



# **NOIDA METRO RAIL CORPORATION (NMRC) LIMITED**

**REQUEST FOR PROPOSAL (RFP)**

**E-Tender No. – NMRC/DCOS/Sig./2025/421**

**Supply of PSD and Interlocking Spares for the Signalling Department**

**OCT 2025**

**Issued by:**

**Noida Metro Rail Corporation (NMRC) Limited  
Block-III, 3<sup>rd</sup> Floor,  
Ganga Shopping Complex, Sector-29, Noida -201301,  
District Gautam Buddha Nagar, Uttar Pradesh, India**

## Disclaimer

This Request for Proposal (RFP) Document (or “E-Tender” or “E-Bid”) for **“Supply of PSD and Interlocking Spares for the Signalling Department”** contains brief information about the scope of work and selection process for the Bidder (‘the Contractor’ or “the Bidder” or “the Applicant”). The purpose of the Document is to provide the Bidders with information to assist the formulation of their Bidding Documents.

While all efforts have been made to ensure the accuracy of information contained in this RFP Document, this Document does not purport to contain all the information required by the Bidders. The Bidders should conduct their own independent assessment, investigations and analysis and should check the reliability, accuracy and completeness of the information at their end and obtain independent advice from relevant sources as required before submission of their Bid/s. Noida Metro Rail Corporation Ltd. (“NMRC” or “the Corporation”) or any of its employees or advisors shall incur no liability under any law, statute, rules or regulations as to the accuracy or completeness of the RFP Document.

NMRC reserves the right to change any or all conditions/information set in this RFP Document by way of revision, deletion, updating or annulment through issuance of appropriate addendum as NMRC may deem fit without assigning any reason thereof.

NMRC reserves the right to accept or reject any or all Bids without giving any reasons thereof. NMRC will not entertain or be liable for any claim for costs and expenses in relation to the preparation of the Bid/s to be submitted in terms of this RFP Document.

## Glossary

- a) **“Addendum / Amendment”** means any written amendment / addendum /corrigendum to this RFP, from time to time issued by NMRC to the prospective bidders;
- b) **“Agreement”** means the Contract Agreement to be executed between NMRC and the selected bidder.
- c) **“Applicable Laws”** means all laws, brought into force and effect by Govt. of India, State Governments, local bodies and statutory agencies and rules / regulations / notifications issued by them from time to time. It also include judgments, decrees, injunctions, writs and orders of any court or judicial authority as may be in force and effected from time to time.
- d) **“Bidder”** or **“Bidder”** means Sole proprietorship, registered partnership firm, public limited company, private limited company which is submitting its bid pursuant to RFP Documents
- e) **“Bid Due Date”** means Bid Submission end date and time given in the tender
- f) **“Earnest Money Deposit (EMD)”** means the refundable amount to be submitted by the Bidder along with RFP documents to NMRC
- g) **“Interest Free Security Deposit/ Performance Security”** means interest free amount to be deposited by the Contractor with NMRC as per terms and conditions of Contract Agreement as a security against the performance of the Contract agreement.
- h) **“NMRC”** means Noida Metro Rail Corporation Limited ( or “Corporation” )
- i) **“Party”** means Contractor or Corporation (together they are called **“Parties”**)
- j) **“Performance Bank Guarantee/ Security Deposit”** means interest free amount to be deposited by the Contractor with NMRC as per terms and conditions of Purchase Order as a security against the performance of the Contract agreement
- k) **“Permits”** shall mean and include all applicable statutory, environmental or regulatory Contracts, authorization, permits, consents, approvals, registrations and franchises from concerned authorities
- l) **“Re. or Rs. or INR”** means Indian Rupee
- m) **“Revenue Operations Date (ROD)”** means the date of operation of metro
- n) **“Selected Bidder”** means the bidder who has been selected by NMRC, pursuant to the bidding process for award of Contract.

The words and expressions beginning with capital letters and defined in this document shall, unless repugnant to the context, have the meaning ascribed thereto hereinabove.

**Data Sheet**

|    |                                                                              |                                                                                                                                                                                                                                     |
|----|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Name of the Bid                                                              | Supply of PSD and Interlocking Spares for the Signalling Department                                                                                                                                                                 |
| 2  | Approximate Cost of Work                                                     | INR 22.90 lakhs (Inclusive of GST)                                                                                                                                                                                                  |
| 3  | Time period of contract                                                      | 45 days for Supply plus 1 year Standard warranty from the date of supply against any manufacturing defects.                                                                                                                         |
| 4  | Method of selection                                                          | Cost Based Selection (Lowest –L1)                                                                                                                                                                                                   |
| 5  | Bid Processing Fee (Nonrefundable)                                           | Rs. 5,900/- (Rupees Five Thousand Nine Hundred Only) including GST through RTGS/NEFT only payable in favour of Noida Metro Rail Corporation Limited                                                                                 |
| 6  | Ernest Money Deposit (EMD)                                                   | Rs. 45,800/- (Rupees Forty Five Thousand and Eight Hundred Only) through RTGS/NEFT only payable in favour of Noida Metro Rail Corporation Limited                                                                                   |
| 7  | System of Tendering                                                          | Single stage Two Packet/Bid System (Technical bid and Financial bid to be submitted together on e-Tender portal.)                                                                                                                   |
| 8  | Name of the Corporation's official for addressing queries and clarifications | JGM/Stores<br>Noida Metro Rail Corporation Limited,<br>Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29,<br>Noida 201301<br><b>Email:</b> <a href="mailto:nmrc.afc@gmail.com">nmrc.afc@gmail.com</a>                         |
| 9  | Bid Validity Period                                                          | 180 days                                                                                                                                                                                                                            |
| 10 | Bid Language                                                                 | English                                                                                                                                                                                                                             |
| 11 | Bid Currency                                                                 | INR                                                                                                                                                                                                                                 |
| 12 | <b>Schedule of Bidding Process</b>                                           |                                                                                                                                                                                                                                     |
|    | <b>Task</b>                                                                  | <b>Key Dates</b>                                                                                                                                                                                                                    |
|    | Uploading of Bid                                                             | 28-10-2025                                                                                                                                                                                                                          |
|    | Pre-bid Meeting                                                              | 04-11-2025 at 11:30 Hrs at NMRC Head office                                                                                                                                                                                         |
|    | Last date of receipt of Pre-bid queries                                      | 04-11-2025 upto 14:00 Hrs                                                                                                                                                                                                           |
|    | Last date of issuing amendment, if any                                       | 14-11-2025                                                                                                                                                                                                                          |
|    | Last Date of Bid Submission                                                  | 28-11-2025 (upto 15:00 Hrs)                                                                                                                                                                                                         |
|    | Date of Technical Bid Opening                                                | 28-11-2025 (at 15:30 Hrs)                                                                                                                                                                                                           |
|    | Place of Bid Opening                                                         | Noida Metro Rail Corporation Ltd.<br>Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29,<br>Noida 201301                                                                                                                       |
| 13 | JV/Consortium to be allowed                                                  | <b>No</b>                                                                                                                                                                                                                           |
| 14 | Account details                                                              | <b>For Bid Processing Fee &amp; EMD</b><br>State Bank of India (04077) – Sector 18, Noida Gautam Budh Nagar, Uttar Pradesh -201301 IFSC Code: SBIN0004077<br><b>A/c No. 37707840592</b><br><b>Noida Metro Rail Corporation Ltd.</b> |



**Note: (i)** Tender Cost and Tender Security (EMD) is exempted for Micro & Small Enterprises (MSEs) registered with District Industries Centre or Khadi & Village Industries Commission or Khadi & Village Industries Board or Coir Board or National Small Industries Corporation or Dte. Of Handicraft & Handloom or any other bodies specified by Ministry of Micro, Small & Medium Enterprises for appropriate category and have valid registration certificate as on date of tender submission. Only those MSEs will be eligible for Tender cost and Tender Security exemption which are registered under following category (With valid registration):-

- (i) “Manufacture of mechanical and electro-mechanical signalling safety and traffic control equipment for railways, tramways, inland waterways, roads, parking facilities, airfields etc.**
- (ii) Manufacture of electrical signalling, safety or traffic-control equipment.**

The tenderers seeking exemption from Tender Cost and Tender Security’, being MSEs, shall ensure their eligibility w.r.t above and submit registration certificate issued by the body under which they are registered which clearly mentions category of along with Terminal Validity of registration.

In absence of any of the above requirements no exemption for ‘Tender cost and Tender security will be allowed and their bid will be rejected and not evaluated further without the Tender cost and EMD.

No further clarification shall be sought on the above.

In case the bidder who has been exempted Tender Cost/Tender Security being Micro & Small Enterprise, and;

- (i)** withdraws his Tender during the period of Tender validity; or
- (ii)** becomes the successful bidder, but fails to commence the work (for whatsoever reasons) as per terms & conditions of Tender; or
- (iii)** refuses or neglects to execute the contract; or
- (iv)** fails to furnish the required Performance Security within the specified time

The bidder shall be debarred from participating in future tenders for a period of 1 year from the date of discharge of tender/date of cancellation of NOA/annulment of award of contract as the case may be. Thereafter, on expiry of period of debarment, the bidder may be permitted to participate in the procurement process only on submission of required Tender Cost/ Tender Security.

Further the Employer may advise the authority responsible for issuing the exemption certificate to take suitable actions against the bidder such as cancellation of enlistment certificate etc.

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## 1. Section 1: General Information

### Background

- a. Noida and Greater Noida are being developed as the satellite towns to New Delhi and more and more people from Delhi and other areas are shifting to these towns in search of fresh air, greenery and better infrastructure. There is a need of providing an efficient, reliable and comfortable transportation system for the population intending to settle in these towns and also the public coming to these areas for education, service and business.
- b. Noida Metro Rail Corporation is a Special Purpose Vehicle (SPV) formed for planning and executing urban transport projects in Noida, Greater Noida regions. The Company desires to provide a world-class Public Transportation System with state of the art technology. As such, the overarching criterion for setting up of the Company is to help create an efficient, safe, reliable, economical and affordable public transport system
- c. An elevated metro line between Noida and Greater Noida is already in operation.
- d. NMRC invites Open e-Bids for selection of Contractor for granting the Contract for **Supply of PSD and Interlocking Spares for the Signalling Department**.
- e. In this regard, the Corporation now invites the interested Bidder/s to submit their proposals as per provisions of this Request for Proposal Document.
- f. NMRC will shortlist the Bidders on the basis of evaluation criteria mentioned in this RFP Document. On the basis of the minimum evaluation criteria, qualified Bidders will be shortlisted. Financial proposal of only qualified Bidders will be opened
- g. If Successful, Bidder shall provide the services as described in **Section 2: Terms of Reference**.

### About Locations

The metro corridor is 29.7 km long and is known as Noida Greater Noida Metro Rail Corridor. It comprises 21 metro stations starting from Noida Sector 51 in Noida and ends up at Depot Station in Greater Noida. Supply of PSD and Interlocking Spares for the Signalling Department are to be supplied at Main Stores (DCOS) Building, Metro Depot at Greater Noida.

### Communication

All communications should be addressed to:

JGM/Stores

Noida Metro Rail Corporation Limited,

Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29, Noida 201301

Email: [nmrc.afc@gmail.com](mailto:nmrc.afc@gmail.com)

## 2. Section 2: Terms of Reference

### 2.1 Tenure:

45 days for Supply plus 1 years Standard warranty from the date of supply against any manufacturing defects.

### 2.2 Scope of Work:

**2.2.1** Tender includes Supply of PSD and Interlocking Spares for the Signalling Department at NMRC Depot as per below mentioned specifications-

| S.No. | Item Description                                                                                       | Unit | Total Required quantity |
|-------|--------------------------------------------------------------------------------------------------------|------|-------------------------|
| 1     | Electrical Key Transmitter with key used in section for Manual operation of Point Machine as per RDSO. | Nos  | 4                       |
| 2     | Relay QNA1 - 24V DC - 8F/8B with complete accessories as per RDSO                                      | Nos  | 4                       |
| 3     | Relay QL1 24V 150 OHM with complete accessories as per RDSO                                            | Nos  | 1                       |
| 4     | Mainline Monitors/ CBI VDU Monitors                                                                    | Nos  | 9                       |
| 5     | Cat6 Cable                                                                                             | Mtr  | 1258                    |
| 6     | Keyboard & Mouse                                                                                       | Nos  | 76                      |
| 7     | Moxa Switch (MGATE MB3480)                                                                             | Nos  | 2                       |
| 8     | Surge Protection Device 220V DC                                                                        | Set  | 15                      |
| 9     | Surge Protection Device 385V AC (3P+1N)                                                                | Set  | 21                      |
| 10    | Surge Protection Device 45V DC                                                                         | Set  | 8                       |
| 11    | Timer Relay 2 Watch (H3DK-HBS)                                                                         | Nos  | 43                      |
| 12    | Timer Relay 4 Watch (H3DK-S2)                                                                          | Nos  | 46                      |
| 13    | Surge Protection Device Class D I Phase 110 V AC                                                       | Set  | 1                       |
| 14    | Surge Protection Device Class D SPD 1,2,3,4,5,6 110V AC/110V DC                                        | Set  | 1                       |
| 15    | Power Supply Unit 230V AC/110V DC, 10A (PS11010V2)                                                     | Nos  | 2                       |
| 16    | Intelligent Temperature Monitor and Controller Unit (GECF3230)                                         | Nos  | 18                      |
| 17    | Limit Switch Crouzet (PBXR-83244213)                                                                   | Nos  | 129                     |
| 18    | Limit Switch Crouzet (V3D-832607)                                                                      | Nos  | 34                      |
| 19    | Axle Counter Rack Cooling Fan 6 inch Oval (SE-17250 ASL)                                               | Nos  | 17                      |

**2.2.2** The scope of supply under the contract may be reduced/curtailed based on NMRC's requirements as deemed fit. No claim or compensation will be entertained on this account.

**2.2.3** All the Items will be received by Main Stores Department at NMRC Depot. No Payment will be made for any item found defective.

**2.2.4** All incidental arrangements for safe transport of Material, machine, tools etc. shall be the responsibility of the contractor. All expenditure to be incurred in this connection shall be borne by contractor.

**2.2.5** All compatible drivers and windows CD should be provided by the supplier at the time of

server supply and experienced service engineer support must be provided for server drivers & operating system supplied by contractor.

**2.2.6** Particular attention shall be given to ensure that all spares should be easily available during the codal life of equipment. In case of equipment made End of life by OEM, same should be intimated to NMRC for timely procurement of spares.

**2.2.7** OEM authorized service center should be available in INDIA for after sale support.

**2.3 Pre-dispatch inspection at Seller premises (Fee/Charges to be borne by the BUYER):**

Before dispatch, the goods will be inspected by NMRC or their Authorized Representative or by Nominated External Inspection Agency (independently or jointly with Buyer) at Seller premises (or at designated place for inspection as declared /communicated by the seller) for their compliance to the specifications. Fee/Charges taken by the External inspection Agency and any external laboratories testing charges shall be borne by the NMRC. For in-house testing, the Sellers will provide necessary facilities. Seller shall notify NMRC through e-mail about readiness of goods for pre-dispatch inspection and NMRC will notify the Seller about the Authorized Representative/Nominated External Inspection Agency and the date for testing. The goods would be dispatched to NMRC only after clearance in pre-dispatch inspection. NMRC's right of rejection in respect of the goods finally received at his location shall in no way be limited or waived by reason of the goods having previously been inspected, tested and passed by NMRC or its Nominated External Inspection Agency prior to the goods' shipment.

**2.4 Obligation to the Contractor**

If any damages / loss / theft etc. occurs in the NMRC premise, shall be the sole responsibility of the contractor and necessary compensation shall be paid by the contractor to NMRC as per the actual cost assessed by NMRC.

The contractor shall indemnify and hold NMRC harmless from and against all claims, damages, losses and expenses arising out of, or resulting from the works/services under the contract provided by the contractor.

Contractor shall ensure that its personnel shall not at any time, without the consent of NMRC, in writing, divulge or make known any trust, accounts, matter or transaction undertaken or handled by NMRC and shall not disclose to any person information to the affairs of NMRC.

All necessary reports, records, registers and other information, under the Contract and all other Statutory Laws, shall be deposited by the contractor on demand by NMRC.

Any damage or loss caused by contractor's persons to the property & equipments of NMRC Ltd. in whatever form may be recovered from the contractor. Contractor shall not be held responsible for the damages/sabotage caused to the property of NMRC due to the trade union / riots / mobs / armed dacoit activities or any other event of force majeure.

Any liabilities arising out of any litigation (including those in consumer courts) due to any act of contractor's personnel shall be directly borne by contractor including all expenses/fines. The concerned contractor's personnel shall attend the court as & when required.

## Section 3: Instructions to Bidders

### 3.1 General instructions

- a. A bidder shall submit only one bid in the same tendering process. A bidder who submits or participates in, more than one bid will cause all of the proposals in which the bidder has participated to be disqualified.
- b. The Bidder shall initiate, and actively pursue and involve itself in all investigations and enquiries, Corporation feedbacks, information, convening of and attendance at meetings, and in any other activities as are or may be necessary for producing high quality work as per the requirements.
- c. The Bidder shall carry out the services in compliance with the provisions of this Agreement. Any and all changes necessary to ensure that the Bidder's documents conform to the intent and purpose set out in the Agreement, shall be made at the Bidder's own expense. The Bidder represents that it is a professional and experienced company, and hereby agrees to bear full responsibility for the correctness and technical merit of the services performed.
- d. Bidders shall be evaluated on the basis of the Evaluation Criteria specified in this document. Bidders shall be deemed to have understood and agreed that no explanation or justification for any aspect of the Selection Process will be given and that NMRC's decisions are without any right of appeal whatsoever.
- e. Any entity which has been barred by the Central/State Government in India or by any entity controlled by them, from participating in any project, and the bar subsists as on the date of Bid, would not be eligible to submit an e - Bid.
- f. Bidders are encouraged to inform themselves fully about the assignment and the local conditions before submitting the e-Bid by paying a visit to the Corporation and/or by sending written queries to NMRC before the last date for receiving queries/clarifications.
- g. NMRC shall not be liable for any omission, mistake or error on the part of the Bidder in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to e-Bid or the Selection Process, including any error or mistake therein or in any information or data given by NMRC.
- h. **The currency for the purpose of the Proposal shall be the Indian Rupee (INR).**
- i. Bidders shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. Bidders shall be considered to have a conflict of interest with one or more parties in this bidding process, if:
  - i. A bidder has been engaged by the Employer to provide consulting services for the preparation related to procurement or implementation of the project;
  - ii. A bidder is any associates/affiliates (inclusive of parent firms) mentioned in sub paragraph above; or
  - iii. A bidder lends, or temporarily seconds its personnel to firms or organizations which are engaged in consulting services for the preparation related to procurement for an implementation of the project, if the personnel would be involved in any capacity on the same project.

#### **Cost of Bid Document / e-Tender processing Fee**

- a. The bidder shall bear all costs associated with the preparation and submission of its e-Bid and Noida Metro Rail Corporation Ltd. ("NMRC" or "the Corporation"), will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the e-Bid process.

- b. This tender document is available on the web site <http://etender.up.nic.in> or on NMRC website ([www.nmrcnoida.com](http://www.nmrcnoida.com)) to enable the bidders to view, download the e-Bid document and submit e-Bids online up to the last date and time mentioned in e-Tender notice/ e-tender document against this e-Tender. The bidders shall have to pay cost of bid document/ e- Tender processing fee of as mentioned in **Data Sheet** through RTGS/NEFT only payable in favor of Noida Metro Rail Corporation Limited in the A/c No. mentioned in **Data Sheet**. The scanned copy of RTGS/NEFT receipt with transaction Id certified by the same bank must be enclosed along with the e-Bid. This cost of bid document/ e-Tender processing fee as mentioned in **Data Sheet** will be non-refundable. Tender without cost of bid document/ e-Tender processing fee in the prescribed form, will not be accepted.

**Acknowledgement by Bidder**

It shall be deemed that by submitting the e-Bid, the Bidder has:

- a. made a complete and careful examination of the e-Bid;
- b. received all relevant information requested from NMRC;
- c. acknowledged and accepted the risk of inadequacy, error or mistake in the information provided in the e-Bid or furnished by or on behalf of NMRC;
- d. satisfied itself about all matters, things and information, necessary and required for submitting an informed Application and performance of all of its obligations there under;
- e. acknowledged that it does not have a Conflict of Interest; and
- f. Agreed to be bound by the undertaking provided by it under and in terms hereof.

**Availability of Bid Document**

This Bid document is available on the web site <http://etender.up.nic.in> or on Noida Metro website [www.nmrcnoida.com](http://www.nmrcnoida.com) to enable the Bidders to view, download the e-Bid document and submit e-Bids online up to the last date and time mentioned in e-Bidder notice/ e-Bid document. The Bidder's shall have to pay e-Bid document fee and EMD as mentioned in Data sheet through RTGS/ NEFT on addresses given in data sheet. The scanned copy of RTGS/ NEFT with transaction ID certified by the same bank must be enclosed along with the e-Bid. This e-Bid document fee will be non-refundable. Bid without Bid fee in the prescribe form will not be accepted.

**Clarifications of e-Bid**

- a. During evaluation of e-Bid, NMRC may, at its discretion, ask the Bidder for a clarification of his/her e-Bid. The request for clarification shall be in writing.
- b. Any queries or request for additional information concerning this RFP shall be submitted in writing or by fax and e-mail to the **JGM/Stores, NMRC**. The envelopes/ communication shall clearly bear the following identification/ title: **"Queries/ Request for Additional Information: RFP for Supply of PSD and Interlocking Spares for the Signalling Department "**. The responses will be posted to all such queries on the official Website [www.nmrcnoida.com](http://www.nmrcnoida.com). NMRC reserves the right not to respond to any questions or provide any clarifications, in its sole discretion, and nothing in this Clause shall be taken or read as compelling or requiring NMRC to respond to any question or to provide any clarification. A pre- submission meeting shall be called on the date mentioned in **Data Sheet** at NMRC Office. Any change corresponding to date, if any, shall be communicated to the **Bidder vide NMRC/ e-Tendering website**.
- c. In case the Bidder seeks for any queries, he shall send letter or e-mail to the correspondence address given in **Data Sheet**.
- d. However, NMRC shall not entertain any correspondence from the Bidders during the

**period of e- Bid opening to selection of the successful Bidder.** Any wrong practice shall be dealt in accordance with the terms and conditions of the RFP.

- e. The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for himself on his own responsibility all information that may be necessary for preparing the Tender and entering into a contract for the proposed work. The costs of visiting the Site shall be borne by the Bidder. It shall be deemed that the Contractor has undertaken a visit to the Site of Works and is aware of the site conditions prior to the submission of the tender documents.
- f. The Bidder and any of his personnel will be granted permission by the Employer to enter upon his premises and lands for the purpose of such inspection, but only upon the express condition that the Bidder, and his personnel, will release and indemnify the Employer and his personnel from and against all liability in respect thereof and will be responsible for death or personal injury, loss of or damage to property and any other loss, damage, costs and expenses incurred as a result of the inspection.

#### **Amendment of e-Bid Document**

- a. At any time prior to the deadline for submission of e-Bid, NMRC may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the e-Bid document by amendments. Such amendments shall be uploaded on the e- procurement website <http://etender.up.nic.in> or NMRC's website [www.nmrcnoida.com](http://www.nmrcnoida.com). The relevant clauses of the e-Bid document shall be treated as amended accordingly.
- b. It shall be the sole responsibility of the prospective Bidder to check the web site <http://etender.up.nic.in> and NMRC's website [www.nmrcnoida.com](http://www.nmrcnoida.com) from time to time for any amendment in the e-Bid documents. In case of failure to get the amendments, if any, NMRC shall not be responsible for it.
- c. In order to allow prospective e-Bids a reasonable time to take the amendment into account in preparing their e-Bids, NMRC, at the discretion, may extend the deadline for the submission of e-Bids. Such extensions shall be uploaded on the e-procurement website <http://etender.up.nic.in> or NMRC's website [www.nmrcnoida.com](http://www.nmrcnoida.com).

### **3.2 Preparation and submission of Bids**

#### **3.2.1 Language of e-Bid**

The e-Bid prepared by the Bidder, as well as all correspondence and documents relating to the e-Bid exchanged by the Bidder and NMRC shall be written in English language. Only English numerals shall be used in the e-Bid. The correspondence and documents in any other language must be accompanied by transcripts verified by the Embassy of Home Country or equivalent.

#### **3.2.2 Documents constituting the e-Bid**

**The e-Bid prepared by the Bidder shall comprise the following components:**

- a. **Technical e-Bid- Technical e-Bid will comprise of -**
  - i. **Fee details** - Details of Bid processing fee and prescribed EMD
  - ii. **Eligibility details** - Includes copies of required documents in PDF format justifying that the Bidder is qualified to perform the contract if his/her bid is accepted and the Bidder has financial & technical capability necessary to perform the contract and meets the criteria outlined in the Qualification requirement and technical specification and fulfill all the conditions of the contract.
  - iii. **Technical evaluation** - Details of all documents needed for Technical evaluation as



mentioned in this RFP

**b. Financial e-Bid -**

- i. **Price bid** – Bill of Quantities in XLS format to be filled in after downloading from the e- Procurement website for this e-tender (<http://etender.up.nic.in>). There shall be a single financial quote for the package for which the bid is submitted.

**3.2.3 Documents establishing Bidder's Qualification**

- c. The Bidder shall furnish, as part of its technical e-Bid, documents establishing the Bidder's qualification to perform the contract if its e-Bid is accepted. The documentary evidence should be submitted by the Bidder electronically in the PDF format.
- d. The documentary evidence of Bidder's qualification to perform the contract if its e-Bid is accepted shall be as per qualification requirements specified in e-Bid document.

**3.2.4 E-Bid form**

The Bidder shall complete the e-Bid form and the appropriate price schedule/BOQ furnished in the e-Bid document.

**3.2.5 E-Bid Currency**

Prices shall be quoted in Indian Rupees only.

**3.2.6 Formats and Signing of e-Bid**

- a. The Bidder shall prepare one electronic copy of the technical e-Bid and financial e-Bid separately.
- b. The e-Bid document shall be digitally signed, at the time of uploading, by the Bidder or a person or persons duly authorized to bind the Bidder to the contract. The later authorization shall be indicated by a scanned copy of written power-of attorney accompanying the e-Bid. All the pages/documents of the e-Bid that are to be uploaded shall be digitally signed by the person authorized to sign the e-Bid.
- c. Bidders should provide all the information as per the RFP and in the specified formats. NMRC reserves the rights to reject any proposal that is not in the specified formats.
- d. In case the Bidders intends to provide additional information for which specified space in the given format is not sufficient, it can be furnished in duly stamped and signed PDFs.

**3.2.7 Deadline for submission of e-Bid**

E-Bid (Technical and financial) must be submitted by the Bidder at e-procurement website <http://etender.up.nic.in> not later than the time specified on the prescribed date (as the server time displayed in the e-procurement website). NMRC may, at its discretion, extend this deadline for submission of e-Bid by amending the e-Bid document, in which case all rights and obligations of NMRC and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

**3.2.8 Submission of e-Bid**

- a. The bid submission module of e-procurement website <http://etender.up.nic.in> enables the Bidders to submit the e-Bid online in response to this e-Bid published by NMRC.
- b. Bid submission can be done only from the bid submission start date and time till the bid submission end date and time given in the e-Bid. Bidders should start the bid submission process well in advance so that they can submit their e-Bid in time.

- c. The Bidder should submit their e-Bid considering the server time displayed in the e-procurement website. This server time is the time by which the e-Bid submission activity will be allowed till the permissible time on the last/end date of submission indicated in the e-Bid schedule.
- d. Once the e-Bid submission date and time is over, the Bidders cannot submit their e-Bid. For delay in submission of e-Bid due to any reasons, the Bidders shall only be held responsible.

**3.2.9 The Bidders have to follow the following instructions for submission of their e-Bid:**

- a. For participating in e-Bid through the e-Bidding system it is necessary for the Bidders to be the registered users of the e-procurement website <http://etender.up.nic.in>. The Bidders must obtain a user login Id and password by registering themselves with U.P. Electronics Corporation Ltd. Lucknow if they have not done so previously for registration.
- b. In addition to the normal registration, the Bidder has to register with his/her digital signature certificate (DSC) in the e-Bidding system and subsequently he/she will be allowed to carry out his/her e-Bid submission activities. Registering the digital signature certificate (DSC) is a one-time activity. Before proceeding to register his/her DSC, the Bidder should first log on to the e-Bidding system using the user login option on the home page with the login Id and password with which he/she has registered.

For successful registration of DSC on e-procurement website <http://etender.up.nic.in> the Bidder must ensure that he/she should possess class-2/class-3 DSC issued by any certifying authorities approved by controller of certifying authorities, Government of India, as the e-procurement website <http://etender.up.nic.in> is presently accepting DSC issued by these authorities only. The Bidder can obtain user login Id and perform DSC registration exercise given above even before the e-Bid submission date starts. NMRC shall not be held responsible if the Bidder tries to submit his/her e-Bid at the moment before end date of submission but could not submit due to DSC registration problem.

- c. The Bidder can search for active Bids through "search active tenders" link, select a Bid in which he/she is interested in and then move it to 'My Tenders' folder using the options available in the e-Bid submission menu. After selecting and the Bid, for which the Bidder intends to e-Bid, from "My tenders" folder, the Bidder can place his/her e-Bid by clicking "pay offline" option available at the end of the view Bid details form. Before this, the Bidder should download the e-Bid document and price schedule/bill of quantity (BOQ) and study them carefully. The Bidder should keep all the documents ready as per the requirements of e-Bid document in the PDF format except the price schedule /bill of quantity (BOQ) which should be in the XLS format (excel sheet).
- d. After clicking the 'pay offline' option, the Bidder will be redirected to terms and conditions page. The Bidder should read the terms & conditions before proceeding to fill in the Bid fee and EMD offline payment details. After entering and saving the Bid fee and EMD details form so that "bid document preparation and submission" window appears to upload the documents as per technical (fee details, qualification details, e-Bid form and technical specification details) and financial (e-Bid form and price schedule/BOQ) schedules/packets given in the Bid details. The details of the RTGS/NEFT should tally with the details available in the scanned copy and the date entered during e-Bid submission time otherwise the e-Bid submitted will not be accepted.
- e. Next the Bidder should upload the technical e-Bid documents for fee details (e-Bid fee and EMD), Qualification details. Before uploading, the Bidder has to select the relevant digital signature certificate. He may be prompted to enter the digital signature certificate password, if necessary. For uploading, the Bidder should click "browse" button against each document label in technical and financial schedules/packets and then upload the relevant PDF/XLS files already prepared and stored in the Bidder's computer. The required documents for each document label of technical ( fee details, qualification details, e-Bid form and technical

specification details) and financial ( e-Bid form and price schedule/BOQ) schedules/packets can be clubbed together to make single different files for each label.

