

Sensor 3

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

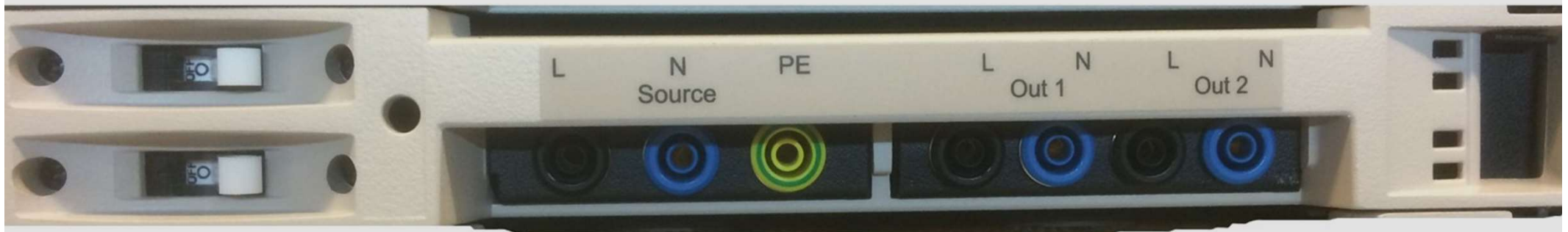
- No master isolator included with the Sensor 3 rack
 - The distribution circuit should be isolated elsewhere
- Final circuits can be isolated and tagged out by use of special adapter
 - P/N 7050A1096



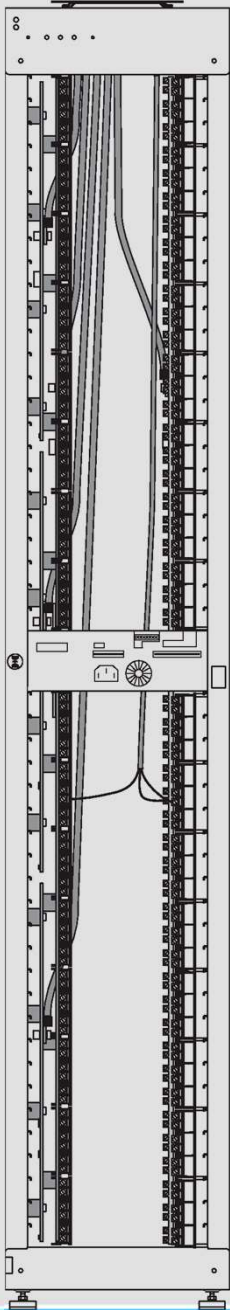
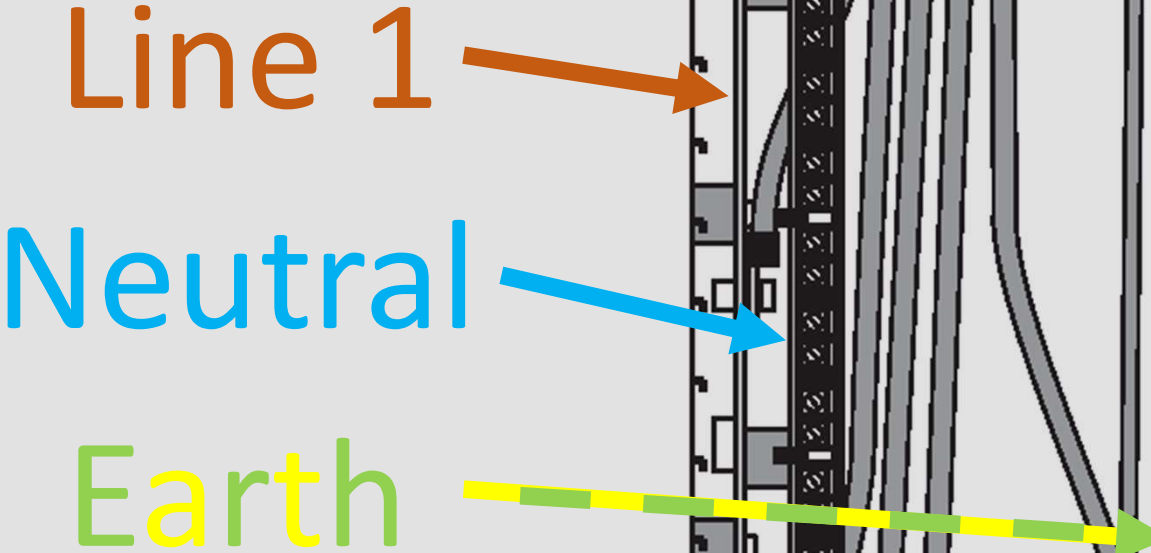
Test Module



