

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

Phoenix Contact offers a full family of modular components covering virtually all of your industrial electrical and electronic needs as well as a broad range of value-added services.

CLIPLINE



- DIN rail-mount terminal blocks
- Marking materials and printers
- Tools
- Ferrules

TRABTECH



- Surge voltage protection

INTERFACE



- Analog signal converters
- Power supplies
- Relays
- PLC cabling
- Rail-mount breakout modules
- Intrinsic safety modules

COMBICON



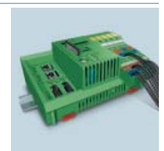
- PCB terminal blocks
- Electronic component housings

PLUSCON



- Industrial plug connectors
- Sensor cabling and sensor boxes

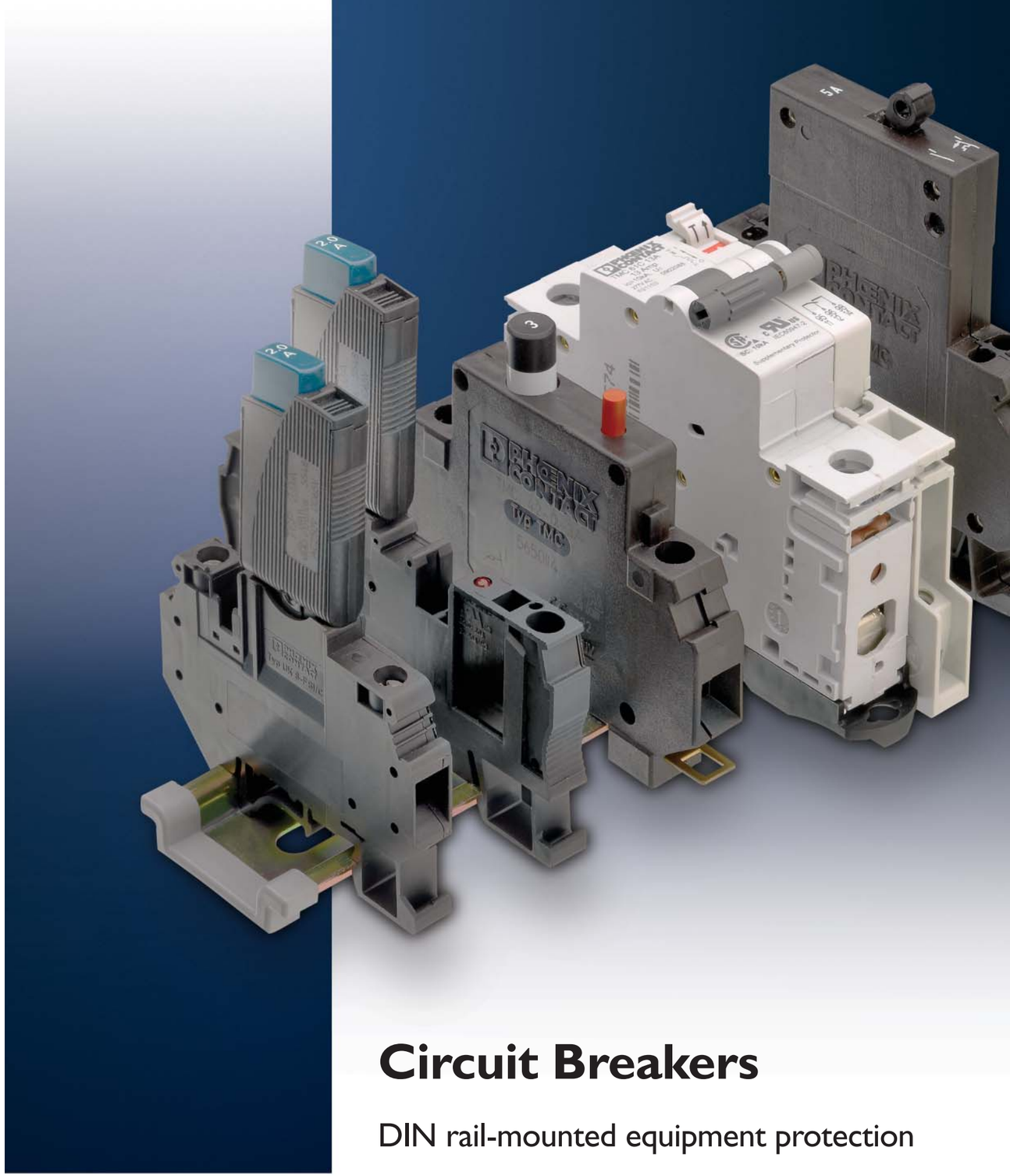
AUTOMATIONWORX



- Solutions, products and services for DeviceNet, Profibus, Ethernet and Interbus
- Controllers and software
- Fieldbus I/O
- Ethernet infrastructure components

