

**Datasheet**

## QL Series Hydraulic-Magnetic Miniature Circuit Breakers



Dual mount - 1 pole



DIN mount - 2 pole



Dual mount + auxiliary

**Features**

- AC Circuit Breaker
- Hydraulic-Magnetic technology
- 100% rating capability, independent of ambient temperature
- One, two and three pole (UL). One, two, three pole and 1+N, 3+N (VDE).
- VDE and CCC approved, CE certified
- UL 489 Listed, CSA 22.2 certified
- Ratings 0.5A to 25A
- Optional Auxiliary Switch / Trip Alarm - factory fitted (6.5 mm wide)
- Wide range of time delays and operating currents
- Precision tripping characteristics
- Ultra compact – 13 mm wide module
- Trip indication with mid-trip handle
- Reset immediately after overload
- DIN mount product in grey shells
- Dual mount product in black shells
- Ring terminal ready (terminal screw is removable)

**Applications:**

- AC branch circuit protection (UL 489, IEC / EN 60847-2)
- ~~• Telecom / datacom equipment~~
- ~~• Lighting control~~
- ~~• UPS equipment~~
- ~~• Alternative energy equipment~~
- ~~• Mobile power generation equipment~~
- ~~• Power conditioning equipment~~

**Auxiliary Switch, Trip Alarm & Combo Features**

- Factory fitted
- Attached to right hand side of Circuit Breaker
- Compact 6.5 mm width
- AC or DC voltages
- UL 489 listed (Auxiliary Switch: 6 A 240VAC, 0.5 A 110VDC)
- IEC 60947-5-1 approved (Auxiliary Switch: 6 A 240 V AC, 0.5 A 110 V DC; Trip Alarm: 6 A 240 V AC, 0.5 A 110 V DC)

**Optional Accessories**

- Auxiliary Switch (DIN and Dual Mount)
- Auxiliary Switch + Trip Alarm (Dual Mount only)
- Trip Alarm (Dual Mount only)
- Handle lock
- Surface mounting clips
- Busbar
- 57 mm Escutcheon blank (Dual Mount only)
- 57 mm Safety blank (Dual Mount only)

**Approvals**

## Technical data

Approvals	IEC / EN 60947-2, VDE						
Number of poles	1	2 (1+N)	2	3			
Operating voltages	240 V AC	240 V AC	415 V AC	415 V AC			
Minimum current rating			0.5 A				
Maximum current rating			25 A				
Interrupting capacity			6 kA				
Operating temperature range		-40°C to +85°C					
Mounting options	DIN Rail, Dual mounting (DIN & Mini), surface mounting clip						
Time delay curves	1, 3, 9, KM, OP						

Approvals	UL 489						
Number of poles	1	1	2	3			
Operating voltages	120 V AC	240 V AC	120 / 240 V AC	240 V AC			
Minimum current rating			0.5 A				
Maximum current rating	25 A	25 A	25 A	25 A			
Ampere interrupting capacity (AIC)	10 kA	5 kA	10 kA	5 kA			
Operating temperature range		-40°C to +85°C					
Mounting options	DIN Rail, Dual mounting (DIN & Mini), surface mounting clip						
Time delay curves	1, 3, 9, KM, OP						

Insulation coordination and general data	
Endurance	10000 operations; 1500 electrical at rated current, 8500 without current (IEC 60947-2 Clause 7.2.4.2)* 6000 electrical operations (UL 489 Clause 7.1.9)*
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 489 Clause 7.1.9)*
Rated impulsive withstand voltage	4 kV (IEC 60947-2)
Weight	102 g per pole, 160 g with auxiliary (unpacked)
Altitude	Certification tests done at altitude = 2000 metres. Will operate at higher altitudes.
Shock	8 G (IEC 60068-2-6) (sinusoidal wave)
Vibration	0.5 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 $\geq 28$
Toxicity	F1 - Smoke index of $\leq 20$ which determines the fumes class
Pollution degree	PD2 - Normally only non-conductive pollution occurs. Temporary conductivity caused by condensation is to be expected.