- Test module is available
 - P/N TLC0106-MODU1 (Beige)
 - P/N TLC0233-MODU1 (Blue)
- Aid safe live working practices
 - Inline with HSE GS38 (UK)

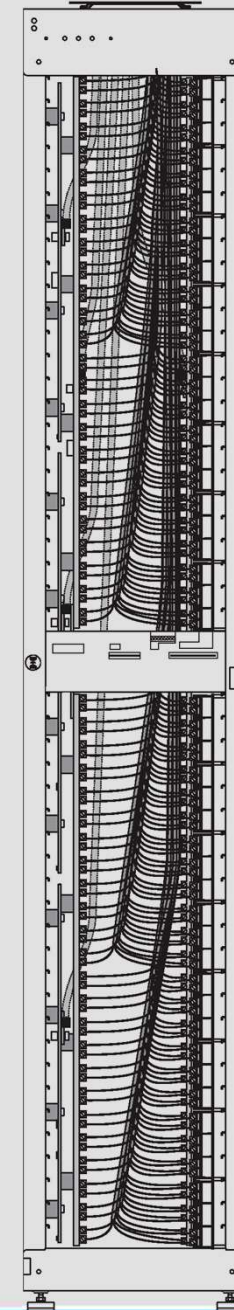
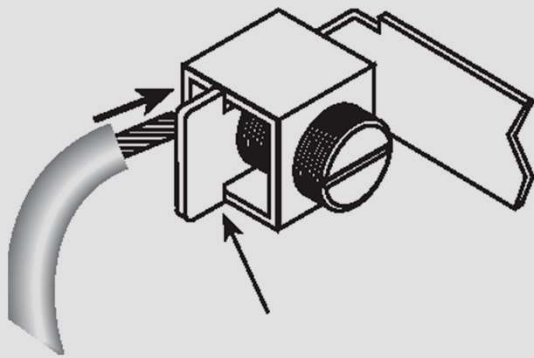
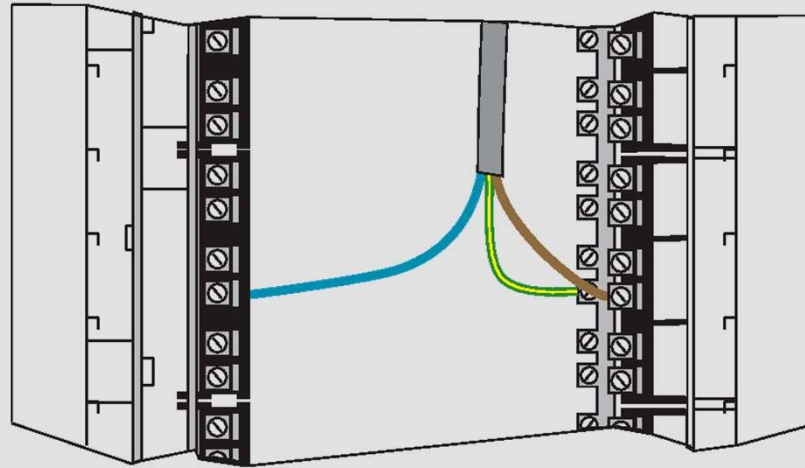