Canada
PHOENIX CONTACT Ltd.
235 Watline Avenue
Mississauga, Ontario L4Z 1P3
Phone: 905-890-2820
Technical Service: 800-890-2820
Fax: 905-890-0180
Website: www.phoenixcontact.ca

USA
PHOENIX CONTACT
P.O. Box 4100
Harrisburg, PA 17111-0100
Phone: 800-888-7388
717-944-1300
Technical Service: 800-322-3225
Fax: 717-944-1625
E-mail: info@phoenixcon.com
Website: www.phoenixcontact.com



Circuit Breakers

DIN rail-mounted equipment protection

© 2008 PHOENIX CONTACT

L002030d:07.08

PHOENIX CONTACT
INSPIRING INNOVATIONS

PHOENIX CONTACT
INSPIRING INNOVATIONS

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

To choose a circuit breaker, determine the following:

The normal current load (nominal current)
Specify the size of the breaker in amps based on the normal current load.

Possible types of failure
Match the short-circuit and overload protection requirements to the performance characteristics of the breaker.

Rupture capacity
Specify the breaker, knowing the maximum fault current that can be repeatedly (3x minimum) interrupted without failure of the breaker.

Maximum interrupting capacity
Choose the breaker, knowing the maximum current at a given voltage that the breaker can interrupt safely without damage to surrounding components.

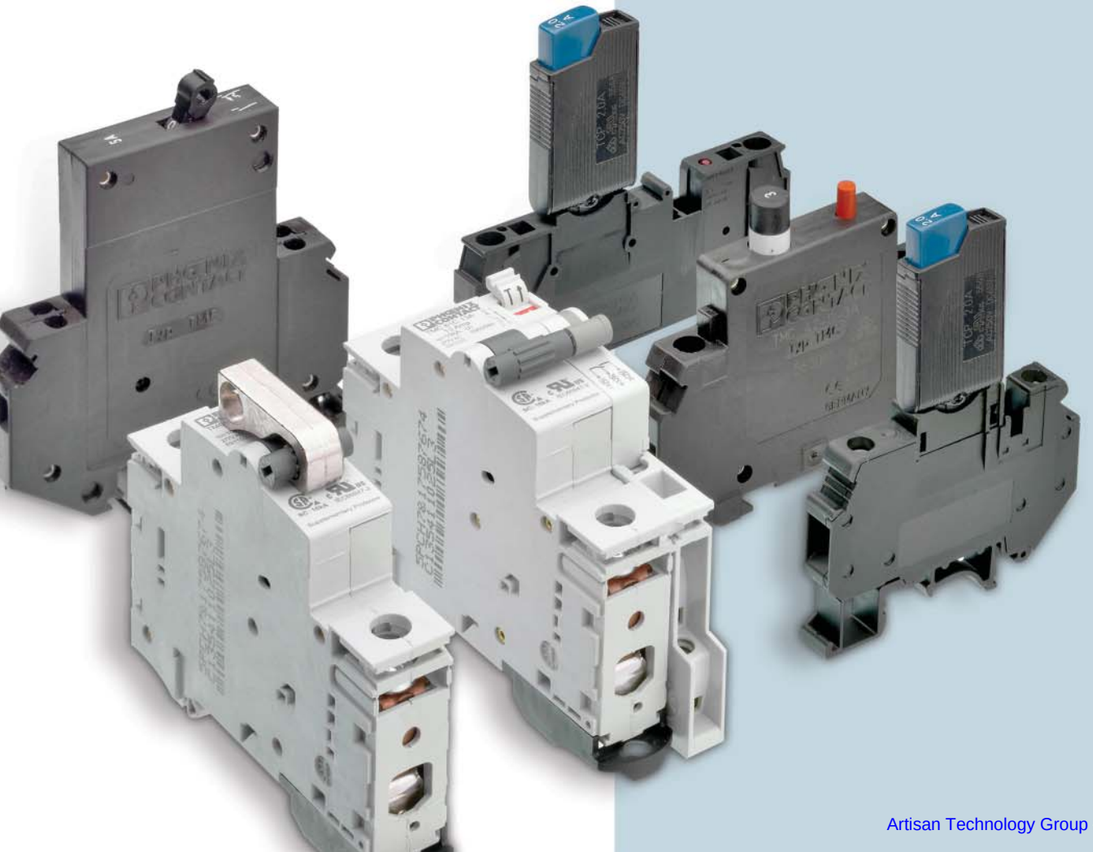
The wire size the breaker must accommodate
Determine if the breaker can accept the wire sizes required.

