

Mains Distribution Assembly with Fuse Combination Switches, 400A, Form 4

The Blakley team have recently been involved in a demanding contract for Mains Distribution Assemblies (MDA), which are to be installed on a major civil engineering project. Although site equipment is usually considered to be temporary, the project is expected to last for more than 20 years and the MDAs have a design life of 25 years. In addition, the site is on the west coast of the UK and the assemblies will have to endure a corrosive salt laden atmosphere, as well as the full force of westerly winds blowing in from the Atlantic.

Stainless Steel Enclosures

To meet the onerous site conditions and extended design life, the decision was made to fabricate enclosures from 316L (marine grade) stainless steel. In line with our normal site MDAs, it was also decided to paint the enclosures in our normal shade of Poppy Red. Although not required for corrosion protection, it allows for easy identification of MDAs on site. In view of the hostile conditions, the enclosures are rated to IP55 with bottom cable entry and exit.

Form 4 Construction

To enhance safety on this high profile project, the client specified Form 4 Type 3 segregation, with the bus bars and each functional unit housed in separate compartments. This form of construction enables an outgoing cable to be connected or disconnected without isolating the panel or compromising safety. The enclosure is double fronted with 4 no. compartments to the front housing fuse switches rated at 400A (the incomer), 2 no. 250A and 1 no. 100A. There are 5 no. compartments to the rear, each fitted with a fuse switch rated at 100A. Each compartment door is padlockable and incorporates a door stay to enhance operator safety in windy conditions.

The incorporation of fuse combination switches was also a customer requirement. Fuses to BS88 provide better discrimination with upstream and downstream devices. In addition, the ability to remove fuse links and padlock shut the compartment is a simple but effective method of isolating an outgoing feeder circuit.

Type Testing

Due to the high number of units being purchased and the long term nature of the installation, independent verification of key elements of the design was required. A number of elements, such as the bus bar system, lifting arrangement and the IP rating, were derived from existing Blakley designs. However, as our site distribution assemblies usually incorporate outgoing MCCBs, the incorporation of fuse combination switches required a full temperature rise test to be carried out, to establish the continuous rating of the overall panel and each switch fuse circuit (when housed in a non-vented, segregated compartment). Details of this test can be found overleaf.

The MDAs incorporated a number of other features including a main kWhr meter, a thermostatically controlled anti-condensation heater in each compartment and an RCD protected test socket.

Please contact the Blakley Projects team if you would like to discuss a possible requirement for Form 4 Mains Distribution Assemblies.



Part no. A7084598, Front View, 1 x Incomer, 3 x Feeders



Part no. A7084598, Rear View, 5 x Feeders



Part no. A7084598, Segregation to Form 4 Type 3



Door Stays and anti-condensation heater thermostat

THE POWER PROFESSIONALS

SP58 - 05/18

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Cert No: 902091



Final Assembly of 20 no. 400A Form 4 Type 3 Mains Distribution Assemblies nearing completion. Enclosures are fabricated from 316L stainless steel with a conspicuous painted finish, shade Poppy Red to BS4800 04 E 53.



400A Form 4 Type 3 Mains Distribution Assembly undergoing temperature rise testing at a third party, UKAS approved, test laboratory.



The testing, which was conducted over a period of 3 days, established the overall full load rating of the IP55, non-vented, Mains Distribution Assembly, as well as a rating for each of the Fuse Combination Switches, with nominal ratings ranging from 100A to 400A.