

1. GENERAL

1.1 References - General

- .1 Suppliers, Equipment, Products, and Execution must meet all requirements detailed in Section 17010.

2. PRODUCTS

2.1 General

- .1 Unless otherwise specified, provide outside finishes on all enclosures in ANSI 61 Grey as specified in Division 9.
- .2 The enclosures must be suitable for carrying the weight of the equipment mounted inside the panel and on the doors without any warpage.

2.2 Enclosures

- .1 Provide EEMAC type 1A gasketed enclosures in MCC rooms and control rooms.
- .2 All enclosures for mounting outside of MCC rooms and control rooms to be EEMAC Type 4, watertight except where otherwise specified.
- .3 Provide EEMAC 7/3R enclosures for equipment in and around classified areas such as sumps.
- .4 Enclosures for certain equipment in corrosive atmospheres to be EEMAC 4X approved for the classification (e.g. chemical cleaning).
- .5 Enclosures for mounting field control indicator lamps and switches in unclassified areas to be Allen Bradley model 800T-xTZ die cast enclosures.
- .6 Enclosures for mounting field control indicator lamps and switches in Class 1 areas to be Allen Bradley model 800H-xHHX7 cast aluminum enclosures.

2.3 Panel Enclosures

- .1 Fabricate panels enclosures from 11 gauge steel panels complete with necessary stiffening to form a rigid free-standing lineup. The structures must be suitable for carrying the weight of the equipment mounted inside the panel and on the doors. Provide removable top and bottom cable entry plates.
- .2 Provide panels with front access only. Doors shall be key lockable and fitted with 3-point heavy duty latching assemblies. Provide a continuous piano hinge and a pneumatic hold open device on each door.

- .3 Finish the interior of the enclosure with white paint. Provide a switched fluorescent light fixture and) 120VAC duplex convenience receptacle inside the enclosure.

2.4 Marshaling and Control Panels

- .1 Supply, fabricate, checkout, layout, document and deliver to site fully equipped and functional panels.
- .2 Supply all components contained on or within the panels fully wired under this section of the specification.
- .3 The selection of all accessories, materials and methods for fabrication not covered by this specification, but which are necessary to complete the fabrication of the control panels, is the responsibility of the panel fabricator.
- .4 Refer to the instrument installation detail drawings for panel dimensions.

2.5 Wiring and Accessories

- .1 Provide wiring inside the panels according to the following specifications:
 - .1 Control wiring to be a minimum of #16 AWG tinned stranded copper; insulation rated at 600 V.
 - .2 Wiring for power distribution shall be a minimum of #14 AWG tinned stranded copper; insulation rated at 600 V.
 - .3 Refer to Division 16 for cable routing requirements.
- .2 Tag each wire at both ends with a heat shrink sleeve that is machine printed.
- .3 Wiring systems with different voltage levels or types shall be suitably segregated within the panel, according to relevant electrical codes.
- .4 Run all wiring in enclosed plastic wireways such as Panduit. Size all wireways so that the total cross sectional area of the insulated wire and cable does not exceed 40% of the cross sectional area of the wireway.
- .5 Provide a minimum clearance of 40 mm between wireways and any point of wire termination.
- .6 Terminate all wiring, incoming and outgoing, at terminal strips mounted inside the panels. Identify each terminal strip with a terminal strip number, defined as follows:
 - .1 Wire identification to use the connected field device tag name with the wire's corresponding terminal number appended to it.
 - .2 Identify every joint and/or terminal of the above wire run with the same identifier until the wire meets another tagged device, at which point the wire identifier will change to use the new device name and terminal number.

- .3 For example, pressure transmitter K4-PT-100A located in the field has a 2CTPSH cable connected to it. The cable runs through a junction box to a marshaling panel. The wire identifiers for the pair of wires would be K4-PT-100A all the way to the marshaling panel.
- .4 Identify spare wires by using the destination identifier, ie the location and terminal identifier of the opposite end of the wire are combined to form the wire tag.
- .7 Provide a 120 VAC panel power distribution system and a 24vdc power distribution system in each panel. Provide a thermal magnetic circuit breaker on each main power circuit and a fused terminal block for each branched circuit off the main.
- .8 Provide disconnect type terminal blocks Wieland WK4TSK/U type to isolate field wiring that is powered sourced from the panel.
- .9 Provide sufficient terminals so that not more than 2 wires are connected under the same terminal. Provide 20% spare terminal capacity at each terminal block assembly.
- .10 Terminals shall be Wieland Type WK4/U color coded as follows:

Red	=	positive 24Vdc
Black	=	0Vdc common and analog signal plus
White	=	analog signal common and VAC neutral
Grey	=	120 VAC
Green	=	ground
- .11 Provide nameplates for each device on or within the panels and enclosures. Nameplates shall be black lamicoïd with white lettering, a minimum of 25mm x 75mm in size with up to three lines of 3mm lettering. Securely fasten nameplates in and situate them in a visible location.

2.6 Panel Grounding

- .1 Provide a ground system for the instrumentation circuits, isolated from the main power system ground to each marshaling panel.
- .2 Provide grounding lugs for each panel, suitable for termination of up to #2 AWG copper grounding conductor.
- .3 Provide in each marshaling panel an isolated grounding bus bar 6 x 25 x 600 mm, equipped with necessary lugs for accepting two #2 AWG grounding conductors.
- .4 Firmly bond all panel-mounted devices on or within the panels to ground. Provide supplementary bonding conductors for backpanels and doors. Attach a separate bonding conductor to all devices that are not firmly fastened to the panels with screws for such devices as case mounted instruments, meters, etc.

3. EXECUTION

3.1. References - General

- .1 Refer To Section 17010, Part 3.

3.2 Mounting Heights

- .1 Unless otherwise specified or a conflict exists, mount all panels, starters and disconnects 2000 mm to top of cover.

END OF SECTION