Breaker: QL	Wire Size mm <sup>2</sup> (IEC)	Wire Gauge (UL)	Torque (IEC)	Torque (UL)	Comments
Main terminals	0.75 - 35 mm <sup>2</sup>	18 - 3 - AWG	2.5 Nm	20 in-lb	Pozidriv #2 Combi head

## Long code

Example code: QL-AT-3-13-D-KM-15-R

Group	1	2	3	4	5	6	7	8	9	10		
Requirement	QL Frame	Switch / Neutral	Auxiliary + Trip Alarm	Triple pole	13 mm module width	DIN Mounting	Medium delay curve KM	Current Rating 15 A	No Shunt Trip	Ring Terminal		
Long Code	QL	-	AT	3	13	DM	KM	15.0	-	R		
<hr/>												
Group 1: Frame Type	Code	Description					Comments					
	QL	13 mm wide Miniature Circuit Breaker					UL 489, IEC / EN 60947-2, VDE, CE, CCC					
Group 2: Switch/Neutral	Code	Description					Comments					
	-	Not applicable					Overload poles do not have any further coding					
	N	Neutral					Green Handle					
Group 3: Auxiliary	Code	Description					Comments					
	-	Not applicable					Use this code if no Auxiliary used					
	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 only)					
	AT	Auxiliary Switch + Trip Alarm combo (combined in 1 module)					6.5 mm module fitted on right-hand side (Dual Mount only)					
Group 4: No of Poles	Code	Description					Comments					
	1	Single pole										
	2	Double pole					2 pole or 1+N					
	3	Triple pole										
	4	Four pole					3+N only					
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 Escutcheon, grey body					
	DM	Dual mount					Dual mount supplied in black only - 57 mm Escutcheon, black body					
Group 7: Time Delays	Code	Description					Instantaneous Trip Point (x In)		Comments			
	1	Long time delay, high instantaneous trip					10 – 20		Orange handle			
	3	Short time delay					3 – 5		White handle			
	9	Long time delay					7 – 12		White handle			
	KM	Medium time delay					6 – 12		White handle			
	OP	Instantaneous					None		White handle			
Group 8: Current Ratings	Code	Description					Comments					
	0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 16, 20, 25 A						Ratings available vary depending on certification * Other ratings are available as special orders. Check availability.					
Group 9: Shunt Trip (not certified, only offered as special order)	Code	Description					Comments					
	-	Not applicable					If no shunt trip is required					
	U0	12 Vdc Shunt trip (Flying Leads)					Flying leads (+/- 60 mm long)					
	U1	24 Vdc Shunt trip (Flying Leads)					Recommended pulse duration 100 ms to 60 s					
	U2	48 Vdc Shunt trip (Flying Leads)					Note: Shunt trip carries no approvals - available as a special offer only					
	U3	60 Vdc Shunt trip (Flying Leads)										
	U4	110 Vdc & 110 – 230 Vac Shunt Trip (Fly Leads)										
Group 10: Special Termination	Code	Description					Comments					
	R	Ring Terminal ready					Terminal Screw is removable. Ring lug (5 mm)					

**QL Series Single Pole****Type: Single Pole (up to 240 VAC)**

Current Ratings (amps)	Description	Order Number
0.5	QL-1-13-DM-KM-0.5	7940102571
1	QL-1-13-DM-KM-1.0	7940125379
2	QL-1-13-DM-KM-2.0	7940102572
3	QL-1-13-DM-KM-3.0	7940102573
4	QL-1-13-DM-KM-4.0	7940102574
5	QL-1-13-DM-KM-5.0	7940102575
6	QL-1-13-DM-KM-6.0	7940102576
7	QL-1-13-DM-KM-7.0	7940102577
8	QL-1-13-DM-KM-8.0	7940102578
9	QL-1-13-DM-KM-9.0	7940102579
10	QL-1-13-DM-KM-10.0	7940102580
13	QL-1-13-DM-KM-13.0	7940102581
15	QL-1-13-DM-KM-15.0	7940102582
16	QL-1-13-DM-KM-16.0	7940102583
20	QL-1-13-DM-KM-20.0	7940102584
25	QL-1-13-DM-KM-25.0	7940102585

