

NOIDA METRO RAIL CORPORATION (NMRC) LIMITED

REQUEST FOR PROPOSAL (RFP)

Open e-Tender No. NMRC/DCOS/Sig./2026/447

Supply of CBTC, DCS, IXL and PSD Spares for Signaling Department

April 2026

Issued by:

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

Disclaimer

This Request for Proposal (RFP) Document (or “Tender” or “Bid”) for “**Supply of CBTC, DCS, IXL and PSD Spares for Signaling 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 CBTC, DCS, IXL and PSD Spares for Signaling Department
2	Approximate Cost of Work	INR 13,30,995/-(Inclusive of GST)
3	Time period of contract	90 days for Supply plus 12 Months warranty
4	Mode of Tender	Open e-Tender
5	Bid Processing Fee	Rs. 5,900/- (Rupees Five Thousand Nine Hundred Only) through RTGS/NEFT only payable in favour of Noida Metro Rail Corporation Limited
6	Ernest Money Deposit (EMD)	Rs. 26,620/- (Rupees Twenty Six Thousand Six Hundred Twenty 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	Financial Bid to be submitted together with Technical Bid	Yes
9	Name of the Corporation's official for addressing queries and clarifications	JGM/Stores Noida Metro Rail Corporation Limited, Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29, Noida 201301 Email: nmrc.afc@gmail.com
10	Bid Validity Period	180 days
11	Bid Language	English
12	Bid Currency	INR
13	Schedule of Bidding Process	
	Task	Key Dates
	Uploading of Bid	28-04-2026
	Pre-bid Meeting	04-05-2026 at 11:00 Hrs at NMRC Head Office
	Last date of receipt of Pre-bid queries	04-05-2026 up to 14:00 Hrs
	Last date of issuing amendment, if any	15-05-2026
	Last Date of Bid Submission	28-05-2026 [Time 15:00 hrs]
	Date of Technical Bid Opening	28-05-2026 [Time 15:30 hrs]
Place of Bid Opening	Noida Metro Rail Corporation, Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29, Noida 201301	
14	JV/Consortium to be allowed	No
15	Account details	For Bid Processing Fee & EMD State Bank of India (04077) – Sector 18, Noida Gautam Buddha Nagar, Uttar Pradesh - 201301 IFSC Code: SBIN0004077 A/c No. 37707840592 Noida Metro Rail Corporation Ltd.

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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 bid for granting the Contract **for Supply of CBTC, DCS, IXL and PSD Spares for Signaling Department.**
- e. 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. CBTC, DCS, IXL and PSD Spares 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

2. Section 2: Terms of Reference

2.1 Tenure:

The term shall be up to 90 days for supply from the date of acceptance of the Purchase order/ Notice of award of contract and 12 months warranty from issuance of acceptance certificate/receiving by NMRC, unless otherwise terminated by the Parties in accordance with the terms.

2.2 Scope of Work:

2.2.1 Tender includes Supply of CBTC, DCS, IXL and PSD Spares for Signaling Department as per below mentioned specifications-

Sr. No.	Item Description	Specifications	System	Unit	Required Quantity
1	AC/DC counter 2 hole reset (Part No. 3400-0010)	Detailed Specifications are attached at Annexure-A	CBTC	Nos.	20
2	SMPS for CPU (I/P 110V DC, O/P +3.3V, +5V, +12V, -12V, +5VSB), 350 watt		PSD	Nos.	18
3	SMPS for CPU (I/P 230V AC, O/P +3.3V, +5V, +12V, -12V, +5VSB), 350 watt		PSD	Nos.	4
4	LCB ASD (Rotary Selection switch 4 position with key) (part no. LW39-16CUYS-4AD-3333X/4-XW)		PSD	Nos.	17
5	Canbus Connector (300972-CAN01)		PSD	Nos.	23
6	Proximity Sensor (GX-F15A)		PSD	Nos.	12
7	RAM 2GB (DDR3)		PSD	Nos.	18
8	DC/DC converter (110 DC/24 DC)		CBTC	Nos.	2
9	CURRENT TRANSFORMER 40/5A CL.3 1.25 VA		IXL	Nos.	3
10	CURRENT TRANSFORMER 100/5A CL,3 1.5 VA		IXL	Nos.	2
11	Rack mounted fans (Exhaust Fan) /230V, 50HZ, 30/33W		IXL	Nos.	6
12	DC Axial Fan with connector (4010/24VDC)		IXL	Nos.	81
13	DC Axial Fan with connector (4010/12VDC)		IXL	Nos.	112
14	Voltage Monitoring Relay (MC21D5)		IXL	Nos.	4
15	DCS Power Cable (3C*2.5 SQ. MM.)		DCS	Mtr	4000

CBTC- Communication Based Train Control

PSD- Platform Screen Door

IXL- Interlocking

DCS- Data Communication System

Note:

1. Any make/model matching with existing installed specification will be accepted. Specification as given above against each item.
2. The equipment should be compatible with site/system requirements.
3. For DCS power cable (Sr.No. 15) - A longer cable drum length (in meters) will be preferred. Cable lengths below 1000 meters will not be accepted.

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.

2.3 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 the 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.

3. 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) 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 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 CBTC, DCS, IXL and PSD Spares for Signaling Department**". The responses will be posted to all such queries on the official Website 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. 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 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.

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

- a. 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.
- b. 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 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 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 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 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.

3.5.4 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.

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. 10.64 lakh (Rupees Ten Lakh Sixty Four Thousand only) or
 - ii. Two orders of similar nature of value not less than Rs 6.65 lakh (Rupees Six Lakh Sixty Five Thousand Only) each or
 - iii. Three orders of similar nature of value not less than Rs 5.32 lakh (Rupees Five Lakh Thirty Two Thousand Only) each.

Definition of Similar Work: Works involving supply of Signaling equipment & accessories in Railways or Metro Rail Projects or Departments of Centre/ State Governments or Centre/State PSE's either in India or Internationally.

- 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 clearly indicating 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. 13.31 Lakh (Rupees Thirteen Lakh Thirty One Thousand only) in the last 3 (three) audited Financial Years (2022-23, 2023-24, 2024-25) preceding the Bid Due Date.
- e) Profit before tax should be positive in at least 1 (one) year; out of the last 3 (three) audited financial years.
- f) The Bidder or its owners/partners have not been blacklisted/ banned/ declared ineligible for corrupt and fraudulent practices by the Government of India/ any State Government/ Government Agency and court of law and contracts have been terminated/ foreclosed by any company/department due to non-fulfillment of Contractual obligation in last 5 (five) financial years.
- g) The Bidder should be registered with the Goods and Services Tax Authority.

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 2022-23, 2023-24, 2024-25).
 - iii. Self-attested copy of PAN, ITR (For last 3 audited FY's) ending on 31st March, 2025.
- d. For above criteria 4.1g
 - i. Copy of GST registration certificate
- e. For above criteria 4.1f
 - 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 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 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.

4.4 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, unconditional and irrevocable Bank Guarantee bond as per Form -13 of this RFP, issued by a scheduled bank of Delhi-NCR in favor of Noida Metro Rail Corporation Limited valid for 21 months within 30 days of acceptance of Purchase order/Notice of Award. PBG shall remain valid for the entire period of contract, including any extensions, amendments or variations thereof and shall further remain valid for a period of six (6) months beyond the date of completion of contract. The bank guarantee shall also have a claim period of not less than six (6) months from the date of expiry of the PBG, during which the employer shall be entitled to invoke the same. The performance guarantee shall be valid for a period up to 6 months beyond the work end date. 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, 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 PBG, extension will be 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 of 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 issued 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.
- 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 CBTC, DCS, IXL and PSD Spares at Main Stores (DCOS) Building, NMRC Depot.

- ii. Final Acceptance/Receiving by NMRC after installation and commissioning at NMRC site.
 - iii. Submission of delivery Challan & E-way bill.
 - 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. GST will be paid only on the production of GST paid Challan or its reflection in the GSTR 2A on the GST portal of NMRC.
- e. Statutory deductions shall be made as per prevalent statutes.

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 of delayed quantity per week or part of the week of delayed period as pre estimated damages not exceeding 10% of the contract value of delayed quantity 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 Employer 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. Warranty of supplied items should be of at least 12 months.
- 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 Employer 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 3rd 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: Draft Contract Agreement

THIS AGREEMENT made on the.....day of... 2026 at Noida, District Gautam Buddha Nagar, Uttar Pradesh Between **Noida Metro Rail Corporation Limited** (Hereafter referred to as "NMRC"), a company incorporated under Companies Act 2013, vide corporate identification Number: U60231UP2014SGC066849 and having its registered office at **Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29, Noida -201301**, District Gautam Buddha Nagar, Uttar Pradesh, India represented by..... of the company, by virtue of his designation and authorization by Noida Metro Rail Corporation (hereinafter called as the "Employer"), which expression shall unless excluded by or repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns) of the one part,

AND

.....having its registered office at ,represented by (herein after called the "**Contractor**", which expression shall unless excluded by or repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns) of the other part. WHEREAS the employer desires that the Works/ Services known..... as the "**.....**" should be executed by the Contractor, and has accepted a contract by the Contractor for the execution and completion of these Works.

The employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement-

Reference:

- (i) Tender No. Dated.....
- (ii) Bid Documents duly accepted and submitted by dated.....
- (iii) The Bidding Documents which include all the Sections specified below:
 - a. Section 1: General Information
 - b. Section 2: Terms of Reference, Scope of work, Particular Specifications
 - c. Section 3: Instructions to Bidders
 - d. Section 4: Eligibility, Evaluation and Selection Process, Special Condition of Contract
 - e. Section 5: General Conditions of Contract (GCC) of NMRC
 - f. Section 6: Draft contract agreement
 - g. Section 7: Forms
- (iv) Amendments/Corrigendum/Addendum issued by NMRC, if any.
- (v) Notice of Award(.....) issued by NMRC
- (vi) Letter of acceptance of NOA (.....) given by (.....) to NMRC.
- (vii) Any other admitted correspondence documents between NMRC and the Bidder.

3. Duration of Contract

The Employer intends to appoint a Contractor to NMRC for a period of 90 days for Supply of CBTC, DCS, IXL and PSD Spares for Signaling Department plus 12 Months warranty.

4. Price Schedule

NMRC shall consider the following Total Contract Price, as quoted by the Contractor as part of financial bid.

- 5. The courts at District Gautam Buddha Nagar, Uttar Pradesh shall have the exclusive jurisdiction to try all disputes arising out of this agreement between the parties.
- 6. In consideration of the payments to be made by the Employer to the Contractor as specified in this Agreement, the Contractor hereby covenants with the Employer to execute the Works/ Services and to remedy defects therein in conformity in all respects with the provisions of the Contract and Notice of Award issued. "Any conditions, deviation, assumption, exclusion, suggestion of alternative clauses, request of amendments in conditions & specifications of work submitted by bidders along with his Technical Bid or Financial bid, which is different from the Tender Document, Corrigendum, Addendum uploaded by NMRC on the E-Tender Portal (<http://etender.up.nic.in>) and any other correspondence in this regard, shall not be treated as a part of the contract Agreement & shall not be binding upon NMRC in anyway whatsoever at any stage of work during execution or thereafter."
- 7. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works/Services, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract and NOA.

IN WITNESS where of the parties hereto have caused this Agreement to be executed in accordance with the laws of India on the day, month and year specified above.

For and on behalf of the Contractor
Signature of the authorized official

For and on behalf of the Employer
Signature of the authorized official

Name of the official

Name of the official

Stamp/Seal of the Contractor Stamp/Seal of the Employer

In the presence of:

In the presence of:

Sign of Witness 1 _____

Sign of Witness1 _____

Name _____

Name _____

Address _____

Address _____

Sign of Witness 2 _____

Sign of Witness 2 _____

Name _____

Name _____

Address _____

Address _____

7. Section 7: 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 CBTC, DCS, IXL and PSD Spares for Signaling Department

Dear Sir,

We, the undersigned, offer to Supply of CBTC, DCS, IXL and PSD Spares for Signaling 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.	Title and name of the Project: Supply of CBTC, DCS, IXL and PSD Spares for Signaling Department
2.	State the structure of the Bidder's organization (Bidders to complete/delete as appropriate) 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.)</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:</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:

1. 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 CBTC, DCS, IXL and PSD Spares for Signaling Department".
2. 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.
3. 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.
4. 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.
5. 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.
6. 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: _____

Sr. No.	ELIGIBILITY CRITERIA	(To be filled by the Bidder)
1	Sole proprietorship, registered partnership firm (including LLP), public limited company, private limited company or Consortium of any of the above can submit the Bidder. The firms and the companies should be registered in India.	
2	<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> <ul style="list-style-type: none"> i. One order of similar nature of value not less than Rs. 10.64 lakh (Rupees Ten Lakh Sixty Four Thousand only) or ii. Two orders of similar nature of value not less than Rs 6.65 lakh (Rupees Six Lakh Sixty Five Thousand Only) each or iii. Three orders of similar nature of value not less than Rs 5.32 lakh (Rupees Five Lakh Thirty Two Thousand Only) each. 	7 years

Supply of CBTC, DCS, IXL and PSD Spares for Signaling Department

Sr.No.	<u>ELIGIBILITY CRITERIA</u>	(To be filled by the Bidder)	
3	The Bidder should have minimum Average Annual Turnover of Rs. 13.31 Lakh (Rupees Thirteen Lakh Thirty One Thousand only) only in the last 3 (three) audited Financial Years (FY 2022-23, FY 2023-24, FY 2024-25) preceding the Bid Due Date.	FY 2024-25	
		FY 2023-24	
		FY 2022-23	
		Average Annual Turnover	
5	The Bidder should have Positive Profit before Tax in at least 1 (one) year, out of the last 3 (three) audited Financial Years (FY 2022-23, FY 2023-24, FY 2024-25)	FY 2024-25	
		FY 2023-24	
		FY 2022-23	
		Total	
6	The Bidder should be registered with the Goods and Services Tax Authorities.		
7	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 from Similar Work
1.	FY 2024-25		
2.	FY 2023-24		
3.	FY 2022-23		
	Average Annual Turnover		

S.No.	Financial Year	Name of Bidder	Profitability
1.	FY 2024-25		
2.	FY 2023-24		
3.	FY 2022-23		

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 2022-23, FY 2023-24 and FY 2024-25 is correct.

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

UDIN-

Date-

Firm Regd. No.-

Undertaking

I/ We _____ (M/s _____) declare that the Annual Accounts for FY 2024-25 have not been audited so far. We are submitting the CA certified provisional accounts, which shall be substantiated by the Audited Accounts, when prepared.

Authorised Signatory

(Name & Designation of Authorised Signatory)

In case the Financial Statements for the latest financial year are not audited and therefore the Bidder cannot make it available, the Bidder shall give an undertaking to this effect and the statutory auditor/charted accountant shall certify the same. In such a case, the Bidder shall provide the Audited Financial Statements for 2 (two) years preceding the year for which the Audited Financial Statement is not being provided. Also, pertaining to latest financial year, the bidder shall submit an affidavit certifying that "The Annual Accounts have not been audited so far. We are submitting the CA certified provisional accounts, which shall be substantiated by the Audited Accounts, when prepared."

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 CBTC, DCS, IXL and PSD Spares for Signaling 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 CBTC, DCS, IXL and PSD Spares for Signaling 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 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.
- 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 CBTC, DCS, IXL and PSD Spares for Signaling 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 ofAccepted

..... 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, 3rd Floor,
Ganga Shopping Complex, Sector-29, Noida -201301,
District Gautam Budh Nagar, Uttar Pradesh, India**

1 Bidder Name	
2 Bidder Address	
3 Bank Name	
4 Bank Branch	
5 A/c No	
6 IFSC	
7 PAN	
8 Tin/TAN No.	
9 GST No.	
10 Phone No.	
11 Mobile No.	
12 Email-Id	
13 Type of Account	
FOR OFFICE USE ONLY	
14 Party Unique Id	

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

Sl. No.	Document	Clause No. and Existing Provision	Clarification required	Suggested Text for the Amendment	Rationale for the Clarification or Amendment

Authorized signatory

Name:

Date:

Name of the Bidder with seal

Supply of CBTC, DCS, IXL and PSD Spares for Signaling Department

Form 12: Bid Offer/ BOQ (Format)

To

Dy.COS
Noida Metro Rail Corporation (NMRC) Limited
Block-III, 3rd Floor, Ganga Shopping Complex, Sector-29,
Noida -201301
District Gautam Buddha 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 CBTC, DCS, IXL and PSD Spares for Signaling 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 CBTC, DCS, IXL and PSD Spares for Signaling Department payable by NMRC.

Price Schedule for Supply of CBTC, DCS, IXL and PSD Spares for Signaling Department

NUMBER #	TEXT #	NUMBER #	TEXT #	NUMBER #	NUMBER #	NUMBER #	NUMBER #
Sr. No.	Item Description	Quantity	Units	Unit rate (Exclusive GST) In Figures To be entered by the Bidder Rs. P	GST%	Unit rate (Inclusive GST) In Figures Rs. P	TOTAL Cost (Including GST) In Figures Rs. P
		a	b	c	d	e = d + c	f = e * a
1	AC/DC counter 2 hole reset (Part No. 3400-0010)	20	Nos.				
2	SMPS for CPU (I/P 110V DC, O/P +3.3V, +5V, +12V, -12V, +5VSB), 350 watt	18	Nos.				
3	SMPS for CPU (I/P 230V AC, O/P +3.3V, +5V, +12V, -12V, +5VSB), 350 watt	4	Nos.				
4	LCB ASD (Rotary Selection switch 4 position with key) (part no. LW39-16CUYS-4AD-3333X/4-XW)	17	Nos.				
5	Canbus Connector (300972-CAN01)	23	Nos.				
6	Proximity Sensor (GX-F15A)	12	Nos.				
7	RAM 2GB (DDR3)	18	Nos.				
8	DC/DC converter (110 DC/24 DC)	2	Nos.				
9	CURRENT TRANSFORMER 40/5A CL.3 1.25 VA	3	Nos.				
10	CURRENT TRANSFORMER 100/5A CL,3 1.5 VA	2	Nos.				
11	Rack mounted fans (Exhaust Fan) /230V, 50HZ, 30/33W	6	Nos.				
12	DC Axial Fan with connector (4010/24VDC)	81	Nos.				

Supply of CBTC, DCS, IXL and PSD Spares for Signaling Department

13	DC Axial Fan with connector (4010/12VDC)	112	Nos.				
14	Voltage Monitoring Relay (MC21D5)	4	Nos.				
15	DCS Power Cable (3C*2.5 SQ. MM.)	4000	Mtr				
Total in Figures							
Quoted Rates in Words							

Note:

1. **The bidder shall mention Quoted Rate (Per item) In Figures.**
2. 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.**
4. The GST will be reimbursed based on the invoice of GST paid to the concerned authority by the contractor.
5. 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.
6. 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 Clause 4.2 of the "General Conditions of Contract").
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.

Signature

Name

Address

Witness 2.

