

QY - Series Miniature Circuit Breakers



1 pole
DIN mount



1 pole
Dual (DIN & mini rail) mount



2 pole
Dual (DIN & mini rail) mount



4 Pole + Auxiliary
Dual (DIN & mini rail) mount

Features

- DC circuit breaker
- Hydraulic-magnetic technology
- 100% rating capability, independent of ambient temperature
- VDE, EAC and CCC approved, CE certified
- UL listed (UL 489A)
- Ratings 0.1 A to 63 A (1 & 2 pole), 3 pole parallel (150 A maximum), 4 pole parallel (200 A maximum)
- Optional shunt trip (Approvals pending)
- Wide range of time delays and operating currents
- Precision tripping characteristics
- Ultra compact – 13 mm wide module
- Trip indication with mid-trip handle
- Can be switched on immediately after tripping
- DIN mount, 45 mm front escutcheon (Grey)
- Dual (DIN & mini rail) mount, 57 mm front escutcheon (Black)
- 80 Vdc devices are reverse feedable
- 125 / 250 / 600 Vdc devices are polarity sensitive
- Suitable to use for electrical isolation

Optional Accessories

- Handle lock - QFAP001
- Surface mounting clips - SAAX000
- Busbar - SABBM54
- 57 mm escutcheon blank (Dual mount only) - 235608
- 57 mm safety blank (Dual mount only) - SAEB000

Applications

- DC branch circuit protection (UL 489A, DIN / EN 60947-2)
- Telecom / datacom equipment
- UPS equipment
- Alternative energy equipment
- Battery protection & switching
- Telecommunication DC power distribution
- Railway signalling equipment

Auxiliary Switch, Trip Alarm & Combo: Features

- Factory fitted
- Attached to right hand side of circuit breaker
- Compact 6.5 mm width
- Auxiliary switch (DIN and Dual mount)
- Auxiliary switch + trip alarm (Dual mount only)
- Trip alarm (Dual mount only)
- UL 489A listed & IEC 60947-5-1
110 Vdc, 0.5 A; 240 Vac, 6A



Hydraulic-Magnetic Circuit Breakers 100% rated, unaffected by ambient temperature

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Technical Data

Approvals	DIN / EN 60947-2						
Number of Poles	1	2	2 parallel	2 parallel	3 parallel	4 parallel	2 series
Operating Voltages	80 Vdc, 125 Vdc		80 Vdc	125 Vdc	80 Vdc		250 Vdc
Minimum Current Rating	0.1 A	0.1 A	30 A	30 A	110 A	200 A	0.1 A
Maximum Current Rating	63 A	50 A	100 A	100 A	150 A	200 A	50 A
Ultimate S/C Breaking Capacity (Icu)	10 kA						

Approvals	UL 489A, CSA C22.2 No. 5 - 16							
Number of Poles	1	2	2 parallel	2 parallel	3 parallel	4 parallel	2 series	4 series
Operating Voltages	80 Vdc, 125 Vdc		80 Vdc	125 Vdc	80 / 125 Vdc	80 Vdc	250 Vdc	600 Vdc
Minimum Current Rating	0.1 A	0.1 A	30 A	20 A	110 A	200 A	0.1 A	0.1 A
Maximum Current Rating	63 A	50 A	100 A	100 A	150 A	200 A	50 A	20 A
Ampere Interrupting Capacity (AIC)	10 kA							

Approvals	GB 14048.2						
Number of Poles	1	2	2 parallel	2 parallel	3 parallel	4 parallel	2 series
Operating Voltages	80 Vdc, 125 Vdc		80 Vdc	125 Vdc	80 Vdc		250 Vdc
Minimum Current Rating	0.1 A	0.1 A	30 A	30 A	110 A	200 A	0.1 A
Maximum Current Rating	63 A	50 A	100 A	100 A	150 A	200 A	50 A
Ultimate S/C Breaking Capacity (Icu)	10 kA						

Verify approvals for specific ratings in accordance with the relevant test certificates.

Product Type	QY
Ambient Operating Temperature	-40 °C to +85 °C
Mounting Options	Dual (DIN & mini rail) mount, Surface mounting clip
Time Delay Curves	1, 9, U2, U3, OP
Endurance	10000 operations - 1500 with current, 8500 without current (IEC 60947-2 Clause 7.2.4.2)* Minimum of 1000 operations with current (UL 489A Clause 12)*
Dielectric Strength	1000 - 2000 Vac for one minute (IEC 60947-2 Clause 8.3.3.3)* 1000 Vac plus twice the rated voltage for one minute (UL 489A Clause 8)*
Rated Impulse Withstand Voltage	4 kV (IEC 60947-2 Clause 8.3.3.2)*
Weight	102 g per pole, 160 g with auxiliary (unpacked)
Altitude	Certification tests done at altitude ≈ 2000 metres. Will operate at higher altitudes.
Shock	16 G (IEC 60068-2-27)
Vibration	2 G (IEC 60068-2-6) (sinusoidal wave)
Flammability	I3 - Ignition does not persist at 850 °C after glow wire is withdrawn with an oxygen index of ≥ 28
Toxicity	F1 - Smoke index of ≤ 20 which determines the fume class
Pollution Degree	PD2 - Normally only non-conductive pollution occurs. Temporary conductivity caused by condensation is to be expected.

