

**ANNEXURE – B (PQR)**

Vendors having any of the following certification in offered multi-function transducer are acceptable:

- 1) CE
- 2) VDE
- 3) UL
- 4) CSA
- 5) BIS with CML marking

262224/2024/HEP-SWE40906



# PRODUCT STANDARD

## SWITCHGEAR ENGINEERING DIVISION

SG 12929 REV. 02

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### SPECIFICATIONS OF MULTI FUNCTION TRANSDUCERS FOR SWITCHGEAR AND CONTROL PANELS

#### 1.0 SCOPE :

This standard covers specification and acceptance norms for the following types of multi-function transducers for use in Switchgear and Control panels.

Item No.	Item Description	Accuracy	Analog Rated Output (Min. 4 outputs)
001	Multifunction Transducer	0.2	4-20mA
002	Multifunction Transducer	0.5	4-20mA

#### 2.0 TECHNICAL DETAILS:

Sl. No.	Parameter	BHEL's Requirement	Compliance By Supplier
1	TYPE	STATIC	
2	APPLICABLE STANDARD	IS 12784 / IEC 60688	
3	CONSTRUCTION	DUST PROOF, FIRE RETARDENT & SELF EXTINGUISHING TYPE, RUGGED & VIBRATION RESISTANT	
4	POWER FREQUENCY WITHSTAND	2 kV / 1 min	
5	IMPULSE WITHSTAND VOLTAGE	5 kVp, 1.2/50µs	
6	AUXILIARY SUPPLY	UNIVERSAL DC SUPPLY (Range to be spelt out in offer)	
7	OPERATIONAL TEMP. RANGE	AS PER IS/IEC	
8	VA BURDEN ON CT/PT	LESS THAN 0.5VA	
9	VA BURDEN ON AUX.SUPPLY	LESS THAN 10VA	
10	NO. OF OUTPUTS	MINIMUM 4 OUTPUTS (PROGRAMMABLE) <u>Vendor to supply programmed transducer as per Annexure-1 (if furnished)</u>	
11	OUTPUT IMPEDANCE	750 Ω FOR EACH OUTPUT	
12	ACCURACY CLASS	0.2 (It-01) and 0.5 (It-02)	
13	INPUT FREQUENCY	50Hz ± 10%	
14	CONTINUOUS OVERLOAD CAPACITY	120% (CURRENT I/P), 120% (VOLTAGE I/P)	
15	SHORT TIME OVERLOAD CAPACITY	1000%/3 sec (CURRENT I/P), 150%/10 sec (VOLTAGE I/P)	
16	RESPONSE TIME	300 milliseconds	
17	AC RIPPLE ON OUTPUT	Less than 0.5%	

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REV.	02	Revision History	APPROVED –		
ALTD.	DP	Clause 3 & 16 updated	S. Chaturvedi		
APPD.	MAK		PREPARED	ISSUED	DATE
DATE.	20/12/21		Rahul	M. Hussain	02.06.12



# PRODUCT STANDARD

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18	GALVANIC ISOLATION	2kV, REQUIRED BETWEEN - INPUT & OUTPUT - AMONG ALL THE OUTPUTS	
19	TERMINAL MARKING	DRAWING TO BE ENCLOSED WITH THE OFFER	
20	MOUNTING	Front connected terminals and shall be suitable for mounting inside the panels on DIN RAIL	
21	TERMINAL SIZE	2.5 SQMM	
22	OFFERED MULTIFUNCTION TRANSDUCER SHALL BE PROGRAMMABLE FOR :	a) 3P-3Wire/3P-4Wire system, balanced/ unbalanced load b) Primary Current (CT Ratio) c) Primary Voltage (PT Ratio) d) Secondary Current e) Secondary Voltage f) Analog outputs	
23	Parameters shall be programmable for analog output	a) Current (rms). b) Voltage (rms). c) Active power d) Reactive power. e) Power factor. f) Frequency.	
24	Front port communication cable & software CD	Front port communication cable (suitable for USB port on PC/Laptop) and software CD for programming the offered transducer shall be supplied along with transducers. Cable and software CD shall be supplied one each for a lot of 20 transducers.	
25	Marking	As per Clause 5.0	
26	Performance Guarantee	As per Clause 6.0	

### 4.0 DOCUMENTS :

#### 4.1 Documents to be furnished along with the offer -

- (1) Compliance to Technical details (Clause 2.0) duly filled sealed and signed.
- (2) 2 copies of technical catalog covering terminal marking details & mounting details of the transducers.
- (3) Type test reports as per relevant IS/IEC.
- (4) The complete code no. of each item (including type of housing should be clearly mentioned in offer.

#### 4.2 Documents to be furnished at the time of delivery -

- (1) 2 copies of routine test certificates along with the consignment and 1 copy with the dispatch document.

### 5.0 ACCEPTANCE CRITERIA :

- a) Routine test certificate.
- b) Type code as per order acknowledgement.
- c) Rating plate having material code as per PO annexure.
- d) Ranges to be checked and verified.
- e) Each multifunction transducer shall have following marking in label/sticker on it:  
PO No. / It no  
Material Code  
CT-PT Ratio  
Analog O/P Range

### 6.0 PERFORMANCE GUARANTEE :

The supplier shall guarantee satisfactory performance of the transducers for a period of 24 months from the date of receipt at BHEL Bhopal or 18 months from the date of commissioning whichever, is earlier.