Signature

Name

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

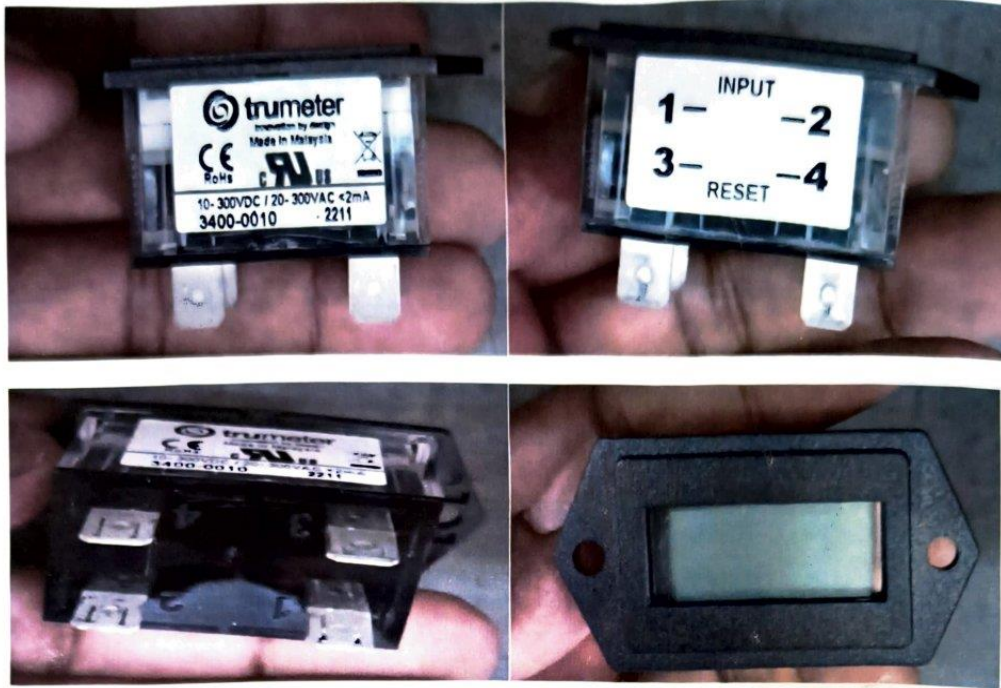
The following list is intended to help the bidders in submitting offer which are complete. An incomplete offer is liable to be rejected. Bidders are advised to go through the list carefully and take necessary action.

S.No.	Particulars	Attached Yes / No / Not Applicable	Page no. (Mandatory)
1	Bid Processing Fees		
2	Earnest Money Deposit		
3	Form 1: Letter of Proposal Submission		
4	Form 2: Firm Details		
5	Form 3: Work Experience		
6	Form 4: Capability Statement		
7	Form 5: Financial Capability Details		
8	Form 6: Memorandum		
9	Form 7: Undertaking		
10	Form 8: Power Of Attorney		
11	Form 9: Saleable form for Tender Document		
12	Form 10: Declaration of Refund of Earnest Money		
13	Form 11: Performa for Clarifications / Amendments on the RFP		
14	Form 12: Bid offer/BOQ Format		
15	Form 13: Performa of performance security/Bank Guarantee by Bank		
16	Form 14: Bid Details		
17	Registration certificate of the firm/ Partnership deed/ certificate of incorporation, affidavit in case of sole proprietorship etc.		
18	Self-attested copy of PAN, ITR for FY 2022-23, FY 2023-24 and FY 2024-25.		
19	Copy of RFP and Corrigendum/Addendum if any signed by Authorized Signatory on each page		
20	Any other document asked by the Purchaser if submitted, specify the documents Or Any other document which the Bidder considers relevant		

Annexure-A
Specifications for Items at Sr. No. 1 to 15

SS

1 AC/DC counter 2 hole reset (Part No. 3400-0010)-



2. SMPS for CPU (I/P 110V DC, O/P +3.3V, +5V, +12V, -12V, +5VSB), 350 watt



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3. SMPS for CPU (I/P 230V AC, O/P +3.3V, +5V, +12V, -12V, +5VSB), 350 watt

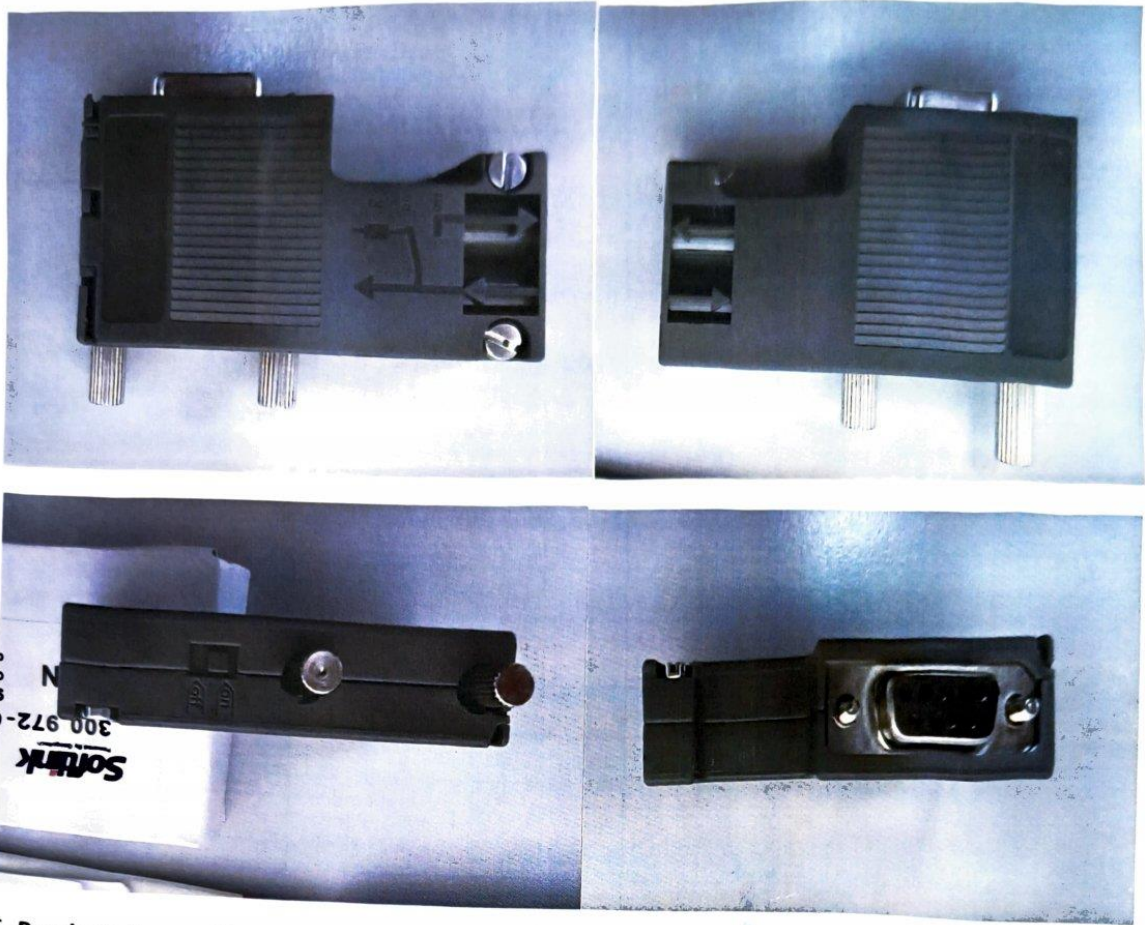


4. LCB ASD (Rotary Selection switch 4 position with key) (part no. LW39-16CUYS-4AD-3333X/4-XW)

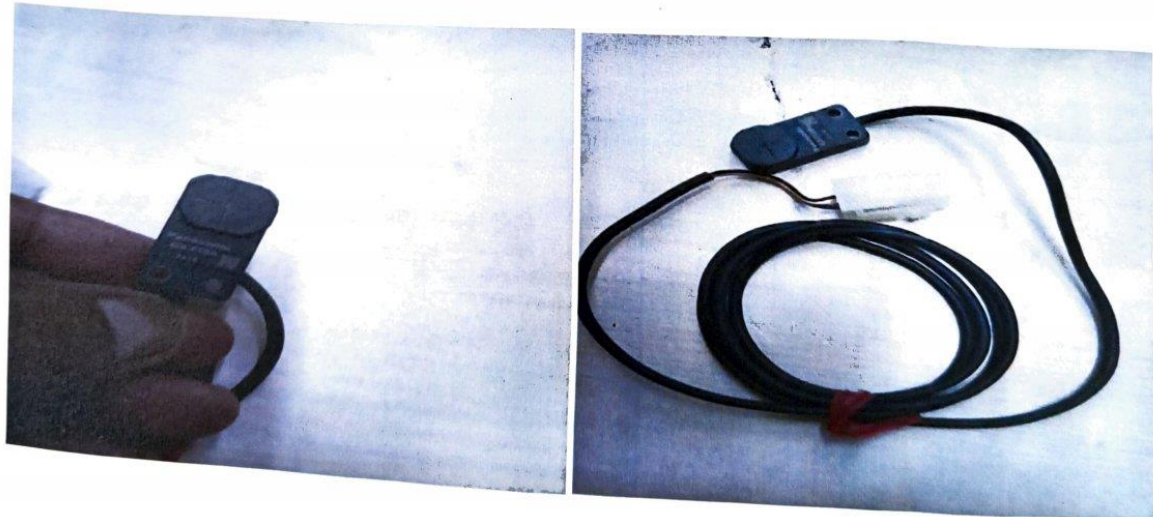


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5. Canbus Connector (300972-CAN01)



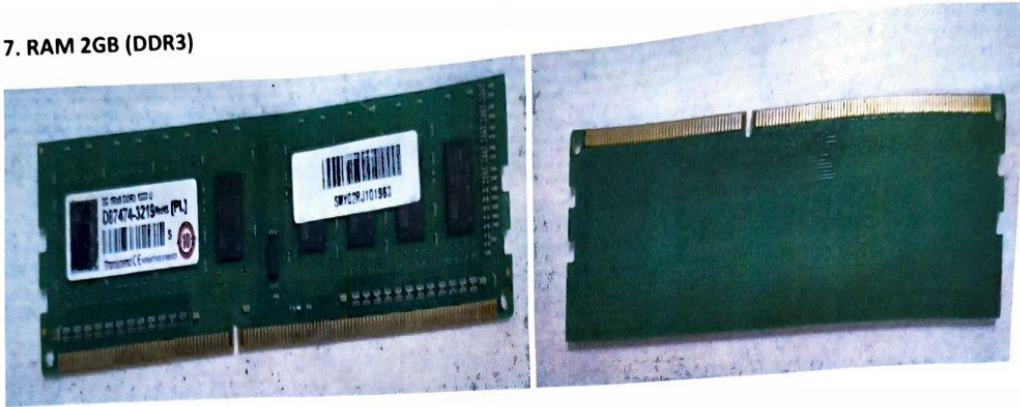
6. Proximity Sensor (GX-F15A)



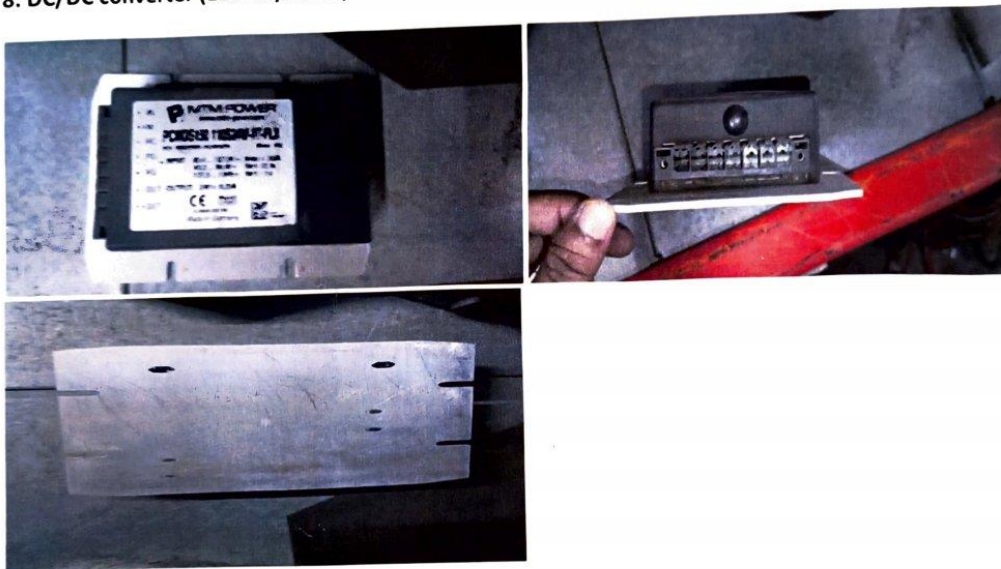
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7. RAM 2GB (DDR3)



8. DC/DC converter (110 DC/24 DC)



09. CURRENT TRANSFORMER 40/5A CL.3 1.25 VA



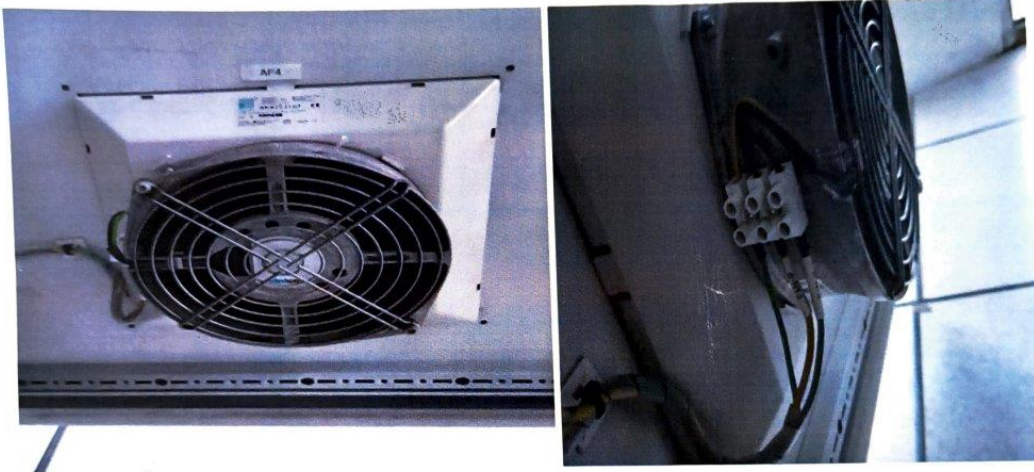
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10. CURRENT TRANSFORMER 100/5A CL,3 1.5 VA



11. Rack mounted fans (Exhaust Fan) /230V, 50HZ, 30/33W



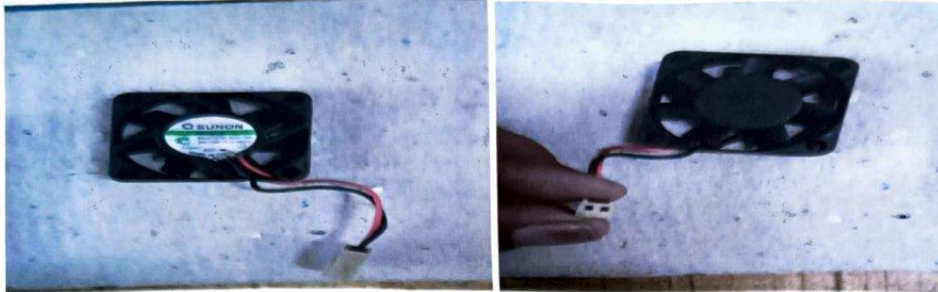
12. DC Axial Fan with connector (4010/24VDC)



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13. DC Axial Fan with connector (4010/12VDC)



14. Voltage Monitoring Relay (MC21D5)



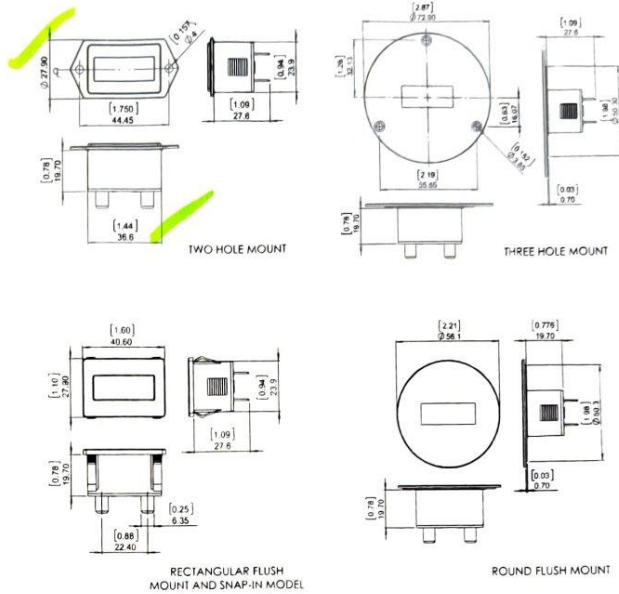
Smaranika



Specifications

- Display** LCD with large 0.28" [7mm] high figures black on light background
- Reset** Remote and non-reset.
- Accuracy** 100% [provided signal meets stated parameters]
- Displays** 8 digits (99999999)
- Max pulse rate** 40 pulses per second (Hz)
- Inputs** 10-300VDC and 20-300VAC - 50/60Hz <2mA
VIH 20VAC or 10VDC minimum
VIL 3VAC or 3VDC maximum
- Power** Self-powered - battery life 10+ years (battery life reduced to 5 years for temps above 100°F/37.8°C)
- Terminations** Standard 0.250" [6.4mm] spades
- Approvals** UL & cUL recognized (file # ELY2.E36690). CE, UKCA, SAE, NEMA 4/4X/IP66 compliant (not including snap-in models)
- Environmental** Operating Temp.: -10°C to +60°C [14°F to +140°F]
Storage Temp.: -20°C to +70°C [-4°F to +158°F]
Humidity: 95% RH per SAE J1378
Shock: 44 to 55g's per SAE J1378
Dielectric: 1000VAC 50/60 Hz for 1 minute
Compliance: to European WEEE and RoHS Directives
- Sealing** Totally sealed
- EMC Compliance** EN61326
- Enclosure** Totally sealed from moisture and dirt. NEMA 4/4X, 12 & IP66 compliant from the front when properly mounted using the optional gasket.
(Not applicable in the Snap-In Model)
- Weight** 1 oz. [28g]

Dimensions



Notes: When interfacing the Model 34 with a Solid State Relay or AC sensor, the leakage current needs to be considered. Exceeding the Absolute Voltage Range and the Absolute Maximum Limits may result in damage to the unit.

Part Numbers

Part Number	Description	Gasket
3400-0000	AC/DC Counter 2-hole case 1/4" spade terminal non-reset	5003-010
3400-0010	AC/DC Counter 2-hole case 1/4" spade terminal remote-reset	5003-010
3400-1000	AC/DC Counter 3-hole case 1/4" spade terminals non-reset	5003-017
3400-1010	AC/DC Counter 3-hole case 1/4" spade terminals remote-reset **special order** MOQ=50pcs	5003-017
3400-2000	AC/DC Counter flush rectangular case 1/4" spade terminals non-reset **special order** MOQ=50pcs	
3400-2010	AC/DC Counter flush rectangular case 1/4" spade terminals remote-reset	5003-009
3400-3000	AC/DC Counter round SAE case 1/4" spade terminals non-reset **special order** MOQ=50pcs	5003-009
3400-3010	AC/DC Counter round SAE case 1/4" spade terminals remote-reset	5003-009
3400-5000	AC/DC Counter snap-in case 1/4" spade terminals non-reset	
3403 3000	3-30VDC Counter round SAE case 1/4" spade terminals non-reset	
5003-010	NEMA 4X Gasket two hole mount	
5003-017	NEMA 4X Gasket three hole mount	
5003-009	NEMA 4X Gasket flush rectangular and SAE round mount	
3400-0010-EVAL	3400 Evaluation Kit	

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AC/DC Counter 2 hole



Model 3400
Electronic LCD Counter

EVALUATION KIT AVAILABLE
Contact us to request yours.