**QL Series Single Pole  
(long time delay/high instant trip)****Type: Single Pole (up to 240 VAC)  
(long time delay/high instant trip)**

Current Ratings (amps)	Description	Order Number
1	QL-1-13-DM-1-1.0	7940115210
2	QL-1-13-DM-1-2.0	7940112653
3	QL-1-13-DM-1-3.0	7940115283
4	QL-1-13-DM-1-4.0	7940115284
5	QL-1-13-DM-1-5.0	7940113986
6	QL-1-13-DM-1-6.0	7940115211
7	QL-1-13-DM-1-7.0	7940114950
8	QL-1-13-DM-1-8.0	7940115282
10	QL-1-13-DM-1-10.0	7940102587
15	QL-1-13-DM-1-15.0	7940113987
16	QL-1-13-DM-1-16.0	7940114409
20	QL-1-13-DM-1-20.0	7940102588
25	QL-1-13-DM-1-25.0	7940112654

**QL Series Double Pole****Type: Double Pole (up to 240 VAC)**

Current Ratings (amps)	Description	Order Number
0.1	QL-2-13-DM-0.1	7940115220
0.5	QL-2-13-DM-KM-0.5	9926252000
1	QL-2-13-DM-KM-1.0	7940102643
2	QL-2-13-DM-KM-2.0	7940102644
3	QL-2-13-DM-KM-3.0	7940102645
4	QL-2-13-DM-KM-4.0	7940102646
5	QL-2-13-DM-KM-5.0	7940102647
6	QL-2-13-DM-KM-6.0	9926252006
7	QL-2-13-DM-KM-7.0	7940102649
8	QL-2-13-DM-KM-8.0	7940102650
10	QL-2-13-DM-KM-10.0	9926252010
12	QL-2-13-DM-KM-12.0	7940115938
13	QL-2-13-DM-KM-13.0	7940102652
15	QL-2-13-DM-KM-15.0	9926252015
16	QL-2-13-DM-KM-16.0	7940102654
20	QL-2-13-DM-KM-20.0	7940126749
25	QL-2-13-DM-KM-25.0	7940102656

**QL Series Double Pole  
(long time delay/high instant trip)****QL Series Triple Pole****Type: Triple Pole (up to 240 VAC)**

Current Ratings (amps)	Description	Order Number
1	QL-3(13)-DM-KM-1.0	7940102691
2	QL-3(13)-DM-KM-2.0	7940102692
5	QL-3(13)-DM-KM-5.0	7940102693
10	QL-3(13)-DM-KM-10.0	7940104412
15	QL-3(13)-DM-KM-15.0	7940102694
20	QL-3(13)-DM-KM-20.0	7940102695
25	QL-3(13)-DM-KM-25.0	7940102696

**QL Series Single Pole w/ Auxiliary Contact****Type: Single Pole (up to 120 VAC)**

Current Ratings (amps)	Description	Order Number
1	QL-A-1-13-DM-KM-1.0	7940102708
2	QL-A-1-13-DM-KM-2.0	7940102709
3	QL-A-1-13-DM-KM-3.0	7940102710
5	QL-A-1-13-DM-KM-5.0	7940102711
10	QL-A-1-13-DM-KM-10.0	7940102712
15	QL-A-1-13-DM-KM-15.0	7940102713
20	QL-A-1-13-DM-KM-20.0	7940102714
25	QL-A-1-13-DM-KM-25.0	7940102715

**QL Series Double Pole w/ Auxiliary Contact****Type: Double Pole (up to 240 VAC)**

Current Ratings (amps)	Description	Order Number
1	QL-A-2-13-DM-KM-1.0	7940114041
2	QL-A-2-13-DM-KM-2.0	7940119828
5	QL-A-2-13-DM-KM-5.0	7940119829
15	QL-A-2-13-DM-KM-15.0	7940119830
20	QL-A-2-13-DM-KM-20.0	7940119831

**QL Series Single Pole (Alarm Contact)****QL Series Double Pole (Alarm Contact)****QL Series Triple Pole (Alarm Contact)****QL Series Single Pole Combination (Auxiliary & Alarm Contact)****QL Series Double Pole Combination (Auxiliary & Alarm Contact)****Type: Double Pole (up to 240 VAC)**