* Refer to standard for details.

Circuit breaker	Wire Size (IEC)	Wire Gauge (UL)	Torque (IEC)	Torque (UL)	Comments
1 Pole & 2 Pole	0.75 mm ² - 25 mm ²	18 – 2 – AWG	2.5 N.m	20 lbf.in	Pozidriv #2 Combi head
2 Pole Parallel	50 mm ²	14 – 1/0 – AWG	3.2 N.m	28 lbf.in	Bridge terminal
3 Pole Parallel	95 mm ²	14 – 5/0 – AWG	5.6 N.m	50 lbf.in	Bridge terminal

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Long Code

Example Code: QY--A-3(13)-D-U2-150A-B0----Z

Group	1	2	3	4	5	6	7	8	9	10	11	12	13
Requirement	QY frame	Switch / neutral	Auxiliary	Triple pole	13 mm module width	DIN rail	Medium delay curve U2	Current rating 150 A	Voltage 80 Vdc	No shunt trip	Future use	Parallel bridged (by customer)	Customer specific
Long Code	QY	-	A	3	(13)	D	U2	150A	B0	-	-	Z	-

Ordering Information

Group 1: Frame Type	Code	Description		Comments	
	QY	Miniature circuit breaker			
Group 2: Switch/Neutral	Code	Description		Comments	
	-	Not applicable		Overload poles do not have any further coding	
Group 3: Auxiliary	Code	Description		Comments	
	-	Not applicable		If auxiliary is not required	
	A	Auxiliary switch (1 x Aux in 1 module)		6.5 mm module fitted on right-hand side (DIN & Dual mount)	
	T	Trip alarm (1 x Trip alarm in 1 module)		6.5 mm module fitted on right-hand side (Dual mount)	
Group 4: No of Poles	Code	Description		Comments	
	1	Single pole			
Group 5: Module Width	Code	Description		Comments	
	(13)	13 mm module width		13 mm per pole	
Group 6: Mounting	Code	Description		Comments	
	D	DIN rail mount		DIN mount supplied in grey only - 45 mm front escutcheon, grey body	
Group 7: Time Delays	Code	Description		Instantaneous Trip Point (x In)	Comments
	1	Long time delay, high instantaneous trip		10 – 20	Orange handle
	9	Long time delay		7 – 12	White handle
	U2	Medium time delay		5 – 10	White handle
	U3	Short time delay		3 – 5	White handle
	OP	Instantaneous		None	White handle
Group 8: Current Ratings	Code / Description			Comments	
	0.1, 0.2, 0.3, 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 16, 20, 25, 30, 32, 35, 40, 45, 50, 60, 63, 70, 80, 90, 100, 120, 125, 150, 200 A			Ratings available vary depending on certification, bridging configuration and voltage. (See comments in Group 9) * Other ratings are available as special orders. Check availability.	
Group 9: Voltage (see diagram on page 11)	Code	Voltage	Description		Comments
	B0	80 Vdc	Unpolarised		
	B1	125 Vdc	Polarised. Positive bottom.		
	B2	250 Vdc	Polarised. Positive bottom		Two poles intended to be bridged in series from the Top of (Pole 1) to the bottom of (Pole 2), bridging to be done by customer
	B3	250 Vdc	Polarised. Positive bottom / Positive top		Factory bridged at the top
	B4	600 Vdc	Polarised. Positive bottom / Positive top / Positive bottom / Positive top		Factory bridged top / bottom / top
	T1	125 Vdc	Polarised. Positive top		
	T2	250 Vdc	Polarised. Positive top		Two poles intended to be bridged in series from the bottom of (Pole 1) to top of (Pole 2), bridging to be done by customer
	T3	250 Vdc	Polarised. Positive top / Positive bottom		Factory bridged at the bottom
	T4	600 Vdc	Polarised. Positive top / Positive bottom / Positive top / Positive bottom		Factory bridged bottom / top / bottom
	B1-T1	125 Vdc	Polarised		1 Pole Positive bottom / 2 Pole positive top
T3- B3	250 Vdc	Polarised		1 & 2 Pole Bottom bridged / 3 & 4 Pole top bridged in series	

