



EDN BANGALORE

PURCHASE SPECIFICATION FOR
CURRENT TRANSDUCER 1000A/250mA

PS4062392

REV NO 00

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SPECIFICATION FOR CURRENT TRANSDUCER 1000A/250mA

REVISION HISTORY SHEET

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Introduction: BHEL EDN is manufacturing 2X 500kVA Hotel Load Converter for Indian Railways. This current transducer is used in IGBT power module for measurement of current which is required for control and protection purpose. Following are general specification of current transducers used in power modules.

Description: Closed loop current transducer using Hall effect (1000A/250mA)

1. Requirements:

- 1.1 Primary nominal rms Current (I_{PN}) : 1000 A
- 1.2 Primary current measuring range @ ± 24 V (I_{PM}) : 0 ... ± 2400 A
- 1.3 Measuring resistance with ± 24 V @ ± 2000 A ($R_{M \min}$) : ≤ 5 ohms
- 1.4 Measuring resistance with ± 24 V @ ± 2000 A ($R_{M \max}$) : ≥ 15 ohms
- 1.5 Conversion ratio (K) : 1:4000
- 1.6 Secondary nominal rms output @ I_{PN} (I_{SN}) : 250mA
- 1.7 Supply voltage ($\pm 5\%$) : ± 15 V to ± 24 V
- 1.8 Current consumption @ ± 24 V : $\leq 32 + I_{SN}$ mA
- 1.9 Measuring accuracy @ I_{PN} , $T_A = 25^\circ\text{C}$: $\leq \pm 0.5\%$
- 1.10 Linearity : $\leq 0.1\%$
- 1.11 Offset Current @ $I_{PN} = 0$, $T_A = 25^\circ\text{C}$: $\leq \pm 0.5$ mA
- 1.12 Response time 90% of I_{PN} (with di/dt of 100 A/us) : ≤ 1 μS
- 1.13 Frequency bandwidth : DC .. 100 KHz
- 1.14 Operating temperature range : -40°C to $+85^\circ\text{C}$
- 1.15 Creepage distance : 64 mm (min.)
- 1.16 Clearance distance : 45 mm (min.)
- 1.17 Dielectric strength b/w Pri. to Output terminals (50 Hz, 1 min) : 12kV (min.)

2. Standards for reference:

- EN 50155 Railway applications electronics equipment used on rolling stock
- EN 50121-3-2 EMC: Emissions to external environments
- IEC60077 Rules for equipment for onboard rail vehicles
- IEC 60571 Rules for electronic equipment onboard rail vehicles
- IEC 62498-1 Railway applications - Environmental conditions for equipment
- IEC-61373 Electric Railway Equipment-Rolling Stock-Shock & Vibrations Requirement
- IEC61287 Railway applications-Power converters installed on rolling stock
- IEC61376 Creepage and clearance

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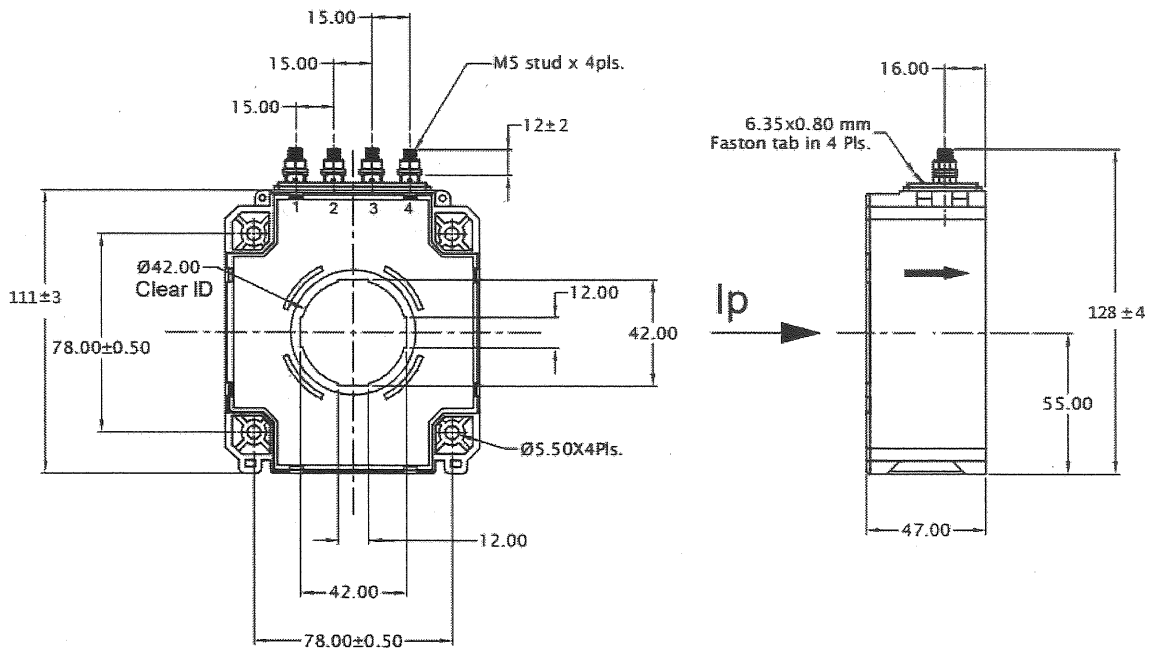
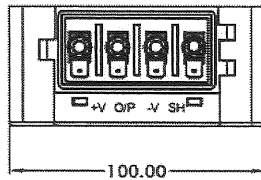
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3. ENVIRONMENTAL CONDITIONS:

