Matrix II

Inspection and Testing

Warning

Electrical inspection and testing should only be undertaken by suitably skilled, trained, and experienced electricians

The information here is intended as a guide for the electrician, and should not replace any local regulations

Reference numbers are BS7671:2019, while this is based on HD 60364 care should be taken if cross referencing

Safe Isolation

- No master isolator included with the Matrix II rack
  - The distribution circuit should be isolated elsewhere
- Final circuits can be isolated by use of domestic tags outs

642.3(viii)(b) Basic protection

- At any point the rack is energised, all slots must be filled with modules or blanking panels.

- Blanking panels, called Matrix Filler Blank Airflow (p/n: 7542A3050) are available

643.2 Continuity of conductors

Distribution Circuit

- Protective conductor
  - Accessible within the termination chamber

Final Circuit

- Protective conductor (CPC)
  - The CPC is exposed on the shell of the backplane connector (see Appendix A)
  - Can also be accessed in the termination chamber

643.3 Insulation Resistance

Distribution Circuit

- Remove Processor
- Fan could influence result or be damaged
  - Remove

    or
  - Perform at 250vDC

    or
  - Measure between live conductors and earth

Final Circuit

- Recommended to remove Processor
- Dimmer module could influence result or be damaged
  - Remove

    or
  - Perform at 250vDC

    or
  - Measure between live conductors and earth

643.4 Protection by SELV, PELV or by electrical separation

ELV Rack Wiring

- All ELV wiring should be visually inspected to ensure suitable insulation and separation from LV conductors

Control Module

- All external ELV control signals are isolated via opto or galvanic isolators rated to at least 1000Vrms
- No user testing can be performed
- If more than a visual inspection is required, this can be tested by ETC

643.6 Polarity

Distribution Circuit

- Protective conductor
  - Accessible within the termination chamber
- Live conductor
  - Accessible within the termination chamber
- Neutral conductor
  - Accessible within the termination chamber

Final Circuit

- Protective conductor (CPC)
  - Backplane connector (see Appendix A)
  - Accessible within the termination chamber
- Live conductor
  - Backplane connector (see Appendix A)
  - Accessible within the termination chamber
- Neutral conductor
  - Backplane connector (see Appendix A)
  - Accessible within the termination chamber

643.7 Protection by automatic disconnection of the supply

MCB (EN 60898)

- The characteristics of the MCB is clearly displayed
- Refer to EN 60898 for curve characteristics

RCBO (EN 61009)

- The characteristics of the RCBO is clearly displayed
- Refer to EN 60898 for curve characteristics

RCD (EN 61008)

- The characteristics of the RCD is clearly displayed
- A number of modules only form of resettable ADS is via an RCD. Overcurrent protection is by internal HBC Fuse. Refer to appendix B

643.7.3 Earth fault loop impedance

Calculation of Zs

- Module impedance values
  - Dimmer Module +0.2ohm
  - Relay Module +0.05ohm

Direct measurement of Zs

- The module should be by-passed
  - Using test leads

    or
  - "Constant current" module

- Module impedance values
  - Dimmer Module +0.2ohm
  - Relay Module +0.05ohm

643.7.3.201 Prospective fault current

- A Matrix installation rack employs the use of DO2 Gg HBC fuses to EN 60269 per module slot
  - These provide an Icn of 50kA

643.8 Additional protection

- The characteristics of the RCD (As per EN61008-1), if fitted, is clearly displayed.

- Set to non-dim mode to limit modification of the waveform
  - Use F3 button of the processor to access the dimmer configuration menus to set all the custom channel attributes – including non-dim operation

643.9 Check of phase sequence

- It is recommended this is tested at the supply distribution board and then confirmed by visual inspection of the wiring labelling/colouring and/or continuity testing

643.10 Functional testing

- A test switch for the RCD/RCBO is located on the RCD/RCBO
- Set to non-dim mode to limit modification of the waveform
  - Use F3 button of the processor to access the dimmer configuration menus to set all the custom channel attributes – including non-dim operation

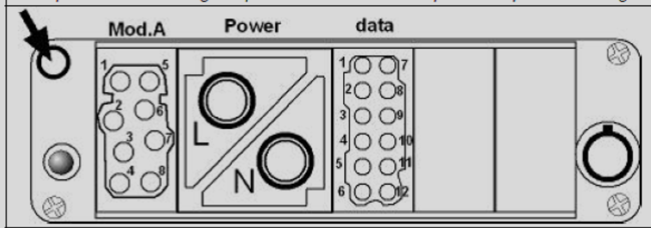
643.11 Verification of voltage drop

- Set to non-dim mode to limit modification of the waveform
  - Use F3 button of the processor to access the dimmer configuration menus to set all the custom channel attributes – including non-dim operation

Appendix
A – Backplane pinout

Multipin socket for 4 x 3kW module

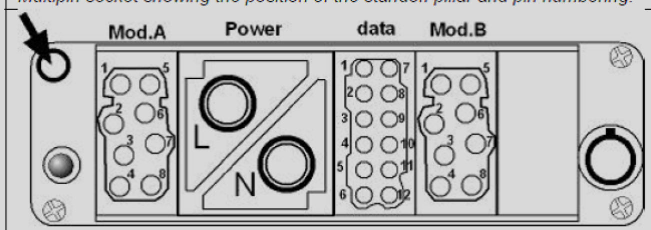
Multipin socket showing the position of the standoff pillar and pin numbering.



