

औद्योगिक किस्म के नियंत्रण स्टेशन के लिए विनिर्देश

SPECIFICATION FOR INDUSTRIAL TYPE CONTROL STATIONS

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Abbreviations:

AC	:	Alternating Current
BIS	:	Bureau of Indian standards
BS	:	British Standards
CEA	:	Central Electricity Authority
CT	:	Current Transformer
DC	:	Direct Current
FRP	:	Fibre Reinforced Plastic
GI	:	Galvanised Iron
IEC	:	International Electrotechnical Commission
IEEE	:	Institute of Electrical and Electronics Engineers
IP	:	Ingress Protection
IS	:	Indian Standards
LED	:	Light Emitting Diode
LV	:	Low Voltage
NC	:	Normally Closed
NEMA	:	National Electrical Manufacturers Association
NO	:	Normally Open
PVC	:	Poly Vinyl Chloride
SS	:	Stainless Steel
SWG	:	Standard Wire Gauge
VDE	:	Verband Der Electrotechnik, Elektronik und Information Stechnik

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- 5.1.5 All metal surfaces shall undergo manufacturer's standard cleaning/ painting cycle. After preparation of under surface, the equipment shall be painted with two coats of epoxy based final paint with colour shade as dark admiralty grey, shade 632 of IS-5/ RAL 7035. All unpainted steel parts shall be suitably treated to prevent rust formation. If these parts are moving elements, then they shall be greased.
- 5.1.6 All accessories like nuts, bolts, washers etc. shall be made of stainless steel SS-304.
- 5.1.7 The control stations shall be provided with two earthing studs with lugs on the external surface of the enclosures suitable for termination of 8 SWG GI wire.
- 5.1.8 The control stations shall be provided with undrilled gland plate. However, double compression nickel-plated brass cable gland shall be supplied loose to suit the specified cable sizes.
- 5.1.9 The control stations shall have external fixing lugs for mounting on wall or column. The holes provided on these lugs shall be of oblong type.
- 5.1.10 Engraved nameplate indicating Tag Number shall be permanently fixed on each control station.

5.2 Component Specification

- 5.2.1 Push buttons for START and STOP shall be of GREEN and RED colour respectively. Each push button shall have one NO and one NC contact. The STOP push button shall be mushroom type with stay put feature and lockable in pressed position.
- 5.2.2 All control switches shall be provided with a pistol grip handle. Circuit breaker control switch, wherever specified, shall have three positions (START - NEUTRAL - STOP) with spring return to neutral from START position and stay put in STOP position. All selector switches shall have minimum two poles for each position. Each position of switch shall be indelibly marked on the control station.
- 5.2.3 All ammeters shall be of moving iron type having an accuracy class of 3 and suitable for 1 Ampere CT secondary. Unless otherwise specified, min. size of ammeter shall either be 72 mm x 72 mm or min. 65 mm dia., 80% of the scale length shall cover 100% of the CT primary current uniformly and the balance 20% of the scale shall cover 100-800% of the CT primary. A red mark corresponding to the full load current of the motor shall be provided on the ammeter dial. The ammeter front glass shall be toughened.
- 5.2.4 Indicating lamp(s), wherever provided, shall be clustered LED type with minimum 3 numbers LEDs, preferably connected in parallel, mounted inside an enclosure of minimum diameter of 15mm.

5.3 Terminals & Wiring

- 5.3.1 The control stations shall be provided with sufficient number of terminals. More than 2 wires per terminal shall not be permitted. If required, additional terminal with shorting link may be used. Each terminal for external cable connection shall be suitable for termination of 2.5 mm² solid copper conductor. Tinned copper lugs shall be provided for cable termination.
- 5.3.2 All internal wiring shall employ 2.5 mm², 660V grade, PVC insulated copper conductor wires.

6.0 INSPECTION, TESTING AND ACCEPTANCE

- 6.1** During fabrication, the equipment shall be subjected to inspection by EIL/ Owner or by an agency authorised by the Owner, if specified/ agreed in Inspection Test Plan. Manufacturer shall furnish all necessary information concerning the supply to EIL/ Owner's inspector. All routine/ acceptance tests shall be carried out at manufacturer's works under his care and expense.
- 6.2** Test certificates of bought out components shall be shown to the inspection agency on demand during inspection.
- 6.3** All equipments shall be subjected to various acceptance tests as per standards but not limited to the following:
- 6.3.1** General visual inspection
 - 6.3.2** Dimensional inspection
 - 6.3.3** Verification of mechanical and electrical operations
 - 6.3.4** Dielectric tests
 - 6.3.5** Any other routine and acceptance test as per applicable standards.

7.0 PACKING AND DESPATCH

All the equipment shall be divided into several sections for protection and ease of handling during transportation. The equipment shall be properly packed for the selected mode of transportation, i.e. by ship/ rail or trailer, and shall be wrapped in polythene sheets before being placed in crates/ cases to prevent damage to finish. The crates/ cases shall have skid bottom for handling. Special notations such as 'Fragile', 'This side up', 'Center of gravity', 'Weight', 'Owner's particulars', 'PO no.' etc., shall be clearly marked on the packages together with other details as per purchase order.

The equipment may be stored outdoors for long periods before installation. The packing shall be completely suitable for outdoor storage, in areas with heavy rains/ high ambient temperature.