- 3.1 Ambient Temperature : 55°C
- 3.2 Maximum Temperature : 7°C (when locomotive standing dead under sun)
55°C (when locomotive working)
- 3.3 Humidity : 100% during rainy season
- 3.4 Rain fall : Very heavy in certain areas
- 3.5 Atmosphere during hot weather : Extremely dusty and desert terrain in certain areas. The dust concentration in air may reach a high value of 1.6mg/cub meter.
- 3.6 Air Pollution : The equipment will be designed to work in coastal areas in humid and salt laden atmosphere
- 3.7 Vibration : The equipment, sub system and their mounting arrangements will be designed to withstand vibrations and shocks encountered in service as specified in corresponding IEC publications unless otherwise prescribed.

4. Mechanical dimensions (For reference):



All dimensions are in mm

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5. Tender documents:

5.1 Approved vendor shall quote for the part number already approved.

5.2 Development order vendors:

5.2.1 Shall agree to conduct type tests as per Cl. 6 and submit test reports during development order (for evaluation and field trial).

5.2.2 If new vendor already conducted above type tests, they will be eligible for development order and can make supplies for evaluation and field trial.

6. TESTS:

Supplier shall submit test protocol for Routine & Type tests.

6.1 Type Tests (During development):

Type tests to be conducted by the vendor for current transducer as per relevant IEC standard in government approved labs / NABL accredited labs and test results shall be submitted to BHEL.

6.2 Routine test:

For series supplies, Routine test reports / COC to be submitted to BHEL.

7. Acceptance criteria:

7.1 Approved vendors shall submit routine test report/COC.

7.2 Development vendors shall submit below documents for evaluation:

7.2.1 Data sheet which includes details as in cl.1.

7.2.2 Type test reports.

--END--

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**PRE - QUALIFICATION CRITERIA FOR
CURRENT TRANSDUCER 1000A/250mA
GROUP: SUB ASSEMBLY ENGG**

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PRE-QUALIFICATION CRITERIA (PQC)		
A	General	COMPLIED
	1. The bidder shall be an Original Equipment Manufacturer (OEM) or authorized by the OEM (to be supported with valid authorization from OEM for supplies to Indian region)	Yes / No
	2. The OEM shall be a current transducer manufacturer for industrial application.	Yes / No
	3. Offer shall be for new current transducer only and not for any used or refurbished material	Yes / No
	4. Vendors who are already developed and evaluated for regular supply of this current transducer to BHEL for usage in Hotel Load IGBT power modules shall quote for the same item as per their approved part numbers.	Yes / No / NA
	5a. Vendors whose samples are under trial and pending approval from BHEL shall not be eligible for this tender.	Yes / No / NA
	5b. New vendor (with no prior supply history of this material to BHEL-EDN) shall not be eligible for this tender. They will be considered for development order as per the details below.	Yes / No / NA
B	Criteria for placing Development Order on new Vendors New vendors shall be considered for separate development orders for technical evaluation and subsequent field trials which is independent of this tender, provided the material is offered at a competitive price. They shall supply current transducer as per BHEL purchase specification PS4062392 rev 00.	Yes / No / NA

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DATE

26.04.2023