How fast the circuit breaker must react to a fault condition
Specify a breaker by selecting a speed that avoids nuisance tripping but protects against component damage.

How many poles are needed
Determine the number of poles needed that are connected electrically and structurally.

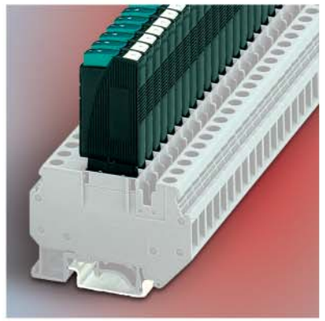
Functional requirements of the breaker
Define the requirements for visual inspection, switching, auxiliary circuits or space.

Environmental factors – temperature, moisture, vibration
Determine if there are unusual conditions in which the breaker must operate.



DIN rail-mounted

Thermal Miniature and Thermal Magnetic Circuit Breakers









Thermal Miniature Circuit Protection (TCP)

Thermal circuit proctectors use heat-sensitive bimetallic elements that respond to overload electrical currents.

- **Thermal Miniature Circuit Protectors** are compact protectors designed to interrupt an electric current under overload conditions. The protector can accommodate ten nominal currents ranging from 0.10 A to 10 A.

After an overload has occurred, TCP breakers are easily reset by pushing the reset button. The breakers can be plugged into UK 6-FSI/C (screw) or ST 4-FSI/C (spring) terminal blocks for convenient DIN rail mounting.

Thermal Magnetic Circuit Breakers (TMC)

Thermal Magnetic circuit breakers interrupt an electrical current under overload or short-circuit conditions. They have both thermal circuit interruption and magnetic interruption functions. The thermal function uses heat-sensitive bimetallic elements that respond to overload currents. The magnetic function responds to very high current overloads such as those that might occur during short-circuit conditions.

- **TMC 42** breakers are available in one- or two-pole configuration for currents ranging from 0.10 to 16 amps. TMC 42 breakers can be snapped directly on a DIN rail. They are reset by pushing a red reset button.
- **TMC 60** breakers are available in one-, two-, or three-pole configurations for currents ranging from 0.5 to 63 amps. TMC 60-Series breakers can be snapped directly on a DIN rail. They are reset by moving the toggle switch to the green (activation) position.
- **TMC 1** breakers are available in one-, two- or three-pole configurations for currents ranging from 0.1 to 32 amps. This high-density breaker has built-in auxiliary contacts. TMC 1 breakers can be snapped directly on a DIN rail. They are reset by moving the toggle switch to the I (activation) position.

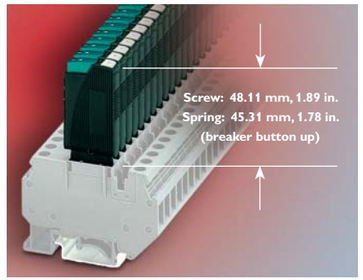
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Thermal (Miniature) Circuit Protectors (TCP)

TCPs are compact circuit protectors designed to interrupt an electric current under overload conditions. There are ten nominal current ratings available, ranging from 0.10 A to 10 A.

TCP protectors are trip-free and reset easily after a current interruption by pushing the reset button. The protector can be plugged into UK 6-FSI/C or ST 4-FSI/C fuse base terminal blocks for convenient DIN rail-mounting.

	[V AC]	[V DC]
Nominal Voltage	250	72



Technical Data		Type	Order No.	Pcs./Pkt.
Thermal Circuit Breaker	Nominal current [A]			
plugged into UK 6-FSI/C or ST 4-FSI/C base	0.10	TCP 0.10	07 12 10 7	1
terminal blocks	0.25	TCP 0.25	07 12 12 3	1
	0.50	TCP 0.5	07 12 15 2	1
	1.00	TCP 1	07 12 19 4	1
	2.00	TCP 2	07 12 21 7	1
	3.00	TCP 3	07 12 23 3	1
	4.00	TCP 4	07 12 25 9	1
	6.00	TCP 6	07 12 27 5	1
	8.00	TCP 8	07 12 29 1	1
	10.00	TCP 10	07 12 31 4	1
(1) Flat Zack strip, unprinted, 10-section for labeling the upper marker grooves		**ZBF 5:WH: Unprinted**	08 08 64 2	10
Technical data in accordance with IEC/DIN VDE				
Nominal voltage	[V AC] / [V DC]		250 / 72	
Nominal current	[A]		0.10-10	
Ambient temperature	°C		-20...+60	
Interrupting capacity				
for nominal currents of 0.10 - 4 A	[A]		6x rated current *	
for nominal currents of 6 - 10 A	[A]		8x rated current **	
for short circuit			2,000 Amps	
Insulating material			**Polymide (PA), non-reinforced**	
Inflammability class in accordance with UL 94			V0	
Approval data (UL and c/UL)	[V AC] / [V DC] / [A]		250 / 72 / 0.1-10	

* If fault current exceeds 6 times I_N, TCP may require replacing.
** If fault current exceeds 8 times I_N, TCP may require replacing.