- f. The Bidder should click "Encrypt" next for successfully encrypting and uploading of required documents. during the above process, the e-Bid document are digitally signed using the DSC of the Bidder and then the documents are encrypted/locked electronically with the DSC's of the bid openers to ensure that the e-Bid documents are protected, stored and opened by concerned bid openers only.
- g. After successful submission of e-Bid document, a page giving the summary of e-Bid submission will be displayed confirming end of e-Bid submission process. The Bidder can take a printout of the bid summary using the "print" option available in the window as an acknowledgement for future reference.
- h. NMRC reserves the right to cancel any or all e-Bids without assigning any reason.

#### **3.2.10 Late e-Bid**

- a. Bids received by NMRC after the specified time on the Bid Due Date shall not be eligible for consideration and shall be summarily rejected.
- b. The server time indicated in the bid management window on the e- procurement website <http://etender.up.nic.in> will be the time by which the e-Bid submission activity will be allowed till the permissible date and time scheduled in the e-Bid.
- c. Once the e-Bid submission date and time is over, the Bidder cannot submit his/her e-Bid. Bidder has to start the bid submission well in advance so that the submission process passes off smoothly. The Bidder will only be held responsible if his/her e-Bid is not submitted in time due to any of his/her problems/faults, for whatsoever reason, during e-Bid submission process.

#### **3.2.11 Withdrawal and resubmission of e-Bid**

- a. At any point of time, a Bidder can withdraw his/her e-Bid submitted online before the bid submission end date and time. For withdrawing the Bidder should first log in using his/her login id and password and subsequently by his/her digital signature certificate on the e-procurement website <http://etender.up.nic.in>. The Bidder should then select "My bids" option in the bid submission menu. The page listing all the bids submitted by the Bidder will be displayed. Click "View" to see the details of the bid to be withdrawn. After selecting the "bid withdrawal" option the Bidder has to click "Yes" to the message "Do you want to withdraw this bid?" displayed in the bid information window for the selected bid. The Bidder also has to enter the bid withdrawing reasons and upload the letter giving the reasons for withdrawing before clicking the "Submit" button. The Bidder has to confirm again by pressing "OK" button before finally withdrawing his/her selected e-Bid.
- b. No e-Bid may be withdrawn in the interval between the deadline for submission of e-Bids and the expiration of period of e- bid validity. Withdrawal of an e-Bid during this interval may result in the forfeiting of Bidder's e-Bid security.
- c. The Bidder can re-submit his/her e-Bid as when required till the e-Bid submission end date and time. The e-Bid submitted earlier will be replaced by the new one. The payment made by the Bidder earlier will be used for revised e-Bid and the new e-Bid submission summary generated after the successful submission of the revised e-Bid will be considered for evaluation purposes. For resubmission, the Bidder should first log in using his/her login Id and password and subsequently by his/her digital signature certificate on the e-procurement website <http://etender.up.nic.in>. The Bidder should then select "My bids" option in the bid submission menu. The page listing all the bids submitted by the Bidder will be displayed. Click "View" to see the detail of the e-Bid to be

resubmitted. After selecting the "bid resubmission" option, click "Encrypt & upload" to upload the revised e-Bids documents.

- d. The Bidder can submit their revised e-Bids as many times as possible by uploading their e-Bid documents within the scheduled date & time for submission of e-Bids.
- e. No e-Bid can be resubmitted subsequently after the deadline for submission of e-Bids.

**3.2.12 NMRC's right to accept any e-Bid and to reject any or all e-Bids.**

- a. Notwithstanding anything contained in this e-Bid, NMRC reserves the right to accept or reject any Bid and to annul the Selection Process and reject all Bids, at any time without any liability or any obligation for such acceptance, rejection or annulment, and without assigning any reasons thereof.
- b. NMRC reserves the right to reject any Bid if:
  - At any time, a material misrepresentation is made or uncovered, or
  - The Bidder does not provide, within the time specified by NMRC, the supplemental information sought by NMRC for evaluation of the e-Bid.
- c. Such misrepresentation/ improper response may lead to the disqualification of the Bidder. If such disqualification /rejection occurs after the e-Bid have been opened and the highest ranking Bidder gets disqualified / rejected, then the NMRC reserves the right to consider the next best Bidder, or take any other measure as may be deemed fit in the sole discretion of NMRC, including annulment of the Selection Process.

**3.2.13 Period of validity of e-Bid**

- a. e-Bid shall remain valid for 180 days after the date of e-Bid opening prescribed by NMRC. An e-Bid valid for a shorter period shall be rejected by NMRC as non-responsive.
- b. In exceptional circumstances, NMRC may solicit the Bidder's consent to an extension of the period of e-Bid validity. The request and the response thereto shall be made in writing.

**3.2.14 Correspondence with the Bidder**

- a. Save and except as provided in this e-Bid, NMRC shall not entertain any correspondence with any Bidder or its Technical Partners in relation to acceptance or rejection of any e-Bid.
- b. No Bidders or its Technical Partners shall contact NMRC on any matter relating to his e-Bid from the time of Bid opening to the time contract is awarded.
- c. Any effort by the Bidder or by its Technical Partners to influence NMRC in the Bid evaluation, Bid comparison or contract award decisions, may result in the rejection of his Bid.

**3.3 Earnest Money Deposit**

**3.3.1 Earnest money deposit (EMD)**

- a. The bidder shall furnish, as part of its e-Bid, an e-Bid security/ EMD as stated in Data Sheet in form of RTGS/NEFT only in favour of Noida Metro Rail Corporation Limited in the A/c No. mentioned in **Data Sheet**. The scanned copy of RTGS/NEFT receipt of Security/ EMD with transaction Id certified by the same bank must be enclosed along with the e-Bid. Tender without Earnest Money in the prescribed form, will not be accepted.
- b. Bidders submitting bids for more than one package shall be required to submit EMD for each package as mentioned in **Data Sheet** for which bid is submitted.
- c. Any e-Bid not secured in accordance with above shall be treated as non-responsive and rejected by NMRC.
- d. Unsuccessful Bidder's EMD will be returned within 45 days after conclusion or discharge of the tender.

- e. No interest will be paid by the Purchaser on the Earnest Money Deposit.
- f. The successful Bidder's e-Bid EMD will be adjusted with Performance Bank Guarantee, if applicable, to be submitted by the Bidder upon signing the contract.
- g. The EMD may be forfeited:
  - i. If Bidder (a) withdraws its e-Bid during the period of e-Bid validity specified by the Bidder on the e-bid form: or (b) does not accept the correction of errors or (c) modifies its e-Bid price during the period of e-Bid validity specified by the Bidder on the form.
  - ii. In case of a successful Bidder, if the Bidder fails to sign the contract agreement with the Corporation.

### **3.4 Opening and Evaluation of Bids**

#### **3.4.1 Opening of technical e-Bid by NMRC**

- a. NMRC will open all technical e-Bids, in the presence of Bidder's representatives who choose to attend on the prescribed date of opening at NMRC Office. The Bidder's representatives who are present shall submit the letter to NMRC on the letter head of the company stating that the representative (name) is authorized to attend the meeting (Please note – The representative is required to carry a copy during pre-bid and other related meetings as well). He / She shall sign a register evidencing their attendance at NMRC. In the event of the specified date e-Bid opening being declared a holiday for the Corporation, the e-bids shall be opened at the appointed time and place on the next working day.
- b. The Bidder who is participating in e-Bid should ensure that the RTGS/NEFT of Bid Processing Fee and EMD must be submitted in the prescribed account of NMRC within the duration (strictly within opening & closing date and time of individual e-Bid) of the work as mentioned in Bid notice, otherwise, in any case, e-Bid shall be rejected.
- c. The Bidders names and the presence or absence of requisite e-Bid security and such other details as NMRC at its discretion may consider appropriate, will be announced at the opening.

#### **3.4.2 Opening of financial e-Bid**

- a. After evaluation of technical e-Bid, through the evaluation committee NMRC shall notify those Bidders whose technical e-Bids were considered non-responsive to the conditions of the contract and not meeting the technical specifications and qualification requirements indicating that their financial e-Bids will not be opened.
- b. NMRC will simultaneously notify the Bidders, whose technical e-Bids were considered acceptable to the Corporation. The notification may sent by e-mail provided by Bidder.
- c. The financial e-Bids of technically qualified Bidders shall be opened in the presence of technically qualified bidders who choose to attend. The date and time for opening of financial bids will be communicated to the technically qualified Bidders subsequently after completion of technical bids evaluation through e-mail provided by the Bidder.

#### **3.4.3 Correction of Errors**

- a. Financial Bids determined to be responsive will be checked by NMRC for any arithmetic errors. Where there is a discrepancy between the rate quoted in the Financial Bid, in figures and in words, the amount in words will prevail over the amounts in figures, to the extent of such discrepancy.

- b. The amount stated in the Financial Bid will be adjusted by NMRC in accordance with the above procedure for the correction of errors and shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected quoted rate of e-Bid, his e-Bid will be rejected, and his Bid Security shall be liable for forfeiture.

#### **3.4.4 Examination of e-Bid document**

- a. The NMRC will examine the e-Bid to determine if:
  - i. They are complete;
  - ii. They meet all the conditions of the contract;
  - iii. The required e-Bid Processing fee, EMD and other required documents have been furnished;
  - iv. The documents have been properly digitally signed; and
  - v. The e-Bids are in order.
- b. Any e-Bid or e-Bids not fulfilling these requirements shall be rejected.

#### **3.4.5 Contacting NMRC**

- a. No Bidder shall contact NMRC on any matter relating to his/her e-Bid, from the time of the e-Bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of NMRC, he/she can do so in writing.
- b. Any effort by a Bidder to influence NMRC in its decisions on e-Bid evaluation, e- bid comparison or contract award may result in rejection of the Bidder's e-Bid.
- c. In the event of any information furnished by the Bidder is found false or fabricated, the minimum punishment shall be debarring /blacklisting from Noida Metro works and legal proceeding can also be initiated. EMD of such bidders will be forfeited.

#### **3.4.6 Confidentiality**

- a. Information relating to the examination, clarification, evaluation, and recommendation for the Bidders shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional advisor advising NMRC in relation to or matters arising out of, or concerning the Bidding Process. Any effort by a Bidder to exert undue or unfair influence in the process of examination, clarification, evaluation and comparison of Proposal shall result in outright rejection of the offer, made by the said Bidder.
- b. NMRC shall treat all information, submitted as part of Bid, in confidence and shall require all those who have access to such material to treat the same in confidence. NMRC may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert any right or privilege of the statutory entity and/ or NMRC or as may be required by law or in connection with any legal process.

### **3.5 Award of Contract**

#### **3.5.1 Award Criteria**

- a. NMRC will award the contract as per evaluation criteria stated in the RFP Document.
- b. NMRC will award the contract to the successful Bidder whose bid has been determined to be responsive to all the conditions of the contract and meeting the eligibility requirement of the bidding document.

#### **3.5.2 Purchase Order**

- a. Prior to the expiration of the period of Bid validity, NMRC will issue Purchase order to the successful Bidder in writing, by letter/mail.

**b.** The successful bidder shall have to provide unconditional acceptance of the Purchase order/ Notice of award of contract within 10 days from the date of issue of Purchase order. Contractor is required to submit Performance Bank Guarantee / Security Deposit within 30 days from the date of acceptance of Purchase order. Upon the receipt of the unconditional acceptance of Purchase order along with Performance Bank Guarantee / Security Deposit, a legally binding contract shall be deemed to have commenced between NMRC and successful bidder.

#### **3.5.3 Signing of contract**

Upon acceptance of the Purchase Order by the bidder, a legally binding contract shall be deemed to have commenced between NMRC and the bidder. However, the bidder shall be required to execute a formal agreement along with all necessary documents as per RFP with NMRC within 45 days from the acceptance of Purchase order/ NOA as per format provided in the RFP document. The cost of Agreement and notarization charges shall be borne by the bidder.

#### **3.5.4 NMRC's right to accept any Bid and to reject any or all Bids**

NMRC reserves the right to accept or reject any Bid, and to annul the Bid process at any time prior to contract award, without thereby incurring any liability to the affected bidder or bidders.

## 4. Section 4: Eligibility, Evaluation and Selection Process

### 4.1 Eligibility Criteria

The Bidder's competence and capability is proposed to be established by the following parameters. The Bidder should meet all the criteria given in this section.

- a) Sole proprietorship, registered partnership firm (including LLP), public limited company, private limited company can submit the Bid. The firms and the companies should be registered in India.
- b) The Bidder should have completed in India during last 7 (Seven) years period ending last day of month previous to the one in which the bids are invited should be either of the following:
  - i. One order of similar nature of value not less than Rs. 18.32 lakh (Rupees Eighteen Lakh Thirty Two Thousand only) or
  - ii. Two orders of similar nature of value not less than Rs 11.45 lakh (Rupees Eleven Lakh Forty Five Thousand Only) each or
  - iii. Three orders of similar nature of value not less than Rs 9.16 lakh (Rupees Nine Lakh and Sixteen Thousand Only) each.

**Definition of Similar Work:** "Supply of Signal Spares to any Metro/Railways/Government Organization/PSUs."

- c) **Bidders are required to enclose copies of the work orders and work completion certificate in support of the same with the Technical-Bid. Work completion certificate should clearly indicate the nature/scope of work, actual completion cost and actual date of completion for such work. Without proper and valid certificates from the Employers, bid will be rejected.**
- d) The Bidder should have minimum average annual turnover of Rs.22.9 lakhs (Rupees Twenty Two Lakh and Ninety Thousand only) in the last 3 (three) audited Financial Years (2021-22, 2022-23, 2023-24) preceding the Bid Due Date.
- e) Profit before tax should be positive in atleast 1 (one) year; out of the last 3 (three) audited financial years ending on 31<sup>st</sup> March 2024.
- f) NMRC/any other Metro Organization (100% owned by Govt.) / Ministry of Housing & Urban Affairs / Order of Ministry of Commerce, applicable for all Ministries must not have banned business with the tenderer (including any member in case of JV/consortium) as on the date of Bid submission for **Supply of PSD and Interlocking Spares for the Signalling Department**. The tenderer should submit undertaking to this effect in Form-7 of Tender.
- g) The Bidder should be registered with the Goods and Services Tax Authority.
- h) Bidder is required to submit the self-attested copy of NIT and RFP.
- i) **Bidders are required to provide the Technical Data Sheet.**

**The Bidder shall also furnish the following documentary proof:**

- a. For above criteria 4.1a
  - i. Registration certificate of the firm/ Partnership deed/ certificate of incorporation/ affidavit for sole proprietorship, etc.
- b. For above criteria 4.1b & c
  - i. Form 3: Work Experience with documentary evidence
- c. For above criteria 4.1d & e
  - i. Form 4: Financial Capability Details
  - ii. A copy of the Audited balance sheets and Profit and Loss Statements for the last 3 (three) financial years (FY 2021-22, 2022-23, 2023-24).
  - iii. Self-attested copy of PAN, ITR (For last 3 audited FY's) ending on 31<sup>st</sup> March 2024.
- d. For above criteria 4.1 g
  - i. Copy of GST registration certificate
- e. For above criteria 4.1 f



- i. Form 6: Undertaking

#### 4.2 Information of the Technical and Financial Proposal

- i. The financial proposal of only technically qualified Bidder shall be opened for evaluation.
- ii. The Bidder satisfying the criteria under shall be considered as qualified.

#### 4.3 Selection of Bidder

NMRC shall award the Contract for **Supply of PSD and Interlocking Spares for the Signalling Department** to the Lowest Bidder (**L1 bidder**), whose tender has been determined to be substantially responsive and compliant to the requirements contained in the Tender Documents.

- i. In case, two or more technically qualified bidders quote the same rate in the Commercial Bid, and become Lowest (i.e. L-1), then the tender would be awarded to the bidder who has the highest / higher Average Annual Turnover (as per Minimum Eligibility Criteria defined in Section 4) during the last 3 audited financial years ending on 31<sup>st</sup> March, 2024. Experience certificate / work completion certificate on client's letter head is mandatory to ascertain the nature, period and value of work which shall be required to be uploaded by the bidder by the last date of tender submission.
- ii. No correspondence will be entertained by NMRC from the unsuccessful bidders.

#### 4.4 Purchase Order

- i. Prior to the expiration of the period of Bid validity, NMRC will issue Purchase order to the successful Bidder in writing, by letter/mail.
- ii. The successful bidder shall have to provide unconditional acceptance within 10 days of receipt of the Purchase order/Notice of award and has to submit Performance Bank Guarantee / Security Deposit within 30 days from the date of acceptance of Purchase order/Notice of award.
- iii. The Successful Bidder shall supply the required items within the time period as mentioned in Purchase order or such extended period as may be decided by the Corporation.
- iv. Failure of the Successful Bidder to comply with the requirement of acknowledgement of Purchase Order shall constitute sufficient grounds for the annulment of the Purchase Order, and forfeiture of the bid security.
- v. The Purchaser/Buyer reserves the right to increase or decrease the quantity up to 25% of the quantity offered by the successful bidder. The bidder is bound to accept the increase or decrease in the tendered quantity up to 25% under this clause without any change in unit price.
- vi. In case the variation in individual items or the group of items as stipulated above, is more than 25% on plus side, the rate for the varied quantity beyond 25% shall be negotiated between the NMRC and the Contractor and mutually agreed rates arrived at before actual execution of the extra quantity. In case the contractor executes the extra quantity without written approval of the NMRC with specific instructions to execute pending the finalization of rates, the payment shall be made at contract rate only. In the event of disagreement, the Engineer shall fix such rates of price as are, in his opinion appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on account payments to the Contractor. Alternatively, in the event of disagreement, the Contractor shall have no claim to execute extra quantities/new items and the Engineer shall be free to get such additional quantities beyond 25% new items executed through any other agency. However, if the Engineer or the Employer so directs the Contractor shall be bound to carry out any such additional quantities beyond the limits stated above original quantities and or new items and the disagreement or the difference regarding rates to be paid for the same shall be settled in the manner laid down under the conditions for the settlement of dispute.

#### 4.5 Performance Bank Guarantee / Security Deposit

- i. To fulfill the requirement of performance bank guarantee during the implementation period, the Successful Bidder (herein referred to as the "Contractor") shall deposit 5% of the Contract Price in form of NEFT/RTGS, FDR or unconditional and irrevocable Bank Guarantee bond as per Form -13 of this RFP, issued by a scheduled bank in favor of Noida Metro Rail Corporation Limited valid for 68 months within 30 days of acceptance of Purchase order/Notice of Award. The performance guarantee shall be

valid for a period up to 6 months beyond the work end date/ 6 months beyond the end date of warranty period. EMD amount of successful bidder shall be adjusted in the performance bank guarantee, if applicable. For unsuccessful bidder, EMD shall be refunded without any interest. In case of extension of tenure by 6 months or more, the performance bank guarantee shall be extended by 6 months or such increased period as well. The performance guarantee shall be extended or renewed in advance before expiry of existing guarantee. Failure to submit the PBG within 30 days from the date of acceptance of Purchase order/ NOA, a penal interest of 15% per annum shall be charged for the period i.e. from date of acceptance of NOA to the date of submission of PBG. In case Contractor fails to submit the PBG beyond 60 days from the date of acceptance to Purchase order/ NOA, the contract shall be annulled duly forfeiting Tender security and other dues. In case of any extension is sought for submission of PBG, extension will be given only after approval from NMRC.

- ii. It is to note that if contract value increases by more than 25% of the original contract value, the performance bank guarantee shall be increased accordingly. However same PBG will hold good for any variation up to 25% of original contract.
- iii. A contract agreement will have to be signed by the contractor at his cost on proper stamp paper. Without performance guarantee by contractor, contract agreement shall not be signed.
- iv. The Bank guarantee must be encashable by a bank branch located in Delhi/NCR, Noida and Greater Noida region only. The performance bank guarantee shall be extended and renewed in advance before expiry of existing guarantee. It shall be ensured that the Bank Guarantee is encashable from the Bank branch located in Delhi NCR, Noida or Greater Noida.
- v. NMRC reserves the right for deduction of NMRC dues from Contractor's Performance Bank Guarantee/ Security Deposit (interest free) for –
  1. Any penalty imposed by NMRC for violation of any terms and conditions of agreement committed by the Contractor.
  2. Any amount which NMRC becomes liable to the Government/Third party due to any default of the Contractor or any of his director/ employees/ representatives/ servant/ agent, etc.
  3. Any payment/ fine made under the order/judgment of any court/consumer forum or law enforcing Contractor or any person duly empowered in his behalf.
  4. Any outstanding payment/ claims of NMRC remained due after completion of relevant actions as per agreement.
- vi. Once the amount under above Clause is debited, the Contractor shall replenish the Security Deposit/Performance Bank Guarantee to the extent the amount is debited within 15 days period, failing which, it shall be treated as Contractor Event of Default and will entitle NMRC to deal with the matter as per the provisions of RFP and Contract Agreement.

#### 4.6 Contact during Proposal Evaluation

- i. Proposals shall be deemed to be under consideration immediately after they are opened and until such time NMRC makes official intimation of award/ rejection to the Bidders. While the Proposals are under consideration, Bidders and/ or their representatives or other interested parties are advised to refrain from contacting by any means, NMRC and/ or their employees/ representatives on matters related to the Proposals under consideration till the time Contract is awarded
- ii. Any effort by a Bidder to influence NMRC in its decisions on Bid evaluation, Bid comparison or contract award may result in rejection of the Bidder's Bid.
- iii. In the event of any information furnished by the agency is found false or fabricated the minimum punishment shall be debarred/ blacklisting and the legal proceeding may also be initiated.
- iv. If the Bidder wishes to bring additional information to the notice of NMRC, he/she can do so in writing. All correspondence/ enquiry should be submitted to the following in writing by fax/ post/courier:  
JGM/Stores  
Noida Metro Rail Corporation (NMRC) Limited  
Block-III, 3rd Floor, Ganga Shopping Complex, Sector-  
29, Noida -201301  
District Gautam Buddha Nagar, Uttar

Pradesh Email: nmrcafc@gmail.com

- v. No interpretation, revision, or other communication from NMRC regarding this solicitation is valid unless in writing and signed by the competent authority from NMRC.

#### 4.7 Financial Terms

##### 4.7.1 Payment Terms

The standard payment terms subject to recoveries, if any by way of Liquidated damages (LD) will be as under:

- a. 100% Payment will be made after-
  - i. Delivery of Supply of PSD and Interlocking Spares for the Signalling Department at Main Stores (DCOS) Building, NMRC Depot.
  - ii. Final Acceptance/Receiving by NMRC after installation and commissioning at NMRC site(if any).
  - iii. Submission of delivery Challans/ e-way bills/ Tax invoice (Containing GST no. of both the parties) and acceptance certificates at NMRC to the concerned department.
  - iv. Copies of bills in original with relevant supporting documents.
- b. No Payment shall be made in advance.
- c. No payment shall be made for the items rejected.
- d. Payment will be effected based on unit rate as approved in the Bill of Quantity (BOQ).
- e. Contractor shall submit necessary documents & Bill (3 copies of invoices) for payment. Income Tax is deductible at source while effecting payment of bills at the prescribed percentage as per the orders of the government and relevant laws.
- f. Quote PAN and GST on all correspondence, bills, voucher and other documents otherwise TDS at higher of the prescribed rate will be deducted.
- g. All payments to the contractor will be made by e-payment/ Account payee cheques. Payments shall be made on receipt of the bill complete and correct in all respect along with the supporting documents subject to deduction of statutory charges/ taxes/ duties/ levies etc.
- h. GST, if claimed, will be reimbursed only if the GST Registration number is mentioned in the Invoice. In the absence of GST registration number, GST will not be reimbursed. Further, GST will be reimbursed only when GST is reflected on the GST portal.
- i. Statutory Deductions will be made from payment as per prevalent laws and act.

**4.7.2. Liquidated Damages:** If the contractor fails to deliver/commission/install any or all of the Goods/Services within the original/fixed period(s) as specified in the purchase order, the NMRC will be entitled to deduct/recover the Liquidated Damages for the delay, unless covered under Force Majeure conditions aforesaid, @ 0.5% of the contract value per week or part of the week of delayed period as pre estimated damages not exceeding 10% of the contract value without any controversy/dispute of any sort whatsoever.

## **5. Section 5: General Conditions of Contract (GCC)**

**These conditions shall be part of the contract agreement.**

### **5.1 General Provisions**

#### **5.1.1 Governing law and jurisdiction**

These general conditions shall be governed by and construed in accordance with the laws in the territory of India. Irrespective of the place of delivery and the place of payment under the contract, the contract shall be deemed to have been made at the place in India from where the acceptance of tender has been issued. Any dispute arising between the parties or arising out of this project or these terms shall be subject to the exclusive jurisdiction of, and venue in, the District court located in Gautam Budh Nagar, Uttar Pradesh, India.

#### **5.1.2 Notices**

Any notice, request or consent required or permitted to be given or made pursuant to these general conditions shall be in writing. Any such notice, request or consent shall be deemed to have been given or made when delivered in person to an authorized representative of the party to whom the communication is addressed, or when sent to such party at the mentioned address.

#### **5.1.3 Authorized Representatives**

Any action required or permitted to be taken, and any document required or permitted to be executed under these general conditions by the Corporation or the Successful Bidder may be taken or executed by the officials as formally designated by each party.

#### **5.1.4 Taxes and Duties**

- a. The Agency shall bear and pay all taxes, duties, levies and charges assessed on the Agency, its Sub Agencies or their employees by all municipal, state or national government authorities in connection with the Facilities in and outside India, the amount of which is deemed to have been included in the Contract Price.
- b. The Agency shall ensure full compliance with tax laws of India with regard to this contract and shall be solely responsible for the same. He shall keep the Employer fully indemnified against liability of tax, interest, penalty etc., of the Agency's in respect thereof, which may arise.

### **5.2 Commencement, Completion, Modification and Termination of Contract**

#### **5.2.1 Effectiveness of Contract**

This Contract shall come into effect on the date the Contract is signed by both the parties and such other later date as discussed and agreed with the Bidder.

#### **5.2.2 Commencement of Services**

The Contractor shall begin carrying out the Services from the date of acceptance of NOA or any such date as specified by the employer.

#### **5.2.3 Expiration of Contract**

Unless terminated earlier pursuant to Clause 5.2.6 hereof, these general conditions shall expire at the end of such time period as given in the time schedule in RFP Document.

#### **5.2.4 Modifications or Variations**

Any modification or variation of the terms and conditions of these general terms, including any modification or variation of the scope of the Services, may only be made by written agreement between the Parties. However, each Party shall give due consideration to any proposals for modification or variation made by the other Party.

### 5.2.5 Force Majeure

- (i) Definition: For the purpose of these general terms, "Force Majeure" means an event which is beyond the reasonable control of a Party and which makes a Party's performance of its obligations under the Contract impossible or so impractical as to be considered impossible under the circumstances.
- (ii) No Breach of Contract: The failure of a Party to fulfill any of its obligations under the contract shall not be considered to be a breach of, or default under, this Contract insofar as such inability arises from an event of Force Majeure, provided that the Party affected by such an event (a) has taken all reasonable precautions, due care and reasonable alternative measures in order to carry out the terms and conditions of this Contract, and (b) has informed the other Party as soon as possible about the occurrence of such an event.
- (iii) Extension of Time: Any period within which a Party shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.
- (iv) Payments: During the period of their inability to perform the Services as a result of an event of Force Majeure, the Agency shall be entitled for time extension for such period.
- (v) Conditions like Pandemic/Lockdown (e.g. in COVID-19) will be treated as Force Majeure. During the period of Non-performance in these conditions, contractor will not be billed and Extension of Time will be given for such period.

### 5.2.6 Termination of Contract

If the Contractor fails to carry out any of his obligations, or if the Contractor is not executing the Works in Accordance with the Contract, the Engineer may give notice to the Contractor requiring him to make good. Such failure and remedy the same within such time as the Employer / Engineer may deem to be reasonable.

The Employer shall be entitled to terminate the Contract if the Contractor or any one of its constituents,

- a. fails to comply with a notice under this clause.
- b. abandons or repudiates the Contract
- c. without reasonable excuse acceptable to the Engineer, fails to commence the Works in accordance with The Contract
- d. Sub-contracts the whole of the Works or assigns the Contract without approval of the Employer
- e. becomes bankrupt or insolvent or goes into liquidation except voluntary liquidation for the purpose of Amalgamation or reconstruction
- f. persistently disregards instructions of the Engineer or contravenes any provisions of the Contract, or
- g. fails to adhere to the agreed programme of work by margin of 10% of the stipulated period or 21 days, whichever is earlier, or fails to complete the Works or parts of the Works within the stipulated or extended period of completion, or is unlikely to complete the whole Work or part thereof within time because of poor record of progress; or
- h. fails to remove materials from the Site, or pull down and replace Work, after receiving notice from the Engineer to the effect that the said materials or Works have been condemned or rejected, or
- i. fails to take steps to employ competent and/or additional staff and labour, or
- j. fails to afford the Engineer or his Representative proper facilities for inspecting the Works or any part thereof, or
- k. indulges in corrupt or fraudulent practices as explained in Clause 5.9

In any one of these events or circumstances, the Employer may upon giving 14 days' notice to the Contractor, Terminate the Contract and expel the Contractor from the Site. However, in case of sub-paragraph (e) or (k), the Employer may by notice of 7 days to the Contractor, terminate the Contract immediately.

If the Agency fails to provide the services within the period fixed for such services in the contract or as extended or at any time repudiates the contract before the expiry of such period, the employer may terminate the contract without prejudice to his other rights. The total amount of liquidated damages, however, not exceed the **limit of liquidated damages i.e. 10 % of total Contract value**, after which contract will be

deemed as cancelled & PBG will be encashed by the Employer.

The Employer's decision to terminate the contract shall not prejudice any other rights of the employer under the contract.

On Termination of contract due to Contractor's default, the performance Security shall be forfeited by encashing the Bank Guarantee and the balance work shall be got done independently without risk and cost of the failed contractor. The failed contractor shall be debarred from participating in the tender for executing the balance work.

#### **5.2.7. Upon Termination of this Agreement for any reason whatsoever**

Upon termination of this Agreement shall not release contractor to pay any sums then owing to the other party nor from the obligation to perform or discharge any liability that had been incurred prior thereto.

#### **5.3 Insolvency and Breach of Contract**

The Purchaser may at any time, issue notice in writing summarily terminate the contract without compensation to the Agency in any of the following events, that is to say –

- a. If the Agency being an individual or a firm - Any partner thereof, shall at any time, be adjudged insolvent or shall have a receiving order or order for administration of his estate made against him or shall take any proceeding for composition under any Insolvency Act for the time being in force or make any conveyance or assignment of his effects or enter into any assignment or composition with his creditors or suspend payment or if the firm be dissolved under the Partnership Act, or
- b. If the Agency being a company is wound up voluntarily or by the order of a Court or a Receiver, Liquidator, or Manager on behalf of the debenture holders is appointed, or circumstances shall have arisen which entitle the Court or Debenture holders to appoint a Receiver, Liquidator or Manager, or
- c. If the Agency commits any breach of the contract not herein specifically provided for
- d. Provided always that such determination shall not prejudice any right of action or remedy which shall have accrued or shall accrue thereafter to the Employer and provided also the Agency shall be liable to pay to the Employer any extra expenditure he is thereby put to and the Agency shall, under no circumstances, be entitled to any gain on re purchase.

