ColorSource ThruPower

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

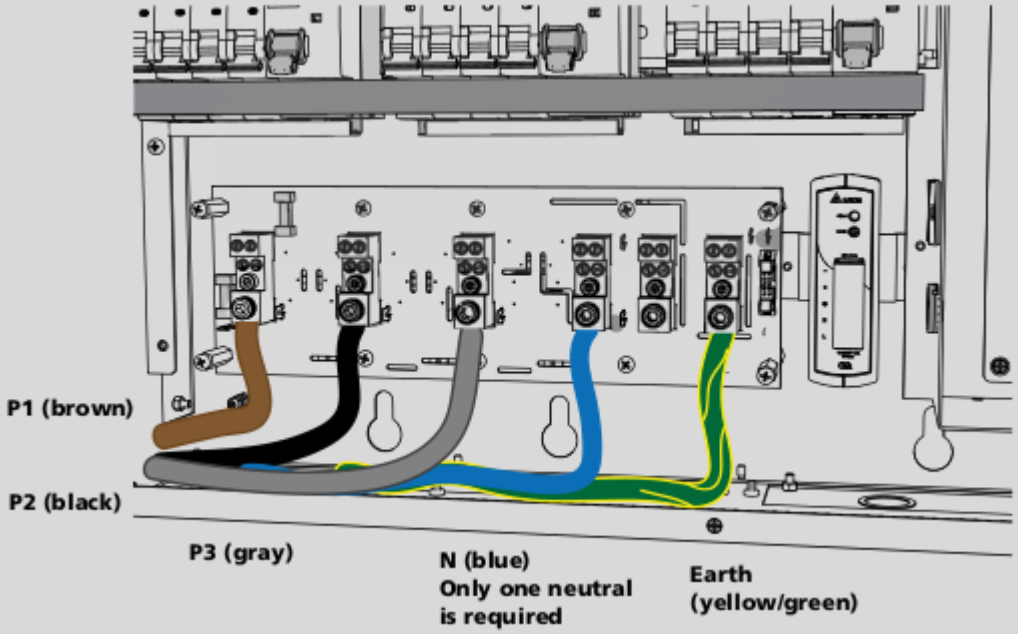
Safe Isolation

- No master isolator included with the rack
  - The distribution circuit should be isolated elsewhere