The Model 34 LCD Totalizer/Preset Counter provides a large display with 0.28" [7mm] high characters, in a range of industry-standard sized housings.

The Model 34 counts and displays the number of pulses that appear at its input terminal at a rate of 40 pulses per second (Hz), the input interface handles AC or DC inputs. The Totalizers are available in 5 different housings.

A wide operating voltage, 10-300VDC and 20-300VAC, makes the model 34 versatile for all indoor and outdoor applications. All models are NEMA 4/4X, 12 & IP66 rated when used with the optional gasket and have a polarized lens which assures high visibility in an outdoor environment.

Key Features

- Totally sealed from moisture and dirt
- AC and DC voltage input in the same unit
- Compact depth
- Fits in existing panel openings
- Always on display

Options

- Optional Remote Reset
- A choice of 5 housings

Applications

AJ
ASSE (1/19)



Medical Devices



Test Equipment



Control Panels



Production Equipment



Office Equipment



Secondary Equipment

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Specification of SMPS and RAM

1. SMPS for CPU (I/P 110V DC, O/P +3.3V, +5V, +12V, -12V, +5VSB), 350 watt

Input- 110V DC

Output- +3.3V 14A, +5V 25A, +12V 18A, -5V, -12V 1A, +5V SB 1A, +19V 3A

Total Power- 350W max, +3.3V & +5V 140W max, +19V 57W max

2. SMPS for CPU (I/P 230V AC, O/P +3.3V, +5V, +12V, -12V, +5VSB), 350 watt

Input- 110-240V AC, 63-47Hz, 6-3A

Output- +3.3V 0-28A, +5V 35A, +12V 22A, -5V 0-0.5A, -12V 0-0.8A, +5V SB 0-2A, +19V 3A

+5V and +3.3V max 45A

3. RAM

As per DDR3

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

Smaanya



LW39-16C Cam Switch 16A Siemens APT

Technical Data

Working conditions: the Altitude ≤ 2000m
 Ambient temperature -25 °C - +55 °C
 Relative Air Humidity ≤ 90%
 Installation Class: III
 Pollution Class: III

Standards

GB14048.5
 IEC60947-5-1

Electrical Technical Data:

Model		LW39-10	LW39-16A (B, C)	LW39-25	LW39-63
Rated Insulation Voltage Ui GB/T14048.1	V	440	690	690	690
Rated Thermal Current Ith GB/T14048.1	A	10	16	25	63
Rated Impulse Withstand Voltage 1min Uimp GB/T14048.1	V	2500	2500	2500	2500
AC Rated operational Current Ie					
AC-21 switching of Resistive Loads GB14048.3	A	10	16	25	63
AC-15 switching of control devices contactors valves ect Loads					
COSφ=0.4 24V	A	10	16	25	28
48V	A	5	8	22	25
110V	A	4	5	18	22
220V	A	2	3	12	16
380V	A	1.2	1.8	8	8
AC-3 squirrel-Cage Asynchronous Motor					
Direct-on-line starting, start-delta starting GB/T14048.3 Appendix A					
3-phase 3-pole 380V	KW	1.5	3	5.5	15
AC-4 Cage Asynchronous Motor					
Startup, braking, reverse, inching					
GB14048.3 Appendix A					
3-phase 3-pole 380V	KW	0.37	1.2	4	6
DC Rated operational Current Ie					
DC-21 switching of Resistive Loads G814048.3					
Number of Series Contacts					
1 2 3 4					
24 48 70 95	A	10	16	25	
48 60 95 110	A	6	12	22	
Voltage V 110 220 300	A	0.56	1	5	
220 440	A	0.24	0.4	2.5	
440	A	0.1	0.27	1.25	
DC-13 switching of control devices contactors valves ect Loads					
T=300ms G814048.5					
Number of Series Contacts					
1 2 3 4					
24 48 70 95	A	8	12	20	
48 60 95 110	A	1.2	2	8	
Voltage V 110 220 300	A	0.25	0.4	2.5	
220 440	A	0.12	0.2	1.25	
440	A		0.1	0.5	
AC electrical endurance	10,000 times	20	20	20	10
DC electrical endurance	10,000 times	10	10	10	
Mechanical endurance	10,000 times	30	30	30	30

1

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Siemens APT Cam Switch LW39-16C Series

LW39-16C Series

Single hole installation, with the same contact system as Series B. The international popular built-in wiring method is used, is safety and reliable.

- It is 16A
 - Operation angle: 30°, 45°, 60°, 90°
 - The maximum number of the contact poles is 12 and less than 8 poles is better
- Note: if the working condition is under 100mA @ 24V, please remark in the purchase order. The contactor will be gold-plating.

Normal Type: LW39-16C

Positioning Angle: 30°, 45°, 60°, 90° Maximum Number poles 12, no more than 8 poles is better, Handles Type: not selectable

Thickness of installation plate 1-3

(n is the number of the contact system poles n=1-12)

The installation hole size

Ordered Model: LW39 - 16C - □ - □ / □ □ Refer to page 15 for details

Handle with Key-lock Type LW39-16C YS

Positioning Angle: 30°, 45°, 60°, 90° Maximum Number poles, no more than 8 poles is better, without handle

Thickness of installation plate 1-3

(n is the number of the contact system poles n=1-12)

The installation hole size

Ordered Model: LW39 - 16C YS - □ - □ / □ □ Refer to page 15 for details

Key Operation: it can be removed at each position and the handle will be locked after the key is taken out. if there is any other requirement, please show us.

Single-hole Installation without Panel Type LW39-16C U

Positioning Angle: 30°, 45°, 60°, 90° Maximum of 12 poles, no more than 8 poles is better Handles: not selectable

Thickness of installation plate 1-3

(n is the number of the contact system poles n=1-12)

The installation hole size

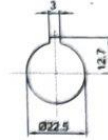
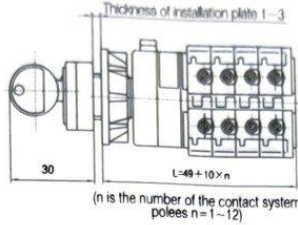
Ordered Model: LW39 - 16CU - □ - □ / □ □ Refer to page 15 for details

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Without Panel with Key-lock Type **LW39-16CUYS**

Positioning Angle: 30°, 45°, 60°, 90°



The installation hole size

Ordered Model: LW39 - 16CUYS - □ - □ / □ □ □ Refer to page 15 for details

Key Operation: it can be removed at each position and the handle will be locked after the key is taken out. if there is any other requirement, please show us.

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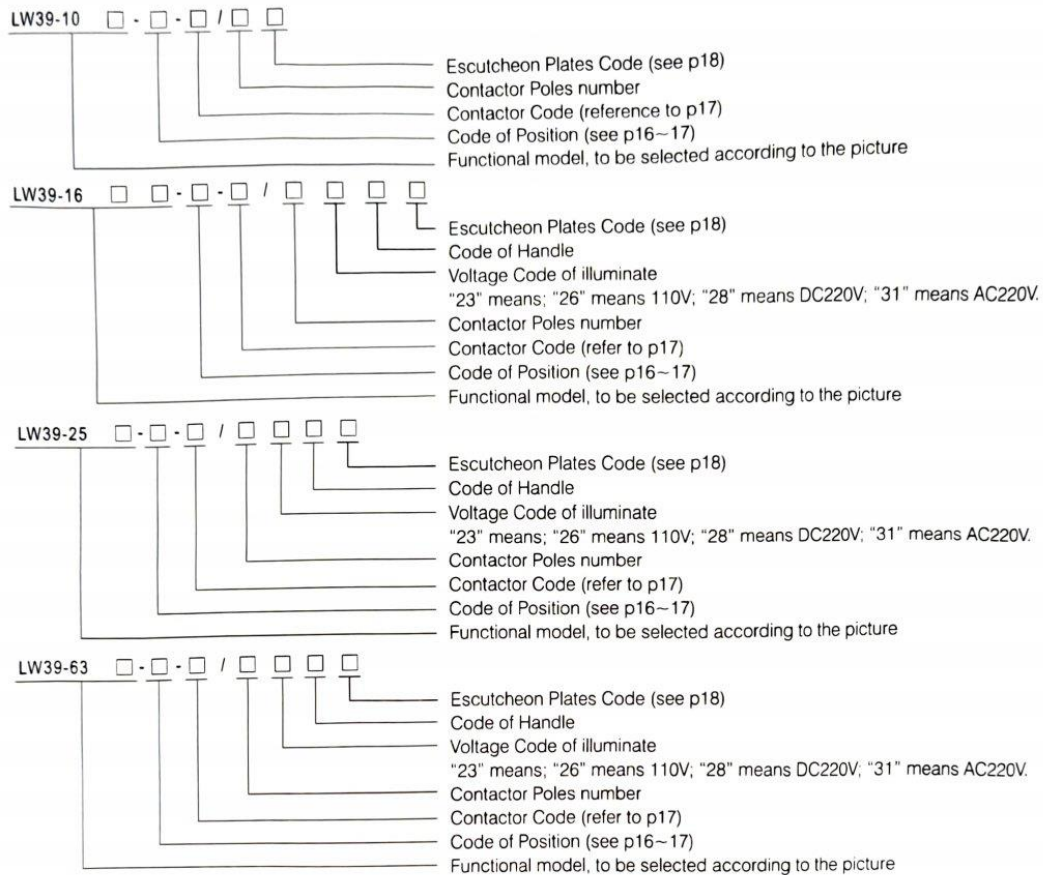
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LW39 Series Cam switches

Model definition

Please provide the specific model when the user order LW39 series cam switches. There are three ways to confirm the model:

- (1) Select from the models of the ordinary cam switches (please reference to P21—26). Please show us if there is any further requirement;
- (2) Please tell us the model according to the description of model;
- (3) Fill the blank contactor diagram (p28) and we will help you confirm the model.



- LW39-63/16, Please provide the contactor diagram and we will help you to confirm the model.
- Description of illuminate color code and voltage code:
- "g" means green and "r" means red
- "23" means AC/DC24V, "26" means AC/DC110V, "28" means DC220V, and "31" means AC220V.

Note:

1. The color code has sequence requirement when the cam switch has illuminate modular, with the panel face the front and write the color code from left to right.
2. For example: "-gr23", shows that the left is green light and the right is red light. "-rg23" shows that the left is red light and the right is green light.
3. Wiring terminal of illuminate modular:
4. The defaulted wiring terminal is common negative poles: X1(-), XO(-), X2(+). Please show us if there is any special wiring requirement.

Comanyu

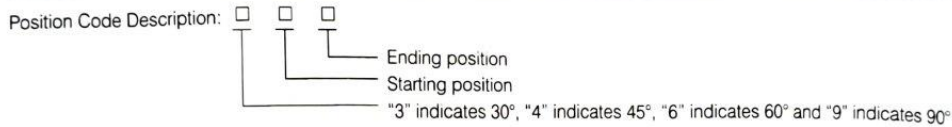
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Code of Position

The code of position indicates the gear features of the cam switches, including maintained type and spring-return type.

(1) Maintained type: it does not have spring return function. LW39 series cam switches have 30°, 45°, 60° and 90° position. Please attention the position of each models and fill the position codes when you ordered.

Position	Applicable Model	Position circle	Example
30°	LW39-10, LW39-16, LW39-25, LW39-63		"3KC" indicates 30° position, starting from K and ending at C with clockwise. It has 5 positions K, O, A, B, C.
45°	LW39-10, LW39-16, LW39-25, LW39-63		"4OB" indicates 45° position, starting from O and ending at B with clockwise. It has 3 positions O, A, B. <i>LAD</i>
60°	LW39-16B, LW39-16C, LW39-63		"6KE" indicates 60° position, starting from K and ending at E clockwise. It has 4 positions - K, A, C, E
90°	LW39-10, LW39-16, LW39-25, LW39-63		"9GC" indicates 90° position, starting from G and ending at C with clockwise. It has 3 positions - G, A, C.



Note: if the switch is operated without limited in a circle, the ending and starting position will be the same letter, for example: "3JJ" indicates 30° position, starting from -90° with 12 positions without limited.

(2) Spring return Type: one or more position for spring-return type have spring-return function. LW39 series cam switches have various spring-return function types for option. The following table show the commonly used spring-return functions codes. Please attention the application models.

Spring-return Position code	Operation Position (Angle)	LW39-10	LW39-16A	LW39-16B LW39-16C	LW39-25	LW39-163
A1	0° ↔ -30°	Y*				
A2	0° ↔ -45°		Y	Y	Y	Y
B1	-30° → 0° ↔ -30°	Y*				
B2	-45° → 0° ↔ -45°		Y	Y	Y	Y
B3	-60° → -30° → 0° ↔ -30° ↔ -60°			Y*		
B4	-90° -45° 0° 45° ↔ -90°		Y	Y	Y	Y
B5	-90° -45° 0° ↔ -45°		Y	Y	Y	Y
B6	-90° ↔ -60° ↔ -30° → 0° ↔ -30° ↔ -60° ↔ -90°			Y		
B7	-90° ↔ -45° 0° 45° 90° 135°			Y		
BA	-90° → -45° → 0° ↔ -45° ↔ -90°		Y	Y	Y	
BC	-45° → 0° 0° ↔ -45°		Y		Y	
BD	-30° → 0° 0° ↔ -30°			Y*		
Z1	-135° → -90° 0° ↔ -45°		Y	Y	Y	Y
ZA	-90° ↔ -45° 0° 45° ↔ -90°		Y	Y	Y	Y

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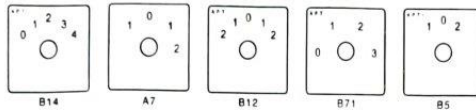
Escutcheon Plates Code

The Escutcheon Plates Code of panel indicate the specific requirements for the prints on the panels of the cam switches. The user can select escutcheon plate code according to "Ordinary escutcheon Codes of Panel", or provide the requirements for customization. If there are no show in the Order Models, we will provide the panels according to the defaulted escutcheon plates code rule.

1. Defaulted Escutcheon Plates Code:

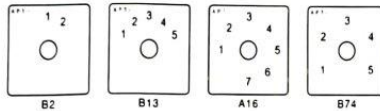
(1) If one position have no contactor closed, this position plate shall be "0" and then the position on both sides shall be show in sequence of Arabic figure as "1", "2", "3"..... For 3 position cam switch, there is not the plate as of 1-0-1, instead of 1-0-2.

For example:



(2) If the position haven't "0", each position will be showed in sequence of Arabic figure as "1", "2", "3".....(clockwise).

For example:

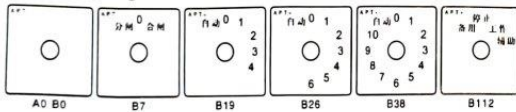


2. Ordinary escutcheon plates:

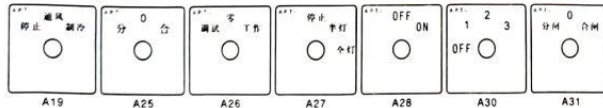
Notes: the codes starting with A are applicable for LW39-10, LW39-16A, LW39-25 and LW39-63

The codes starting with B are applicable for LW39-16B and LW39-16C

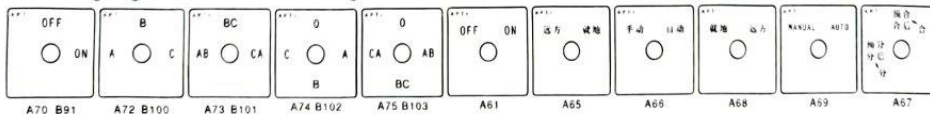
Positioning Angle - 30°



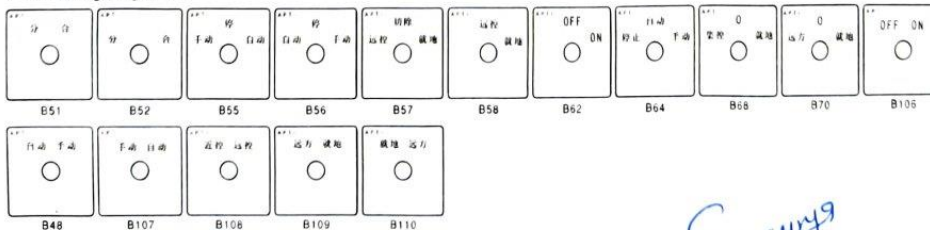
Positioning Angle - 45°



Positioning Angle - 90° and Combined Angles



Positioning Angle - 60°



3. Special Plate, add the letter "P" after the pole code.

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LW39 Series Cam switches

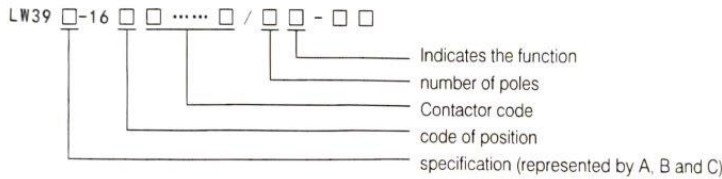
Model and Revision Specification

LW39 series cam switches have been very popular used by users in the market. With the continuously increased in these years, the product functions and models have been also updated so that the meanings of the models of the initially designed products cannot satisfy the ordering demands of the customers. Therefore, after the careful study, it has been decided that the meanings of the original product models shall be modified in this revision.

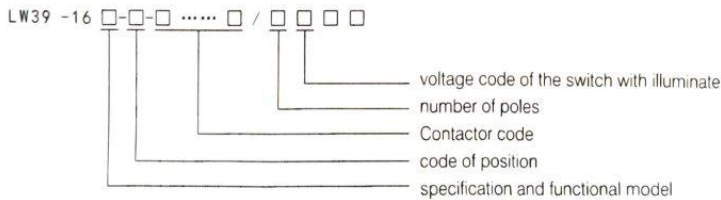
The main modifications are as follows:

- (1) The two codes "A, B" and "Function Representation" in the old models LW39A-16 and LW39B-16 are integrated into the "function model" in the new model.
 - (2) "Code of position", for easy memorization and to reduce the errors during the ordering, please use the new code applicable rules in the definition of a new model. (Reference to Code of Position in p16 for details)
 - (3) The contactor codes can be prepared by the user or us flexibly or follow the existing "contactor codes handbook" for easy memorization and individualized compiling (reference to Code of Position in p17 for details)
- Please try to order the products according to the new defining method of the models and we feel sorry for any inconvenience to you!

Example of Old Model:



Example of New Model:



Signature

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Comparison Table for New and Old Codes of Position

To make the existing customers to easily understand and use the new codes of position, the following table is to list the comparison between the new and old codes.