#### **5.4 Warranty**

- a. The Bidder shall give warranty that the goods shall be new and free from defects and manufacture shall be of the highest grade and consistent with the established and generally accepted standards for materials of the type ordered.
- b. All the items supplied under this contract should have 2 years Standard warranty and 3 years extended warranty from the date of supply against any manufacturing defects. All faults other than PCB should be taken care within 72 hours from the date of reporting. PCB level fault will be taken care at OEM level only. Repair turnaround time for such faults shall be within 15-30 days.
- c. If it becomes necessary for the Agency to replace or renew any defective portion/portions of the item under this clause, the provisions of the clause shall apply to the portion/portions of item's replaced or renewed. If any defect is not remedied within a reasonable time, the Employer may proceed to get the work done at the Agency's risk and expenses, but without prejudice to any other rights which the Employer may have against the Agency in respect of such defects.
- d. Replacement under warranty clause shall be made by the Agency free of all charges at site including freight, insurance and other incidental charges, as the case may be.

#### **5.5 Inspection**

The Purchaser or its representatives or ultimate client shall have the right to inspect and test the goods for their conformity to the specifications as required.

### **5.6 Obligations of the Agency**

- a. The Agency/Bidder shall undertake the Work with due care and diligence in accordance with the Contract.
- b. Engagement of Staff and Labour- Except as otherwise stated in the Specification, the Agency shall ensure/ make arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, transport, etc.

### **5.7 Packaging**

The Agency shall be responsible for packing, transporting, receiving, storing and protecting all items and other things required for the Works.

### **5.8 Obligations of employer**

NMRC agrees to provide support to the Agency and undertake to observe, comply with and perform, subject to and in accordance with the provisions of the Agreement and the Applicable Laws.

### **5.9 Fraud and Corrupt Practices**

- a. The Bidders and their respective officers, employees, agents and advisers shall observe highest standard of ethics during Bidding Process and subsequent to issue of NOA and during subsistence of Contract Agreement. Notwithstanding anything to the contrary contained herein, or in the NOA or the Contract Agreement, NMRC may reject a Bid, withdraw the NOA, or terminate the Contract Agreement, as the case may be, without being liable in any manner whatsoever to the Bidder or Agency, as the case may be, if it determines that the Bidder or Agency, as the case may be, has, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process. In such an event, NMRC shall be entitled to forfeit & appropriate Bid Security or Security Deposit (interest free)/ Performance Bank Guarantee, as the case may be, as Damages, without prejudice to any other right or remedy available to NMRC under Bidding Documents and/ or Contract Agreement, or otherwise.
- b. Without prejudice to the rights of NMRC under Clause 5.9 a hereinabove and the rights and remedies which NMRC may have under the NOA or the Contract Agreement, or otherwise if a Bidder or Agency, as the case may be, is found by NMRC to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, or after the issue of the NOA or the execution of the Contract Agreement, such Bidder or Agency shall not be eligible to participate in any tender or RFP issued by NMRC during a period of 3 (three) years from the date such Bidder is found by NMRC to have engaged, directly or indirectly, in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.
- c. For the purposes of this Clause, the following terms shall have the meaning herein after respectively assigned to them:
  - i. "corrupt practice" means the offering, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the selection process or in contract execution;
  - ii. "fraudulent practice" means a misrepresentation or omission of facts in order to influence a selection process or the execution of a contract;
  - iii. "collusive practices" means a scheme or arrangement between the Agency, with or without the knowledge of the authority, designed to establish prices at artificial, non-competitive levels;
  - iv. "coercive practices" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract

d. Measures to be taken:

The employer shall have right to cancel the engagement of the Agency, if found to be indulged in corrupt, fraudulent, collusive or coercive practices either during the selection process or during the execution of the contract.

### **5.10 Settlement of Disputes**

#### **5.10.1. Amicable Settlement**

The Parties agree that the avoidance or early resolution of disputes is crucial for a smooth execution of the Contract and the success of the Project. The Parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation.

#### **5.10.2 Conciliation**

In the event of any dispute, difference of opinion or dispute or claim arising out of or relating to this License Agreement or breach, termination, shall firstly be attempted to be settled by conciliator appointed/nominated by NMRC on receipt of such requests from either party. The conciliator shall make the settlement agreement. The settlement agreement shall be final and binding on the parties. The settlement agreement shall have the same status and effect of an Arbitration Award.

#### **5.10.3 Arbitration:**

All disputes related to this agreement contract or claims arising out of or relating to this agreement or breach, termination or the invalidity thereof or any issue whether arising during the progress of services or after the completion or abandonment thereof or any matter directly or indirectly connected with this agreement shall be attempted to be settled by mutual discussion and consultation with parties here of in event of any such disputes or any disputes or claims are not settled in aforesaid manner, then the disputes claim shall be referred for arbitration.

The matter referred to arbitrators appointed by Managing director, NMRC on receipt of such request from either party. Matters to be arbitrated upon shall be referred to a sole arbitrator, if the total value of the claim is up to Rs.50 Lakhs and to a panel of 3 arbitrators for the claims of more than Rs.50 Lakhs. License shall have to choose the sole arbitrator from the panel of 3 and / or one arbitrator from the panel of 5 in case 3 arbitrators are to be appointed. NMRC shall also choose one arbitrator from this panel of 5 and 2 so chosen will choose the 3<sup>rd</sup> arbitrator from the panel only. The arbitrators shall be appointed within a period of 30 days from the date of receipt of written notice/demand of appointment of the arbitrator from either party.

The decision of sole arbitrator / panel of arbitrators shall be binding on all the parties. The cost of arbitration shall be borne by respective parties equally. The venue of such arbitration shall be Noida, UP. The parties agree to comply with the awards resulting from arbitration and waive their rights to any form of appeal insofar as such waiver can validly be made.

#### **5.10.3 Rules Governing Arbitration Proceedings:**

The arbitration proceedings shall be governed by Indian arbitration and conciliation act 1996, as amended from time to time including provisions in force at the time the references made.

#### **5.10.4 Jurisdiction of Courts:**

The Court at Gautam Buddha Nagar, U.P. shall have the exclusive jurisdiction to try all dispute between the party arising out of this agreement.



## 6. Section 6: Forms

### Form 1: Letter of Proposal Submission

[Location, Date]

To

JGM/Stores  
Noida Metro Rail Corporation (NMRC) Limited  
Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29,  
Noida -201301  
District Gautam Budh Nagar, Uttar Pradesh

### Subject: Supply of PSD and Interlocking Spares for the Signalling Department.

Dear Sir,

We, the undersigned, offer to Supply of PSD and Interlocking Spares for the Signalling Department in accordance with your RFP Document dated [Insert Date] and our Proposal. We are hereby submitting our Technical and Financial Proposal. We confirm that we have read the RFP Document in totality and abide by the terms and conditions stated in the document.

We acknowledge that we have

- Studied and analyzed and satisfied ourselves about all the requirement of the tender including but not limited to market and market conditions
- Carefully assessed the commerciality of Project and that we will be fully responsible for all its assessment in this regard.

We confirm and declare that no agent, middleman or any intermediary has been, or will be, engaged to provide any services, or any other item or work related to the award and performance of this Contract and declare that no agency commission or any payment which may be construed as an agency commission has been, or will be, paid and that the tender price will not include any such amount.

We have filled the complete information correctly in **Form 14**: Bid Details

### Authorized signatory

Name:

Date:

Name of the Bidder with seal

**Form 2: Firm Details**

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | <b>Title and name of the Project:</b> Supply of PSD and Interlocking Spares for the Signalling Department                                                                                                                                                                                                                                                                                                                                                                                             |
| 2. | State the structure of the Bidder's organization (Bidders to complete/delete as appropriate)<br>Sole Bidder                                                                                                                                                                                                                                                                                                                                                                                           |
| 3. | <p>For Bidders who are individual companies or firms, state the following:</p> <p>Name of Company or firm: .....</p> <p>Legal status: (e.g. incorporated private company, proprietorship, etc.)<br/>.....</p> <p>Registered address: .....</p> <p>Year of incorporation.....</p> <p>Principal place of business: .....</p> <p>Contact person: .....</p> <p>Contact person's title: .....</p> <p>Address, telephone, facsimile number and mail ID of contact person:<br/>.....<br/>.....<br/>.....</p> |
| 4. | PAN: .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 5. | <p>GST No.:</p> <p>.....</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

**Form 3: Work Experience**

The following format shall be used for statement of experience of Bidder:

| S.No.                       | Similar Contract description | Contract Identification Number | Award date & Completion date | Employer's Name, address, telephone number, mail etc | Role in contract |                | If in JV/consortium then % participation | Completion cost | Value of similar work in completed work |
|-----------------------------|------------------------------|--------------------------------|------------------------------|------------------------------------------------------|------------------|----------------|------------------------------------------|-----------------|-----------------------------------------|
|                             |                              |                                |                              |                                                      | Individual       | JV/ Consortium |                                          |                 |                                         |
| 1                           |                              |                                |                              |                                                      |                  |                |                                          |                 |                                         |
| 2                           |                              |                                |                              |                                                      |                  |                |                                          |                 |                                         |
| 3                           |                              |                                |                              |                                                      |                  |                |                                          |                 |                                         |
| 4                           |                              |                                |                              |                                                      |                  |                |                                          |                 |                                         |
| Add required number of rows |                              |                                |                              |                                                      |                  |                |                                          |                 |                                         |

**Authorized signatory**

**Name:**

**Date:**

**Name of the Bidder with seal**

**NOTE:**

- Only the value of contract as executed by the applicant/member in his own name should be indicated. Where a work is undertaken by a group, only that portion of the contract which is undertaken by the concerned applicant/member should be indicated and the remaining done by the other members of the group be excluded. This is to be substantiated with documentary evidence (Experience Certificate/Work Completion Certificate on Client's Letter Head will only be considered) which clearly mentioned the amount for the **"Supply of PSD and Interlocking Spares for the Signalling Department"**.
- The bidder shall upload details of work executed by them in the prescribed format for the works to be considered for qualification of work experience criteria. Documentary proof such as completion certificates from the client clearly indicating the nature/scope of work, actual completion cost and actual date of completion for such work should be uploaded. In case work is executed for private client documentary proof such as copy of work order, Bill of quantities, Bill wise details of payment received certified by CA, TDS certificates for all the payments received, copy of final/ last bill paid by the client should be uploaded. The offers submitted without this documentary proof will not be evaluated.
- Value of successfully completed portion of any ongoing work up to the last day of the previous month of tender submission will also be considered for qualification of work experience criteria.
- For completed works, value of work done shall be updated to the last day of the previous month of tender submission price level assuming 5% inflation for Indian Rupees every year and 2% for foreign currency portions per year. The exchange rate of foreign currency shall be applicable 28 days before the submission date of tender.
- If the qualifying work(s) were done by them in JV/Consortium having different constituents, then the value of work as per their percentage participation in such JV/Consortium shall be considered. This is to be substantiated with documentary evidence.
- If the above work(s) comprise(s) other works also, then client's certificate clearly indicating the amount of work done in respect of the "similar work" shall be furnished by the bidder in support of work experience along-with their tender submissions.

**Form 4: Capability Statement**

It is Compulsory for the bidder to fill this statement and the bidder must upload those document that support this statement

Tender Reference No: \_\_\_\_\_

Name of Work: \_\_\_\_\_

Name of Bidder: \_\_\_\_\_

| <b>S.No.</b> | <b>ELIGIBILITY CRITERIA</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>(To be filled by the Bidder)</b> |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| <b>1</b>     | Sole proprietorship, registered partnership firm( Including LLP), public limited company, private limited company can submit the Bid. The firms and the companies should be registered in India.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                     |
| <b>2</b>     | <p>The Bidder should have a minimum experience of having satisfactorily completed in India during last 7 years period ending last day of month previous to the one in which the bids are invited should be either of the following:</p> <p>i. One order of similar nature of value not less than Rs. 18.32 lakh (Rupees Eighteen Lakh and Thirty Two Thousand Only) or</p> <p>ii. Two orders of similar nature of value not less than Rs 11.45 lakh (Rupees Eleven Lakh and Forty Five Thousand Only) each or</p> <p>iii. Three orders of similar nature of value not less than Rs 9.16 lakh (Rupees Nine Lakh and Sixteen Thousand Only) each.</p> | 7 years                             |

| <b><u>S.No.</u></b> | <b><u>ELIGIBILITY CRITERIA</u></b>                                                                                                                                                                                                                                                                                                                                 | <b>(To be filled by the Bidder)</b> |  |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--|
| <b>3</b>            | The Bidder should have minimum average annual turnover of Rs.22.90 lakhs (Rupees Twenty Two Lakh and Ninety Thousand only) in the last 3 (three) audited Financial Years (2021-22, 2022-23, 2023-24) preceding the Bid Due Date.                                                                                                                                   | FY 2023-24                          |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                    | FY 2022-23                          |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                    | FY 2021-22                          |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                    | <b>Average Annual Turnover</b>      |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                    |                                     |  |
| <b>5</b>            | The Bidder should have Positive Profit before Tax in at least 1 (one) year, out of the last 3 (three) audited Financial Years (FY 2021-22, FY 2022-23, FY 2023-24)                                                                                                                                                                                                 | FY 2023-24                          |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                    | FY 2022-23                          |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                    | FY 2021-22                          |  |
|                     |                                                                                                                                                                                                                                                                                                                                                                    | <b>Total</b>                        |  |
| <b>6</b>            | The Bidder should be registered with the Goods and Services Tax Authorities.                                                                                                                                                                                                                                                                                       |                                     |  |
| <b>7</b>            | The Bidder should not have been blacklisted/ banned/ declared ineligible for corrupt and fraudulent practices by the Government of India/ any State Government/ Government Agency and Supreme court and contracts have been terminated/ foreclosed by any company / department due to non- fulfillment of Contractual obligation in last 5 (five) financial years. |                                     |  |

**Form 5: Financial Capability Details**

This is to certify that the Average Annual Turnover and Profitability of M/s ..... having registered office at ..... as applicable, is as below:

| S.No. | Financial year                 | Name of the Bidder | Turnover (₹) |
|-------|--------------------------------|--------------------|--------------|
| 1.    | FY 2023-24                     |                    |              |
| 2.    | FY 2022-23                     |                    |              |
| 3.    | FY 2021-22                     |                    |              |
|       | <b>Average Annual Turnover</b> |                    |              |

| S.No. | Financial Year | Name of Bidder | Profitability (₹) |
|-------|----------------|----------------|-------------------|
| 1.    | FY 2023-24     |                |                   |
| 2.    | FY 2022-23     |                |                   |
| 3.    | FY 2021-22     |                |                   |

**Certificate of the Chartered Accountants/Statutory Auditors**

Based on Audited Accounts and other relevant documents of \_\_\_\_\_ (Name of Bidder), we M/s \_\_\_\_\_, Chartered Accountants/ Statutory Auditors, certify that the above information pertaining to FY 2021-22, FY 2022-23 and FY 2023-24 is correct.

**Signature and Seal of**  
**Chartered Accountants/Statutory Auditors** (with membership no.)

**UDIN-**

**Date-**

**Firm Regd. No.-**

**NOTE:**

1. All such documents reflect the financial data of the bidder and not that of sister or parent company.
2. The financial data in above prescribed format shall be certified by CA/ Company Auditor under his signature and stamp in original along with membership no. and UDIN.
3. The Bidder shall provide the audited annual financial statements as required.

**Form 6: Memorandum**

**Name of Work: Supply of PSD and Interlocking Spares for the Signalling Department.**

I/We agree to keep the quoted rate open for acceptance for 180 days from the due date of submission thereof and not make any modification in its terms and conditions.

I hereby declare that I shall treat the quotation documents, drawings and other records connected with the works as secret/ confidential documents and shall not communicate information derived there from to any person other than the information in any manner prejudicial to the safety of NMRC.

---

Signature of the bidder with seal

Dated:

Witness:

Address:

Occupation



## Form 7: Undertaking

**Name of Work: Supply of PSD and Interlocking Spares for the Signalling Department.**

I confirm that we (Bidder), \_\_\_\_\_

- a. Have not been banned in NMRC and any other Metro Organization (100% owned by Govt.)/ Ministry of Housing & Urban affairs/ Order of Ministry of Commerce, applicable for all Ministries must not have banned business with the tenderer (including any member in case of JV/consortium) as on date of tender submission.
- b. Do not have any pending litigation & non-performing contracts during last 5 (five) years. Further, has not been barred by any other Metro Organization (100% owned by Govt.)/ Ministry of Housing & Urban affairs/ Order of Ministry of Commerce, applicable for all Ministries as on date of tender submission.
- c. Have not abandoned any work in last 5 (five) years.
- d. Have not delayed in similar work completion during orders executed in last 5 (five) years.
- e. Do not ever been terminated due to poor performance.
- f. Have not suffered Bankruptcy/ insolvency in last 5 (five) years.
- g. Have not been blacklisted /debarred by any organization.
- h. Neither penalized with liquidated damages of 10% (or more) of the contract value due to delay nor imposed with penalty of 10% (or more) of the contract value due to any other reason in any contract more than 10% of NIT cost of work, during the last 5 (five) years.
- i. Have not been put on defaulter's list of EPF/ESI/GST/Labor Department etc. as on date of tender submission during the last 5 (five) years.
- j. Have not been be involved in any illegal activity and/or has not been charge sheeted for any criminal act during the last 5 (five) years.
- k. Have not submitted any misleading information in the Bid.
- l. Are financially sound to perform the work.

**Authorized signatory**

**Name:**

**Date:**

**Name of the Bidder with seal**

**Form 8: Power Of Attorney**

**(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution.)**

**Power of Attorney to be provided by the Bidding Company in favour of its representative as evidence of authorized signatory's authority.**

Know all men by these presents, We .....(name and address of the registered office of the Bidding Company) do hereby constitute, appoint and authorize Mr./Ms.....(name and residential address) who is presently employed with us and holding the position of , as our Attorney to do in our name and our behalf all or any of the acts, deeds or things necessary or incidental to submission of our Bid for **"Supply of PSD and Interlocking Spares for the Signalling Department"**

"in response to the RFP Document dated\_ issued by Noida Metro Rail Corporation ("NMRC" or "the Corporation"), including signing and submission of the Bid and all other documents related to the Bid, including but not limited to undertakings, letters, certificates, acceptances, clarifications, guarantees or any other document which the employer may require us to submit.

The aforesaid Attorney is further authorized for making representations to the NMRC or any other authority, and providing information / responses to the NMRC, representing us in all matters before the NMRC, and generally dealing with the employer in all matters in connection with our Bid till the completion of the bidding process as per the terms of the RFP Document and further till the Contract is entered into with the NMRC and thereafter till the expiry of the Contract.

We hereby agree to ratify all acts, deeds and things done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall be binding on us and shall always be deemed to have been done by us.

All the terms used herein but not defined shall have the meaning ascribed to such terms under the RFP Document.

Signed by the within named

..... [Insert the name of the executants company] through the hand of Mr.  
.....duly authorized by the Board to issue such Power of Attorney Dated  
this ..... day of .....Accepted

.....  
..... Signature of Attorney  
(Name, designation and address of the Attorney)  
Attested

.....  
..... (Signature of the executants)  
(Name, designation and address of the executants)

.....  
Signature and stamp of Notary of the place of execution  
Common seal of ..... has been affixed in my/our presence pursuant to Board of Director's  
Resolution dated.....

**WITNESS**

**1.**

.....  
..... (Signature)  
Name .....  
Designation.....

**2.**

.....  
..... (Signature)  
Name .....  
Designation.....

**Notes:**

1. The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executants (s) and the same should be under common seal of the executants affixed in accordance with the applicable procedure. Further, the person whose signatures are to be provided on the power of attorney shall be duly authorized by the executants (s) in this regard.
2. In the event, power of attorney has been executed outside India, the same needs to be duly notarized by a notary public of the jurisdiction where it is executed.
3. Also, wherever required, the executants (s) should submit for verification the extract of the charter documents and documents such as a board resolution / power of attorney, in favour of the person executing this power of attorney for delegation of power hereunder on behalf of the executants(s).

**Form 9: Saleable Form for Tender Document**

Bid No. ....

The required fee of tender form has been deposited in\_\_\_\_\_Bank A/c No. \_\_\_\_\_  
RTGS/NEFT and the scanned copy of UTR receipt with Transaction Id is being enclosed with tender documents. If the copy of UTR receipt is not uploaded with the tender the tender shall be rejected.

DETAILS OF EARNEST MONEY ATTACHED

The required amount of Earnest money has been deposited in \_\_\_\_\_Bank A/c  
No. \_\_\_\_\_  
\_\_\_\_\_ RTGS/NEFT and the scanned copy of UTR receipt with transaction Id is being enclosed with tender documents. If the copy of UTR receipt is not uploaded with the tender the tender shall be rejected.

**BIDDER**

## Form 10: Declaration of Refund of Earnest Money

**Noida Metro Rail Corporation (NMRC) Limited  
Block-III, 3<sup>rd</sup> Floor,  
Ganga Shopping Complex, Sector-29, Noida -201301,  
District Gautam Budh Nagar, Uttar Pradesh, India**

[illegible]

The above provided information is true to the best of my knowledge.

Date:

**Signature with Stamp/Seal**

**Form11: Performa for Clarifications / Amendments on the RFP**

| <b>Sl. No.</b> | <b>Document</b> | <b>Clause No. and Existing Provision</b> | <b>Clarification required</b> | <b>Suggested Text for the Amendment</b> | <b>Rationale for the Clarification or Amendment</b> |
|----------------|-----------------|------------------------------------------|-------------------------------|-----------------------------------------|-----------------------------------------------------|
|                |                 |                                          |                               |                                         |                                                     |
|                |                 |                                          |                               |                                         |                                                     |

**Authorized signatory**

**Name:**

**Date:**

**Name of the Bidder with seal**

**Form 12: Bid Offer/ BOQ (Format)**

To

JGM/Stores

Noida Metro Rail Corporation (NMRC) Limited

Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29, Noida -201301

District Gautam Budh Nagar, Uttar Pradesh

***THIS FORM IS NOT TO BE FILLED. THE BIDDERS ARE REQUIRED TO FILL THE FINANCIAL PROPOSAL IN XLS FORMAT AFTER DOWNLOADING THE FORM FROM THE PROCUREMENT WEBSITE FOR THIS TENDER DOCUMENT***

**Sub: Supply of PSD and Interlocking Spares for the Signalling Department.**

Dear Sir,

I/we have read and examined the RFP document, general terms and conditions for the work.

I/we hereby quote the following Total price for services in rupees for providing Supply of PSD and Interlocking Spares for the Signalling Department payable by NMRC.

## Price Schedule for Supply of PSD and Interlocking Spares for the Signalling Department

| NUMBER# | TEXT #                                                                                                 | TEXT # | NUMBER #                | NUMBER #                                                                             | NUMBER #                         | NUMBER # | NUMBER #                                    |
|---------|--------------------------------------------------------------------------------------------------------|--------|-------------------------|--------------------------------------------------------------------------------------|----------------------------------|----------|---------------------------------------------|
| S.No.   | Item Description                                                                                       | Unit   | Total Required quantity | Unit rate (Exclusive GST) In <b>Figures</b> To be entered by the <b>Bidder</b> Rs. P | Total Amount without Taxes Rs. P | GST%     | TOTAL Cost (Including GST) In Figures Rs. P |
| 1       | 2                                                                                                      | 3      | 4                       | 5                                                                                    | 6                                | 7        | 8                                           |
| 1       | Electrical Key Transmitter with key used in section for Manual operation of Point Machine as per RDSO. | Nos    | 4                       |                                                                                      |                                  |          |                                             |
| 2       | Relay QNA1 - 24V DC - 8F/8B with complete accessories as per RDSO                                      | Nos    | 4                       |                                                                                      |                                  |          |                                             |
| 3       | Relay QL1 24V 150 OHM with complete accessories as per RDSO                                            | Nos    | 1                       |                                                                                      |                                  |          |                                             |
| 4       | Mainline Monitors/ CBI VDU Monitors                                                                    | Nos    | 9                       |                                                                                      |                                  |          |                                             |
| 5       | Cat6 Cable                                                                                             | Mtr    | 1258                    |                                                                                      |                                  |          |                                             |
| 6       | Keyboard & Mouse                                                                                       | Nos    | 76                      |                                                                                      |                                  |          |                                             |
| 7       | Moxa Switch (MGATE MB3480)                                                                             | Nos    | 2                       |                                                                                      |                                  |          |                                             |
| 8       | Surge Protection Device 220V DC                                                                        | Set    | 15                      |                                                                                      |                                  |          |                                             |
| 9       | Surge Protection Device 385V AC (3P+1N)                                                                | Set    | 21                      |                                                                                      |                                  |          |                                             |
| 10      | Surge Protection Device 45V DC                                                                         | Set    | 8                       |                                                                                      |                                  |          |                                             |
| 11      | Timer Relay 2 Watch (H3DK-HBS)                                                                         | Nos    | 43                      |                                                                                      |                                  |          |                                             |
| 12      | Timer Relay 4 Watch (H3DK-S2)                                                                          | Nos    | 46                      |                                                                                      |                                  |          |                                             |
| 13      | Surge Protection Device Class D I Phase 110 V AC                                                       | Set    | 1                       |                                                                                      |                                  |          |                                             |



**Supply of PSD and Interlocking Spares for the Signalling Department**

|                                                         |                                                                 |     |     |  |  |  |  |
|---------------------------------------------------------|-----------------------------------------------------------------|-----|-----|--|--|--|--|
| 14                                                      | Surge Protection Device Class D SPD 1,2,3,4,5,6 110V AC/110V DC | Set | 1   |  |  |  |  |
| 15                                                      | Power Supply Unit 230V AC/110V DC, 10A (PS11010V2)              | Nos | 2   |  |  |  |  |
| 16                                                      | Intelligent Temperature Monitor and Controller Unit (GECF3230)  | Nos | 18  |  |  |  |  |
| 17                                                      | Limit Switch Crouzet (PBXR-83244213)                            | Nos | 129 |  |  |  |  |
| 18                                                      | Limit Switch Crouzet (V3D-832607)                               | Nos | 34  |  |  |  |  |
| 19                                                      | Axle Counter Rack Cooling Fan 6 inch Oval (SE-17250 ASL)        | Nos | 17  |  |  |  |  |
| <b>Total Quoted Rate including GST in Figures (INR)</b> |                                                                 |     |     |  |  |  |  |
| <b>Total Quoted Rate including GST in Words (INR)</b>   |                                                                 |     |     |  |  |  |  |

**\*The bidder is required to fill only grey cells.**

Note:

- 1. The bidder shall mention Quoted Rate (Per item) In Figures.**
- The Amount Arrived at from Quoted Rate, Per item along with Miscellaneous Charges in the Commercial Bid, would be treated as complete in all respect. It will be deemed to include all incidental charges, supervision, transport, contractor's profit and establishment/overheads, all risks & insurance liabilities, compliance of labour laws and other obligations set out or implied in the contract.
- 3. The total payment due to contractor shall be inclusive of all taxes, Tender Requirements, Statutory Contributions, etc.**
- The GST will be reimbursed based on the invoice of GST paid to the concerned authority by the contractor.
- The rates and prices tendered in the priced bill of quantities are for complete work and complete in all respects. It will be deemed to include all plant, labour, supervision, materials, including all leads, lifts, ascents, descants, crossing of Rly. tracks and any other obstructions etc. unloading, loading, handling, re-handling, taxes (including GST), royalty and compensation etc. all temporary works, erection, maintenance, contractor's profit and establishment/ over heads, together with all general risks, insurance liabilities and obligations set out or implied in the contract.
- We have completely read and understood the Bid Document. The Financial Tender submitted is unconditional and fulfills all the requirements of the Tender Document.

7. Our Financial Proposal shall be binding upon us subject to the modifications resulting from contract negotiations, up to expiration of the validity period of the Proposal. We understand you are not bound to accept any Proposal you receive.

---

Signature and Name of the Authorized Person

---

NAME OF THE BIDDER AND SEAL

**Form 13: Performa of performance security/Bank Guarantee by Bank**

**FORM OF PERFORMANCE SECURITY (GUARANTEE) BY BANK**

1. This deed of Guarantee made this..... day of .....(month & year) between  
Bank of..... (Hereinafter called the "Bank") of the one part, and Noida Metro Rail Corporation Limited (hereinafter called "the Employer") of the other part.
2. Whereas Noida Metro Rail Corporation limited has awarded the contract for .... (name of  
Work) (hereinafter called "the contract") to M/s.....(Name of the Contractor)....hereinafter called "the Contractor".
3. AND WHEREAS the Contractor is bound by the said Contract to submit to the Employer a Performance Security for a total amount of ₹ ..... (Amount in figures and words).
4. Now we the **Undersigned**..... (Name of the Bank) being fully authorized to sign and to incur obligations for and on behalf of and in the name of ..... (Full name of Bank), hereby declare that the said Bank will  
Guarantee the Employer the full amount of ₹ ..... (Amount in  
Figures and Words) as stated above.
5. After the Contractor has signed the aforementioned Contract with the Employer, the Bank is engaged to pay the Employer, any amount up to and inclusive of the aforementioned full amount upon written order from the Employer to indemnify the Employer for any liability of damage resulting from any defects or shortcomings of the Contractor or the debts he may have incurred to any parties involved in the Works under the Contract mentioned above, whether these defects or shortcomings or debts are actual or estimated or expected. The Bank will deliver the money required by the Employer immediately/same day on demand without delay without reference to the Contractor and without the necessity of a previous notice or of judicial or administrative procedures and without it being necessary to prove to the Bank the liability or damages resulting from any defects or shortcomings or debts of the Contractor. The Bank shall pay to the Employer any money so demanded notwithstanding any dispute/disputes raised by the Contractor in any suit or proceedings pending before any Court, Tribunal or Arbitrator/s/ Arbitral Tribunal relating thereto and the liability under this guarantee shall be absolute and unequivocal.
6. This Guarantee is valid till..... (The initial period for which this Guarantee will be valid must be for at least 6-months (six months) longer than the anticipated expiry date of contract period as stated in Section 4.5).
7. At any time during the period in which this Guarantee is still valid, if the Employer agrees to grant a time extension to the Contractor or if the Contractor fails to complete the Works within the time of completion as stated in the Contract, or fails to discharge himself of the liability or damages or debts as stated under Para 5, above, it is understood that the Bank will extend this Guarantee under the same conditions for the required time on demand by the Employer and at the cost of the Contractor.
8. The Bank agrees that no changes, addition, modifications to the terms of the contract Agreement or to any documents, which have been or may be made between the Employer and the Contractor, will in no way release us from the liability under this Guarantee; and the Bank, hereby, waives any requirement for notice of any such change, addition or modification to the

Bank.