Continues on page 4

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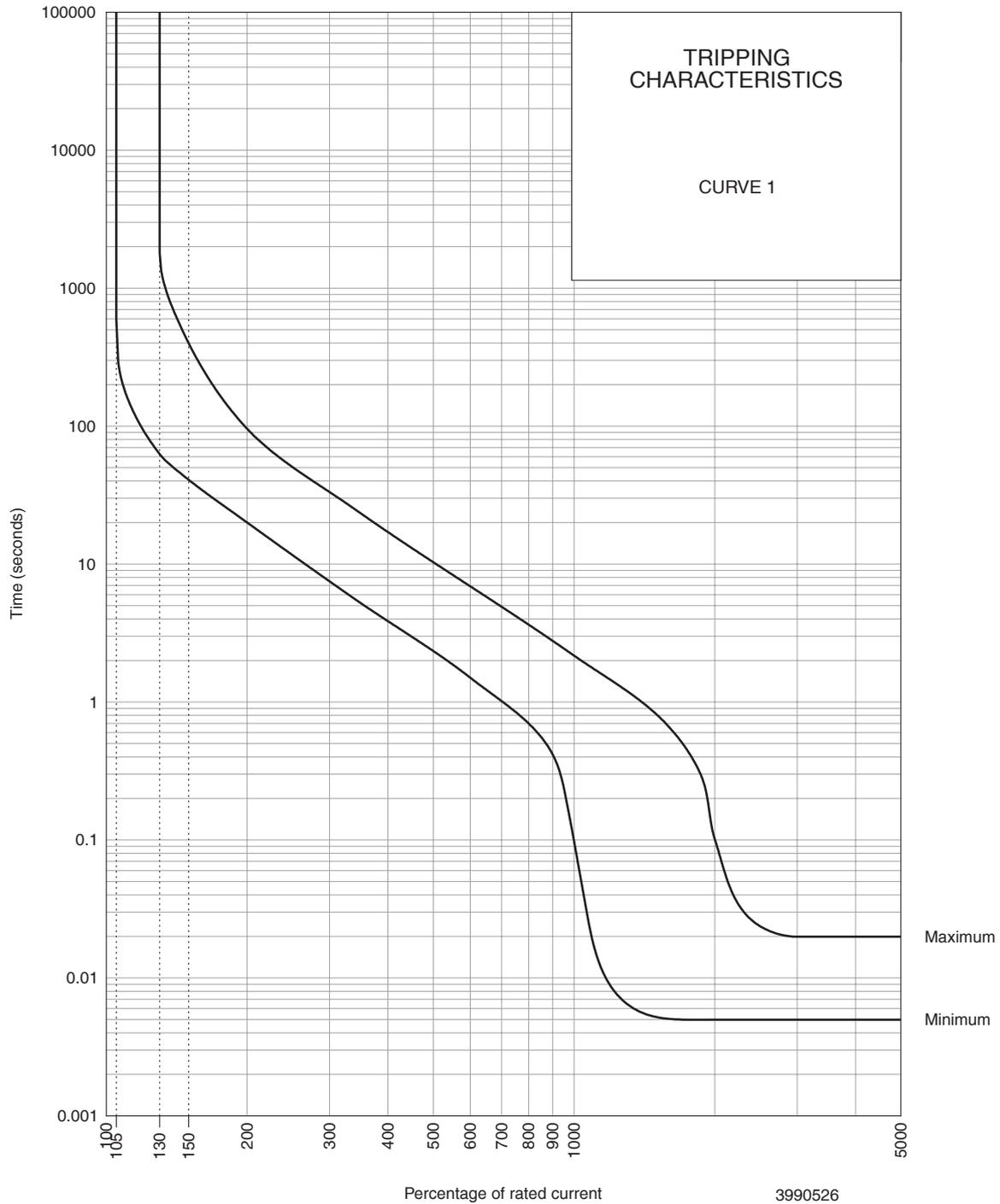
Ordering Information continues

Group 10: Shunt Trip	Code	Description	Comments
(not certified, only offered as special order)	-	Not applicable	If shunt trip is not required
	U5	12 Vdc Shunt trip (Box terminal)	<p style="text-align: center;">Recommended pulse tolerance 100 ms - 60 s</p> <p style="text-align: center;">Note: Shunt trip option carries no approvals - available as a special order only</p>
	U6	24 Vdc Shunt trip (Box terminal)	
	U7	48 Vdc Shunt trip (Box terminal)	
	U8	110 Vdc or 110 Vac Shunt trip (Box terminal)	
	U9	220 Vdc - 240 Vac Shunt trip (Box terminal)	
Group 11:	Code	Description	Comments
	-	Not applicable	For future use
Group 12: Special Termination	Code	Description	Comments
	-	Not applicable	
	Z	Bridged unit (bridge to be fitted by customer)	
	ZL	Bridged unit (factory fitted)	
Group 13: Customer Specific	Code	Description	Comments
	-	Not applicable	If shunt trip is not required