- Final circuits can be isolated by use of domestic tag outs

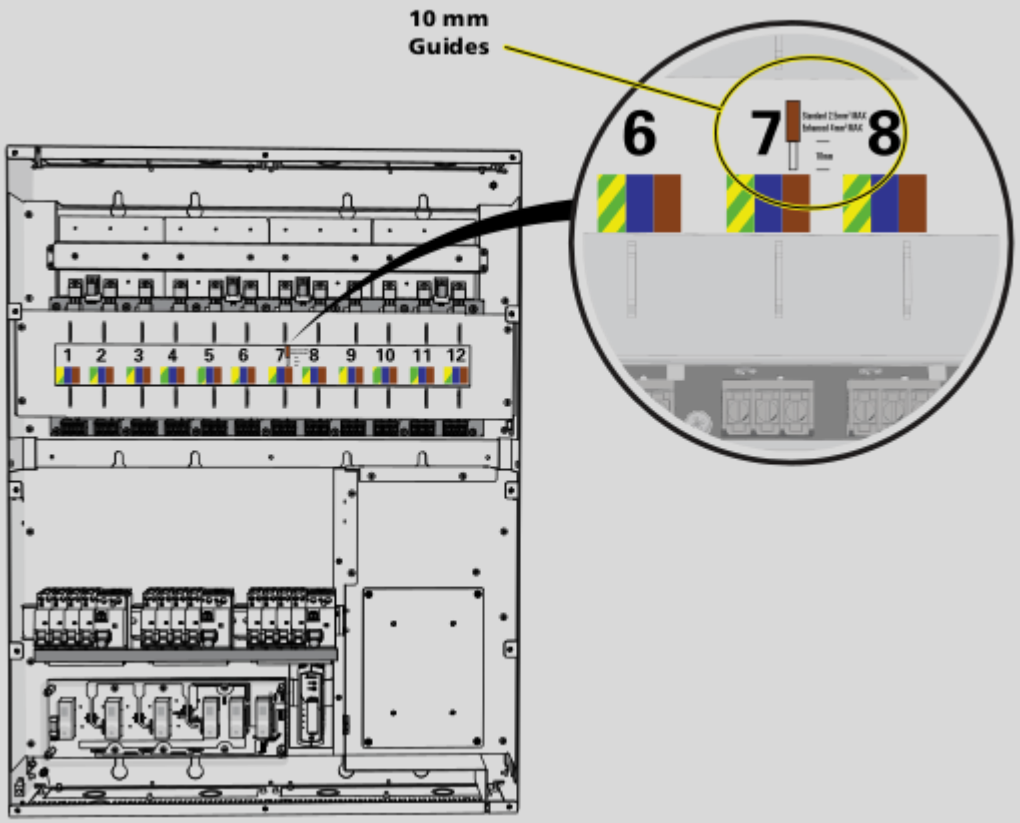
LV Termination - Distribution

- 6 Incoming lugs, each rated for up to 50mm^2
- BS7871:2018 Sec 526
  - We recommended to terminate these with bootlace ferrules.
- 2 Neutral lugs are provided, where required.
  - These are paralleled/commoned internally



LV Termination – Final Circuits

- Line, Neutral, CPC for each circuit
- The CPC are commoned
- #6 (3.5mm) Screw terminals
- BS7871:2018 Sec 526
  - We recommended to terminate these with eyelet crimps
- Up to 6mm² with eyelet crimps
  - 0.5mm² to 1.5mm² (Red) - RS 267-3644
  - 1.5mm² to 2.5mm² (Blue) - RS 267-3789
  - 4mm² to 6mm² (Yellow) - RS 267-3919



642.3(viii)(b) Basic protection

- At any point the rack is energised, all protective covers must be fitted

643.2 Continuity of conductors

Distribution Circuit

- Protective conductor
  - Bottom of rack

Final Circuit

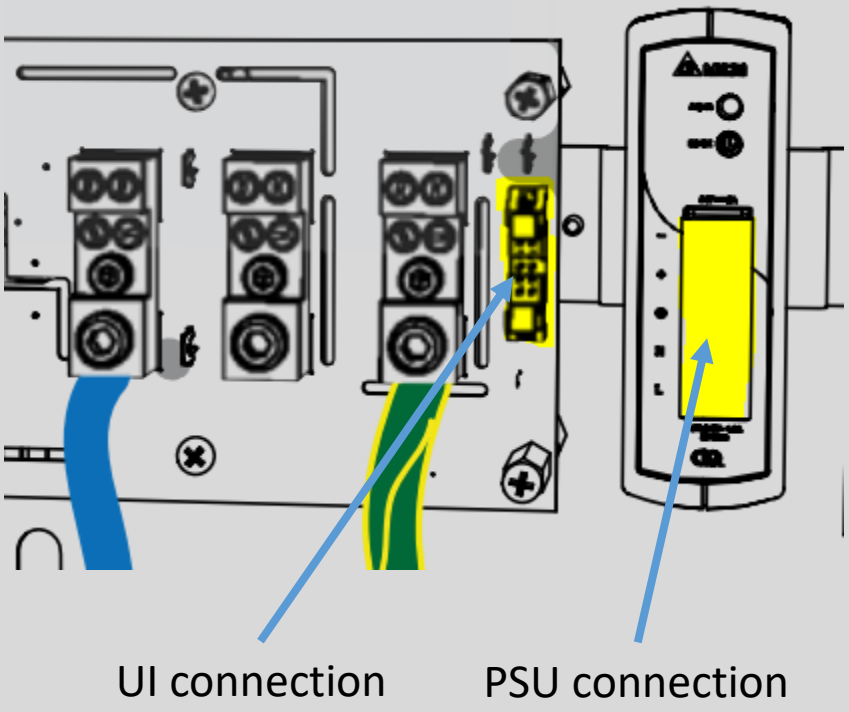
- Protective conductor (CPC)
  - Soured from the upper section

643.3 Insulation Resistance

- Influence result or be damaged
  - Processor/UI
    - Isolate
  - PSU
    - Isolate
  - Triacs
    - 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 2500V
- 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
  - Bottom of rack
- Live conductor
  - Bottom of rack
- Neutral conductor
  - Bottom of rack

Final Circuit

- Protective conductor (CPC)
  - Identified by colour
  - Mid section of rack
- Live conductor
  - Identified by colour
  - Mid section of rack
- Neutral conductor
  - Identified by colour
  - Mid section of rack

643.7 Protection by automatic disconnection of the supply

MCB (EN 60898)

- The characteristics of the MCB is clearly displayed
- Appendix A details the exact curve characteristics
- Appendix B details derating values

RCD (EN 61008)

- The characteristics of the RCD is clearly displayed

643.7.3 Earth fault loop impedance

Calculation of Zs

- Most onerous internal impedance 0.2ohm
  - $Zs = Ze + R_1 + R_2 + 0.2$

Direct measurement of Zs

- Set to relay mode to remove modification of the waveform
  - Each output must be changed to relay mode via the "Output Setup" on the UI. Remember to return the mode after testing
  - Each output, once set to relay mode, can be operated via the test button (Lamp Icon)
- Apply +0.15ohm correction to account for most onerous mode (Dimming)