9. The Guarantee hereinbefore contained shall not be affected by any change in the Constitution of the Bank or of the Contractor.

10. The neglect or forbearance of the Employer in enforcement of payment of any moneys, the payment whereof is intended to be hereby secured or the giving of time by the Employer for the payment hereof shall in no way relieve the bank of their liability under this deed.

11. The expressions "the Employer", "the Bank" and "the Contractor" hereinbefore used shall include their respective successors and assigns.

12. Notwithstanding anything contained herein:

- (a) Our liability under this Bank Guarantee shall not exceed Rs.....(Rs )
- (b) This Bank Guarantee shall be valid up to .....
- (c) We are liable to pay the Guarantee amount or part thereof under this Bank Guarantee only & only if you serve upon us a written claim or demand on or before.....

In witness whereof I/We of the bank have signed and sealed this guarantee on the.....day of (Month & Year) being herewith duly authorized.

**For and on behalf of the \_\_\_\_\_ Bank. Signature of authorized Bank official**

Name: .....

Designation: .....

I.D. No. : .....

Stamp/Seal of the Bank: .....

Signed, sealed and delivered for and on behalf of the Bank by the above named \_\_\_\_\_

In the presence of:

Witness 1.

Witness 2.

Signature .....

Signature

.....

Name .....

Name

.....

Address .....

Address

.....

Notes:

- The stamp papers of appropriate value shall be purchased in the name of the Bank, who issues the 'Bank Guarantee'.
- The 'Bank Guarantee' shall be from the Scheduled Commercial Bank based in India, acceptable to Employer.

**Form 14: Bid Details**

The following list is intended to help the bidders in submitting offer which are complete. An incomplete offer is liable to be rejected. Bidders are advised to go through the list carefully and take necessary action.

| S.No. | Particulars                                                                                                                                               | Attached<br>Yes / No / Not<br>Applicable | Page no.<br>(Mandatory) |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------|
| 1     | Bid Processing Fees                                                                                                                                       |                                          |                         |
| 2     | Earnest Money Deposit                                                                                                                                     |                                          |                         |
| 3     | <b>Form 1:</b> Letter of Proposal Submission                                                                                                              |                                          |                         |
| 4     | <b>Form 2:</b> Firm Details                                                                                                                               |                                          |                         |
| 5     | <b>Form 3:</b> Work Experience                                                                                                                            |                                          |                         |
| 6     | <b>Form 4:</b> Capability Statement                                                                                                                       |                                          |                         |
| 7     | <b>Form 5:</b> Financial Capability Details                                                                                                               |                                          |                         |
| 8     | <b>Form 6:</b> Memorandum                                                                                                                                 |                                          |                         |
| 9     | <b>Form 7:</b> Undertaking                                                                                                                                |                                          |                         |
| 10    | <b>Form 8:</b> Power Of Attorney                                                                                                                          |                                          |                         |
| 11    | <b>Form 9:</b> Saleable form for tender Document                                                                                                          |                                          |                         |
| 12    | <b>Form 10:</b> Declaration of Refund of Earnest Money                                                                                                    |                                          |                         |
| 13    | <b>Form 11:</b> Performa for Clarifications / Amendments on the RFP                                                                                       |                                          |                         |
| 14    | <b>Form 12:</b> Bid offer/BOQ Format                                                                                                                      |                                          |                         |
| 15    | <b>Form 13:</b> Performa of performance security/Bank Guarantee by Bank                                                                                   |                                          |                         |
| 16    | <b>Form 14:</b> Bid Details                                                                                                                               |                                          |                         |
| 17    | Registration certificate of the firm/ Partnership deed/ certificate of incorporation, affidavit for sole proprietorships etc.                             |                                          |                         |
| 18    | A copy of the Audited balance sheets and Profit and Loss Statements for the last 3 (three) financial years i.e. for FY 2021-22, FY 2022-23 and FY 2023-24 |                                          |                         |
| 19    | Self-attested copy of PAN, ITR for FY 2021-22, FY 2022-23 and FY 2023-24.                                                                                 |                                          |                         |
| 20    | Self-attested Copy of RFP NIT and RFP                                                                                                                     |                                          |                         |
| 21    | Any other document asked by the Purchaser if submitted, specify the documents<br>Or<br>Any other document which the Bidder considers relevant             |                                          |                         |

Annexure A: Technical Specifications



Fig.1 Electrical Key Transmitter



Fig.2 Relay QNA1



Fig.3 Relay QL1



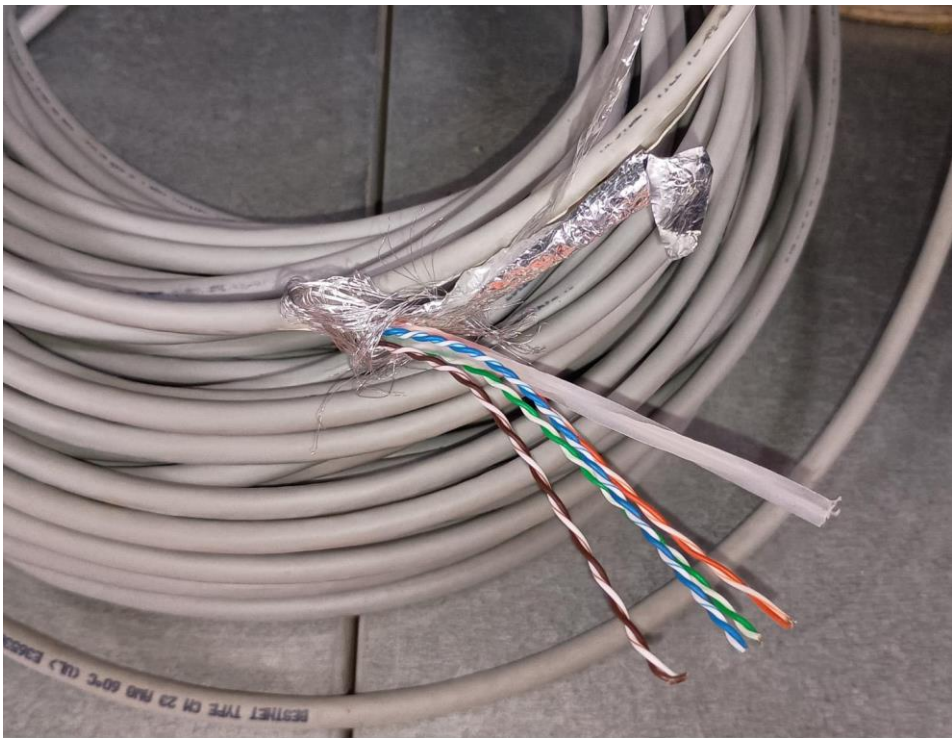


Fig. 4 Cat6 cable



Fig. 5 Moxa MB 3480



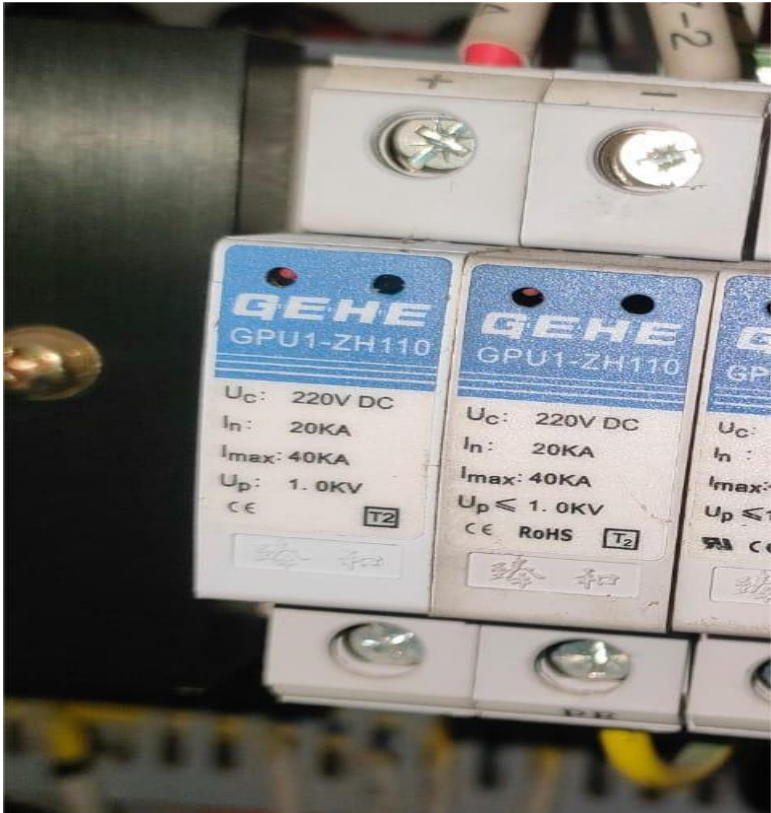


Fig. 6 SPD 220V DC

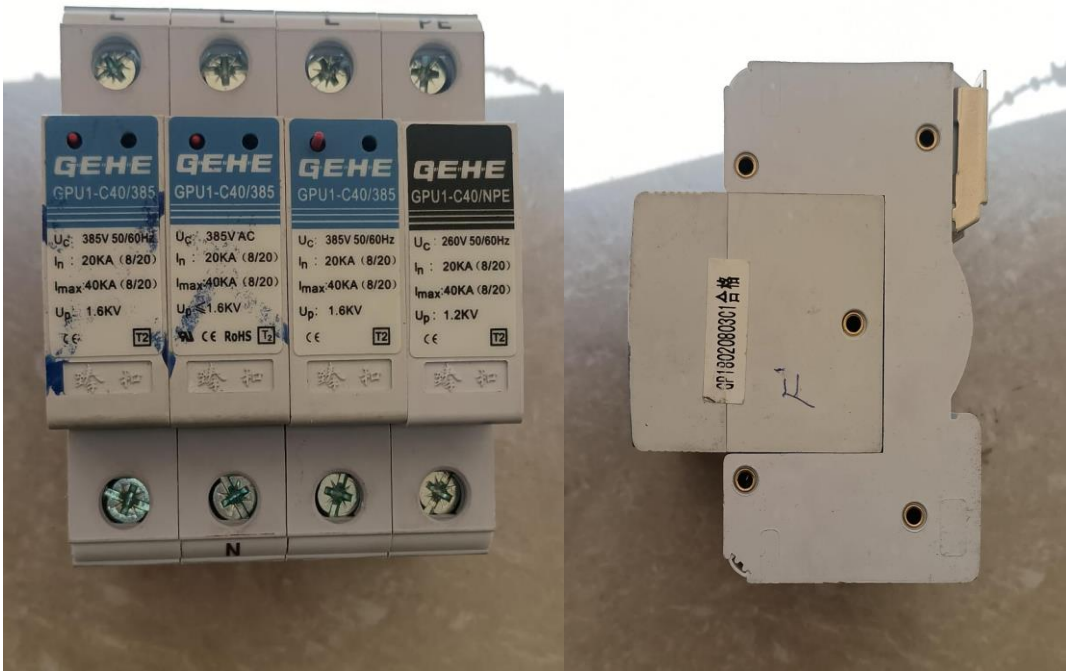


Fig. 7 SPD 385V (3P+N)

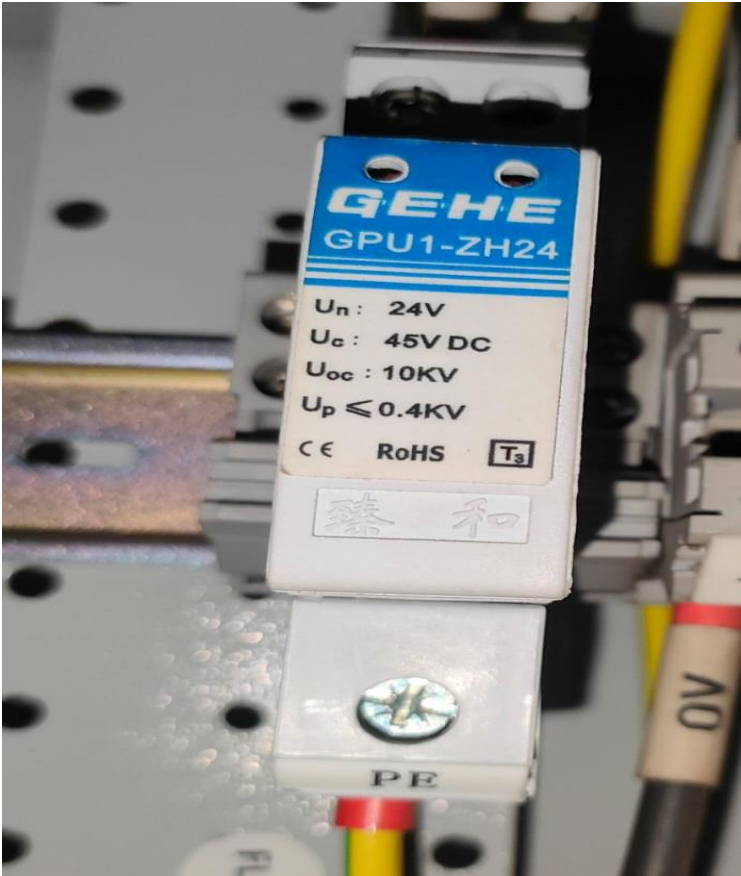


Fig. 8 SPD 45V DC

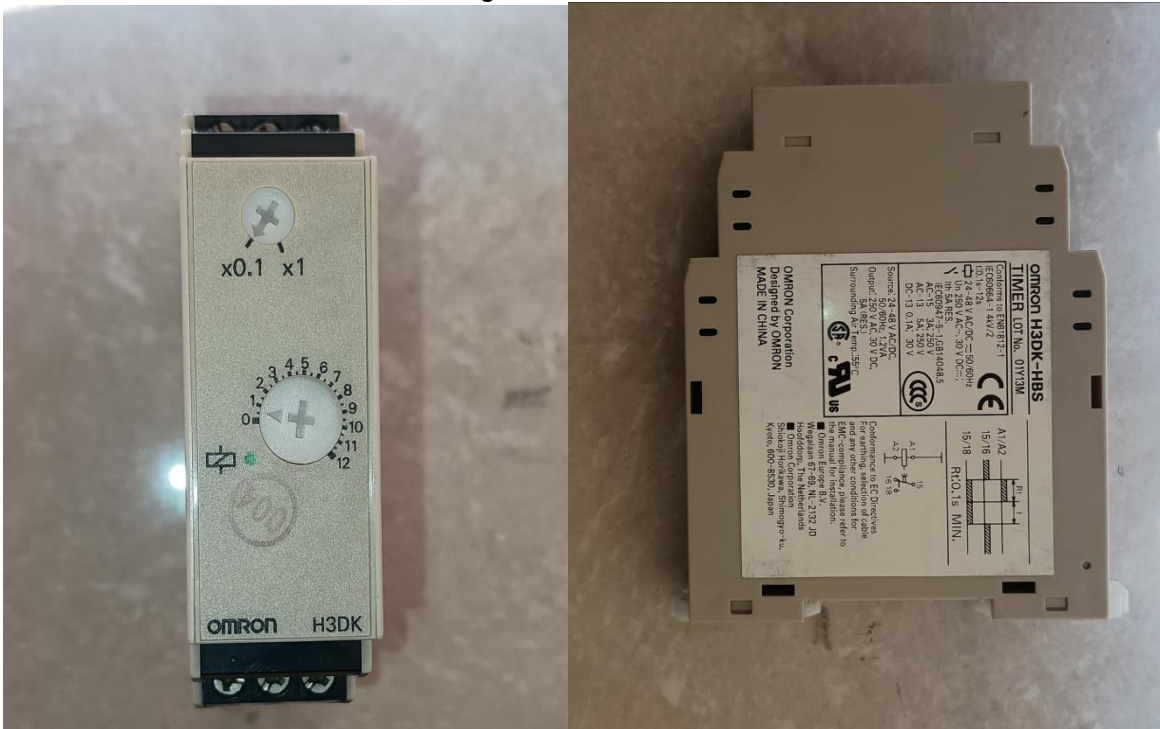


Fig. 9 Timer Relay 2 Watch (H3DK-HBS)



Fig. 10 Timer Relay 4 Watch (H3DK-S2)





Fig. 11 Surge Protection Device Class D, 110 V AC

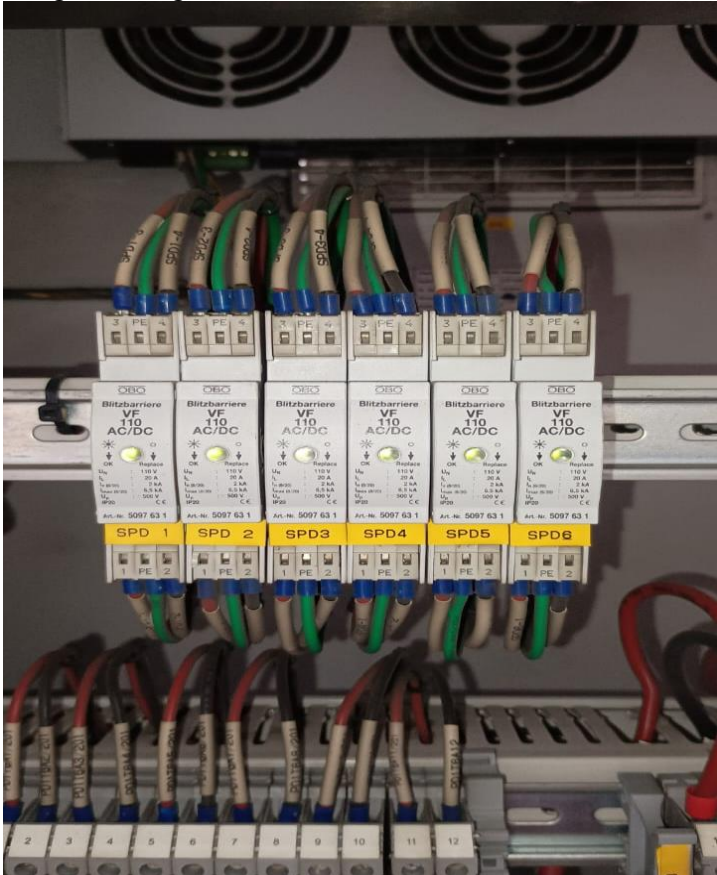


Fig. 12 Surge Protection Device Class D SPD 1,2,3,4,5,6 110V AC/110V DC



Fig. 13 Power Supply Unit 230V AC/110V DC



Fig. 14 Intelligent Temperature Monitor and Controller Unit

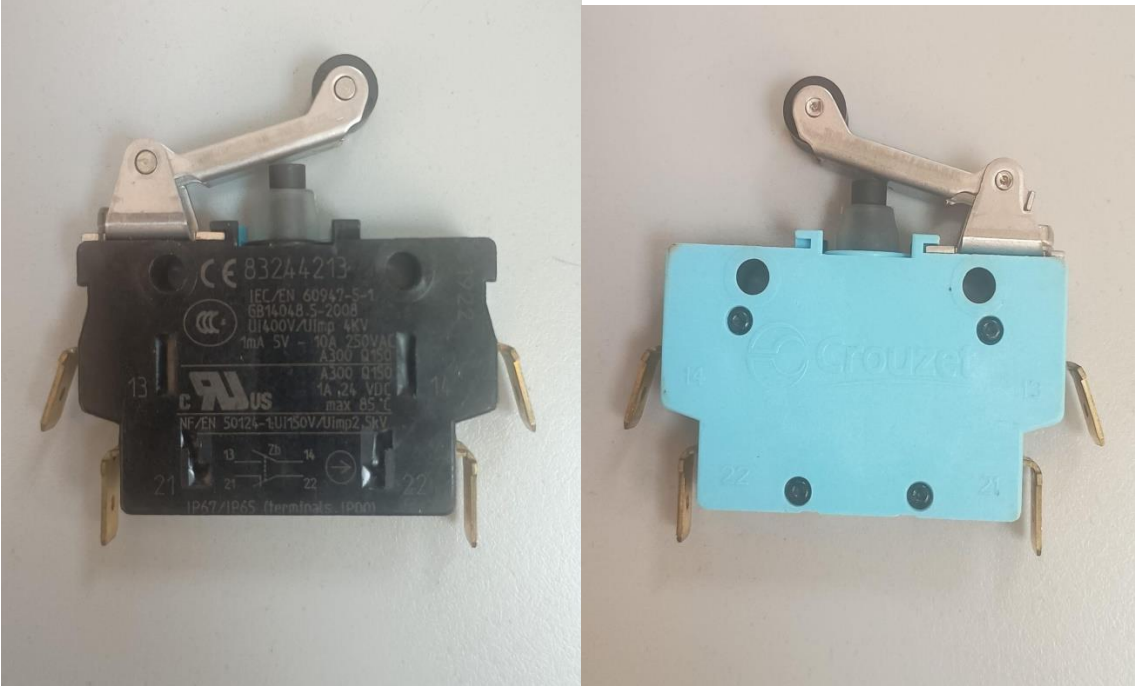


Fig. 15 Limit Switch Crouzet (PBXR-83244213)



Effective from Year 2001

IRS: S 21/2001

Revision: 1

ELECTRIC KEY TRANSMITTER ROTARY TYPE

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**INDIAN RAILWAY  
STANDARD SPECIFICATION  
FOR  
ELECTRIC KEY TRANSMITTER ROTARY TYPE  
(TENTATIVE)**

**SPECIFICATION NO. IRS: S 21/2001**

**Revision 1.0**

**Number of pages 13**

**SIGNAL DIRECTORATE  
RESEARCH DESIGNS & STANDARDS ORGANISATION  
LUCKNOW-226011**

*Smaurya*

Page 1 of 13

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Effective from Year 2001

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Revision: 1

ELECTRIC KEY TRANSMITTER ROTARY TYPE

| DOCUMENT DATA SHEET                                                                      |  |  |          |
|------------------------------------------------------------------------------------------|--|--|----------|
| Designation                                                                              |  |  | Revision |
| IRS: S 21/2001                                                                           |  |  | 1.0      |
| Title of Document                                                                        |  |  |          |
| Indian Railways Standard Specification for Electric Key Transmitter Rotary Type          |  |  |          |
| Authors                                                                                  |  |  |          |
| Director/ Signal/ RDSO                                                                   |  |  |          |
| Approved by                                                                              |  |  |          |
| Sr. Executive Director/ Signal, RDSO                                                     |  |  |          |
| Abstract                                                                                 |  |  |          |
| This document specifies Technical specification for Electric Key Transmitter Rotary Type |  |  |          |

*Smaru*



|                                      |                |             |
|--------------------------------------|----------------|-------------|
| Effective from Year 2001             | IRS: S 21/2001 | Revision: 1 |
| ELECTRIC KEY TRANSMITTER ROTARY TYPE |                | 120         |

**DOCUMENT CONTROL SHEET**

| NAME                              | ORGANIZATION | FUNCTION | LEVEL   |
|-----------------------------------|--------------|----------|---------|
| Director/ Signal                  | RDSO         | Member   | Prepare |
| Sr. Executive Director/<br>Signal | RDSO         | -        | Approve |

**Converted into electronic form on 13.10.2004**

Prepared By: R. G. Gupta,  
Section Engineer / Signal

Checked By: R. Sahariya  
Asstt. Design Engineer

*Smaung*

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|                                      |                |             |
|--------------------------------------|----------------|-------------|
| Effective from Year 2001             | IRS: S 21/2001 | Revision: 1 |
| ELECTRIC KEY TRANSMITTER ROTARY TYPE |                |             |

**AMENDMENTS**

| Version        | Chapter/ Annexure | Amendment   | Effective date |
|----------------|-------------------|-------------|----------------|
| IRS: S 21/1964 |                   | FIRST ISSUE | 1964           |
| IRS: S 21/2001 |                   | Revision 1  | 2001           |

*Smayya*

Effective from Year 2001

IRS: S 21/2001

Revision: I

ELECTRIC KEY TRANSMITTER ROTARY TYPE

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Effective from Year 2001

IRS: S 21/2001

Revision: 1

ELECTRIC KEY TRANSMITTER ROTARY TYPE

**GOVERNMENT OF INDIA  
MINISTRY OF RAILWAYS  
(RAILWAY BOARD)**



**INDIAN RAILWAY  
STANDARD SPECIFICATION  
FOR  
ELECTRIC KEY TRANSMITTER ROTARY TYPE  
(TENTATIVE)**

**0 FOREWORD**

- 0.1 This specification is issued under the fixed Serial No.S21 followed by the year of original adoption as standard, or in the case of revision the year of last revision.

**ADOPTED 1964, REVISED 2001**

- 0.2 This specification requires reference to the following specifications:

IRS: S 23 : Specification for Electrical Signalling & Interlocking Equipment.

- 0.3 Wherever a reference to any specification mentioned in para 0.2 appears in this specification, it shall be taken as a reference to the latest issue of that specification.

*Comauya*

Effective from Year 2001

IRS: S 21/2001

Revision: 1

**ELECTRIC KEY TRANSMITTER ROTARY TYPE**

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- 0.4 This specification is intended chiefly to cover the technical provisions and the provisions relating to the supply of materials and so does not include all the necessary provisions of a contract.

**1. SCOPE**

- 1.1 This specification applies to Electric Key Transmitters for electrical transmission of interlocking keys used in Railway Signalling.
- 1.2 This specification does not cover external wiring, lightning arrestors and protective devices which are used in conjunction with the key transmitters in their installation.

**2. TERMINOLOGY**

- 2.1 The terminology referred to in this specification is covered by IRS specification No. S 23.

**3. OPERATING VOLTAGE**

- 3.1 Unless otherwise specified by the purchaser, the rated voltage of the key transmitter shall be 5 Volts D.C.
- 3.2 The minimum working voltage of the key transmitter shall be 3.75 Volts D.C.

**4. MANUFACTURING DRAWING**

- 4.1 The key transmitter shall be manufactured as per Drawing No. SA 22601. A sketch diagram showing the shape of the key transmitter is enclosed for guidance.

**5. WORKMANSHIP**

- 5.1 Workmanship, limits, fits and other requirements shall be in accordance with IRS specification no. S 23, wherever applicable.

**6. GENERAL REQUIREMENTS**

- 6.1 The key transmitter shall be such as to receive an interlocking key of an approved type.

*Smaun*



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Effective from Year 2001

IRS: S 21/2001

Revision: 1

**ELECTRIC KEY TRANSMITTER ROTARY TYPE**

- 6.2 It shall not be possible to insert and operate the lock by any other key except the one for which the key transmitter is intended.
- 6.3 The tumblers proving the wards of the key shall be provided with an arrangement to force them back to their normal position before the key can be extracted.
- 6.4 The transmitting key shall get locked in the key transmitter before the control can be transmitted to key instrument at the other end.
- 6.5 It shall not be possible to extract a key once inserted and locked in the key transmitter unless it is released by the electrical control received from the other end.
- 6.6 It shall not be possible to transmit control to the instrument at the other end and simultaneously release the key from the key transmitter transmitting the control.
- 6.7 It shall not be possible to release the key by jerks or any other irregular means.
- 6.8 The key transmitter shall be suitable for operation on two wires.
- 6.9 A suitable design of LED based indication shall be provided.
- 6.10 There must not be opening giving access to the interior of the key transmitter through which it is possible to operate the mechanism by any irregular means.
- 6.11 Facility shall be provided for locking and/or sealing the key transmitter.
- 6.12 The key transmitter shall be of robust construction fit to withstand rough handling.
- 6.13 In addition to screw, strong adhesive shall be provided between the insulating piece and the drum.
- 6.14 Where required, immunity from the effects of 25 KV, A.C Electrification shall be provided.

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ELECTRIC KEY TRANSMITTER ROTARY TYPE

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## 7. SPECIAL FEATURES

- 7.1 All parts where breakage is liable to cause a failure on the wrong side shall, as far as possible, be forged from solid.
- 7.2 The electrical lock shall be of gravity type and provided with an efficient forced-drop arrangement.
- 7.3 The key transmitter shall be provided with an electrical indicator to indicate the incoming and outgoing currents.
- 7.4 Means shall be provided to avoid the effects of residual magnetism.

## 8. INSPECTION AND TESTING

- 8.1 Inspection and tests shall be carried out to ensure that all requirements of this specification, IRS specification S23 and any other drawings and specifications referred to by the purchaser are fully complied with.

### 8.2 TYPE TESTS

These tests shall be carried out on two nos. of Electric Key Transmitter. The following shall constitute type tests:

- (a) Visual Inspection (Clauses 4.1 & 6.1 to 6.14)
- (b) Applied High Voltage Test (Clause 14.3.2.1 of IRS:S 23 Part-II).
- (c) Insulation Resistance Test (Clause 14.3.2.2 of IRS:S23 Part-II).
- (d) Coil Resistance Test (Clause 8.5).
- (e) Pick up Voltage Test (Clauses 3.1 and 3.2).
- (f) Contact pressure Test (Clause 8.6).
- (g) Performance Test (Clause 8.7).
- (h) Climatic Test (Clause 8.8)
- (i) Key Extraction Checking Test (Clause 6.5 to 6.7)

### 8.3 ACCEPTANCE TESTS

These tests shall be conducted on 10% of a batch subject to a minimum of two nos. of Electric Key Transmitter and shall comprise the following.

- (a) Visual Inspection (Clauses 4.1 & 6.1 to 6.14)
- (b) Applied High Voltage Test (Clause 14.3.2.1 of IRS:S 23 Part-II).
- (c) Insulation Resistance Test (Clause 14.3.2.2 of IRS:S23 Part-II).

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**ELECTRIC KEY TRANSMITTER ROTARY TYPE**

- (d) Coil Resistance Test (Clause 8.5).
- (e) Pick up Voltage Test (Clauses 3.1 and 3.2).
- (f) Contact pressure test (Clause 8.6).
- (g) Key Extraction Checking Test (Clause 6.5 to 6.7)

**8.4 ROUTINE TESTS**

Every assembled key transmitter shall be subjected by the manufacturer to Routine tests, which shall comprise the following:

- (a) Visual Inspection (Clauses 4.1 & 6.1 to 6.14)
- (b) Applied High Voltage Test (Clause 14.3.2.1 of IRS:S 23 Part-II).
- (c) Insulation Resistance Test (Clause 14.3.2.2 of IRS:S 23 Part-II).
- (d) Coil Resistance Test (Clause 8.5).
- (e) Pick-up Voltage Test (Clauses 3.1 and 3.2).

**8.5 COIL RESISTANCE TEST**

Unless otherwise specified by the purchaser, the resistance of the coil shall be 14.6 ohm  $\pm$  5% at 20°C.

**8.6 CONTACT PRESSURE TEST**

The initial contact pressure in closed position when measured very near the point of contact shall not be less than 180 gm.