Bus bar layout



Final Circuits

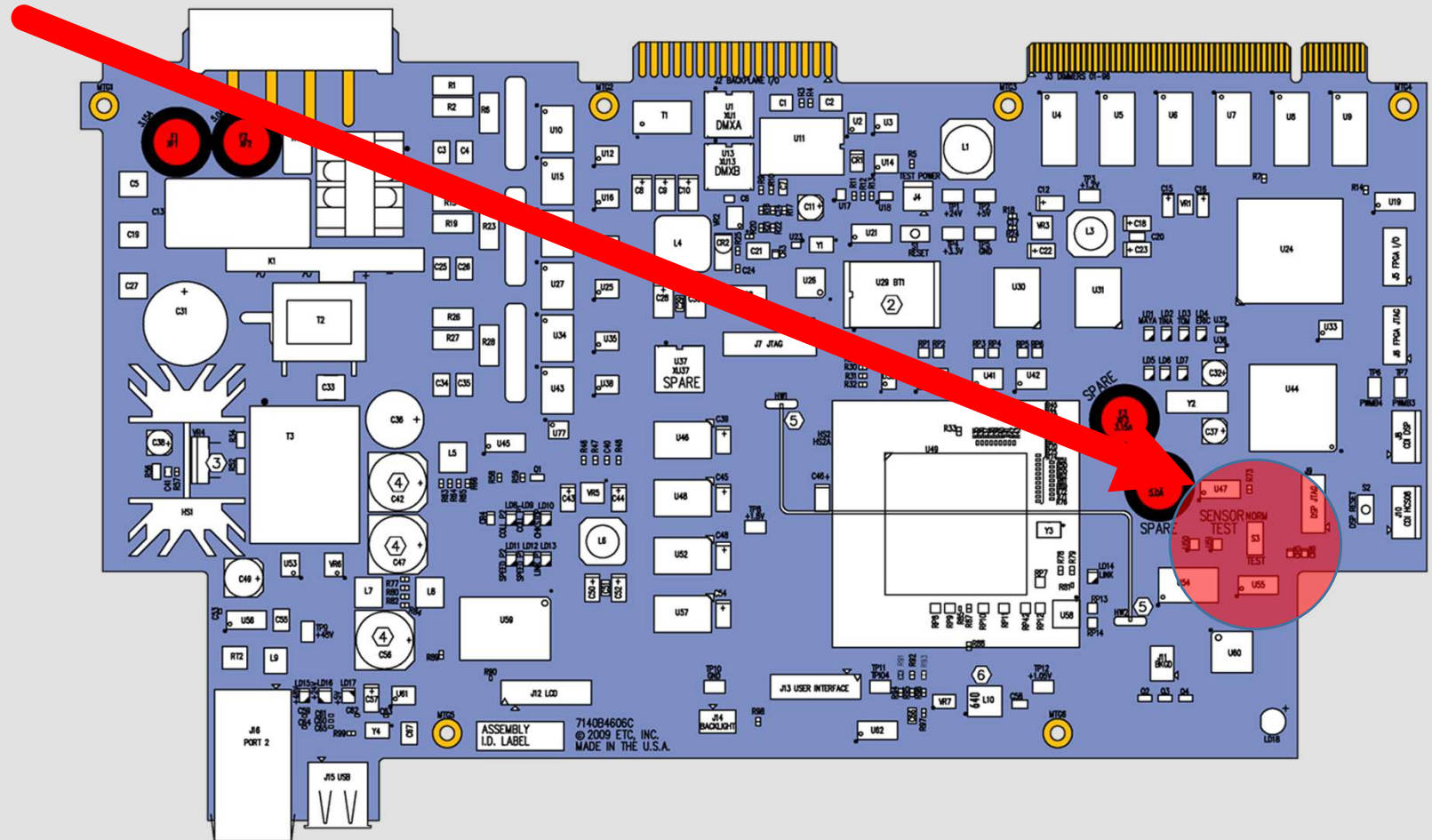
- Separate neutral per final circuit
- Untreated strands
- Behind pressure plate





Control Module (CEM3)

- Test switch
 - Forces all outputs to full





642.3(viii)(b) Basic protection

- At any point the rack is energised, all slots must be filled with modules
- Modules must be secured with locking bar
- Blank modules, called Air Flow Modules (p/n: 7050A1014) are available

643.2 Continuity of conductors



Distribution Circuit

- Protective conductor
 - Exposed on test module
 - Far right bus bar

Final Circuit

- Protective conductor (CPC)
 - Exposed on test module
 - Sourced from right hand bus bar



643.3 Insulation Resistance

Distribution Circuit

- Remove CEM
- Neon and filter board could influence result or be damaged
 - Remove
 - or
 - Perform at 250vDC
 - or
 - Measure between live conductors and earth

Final Circuit

- Recommended to remove CEM

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
 - Exposed on test module
 - Far right bus bar
- Live conductor
 - Exposed on test module
 - Far left bus bar
- Neutral conductor
 - Exposed on test module
 - Mid left bus bar

Final Circuit

- Protective conductor (CPC)
 - Exposed on test module
 - Terminates on right hand bus bar
- Live conductor
 - Exposed on test module
 - Terminates on right hand lugs
- Neutral conductor
 - Exposed on test module
 - Terminates on left hand lugs