For options not listed, please contact CBI for assistance

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Time Delay Curve

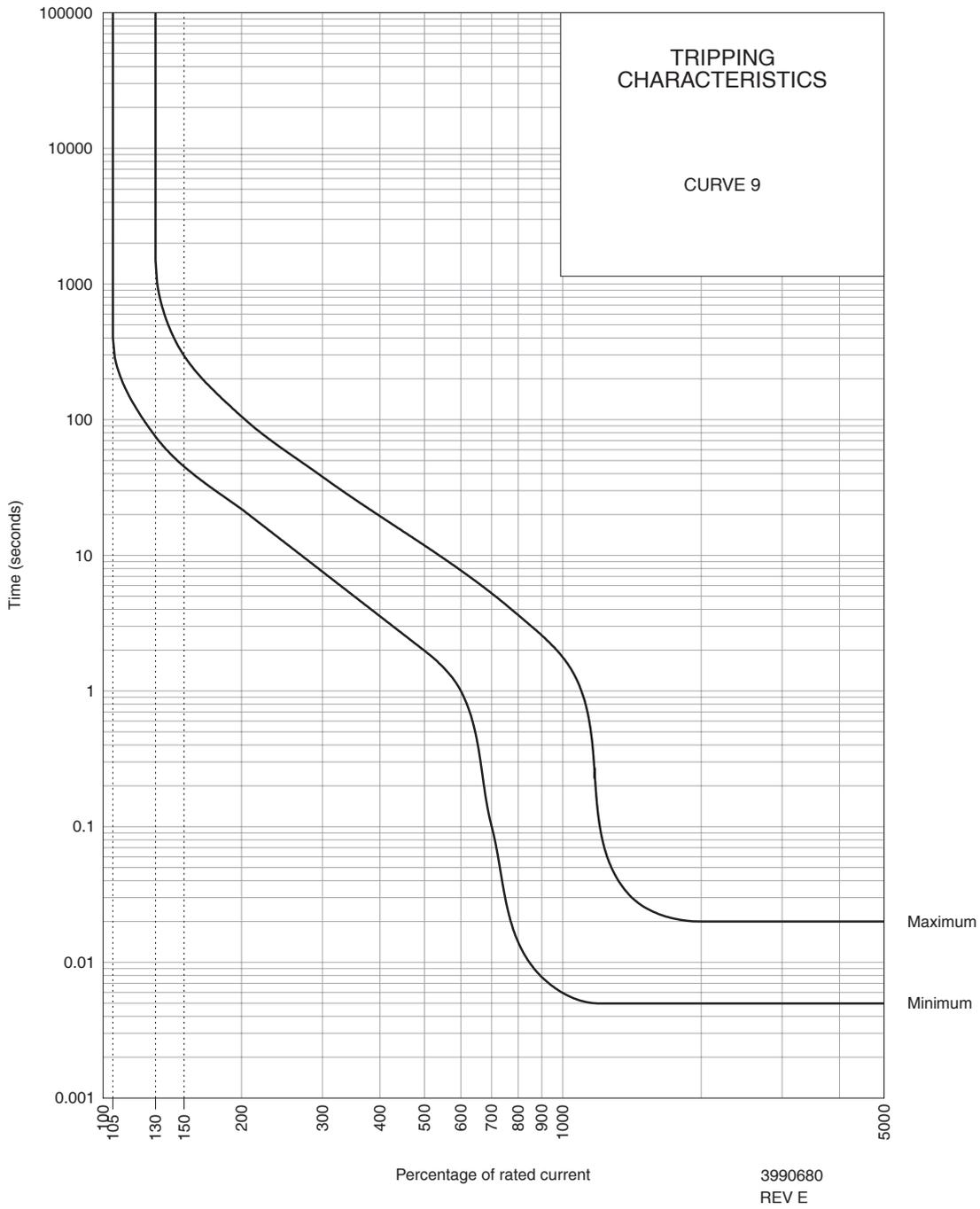


3990526
REV G

PERCENTAGE OF RATED CURRENT	105%	130%	145%	150%	200%	300%	400%	500%	600%	700%	800%	900%	1000%	2000%
MINIMUM TRIP TIME IN SECONDS	NO TRIP	63	45	41	20	7.5	3.8	2.3	1.5	1.01	0.7	0.42	0.1	0.005
MAXIMUM TRIP TIME IN SECONDS	NO TRIP	1800	503	400	96	34	17	10.3	6.8	4.9	3.6	2.8	2.2	0.1