**8.7 PERFORMANCE TEST**

The key transmitters shall be tested for 50,000 cycles of operation. On completion of the test, the key transmitters shall continue to operate satisfactorily and the loss in contact pressure shall not exceed 10 percent of the initial contact pressure.

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ELECTRIC KEY TRANSMITTER ROTARY TYPE

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**8.8 CLIMATIC TESTS**

8.8.1 The following environmental tests shall be conducted on the key transmitter in the under -mentioned sequence.

8.8.2

| S.No | Name of Tests                                                                                  | Part & Section of IS:9000         | Recovery Period |
|------|------------------------------------------------------------------------------------------------|-----------------------------------|-----------------|
| 1.   | Dry heat test at $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ (one cycle of 16 hours)            | Part-III/ Section 3 of 1977 issue | 2 hours         |
| 2.   | Cold test at $-10^{\circ}\text{C} \pm 3^{\circ}\text{C}$ (one cycle of 16 hours)               | Part-II/Section 3 of 1977 issue   | 2 hours         |
| 3.   | Damp heat cycle test (one cycle of $12+12=24$ hours) (upper temperature $55^{\circ}\text{C}$ ) | Part V/Section 2 of 1981 issue    | 2 hours         |

8.8.3 After the climatic tests, the key transmitters shall be checked for satisfactory operation and also for compliance with clause 14.3.2.2 of IRS: S 23 Part-II (Insulation Resistance Test).

**9. MARKING & IDENTIFICATION**

9.1 The marking and identification shall be done in accordance with clause 16 of IRS specification S 23, Part-II.

**10. PACKING**

10.1 The key transmitters shall be packed in suitable wooden boxes containing not more than eight units in each. The wooden boxes shall be provided with thermocol packing on the inner surface all around to avoid damage during transit.

10.2 The packing shall be such as to permit convenient handling and to protect against loss or damage during transit and storage.

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ELECTRIC KEY TRANSMITTER ROTARY TYPE

### APPENDIX

Requirements to be specified by the purchaser:

- (i) The type of key with its ward, lug and feather particulars for use with the key transmitter (Clause 6.1).
- (ii) The resistance of coil at 20°C. (Clause 8.5).
- (iii) Whether immunity from the effects of A.C. electrification is required (Clause 6.14).

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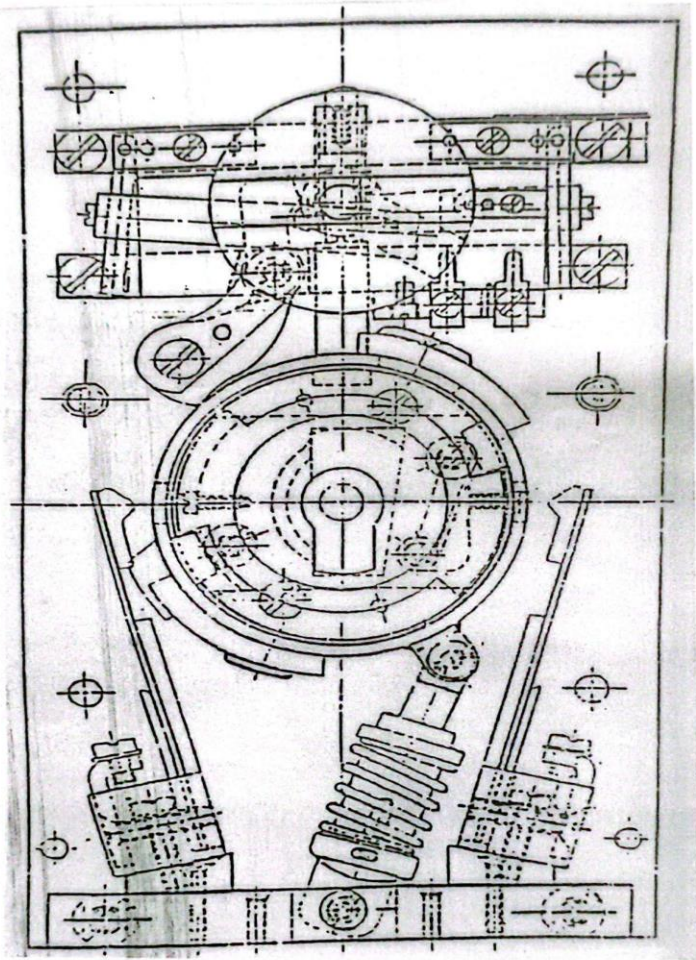
IRS: S 21/2001

Revision: 1

ELECTRIC KEY TRANSMITTER ROTARY TYPE

110

**Electric key Transmitter  
(Rotary Type)  
Drawing no. SA 22601**



**Cover Removed & Key Extracted**

----- X -----

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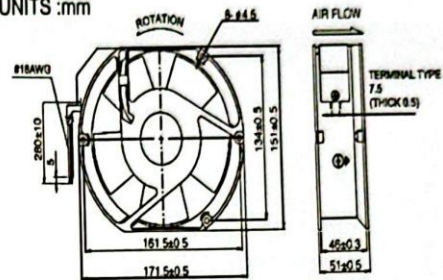
L36

## COOLING FAN 6 INCH OVAL



### DIMENSION

UNITS :mm



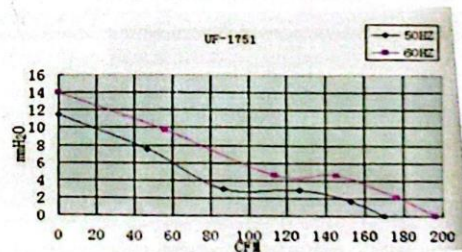
### SPECIFICATION

| MODEL    | SIZE       | VOLTAGE | CURRENT | WATTS | SPEED | AIR FLOW | BEARING | HZ    |
|----------|------------|---------|---------|-------|-------|----------|---------|-------|
| 17250ASL | 172*150*51 | 220V    | 0.25A   | 38W   | 2600  | 160/180  | SEELVE  | 50/60 |

### GENERAL DATA

- \* FRAME - ALUMINUM ALLOY
- \* IMPELLER - PLASTIC PBT
- \* BEARING SYSTEM - SEELVE
- \* LIFE EXPECTANCY - OVER 30,000 HR  
(AT 25 DEGREE CELUIS)

### CFM



### SIBASS ELECTRIC PVT .LTD.

216,LINGHI CHETTY STREET,PARRYS,CHENNAI-600001 INDIA  
P+91 44 4205 1981/82/83/84

EMAIL:- sales@sibasselectric.com , info@sibasselectric.com

web site :- www.sibasselectric.com

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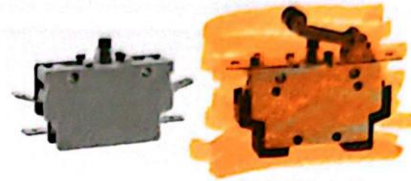
MICROSWITCHES

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**MICROSWITCHES - SEALED, POSITIVE BREAK****PBX - 8324**

- › Double-break snap-action mechanism with electrically separated circuits (form Zb)
- › Positive opening action according to IEC 60947-5-1 Annex K
- › Long overtravel, also after the positive opening position
- › Protection of mechanism: IP67/IP65, or IP40 with sealed plunger
- › Operating temperature -50 °C to +85 °C
- › Max. rating 10A 250 V~ - Rating codes: A300, Q150
- › Very long mechanical life
- › Choice of connections
- › Mounting plates and roller lever (pre-assembled or retrofittable)
- › cURus and CCC approved - Meet applicable railway standards

**Main specifications**

|                                              |                                    | Standard<br>83240 | High force<br>83242 |
|----------------------------------------------|------------------------------------|-------------------|---------------------|
| <b>Degree of protection</b>                  | <b>Connections</b>                 |                   |                     |
| IP40                                         | W3 (QC 6.3x0.8)                    | 83240000          | 83242000            |
| IP40                                         | W3/90B (QC 6.3x0.8, folded)        | 83240010          | 83242010            |
| IP40                                         | W5 (screw + clamp)                 | 83240020          | 83242020            |
| IP40                                         | W5/IP20 (screw + clamp, protected) | 83240030          | 83242030            |
| IP67                                         | W3 (QC 6.3x0.8)                    | 83240200          | 83242200            |
| IP67                                         | W3/90B (QC 6.3x0.8, folded)        | 83240210          | •                   |
| IP67                                         | W5 (screw + clamp)                 | 83240220          | 83242220            |
| IP67                                         | W5/IP20 (screw + clamp, protected) | 83240230          | 83242230            |
| <b>Electrical characteristics</b>            |                                    |                   |                     |
| Positive opening action                      |                                    | →                 | →                   |
| Rating nominal / 250 V~ (A)                  |                                    | 6                 | 6                   |
| Rating thermal (A)                           |                                    | 10                | 10                  |
| <b>Mechanical characteristics</b>            |                                    |                   |                     |
| Maximum operating force (N)                  |                                    | 4.5               | 6.5                 |
| Minimum release force (N)                    |                                    | 0.6               | 2.5                 |
| Minimum positive opening force (N)           |                                    | 28                | 28                  |
| Maximum rest position (mm)                   |                                    | 8.9               | 8.9                 |
| Operating position (mm)                      |                                    | 6.6 ±0.25         | 6.6 ±0.25           |
| Positive opening position (mm)               |                                    | 4.4               | 4.4                 |
| Maximum total travel position (mm)           |                                    | 3.4               | 3.4                 |
| Differential travel (mm)                     |                                    | 1 ±0.3            | 1 ±0.3              |
| Operating temperature (°C)                   |                                    | -50 → +85         | -50 → +85           |
| Mechanical life - IP40 versions (operations) |                                    | 10 <sup>7</sup>   | 10 <sup>7</sup>     |
| Mechanical life - IP67 versions (operations) |                                    | 4x10 <sup>6</sup> | 4 x 10 <sup>6</sup> |
| Contact gap (mm)                             |                                    | 2 x 1             | 2 x 1               |
| Weight, terminal versions (g)                |                                    | 22                | 22                  |

**Additional specifications**

- Case: PC GF (UL 94-V0 / GWFI 960 °C / GWIT 775 °C)
- Button: PBT GF (UL 94-V0 / GWFI 960 °C)
- Membrane: silicone rubber
- Contacts: silver alloy, micro-profile
- Terminals: brass (silver-plated brass : on request)
- Screws: stainless steel
- Levers: stainless steel, polyamide roller
- Degree of protection: IP65/IP67 or IP40 (mechanism)
- Recommended min actuating speed: 0.1 mm/s
- Rated insulation voltage Ui: 400 V
- Impulse withstand voltage Uimp: 4 kV
- Pollution degree: 3
- Protection against electric shock: Button and actuators of IP67 versions have reinforced insulation
- Dimensional conformity: DIN 41636 F
- Fire/smoke resistance: EN 45545
- Conformity / Certifications: (A300, Q150) /

**Product adaptations**

- › Special connections: W3 QC with specific folding, double QC tabs, W1 screw + washer, W5 without screw, ...
- › Integral wire lead or cable outputs, EN 50306 halogen-free versions
- › Special levers: special shapes and lengths
- › Maintained action variant (bistable reset switch), with plunger or lever
- › Two-pole DPDT assemblies with common lever
- › IP40 protective cover/housing on connections

Smaury

Standard product

Product made to order

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12

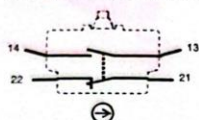
## | MICROSWITCHES

| 01/2022

## Principles

Double break snap-action switch with electrically separated circuits and with positive opening action on NC contacts (21-22) according to IEC 60947-5-1 Annex K

**Changeover - SPDT (form Zb)**



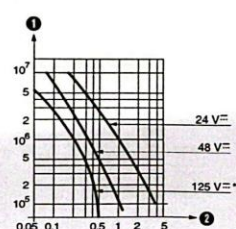
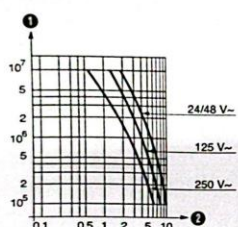
Both circuits can be used at opposite polarities

## Curves

Operating curve for category AC-15

Operating curve for category DC-13

**Making & breaking capacities IEC/EN 60947-5-1 (6000 cycles)**



|                              |                |
|------------------------------|----------------|
| AC-12 (resistive load)       | 10 A 24 V~     |
|                              | 10 A 250 V~    |
| AC-15 (electromagnetic load) | 10 A 24 V~     |
|                              | 6 A 250 V~     |
| DC-12 (resistive load)       | 10 A 24 V---   |
|                              | 0.6 A 250 V--- |
| DC-13 (electromagnetic load) | 8 A 24 V---    |
|                              | 0.3 A 250 V--- |

For other ratings please consult us

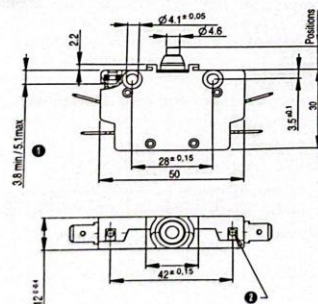
- ① Number of operations
- ② Current in Amps

\* For IP67 versions used in 125 V DC, please consult us.

### Dimensions

**Product**

8324



- ① Fixing screw threaded length  
② Fixing nuts 2 x M3

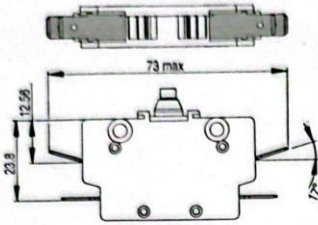
Max. tightening torque of fixing screws: 1.3 N.m on Ø 4.1 holes  
0.9 N.m on M3 nuts

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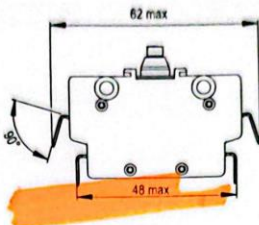
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Connections

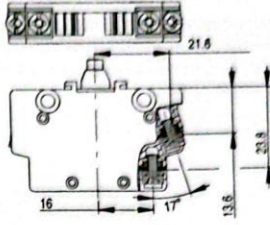
W3 quick-connect 6.3 x 0.8



W3/90B quick-connect 6.3x0.8, 90° downward folding

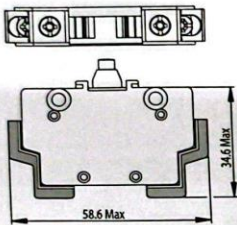


W5 screw with clamp  
W1 screw with washer



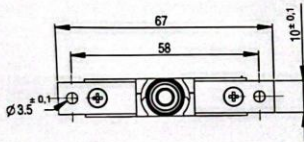
4 x M3 screws - PZ1 type

W5/IP20 screw with clamp and IP20 protection



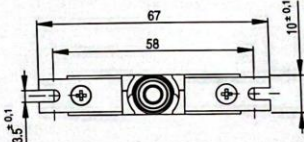
Mounting accessories

PT mounting plates with holes 79552459



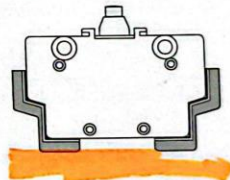
Thickness: 1 mm

PE mounting plates with notches 79552460



Thickness: 1 mm

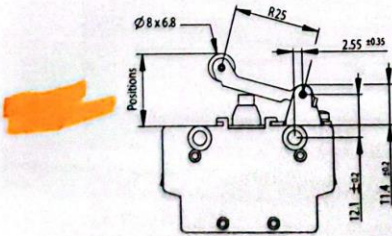
IP20 screw connection cover 79552328



Snap-on mounting  
2 pieces are needed

Actuators

LG roller lever 79552456  
LG PT roller lever + plates with holes 79552457  
LG PE roller lever + plates with notches 79552458



Mechanical characteristics on roller

|                                    | 83240                | 83242                |
|------------------------------------|----------------------|----------------------|
| Maximum operating force (N)        | 3                    | 4                    |
| Minimum release force (N)          | 0.3                  | 1.3                  |
| Min. positive opening force (N)    | 19                   | 19                   |
| Maximum rest position (mm)         | 21                   | 21                   |
| Operating position (mm)            | 16.6 <sup>+0.5</sup> | 16.6 <sup>+0.5</sup> |
| Positive opening position (mm)     | 13.2                 | 13.2                 |
| Maximum total travel position (mm) | 12                   | 12                   |
| Differential travel (mm)           | 1.8 <sup>+0.55</sup> | 1.8 <sup>+0.55</sup> |

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MICROSWITCHES

01/2022

**Actuators and mounting accessories**

PBX-8324 with referenced accessories

| Roller lever<br>Mounting plates<br>Accessory kit |      | LG<br>-  | LG<br>PT | LG<br>PE | -<br>PT  | -<br>PE  |
|--------------------------------------------------|------|----------|----------|----------|----------|----------|
|                                                  |      | 79552456 | 79552457 | 79552458 | 79552459 | 79552460 |
| 83240                                            | IP40 | W3       | 83240003 | 83240004 | 83240005 | •        |
|                                                  |      | W3/90B   | 83240013 | 83240014 | •        | •        |
|                                                  |      | W5       | 83240023 | 83240024 | •        | •        |
|                                                  |      | W5/1P20  | 83240033 | 83240034 | •        | •        |
|                                                  |      | IP67     | W3       | 83240203 | •        | •        |
|                                                  | IP67 | W3/90B   | 83240213 | 83240214 | •        | •        |
|                                                  |      | W5       | 83240223 | 83240224 | 83240225 | 83240221 |
|                                                  |      | W5/1P20  | •        | •        | •        | •        |
|                                                  |      | W3       | 83242003 | 83242004 | •        | •        |
|                                                  |      | W3/90B   | •        | 83242014 | 83242011 | •        |
| 83242                                            | IP40 | W5       | 83242023 | 83242024 | •        | •        |
|                                                  |      | W5/1P20  | •        | •        | •        | •        |
|                                                  |      | IP67     | W3       | •        | •        | •        |
|                                                  |      | W3/90B   | •        | •        | •        | •        |
|                                                  |      | W5       | 83242223 | 83242224 | •        | •        |
|                                                  |      | W5/1P20  | •        | •        | •        | •        |
|                                                  | IP67 | W3       | •        | •        | •        | •        |
|                                                  |      | W3/90B   | •        | •        | •        | •        |
|                                                  |      | W5       | •        | •        | •        | •        |
|                                                  |      | W5/1P20  | •        | •        | •        | •        |
|                                                  |      | W3       | •        | •        | •        | •        |

**Installation recommendations**

See "Basic technical concepts".

To observe the required clearances and creepage distances in the connection area :

- above 100 V: an insulating plate is needed when the switch is mounted on an uninsulated surface.
- above 250 V: insulating plates are needed between switches when ganging.

**How to order**

Use the 8 digit part numbers when they are defined

Other cases, precise: Type of microswitch - Degree of protection - Connection - Actuator\* - Mounting accessories\* - Adaptation\*

\* if needed

Example: 83240 IP67 W3/90B LG PE

**Examples of special adaptations**

Two-pole DPDT assembly with linked levers



Short roller lever



Mixed connections: NO quick-connect 6.3 x 0.8 / NC screw with clamp



Mixed connections: NO screw with clamp / NC quick-connect 6.3 x 0.8, 90° downward folding



In-line quick-connect terminals



Economic version (839930): SPDT form Za without positive opening, Ø 3.2 mounting holes on top face, screw terminals

Smauina

Standard product

Product made to order

Contact us

**Warning:**

The product information contained in this catalogue is given purely as information and does not constitute a representation, warranty or any form of contractual commitment. Crouzet and its subsidiaries reserve the right to modify their products without notice. It is imperative that we should be consulted over any particular use or application of our products and it is the responsibility of the buyer to establish, particularly through all the appropriate tests, that the product is suitable for the use or application. Under no circumstances will our warranty apply, nor shall we be held responsible for any application (such as any modification, addition, deletion, use in conjunction with other electrical or electronic components, circuits or assemblies, or any other unsuitable material or substance) which has not been expressly agreed by us prior to the sale of our products.



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MICROSWITCHES

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## MINIATURE MICROSWITCHES - STANDARD

### V3D - 8326

- › C-spring snap-action mechanism with wiping contacts
- › Ratings from 0.02 A 24 V~ up to 25 A 250 V~ and 1 hp 125V~ / 2 hp 250 V~
- › Broad range of operating forces from 0.25 N to 4 N
- › Operating temperature from -50 °C up to +200 °C
- › Wide choice of connections
- › Housing material complying with IEC 60335-1 for unattended appliances:  
GWFI 850 °C / GWIT 775 °C
- › ENEC and cURus approved
- › Choice of pre-assembled actuators on 2 possible fixing positions



#### Main specifications

|                                         |                           | Standard<br>83263 | High<br>current<br>83262 | High force<br>83261 | Low force<br>83264 | Very low<br>force<br>83265 | Low current<br>83268 | Low current<br>Low force<br>83269 |
|-----------------------------------------|---------------------------|-------------------|--------------------------|---------------------|--------------------|----------------------------|----------------------|-----------------------------------|
| <b>Function</b>                         | <b>Connections</b>        |                   |                          |                     |                    |                            |                      |                                   |
| I (changeover)                          | W1 (screw)                | 83263001          | 83262001                 | 83261001            | 83264001           | 83265001                   | 83268001             | 83269001                          |
| I (changeover)                          | W2 (solder)               | 83263011          | 83262011                 | 83261011            | 83264011           | 83265011                   | 83268011             | 83269011                          |
| I (changeover)                          | W3 (QC 6.3x0.8)           | 83263021          | 83262021                 | 83261021            | 83264021           | 83265021                   | 83268021             | 83269021                          |
| I (changeover)                          | W3R5 (QC 6.3x0.8, Rast 5) | 83263031          | 83262031                 | 83261031            | 83264031           | 83265031                   | 83268031             | 83269031                          |
| I (changeover)                          | W6A5 (QC 4.8x0.5)         | 83263041          | 83262041                 | 83261041            | 83264041           | 83265041                   | 83268041             | 83269041                          |
| I (changeover)                          | W6D8 (QC 4.8x0.8)         | 83263051          | 83262051                 | 83261051            | 83264051           | 83265051                   | 83268051             | 83269051                          |
| I (changeover)                          | W7A5 (QC 2.8x0.5)         | 83263061          | -                        | 83261061            | 83264061           | 83265061                   | 83268061             | 83269061                          |
| I (changeover)                          | X2 (PCB, rear)            | 83263071          | 83262071                 | 83261071            | 83264071           | 83265071                   | 83268071             | 83269071                          |
| I (changeover)                          | X3 (PCB, front)           | 83263081          | 83262081                 | 83261081            | 83264081           | 83265081                   | 83268081             | 83269081                          |
| I (changeover)                          | X1 (PCB, straight)        | 83263091          | 83262091                 | 83261091            | 83264091           | 83265091                   | 83268091             | 83269091                          |
| R (norm. closed)                        | W1 (screw)                | 83263601          | 83262601                 | 83261601            | 83264601           | 83265601                   | 83268601             | 83269601                          |
| R (norm. closed)                        | W2 (solder)               | 83263611          | 83262611                 | 83261611            | 83264611           | 83265611                   | 83268611             | 83269611                          |
| R (norm. closed)                        | W3 (QC 6.3x0.8)           | 83263621          | 83262621                 | 83261621            | 83264621           | 83265621                   | 83268621             | 83269621                          |
| R (norm. closed)                        | W3R5 (QC 6.3x0.8, Rast 5) | 83263631          | 83262631                 | 83261631            | 83264631           | 83265631                   | 83268631             | 83269631                          |
| R (norm. closed)                        | W6A5 (QC 4.8x0.5)         | 83263641          | 83262641                 | 83261641            | 83264641           | 83265641                   | 83268641             | 83269641                          |
| R (norm. closed)                        | W6D8 (QC 4.8x0.8)         | 83263651          | 83262651                 | 83261651            | 83264651           | 83265651                   | 83268651             | 83269651                          |
| R (norm. closed)                        | W7A5 (QC 2.8x0.5)         | 83263661          | -                        | 83261661            | 83264661           | 83265661                   | 83268661             | 83269661                          |
| C (norm. open)                          | W1 (screw)                | 83263801          | 83262801                 | 83261801            | 83264801           | 83265801                   | 83268801             | 83269801                          |
| C (norm. open)                          | W2 (solder)               | 83263811          | 83262811                 | 83261811            | 83264811           | 83265811                   | 83268811             | 83269811                          |
| C (norm. open)                          | W3 (QC 6.3x0.8)           | 83263821          | 83262821                 | 83261821            | 83264821           | 83265821                   | 83268821             | 83269821                          |
| C (norm. open)                          | W3R5 (QC 6.3x0.8, Rast 5) | 83263831          | 83262831                 | 83261831            | 83264831           | 83265831                   | 83268831             | 83269831                          |
| C (norm. open)                          | W6A5 (QC 4.8x0.5)         | 83263841          | 83262841                 | 83261841            | 83264841           | 83265841                   | 83268841             | 83269841                          |
| C (norm. open)                          | W6D8 (QC 4.8x0.8)         | 83263851          | 83262851                 | 83261851            | 83264851           | 83265851                   | 83268851             | 83269851                          |
| C (norm. open)                          | W7A5 (QC 2.8x0.5)         | 83263861          | -                        | 83261861            | 83264861           | 83265861                   | 83268861             | 83269861                          |
| <b>Electrical characteristics</b>       |                           |                   |                          |                     |                    |                            |                      |                                   |
| Rating nominal / 250 V AC (A)           |                           | 16                | 20                       | 16                  | 12                 | 5                          | -                    | -                                 |
| Rating thermal / 250 V AC (A)           |                           | 20                | 25                       | 20                  | 15                 | 7.5                        | -                    | -                                 |
| Operating range / 5 → 24 V AC/DC (A)    |                           | -                 | -                        | -                   | -                  | -                          | 0.001 → 0.02         | 0.001 → 0.02                      |
| Rating ENEC / 250 V AC (A)              |                           | 16(4)             | 20(8)                    | 16(4)               | 12(6)              | 5(1)                       | 0.1(0.04)            | 0.1(0.04)                         |
| Rating UL / 125/250 V AC (A)            |                           | 16 GP             | 21 GP                    | 16 GP               | 8 GP               | 5 GP                       | 0.1 GP               | 0.1 GP                            |
| Rating UL hp / 125/250 V AC             |                           | -*                | 1hp/2hp                  | -*                  | 1/4hp              | 1/10hp                     | -                    | -                                 |
| <b>Mechanical characteristics</b>       |                           |                   |                          |                     |                    |                            |                      |                                   |
| Maximum operating force (N)             |                           | 1                 | 2                        | 2                   | 0.5                | 0.25                       | 1                    | 0.25                              |
| Min. Release force (N)                  |                           | 0.2               | 0.5                      | 0.5                 | 0.1                | 0.05                       | 0.2                  | 0.05                              |
| Maximum total travel force (N)          |                           | 1.5               | 3                        | 3                   | 0.8                | 0.4                        | 1.5                  | 0.4                               |
| Max. Allowable overtravel force (N)     |                           | 20                | 20                       | 20                  | 20                 | 20                         | 20                   | 20                                |
| Rest position max. (mm)                 |                           | 16.2              | 16.2                     | 16.2                | 16.2               | 16.2                       | 16.2                 | 16.2                              |
| Operating position (mm)                 |                           | 14.7 ±0.5         | 14.7 ±0.5                | 14.7 ±0.5           | 14.7 ±0.5          | 14.7 ±0.5                  | 14.7 ±0.5            | 14.7 ±0.5                         |
| Maximum differential travel (mm)        |                           | 0.4               | 0.4                      | 0.4                 | 0.4                | 0.4                        | 0.4                  | 0.4                               |
| Min. overtravel (mm)                    |                           | 1.1               | 1.1                      | 1.1                 | 1.1                | 1.1                        | 1.1                  | 1.1                               |
| Ambient operating temperature (°C)      |                           | -50 → +125        | -50 → +125               | -50 → +125          | -20 → +125         | -20 → +125                 | -50 → +150           | -20 → +150                        |
| Mechanical life for 2/3 OT (operations) |                           | 10 <sup>6</sup>   | 10 <sup>6</sup>          | 10 <sup>6</sup>     | 10 <sup>6</sup>    | 10 <sup>6</sup>            | 10 <sup>6</sup>      | 10 <sup>6</sup>                   |
| Contact gap (mm)                        |                           | 0.4               | 0.4                      | 0.4                 | 0.4                | 0.4                        | 0.4                  | 0.4                               |
| Weight (g)                              |                           | 6                 | 6                        | 6                   | 6                  | 6                          | 6                    | 6                                 |

\* Also available with 1/2hp (83263 SP9333, 83261 SP9331)

#### Additional specifications

- Case, Button: PET GF (UL 94-V0 / GWFI 960 °C / GWIT 775 °C)
- Contacts: silver alloy or gold plated (83268/269)
- Terminals: brass, silver-plated brass (W2, X)
- Levers: stainless steel, polyamide roller

- Conformity / Certifications:

- Degree of protection: IP40 (mechanism)
- Proof tracking index: PTI 250 (PTI 300 on request)
- Protection against electric shock: button and actuators mounted on position B have reinforced insulation for Ui 250V / Uimp 2.5kV / pollution 2
- Recommended min actuating speed: 83261/83262: 0.3 mm/s  
83263/83268: 1 mm/s  
83264/83265/83269: 3 mm/s

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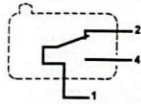
## Product adaptations



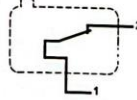
- › Special levers: special shapes and lengths
- › Lever mounted on position A for higher ratio
- › Special connections: angled, screw with clamp (W5-SP9348), solder with enlarged hole (W2-SP9368), RAST 2.5 (W3R2.5-SP9307), ...
- › Higher operating force: max 4 N (83261 SP9335, 83262 SP9347)
- › +200 °C versions: max 8A, ENEC and cURus approved (83261-83263-83268-83269 SP9328)
- › 25 A cURus approved version (83262 SP9360)
- › Telescopic plunger and adjustable fixing by threaded barrel: plastic and metal versions (consult us)

## Principles

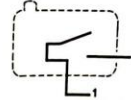
Single break snap-action switch  
Changeover - SPDT (form C)



Normally closed - SPST-NC (form B)

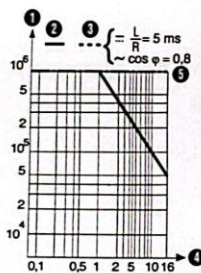


Normally open - SPST-NO (form A)



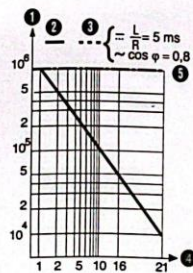
## Curves

Operating curve for types  
83261 / 83263



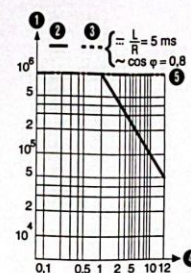
- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Current in Amps
- 5 Mechanical life limit

Operating curve for type 83262



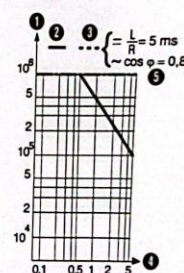
- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Current in Amps
- 5 Mechanical life limit