Mod. A	
Pin	Connection
1	Ch 1 - L
2	Ch 2 - L
3	Ch 3 - L
4	Ch 4 - L
5	Ch 1 - N
6	Ch 2 - N
7	Ch 3 - N
8	Ch 4 - N

Multipin socket for 6 x 3kW module

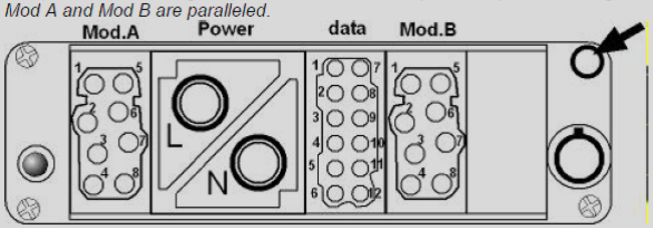
Multipin socket showing the position of the standoff pillar and pin numbering.



Mod. A	
Pin	Connection
1	Ch 1 - L
2	Ch 2 - L
3	Ch 3 - L
4	Ch 4 - L
5	Ch 1 - N
6	Ch 2 - N
7	Ch 3 - N
8	Ch 4 – N
Mod. B	
1	Ch 5 - L
2	Ch 6 - L
5	Ch 5 - N
6	Ch 6 -N

Multipin socket for 3 x 5kW module

Multipin socket showing the position of the standoff pillar and pin numbering. Note that Mod A and Mod B are paralleled.



Mod. A	
Pin	Connection
1	Ch 1 - L
2	Ch 2 - L
3	Ch 3 - L
5	Ch 1 - N
6	Ch 2 - N
7	Ch 3 - N
Mod. B	
1	Ch 1 - L
2	Ch 2 - L
3	Ch 3 - L
5	Ch 1 - N
6	Ch 2 - N
7	Ch 3 - N

Appendix
B – Dimmer module HBC fuse

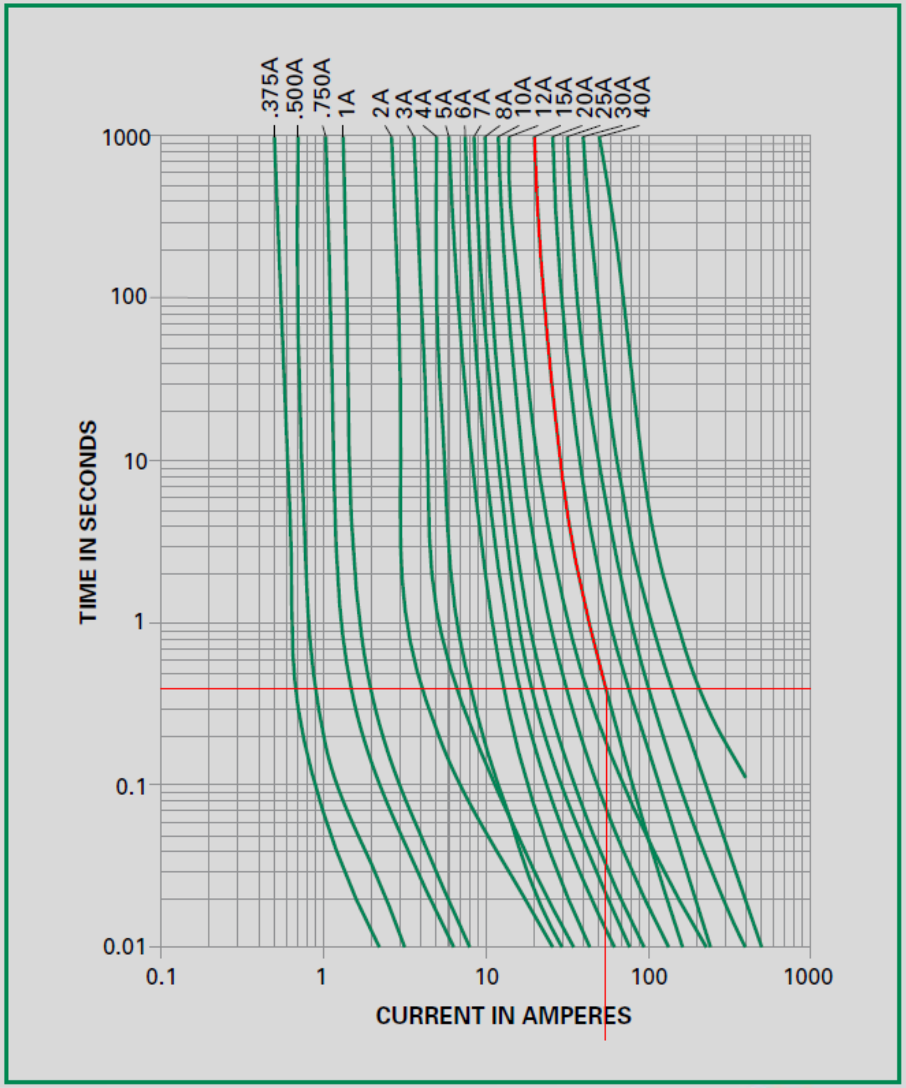
- A number of module only form of resettable ADS is via an RCD.

- Overcurrent protection by means of a HBC fuse internal to the dimmer block
  - HBC fuses (Manufactures P/N: 0314015.HXP) have a In = 15A, the curve is replicated on the next page

  - A suitable $Zs_{(max)}$ can be obtained by the following equation. When confirming the below to the installation, the relevant equivalent internal impedance of the module should be considered.
    - I_n = 15A
    - $I_{a(0.4s)}$ = 60A
    - $Z_{s(max)} \times I_{a(0.4s)} = U_0 \times C_{min}$
    - $(U_0 \times C_{min})/I_a$ = (230x0.95)/60 = 3.64Ohm

Appendix

B – Dimmer module HBC fuse



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