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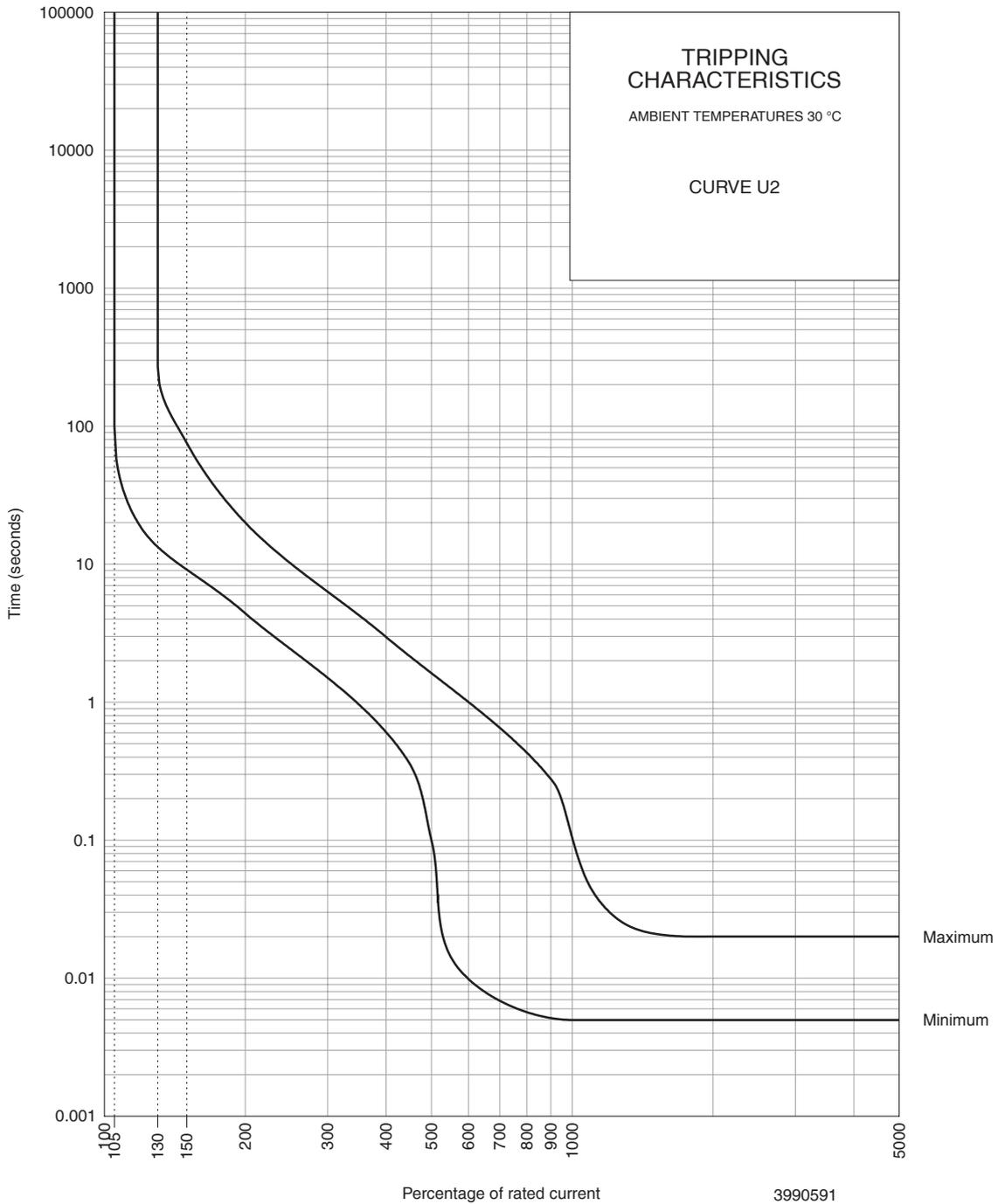
Time Delay Curve



PERCENTAGE OF RATED CURRENT	105%	130%	145%	150%	200%	300%	400%	500%	600%	700%	800%	900%	1200%	2000%
MINIMUM TRIP TIME IN SECONDS	NO TRIP	75	50	45	22	7.6	3.6	2	1	0.1	0.01	0.008	0.005	0.005
MAXIMUM TRIP TIME IN SECONDS	NO TRIP	1500	360	295	100	38	19	11.8	7.7	5.3	3.6	2.6	0.06	0.02

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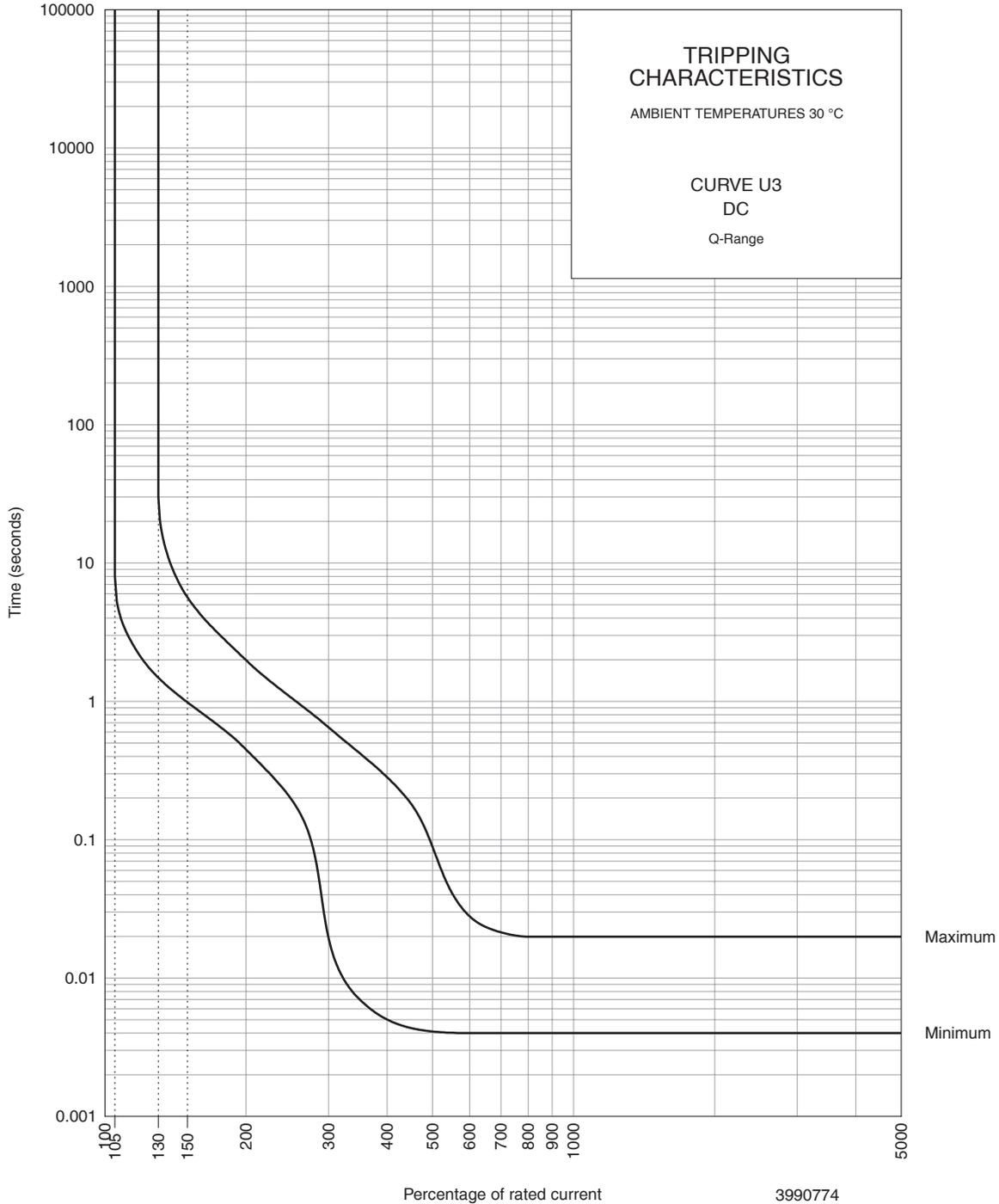
Time Delay Curve