643.7.3.201 Prospective fault current

- The rack contains a EN 60898-1 listed MCB.
  - The Icn value of the MCB is clearly displayed on the MCB
- In dimmer mode contains a toroidal choke, this limits the PSSC

643.8 Additional protection

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

- Set to relay mode to remove modification of the waveform
  - Each output must be changed to relay mode via the "Output Setup" on the UI. Remember to return the mode after testing
  - Each output, once set to relay mode, can be operated via the test button (Lamp Icon)

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

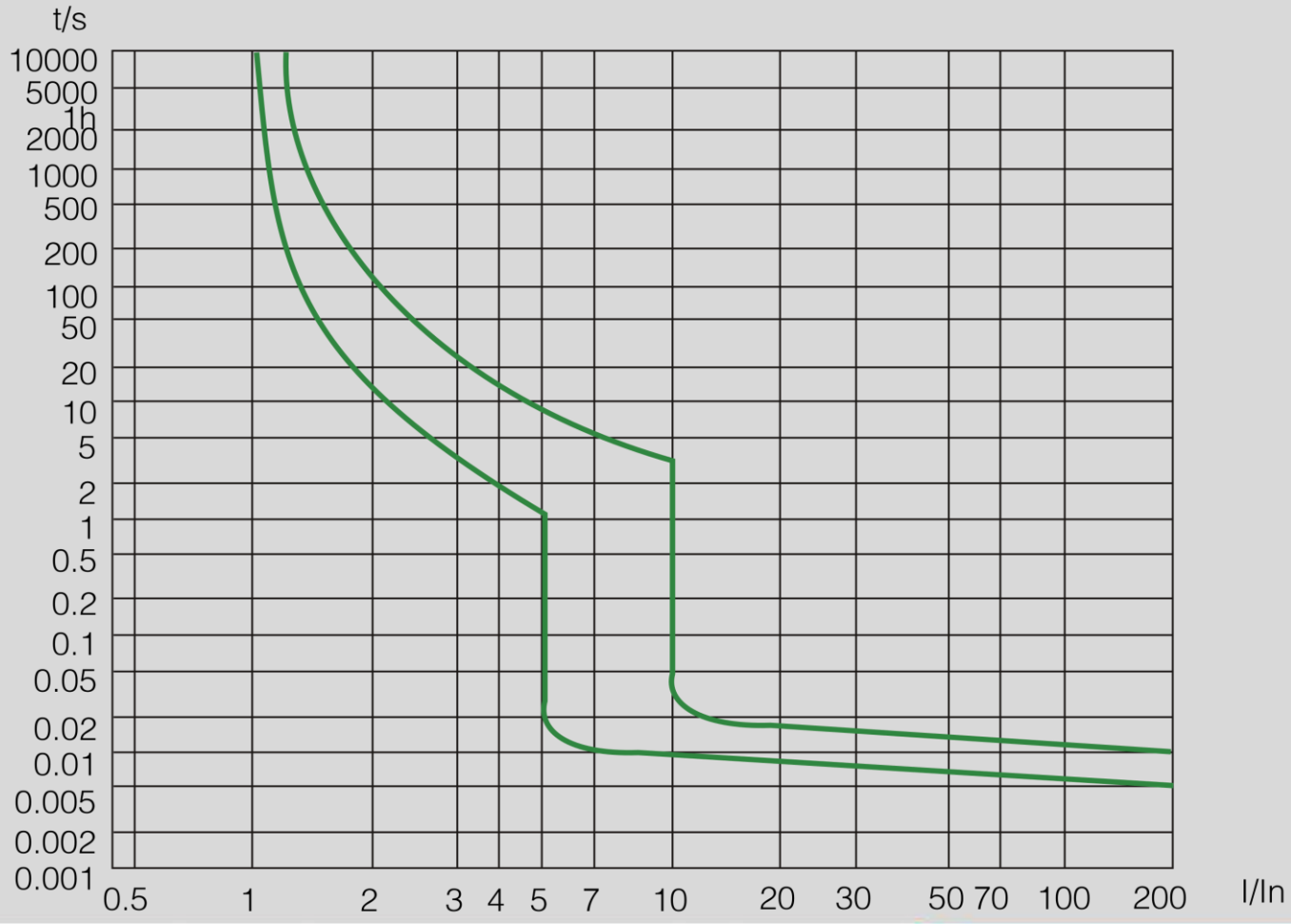
- A test switch for the RCD is located on the RCD
- Each output can be tested via the UI test menu (Lamp button)