643.7 Protection by automatic disconnection of the supply



MCB (EN 60898)

- The characteristics of the MCB are displayed on the front right of the module. Should the label be omitted, consult Appendix A
- Appendix B details the exact curve characteristics

RCBO (EN61009)

- The characteristics RCD portion are displayed on the front left of the module
- The characteristics of the MCB portion are displayed on the front right of the module. Should the label be omitted, consult Appendix A
- Appendix B details the exact curve characteristics



643.7.3 Earth fault loop impedance

Calculation of Z_s

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

Direct measurement of Z_s

- The module should be bypassed
 - Using the test module and suitable test leads
 - or
 - An ECC module
- Module impedance values
 - Dimmer Module +0.2ohm
 - Relay Module +0.05ohm



643.7.3.201 Prospective fault current

Dimmer module

- The module contains a toroidal choke, this limits the PSSC to within the rating of the MCB
- The Icn of the module is located on a the base

Relay module

- Contains a BS EN 60269-2 listed HBC fuse
- The Icn of the module is located on a the base



643.8 Additional protection

- The characteristics RCD portion are displayed on the front left of the module
- Sensor dimmer modules should be controlled at 100% to limit modification of the waveform
 - It is recommended to use the microswitch labelled test, located inside the CEM. This is used to force all levels to full and disable all voltage regulation performed by the CEM

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 RCBO is located to the right of the breaker
- Sensor dimmer modules should be controlled at 100% to limit modification of the waveform
 - It is recommended to use the microswitch labelled test, located inside the CEM. This is used to force all levels to full and disable all voltage regulation performed by the CEM
- Certain modules have functional output override switches on the front, these are clearly labelled



643.11 Verification of voltage drop

Calculation

- Dimmer modules have an internal voltage drop. For details please consult the relevant modules datasheet.

Direct measurement

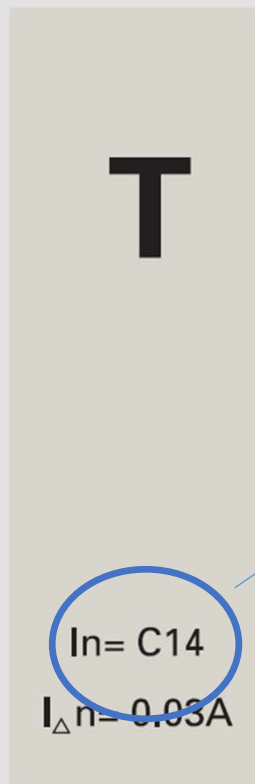
- Sensor dimmer modules should be controlled at 100% to limit modification of the waveform
 - It is recommended to use the microswitch labelled test, located inside the CEM. This is used to force all levels to full and disable all voltage regulation performed by the CEM



Appendix

A - MCB 'In' identification

- Method 1 – Module label



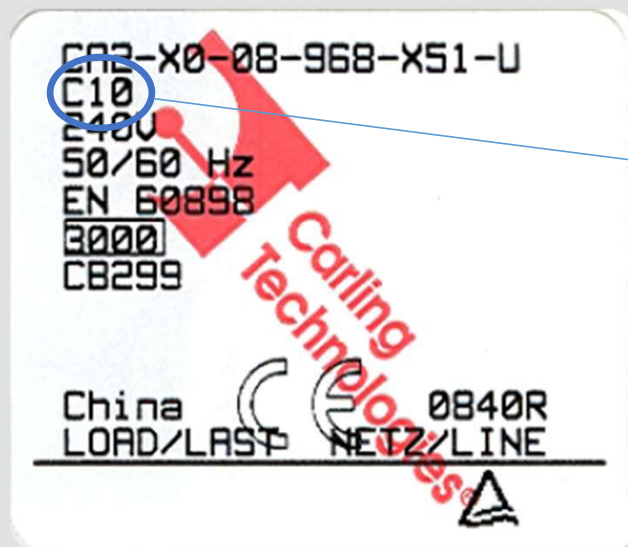
Curve and Rated Current Limit
e.g. 'C' Curve, 14 A



Appendix

A - MCB 'In' identification

- Method 2 – Carling Label (New Style)