PERCENTAGE OF RATED CURRENT	105%	130%	145%	150%	200%	300%	400%	500%	600%	700%	800%	900%	1000%	2000%
MINIMUM TRIP TIME IN SECONDS	NO TRIP	13	9.9	9.1	4.4	1.5	0.6	0.1	0.01	0.007	0.006	0.005	0.005	0.005
MAXIMUM TRIP TIME IN SECONDS	NO TRIP	270	92.3	75.5	20	6.3	3	1.6	1	0.65	0.43	0.28	0.1	0.02

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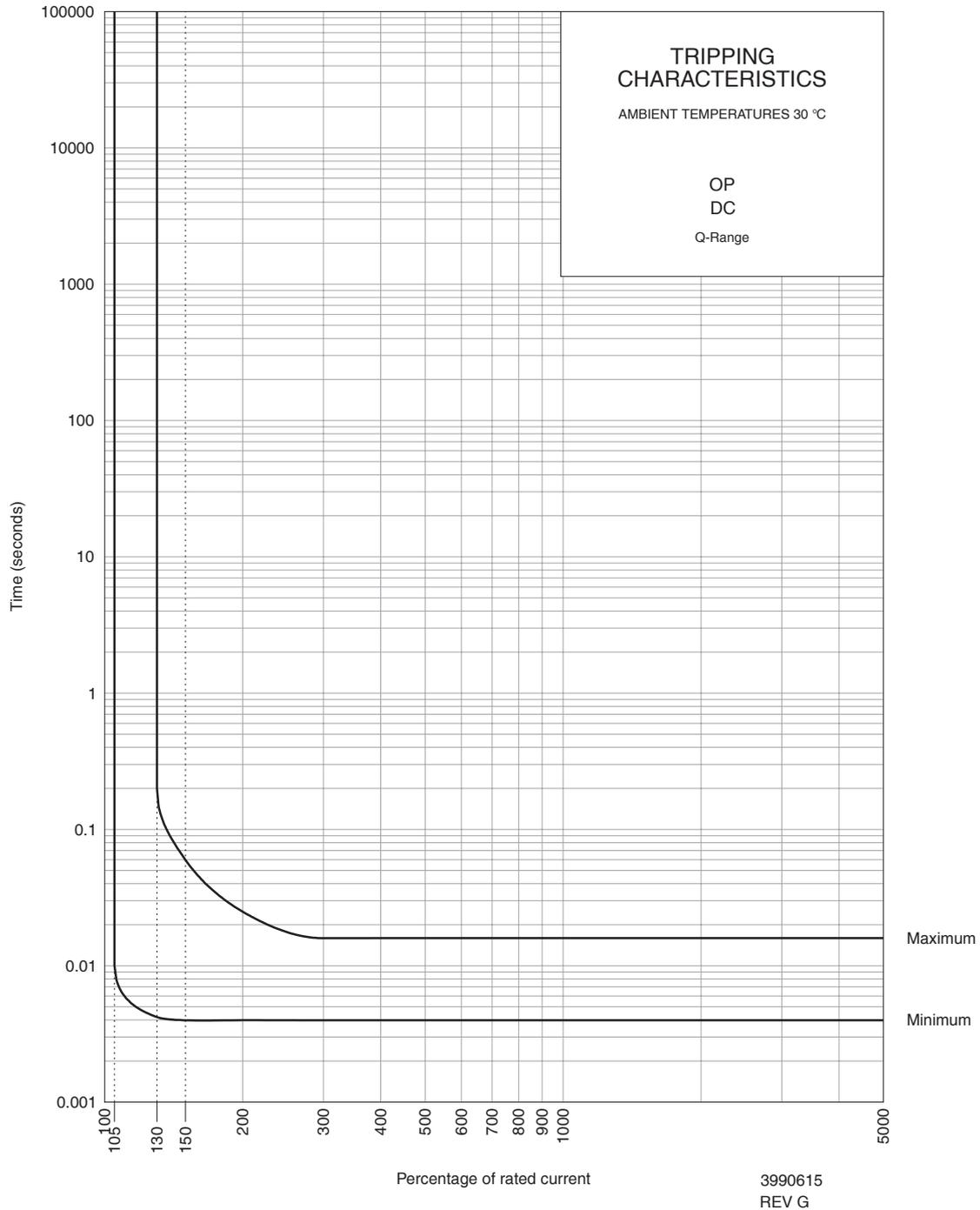
Time Delay Curve