Comparison Table for New and Old Codes of Position

Type A (LW39-16A) Codes of Positioning			Type B (LW39-16B) Codes of Positioning		
Old Code	New Code	Position	Old Code	New Code	Position
C	4AB	0° 45°	C	6AC	0° 60°
D	4OB	45° 0° 45°	D	6KC	60° 0° 60°
E	4OC	45° 0° 45° 90°	E	6JD	90° 30° 30° 90°
F	4GC	90° 45° 0° 45° 90°	F	6IE	120° 60° 0° 60° 120°
G	4GD	90° 45° 0° 45° 90° 135°	G	6IG	120° 60° 0° 60° 120° 180°
V	4GE	90° 45° 0° 45° 90° 135° 180°	GT	6II	120° 60° 0° 60° 120° 180° without limiting part
U	4GF	90° 45° 0° 45° 90° 135° 180° 225°	H	3OC	30° 0° 30° 60°
UT	4GG	90° 45° 0° 45° 90° 135° 180° 225° without limiting part	I	3KC	60° 30° 0° 30° 60°
H	3OC	30° 0° 30° 60°	J	3JC	90° 60° 30° 0° 30° 60°
I	3KC	60° 30° 0° 30° 60°	K	3JD	90° 60° 30° 0° 30° 60° 90°
J	3JC	90° 60° 30° 0° 30° 60°	L	3JE	90° 60° 30° 0° 30° 60° 90° 120°
K	3JD	90° 60° 30° 0° 30° 60° 90°	LD	3OG	30° 0° 30° 60° 90° 120° 150° 180°
L	3JE	90° 60° 30° 0° 30° 60° 90° 120°	M	3JF	90° 60° 30° 0° 30° 60° 90° 120° 150°
LD	3OG	30° 0° 30° 60° 90° 120° 150° 180°	N	3JG	90° 60° 30° 0° 30° 60° 90° 120° 150° 180°
M	3JF	90° 60° 30° 0° 30° 60° 90° 120° 150°	ND	3OI	30° 0° 30° 60° 90° 120° 150° 180° 210° 240°
N	3JG	90° 60° 30° 0° 30° 60° 90° 120° 150° 180°	P	3JH	90° 60° 30° 0° 30° 60° 90° 120° 150° 180° 210°
ND	3OI	30° 0° 30° 60° 90° 120° 150° 180° 210° 240°	Q	3JI	90° 60° 30° 0° 30° 60° 90° 120° 150° 180° 210° 240°
P	3JH	90° 60° 30° 0° 30° 60° 90° 120° 150° 180° 210°	QD	3OK	30° 0° 30° 60° 90° 120° 150° 180° 210° 240° 270° 300°
Q	3JI	90° 60° 30° 0° 30° 60° 90° 120° 150° 180° 210° 240°	QT	3JJ	90° 60° 30° 0° 30° 60° 90° 120° 150° 180° 210° 240° without limiting part
QD	3OK	30° 0° 30° 60° 90° 120° 150° 180° 210° 240° 270° 300°	R	6OB	30° 30°
QT	3JJ	90° 60° 30° 0° 30° 60° 90° 120° 150° 180° 210° 240° without limiting part	RA	9GA	90° 0°
R	9OB	45° 45°	RE	9AC	0° 90°
RA	9GA	90° 0°	S	9GC	90° 0° 90°
RE	9AC	0° 90°	T	9GE	90° 0° 90° 180°
S	9GC	90° 0° 90°	TT	9GG	90° 0° 90° 180° without limiting part
T	9GE	90° 0° 90° 180°			
TT	9GG	90° 0° 90° 180° without limiting part			

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LW39 Series Cam switches

Models of Common Cam switches

Normal ON/OFF Switches

Number of Pole	Printing	0	1	Model
1 Pole	1-2		x	LW39-□□-□-02/1
	3-4		x	
2 Pole	5-6		x	LW39-□□-□-04/2
	7-8		x	
3 Pole	9-10		x	LW39-□□-□-06/3
	11-12		x	
4 Pole	13-14		x	LW39-□□-□-08/4
	15-16		x	
5 Pole	17-18		x	LW39-□□-□-0A/5
	19-20		x	
6 Pole	21-22		x	LW39-□□-□-0C/6
	23-24		x	
7 Pole	25-26		x	LW39-□□-□-0E/7
	27-28		x	
8 Pole	29-30		x	LW39-□□-□-0G/8
	31-32		x	
9 Pole	33-34		x	LW39-□□-□-0I/9
	35-36		x	
10 Pole	37-38		x	LW39-□□-□-0K/10
	39-40		x	

Example: LW39-16A-4AB-06/3, indicates LW39-16A type 3-pole ON/OFF switch with the positioning angle as 0°, 45° and printing on panel as 0, 1

Double-throw Switches without "0" position and with independent contact

Number of Pole	Printing	1	2	Model
1 Pole	1-2	x		LW39-□□-□-11/1
	3-4		x	
2 Pole	5-6	x		LW39-□□-□-22/2
	7-8		x	
3 Pole	9-10	x		LW39-□□-□-33/3
	11-12		x	
4 Pole	13-14	x		LW39-□□-□-44/4
	15-16		x	
5 Pole	17-18	x		LW39-□□-□-55/5
	19-20		x	
6 Pole	21-22	x		LW39-□□-□-66/6
	23-24		x	
7 Pole	25-26	x		LW39-□□-□-77/7
	27-28		x	
8 Pole	29-30	x		LW39-□□-□-88/8
	31-32		x	
9 Pole	33-34	x		LW39-□□-□-99/9
	35-36		x	
10 Pole	37-38	x		LW39-□□-□-AA/10
	39-40		x	

Example: LW39-16A-90B-33/3, indicates LW39-16A type 3-pole double-throw switch with the positioning angle as -45°, 45° and printing on panel as 1, 2

Double-throw Switch, without "0" position and double connecting straps

Number of Pole	Printing	1	2	Model
1 Pole	1-2	x		LW39-□□-□-11J/1
	3-4		x	
2 Pole	5-6	x		LW39-□□-□-22J/2
	7-8		x	
3 Pole	9-10	x		LW39-□□-□-33J/3
	11-12		x	
4 Pole	13-14	x		LW39-□□-□-44J/4
	15-16		x	
5 Pole	17-18	x		LW39-□□-□-55J/5
	19-20		x	
6 Pole	21-22	x		LW39-□□-□-66J/6
	23-24		x	
7 Pole	25-26	x		LW39-□□-□-77J/7
	27-28		x	
8 Pole	29-30	x		LW39-□□-□-88J/8
	31-32		x	
9 Pole	33-34	x		LW39-□□-□-99J/9
	35-36		x	
10 Pole	37-38	x		LW39-□□-□-AAJ/10
	39-40		x	

Example: LW39-16B-60B-33J/3, indicates LW39-16B type 3-pole double-throw switch, with connecting strap, positioning angle as -30°, 30° and printing on panel as 1, 2

Double-throw Switch, with "0" position and with independent contact

Number of Pole	Printing	1	0	2	Model
1 Pole	1-2	x			LW39-□□-□-101/1
	3-4			x	
2 Pole	5-6	x			LW39-□□-□-202/2
	7-8			x	
3 Pole	9-10	x			LW39-□□-□-303/3
	11-12			x	
4 Pole	13-14	x			LW39-□□-□-404/4
	15-16			x	
5 Pole	17-18	x			LW39-□□-□-505/5
	19-20			x	
6 Pole	21-22	x			LW39-□□-□-606/6
	23-24			x	
7 Pole	25-26	x			LW39-□□-□-707/7
	27-28			x	
8 Pole	29-30	x			LW39-□□-□-808/8
	31-32			x	
9 Pole	33-34	x			LW39-□□-□-909/9
	35-36			x	
10 Pole	37-38	x			LW39-□□-□-A0A/10
	39-40			x	

Example: LW39-25-40B-303/3, indicates LW39-25 type 3-pole double-throw switch, with positioning angle as -45°, 0°, 45° and printing on panel as 1, 0, 2

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Double-throw Switches with "0" position and double connecting straps

Number of Pole	Printing	Position			Model
		1	0	2	
1 Pole	1-2	x			LW39-□□-□-101J/1
	3-4			x	
2 Pole	5-6	x			LW39-□□-□-202J/2
	7-8			x	
3 Pole	9-10	x			LW39-□□-□-303J/3
	11-12			x	
4 Pole	13-14	x			LW39-□□-□-404J/4
	15-16			x	
5 Pole	17-18	x			LW39-□□-□-505J/5
	19-20			x	
6 Pole	21-22	x			LW39-□□-□-606J/6
	23-24			x	
7 Pole	25-26	x			LW39-□□-□-707J/7
	27-28			x	
8 Pole	29-30	x			LW39-□□-□-808J/8
	31-32			x	
9 Pole	33-34	x			LW39-□□-□-909J/9
	35-36			x	
10 Pole	37-38	x			LW39-□□-□-A0AJ/10
	39-40			x	

Example: LW39-25-40B-404J/4, indicates LW39-25 type 4-pitch double-throw switch, with connecting strap, positioning angle as -45°, 0°, 45° and printing on panel as 1, 0, 2

Multi-gear Switches 3-gear Switches

Number of Pole	Printing	Position			Model
		1	2	3	
1 Pole	1-2	x			LW39-□□-□-111J/2
	3-4			x	
2 Pole	5-6			x	LW39-□□-□-222J/3
	7-8	x			
3 Pole	9-10		x		LW39-□□-□-333J/5
	11-12			x	
4 Pole	13-14	x			LW39-□□-□-444J/6
	15-16			x	
5 Pole	17-18	x			LW39-□□-□-555J/8
	19-20			x	
6 Pole	21-22		x		LW39-□□-□-666J/9
	23-24			x	
7 Pole	25-26	x			LW39-□□-□-777J/7
	27-28			x	
8 Pole	29-30		x		LW39-□□-□-888J/8
	31-32	x			
9 Pole	33-34		x		LW39-□□-□-999J/9
	35-36			x	

Multi-gear Switch, 4-gear Switch

Number of Pole	Printing	Position				Model
		1	2	3	4	
1 Pole	1-2	x				LW39-□□-□-1111J/2
	3-4			x		
2 Pole	5-6			x		LW39-□□-□-2222J/4
	7-8				x	
3 Pole	9-10	x				LW39-□□-□-3333J/6
	11-12		x			
4 Pole	13-14			x		LW39-□□-□-4444J/8
	15-16				x	
5 Pole	17-18	x				LW39-□□-□-5555J/10
	19-20		x			
6 Pole	21-22			x		LW39-□□-□-6666J/12
	23-24				x	
7 Pole	25-26	x				LW39-□□-□-7777J/14
	27-28		x			
8 Pole	29-30			x		LW39-□□-□-8888J/16
	31-32				x	
9 Pole	33-34	x				LW39-□□-□-9999J/18
	35-36		x			
10 Pole	37-38			x		LW39-□□-□-101010J/20
	39-40				x	
11 Pole	41-42	x				LW39-□□-□-111111J/22
	43-44		x			
12 Pole	45-46			x		LW39-□□-□-121212J/24
	47-48				x	

Multi-gear Switch, 5-gear Switch

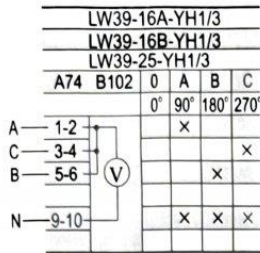
Number of Pole	Printing	Position					Model
		1	2	3	4	5	
1 Pole	1-2	x					LW39-□□-□-1 x 5J/3
	3-4					x	
2 Pole	5-6		x				LW39-□□-□-2 x 5J/5
	7-8			x			
3 Pole	9-10			x			LW39-□□-□-3 x 5J/8
	11-12		x				
4 Pole	13-14				x		LW39-□□-□-4 x 5J/10
	15-16					x	
5 Pole	17-18	x					LW39-□□-□-5 x 5J/12
	19-20		x				
6 Pole	21-22		x				LW39-□□-□-6 x 5J/15
	23-24			x			
7 Pole	25-26			x			LW39-□□-□-7 x 5J/18
	27-28				x		
8 Pole	29-30				x		LW39-□□-□-8 x 5J/21
	31-32		x				
9 Pole	33-34					x	LW39-□□-□-9 x 5J/24
	35-36				x		
10 Pole	37-38	x					LW39-□□-□-10 x 5J/27
	39-40					x	

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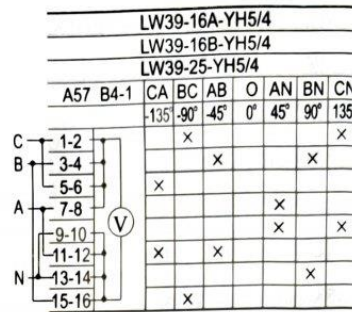
(35) **LW39 Series Cam switches**

Voltage Measurement Cam switch

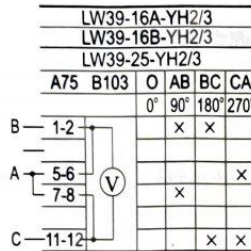
With "0" position, N line and 3-phase phase voltage of changeover measurement



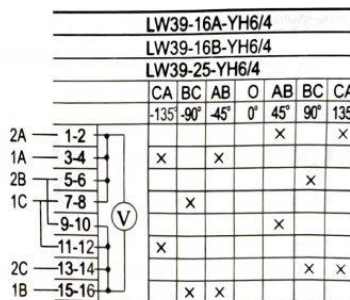
With "0" position, N line, 3-phase phase voltage and 3-phase wire voltage of changeover measurement



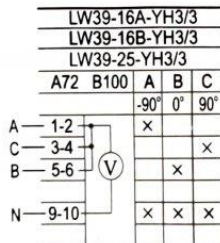
With "0" position, 3-phase wire voltage of changeover measurement



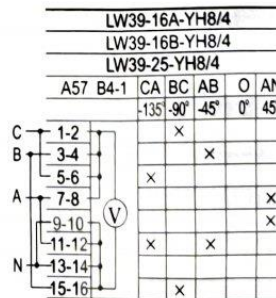
With "0" position, 3-phase wire voltage of changeover measurement separate for 2 power supplies



Without "0" position, with N line, 3-phase phase voltage of changeover measurement



With "0" position, N line, 1-phase phase voltage and 3-phase wire voltage of changeover measurement

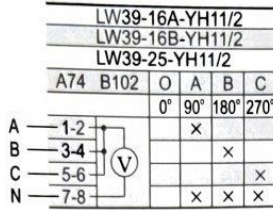


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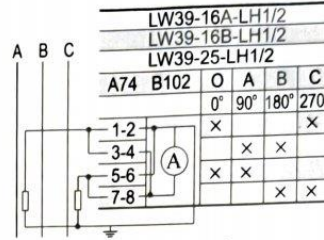
Voltage Measurement Cam switch

With "0" position, without N line, 3-phase wire voltage of changeover measurement

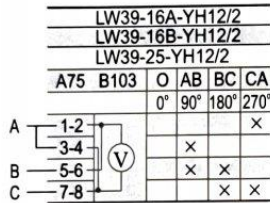


Current Measurement Cam switch

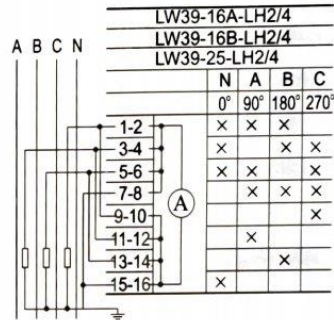
2 transformers, with "0" line, without N line, 3-phase current of changeover measurement



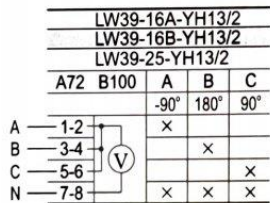
With "0" position, without N line, 3-phase wire voltage of changeover measurement



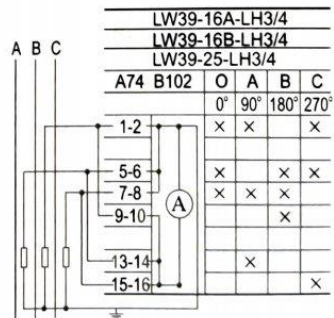
3 transformers, with N line, changeover measurement A, B, C, N 3-phase 4-wire current



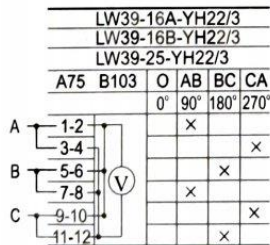
Without "0" position, with N line, 3-phase phase voltage of changeover measurement



3 transformers, with "0" position, changeover measurement A, B, C 3-phase current



With "0" position, without N line, 3-phase wire voltage of changeover measurement



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LW39 Series Cam switches

Power Transmission and Distribution ON/OFF Control Switches LW39A Type

Model of Switch	LW39-16A-Z/J/1a.4.6a.40.20/7					
	LW39-25-Z/J/1a.4.6a.40.20/7					
Panel Symbol	After Break	Pre-close	Close	After Close	Pre-break	Break
Handle Direction	←	↑	↗	↑	←	↘
Handle Angle	-90°	0°	45°	0°	-90°	-135°
1a	1-3	x		x		
	2-4	x			x	
4	5-8		x			
	6-7					x
6a	9-10		x		x	
	10					
	9-12			x		
40	11-10	x			x	x
	13-14		x		x	
	15-14	x				x
20	13-16		x	x		
	17-19		x	x		
	20-18	x				x
	17-18		x		x	

Note: replace LW2-Z-1a.4.6a.40.20/F8

Model of Switch	LW39-16A-Z/49.6781/8					
	LW39-25-Z/49.6781/8					
Panel Symbol	After Break	Pre-close	Close	After Close	Pre-break	Break
Handle Direction	←	↑	↗	↑	←	↘
Handle Angle	-90°	0°	45°	0°	-90°	-135°
1-2		x		x		
3-4	x				x	
5-6			x			
7-8						x
9-10		x		x		
11-12						
13-14			x			
15-16	x				x	x
17-18						x
19-20						
21-22		x			x	
23-24	x					x
25-26			x	x		
27-28			x	x		
29-30		x			x	
31-32	x					x

Note: replace LW12-16D/49.6781/7

Model of Switch	LW39-16A-Z/1a.4.20/4					
	LW39-25-Z/1a.4.20/4					
Panel Indication	After Break	Pre-close	Close	After Close	Pre-break	Break
Handle Direction	←	↑	↗	↑	←	↘
Position Angle	-90°	0°	45°	0°	-90°	-135°
1a	1-2		x		x	
	3-4	x				x
4	5-6			x		
	7-8					x
20	9-10			x	x	
	11-12		x			x
	13-14	x				x
	15-16					

Note: replace LW2-Z-1a.4.20/F8

Model of Switch	LW39-16A-Z/1a.4.6a.40.20/5					
	LW39-25-Z/1a.4.6a.40.20/5					
Panel Indication	After Break	Pre-close	Close	After Close	Pre-break	Break
Handle Direction	←	↑	↗	↑	←	↘
Position Angle	-90°	0°	45°	0°	-90°	-135°
1a	1-2		x		x	
	3-4	x				x
4	5-6			x		
	7-8					x
6a	9-10		x	x	x	
	11-12	x				x
40	13-14	x	x			x
	15-16			x	x	
20	17-18			x	x	
	19-20	x				x