Operating curve for type 83264



- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Current in Amps
- 5 Mechanical life limit

Operating curve for type 83265



- 1 Number of cycles
- 2 Resistive circuit
- 3 Inductive circuit
- 4 Current in Amps
- 5 Mechanical life limit

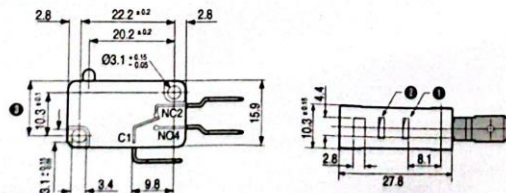
Electrical life for 83268/83269: 24 V~: 5 mA: 20 000 cycles\*  
12 V~: 10 mA: 20 000 cycles\*

\* For longer electrical life, please consult us

## Dimensions

## Product

8326



- 1 Lever mounting position B (standard)
- 2 Lever mounting position A (optional)
- 3 Total travel position = 13.2 max

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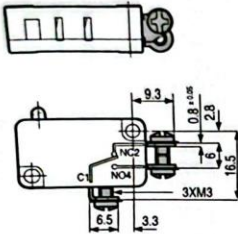
13

MICROSWITCHES

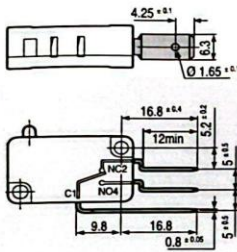
129 02/2022

## Connections

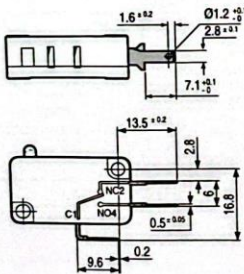
W1 screw



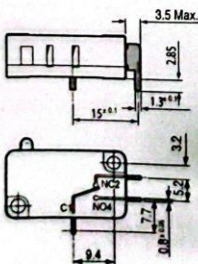
W3R5 quick-connect 6.3 x 0.8 for RAST 5 connector



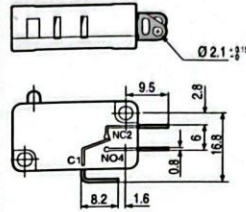
W7A5 quick-connect 2.8 x 0.5



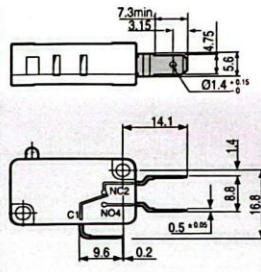
X3 for printed circuit board, front output



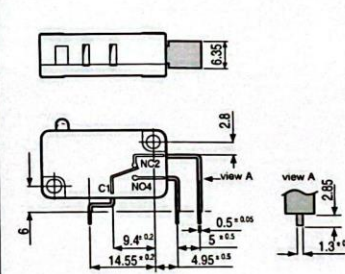
W2 solder



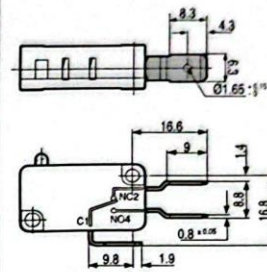
W6A5 quick-connect 4.8 x 0.5



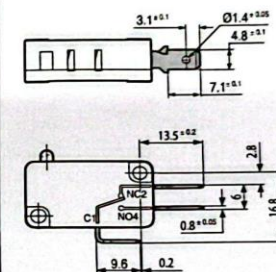
X1 for printed circuit board, straight output



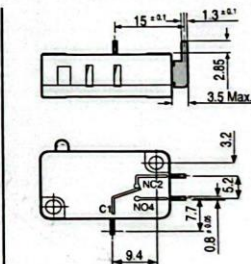
W3 quick-connect 6.3 x 0.8



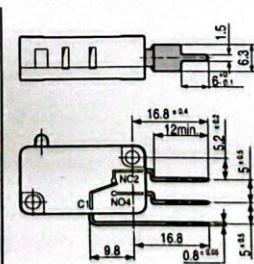
W6D8 quick-connect 4.8 x 0.8



X2 for printed circuit board, rear output



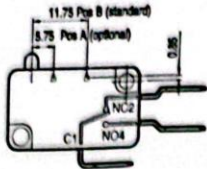
W3R2.5 for RAST 2.5 connector (SP9307)



Other shapes and dimensions: consult us

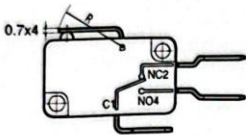
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Actuator mounting positions

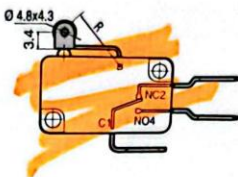


Actuators

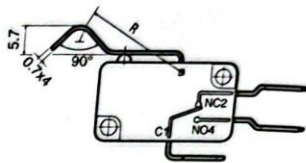
260A flat



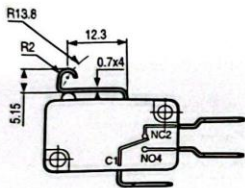
260E roller



260F dummy roller



260G dummy roller

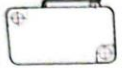
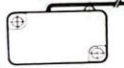
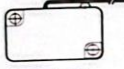
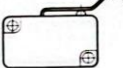
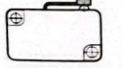
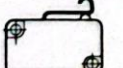


Other shapes and dimensions: consult us

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## Actuators and mounting accessories

| Mechanical characteristics                                                                                       |       | Length of actuator (mm) | Maximum operating force (N) | Minimum release force (N) | Operating position (mm) | Minimum overtravel (mm) | Maximum differential travel (mm) | Maximum total travel (mm) |
|------------------------------------------------------------------------------------------------------------------|-------|-------------------------|-----------------------------|---------------------------|-------------------------|-------------------------|----------------------------------|---------------------------|
| <br>Lever 260A<br>R14.2 Pos B   | 83261 | 14.2                    | 2                           | 0.5                       | 15.4±0.5                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83262 | 14.2                    | 2                           | 0.5                       | 15.4±0.5                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83263 | 14.2                    | 1                           | 0.2                       | 15.4±0.5                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83264 | 14.2                    | 0.5                         | 0.1                       | 15.4±0.5                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83265 | 14.2                    | 0.25                        | 0.05                      | 15.4±0.5                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83268 | 14.2                    | 1                           | 0.2                       | 15.4±0.5                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83269 | 14.2                    | 0.25                        | 0.05                      | 15.4±0.5                | 1.1                     | 0.4                              | 3                         |
| <br>Lever 260A<br>R25.4 Pos B   | 83261 | 25.4                    | 1                           | 0.25                      | 15.4±1                  | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83262 | 25.4                    | 1                           | 0.25                      | 15.4±1                  | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83263 | 25.4                    | 0.5                         | 0.1                       | 15.4±1                  | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83264 | 25.4                    | 0.25                        | 0.05                      | 15.4±1                  | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83265 | 25.4                    | 0.13                        | 0.02                      | 15.4±1                  | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83268 | 25.4                    | 0.5                         | 0.1                       | 15.4±1                  | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83269 | 25.4                    | 0.13                        | 0.02                      | 15.4±1                  | 2                       | 0.8                              | 5.8                       |
| <br>Lever 260A<br>R40 Pos B     | 83261 | 40                      | 0.6                         | 0.15                      | 15.4±1.8                | 3.3                     | 1.3                              | 9.6                       |
|                                                                                                                  | 83262 | 40                      | 0.6                         | 0.15                      | 15.4±1.8                | 3.3                     | 1.3                              | 9.6                       |
|                                                                                                                  | 83263 | 40                      | 0.3                         | 0.06                      | 15.4±1.8                | 3.3                     | 1.3                              | 9.6                       |
|                                                                                                                  | 83264 | 40                      | 0.15                        | 0.03                      | 15.4±1.8                | 3.3                     | 1.3                              | 9.6                       |
|                                                                                                                  | 83265 | 40                      | 0.08                        | 0.01                      | 15.4±1.8                | 3.3                     | 1.3                              | 9.6                       |
|                                                                                                                  | 83268 | 40                      | 0.3                         | 0.06                      | 15.4±1.8                | 3.3                     | 1.3                              | 9.6                       |
|                                                                                                                  | 83269 | 40                      | 0.08                        | 0.01                      | 15.4±1.8                | 3.3                     | 1.3                              | 9.6                       |
| <br>Lever 260A<br>R60 Pos B    | 83261 | 60                      | 0.4                         | 0.1                       | 15.4±2.5                | 5                       | 2                                | 14.5                      |
|                                                                                                                  | 83262 | 60                      | 0.4                         | 0.1                       | 15.4±2.5                | 5                       | 2                                | 14.5                      |
|                                                                                                                  | 83263 | 60                      | 0.2                         | 0.04                      | 15.4±2.5                | 5                       | 2                                | 14.5                      |
|                                                                                                                  | 83264 | 60                      | 0.1                         | 0.02                      | 15.4±2.5                | 5                       | 2                                | 14.5                      |
|                                                                                                                  | 83265 | 60                      | 0.05                        | 0.01                      | 15.4±2.5                | 5                       | 2                                | 14.5                      |
|                                                                                                                  | 83268 | 60                      | 0.2                         | 0.04                      | 15.4±2.5                | 5                       | 2                                | 14.5                      |
|                                                                                                                  | 83269 | 60                      | 0.05                        | 0.01                      | 15.4±2.5                | 5                       | 2                                | 14.5                      |
| <br>Lever 260F<br>R22.2 Pos B | 83261 | 22.2                    | 1.06                        | 0.26                      | 20.4±1                  | 1.8                     | 0.75                             | 5.2                       |
|                                                                                                                  | 83262 | 22.2                    | 1.06                        | 0.26                      | 20.4±1                  | 1.8                     | 0.75                             | 5.2                       |
|                                                                                                                  | 83263 | 22.2                    | 0.53                        | 0.1                       | 20.4±1                  | 1.8                     | 0.75                             | 5.2                       |
|                                                                                                                  | 83264 | 22.2                    | 0.27                        | 0.05                      | 20.4±1                  | 1.8                     | 0.75                             | 5.2                       |
|                                                                                                                  | 83265 | 22.2                    | 0.13                        | 0.02                      | 20.4±1                  | 1.8                     | 0.75                             | 5.2                       |
|                                                                                                                  | 83268 | 22.2                    | 0.53                        | 0.1                       | 20.4±1                  | 1.8                     | 0.75                             | 5.2                       |
|                                                                                                                  | 83269 | 22.2                    | 0.13                        | 0.02                      | 20.4±1                  | 1.8                     | 0.75                             | 5.2                       |
| <br>Lever 260E<br>R13.7 Pos B | 83261 | 13.7                    | 2                           | 0.5                       | 20.5±0.8                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83262 | 13.7                    | 2                           | 0.5                       | 20.5±0.8                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83263 | 13.7                    | 1                           | 0.2                       | 20.5±0.8                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83264 | 13.7                    | 0.5                         | 0.1                       | 20.5±0.8                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83265 | 13.7                    | 0.25                        | 0.05                      | 20.5±0.8                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83268 | 13.7                    | 1                           | 0.2                       | 20.5±0.8                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83269 | 13.7                    | 0.25                        | 0.05                      | 20.5±0.8                | 1.1                     | 0.4                              | 3                         |
| <br>Lever 260E<br>R24.3 Pos B | 83261 | 24.3                    | 1                           | 0.25                      | 20.5±1.5                | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83262 | 24.3                    | 1                           | 0.25                      | 20.5±1.5                | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83263 | 24.3                    | 0.5                         | 0.1                       | 20.5±1.5                | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83264 | 24.3                    | 0.25                        | 0.05                      | 20.5±1.5                | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83265 | 24.3                    | 0.13                        | 0.02                      | 20.5±1.5                | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83268 | 24.3                    | 0.5                         | 0.1                       | 20.5±1.5                | 2                       | 0.8                              | 5.8                       |
|                                                                                                                  | 83269 | 24.3                    | 0.13                        | 0.02                      | 20.5±1.5                | 2                       | 0.8                              | 5.8                       |
| <br>Lever 260G<br>R13.8 Pos B | 83261 | 13.8                    | 2                           | 0.5                       | 19.9±0.7                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83262 | 13.8                    | 2                           | 0.5                       | 19.9±0.7                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83263 | 13.8                    | 1                           | 0.2                       | 19.9±0.7                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83264 | 13.8                    | 0.5                         | 0.1                       | 19.9±0.7                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83265 | 13.8                    | 0.25                        | 0.05                      | 19.9±0.7                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83268 | 13.8                    | 1                           | 0.2                       | 19.9±0.7                | 1.1                     | 0.4                              | 3                         |
|                                                                                                                  | 83269 | 13.8                    | 0.25                        | 0.05                      | 19.9±0.7                | 1.1                     | 0.4                              | 3                         |

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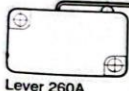
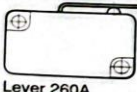
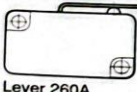
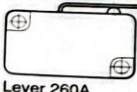
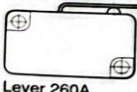
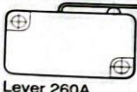
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MICROSWITCHES

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## V3D - 8326 microswitches with referenced actuators

| Actuators                                                                                                       | Function | Type | 83261    | 83262    | 83263    | 83264    | 83265    | 83268    | 83269    |
|-----------------------------------------------------------------------------------------------------------------|----------|------|----------|----------|----------|----------|----------|----------|----------|
| <br>Lever 260A<br>R14.2 Pos B  | I        | W1   | 83261002 | 83262002 | 83263002 | 83264002 | 83265002 | 83268002 | 83269002 |
|                                                                                                                 | I        | W2   | 83261012 | 83262012 | 83263012 | 83264012 | 83265012 | 83268012 | 83269012 |
|                                                                                                                 | I        | W3   | 83261022 | 83262022 | 83263022 | 83264022 | 83265022 | 83268022 | 83269022 |
|                                                                                                                 | I        | W3R5 | 83261032 | 83262032 | 83263032 | 83264032 | 83265032 | 83268032 | 83269032 |
|                                                                                                                 | I        | W6A5 | 83261042 | 83262042 | 83263042 | 83264042 | 83265042 | 83268042 | 83269042 |
|                                                                                                                 | I        | W6D8 | 83261052 | 83262052 | 83263052 | 83264052 | 83265052 | 83268052 | 83269052 |
|                                                                                                                 | I        | W7A5 | 83261062 | -        | 83263062 | 83264062 | 83265062 | 83268062 | 83269062 |
|                                                                                                                 | I        | X2   | 83261072 | 83262072 | 83263072 | 83264072 | 83265072 | 83268072 | 83269072 |
|                                                                                                                 | I        | X3   | 83261082 | 83262082 | 83263082 | 83264082 | 83265082 | 83268082 | 83269082 |
|                                                                                                                 | I        | X1   | 83261092 | 83262092 | 83263092 | 83264092 | 83265092 | 83268092 | 83269092 |
|                                                                                                                 | R        | W1   | 83261602 | 83262602 | 83263602 | 83264602 | 83265602 | 83268602 | 83269602 |
| <br>Lever 260A<br>R25.4 Pos B | R        | W2   | 83261612 | 83262612 | 83263612 | 83264612 | 83265612 | 83268612 | 83269612 |
|                                                                                                                 | R        | W3   | 83261622 | 83262622 | 83263622 | 83264622 | 83265622 | 83268622 | 83269622 |
|                                                                                                                 | R        | W3R5 | 83261632 | 83262632 | 83263632 | 83264632 | 83265632 | 83268632 | 83269632 |
|                                                                                                                 | R        | W6A5 | 83261642 | 83262642 | 83263642 | 83264642 | 83265642 | 83268642 | 83269642 |
|                                                                                                                 | R        | W6D8 | 83261652 | 83262652 | 83263652 | 83264652 | 83265652 | 83268652 | 83269652 |
|                                                                                                                 | R        | W7A5 | 83261662 | -        | 83263662 | 83264662 | 83265662 | 83268662 | 83269662 |
|                                                                                                                 | C        | W1   | 83261802 | 83262802 | 83263802 | 83264802 | 83265802 | 83268802 | 83269802 |
|                                                                                                                 | C        | W2   | 83261812 | 83262812 | 83263812 | 83264812 | 83265812 | 83268812 | 83269812 |
|                                                                                                                 | C        | W3   | 83261822 | 83262822 | 83263822 | 83264822 | 83265822 | 83268822 | 83269822 |
|                                                                                                                 | C        | W3R5 | 83261832 | 83262832 | 83263832 | 83264832 | 83265832 | 83268832 | 83269832 |
|                                                                                                                 | C        | W6A5 | 83261842 | 83262842 | 83263842 | 83264842 | 83265842 | 83268842 | 83269842 |
| <br>Lever 260A<br>R40 Pos B  | C        | W6D8 | 83261852 | 83262852 | 83263852 | 83264852 | 83265852 | 83268852 | 83269852 |
|                                                                                                                 | C        | W7A5 | 83261862 | -        | 83263862 | 83264862 | 83265862 | 83268862 | 83269862 |
|                                                                                                                 | I        | W1   | 83261003 | 83262003 | 83263003 | 83264003 | 83265003 | 83268003 | 83269003 |
|                                                                                                                 | I        | W2   | 83261013 | 83262013 | 83263013 | 83264013 | 83265013 | 83268013 | 83269013 |
|                                                                                                                 | I        | W3   | 83261023 | 83262023 | 83263023 | 83264023 | 83265023 | 83268023 | 83269023 |
|                                                                                                                 | I        | W3R5 | 83261033 | 83262033 | 83263033 | 83264033 | 83265033 | 83268033 | 83269033 |
|                                                                                                                 | I        | W6A5 | 83261043 | 83262043 | 83263043 | 83264043 | 83265043 | 83268043 | 83269043 |
|                                                                                                                 | I        | W6D8 | 83261053 | 83262053 | 83263053 | 83264053 | 83265053 | 83268053 | 83269053 |
|                                                                                                                 | I        | W7A5 | 83261063 | -        | 83263063 | 83264063 | 83265063 | 83268063 | 83269063 |
|                                                                                                                 | I        | X2   | 83261073 | 83262073 | 83263073 | 83264073 | 83265073 | 83268073 | 83269073 |
|                                                                                                                 | I        | X3   | 83261083 | 83262083 | 83263083 | 83264083 | 83265083 | 83268083 | 83269083 |
| <br>Lever 260A<br>R40 Pos B  | I        | X1   | 83261093 | 83262093 | 83263093 | 83264093 | 83265093 | 83268093 | 83269093 |
|                                                                                                                 | R        | W1   | 83261603 | 83262603 | 83263603 | 83264603 | 83265603 | 83268603 | 83269603 |
|                                                                                                                 | R        | W2   | 83261613 | 83262613 | 83263613 | 83264613 | 83265613 | 83268613 | 83269613 |
|                                                                                                                 | R        | W3   | 83261623 | 83262623 | 83263623 | 83264623 | 83265623 | 83268623 | 83269623 |
|                                                                                                                 | R        | W3R5 | 83261633 | 83262633 | 83263633 | 83264633 | 83265633 | 83268633 | 83269633 |
|                                                                                                                 | R        | W6A5 | 83261643 | 83262643 | 83263643 | 83264643 | 83265643 | 83268643 | 83269643 |
|                                                                                                                 | R        | W6D8 | 83261653 | 83262653 | 83263653 | 83264653 | 83265653 | 83268653 | 83269653 |
|                                                                                                                 | R        | W7A5 | 83261663 | -        | 83263663 | 83264663 | 83265663 | 83268663 | 83269663 |
|                                                                                                                 | C        | W1   | 83261803 | 83262803 | 83263803 | 83264803 | 83265803 | 83268803 | 83269803 |
|                                                                                                                 | C        | W2   | 83261813 | 83262813 | 83263813 | 83264813 | 83265813 | 83268813 | 83269813 |
|                                                                                                                 | C        | W3   | 83261823 | 83262823 | 83263823 | 83264823 | 83265823 | 83268823 | 83269823 |
| <br>Lever 260A<br>R40 Pos B  | C        | W3R5 | 83261833 | 83262833 | 83263833 | 83264833 | 83265833 | 83268833 | 83269833 |
|                                                                                                                 | C        | W6A5 | 83261843 | 83262843 | 83263843 | 83264843 | 83265843 | 83268843 | 83269843 |
|                                                                                                                 | C        | W6D8 | 83261853 | 83262853 | 83263853 | 83264853 | 83265853 | 83268853 | 83269853 |
|                                                                                                                 | C        | W7A5 | 83261863 | -        | 83263863 | 83264863 | 83265863 | 83268863 | 83269863 |
|                                                                                                                 | I        | W1   | 83261004 | 83262004 | 83263004 | 83264004 | 83265004 | 83268004 | 83269004 |
|                                                                                                                 | I        | W2   | 83261014 | 83262014 | 83263014 | 83264014 | 83265014 | 83268014 | 83269014 |
|                                                                                                                 | I        | W3   | 83261024 | 83262024 | 83263024 | 83264024 | 83265024 | 83268024 | 83269024 |
|                                                                                                                 | I        | W3R5 | 83261034 | 83262034 | 83263034 | 83264034 | 83265034 | 83268034 | 83269034 |
|                                                                                                                 | I        | W6A5 | 83261044 | 83262044 | 83263044 | 83264044 | 83265044 | 83268044 | 83269044 |
|                                                                                                                 | I        | W6D8 | 83261054 | 83262054 | 83263054 | 83264054 | 83265054 | 83268054 | 83269054 |
|                                                                                                                 | I        | W7A5 | 83261064 | -        | 83263064 | 83264064 | 83265064 | 83268064 | 83269064 |
| <br>Lever 260A<br>R40 Pos B  | I        | X2   | 83261074 | 83262074 | 83263074 | 83264074 | 83265074 | 83268074 | 83269074 |
|                                                                                                                 | I        | X3   | 83261084 | 83262084 | 83263084 | 83264084 | 83265084 | 83268084 | 83269084 |
|                                                                                                                 | I        | X1   | 83261094 | 83262094 | 83263094 | 83264094 | 83265094 | 83268094 | 83269094 |
|                                                                                                                 | R        | W1   | 83261604 | 83262604 | 83263604 | 83264604 | 83265604 | 83268604 | 83269604 |
|                                                                                                                 | R        | W2   | 83261614 | 83262614 | 83263614 | 83264614 | 83265614 | 83268614 | 83269614 |
|                                                                                                                 | R        | W3   | 83261624 | 83262624 | 83263624 | 83264624 | 83265624 | 83268624 | 83269624 |
|                                                                                                                 | R        | W3R5 | 83261634 | 83262634 | 83263634 | 83264634 | 83265634 | 83268634 | 83269634 |
|                                                                                                                 | R        | W6A5 | 83261644 | 83262644 | 83263644 | 83264644 | 83265644 | 83268644 | 83269644 |
|                                                                                                                 | R        | W6D8 | 83261654 | 83262654 | 83263654 | 83264654 | 83265654 | 83268654 | 83269654 |
|                                                                                                                 | R        | W7A5 | 83261664 | -        | 83263664 | 83264664 | 83265664 | 83268664 | 83269664 |
|                                                                                                                 | C        | W1   | 83261804 | 83262804 | 83263804 | 83264804 | 83265804 | 83268804 | 83269804 |
| <br>Lever 260A<br>R40 Pos B  | C        | W2   | 83261814 | 83262814 | 83263814 | 83264814 | 83265814 | 83268814 | 83269814 |
|                                                                                                                 | C        | W3   | 83261824 | 83262824 | 83263824 | 83264824 | 83265824 | 83268824 | 83269824 |
|                                                                                                                 | C        | W3R5 | 83261834 | 83262834 | 83263834 | 83264834 | 83265834 | 83268834 | 83269834 |
|                                                                                                                 | C        | W6A5 | 83261844 | 83262844 | 83263844 | 83264844 | 83265844 | 83268844 | 83269844 |
|                                                                                                                 | C        | W6D8 | 83261854 | 83262854 | 83263854 | 83264854 | 83265854 | 83268854 | 83269854 |
|                                                                                                                 | C        | W7A5 | 83261864 | -        | 83263864 | 83264864 | 83265864 | 83268864 | 83269864 |

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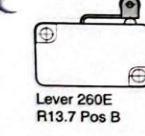


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|                                                                                                                  | Type     | 83261      | 83262    | 83263    | 83264    | 83265    | 83266    | 83269    |
|------------------------------------------------------------------------------------------------------------------|----------|------------|----------|----------|----------|----------|----------|----------|
| <br>Lever 260A<br>R60 Pos B     | Function | Connection |          |          |          |          |          |          |
|                                                                                                                  | I        | W1         | 83261005 | 83262005 | 83263005 | 83264005 | 83265005 | 83266005 |
|                                                                                                                  | I        | W2         | 83261015 | 83262015 | 83263015 | 83264015 | 83265015 | 83266015 |
|                                                                                                                  | I        | W3         | 83261025 | 83262025 | 83263025 | 83264025 | 83265025 | 83266025 |
|                                                                                                                  | I        | W3R5       | 83261035 | 83262035 | 83263035 | 83264035 | 83265035 | 83266035 |
|                                                                                                                  | I        | W6A5       | 83261045 | 83262045 | 83263045 | 83264045 | 83265045 | 83266045 |
|                                                                                                                  | I        | W6D8       | 83261055 | 83262055 | 83263055 | 83264055 | 83265055 | 83266055 |
|                                                                                                                  | I        | W7A5       | 83261065 | -        | 83263065 | 83264065 | 83265065 | 83266065 |
|                                                                                                                  | I        | X2         | 83261075 | 83262075 | 83263075 | 83264075 | 83265075 | 83266075 |
|                                                                                                                  | I        | X3         | 83261085 | 83262085 | 83263085 | 83264085 | 83265085 | 83266085 |
| <br>Lever 260F<br>R22.2 Pos B  | I        | X1         | 83261095 | 83262095 | 83263095 | 83264095 | 83265095 | 83266095 |
|                                                                                                                  | R        | W1         | 83261605 | 83262605 | 83263605 | 83264605 | 83265605 | 83266605 |
|                                                                                                                  | R        | W2         | 83261615 | 83262615 | 83263615 | 83264615 | 83265615 | 83266615 |
|                                                                                                                  | R        | W3         | 83261625 | 83262625 | 83263625 | 83264625 | 83265625 | 83266625 |
|                                                                                                                  | R        | W3R5       | 83261635 | 83262635 | 83263635 | 83264635 | 83265635 | 83266635 |
|                                                                                                                  | R        | W6A5       | 83261645 | 83262645 | 83263645 | 83264645 | 83265645 | 83266645 |
|                                                                                                                  | R        | W6D8       | 83261655 | 83262655 | 83263655 | 83264655 | 83265655 | 83266655 |
|                                                                                                                  | R        | W7A5       | 83261665 | -        | 83263665 | 83264665 | 83265665 | 83266665 |
|                                                                                                                  | C        | W1         | 83261805 | 83262805 | 83263805 | 83264805 | 83265805 | 83266805 |
|                                                                                                                  | C        | W2         | 83261815 | 83262815 | 83263815 | 83264815 | 83265815 | 83266815 |
| <br>Lever 260E<br>R13.7 Pos B | C        | W3         | 83261825 | 83262825 | 83263825 | 83264825 | 83265825 | 83266825 |
|                                                                                                                  | C        | W3R5       | 83261835 | 83262835 | 83263835 | 83264835 | 83265835 | 83266835 |
|                                                                                                                  | C        | W6A5       | 83261845 | 83262845 | 83263845 | 83264845 | 83265845 | 83266845 |
|                                                                                                                  | C        | W6D8       | 83261855 | 83262855 | 83263855 | 83264855 | 83265855 | 83266855 |
|                                                                                                                  | C        | W7A5       | 83261865 | -        | 83263865 | 83264865 | 83265865 | 83266865 |
|                                                                                                                  | I        | W1         | 83261006 | 83262006 | 83263006 | 83264006 | 83265006 | 83266006 |
|                                                                                                                  | I        | W2         | 83261016 | 83262016 | 83263016 | 83264016 | 83265016 | 83266016 |
|                                                                                                                  | I        | W3         | 83261026 | 83262026 | 83263026 | 83264026 | 83265026 | 83266026 |
|                                                                                                                  | I        | W3R5       | 83261036 | 83262036 | 83263036 | 83264036 | 83265036 | 83266036 |
|                                                                                                                  | I        | W6A5       | 83261046 | 83262046 | 83263046 | 83264046 | 83265046 | 83266046 |
|                                                                                                                  | I        | W6D8       | 83261056 | 83262056 | 83263056 | 83264056 | 83265056 | 83266056 |
|                                                                                                                  | I        | W7A5       | 83261066 | -        | 83263066 | 83264066 | 83265066 | 83266066 |
|                                                                                                                  | I        | X2         | 83261076 | 83262076 | 83263076 | 83264076 | 83265076 | 83266076 |
|                                                                                                                  | I        | X3         | 83261086 | 83262086 | 83263086 | 83264086 | 83265086 | 83266086 |
|                                                                                                                  | I        | X1         | 83261096 | 83262096 | 83263096 | 83264096 | 83265096 | 83266096 |
|                                                                                                                  | R        | W1         | 83261606 | 83262606 | 83263606 | 83264606 | 83265606 | 83266606 |
|                                                                                                                  | R        | W2         | 83261616 | 83262616 | 83263616 | 83264616 | 83265616 | 83266616 |
|                                                                                                                  | R        | W3         | 83261626 | 83262626 | 83263626 | 83264626 | 83265626 | 83266626 |
|                                                                                                                  | R        | W3R5       | 83261636 | 83262636 | 83263636 | 83264636 | 83265636 | 83266636 |
|                                                                                                                  | R        | W6A5       | 83261646 | 83262646 | 83263646 | 83264646 | 83265646 | 83266646 |
|                                                                                                                  | R        | W6D8       | 83261656 | 83262656 | 83263656 | 83264656 | 83265656 | 83266656 |
|                                                                                                                  | R        | W7A5       | 83261666 | -        | 83263666 | 83264666 | 83265666 | 83266666 |
|                                                                                                                  | C        | W1         | 83261806 | 83262806 | 83263806 | 83264806 | 83265806 | 83266806 |
|                                                                                                                  | C        | W2         | 83261816 | 83262816 | 83263816 | 83264816 | 83265816 | 83266816 |
|                                                                                                                  | C        | W3         | 83261826 | 83262826 | 83263826 | 83264826 | 83265826 | 83266826 |
|                                                                                                                  | C        | W3R5       | 83261836 | 83262836 | 83263836 | 83264836 | 83265836 | 83266836 |
|                                                                                                                  | C        | W6A5       | 83261846 | 83262846 | 83263846 | 83264846 | 83265846 | 83266846 |
|                                                                                                                  | C        | W6D8       | 83261856 | 83262856 | 83263856 | 83264856 | 83265856 | 83266856 |
|                                                                                                                  | C        | W7A5       | 83261866 | -        | 83263866 | 83264866 | 83265866 | 83266866 |
|                                                                                                                  | I        | W1         | 83261007 | 83262007 | 83263007 | 83264007 | 83265007 | 83266007 |
|                                                                                                                  | I        | W2         | 83261017 | 83262017 | 83263017 | 83264017 | 83265017 | 83266017 |
|                                                                                                                  | I        | W3         | 83261027 | 83262027 | 83263027 | 83264027 | 83265027 | 83266027 |
|                                                                                                                  | I        | W3R5       | 83261037 | 83262037 | 83263037 | 83264037 | 83265037 | 83266037 |
|                                                                                                                  | I        | W6A5       | 83261047 | 83262047 | 83263047 | 83264047 | 83265047 | 83266047 |
|                                                                                                                  | I        | W6D8       | 83261057 | 83262057 | 83263057 | 83264057 | 83265057 | 83266057 |
|                                                                                                                  | I        | W7A5       | 83261067 | -        | 83263067 | 83264067 | 83265067 | 83266067 |
|                                                                                                                  | I        | X2         | 83261077 | 83262077 | 83263077 | 83264077 | 83265077 | 83266077 |
|                                                                                                                  | I        | X3         | 83261087 | 83262087 | 83263087 | 83264087 | 83265087 | 83266087 |
|                                                                                                                  | I        | X1         | 83261097 | 83262097 | 83263097 | 83264097 | 83265097 | 83266097 |
|                                                                                                                  | R        | W1         | 83261607 | 83262607 | 83263607 | 83264607 | 83265607 | 83266607 |
|                                                                                                                  | R        | W2         | 83261617 | 83262617 | 83263617 | 83264617 | 83265617 | 83266617 |
|                                                                                                                  | R        | W3         | 83261627 | 83262627 | 83263627 | 83264627 | 83265627 | 83266627 |
|                                                                                                                  | R        | W3R5       | 83261637 | 83262637 | 83263637 | 83264637 | 83265637 | 83266637 |
|                                                                                                                  | R        | W6A5       | 83261647 | 83262647 | 83263647 | 83264647 | 83265647 | 83266647 |
|                                                                                                                  | R        | W6D8       | 83261657 | 83262657 | 83263657 | 83264657 | 83265657 | 83266657 |
|                                                                                                                  | R        | W7A5       | 83261667 | -        | 83263667 | 83264667 | 83265667 | 83266667 |
|                                                                                                                  | C        | W1         | 83261807 | 83262807 | 83263807 | 83264807 | 83265807 | 83266807 |
|                                                                                                                  | C        | W2         | 83261817 | 83262817 | 83263817 | 83264817 | 83265817 | 83266817 |
|                                                                                                                  | C        | W3         | 83261827 | 83262827 | 83263827 | 83264827 | 83265827 | 83266827 |
|                                                                                                                  | C        | W3R5       | 83261837 | 83262837 | 83263837 | 83264837 | 83265837 | 83266837 |
|                                                                                                                  | C        | W6A5       | 83261847 | 83262847 | 83263847 | 83264847 | 83265847 | 83266847 |
|                                                                                                                  | C        | W6D8       | 83261857 | 83262857 | 83263857 | 83264857 | 83265857 | 83266857 |
|                                                                                                                  | C        | W7A5       | 83261867 | -        | 83263867 | 83264867 | 83265867 | 83266867 |