PERCENTAGE OF RATED CURRENT	105%	130%	145%	150%	200%	300%	400%	500%	600%	700%	800%	900%	1000%	2000%
MINIMUM TRIP TIME IN SECONDS	NO TRIP	1.5	1.08	1	0.45	0.02	0.005	0.0041	0.004	0.004	0.004	0.004	0.004	0.004
MAXIMUM TRIP TIME IN SECONDS	NO TRIP	30	6.8	5.6	2	0.65	0.28	0.09	0.028	0.021	0.02	0.02	0.02	0.02

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Time Delay Curve

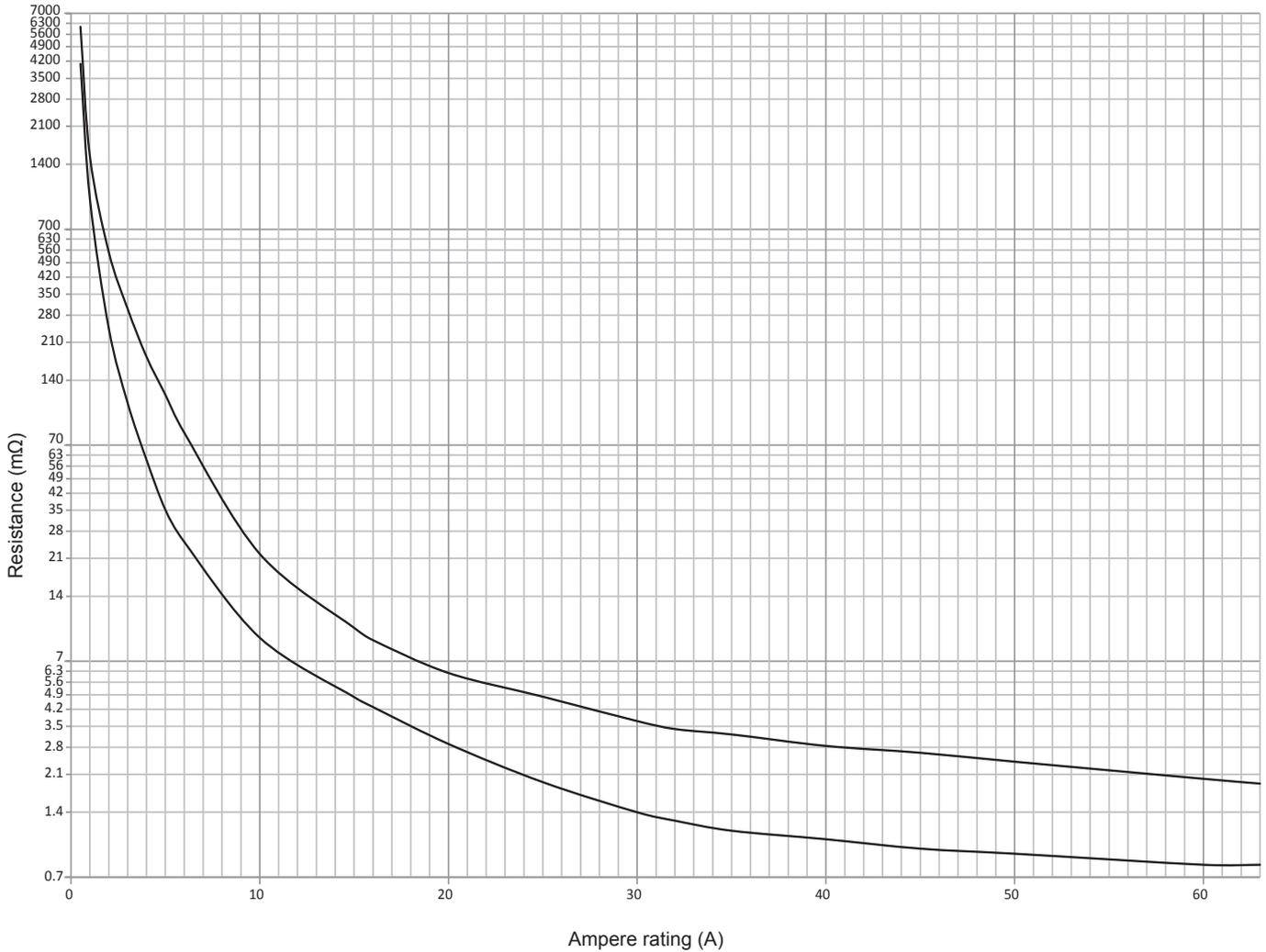


PERCENTAGE OF RATED CURRENT	105%	130%	145%	150%	200%	300%	400%	500%	600%	700%	800%	900%	1000%	2000%
MINIMUM TRIP TIME IN SECONDS	NO TRIP	0.0042	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
MAXIMUM TRIP TIME IN SECONDS	NO TRIP	0.2	0.07	0.06	0.025	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016