Note: replace LW2-Z-1a.4.6a.40.20/F8

Model of Switch	LW39-16A-Z/J/1a.4.6a.20/6					
	LW39-25-Z/J/1a.4.6a.20/6					
Panel Indication	After Break	Pre-close	Close	After Close	Pre-break	Break
Handle Direction	←	↑	↗	↑	←	↘
Position Angle	-90°	0°	45°	0°	-90°	-135°
1a	1-3		x		x	
	2-4	x				x
4	5-8			x		
	6-7					x
6a	9-10		x		x	
	10					
	9-12			x		
20	11-10	x				x
	13-14		x			x
	13-15			x	x	
	16-14	x				x

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Capacitor Enclosure Regulating Switches

8-loop Main Capacitor Enclosure Regulating Switch

		LW39-16A-3OI-21-9/6								
		LW39-16B-3OI-21-9/6								
	Auto	0	1	2	3	4	5	6	7	8
	-30°	0°	30°	60°	90°	120°	150°	180°	210°	240°
1-2		x								
3-4	x									
5-6	x									
7-8			x	x	x	x	x	x	x	x
9-10				x	x	x	x	x	x	x
11-12					x	x	x	x	x	x
13-14						x	x	x	x	x
15-16							x	x	x	x
17-18								x	x	x
19-20									x	x
21-22										x
23-24										

8-loop Auxiliary Capacitor Enclosure Regulating Switch

		LW39-16A-3JF-0-8/4								
		LW39-16B-3JF-0-8/4								
		0	1	2	3	4	5	6	7	8
		-90°	-60°	30°	0°	30°	60°	90°	120°	150°
1-2			x							
3-4				x						
5-6					x					
7-8						x				
9-10							x			
11-12								x		
13-14									x	
15-16										x

6-loop Main Capacitor Enclosure Regulating Switch

		LW39-16A-3OG-21-7/5						
		LW39-16B-3OG-21-7/5						
	Auto	0	1	2	3	4	5	6
	-30°	0°	30°	60°	90°	120°	150°	180°
1-2		x						
3-4	x							
5-6	x							
7-8				x	x	x	x	x
9-10					x	x	x	x
11-12						x	x	x
13-14							x	x
15-16								x
17-18								
19-20								

6-loop Auxiliary Capacitor Enclosure Regulating Switch

		LW39-16A-3JD-0-6/3						
		LW39-16B-3JD-0-6/3						
		0	1	2	3	4	5	6
		-90°	-60°	30°	0°	30°	60°	90°
1-2			x					
3-4				x				
5-6					x			
7-8						x		
9-10							x	
11-12								x

10-loop Main Capacitor Enclosure Regulating Switch

		LW39-16A-3OK-21-AC/7										
		LW39-16B-3OK-21-AC/7										
	Auto	0	1	2	3	4	5	6	7	8	9	10
	-30°	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°
1-2		x										
3-4	x											
5-6	x											
7-8			x	x	x	x	x	x	x	x	x	x
9-10				x	x	x	x	x	x	x	x	x
11-12					x	x	x	x	x	x	x	x
13-14						x	x	x	x	x	x	x
15-16							x	x	x	x	x	x
17-18								x	x	x	x	x
19-20									x	x	x	x
21-22										x	x	x
23-24											x	x
25-26												x
27-28												

10-loop Auxiliary Capacitor Enclosure Regulating Switch

		LW39-16A-3JH-0-A/5										
		LW39-16B-3JH-0-A/5										
		0	1	2	3	4	5	6	7	8	9	10
		-90°	-60°	30°	0°	30°	60°	90°	120°	150°	180°	210°
1-2			x									
3-4				x								
5-6					x							
7-8						x						
9-10							x					
11-12								x				
13-14									x			
15-16										x		
17-18											x	
19-20												x

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LW39 Series Cam switches

Product Model of Operating Motor Switch

LW39-□ □ □ □ / □ - □ □

Motor Power (kW)

Code of Usage Feature (reference to Table 2)

Conventional Thermal Current

Usage

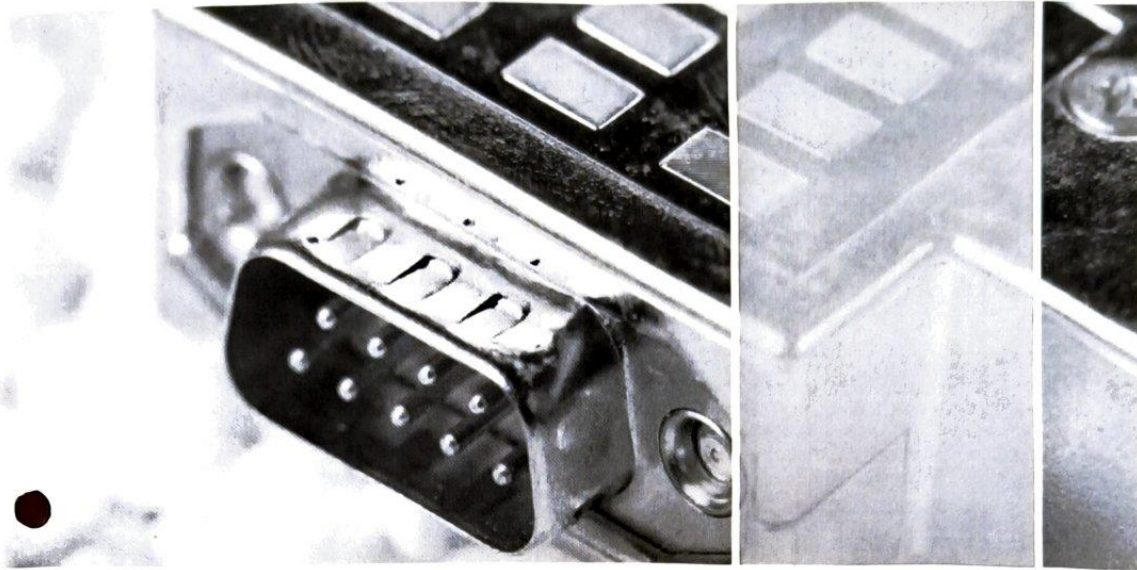
Table 2 Codes of Usage Features of Operating Motor

Usage	Direct Startup Cage Motor	Forward / Backward Startup Cage Motor	Two-speed Motor Direct Startup and Variable Speed	Star delta Startup Cage Motor
Code of Feature	Q	N	S	XS

Function	Model	Panel Symbol	Junction List																																								
Direct startup, disconnected during the operation	LW39-63-Q15/2 LW39-25-Q5.5/2 LW39-16A-Q3/2 LW39-16B-Q3/2		<table border="1"> <thead> <tr> <th>Panel symbol</th> <th>OFF</th> <th>ON</th> </tr> <tr> <th>Handle angle</th> <th>0°</th> <th>45°</th> </tr> </thead> <tbody> <tr> <td>A 1-2</td> <td></td> <td>x</td> </tr> <tr> <td>B 3-4</td> <td></td> <td>x</td> </tr> <tr> <td>C 5-6</td> <td></td> <td>x</td> </tr> <tr> <td>7-8</td> <td></td> <td></td> </tr> </tbody> </table>	Panel symbol	OFF	ON	Handle angle	0°	45°	A 1-2		x	B 3-4		x	C 5-6		x	7-8																								
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7-8																																											
Startup, plug braking Reversal, closed ON/OFF	LW39-63-N6/3 LW39-25-N4/3 LW39-16A-N1.2/3 LW39-16B-N1.2/3		<table border="1"> <thead> <tr> <th>Panel symbol</th> <th>1</th> <th>0</th> <th>2</th> </tr> <tr> <th>Handle angle</th> <th>45°</th> <th>0°</th> <th>45°</th> </tr> </thead> <tbody> <tr> <td>A 1-2</td> <td></td> <td></td> <td>x</td> </tr> <tr> <td>B 3-4</td> <td>x</td> <td></td> <td></td> </tr> <tr> <td>5-6</td> <td>x</td> <td></td> <td></td> </tr> <tr> <td>7-8</td> <td></td> <td></td> <td>x</td> </tr> <tr> <td>C 9-10</td> <td>x</td> <td></td> <td>x</td> </tr> <tr> <td>11-12</td> <td>x</td> <td></td> <td>x</td> </tr> </tbody> </table>	Panel symbol	1	0	2	Handle angle	45°	0°	45°	A 1-2			x	B 3-4	x			5-6	x			7-8			x	C 9-10	x		x	11-12	x		x								
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Two-speed motor Startup and variable speed	LW39-63-S15/4 LW39-25-S5.5/4 LW39-16A-S3/4 LW39-16B-S3/4		<table border="1"> <thead> <tr> <th>Panel symbol</th> <th>1</th> <th>0</th> <th>2</th> </tr> <tr> <th>Handle angle</th> <th>45°</th> <th>0°</th> <th>45°</th> </tr> </thead> <tbody> <tr> <td>A 1-2</td> <td>x</td> <td></td> <td></td> </tr> <tr> <td>3-4</td> <td></td> <td></td> <td>x</td> </tr> <tr> <td>B 5-6</td> <td></td> <td></td> <td>x</td> </tr> <tr> <td>7-8</td> <td>x</td> <td></td> <td></td> </tr> <tr> <td>C 9-10</td> <td></td> <td></td> <td>x</td> </tr> <tr> <td>11-12</td> <td></td> <td></td> <td>x</td> </tr> <tr> <td>13-14</td> <td>x</td> <td></td> <td></td> </tr> <tr> <td>15-16</td> <td></td> <td></td> <td>x</td> </tr> </tbody> </table>	Panel symbol	1	0	2	Handle angle	45°	0°	45°	A 1-2	x			3-4			x	B 5-6			x	7-8	x			C 9-10			x	11-12			x	13-14	x			15-16			x
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Star delta startup	LW39-63-XS18.5/4		<table border="1"> <thead> <tr> <th>Panel symbol</th> <th>0</th> <th>Y</th> <th>Δ</th> </tr> <tr> <th>Handle angle</th> <th>45°</th> <th>0°</th> <th>45°</th> </tr> </thead> <tbody> <tr> <td>A 1-2</td> <td></td> <td>x</td> <td>x</td> </tr> <tr> <td>3-4</td> <td></td> <td></td> <td>x</td> </tr> <tr> <td>B 5-6</td> <td></td> <td>x</td> <td>x</td> </tr> <tr> <td>7-8</td> <td></td> <td>x</td> <td></td> </tr> <tr> <td>C 9-10</td> <td></td> <td></td> <td>x</td> </tr> <tr> <td>11-12</td> <td></td> <td></td> <td>x</td> </tr> <tr> <td>13-14</td> <td></td> <td>x</td> <td>x</td> </tr> <tr> <td>15-16</td> <td></td> <td></td> <td>x</td> </tr> </tbody> </table>	Panel symbol	0	Y	Δ	Handle angle	45°	0°	45°	A 1-2		x	x	3-4			x	B 5-6		x	x	7-8		x		C 9-10			x	11-12			x	13-14		x	x	15-16			x
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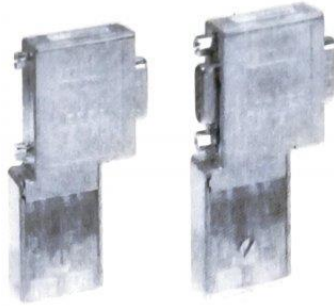
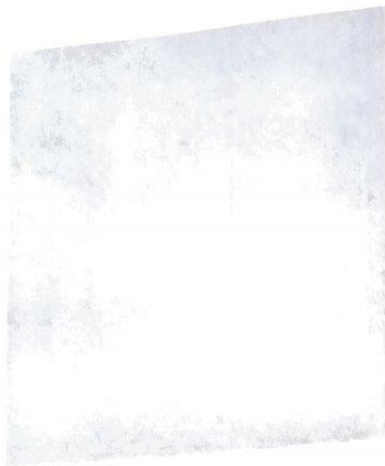
SOFTLINK · Field-bus Connector

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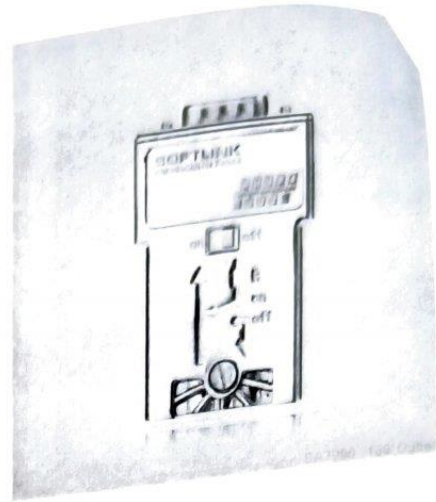
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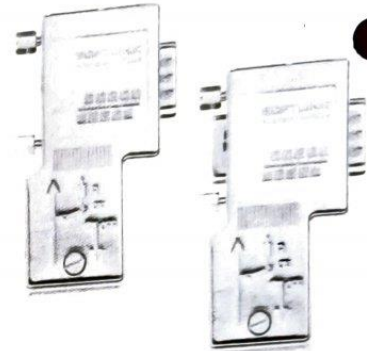
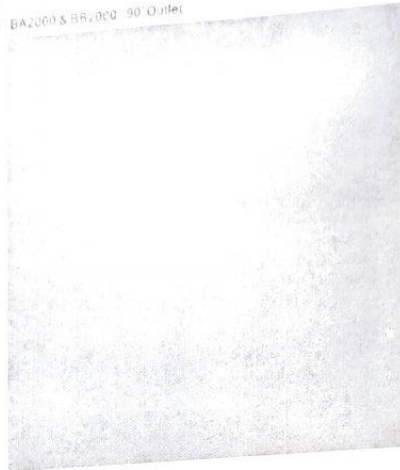
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BA2000 & BB2000 90° Outlet



BA1000 & BB1000 25° Outlet



BA1200 & BB1200 90° Outlet



Metal-shielded Field-bus connectors have a strong shielding action to high-frequency interference and guarantee a smooth communication in any harsh industrial environment.

SOFTLINK's metal-shielded Field-bus connectors offer 3 outlet modes: 35°, 90°, and 180°. And the 90° metal-shielded Field-bus connector applies fast-wiring technology, which could save time and improve installation efficiency substantially. Also with transparent caps, it is more convenient to check the connection.

Product	Order NO.
35° outlet, without programming port	300 972-BA1000
35° outlet, with programming port	300 972-BB1000
90° outlet, without programming port	300 972-BA1200
90° outlet, with programming port	300 972-BB1200
90° outlet, without programming port, fast-wiring	300 972-BA2000
90° outlet, with programming port, fast-wiring	300 972-BB2000
180° outlet, without programming port	300 972-BA3000

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(21)



BA5000 90°Outlet



BA6000 & BB6000 90°Outlet



Self-diagnostic fieldbus connectors

Self-diagnostic Field-bus connectors have 3 LED indicators (blue, green and orange) to show the working status or fault status of the network and the Field-bus connectors

- Orange indicator is termination resistor
- Blue indicator is system hardware connection
- Green indicator is network transmission

Self-diagnostic Field-bus connectors have fast-wiring, which could save installation time

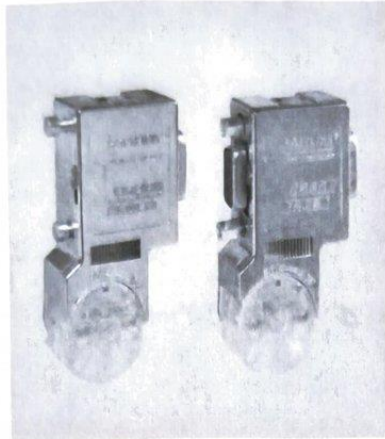
Optoelectronic isolation PROFIBUS Field-bus connector

Optoelectronic isolation PROFIBUS Field-bus connector adapts high-speed optoelectronic isolation technique and new RS485 chip to enhance drive capability greatly and minimize EMI in any harsh electromagnetic environment (more effective in communication networks where inverters work). Optoelectronic isolation also solved the problem of frequently damaged communication interfaces caused by the electrical potential difference in network.

Product	Order NO.
90° outlet, without programming port, optical isolation	300 972-BA5000
Self-diagnosis 90° outlet, without programming port	300 972-BA6000
Self-diagnosis 90° outlet, with programming port	300 972-BB6000

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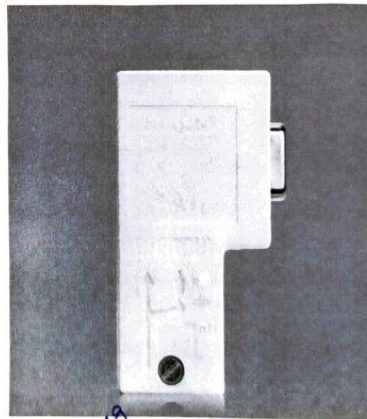
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Multi-Angle

Multi-Angle Profibus Field-bus connectors can switch outlet modes between 35° and 90°. Users can adjust outlet angle based on field needs. Transparent caps allow for convenient wiring check.

Product	Order NO.
Multi-Angle, without programming port	300 972-BA8000
Multi-Angle, with programming port	300 972-BB8000



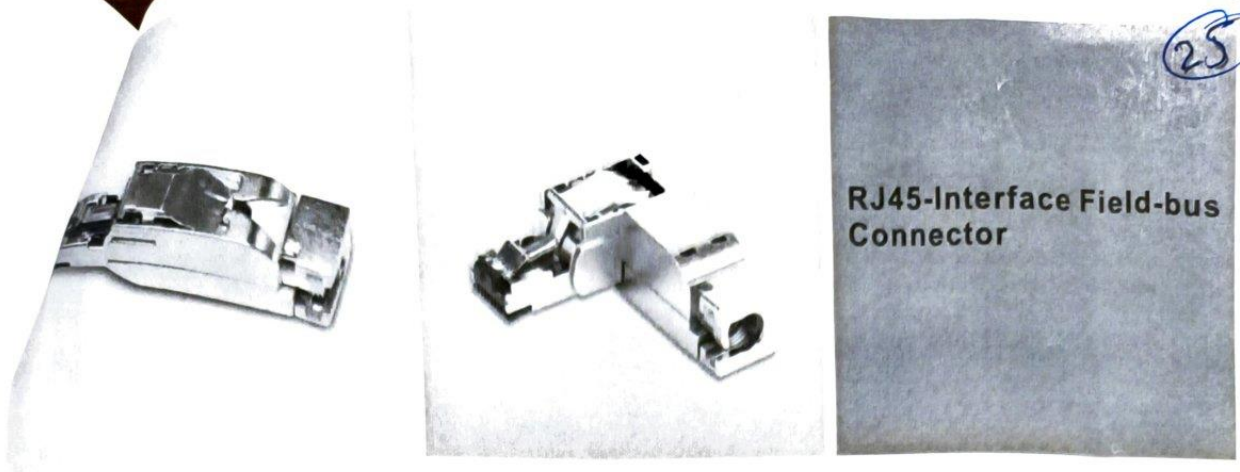
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CANopen Field-bus connector

CANopen Field-bus connector achieves the CANopen communication with CANopen cable. The cable core of connector is fixed with bolts, which is more safe and reliable. And it is build-in termination resistors which can be connected or disconnected via a seesaw switch to configure the bus node.

Product	Order NO.
90° outlet	300 972-CA01

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- Connect 4-core twisted-pair cable without special tools
- Anti-error correction technology , visible connection zone and colorful knife-type terminals.
- Excellent anti-EMI and deflection performance (metal casing)
- Industrial compatibility design (fastening metal casing, small accessories not easy to be damaged).
- RJ45 plug-in connector with compact and robust structure is suitable for industrial and office environment. It can be connected to Profinet cable quickly and easily.