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MICROSWITCHES

02/2022

|                                                                                                              |           | Type     | 83261      | 83262    | 83263    | 83264    | 83265    | 83266    | 83269    |
|--------------------------------------------------------------------------------------------------------------|-----------|----------|------------|----------|----------|----------|----------|----------|----------|
|  Lever 260E<br>R24.3 Pos B  | Actuators | Function | Connection |          |          |          |          |          |          |
|                                                                                                              | I         | W1       | 83261008   | 83262008 | 83263008 | 83264008 | 83265008 | 83266008 | 83269008 |
|                                                                                                              | I         | W2       | 83261018   | 83262018 | 83263018 | 83264018 | 83265018 | 83266018 | 83269018 |
|                                                                                                              | I         | W3       | 83261028   | 83262028 | 83263028 | 83264028 | 83265028 | 83266028 | 83269028 |
|                                                                                                              | I         | W3R5     | 83261038   | 83262038 | 83263038 | 83264038 | 83265038 | 83266038 | 83269038 |
|                                                                                                              | I         | W6A5     | 83261048   | 83262048 | 83263048 | 83264048 | 83265048 | 83266048 | 83269048 |
|                                                                                                              | I         | W6D8     | 83261058   | 83262058 | 83263058 | 83264058 | 83265058 | 83266058 | 83269058 |
|                                                                                                              | I         | W7A5     | 83261068   | -        | 83263068 | 83264068 | 83265068 | 83266068 | 83269068 |
|                                                                                                              | I         | X2       | 83261078   | 83262078 | 83263078 | 83264078 | 83265078 | 83266078 | 83269078 |
|                                                                                                              | I         | X3       | 83261088   | 83262088 | 83263088 | 83264088 | 83265088 | 83266088 | 83269088 |
|                                                                                                              | I         | X1       | 83261098   | 83262098 | 83263098 | 83264098 | 83265098 | 83266098 | 83269098 |
|                                                                                                              | R         | W1       | 83261608   | 83262608 | 83263608 | 83264608 | 83265608 | 83266608 | 83269608 |
|                                                                                                              | R         | W2       | 83261618   | 83262618 | 83263618 | 83264618 | 83265618 | 83266618 | 83269618 |
|                                                                                                              | R         | W3       | 83261628   | 83262628 | 83263628 | 83264628 | 83265628 | 83266628 | 83269628 |
|                                                                                                              | R         | W3R5     | 83261638   | 83262638 | 83263638 | 83264638 | 83265638 | 83266638 | 83269638 |
|                                                                                                              | R         | W6A5     | 83261648   | 83262648 | 83263648 | 83264648 | 83265648 | 83266648 | 83269648 |
|                                                                                                              | R         | W6D8     | 83261658   | 83262658 | 83263658 | 83264658 | 83265658 | 83266658 | 83269658 |
|                                                                                                              | R         | W7A5     | 83261668   | -        | 83263668 | 83264668 | 83265668 | 83266668 | 83269668 |
|                                                                                                              | C         | W1       | 83261808   | 83262808 | 83263808 | 83264808 | 83265808 | 83266808 | 83269808 |
|                                                                                                              | C         | W2       | 83261818   | 83262818 | 83263818 | 83264818 | 83265818 | 83266818 | 83269818 |
|                                                                                                              | C         | W3       | 83261828   | 83262828 | 83263828 | 83264828 | 83265828 | 83266828 | 83269828 |
|  Lever 260G<br>R13.8 Pos B | C         | W3R5     | 83261838   | 83262838 | 83263838 | 83264838 | 83265838 | 83266838 | 83269838 |
|                                                                                                              | C         | W6A5     | 83261848   | 83262848 | 83263848 | 83264848 | 83265848 | 83266848 | 83269848 |
|                                                                                                              | C         | W6D8     | 83261858   | 83262858 | 83263858 | 83264858 | 83265858 | 83266858 | 83269858 |
|                                                                                                              | C         | W7A5     | 83261868   | -        | 83263868 | 83264868 | 83265868 | 83266868 | 83269868 |
|                                                                                                              | I         | W1       | 83261009   | 83262009 | 83263009 | 83264009 | 83265009 | 83266009 | 83269009 |
|                                                                                                              | I         | W2       | 83261019   | 83262019 | 83263019 | 83264019 | 83265019 | 83266019 | 83269019 |
|                                                                                                              | I         | W3       | 83261029   | 83262029 | 83263029 | 83264029 | 83265029 | 83266029 | 83269029 |
|                                                                                                              | I         | W3R5     | 83261039   | 83262039 | 83263039 | 83264039 | 83265039 | 83266039 | 83269039 |
|                                                                                                              | I         | W6A5     | 83261049   | 83262049 | 83263049 | 83264049 | 83265049 | 83266049 | 83269049 |
|                                                                                                              | I         | W6D8     | 83261059   | 83262059 | 83263059 | 83264059 | 83265059 | 83266059 | 83269059 |
|                                                                                                              | I         | W7A5     | 83261069   | -        | 83263069 | 83264069 | 83265069 | 83266069 | 83269069 |
|                                                                                                              | I         | X2       | 83261079   | 83262079 | 83263079 | 83264079 | 83265079 | 83266079 | 83269079 |
|                                                                                                              | I         | X3       | 83261089   | 83262089 | 83263089 | 83264089 | 83265089 | 83266089 | 83269089 |
|                                                                                                              | I         | X1       | 83261099   | 83262099 | 83263099 | 83264099 | 83265099 | 83266099 | 83269099 |
|                                                                                                              | R         | W1       | 83261609   | 83262609 | 83263609 | 83264609 | 83265609 | 83266609 | 83269609 |
|                                                                                                              | R         | W2       | 83261619   | 83262619 | 83263619 | 83264619 | 83265619 | 83266619 | 83269619 |
|                                                                                                              | R         | W3       | 83261629   | 83262629 | 83263629 | 83264629 | 83265629 | 83266629 | 83269629 |
|                                                                                                              | R         | W3R5     | 83261639   | 83262639 | 83263639 | 83264639 | 83265639 | 83266639 | 83269639 |
|                                                                                                              | R         | W6A5     | 83261649   | 83262649 | 83263649 | 83264649 | 83265649 | 83266649 | 83269649 |
|                                                                                                              | R         | W6D8     | 83261659   | 83262659 | 83263659 | 83264659 | 83265659 | 83266659 | 83269659 |
|                                                                                                              | R         | W7A5     | 83261669   | -        | 83263669 | 83264669 | 83265669 | 83266669 | 83269669 |
|                                                                                                              | C         | W1       | 83261809   | 83262809 | 83263809 | 83264809 | 83265809 | 83266809 | 83269809 |
|                                                                                                              | C         | W2       | 83261819   | 83262819 | 83263819 | 83264819 | 83265819 | 83266819 | 83269819 |
|                                                                                                              | C         | W3       | 83261829   | 83262829 | 83263829 | 83264829 | 83265829 | 83266829 | 83269829 |
|                                                                                                              | C         | W3R5     | 83261839   | 83262839 | 83263839 | 83264839 | 83265839 | 83266839 | 83269839 |
|                                                                                                              | C         | W6A5     | 83261849   | 83262849 | 83263849 | 83264849 | 83265849 | 83266849 | 83269849 |
|                                                                                                              | C         | W6D8     | 83261859   | 83262859 | 83263859 | 83264859 | 83265859 | 83266859 | 83269859 |
|                                                                                                              | C         | W7A5     | 83261869   | -        | 83263869 | 83264869 | 83265869 | 83266869 | 83269869 |

**Installation recommendations**

See "Basic technical concepts"

**How to order**

Use the 8 digit part numbers when they are defined

Other cases, precise: Type of microswitch - Function - Connection - Actuator\* - Fixing position\* - Adaptation\*  
 Example: 83263 I W3 260E R13.7 A SP9328

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**Technical Specification**

1. AC- DC Converter  
Make-Gallant,  
Model- PS11010V2  
I/P- 230V AC  
O/P- 110V DC  
Imax- 10A
2. Intelligent Temperature Monitor and Control Unit  
Make-Gallant  
Model- GECE3230  
Power Supply- 230V AC

Note- Specification should be matching with existing make/model specification and should be compatible with site requirements.

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**Technical Specifications****Schedule-1****Mat code :- M7530116152**

"S&T RELAY  
 PART NAME : RELAY, QNA1  
 ADDITIONAL INFORMATION : CONTACT ARRANGEMENT: 8F/8B  
 VOLTAGE RATING: 24 V, AC1 DC/NL LOCK CODE-ABDGH, SPECIFICATION: BRS 930 & BRS 931A"

**Schedule-2****Mat code :- M7530116145**

"S&T RELAY  
 PART NAME : RELAY, QNN1  
 ADDITIONAL INFORMATION : CONTACT ARRANGEMENT: 6F/2B  
 VOLTAGE RATING: 24 VDC, N/L CODE ACDEK, SPECIFICATION: BRS 930 & BRS 931A"

**Schedule-3****Mat code :- M7530116136**

"S&T RELAY  
 PART NAME : RELAY, QN1  
 ADDITIONAL INFORMATION : CONTACT ARRANGEMENT: 8F/8B  
 VOLTAGE RATING: 24 VDC, N/L CODE ABCDF, SPECIFICATION: BRS 930 & BRS 931A"

**Schedule-4****Mat code :- M7530116292**

"S&T RELAY  
 PART NAME : PLUG-IN RELAY  
 ADDITIONAL INFORMATION : STYLE: QNNA1  
 AC IMMUNE, TWIN DC NEUTRAL LINE, VOLTAGE RATING: 24 VDC, CONTACT ARRANGEMENT: 6F/2B, EACH FOR LH AND RH, CONTACT METAL TO CARBON, INTERLOCK CODE: CDEHK, SPECIFICATION: BRS 960, IRS S-34, IRS S-23"

**Schedule-5****Mat code :- M7530116224**

"S&T RELAY  
 PART NAME : MTM RELAY  
 ADDITIONAL INFORMATION : CONTACT ARRANGEMENT: 4F/4B  
 VOLTAGE RATING: 110 VAC, ECR LED UNIT, SPECIFICATION: STS/E/RLYS/AC LIT LED SGNL/09-2002"

**Schedule-6****Mat code :- M7530116210**

"S&T RELAY  
 PART NAME : PLUG-IN TRACK RELAY  
 ADDITIONAL INFORMATION : TYPE: QTA2  
 CONTACT ARRANGEMENT: 2F/1B, RESISTANCE: 9 OHM, CODE: FGKX, SPECIFICATION: BRS 938A, 939A & 966"

**Schedule-7****Mat code :- M7530116161**

"S&T RELAY  
 PART NAME : RELAY, QSPA1  
 ADDITIONAL INFORMATION : CONTACT ARRANGEMENT: 8F/4B  
 VOLTAGE RATING: 24 V, SLOW PICKUP AC1 LOCK CODE-ABDEJ, SPECIFICATION: BRS 943A/IRS S-46"

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**Schedule-8**

**Mat code :- M7530116210**

"S&T RELAY  
PART NAME : PLUG-IN TRACK RELAY  
ADDITIONAL INFORMATION : TYPE:QTA2  
CONTACT ARRANGEMENT:2F/1B, RESISTANCE:9 OHM, CODE:FGHKX, SPECIFICATION:BRS 938A, 939A & 966"

**Schedule-9**

**Mat code :- M7530116262**

"S&T RELAY  
PART NAME : FAIL-SAFE ELECTRONIC FLASHER DEVICE  
SUB ASSEMBLY : RELAY  
SPECIFICATION:RDSO/SPN/173/2002 (AMENDMENT-2 OR LATEST) "

**Schedule-10**

**Mat code :- M7530116158**

"S&T RELAY  
PART NAME : RELAY,QBCA1  
ADDITIONAL INFORMATION : CONTACT ARRANGEMENT:2F (HD) /4B  
VOLTAGE RATING:24 VDC,ACI LOCK CODE-BCEJK, SPECIFICATION:BRS 943/IRS S-34/IRS S-23 (AS APPLICABLE) "

**Schedule-11**

**Mat code :- M7530116164**

"S&T RELAY  
PART NAME : RELAY,QL1  
ADDITIONAL INFORMATION : CONTACT ARRANGEMENT:11F/4B  
VOLTAGE RATING:24 V,MAGNET LATCH, LOCK CODE-ABDEG, SPECIFICATION:BRS 935A & RDSO/SPN/84 VERSION 2.0 AMENDMENT-1 OR LATEST"

**Schedule-12**

**Mat code :- M7530116292**

"S&T RELAY  
PART NAME : PLUG-IN RELAY  
ADDITIONAL INFORMATION : STYLE:QNNAL  
AC IMMUNE,TWIN DC NEUTRAL LINE,VOLTAGE RATING:24 VDC, CONTACT ARRANGEMENT:6F/2B,EACH FOR LH AND RH, CONTACT METAL TO CARBON, INTERLOCK CODE:CDEHK, SPECIFICATION:BRS 960, IRS S-34, IRS S-23"

**Schedule-13**

**Mat code :- M7530116293**

"S&T RELAY  
PART NAME : UNIVERSAL LAMP RELAY  
ADDITIONAL INFORMATION : STYLE:QECX-61  
PROVING MTC, CONTACT ARRANGEMENT:4F/4B, SPECIFICATION:STS/E/RELAYS/AC LIT LED SIGNAL/09-2002 AMD 1"

**Schedule-14**

**Mat code :- M7530116226**

"S&T RELAY  
PART NAME : PLUG-IN TIMER RELAY  
ADDITIONAL INFORMATION : Q-TYPE  
RESPONSE TIME:1 TO 120 SEC,SPECIFICATION:IRS S 61-2000 (AMENDMENT-2) OR LATEST"

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## Specifications

|                                                                                                                                                                       |                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Cable category: Category 6<br>Unshielded/Unshielded twisted<br>pair or Category 6<br>Foiled/Unshileded twisted pair or<br>Category 6 Shielded /Foiled<br>Twisted Pair | CAT6 F/UTP               |
| Cable colour                                                                                                                                                          | Grey                     |
| Conductor diameter                                                                                                                                                    | 0.51 mm<br>(24 AWG)      |
| Length of cable in a bundle (Mtrs)                                                                                                                                    | 305 mtrs.                |
| Cable jacket material                                                                                                                                                 | Fire<br>retardant<br>PVC |
| UL Marking on Cable                                                                                                                                                   | No                       |



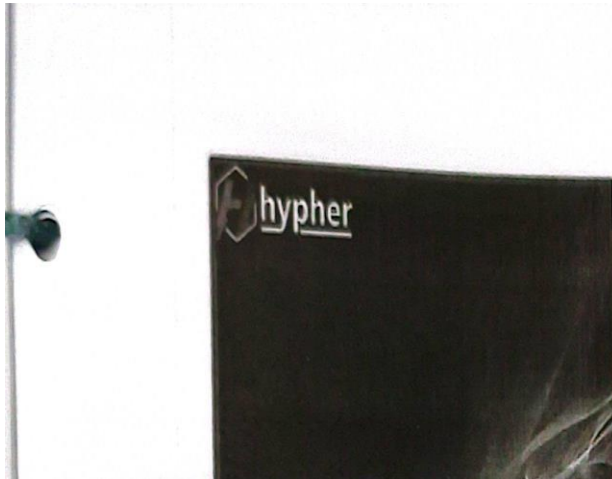
## GENERIC

|                                                                                                                                                        |                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Cate 6 cable conforming to ANSI/TIA/EIA-568 C.2 latest or ISO/IEC:11801 latest                                                                         | Yes              |
| Cable category: Category 6 Unshielded/Unshielded twisted pair or Category 6 Foiled/Unshileded twisted pair or Category 6 Shielded /Foiled Twisted Pair | CAT6 F/UTP       |
| Cable colour                                                                                                                                           | Grey             |
| Conductor diameter                                                                                                                                     | 0.51 mm (24 AWG) |
| Conductor count (in Nos.,)                                                                                                                             | 8                |
| Length of cable in a bundle (Mtrs)                                                                                                                     | 305 mtrs.        |



**CONSTRUCTIONAL**

|                                                                                                                                                                                                      |                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| "CAT6 Cable can transmit data at 1000 Mbps (~1 Gigabit per second) with a frequency of 250 MHz and suitable for 10BASE-T, 100BASE-TX Fast Ethernet and 1000BASE-T / 1000BASE-TX (Gigabit Ethernet)." | Yes                                   |
| Maximum DC resistance - in Ohm/Km                                                                                                                                                                    | Max. 100 Ohm/Km                       |
| Conductor Material                                                                                                                                                                                   | Bare Copper                           |
| Conductor Insulation Material                                                                                                                                                                        | Polyethylene                          |
| Cable jacket material                                                                                                                                                                                | Fire retardant PVC                    |
| Conductor stranding                                                                                                                                                                                  | Solid                                 |
| Cable should have internal cross separator                                                                                                                                                           | Yes                                   |
| Storage temperature range                                                                                                                                                                            | minus 20 degree C to plus 60 degree C |
| Operating temperature range                                                                                                                                                                          | minus 20 degree C to plus 60 degree C |
| Each meter printed with sequential length counter of cable apart from marking requirement as per relevant specifications and certifications                                                          | Yes                                   |



**HYPHER Flat LED Backlit LCD  
(Liquid Crystal Display) Compute  
Monitor**

**HYPHER<sup>R</sup>  
(24MN158X)**

**Dimension**

|                                                              |                            |
|--------------------------------------------------------------|----------------------------|
| Maximum Resolution (Pixels)                                  | 1600 x 900                 |
| Screen Size (in cm)                                          | 58.1 - 63 (22.87" - 24.8") |
| Image Aspect Ratio                                           | 16:9                       |
| Brightness (in Nits)                                         | 251 to 280                 |
| Refresh Rate (in Hz)                                         | 60 to 80                   |
| Product Dimensions Including Stand (Length x Height) (in cm) | 54 x 42                    |
| Weight Without Stand (in Kilograms)                          | 3.6                        |

**Connectivity Ports**

|             |                           |
|-------------|---------------------------|
| Input Port  | 1- VGA Port, 1- HDMI Port |
| Output port | NA                        |

**Features**

|                          |                     |
|--------------------------|---------------------|
| Salient Features         | Integrated Speakers |
| Provision for Wall Mount | Yes                 |

**Power Supply**

|              |                |
|--------------|----------------|
| Power Supply | 230V AC, 50 Hz |
|--------------|----------------|

Technical Specification

1. SPD 220V DC Make-GEHE, Model- GPU1-ZH110Y  
Uc- 220V DC  
In- 20KA  
Imax- 40KA  
Up- 1.0 KV
  
2. SPD 385V AC Make-GEHE, Model- GPU1-C40/385/3P+NY  
Uc- 385V 50/60Hz  
In- 20KA (8/20)  
Imax- 40KA (8/20)  
Up- 1.6 KV
  
3. SPD 45V DC, Make-GEHE, Model- GPU1-ZH24Y  
Uc- 45V DC  
In- 10KA  
Imax- 20KA  
Up- 0.4 KV

Note- Specification should be matching with existing make/model specification and should be compatible with site requirements.

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Technical data sheet

MCR protection for 2-pole for power supply, 110 V

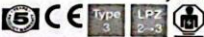
Item number: 5097631



Surge protective device/fine protection type 3 to EN 61643-11

- Suitable for DC and AC voltage systems
- With visual function display
- With installation-friendly, screwless connection terminals
- In a space-saving 17.5 mm grid
- Y circuit

Application: Universal use on 35 mm DIN profile rail in every normal commercial-ly available distributor housing.



Master data

|                     |                   |
|---------------------|-------------------|
| Item number         | 5097631           |
| Type                | VF110-AC DC       |
| Description 1       | Lightning barrier |
| Description 2       | for AC and DC     |
| Manufacturer        | OBO               |
| Dimension           | 110V AC           |
| Smallest sales unit | 1                 |
| Unit of quantity    | Piece             |
| Weight              | 8 kg              |
| Weight unit         | kg/100 pc.        |

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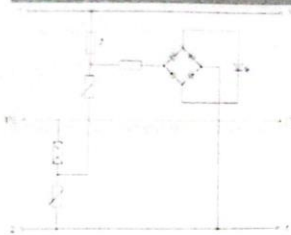
## Technical data sheet

MCR protection for 2-pole for power supply, 110 V

Item number: 5097631

OBO  
BETTERMANN

## Technical data



|                                                              |                      |
|--------------------------------------------------------------|----------------------|
| Response time                                                | <25 ns               |
| Blow-out                                                     | no                   |
| Version for                                                  | 110 V version        |
| Pole version                                                 | 2                    |
| Structural width in division units (division unit, 17.5 mm)  | 1                    |
| Operating temperature, max.                                  | 80 °C                |
| Operating temperature, min.                                  | -40 °C               |
| Explosion-tested version                                     | no                   |
| Remote signalling                                            | no                   |
| Maximum continuous voltage AC                                | 150                  |
| Maximum continuous voltage DC                                | 200                  |
| Conductor cross-section, flexible (fine-wire), min.          | 2.5 mm <sup>2</sup>  |
| Conductor cross-section, rigid (single-wire/multiwire), max. | 2.5 mm <sup>2</sup>  |
| Conductor cross-section, rigid (single-wire/multiwire), min. | 0.14 mm <sup>2</sup> |
| Lightning protection zone LPZ                                | 2→3                  |
| Max. mains-side overcurrent protection                       | 20                   |
| Maximum back-up fuse                                         | 20 A                 |
| Maximum discharge current (8/20 µs)                          | 6.5 kA               |
| Installation type                                            | DIN rail 35 mm       |
| Nominal discharge current (8/20 µs)                          | 2 kA                 |
| Nominal voltage AC (50/60 Hz)                                | 110 V                |
| Network form                                                 | Other                |
| OBO_Nominal load current (input/output terminal)             | 20 A                 |
| Pole number                                                  | 3                    |
| Test class, type 3                                           | yes                  |
| Protection rating                                            | IP20                 |
| Protection level                                             | ≤0,5                 |
| Protection level wire-wire                                   | <500 V               |
| Protection level wire-earth                                  | <1400 V              |
| Signalling on device                                         | Visual               |
| SPD to EN 61643-11                                           | Type 3               |
| SPD to IEC 61643-1                                           | Class III            |
| Cable type for surge protection devices                      | Power cable AV       |

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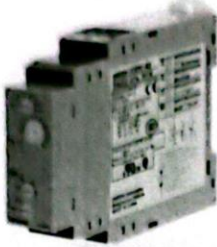


**OMRON** Industrial Automation | Global

Print

Multi-range, Multi-mode Timer

## H3DK-S2 AC/DC24-240



Image

Solid-state Timer, Four multi-modes, Control output: DPDT, Time range 0.1 s to 1200 h, 24 to 240 VAC/VDC

|                            |                                                                                     |
|----------------------------|-------------------------------------------------------------------------------------|
| Rated power supply voltage | 24 to 240 VAC 50/60 Hz<br>24 to 240 VDC Ripple 20% max.                             |
| Control output (Type)      | Relay output (DPDT/ Time-limit SPDT and switchable SPDT (Time-limit/Instantaneous)) |
| Connecting method          | Terminal blocks                                                                     |

### Ratings/Specifications

As of December 23, 2024

|                                  |                                                                                                                                                                                                                                                      |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated power supply voltage       | 24 to 240 VAC 50/60 Hz<br>24 to 240 VDC Ripple 20% max.                                                                                                                                                                                              |
| Allowable voltage variable range | 85 to 110% of the power supply voltage                                                                                                                                                                                                               |
| Power consumption                | Approx. 6.6 VA (at 240 VAC)                                                                                                                                                                                                                          |
| Reset voltage                    | 10% max. of rated supply voltage                                                                                                                                                                                                                     |
| Number of time ranges            | 8                                                                                                                                                                                                                                                    |
| Operation mode                   | ON delay, Flicker ON start, Interval, One shot output                                                                                                                                                                                                |
| Control output (Type)            | Relay output (DPDT/ Time-limit SPDT and switchable SPDT (Time-limit/Instantaneous))                                                                                                                                                                  |
| Control output (Contact output)  | Resistive load: 250 VAC 5 A (cosφ=1)/5 A at 30 VDC/0.5 A max. at 125 VDC<br>Minimum applicable load: 10 mA at 5 VDC (failure level: P Reference value)                                                                                               |
| Ambient temperature range        | Operating: -20 to 55 °C (with no icing)<br>Storage: -40 to 70 °C (with no icing)                                                                                                                                                                     |
| Ambient humidity range           | Operating: 25 to 85 %                                                                                                                                                                                                                                |
| Accuracy of operating time       | ±1% FS max. (±1% ±10 ms in a range of 1.2 s)                                                                                                                                                                                                         |
| Setting error                    | ±10% FS ±0.05 s max.                                                                                                                                                                                                                                 |
| Influence of voltage             | ±0.5% FS max. (±0.5% ±10 ms in a range of 1.2 s)                                                                                                                                                                                                     |
| Influence of temperature         | ±2% FS max. (±2% ±10 ms in a range of 1.2 s)                                                                                                                                                                                                         |
| Insulation resistance            | 100 MΩ min. (at 500 VDC)                                                                                                                                                                                                                             |
| Dielectric strength              | Between current carrying metal parts and non-current carrying metal parts: 2,000 VAC 50/60 Hz 1 min<br>Between control output terminals and operating circuit: 2,000 VAC 50/60 Hz 1 min<br>Between non-continuous contacts: 1,000 VAC 50/60 Hz 1 min |
| Impulse withstand voltage        | Between power terminals: 5 kV<br>Between current carrying terminals and exposed non-current carrying metal parts: 5 kV                                                                                                                               |
| Noise immunity                   | ±1.5 kV square-wave noise by noise simulator (pulse width: 100 ns/1 μs, 1-ns rise)                                                                                                                                                                   |
| Static immunity                  | Multifunction: 4 kV, Destruction: 8 kV                                                                                                                                                                                                               |

12

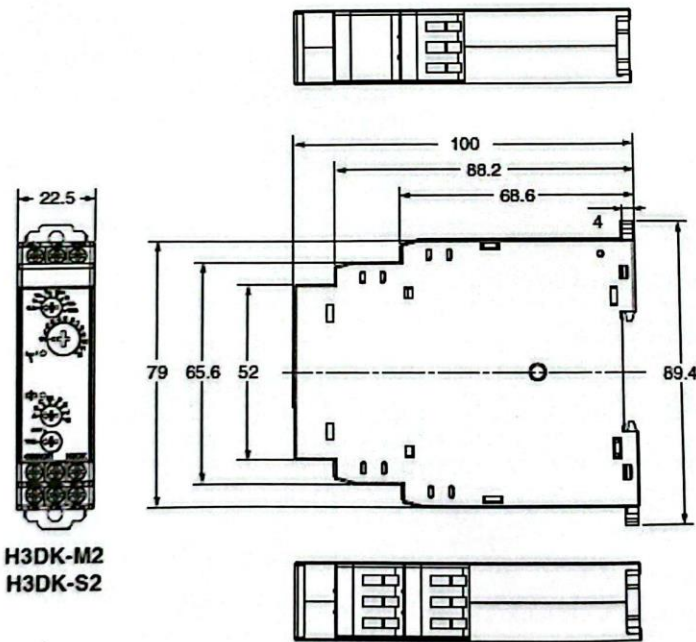
|                                |                                                                                                                                                                          |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vibration resistance           | Destruction: 10 to 55 Hz, 0.75 mm single amplitude each in 3 directions for 2 h<br>Malfunction: 10 to 55 Hz, 0.5 mm single amplitude each in 3 directions for 10 min     |
| Shock resistance               | Destruction: 1,000 m/s <sup>2</sup> , 3 times each in 6 directions<br>Malfunction: 100 m/s <sup>2</sup> , 3 times each in 6 directions                                   |
| Life expectancy (relay output) | Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load at 360 operations/h)<br>Mechanical: 10 million operations min. (under no load at 1,800 operations/h) |
| Degree of protection           | IP30 (Terminal Block: IP20)                                                                                                                                              |
| Connecting method              | Terminal blocks                                                                                                                                                          |
| Weight                         | Approx. 120 g                                                                                                                                                            |
| Accessories                    | User label                                                                                                                                                               |

As of December 23, 2024

Dimensions

As of December 23, 2024

Outline drawing



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As of December 23, 2024

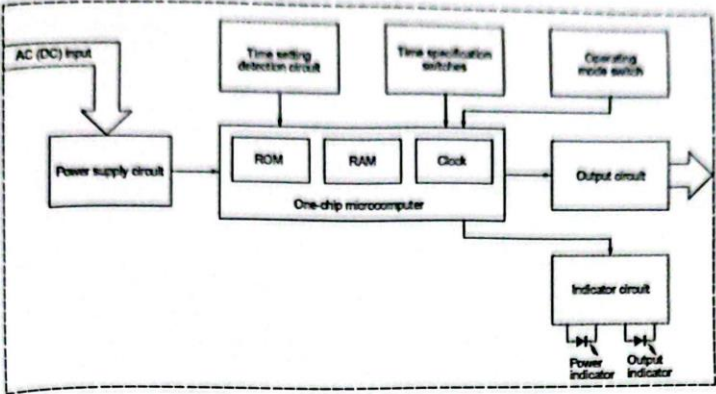
Internal connection

As of December 23, 2024

Internal connection



11

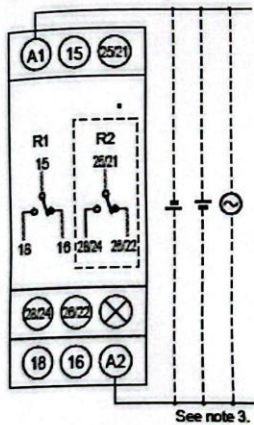


As of December 23, 2024

Terminal arrangement

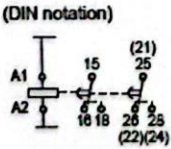
As of December 23, 2024

Terminal arrangement



Note 2: \*The relay R2 can be set to either instantaneous or time-limit contacts using the switch on the front of the Timer.  
Note 3: The power supply terminals do not have polarity.