* The published time delay curves are generated at 30°C ambient temperature with the circuit breaker mounted in the up-right position. The "must hold", "must trip" and "instantaneous trip" current values are not affected by temperature, although delay time for the other operating current values may have to be adjusted using the temperature compensation curve which is available on request.

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Resistance Curve



3990A784 REV A

Amp RATING	0.5	1	2	5	6	10	15	20	25	30	32	40	50	60	63
MINIMUM (mΩ)	4085	970	244	35	25	9.0	4.8	2.9	1.9	1.4	1.3	1.1	0.9	0.8	0.8
MAXIMUM (mΩ)	6065	1527	550	120	80	22	10	6.2	4.8	3.7	3.4	2.8	2.4	2.0	1.9

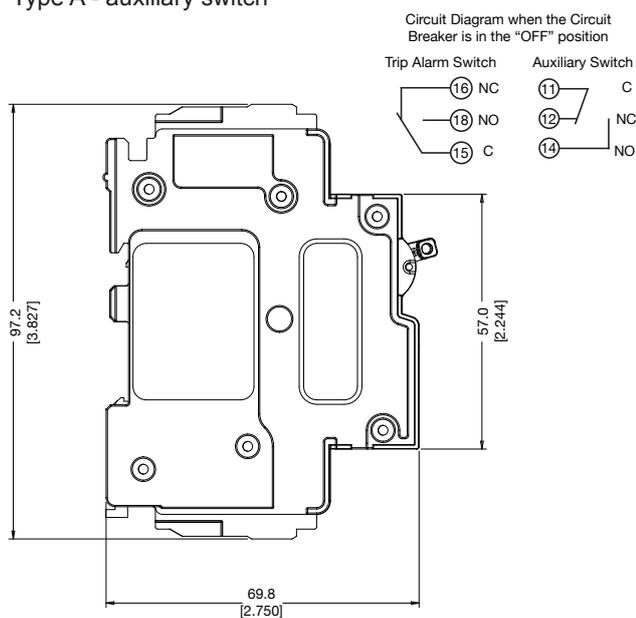
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Typical outline of Auxiliary Switch

Auxiliary available (6.5 mm module width) to match the unit to which it is attached.

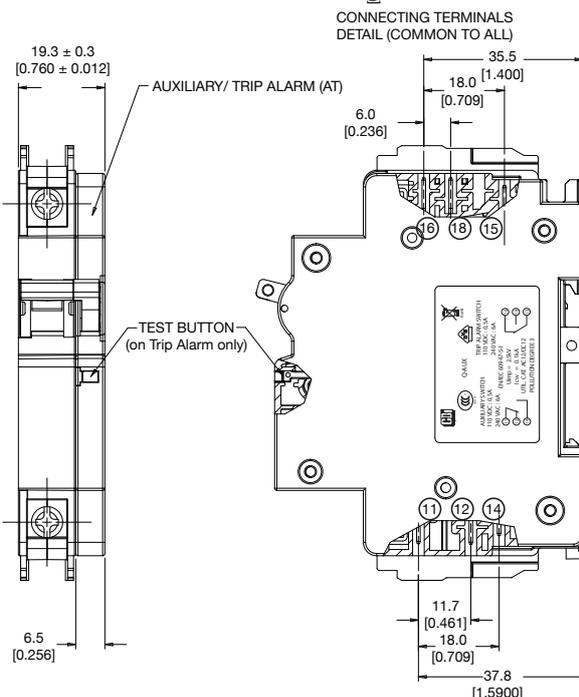
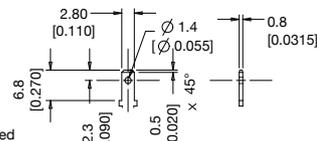
Available types as listed in Group 3:

- Type T - trip alarm as shown in outline drawings (fitted on a dual mount product)
- Type AT - auxiliary switch + trip alarm (as shown)
- Type A - auxiliary switch



Typical outline for an Auxiliary module attached to a Dual mount single pole Circuit Breaker

All dimensions in mm [inch]
Tolerance ± 0.2 unless otherwise specified



Polarity identification

Diagram identifying the polarity of 125 Vdc products in reference to Group 9 on page 3. Devices are shown viewed from the front. Series devices (standard) - each pole is opposite polarity from the next pole on the left (bridged "-" to "+"). Parallel devices - each pole has the same polarity (bridged "+" to "+", "-" to "-").