Current Ratings (amps)	Description	Order Number
1	QL-T-2-13-DM-KM-1.0	7940114048
2	QL-T-2-13-DM-KM-2.0	7940114049
5	QL-T-2-13-DM-KM-5.0	7940114050
10	QL-T-2-13-DM-KM-10.0	7940114051
15	QL-T-2-13-DM-KM-15.0	7940114052
20	QL-T-2-13-DM-KM-20.0	7940114053
25	QL-T-2-13-DM-KM-25.0	7940114054

**Type: Triple Pole (up to 240 VAC)**

Current Ratings (amps)	Description	Order Number
1	QL-T-3(13)-DM-KM-1.0	7940115448
2	QL-T-3(13)-DM-KM-2.0	7940115449
5	QL-T-3(13)-DM-KM-5.0	7940115450
10	QL-T-3(13)-DM-KM-10.0	7940115451
15	QL-T-3(13)-DM-KM-15.0	7940115452
20	QL-T-3(13)-DM-KM-20.0	7940115453
25	QL-T-3(13)-DM-KM-25.0	7940115454

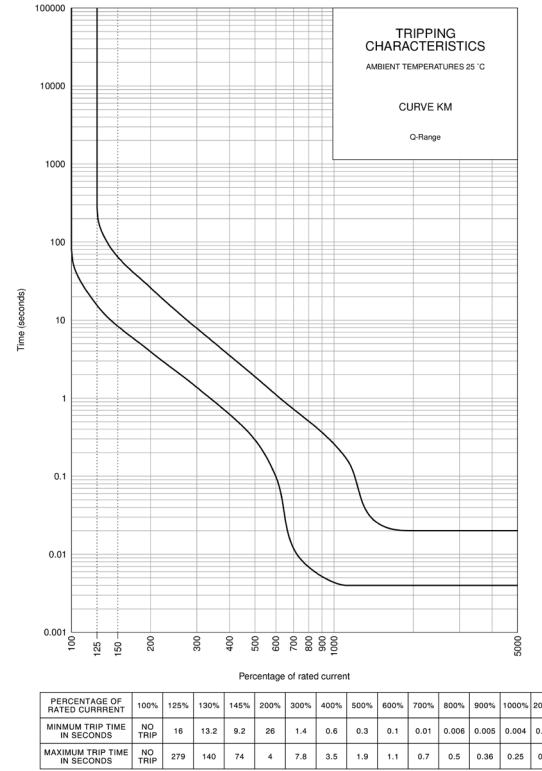
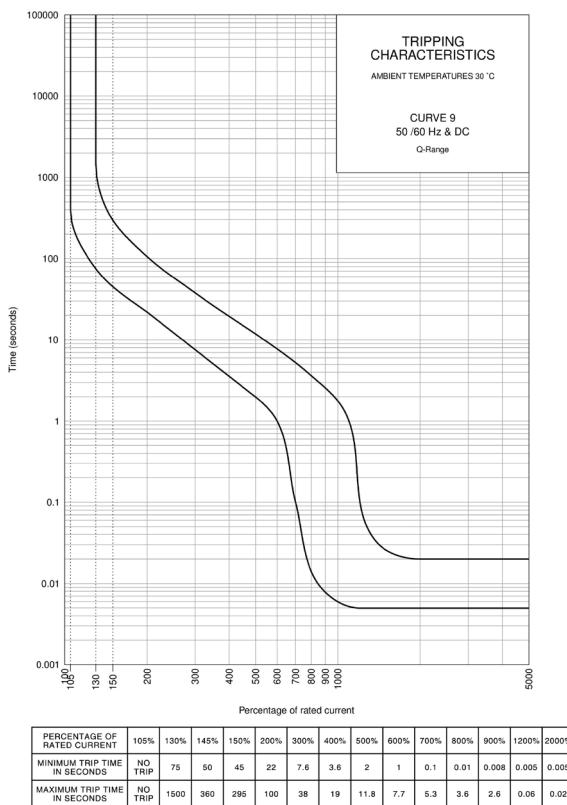
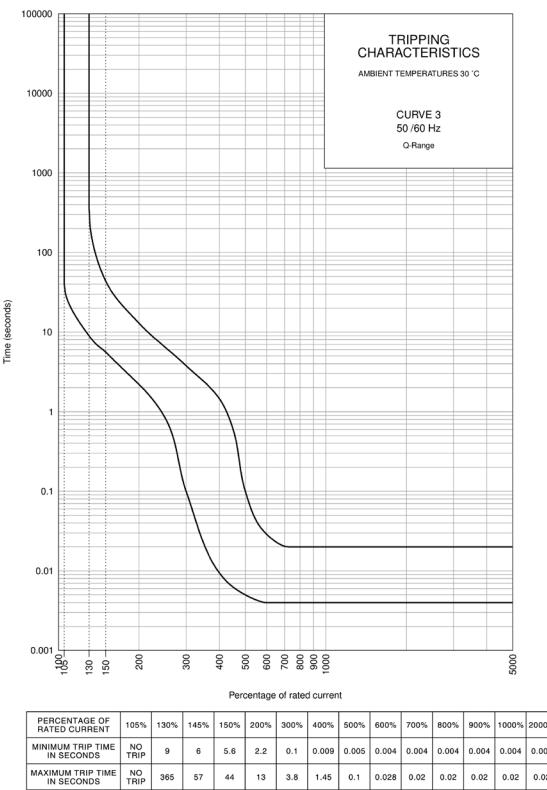
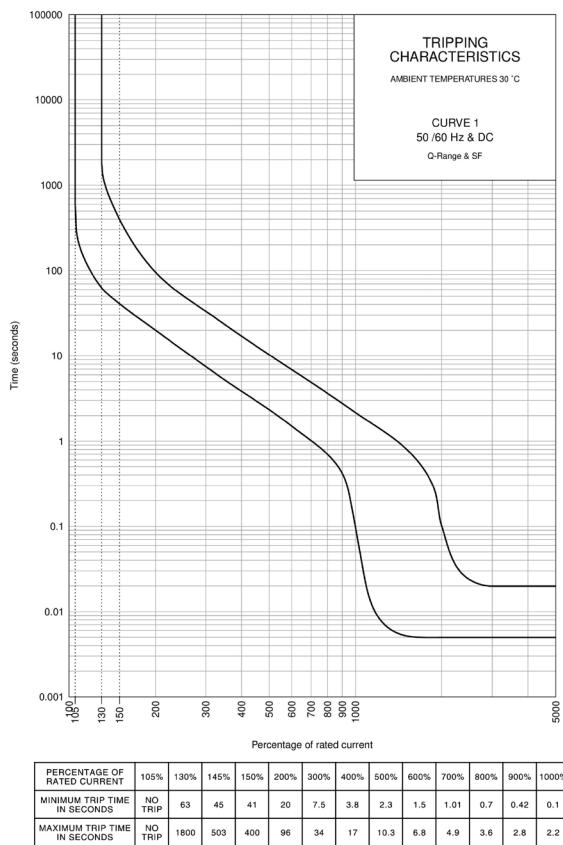
**Type: Single Pole (up to 120 VAC)**

Current Ratings (amps)	Description	Order Number
1	QL-AT-1-13-DM-KM-1.0	7940114055
5	QL-AT-1-13-DM-KM-5.0	7940102725
10	QL-AT-1-13-DM-KM-10.0	7940102726
15	QL-AT-1-13-DM-KM-15.0	2853970000
20	QL-AT-1-13-DM-KM-20.0	7940114056
25	QL-AT-1-13-DM-KM-25.0	7940114057