Interfaces	
Industrial Ethernet FC standard interface	4 integrated insulation piercing contacts.
Industrial Ethernet RJ45 interface	One RJ45 connector
Baudrate	100MBit/s
Extension	
TP Cable Length	0-100m
Temperature	
Working Temperature	-20°C-70°C
Transport/ Storage Temperature	-40°C-80°C
Relative Humidity	< 95%
Design	
Dimension (W X H x D) mm	13.6X16X53.6
Weight	Approx X.40
Degree of Protection	IP20
Product	Order NO.
90°Field-bus connector	300-901-BG10
90°Field-bus connector	300-901-BB10



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About SOFTLINK

The Leading Manufacturer of PLC And Motion Control Products from China
The Reliable Intelligent Manufacturing Solutions Provider

SOFTLINK Automation System Co., Ltd., was founded in 2003. The persistent efforts on R&D make SOFTLINK develop rapidly from a small manufacturer to a provider of complete solutions of PLC & Motion Control products .

The Excellent Products Quality

The constant pursuit of high-quality products and excellent service, and the strict Quality Management System make it possible for SOFTLINK to output "zero-defect" products. All the products have tested by 48 hours ageing with load and pursuing 100% detection before delivery. All SOFTLINK products pass CE certifications.

The Comprehensive Industry Applications

Now we can provide SOFTLINK 300 PLC, IDEABOX control system, Remote I/O, Field-bus connectors etc. All the products are sold around the world and are widely used in various fields.

The Professional Technical Support Team

24 branches cover more than 50 countries and regions, the professional technical support team can offer the timely technical support for customers all over the world.

For more information, please visit: www.softlink.cn

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Fax: +86-755-2533 3788

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Website: www.softlink.cn E-mail: info@softlink.cn

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Rectangular-shaped Inductive Proximity Sensor **GX-F/H SERIES**

Proximity Sensor

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SPECIFICATIONS

- FIBER OPTICS
- LASER
- PHOTO-ELECTRIC
- MICRO PHOTO-ELECTRIC
- AREA
- ETH LIGHT BARRIERS / SAFETY
- ASSURE / FLOW
- COLLECTING
- COLLUSAR
- SENSOR
- SMILE
- ASSURE
- STATIC
- LASER
- PLC
- HUMAN
- ENERGY
- FA
- MACHINE
- UV
- Selection
- Cable
- Cable
- Net weight
- GX-F/H
- GXL
- GL
- 3X-M
- UPL
- GX

GX-15 type

Item	Type	NPN output				PNP output			
		Long sensing range				Long sensing range			
		Front sensing	GX-F15A(I)	GX-F15B(I)	GX-FL15A(I)	GX-FL15B(I)	GX-F15A(I)-P	GX-F15B(I)-P	GX-FL15A(I)-P
Model No. (Note 2)	Top sensing	GX-H15A(I)	GX-H15B(I)	GX-HL15A(I)	GX-HL15B(I)	GX-H15A(I)-P	GX-H15B(I)-P	GX-HL15A(I)-P	GX-HL15B(I)-P
CE marking directive compliance	EMC Directive, RoHS Directive								
Max. operation distance (Note 3)	5.0 mm 0.197 in ± 8 %		8.0 mm 0.315 in ± 8 % (Note 4)		5.0 mm 0.197 in ± 8 %		8.0 mm 0.315 in ± 8 % (Note 4)		
Stable sensing range (Note 3)	0 to 4.2 mm 0 to 0.165 in		0 to 6.7 mm 0 to 0.264 in (Note 4)		0 to 4.2 mm 0 to 0.165 in		0 to 6.7 mm 0 to 0.264 in (Note 4)		
Standard sensing object	Iron sheet 20 × 20 × t 1 mm 0.787 × 0.787 × t 0.039 in		Iron sheet 30 × 30 × t 1 mm 1.181 × 1.181 × t 0.039 in		Iron sheet 20 × 20 × t 1 mm 0.787 × 0.787 × t 0.039 in		Iron sheet 30 × 30 × t 1 mm 1.181 × 1.181 × t 0.039 in		
Hysteresis	20 % or less of operation distance (with standard sensing object)								
Repeatability	Along sensing axis, perpendicular to sensing axis: 0.04 mm 0.002 in or less								
Supply voltage	12 to 24 V DC ± 10 / -15 % Ripple P-P 10 % or less								
Current consumption	15 mA or less								
Output	NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between output and 0 V) • Residual voltage: 2 V or less (at 100 mA sink current)				PNP open-collector transistor • Maximum source current: 100 mA • Applied voltage: 30 V DC or less (between output and +V) • Residual voltage: 2 V or less (at 100 mA source current)				
Utilization category	DC-12 or DC-13								
Output operation	Normally open	Normally closed	Normally open	Normally closed	Normally open	Normally closed	Normally open	Normally closed	
Max. response frequency	250 Hz		150 Hz (Note 5)		250 Hz		150 Hz (Note 5)		
Operation indicator	Orange LED (lights up when the output is ON)								
Pollution degree	3 (Industrial environment)								
Protection	IP68 (IEC), IP68G (Note 6, 7)								
Ambient temperature	-25 to +70 °C -13 to +158 °F, Storage: -40 to +85 °C -40 to +185 °F								
Ambient humidity	35 to 85 % RH, Storage: 35 to 95 % RH								
Voltage withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure								
Insulation resistance	50 MΩ, or more, with 500 V DC megger between all supply terminals connected together and enclosure								
Vibration resistance	10 to 500 Hz frequency, 3 mm 0.118 in double amplitude (Max. 20 G) in X, Y and Z directions for two hours each								
Shock resistance	10,000 m/s ² acceleration (1,000 G approx.) in X, Y and Z directions three times each								
Sensing range variation	Temperature characteristics	Over ambient temperature range -25 to +70 °C -13 to +158 °F: Within ± 8 % of sensing range at +23 °C +73 °F							
	Voltage characteristics	Within ± 2 % for ± 10 / -15 % fluctuation of the supply voltage							
Material	Enclosure: PBT, Indicator part: Polyester								
Cable	0.15 mm ² 3-core oil, heat and cold resistant cabtyre cable, 1 m 3.281 ft long								
Cable extension	Extension up to total 100 m 328.084 ft is possible with 0.3 mm ² , or more, cable.								
Net weight	20 g approx.								

- Notes: 1) Where measurement conditions have not been specified precisely, the conditions used were an ambient temperature of +23 °C +73 °F.
 2) " I " in the model No. indicates a different frequency type.
 3) The maximum operation distance stands for the maximum distance for which the sensor can detect the standard sensing object. The stable sensing range stands for the sensing range for which the sensor can stably detect the standard sensing object even if there is an ambient temperature drift and/or supply voltage fluctuation.
 4) This is the numerical value which the sensor mount onto an insulator. When mounted onto a steel or stainless steel plate, insert the optional aluminum sheet between the sensor and the plate.
 5) This is the numerical value which the sensor mount onto an insulator. When mounted onto a metallic plate, max. response frequency will decrease.
 6) Panasonic Industrial Devices SUNX's IP68 test method
 ① Immerse at 0 m below 0 °C +32 °F water surface and leave for 30 min. Then, immerse at 0 m below +70 °C +158 °F water surface and leave for 30 min.
 ② Regard the heat shock test in ① as one cycle and perform 20 cycles.
 ③ Leave in water at a depth of 1 m 3.281 ft in water for 500 hours.
 ④ After tests ① to ③, insulation resistance, voltage withstandability, current consumption, and sensing ranges must meet the standard values.
 7) If using the sensor in an environment where cutting oil droplets splatter, the sensor may be deteriorated due to added substances in the oil. Please check the resistivity of the sensor against the cutting oil you are using beforehand.

Srinivas

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Technical data sheet of DC-DC converter

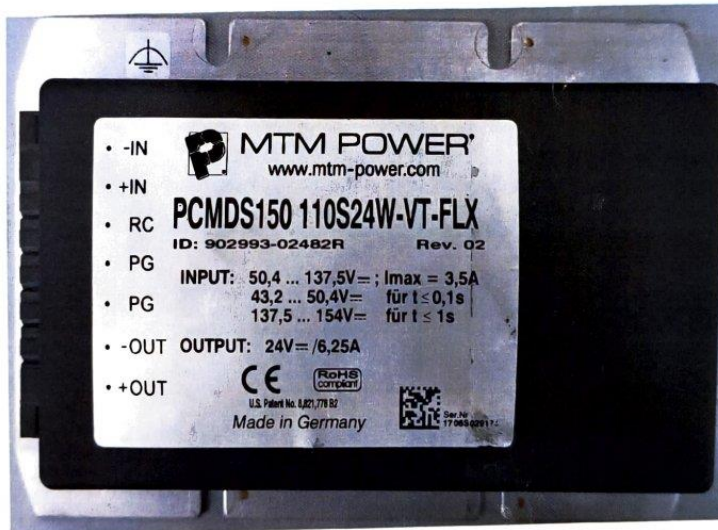
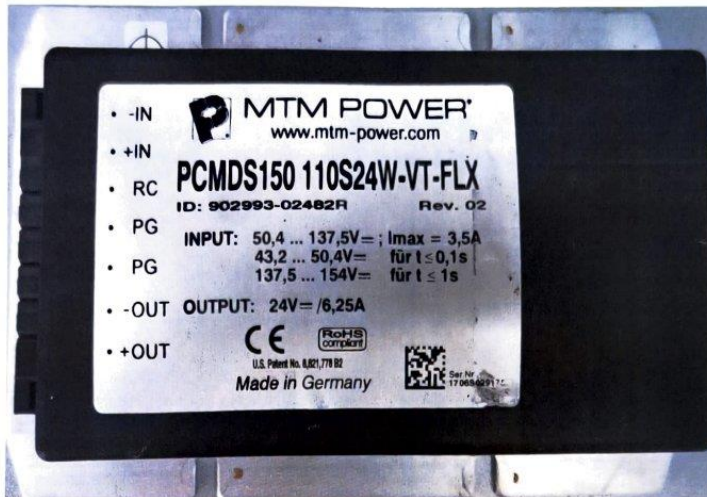
Device Name (Part No.) - PCMDS150 - 110S24 W-VT-FLX

Input voltage – 50.4 V – 137.5 V DC

Input Current (Imax) – 3.5A

Output Voltage – 24V DC

Output Current (Imax) – 6.5A

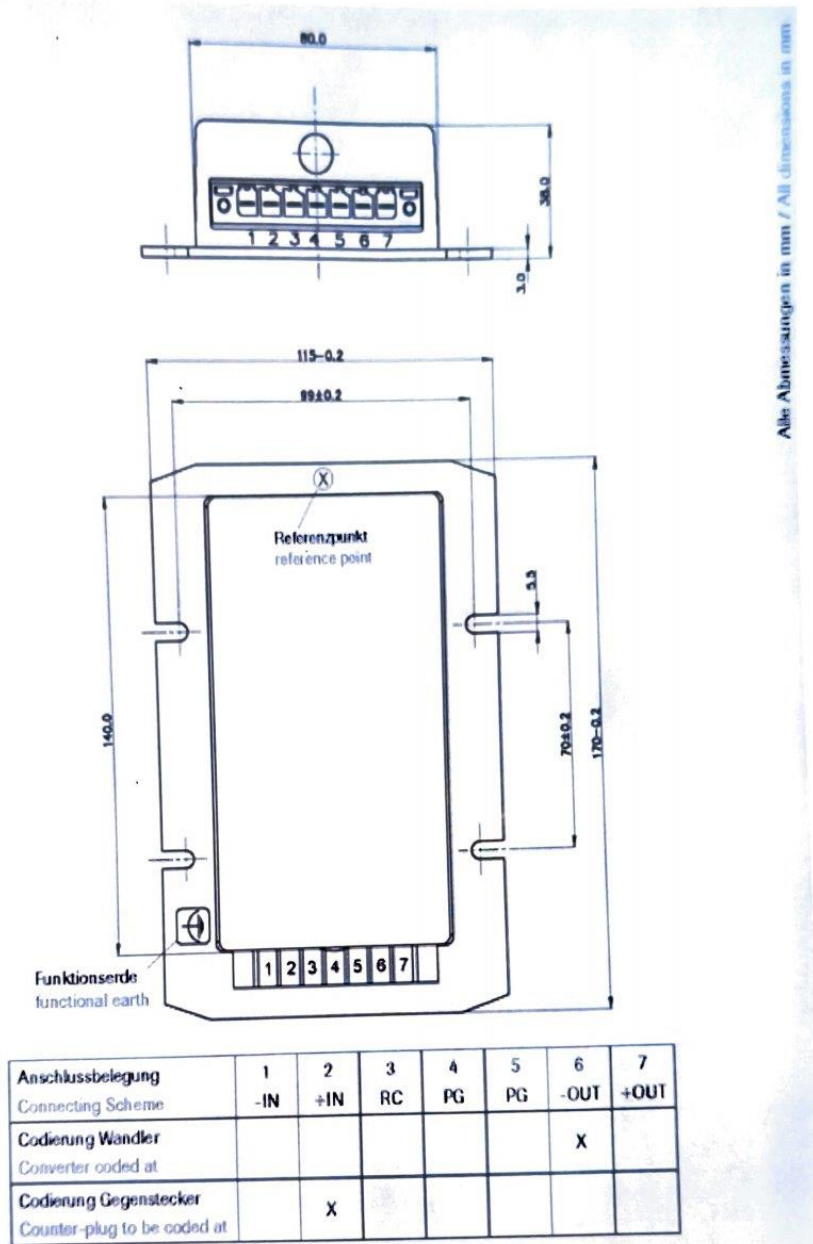


- Image of installed DC_DC converter in Noida greater Noida project.
- PCMDS150 - 110S24 W-VT-FLX part no. DC-DC converter datasheet not available on MTM power website.

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Technical data sheet of DC-DC converter



Physical dimensions of DC-DC converter

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RISH XMER 3PH.

CT 185/27 40/5A



Data Sheet



Page 1 of 7



Rishabh Instruments



I/08/IV/1217/D

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RISH XMER 3PH.

General specification

- # **Applicable standard** :- IEC-61869-1&2 / IEC-60044-1, BS3938, BS7626, IS-2705-1,2&3
- # **Case** :- Unfilled polycarbonate, flame retardant grades classified UL 94V-0.
- # **Insulation class** :- E(120°C max)
- # **Test voltage** :- 3KV 50 Hz for 1 minute.
- # **Operating frequency** :- 50Hz/60Hz
- # **Rated Primary current** :- 40A to 800A
- # **Rated secondary current** :- 5A standard
- # **Continuous current** :- 1.2X Rated current
- # **Rated system voltage** :- 0.72/3KV
- # **Ambient temperature range** :- -25°C to +40°C
- # **Storage temperature range** :- -50 to +80°C

Features

- # Compact size.
- # Wide range of system current Ratings.
- # Hinged terminal cover.
- # Various mounting options like DIN rail mounting, Wall mounting.
- # Terminal with self lifting screw with dual connection facility giving access from both sides of transformers.

Somanya

Page 2 of 7



Rishabh Instruments

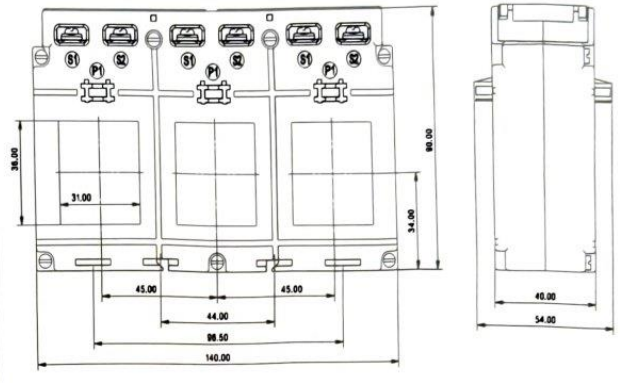
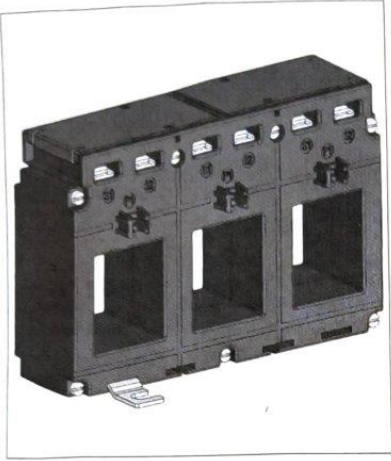


I/08/IV/1217/D

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RISH XMER 3PH.

RISH XMER 3PH 140-31(40)

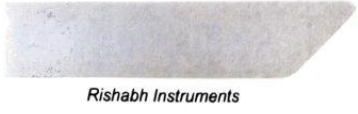


CT Ratio	Class 0.5	Class 1	Class 3
250/5A	1.5VA	1.5VA	2.5VA
300/5A	2.5VA	2.5VA	3.75VA
400/5A	2.5VA	2.5VA	3.75VA
500/5A	2.5VA	2.5VA	3.75VA

Smayya

ALL DIMENSIONS ARE IN MM

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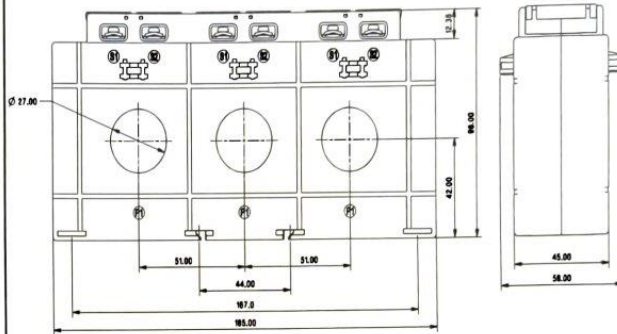


L/08/IV/1217/D

17

RISH XMER 3PH.

RISH XMER 3PH 185-27(45)



CT Ratio	Class 1	Class 3
40/5A	-	1.25VA
60/5A	-	1.5VA
80/5A	-	1.5VA
100/5A	1.5VA	1.5VA
150/5A	1.5VA	1.5VA
200/5A	2.5VA	2.5VA
250/5A	2.5VA	2.5VA
300/5A	5VA	5VA
400/5A	5VA	5VA
500/5A	5VA	5VA

Smaurya

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Page 6 of 7



Rishabh Instruments

Measure

Control

Record

Analyze

Optimize

I08/IV/1217/D

16

LOW VOLTAGE CURRENT TRANSFORMER

RISHABH Xmer SERIES



Data Sheet

SQUARE TYPE CURRENT TRANSFORMER



15

LOW VOLTAGE CURRENT TRANSFORMER

- # **Applicable standard:** - IEC-61869-1&2 / IEC- 60044 -1, BS 3938, IS 2705 -1,2&3.
- # **Case:** - Unfilled polycarbonate, flame retardant grades classified UL 94V-0.
- # **Connection:** - Two connection on each side. M4 screws with self lifting clamp strap assembly for RishXmer series and 1 connection on each side M4 screws with self lifting clamp strap for Rish CT series.
- # **Insulation class:** - E (120°C max)
- # **System voltage:** - 720V maximum
- # **Test voltage:** - For Ring (Window) type CT : 4KV 50 Hz for 1 min (except for 50/30 CT type and 50/50 CT type where test voltage is 3KV 50 Hz for 1 min)
For Wound type CT : 3KV 50 Hz for 1 min
- # **Operating frequency:** - 50Hz / 60 Hz
- # **Rated primary rating:** - 1A to 7500A
- # **Rated secondary output:** - 5A standard (1A on request)
- # **Rated burden:** - 1, 1.25, 1.5, 2.5, 3.75, 5, 7.5, 10, 12.5, 15, 20, 30, 45, 60, 100 VA
- # **Class of accuracy:** - 0.2, 0.2S for laboratory and power measurement
0.5, 0.5S for accurate measuring, kWh
1 for general measurement
3 for indicating instruments
- # **Ambient temperature:** - -25°C to +40°C
- # **Storage temperature:** - -50°C...+80°C
- # **Thermal short circuit current (I_{th}):**- 40xI_n for Wound type CT and 60xI_n for Bus Bar type CT.
- # **Dynamic short circuit current (I_{dyn}):**- 2.5xI_{th}
- # **Instrument security factor (FS):** - 2.5, 5, 10

Features

- # Wide range of system current Ratings.
- # Hinged terminal cover.
- # Various mounting options like DIN rail mounting, Wall mounting.
- # Terminal with self lifting screw with dual connection facility giving access from both sides of transformers.