Curve and Rated Current Limit
e.g. 'C' Curve, 10 A

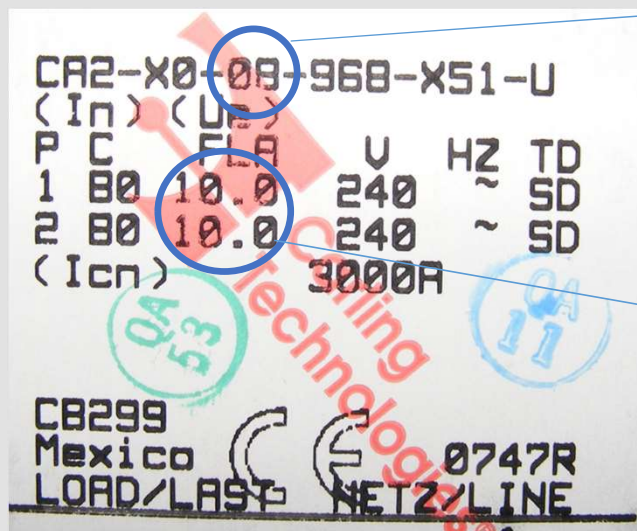


Appendix

A - MCB 'In' identification

- Method 3 – 'Carling' Label (Old Style (A))

| Number | Curve |
|------------|-----------|
| 03, 04 | 'D' Curve |
| 07, 08, 10 | 'C' Curve |



Rated Current Limit
e.g. 10 A



Appendix

A - MCB 'In' identification

- Method 4 – 'Carling' Label (Old Style (B))



| Number | Curve |
|------------|-----------|
| 03, 04 | 'D' Curve |
| 07, 08, 10 | 'C' Curve |