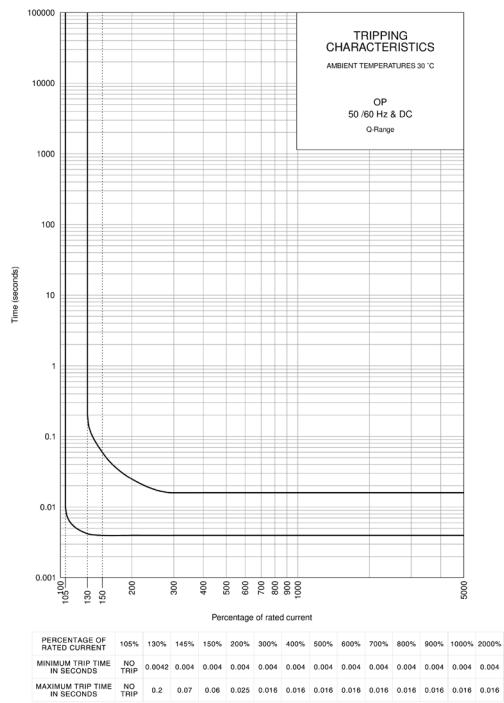
**Type: Double Pole (up to 240 VAC)**

Current Ratings (amps)	Description	Order Number
1	QL-AT-2-13-DM-KM-1.0	7940114058
2	QL-AT-2-13-DM-KM-2.0	7940114059
10	QL-AT-2-13-DM-KM-10.0	7940126754
15	QL-AT-2-13-DM-KM-15.0	7940102727
20	QL-AT-2-13-DM-KM-20.0	7940114060
25	QL-AT-2-13-DM-KM-25.0	7940114061

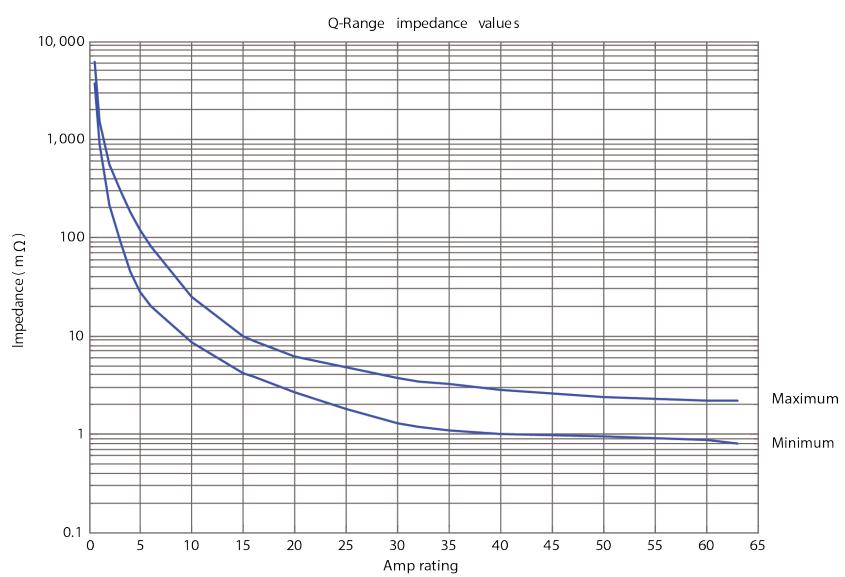
## Time Delay Curves



## Time Delay Curves

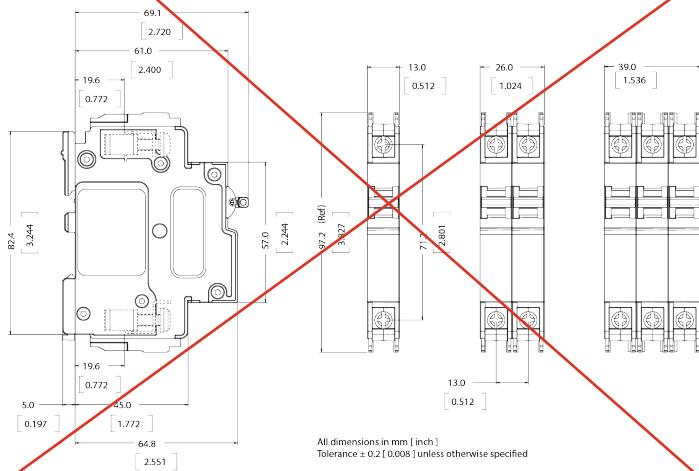


## Internal Impedance vs Current Rating



\* 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.

## Outline Dimensions: Dual mount



## Outline Dimensions: DIN mount