Somanja

Page 2 of 13



Rishabh Instruments

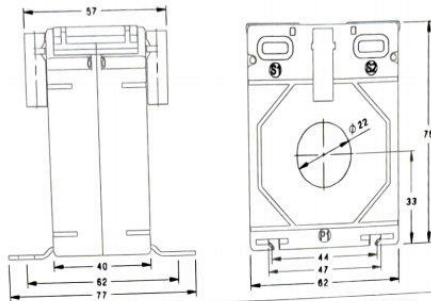


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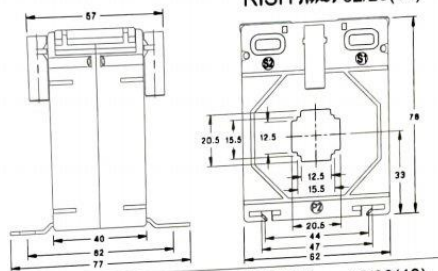
RISH Xmer 62 SERIES

RISH Xmer 62/R(40)



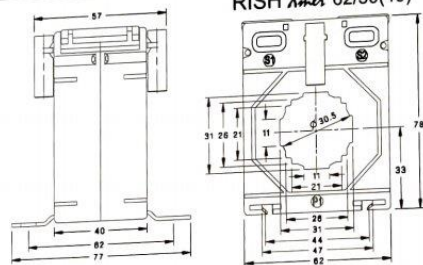
Primary Current	RISH Xmer 62/R(40)			
	Accuracy			
	0.25/0.5S	0.2	0.5	1.0
50A	-	-	-	1.5VA
60A	-	-	-	2.5VA
75A	-	-	1.5VA	2.5VA
80A	-	-	2.5VA	5VA
100A	1.5VA	-	2.5VA	5VA
120A	1.5VA	1.5VA	3.75VA	5VA
125A	2.5VA	2.5VA	5VA	7.5VA
150A	2.5VA	5VA	5VA	10VA
200A	5VA	5VA	10VA	15VA
250A	5VA	5VA	10VA	15VA
300A	5VA	5VA	10VA	15VA
400A	5VA	10VA	15VA	15VA
500A	10VA	10VA	15VA	15VA
600A	10VA	10VA	15VA	15VA

RISH Xmer 62/20(40)



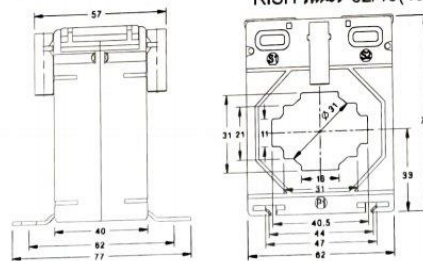
Primary Current	RISH Xmer 62/20(40)			
	Accuracy			
	0.25/0.5S	0.2	0.5	1.0
50A	-	-	-	1.5VA
60A	-	-	-	2.5VA
75A	-	-	1.5VA	3.75VA
80A	-	-	2.5VA	3.75VA
100A	1.5VA	1.5VA	2.5VA	5VA
120A	1.5VA	1.5VA	3.75VA	5VA
125A	1.5VA	1.5VA	3.75VA	5VA
150A	2.5VA	2.5VA	5VA	7.5VA
200A	3.75VA	5VA	7.5VA	10VA
250A	3.75VA	5VA	10VA	15VA
300A	5VA	5VA	10VA	15VA
400A	5VA	10VA	15VA	15VA
500A	5VA	10VA	15VA	15VA

RISH Xmer 62/30(40)



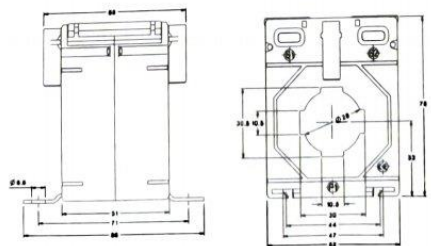
Primary Current	RISH Xmer 62/30(40)			
	Accuracy			
	0.25/0.5S	0.2	0.5	1.0
50A	-	-	-	1.25VA
60A	-	-	-	1.5VA
75A	-	-	-	2.5VA
80A	-	-	-	2VA
100A	1VA	1VA	1.5VA	3.75VA
120A	1VA	1VA	2.5VA	3.75VA
125A	1VA	1VA	2.5VA	3.75VA
150A	2.5VA	1.5VA	3.75VA	7.5VA
200A	5VA	3.75VA	5VA	10VA
250A	5VA	5VA	5VA	10VA
300A	5VA	3.75VA	10VA	15VA
400A	5VA	10VA	12.5VA	15VA
500A	5VA	10VA	12.5VA	15VA
600A	7.5VA	10VA	15VA	20VA
750A	10VA	10VA	15VA	15VA
800A	10VA	10VA	15VA	15VA

RISH Xmer 62/40(40)



Primary Current	RISH Xmer 62/40(40)			
	Accuracy			
	0.25/0.5S	0.2	0.5	1.0
100A	-	-	-	1.5VA
120A	-	-	-	1.5VA
125A	-	-	-	1.5VA
150A	-	-	-	2.5VA
200A	1VA	1VA	1.5VA	3.75VA
250A	1.5VA	1.5VA	2.5VA	5VA
300A	1.5VA	1.5VA	5VA	5VA
400A	2.5VA	2.5VA	5VA	5VA
500A	2.5VA	5VA	5VA	7.5VA
600A	2.5VA	7.5VA	7.5VA	10VA
750A	5VA	10VA	10VA	10VA
800A	5VA	10VA	10VA	10VA

RISH Xmer 62/30(50)



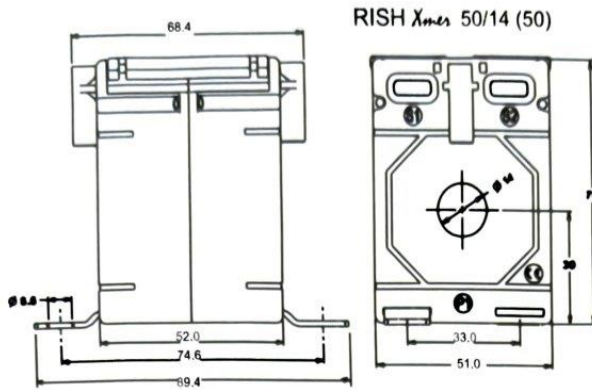
Primary Current	RISH Xmer 62/30(50)			
	Accuracy			
	0.25/0.5S	0.2	0.5	1.0
50A	-	-	-	1.5VA
60A	-	-	-	2.5VA
75A	-	-	-	2.5VA
80A	-	-	-	3.75VA
100A	1.25VA	1.25VA	2.5VA	5VA
120A	1.25VA	1.25VA	5VA	5VA
125A	1.25VA	1.25VA	5VA	5VA
150A	2VA	2VA	5VA	7.5VA
200A	5VA	3.75VA	10VA	15VA
250A	5VA	5VA	15VA	15VA
300A	5VA	5VA	15VA	15VA
400A	10VA	8.25VA	15VA	30VA
500A	5VA	7.5VA	15VA	30VA
600A	6.25VA	10VA	20VA	30VA
750A	6.25VA	10VA	20VA	30VA
800A	6.25VA	10VA	20VA	30VA

Smazya

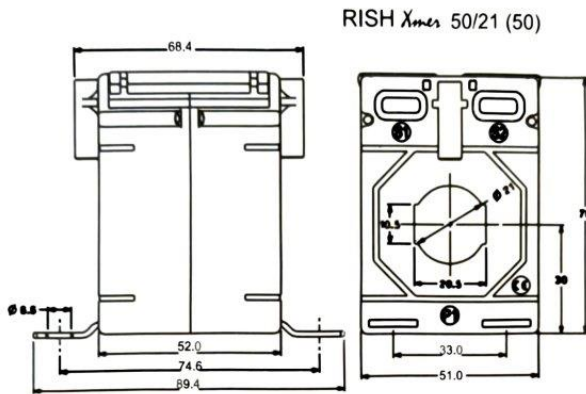
ALL DIMENSIONS ARE IN MM

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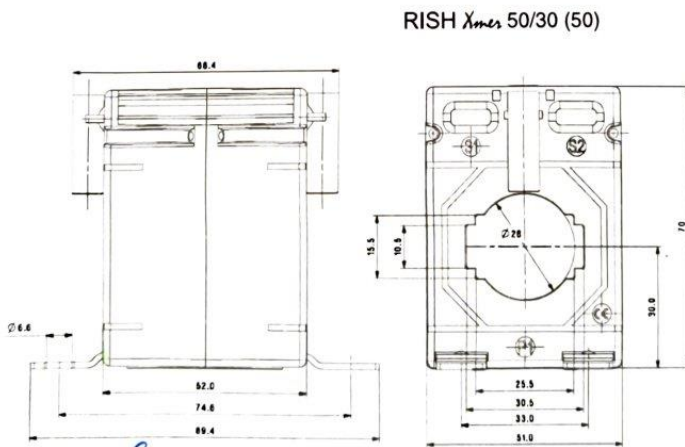
RISH Xmes 50/14 (50), 50/21 (50) and 50/30 (50) SERIES



Primary Current	RISH Xmes 50/14 (50)	
	Accuracy	
	0.5	1.0
30A	-	1VA
40A	-	1VA
50A	1.5VA	1.5VA
60A	1.5VA	1.5VA
75A	2.5VA	5VA
80A	2.5VA	5VA
100A	3.75VA	5VA
120A	3.75VA	5VA
125A	3.75VA	5VA
150A	5VA	7.5VA
200A	7.5VA	10VA
250A	10VA	12.5VA
300A	10VA	12.5VA



Primary Current	RISH Xmes 50/21 (50)	
	Accuracy	
	0.5	1.0
50A	1VA	2.5VA
60A	1.5VA	3.75VA
75A	1.5VA	3.75VA
80A	2.5VA	5VA
100A	2.5VA	5VA
120A	3.75VA	5VA
125A	5VA	5VA
150A	5VA	10VA
200A	10VA	12.5VA
250A	10VA	15VA
300A	7.5VA	12.5VA
400A	10VA	15VA



Primary Current	RISH Xmes 50/30 (50)	
	Accuracy	
	0.5	1.0
50A	-	1.5VA
60A	-	1.5VA
75A	-	2.5VA
80A	-	2.5VA
100A	1VA	3.75VA
120A	2.5VA	5VA
125A	2.5VA	5VA
150A	5VA	5VA
200A	5VA	7.5VA
250A	5VA	10VA
300A	5VA	10VA
400A	10VA	12.5VA
500A	10VA	12.5VA
600A	10VA	15VA

ALL DIMENSIONS ARE IN MM

Smaranya





12

W2S130-AA75-A2
(Exclusivo)

AC axial compact fan

Rack mounted fan

www.ebmpapst.com
 Limited partnership · Headquarters Mulfingen
 Amtsgericht (court of registration) Stuttgart · HRA 590344
 General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen
 Amtsgericht (court of registration) Stuttgart · HRB 590142

Nominal data

Type	W2S130-AA75-A2		
Motor	M2S052-CA		
Phase		1~	1~
Nominal voltage	VAC	230	230
Frequency	Hz	50	60
Method of obtaining data		fa	fa
Valid for approval/standard		CE	UL 2111
Speed (rpm)	min ⁻¹	2350	2300
Power consumption	W	30	33
Current draw	A	0.19	
Min. ambient temperature	°C	-25	-25
Max. ambient temperature	°C	80	85

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment
 Subject to change

Valid ASE/157

Item no. 15872-5-9980 · ENU · Change 99022 · Approved 2018-04-26 · Page 1 / 5



ebmpapst

www.ebmpapst.com

Fonte da Portela Camiño Feira-Bembrive 7 36214 - Vigo - España - rodavigo@rodavigo.com

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W2S130-AA75-A2

AC axial compact fan

Technical description

Weight	1.1 kg
Size	130 mm
Motor size	52
Rotor surface	Rotor open, painted black
Blade material	Sheet steel, painted black
Fan housing material	Die-cast aluminum
Guard grille material	Steel, galvanized and coated with white-aluminum plastic (RAL 9006)
Number of blades	7
Airflow direction	V
Direction of rotation	Counterclockwise, viewed toward rotor
Degree of protection	IP20
Insulation class	"B"
Moisture (F) / Environmental (H) protection class	H0+
Max. permitted ambient temp. for motor (transport/storage)	+ 80 °C
Min. permitted ambient temp. for motor (transport/storage)	- 40 °C
Installation position	Any
Condensation drainage holes	None, open rotor
Mode	S1
Motor bearing	Ball bearing
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	< 0.75 mA
Motor protection	Thermal overload protector (TOP) internally connected
Protection class	I (with customer connection of protective earth)
Conformity with standards	EN 60335-1; CE
Approval	CCC; UL 1004-3; CSA C22.2 No. 77

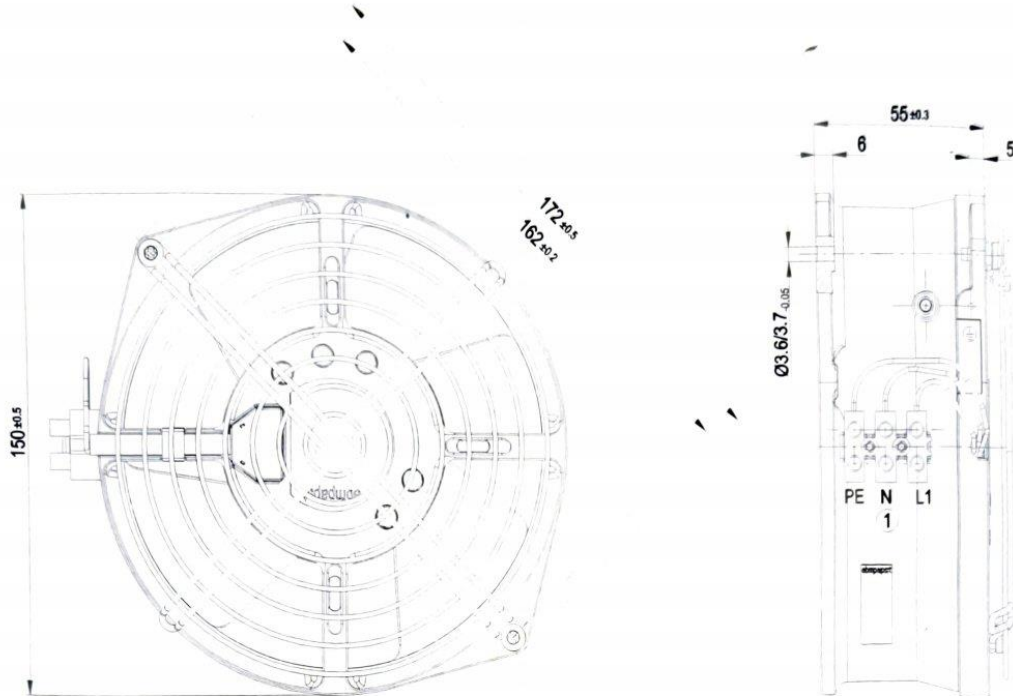
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W2S130-AA75-A2

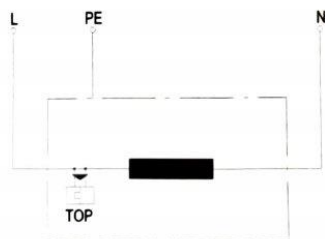
AC axial compact fan

Product drawing



1 Connection: terminal strip with 3 terminals.

Connection diagram



- L black
- PE green/yellow
- N black
- TOP Thermal overload protector

Salif ASE/15/19

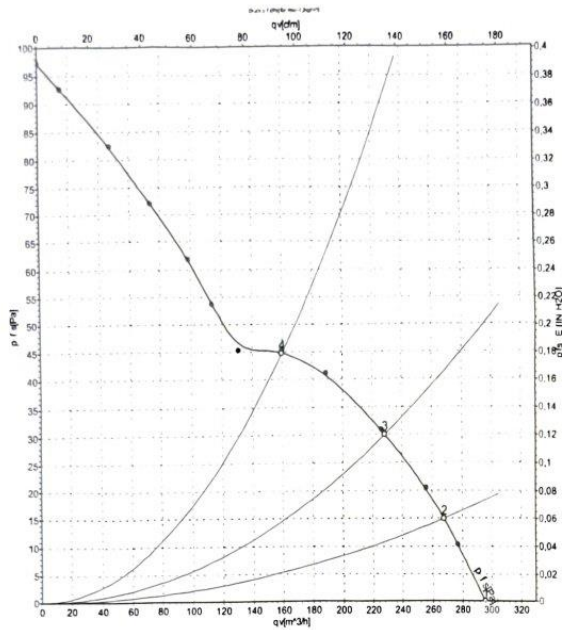




W2S130-AA75-A2

AC axial compact fan

Curves: Air performance 50 Hz



Measurement LU-32925-1

Air performance measured according to ISO 5801 installation category A. For detailed information on the measurement setup, contact ebm-papst. Intake sound level: Sound power level according to ISO 13347 / sound pressure level measured at 1 m distance from fan axis. The values given are valid under the specified measuring conditions and may vary due to conditions of installation. For deviations from the standard configuration, the parameters have to be checked on the installed unit.