643.11 Verification of voltage drop

- Set to relay mode to remove modification of the waveform
  - Each output must be changed to relay mode via the "Output Setup" on the UI. Remember to return the mode after testing
  - Each output, once set to relay mode, can be operated via the test button (Lamp Icon)

Appendix

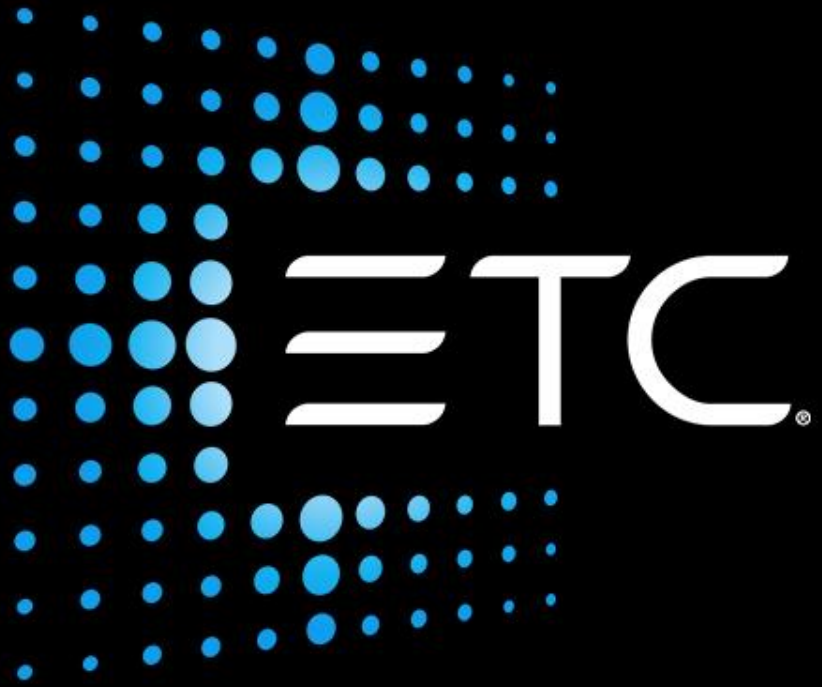
A - MCB curve characteristics



Appendix

B - MCB derating characteristics

Dependence of Tripping Characteristics on Ambient Temperature											
T [°C]	**I_n (T) [A]**										
	1 A	**2 A**	**3 A**	**4 A**	**6 A**	**10 A**	**16 A**	**20 A**	**25 A**	**32 A**	**40 A**
-20	1.35	2.6	4.1	5.3	8	13.5	20	24.5	29.8	39.5	50.5
-15	1.28	2.53	4.05	5.15	7.8	13.3	19.8	24.3	29.7	39.3	50.4
-10	1.25	2.4	3.95	5.08	7.6	13	19.5	24	29.5	39	50.2
-5	1.2	2.33	3.9	4.98	7.3	12.7	19.2	23.8	29.3	38.8	50
0	1.18	2.3	3.8	4.8	7.2	12.5	19.1	23.7	29.2	38.6	48.8
5	1.15	2.28	3.6	4.72	7	12.3	18.8	23.5	29	38.4	48.6
10	1.1	2.23	3.45	4.65	6.8	12.1	18.6	23.3	28.8	38.2	48.4
15	1.08	2.18	3.35	4.52	6.6	12	18.5	23.1	28.6	38	48.1
20	1.05	2.09	3.22	4.31	6.4	11.8	18.3	22.8	28.4	37.8	47.8
25	1.05	2.03	3.08	4.22	6.2	11.5	18	22.6	28.2	37.5	47
30	1	2	3	4	6	10	16	20	25	32	40
35	0.99	1.98	2.98	3.95	6	9.9	15.7	19.7	24.6	31.5	39.2
40	0.97	1.95	2.95	3.91	5.9	9.8	15.4	19.3	24.3	31.1	38.8
45	0.95	1.91	2.91	3.85	5.83	9.8	15.1	18.8	24	30.8	38.3
50	0.91	1.88	2.88	3.8	5.72	9.6	14.9	18.5	23.8	30.1	38
55	0.89	1.85	2.82	3.74	5.65	9.5	14.7	18.2	23.5	29.5	36.5
60	0.86	1.81	2.77	3.71	5.5	9	14.5	17.8	23	28.5	35
65	0.84	1.77	2.73	3.65	5.4	8.6	14	17.5	22	27.5	34
70	0.81	1.71	2.65	3.52	5.2	8	13.8	17.3	21.5	27	32.5



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