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As of December 23, 2024

Time ranges



As of December 23, 2024

## Time ranges

## ■ Time Ranges

| Time range setting | 0.1 s        | 1 s       | 10 s        | 1 min       | 10 min        | 1 h       | 10 h        | 120 h          |
|--------------------|--------------|-----------|-------------|-------------|---------------|-----------|-------------|----------------|
| Time range         | 0.1 to 1.2 s | 1 to 12 s | 10 to 120 s | 1 to 12 min | 10 to 120 min | 1 to 12 h | 10 to 120 h | 100 to 1,200 h |
| Scale numbers      | 12           |           |             |             |               |           |             |                |

Note: When the main dial is set to '12' for all settings, the output will operate instantaneously.

As of December 23, 2024

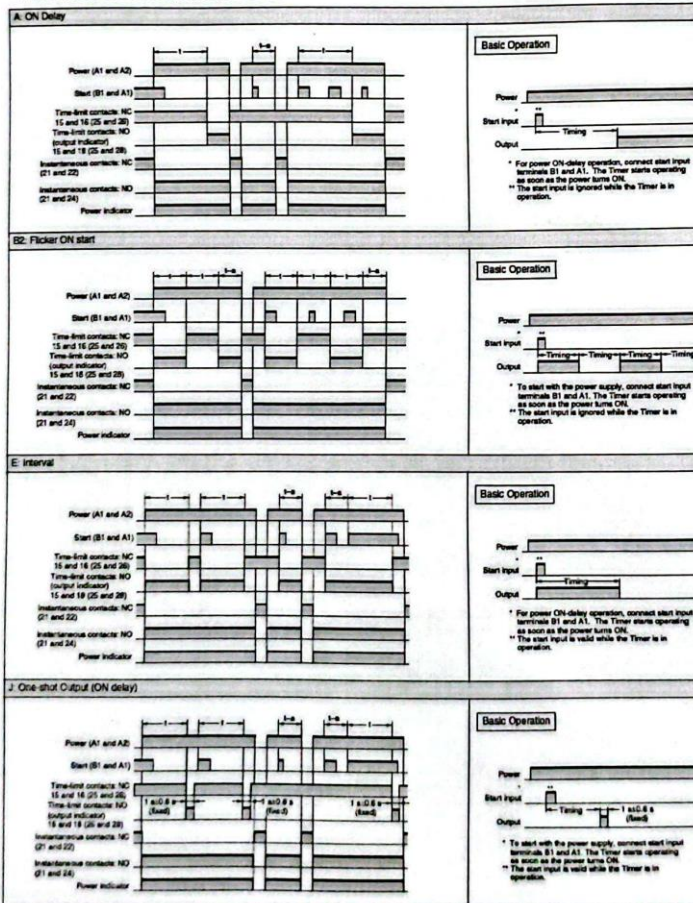
## Operating chart

As of December 23, 2024

## Operating chart

## ■ Timing Charts

- There is no start input with the H3DK-S. Timer operation starts when the power is turned ON.
- There is no instantaneous output with the H3DK-S.



Note 1: The reset time is 0.1 s min. Make sure the signal input time is 0.05 s or longer.  
 Note 2: 'T' is the set time. 't-s' is a time that is less than the set time.

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As of December 23, 2024

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Power OFF-delay Timer

**H3DK-HBS AC/DC24-48**

Image

Solid-state Timer, Power OFF-delay Timer, Control output: SPDT, Time range 0.1 to 12 s, 24 to 48 VAC/VDC

|                            |                                                       |
|----------------------------|-------------------------------------------------------|
| Rated power supply voltage | 24 to 48 VAC 50/60 Hz<br>24 to 48 VDC Ripple 20% max. |
| Control output (Type)      | Relay output (SPDT)                                   |
| Operating resetting        | Instantaneous operation/Time-limit reset              |
| Connecting method          | Terminal blocks                                       |

## Ratings/Specifications

As of December 23, 2024

|                                  |                                                                                                                                                                                                                                                      |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated power supply voltage       | 24 to 48 VAC 50/60 Hz<br>24 to 48 VDC Ripple 20% max.                                                                                                                                                                                                |
| Allowable voltage variable range | 85 to 110% of the power supply voltage                                                                                                                                                                                                               |
| Power consumption                | Approx. 1.2 VA (at 48 VAC)                                                                                                                                                                                                                           |
| Number of time ranges            | 2                                                                                                                                                                                                                                                    |
| Operation mode                   | Power OFF-delay                                                                                                                                                                                                                                      |
| Control output (Type)            | Relay output (SPDT)                                                                                                                                                                                                                                  |
| Control output (Contact output)  | Minimum applicable load: 100 mA at 5 VDC (failure level: P Reference value)                                                                                                                                                                          |
| Operating resetting              | Instantaneous operation/Time-limit reset                                                                                                                                                                                                             |
| Ambient temperature range        | Operating: -20 to 55 °C (with no icing)<br>Storage: -40 to 70 °C (with no icing)                                                                                                                                                                     |
| Ambient humidity range           | Operating: 25 to 85 %                                                                                                                                                                                                                                |
| Accuracy of operating time       | ±1% FS max. (±1% ±10 ms in a range of 1.2 s)                                                                                                                                                                                                         |
| Setting error                    | ±10% FS ±0.05 s max.                                                                                                                                                                                                                                 |
| Influence of voltage             | ±0.5% FS max. (±0.5% ±10 ms in a range of 1.2 s)                                                                                                                                                                                                     |
| Influence of temperature         | ±2% FS max. (±2% ±10 ms in a range of 1.2 s)                                                                                                                                                                                                         |
| Insulation resistance            | 100 MΩ min. (at 500 VDC)                                                                                                                                                                                                                             |
| Dielectric strength              | Between current carrying metal parts and non-current carrying metal parts: 2,000 VAC 50/60 Hz 1 min<br>Between control output terminals and operating circuit: 2,000 VAC 50/60 Hz 1 min<br>Between non-continuous contacts: 1,000 VAC 50/60 Hz 1 min |
| Impulse withstand voltage        | Between power terminals: 1 kV<br>Between current carrying terminals and exposed non-current carrying metal parts: 1.5 kV                                                                                                                             |
| Noise immunity                   | ±1.5 kV (between power terminals), square-wave noise by noise simulator (pulse width: 100 ns/1 μs, 1-ns rise)                                                                                                                                        |



8

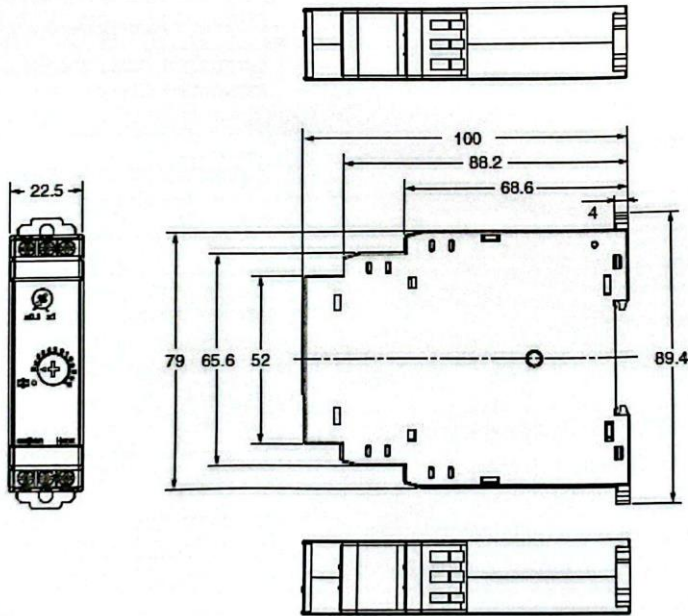
|                                |                                                                                                                                                                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Static immunity                | Multifunction: 4 kV, Destruction: 8 kV                                                                                                                                    |
| Vibration resistance           | Destruction: 10 to 55 Hz, 0.75 mm single amplitude each in 3 directions for 2 h<br>Malfunction: 10 to 55 Hz, 0.5 mm single amplitude each in 3 directions for 10 min      |
| Shock resistance               | Destruction: 1,000 m/s <sup>2</sup> , 3 times each in 6 directions<br>Malfunction: 100 m/s <sup>2</sup> , 3 times each in 6 directions                                    |
| Life expectancy (relay output) | Electrical: 100,000 operations min. (5 A at 250 VAC, resistive load at 1200 operations/h)<br>Mechanical: 10 million operations min. (under no load at 1,200 operations/h) |
| Degree of protection           | IP30 (Terminal Block: IP20)                                                                                                                                               |
| Connecting method              | Terminal blocks                                                                                                                                                           |
| Weight                         | Approx. 120 g                                                                                                                                                             |
| Accessories                    | User label                                                                                                                                                                |

As of December 23, 2024

Dimensions

As of December 23, 2024

Outline drawing



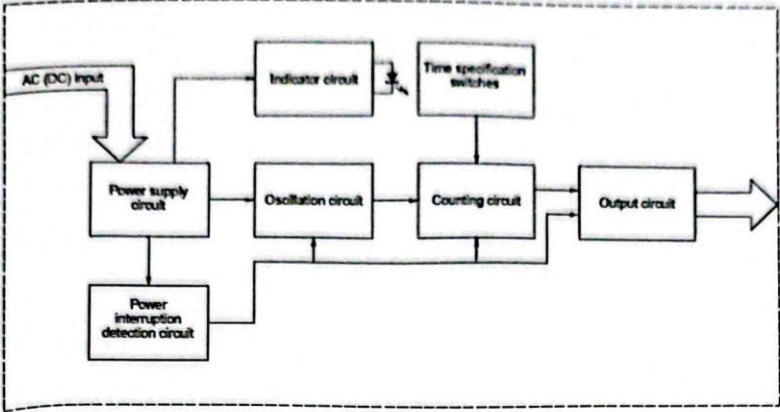
As of December 23, 2024

Internal connection

As of December 23, 2024

Internal connection

7



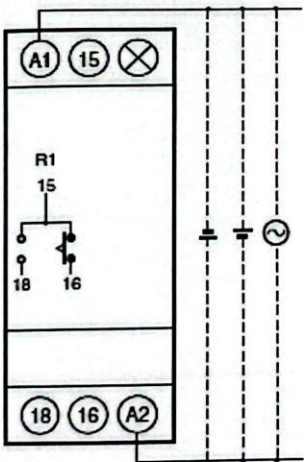
As of December 23, 2024

Terminal arrangement

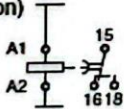
As of December 23, 2024

Terminal arrangement

H3DK-H



(DIN notation)



- Note 1: The above figure shows the terminal arrangement for a 24 to 48-VAC/DC model. Models with 100 to 120-VAC or 200 to 240-VAC power input do not have a DC input.
- Note 2: The power supply terminals do not have polarity.

As of December 23, 2024

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Time ranges

As of December 23, 2024

Time ranges

|                    | S Series     |           | L Series   |             |
|--------------------|--------------|-----------|------------|-------------|
| Time range setting | x0.1         | x1        | x1         | x10         |
| Set time range     | 0.1 to 1.2 s | 1 to 12 s | 1 to 12 s  | 10 to 120 s |
| Power ON time      | 0.1 s min.   |           | 0.3 s min. |             |
| Scale numbers      | 12           |           |            |             |

Note: The Timer will not operate if the specified power-on time is not kept. Be sure to supply power for at least the period specified. Also, make sure that the repeat cycle for the timing-out operation is at least 3 s.

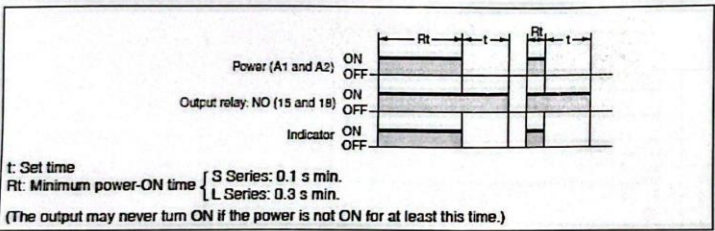
As of December 23, 2024

Operating chart

As of December 23, 2024

Operating chart

■ Timing Charts



As of December 23, 2024

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# MGate MB3180/MB3280/MB3480 Series

5

1, 2, and 4-port standard serial-to-Ethernet Modbus gateways



### Features and Benefits

- Supports Auto Device Routing for easy configuration
- Supports route by TCP port or IP address for flexible deployment
- Converts between Modbus TCP and Modbus RTU/ASCII protocols
- 1 Ethernet port and 1, 2, or 4 RS-232/422/485 ports
- 16 simultaneous TCP masters with up to 32 simultaneous requests per master
- Easy hardware setup and configuration

### Certifications



### Introduction

The MB3180, MB3280, and MB3480 are standard Modbus gateways that convert between Modbus TCP and Modbus RTU/ASCII protocols. Up to 16 simultaneous Modbus TCP masters are supported, with up to 31 RTU/ASCII slaves per serial port. For RTU/ASCII masters, up to 32 TCP slaves are supported.

### Standard Modbus Network Integration

The three standard MGate™ models (MB3180, MB3280, and MB3480) are designed for easy integration of Modbus TCP and RTU/ASCII networks. With these models, Modbus serial slave devices can be seamlessly incorporated into an existing Modbus TCP network, and Modbus TCP slaves can be made accessible to serial masters. The MB3180, MB3280, and MB3480 offer features that make network integration easy, customizable, and compatible with almost any Modbus network.

### High Density, Cost-Effective Gateways

The MGate™ MB3000 gateways can effectively connect a high density of Modbus nodes to the same network. The MB3280 can manage up to 62 serial slave nodes, and the MB3480 can manage up to 124 serial slave nodes. Each RS-232/422/485 serial port can be configured individually for Modbus RTU or Modbus ASCII operation and for different baudrates, allowing both types of networks to be integrated with Modbus TCP through one Modbus gateway.

### Auto-Device Routing for Easy Configuration (Patent Pending)

Moxa's Auto-Device Routing function helps eliminate many of the problems and inconveniences encountered by engineers who need to configure large numbers of Modbus devices. A single mouse click is all that's required to set up a slave ID routing table and configure Modbus gateways to automatically detect Modbus requests from a supervisory control and data acquisition (SCADA) system. By removing the need to manually create the slave ID routing table, the Auto-Device Routing function saves engineers significant time and cost.

### Specifications

|                                       |                                                                                                                                                                                                     |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ethernet Interface                    |                                                                                                                                                                                                     |
| 10/100BaseT(X) Ports (RJ45 connector) | 1 (Auto MDI/MDI-X connection)                                                                                                                                                                       |
| Magnetic Isolation Protection         | 1.5 kV (built-in)                                                                                                                                                                                   |
| Ethernet Software Features            |                                                                                                                                                                                                     |
| Industrial Protocols                  | Modbus TCP Client (Master), Modbus TCP Server (Slave)                                                                                                                                               |
| Configuration Options                 | Web Console (HTTP), Device Search Utility (DSU), MGate Manager, Telnet Console                                                                                                                      |
| Management                            | ARP, DHCP Client, DNS, HTTP, HTTPS (MGate MB3180 Excluded), SMTP (MGate MB3180 Excluded), SNMP Trap (MGate MB3180 Excluded), SNMPv1/v2c/v3, TCP/IP, Telnet, UDP, NTP Client (MGate MB3180 Excluded) |

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|                                   |                                                                                                                  |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------|
| MIB                               | RFC1213, RFC1317                                                                                                 |
| Time Management                   | NTP Client (MGate MB3180 Excluded)                                                                               |
| <b>Serial Interface</b>           |                                                                                                                  |
| No. of Ports                      | MGate MB3180: 1<br>MGate MB3280: 2<br>MGate MB3480: 4                                                            |
| Connector                         | DB9 male                                                                                                         |
| Serial Standards                  | RS-232/422/485 (software selectable)                                                                             |
| Baudrate                          | 50 bps to 921.6 kbps                                                                                             |
| Data Bits                         | 7, 8                                                                                                             |
| Parity                            | None, Even, Odd, Space, Mark                                                                                     |
| Stop Bits                         | 1, 2                                                                                                             |
| Flow Control                      | DTR/DSR, RTS Toggle (RS-232 only), RTS/CTS                                                                       |
| RS-485 Data Direction Control     | ADDC® (automatic data direction control)                                                                         |
| Pull High/Low Resistor for RS-485 | 1 kilo-ohm, 150 kilo-ohms                                                                                        |
| Terminator for RS-485             | MGate MB3180: None<br>MGate MB3280/MB3480: 120 ohms                                                              |
| <b>Serial Signals</b>             |                                                                                                                  |
| RS-232                            | TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND                                                                           |
| RS-422                            | Tx+, Tx-, Rx+, Rx-, GND                                                                                          |
| RS-485-2w                         | Data+, Data-, GND                                                                                                |
| RS-485-4w                         | Tx+, Tx-, Rx+, Rx-, GND                                                                                          |
| <b>Serial Software Features</b>   |                                                                                                                  |
| Industrial Protocols              | Modbus RTU/ASCII Master, Modbus RTU/ASCII Slave                                                                  |
| <b>Modbus (Transparent)</b>       |                                                                                                                  |
| Max. No. of Client Connections    | 16                                                                                                               |
| Max. No. of Server Connections    | 32                                                                                                               |
| <b>Power Parameters</b>           |                                                                                                                  |
| Input Voltage                     | 12 to 48 VDC                                                                                                     |
| Input Current                     | MGate MB3180: 200 mA @ 12 VDC<br>MGate MB3280: 250 mA @ 12 VDC<br>MGate MB3480: 385 mA @ 12 VDC                  |
| Power Connector                   | MGate MB3180: Power jack<br>MGate MB3280/MB3480: Power jack and terminal block                                   |
| <b>Physical Characteristics</b>   |                                                                                                                  |
| Housing                           | Metal                                                                                                            |
| IP Rating                         | IP30                                                                                                             |
| Dimensions (with ears)            | MGate MB3180: 22 x 75 x 80 mm (0.87 x 2.95 x 3.15 in)<br>MGate MB3280: 22 x 100 x 111 mm (0.87 x 3.94 x 4.37 in) |



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|                                        |                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                        | MGate MB3480: 35.5 x 102.7 x 181.3 mm (1.40 x 4.04 x 7.14 in)                                                                                                                                                                                                                                                                  |
| Dimensions (without ears)              | MGate MB3180: 22 x 52 x 60 mm (0.87 x 2.05 x 2.36 in)                                                                                                                                                                                                                                                                          |
|                                        | MGate MB3280: 22 x 77 x 111 mm (0.87 x 3.03 x 4.37 in)                                                                                                                                                                                                                                                                         |
|                                        | MGate MB3480: 35.5 x 102.7 x 157.2 mm (1.40 x 4.04 x 6.19 in)                                                                                                                                                                                                                                                                  |
|                                        |                                                                                                                                                                                                                                                                                                                                |
| Weight                                 | MGate MB3180: 340 g (0.75 lb)                                                                                                                                                                                                                                                                                                  |
|                                        | MGate MB3280: 360 g (0.79 lb)                                                                                                                                                                                                                                                                                                  |
|                                        | MGate MB3480: 740 g (1.63 lb)                                                                                                                                                                                                                                                                                                  |
|                                        |                                                                                                                                                                                                                                                                                                                                |
| Environmental Limits                   |                                                                                                                                                                                                                                                                                                                                |
| Operating Temperature                  | 0 to 60°C (32 to 140°F)                                                                                                                                                                                                                                                                                                        |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F)                                                                                                                                                                                                                                                                                                     |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)                                                                                                                                                                                                                                                                                                      |
| Standards and Certifications           |                                                                                                                                                                                                                                                                                                                                |
| Safety                                 | EN 60950-1, UL 60950-1                                                                                                                                                                                                                                                                                                         |
| EMC                                    | EN 55032/24                                                                                                                                                                                                                                                                                                                    |
| EMI                                    | CISPR 32, FCC Part 15B Class A                                                                                                                                                                                                                                                                                                 |
| EMS                                    | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: 1 kV (MB3180/MB3280)<br>IEC 61000-4-5 Surge: Power: 1 kV; Signal: 2 kV (MB3480)<br>IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8 PFMF<br>IEC 61000-4-11 DIPs |
| MTBF                                   |                                                                                                                                                                                                                                                                                                                                |
| Time                                   | MGate MB3180: 908,440 hrs<br>MGate MB3280: 749,455 hrs<br>MGate MB3480: 1,242,173 hrs                                                                                                                                                                                                                                          |
| Standards                              | Telcordia SR332                                                                                                                                                                                                                                                                                                                |
| Warranty                               |                                                                                                                                                                                                                                                                                                                                |
| Warranty Period                        | 5 years                                                                                                                                                                                                                                                                                                                        |
| Details                                | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>                                                                                                                                                                                                                                                           |
| Package Contents                       |                                                                                                                                                                                                                                                                                                                                |
| Device                                 | 1 x MGate MB3180/MB3280/MB3480 Series gateway                                                                                                                                                                                                                                                                                  |
| Power Supply                           | 1 x power adapter, suitable for your region                                                                                                                                                                                                                                                                                    |
| Documentation                          | 1 x quick installation guide<br>1 x warranty card                                                                                                                                                                                                                                                                              |

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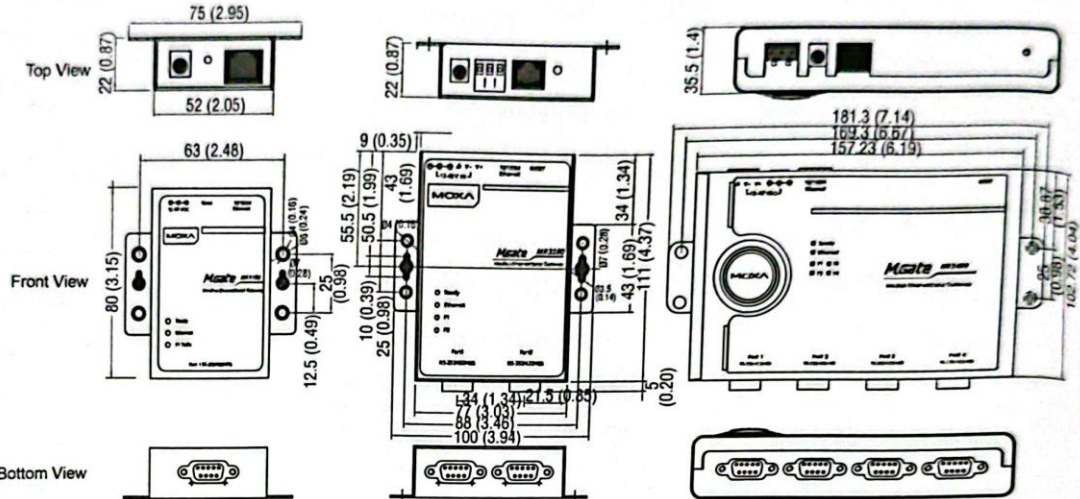
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2

## Dimensions

Unit: mm (inch)



## Ordering Information

| Model Name   | No. of Serial Ports |
|--------------|---------------------|
| MGate MB3160 | 1                   |
| MGate MB3280 | 2                   |
| MGate MB3480 | 4                   |

## Accessories (sold separately)

### Cables

|              |                                            |
|--------------|--------------------------------------------|
| CBL-F9M9-150 | DB9 female to DB9 male serial cable, 1.5 m |
| CBL-F9M9-20  | DB9 female to DB9 male serial cable, 20 cm |

### Connectors

|                 |                                        |
|-----------------|----------------------------------------|
| Mini DB9F-to-TB | DB9 female to terminal block connector |
|-----------------|----------------------------------------|

### DIN-Rail Mounting Kits

|       |                              |
|-------|------------------------------|
| DK35A | DIN-rail mounting kit, 35 mm |
|-------|------------------------------|

### Wall-Mounting Kits

|          |                                                         |
|----------|---------------------------------------------------------|
| WK-35-01 | Wall-mounting kit, 2 plates, 6 screws, 35 x 44 x 2.5 mm |
|----------|---------------------------------------------------------|

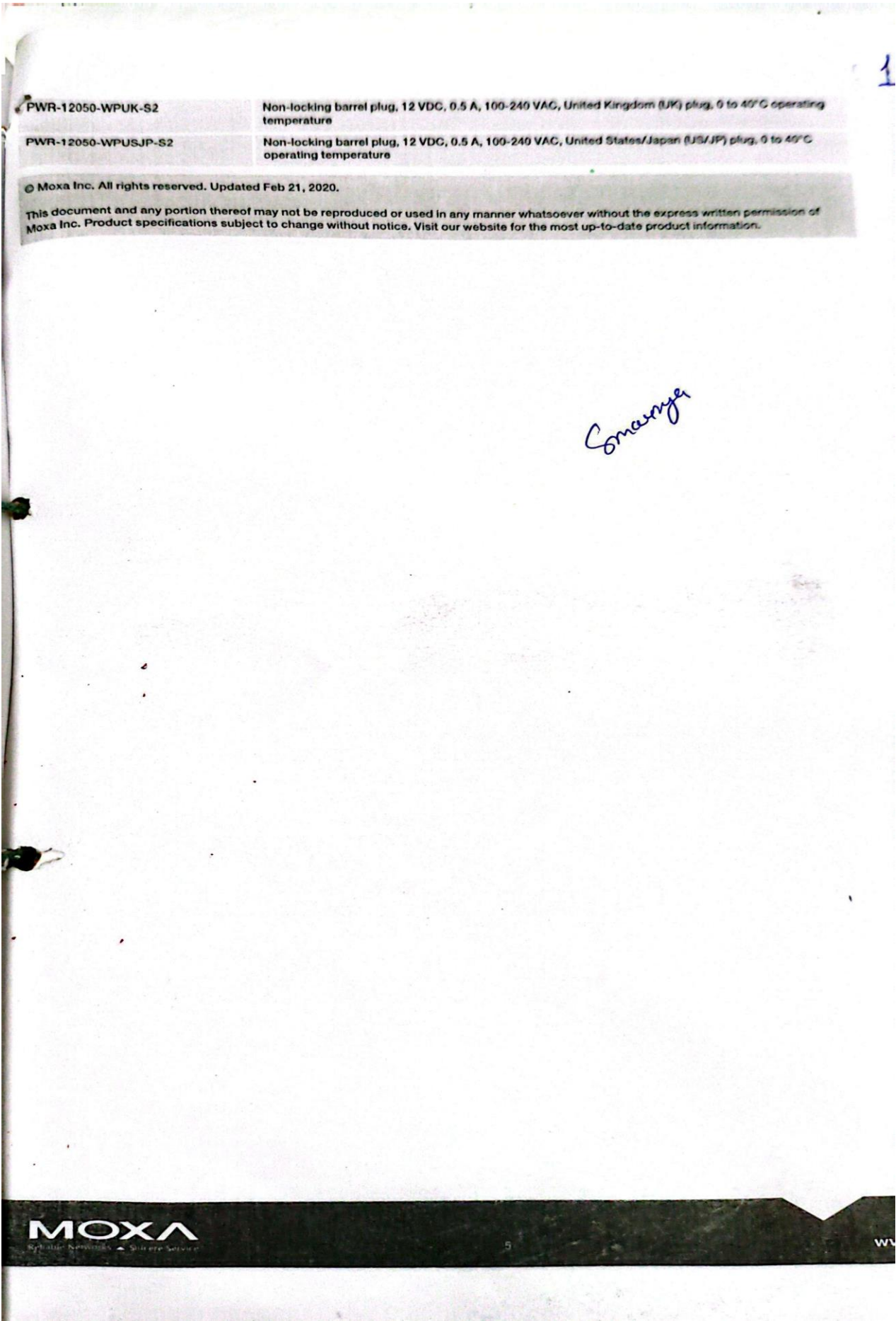
### Power Adapters

|                   |                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------|
| PWR-12050-WPAU-S2 | Non-locking barrel plug, 12 VDC, 0.5 A, 100-240 VAC, Australia (AU) plug, 0 to 40°C operating temperature          |
| PWR-12050-WPCN-S2 | Non-locking barrel plug, 12 VDC, 0.5 A, 100-240 VAC, China (CN) plug, 0 to 40°C operating temperature              |
| PWR-12050-WPEU-S2 | Non-locking barrel plug, 12 VDC, 0.5 A, 100-240 VAC, Continental Europe (EU) plug, 0 to 40°C operating temperature |

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PWR-12050-WPUK-S2

Non-locking barrel plug, 12 VDC, 0.5 A, 100-240 VAC, United Kingdom (UK) plug, 0 to 40°C operating temperature

PWR-12050-WPUSJP-S2

Non-locking barrel plug, 12 VDC, 0.5 A, 100-240 VAC, United States/Japan (US/JP) plug, 0 to 40°C operating temperature

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