Measured values

	U	f	n	P _e	I	q _v	P ₁₅	q _v	P ₁₅
	V	Hz	min ⁻¹	W	A	m ³ /h	Pa	cfm	in. wg
1	230	50	2430	30	0.19	295	0	175	0.00
2	230	50	2385	30	0.18	265	15	155	0.06
3	230	50	2340	30	0.19	230	30	135	0.12
4	230	50	2335	30	0.19	160	45	95	0.18

U = Voltage · f = Frequency · n = Speed (rpm) · P_e = Power consumption · I = Current draw · q_v = Air flow · P₁₅ = Pressure increase

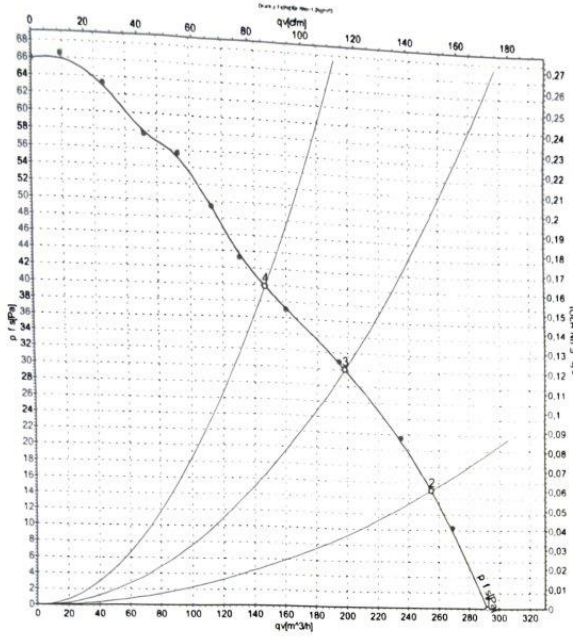
*Jalil-
15/1/16*



W2S130-AA75-A2

AC axial compact fan

Curves: Air performance 60 Hz



Measurement LU-32926-1
 Air performance measured according to ISO 5801 installation category A. For detailed information on the measurement setting, contact ebm-papst, intake sound level. Sound power level according to ISO 13347 / sound pressure level measured at 1 m distance from fan axis. The values given are valid under the specified measuring conditions and may vary due to conditions of installation. For deviations from the standard configuration, the parameters have to be checked on the installed unit.

Measured values

	U	f	n	P _e	I	q _v	P _{ts}	q _v	P _{ts}
	V	Hz	min ⁻¹	W	A	m ³ /h	Pa	cfm	in. wg
1	230	60	2400	33	0.16	290	0	170	0.00
2	230	60	2290	33	0.16	255	15	150	0.06
3	230	60	2165	33	0.17	200	30	115	0.12
4	230	60	2205	33	0.17	145	40	85	0.16

U = Voltage · f = Frequency · n = Speed (rpm) · P_e = Power consumption · I = Current draw · q_v = Air flow · p_s = Pressure increase

Salut ASE/Sig





DC Axial Fan
(24V)

7



40 x 40 x 10mm High Quality DC Fan

Features:

- 40mm fans are great for cooling a Northbridge and Southbridge
- Two bearing system selection, sleeve or 1 ball 1 sleeve
- Low noise
- Easy to connect
- Our 40mm fans are perfect for any space-limited cooling needs

Specifications:

Item No.	Bearing System	Rated Voltage (VDC)	Rated Current (AMP)	Input Power (Watt)	Fan Speed (RPM)	Air Flow (CFM)	Static Pressure (Inch-H2O)	Noise Level (dBA)	Dimension (mm)
4010L05S 4010L05B 4010L05D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	5V	0.08	0.40	4,000 ± 10%	4.2	0.07	23	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010M05S 4010M05B 4010M05D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	5V	0.10	0.50	5,000 ± 10%	5.6	0.10	24	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010H05S 4010H05B 4010H05D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	5V	0.16	0.80	6,000 ± 10%	6.2	0.13	26	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010L12S 4010L12B 4010L12D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	12V	0.06	0.72	4,000 ± 10%	4.2	0.07	23	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010M12S 4010M12B 4010M12D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	12V	0.09	1.08	5,000 ± 10%	5.6	0.10	24	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010H12S 4010H12B 4010H12D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	12V	0.12	1.44	6,000 ± 10%	6.2	0.13	26	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010L24S 4010L24B 4010L24D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	24V	0.04	0.96	4,000 ± 10%	4.2	0.07	23	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010M24S 4010M24B 4010M24D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	24V	0.06	1.44	5,000 ± 10%	5.6	0.10	24	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010H24S 4010H24B 4010H24D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	24V	0.10	2.40	6,000 ± 10%	6.2	0.13	26	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")

Jalil
ASE/Sig

⑥

Connectors:

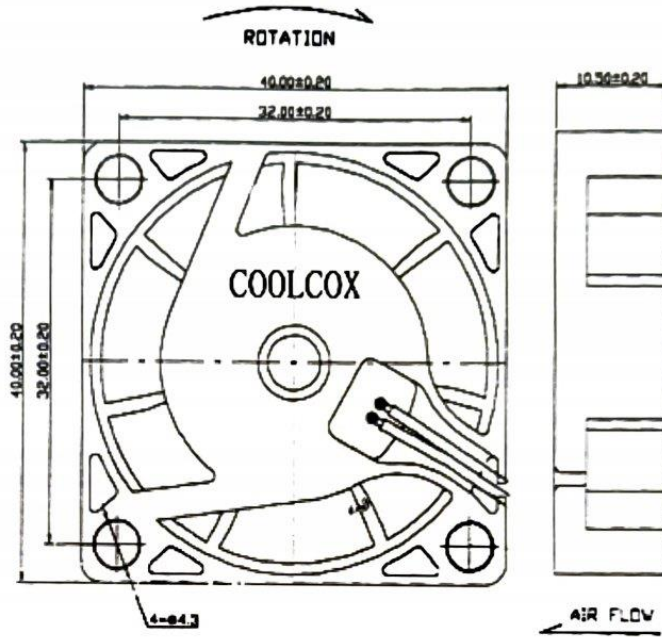
We recommend the below 2 pin, 3pin or 4pin connectors for option



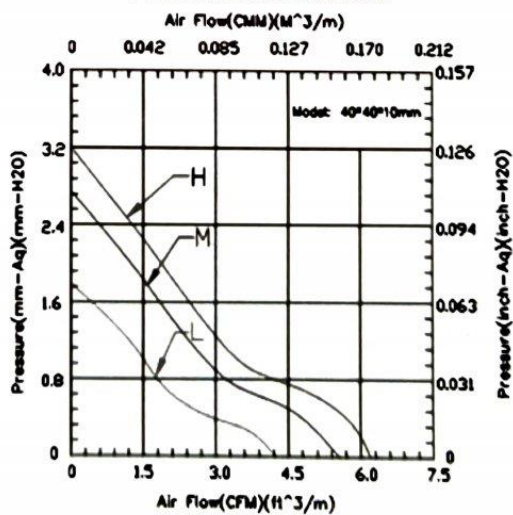
Packing:

- 900pcs/ctn
- 0.053cbm/ctn

Dimensions:



Performance Curves:



*Jalil
A/E/15/7*

5



DC Axial fan
(12V)



40 x 40 x 10mm High Quality DC Fan

Features:

- 40mm fans are great for cooling a Northbridge and Southbridge
- Two bearing system selection, sleeve or 1 ball 1 sleeve
- Low noise
- Easy to connect
- Our 40mm fans are perfect for any space-limited cooling needs

Specifications:

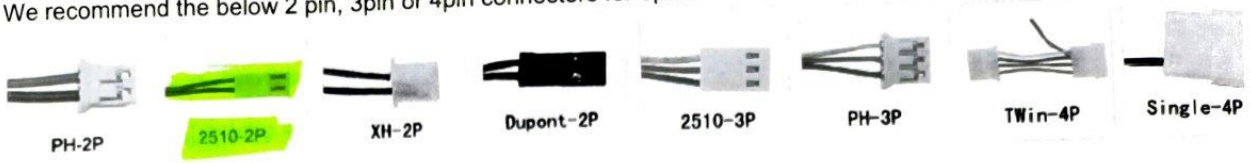
Item No.	Bearing System	Rated Voltage (VDC)	Rated Current (AMP)	Input Power (Watt)	Fan Speed (RPM)	Air Flow (CFM)	Static Pressure (Inch-H2O)	Noise Level (dBA)	Dimension (mm)
4010L05S 4010L05B 4010L05D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	5V	0.08	0.40	4,000 ± 10%	4.2	0.07	23	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010M05S 4010M05B 4010M05D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	5V	0.10	0.50	5,000 ± 10%	5.6	0.10	24	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010H05S 4010H05B 4010H05D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	5V	0.16	0.80	6,000 ± 10%	6.2	0.13	26	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010L12S 4010L12B 4010L12D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	12V	0.06	0.72	4,000 ± 10%	4.2	0.07	23	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010M12S 4010M12B 4010M12D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	12V	0.09	1.08	5,000 ± 10%	5.6	0.10	24	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010H12S 4010H12B 4010H12D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	12V	0.12	1.44	6,000 ± 10%	6.2	0.13	26	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010L24S 4010L24B 4010L24D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	24V	0.04	0.96	4,000 ± 10%	4.2	0.07	23	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010M24S 4010M24B 4010M24D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	24V	0.06	1.44	5,000 ± 10%	5.6	0.10	24	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")
4010H24S 4010H24B 4010H24D	Sleeve Bearing 1 Ball Bearing 2 Ball Bearings	24V	0.10	2.40	6,000 ± 10%	6.2	0.13	26	40 X 40 X 10 (mm) (1.57" X 1.57" X .39")

Jalif
ASF/SG

④

Connectors:

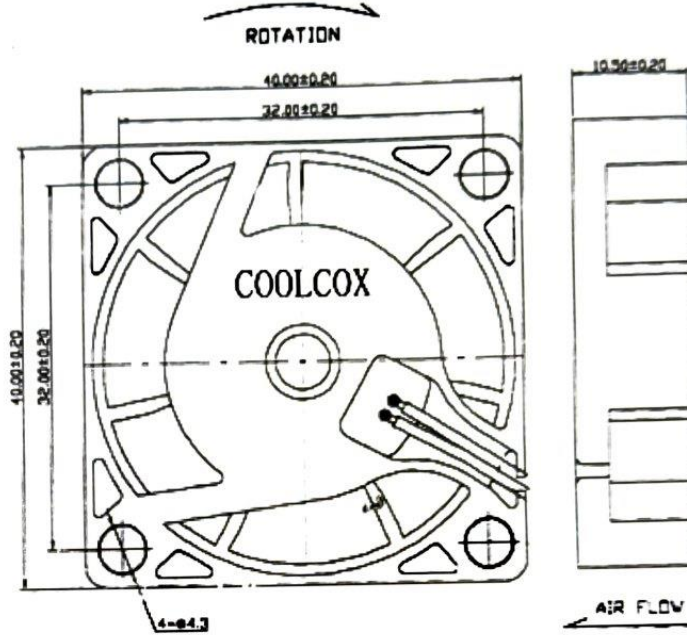
We recommend the below 2 pin, 3pin or 4pin connectors for option



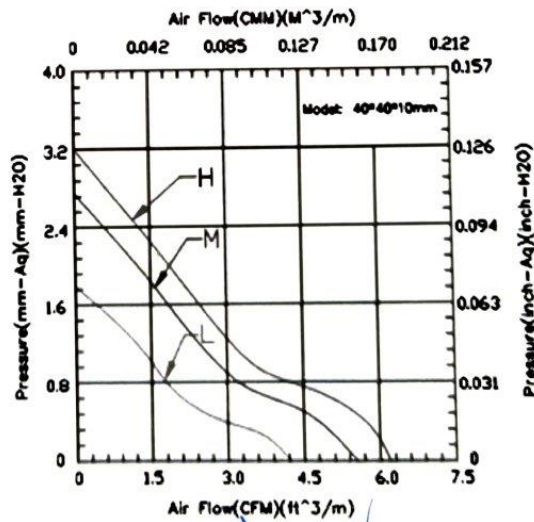
Packing:

- 900pcs/ctn
- 0.053cbm/ctn

Dimensions:



Performance Curves:

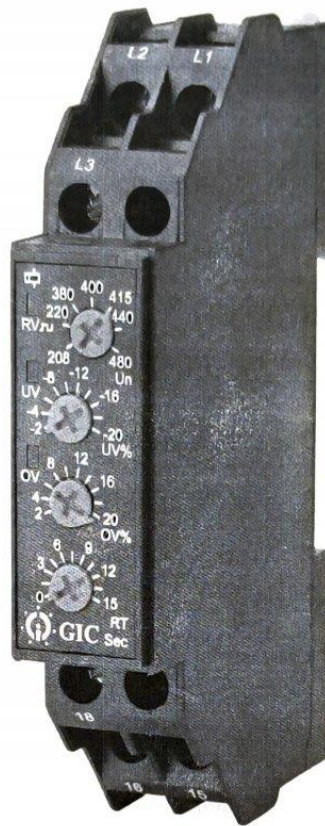


*Jalif
ASB/SG*

3

Voltage Monitoring Series SM 175

- Compact 17.5 mm Wide
- Protects against Phase Loss, Phase Reversal & Phase Asymmetry
- Multi-Voltage: Three Phase Three Wire @ 208 - 480 VAC
- Selectable Under Voltage / Over Voltage & Asymmetry
- LED Indication for all Faults & for change in settings during run time for better security
- Adjustable Time Delay
- 1 C/O Configuration



Ordering Information

Cat. No.	Description
MN21D5	208 - 480 VAC, Phase Loss Monitoring, 1 C/O
MK21D5	208 - 480 VAC, Phase Loss, Phase Sequence Monitoring , 1 C/O
MC21D5	208 - 480 VAC, Phase Loss, Phase Sequence, Phase Asymmetry Monitoring (30% Fixed), 1 C/O
MA21DN	208 - 480 VAC, Phase Loss, Phase Sequence, Phase Asymmetry Monitoring (5% to 15% Variable), 1 C/O
MOF1D51	208 - 480 VAC, Phase Loss, Phase Asymmetry Monitoring (10% Fixed), with trip time < 65 ms, 1 C/O

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Voltage Monitoring Series SM 175



Cat. No.	MN21D5	MK21D5	MC21D5	MA21DN
Parameters				
Supply Voltage (φ)	208 - 480 VAC, (3 Phase 3 Wire)			
Supply Variation	-12% to + 10% (of φ)			
Frequency	50/60 Hz			
Power Consumption (Max.)	3 VA			
Trip Levels	Phase Loss	Yes	Yes	Yes
	Phase Sequence	N A	Yes	Yes
	Phase Asymmetry	30% Fixed	N A	30% Fixed
Time Delay	ON Delay	< 750 ms	< 750 ms	< 750 ms
	Trip Time (OFF Delay)	< 65 ms	100 ms	100 ms
Output	Relay Output	1 C/O		
	Contact Rating	5A @ 250 VAC / 30 VDC (Resistive)		
	Electrical Life	1X10 ⁵		
	Mechanical Life	3X10 ⁶		
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A		
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A		
LED Indication	Healthy	Relay LED Continuous ON		
	Phase Reverse	N A	Relay LED Flashing	
	Asymmetry	Relay LED Off (Red Colour)	N A	Relay LED Off (Red Colour)
Operating Temperature	- 15° C to +60° C			
Storage Temperature	- 20° C to +80° C			
Humidity (Non Condensing)	95% (Rh)			
Enclosure	Flame Retardant UL 94-V0			
Dimension (W x H x D) (in mm)	18 x 58.5 x 90			
Weight (unpacked)	70 g			
Mounting	Base / DIN rail			
Degree of Protection	IP 20 for Terminal, IP 30 for Enclosure			
Certification				

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

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CP 1 (1)

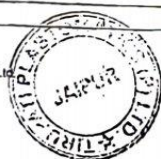
M/s. Tirupati Plastomatics Pvt. Ltd.,
B-141 A, Road No. 9D, V.K.I. Area, Jaipur

TDS NO. : TFP/ANSALDO/NOIDA/03 DT 05.12.2016

TECHNICAL DATA SHEET

Name of Equipment/Item: PVC Insulated U/G U/S Cable for Railway Signaling as per IRS: S-63/2014 (Rev. 4)											
S. NO.	PARTICULARS	Unit	4 C X 1.5 Sq.mm	6 C X 1.5 Sq.mm	8 C X 1.5 Sq.mm	2 C X 2.5 Sq.mm	3 C X 2.5 Sq.mm	5 C X 2.5 Sq.mm	2 C X 4 Sq.mm	2 C X 6 Sq.mm	
1	Name of Manufacturer	--	M/s. Tirupati Plastomatics Pvt. Ltd., B-141 A, Road No. 9D, V.K.I. Area, Jaipur								
2	Type of Cable	--	PVC Insulated Underground, Unscreened Signaling Cable for rated voltage upto and including 1100 volts								
3	Specification	--	IRS: S-63-2014 or latest								
4	CONDUCTOR										
(a)	Material & Flexibility class	--	Plain, Annealed High Conductivity Copper Conductor Complying with Class 1 of IS:8130								
(b)	Size	Sq.mm	1.6	1.6	1.5	2.5	2.5	2.5	4	6	
(c)	Number of strands/ Diameter	No/ mm	1/1.40, +0.025, - 0.015	1/1.40 +0.025, - 0.018	1/1.40, +0.025, - 0.015	1/1.80, +0.025, - 0.015	1/1.80, +0.025, - 0.015	1/1.80, +0.025, - 0.015	1/2.24, +0.045,	1/2.80, +0.055, - 0.035	
(d)	maximum D.C. resistance at 20 Deg. C	(Ohm/KM)	11.77	11.77	11.77	7.118	7.118	7.118	4.596	2.842	
(e)	Annealing Test	%	27.5% (Min)								
5	INSULATION										
(a)	Material & Type	--	PVC Compound Type-A complying with IS : 5831-1984 & IRS: S-63/2014								
(b)	Nominal thickness (mm)	mm	0.80	0.80	0.80	0.90	0.90	0.90	1.00	1.00	
(c)	Insulation core identification	--	Red, Yellow, Blue & Black	Two adjacent cores in each layer Blue & Yellow, remaining core Grey	Red & Black	Red, Yellow & Blue	Red, Yellow, Blue, Black & Grey	Red & Black	Red & Black		
(d)	Specific Gravity	g/cc	1.42 (Max)								
(e)	Insulation Resistance at 50°C	M ohm/Km	Min 10.0 at Dry, 7.5 at wet								
6	LAYING UP										
(a)	Direction of Lay	--	Outermost Layer- Right Hand								
7	INNER SHEATH										
(a)	Material & Type	--	PVC Compound Type ST 1 complying with IS : 5831-1984 & IRS: S-63/2014								
(b)	Colour of Inner sheath	--	GREY								
(c)	Thickness (mm)	mm	0.80 mm (Minimum)								
(d)	Whether applied by extrusion	--	By Extrusion								
(e)	Specific Gravity	g/cc	1.50 (Max)								
8	ARMOURING										
(a)	Material & Type	--	Galvanised Steel Round Wire								
(b)	Diameter of Steel Wire	mm	1.40 ±0.06								
(c)	Mass of Zinc coating	Gm/ m ²	110 (Min)								
9	OUTER SHEATH										
(a)	Material & Type	--	PVC Compound Type ST 1 complying with IS 5831 & IRS: S-63/2014								
(b)	Thickness of sheath (Nom./Min)	mm	1.8/1.24								
(c)	Colour of outer sheath	--	Black								
(d)	Specific Gravity	g/cc	1.50 (Max)								
(e)	Approximate overall diameter of cable (mm)	mm	15.5±2.0	17.0±2.0	18.0±2.0	15.5±2.0	16.0±2.0	18.0±2.0	17.0±2.0	18.5±2.0	
10	Drum length (meter)	Meter	1000 + 4%, -2%								
11	Packing	--	Non returnable Wooden Drum								
12	Embossing	--	"TIRUPATI PLASTOMATICS PVT. LTD. IRS : S-63/2014 Month Year of Mfg D.No... SIZE"								

LEAD QUALITY
Tirupati Plastomatics Pvt. Ltd.



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