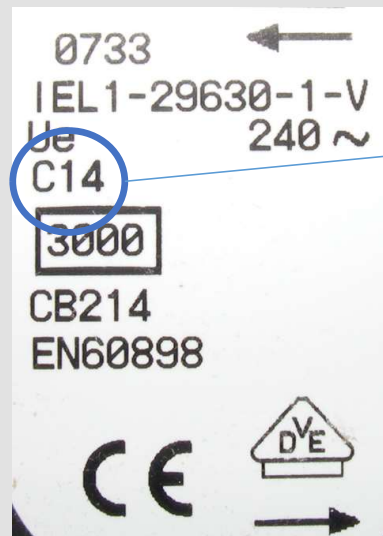
Rated Current Limit
e.g. 20 A



Appendix

A - MCB 'In' identification

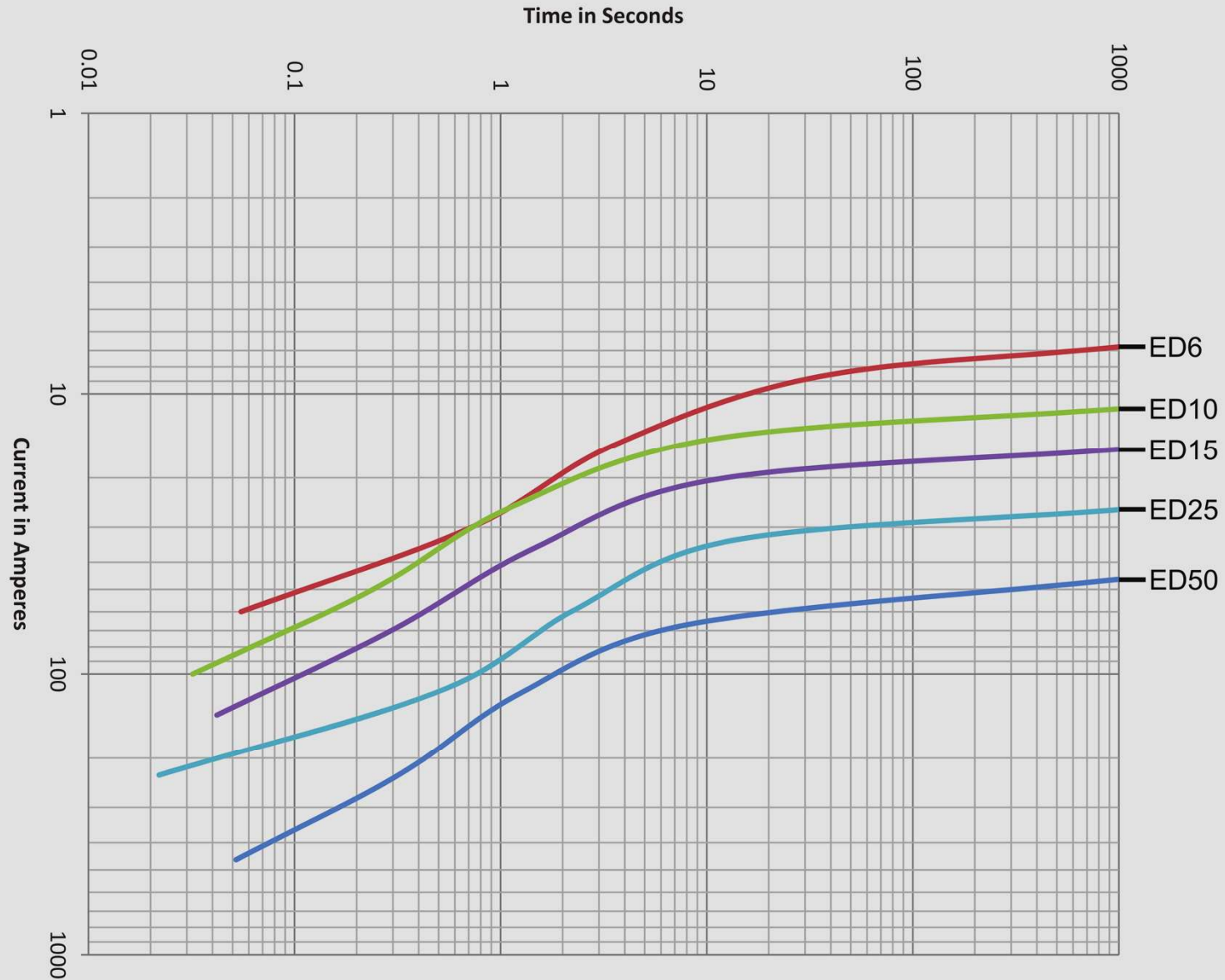
- Method 5 – 'Airpax' Label

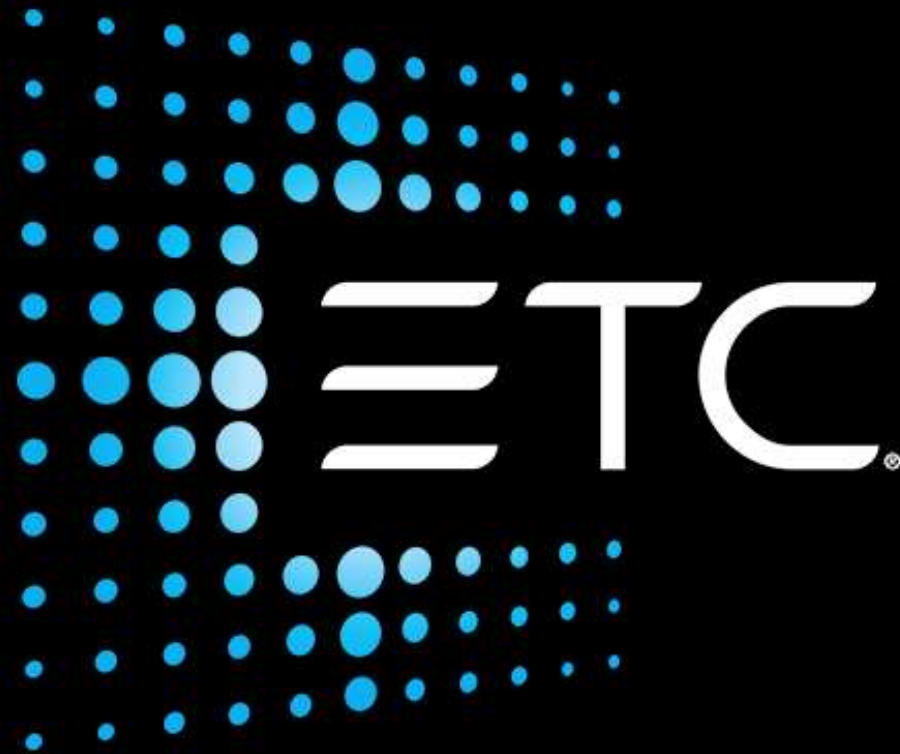


Curve and Rated Current Limit
e.g. 'C' Curve, 14 A

Appendix

B - MCB curve characteristics





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