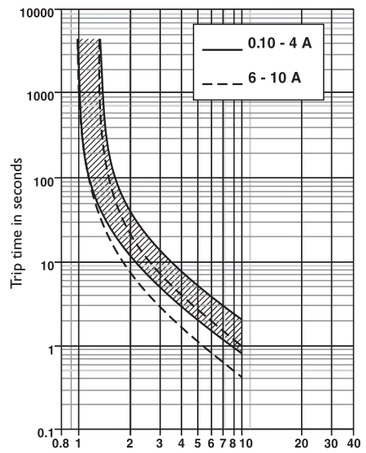
Thermal Miniature Circuit Breaker TCP compared to glass fuses

TCP Feature	TCP	Glass Fuses
Convenience	Reset with reset button when overload is resolved	Storing, ordering and locating issues
Deterioration	Virtually no aging	Age with eventual failure at normal loads
Life expectancy	3,000 operations at current rating, 500 operations at 2x current rating	Unknown
Interruption detection	Visual identification	Status not determined until fuse is removed from its holder
ON / OFF capability	Switch duty actuator allows product to operate as an electrical switch	Not applicable
Hot-swappable	May be removed or replaced under load	Not applicable
Controlled trip	Avoids nuisance trips due to high in-rush currents	Not applicable

Technical data for TCP

Time/current characteristic curve

Ambient temperature 23 C



Nominal currents and internal resistances

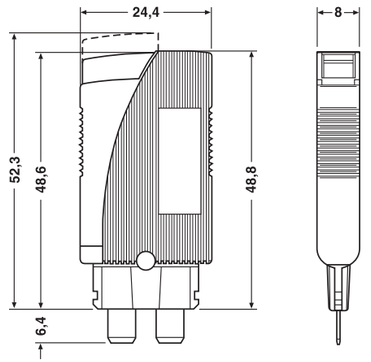
Nominal current [A]	Internal resistance [W]
0.1	81
0.25	14
.5	3.4
1	0.9
2	0.25
3	0.11
4	0.07
6	≤ 0.05
8	≤ 0.05
10	≤ 0.05

The time/current characteristic curve depends on the ambient temperatures. To avoid a premature or late switch-off, the nominal current of the circuit breaker must be multiplied with a temperature factor.

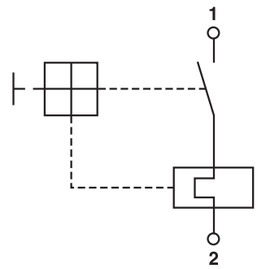
Ambient temperature	°F	-4	14	32	73.4	104	122	140
	°C	-20	-10	0	23	40	50	60
Temperature factor		**0.76**	**0.84**	**0.92**	**1**	**1.08**	**1.16**	**1.24**

NOTE: If the TCP circuit protectors are mounted side-by-side with less than the minimum of 1 mm of space for air movement, then do not exceed 80 percent of their rating.

Dimensional drawing



Switching diagram



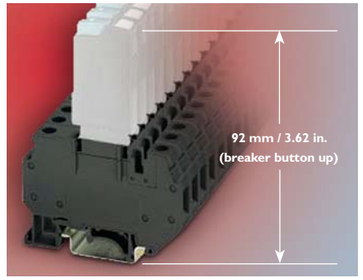
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Thermal Miniature Circuit Protector Base

Base terminal block with screw connection for accommodating the TCP circuit breaker UK 6-FSI/C

(IEC)	rigid	flexible			
[mm²]	solid	stranded	AWG	[A]	[V]
Connection data	0.2 - 10	0.2 - 6	24 - 8	*	250*

*The current and voltage are determined by the thermal circuit breaker



Technical Data			Type	Order No.	Pcs./Pkt.
Fuse Terminal Block with universal foot for mounting on NS 32 or NS 35 DIN rails			**UK 6-FSI/C**	**31 18 20 3**	**50**
Fuse Terminal Block	Light indicator / voltage [V DC]	Current [mA]			
as shown above with light indicator	LED red / 12	2.0	**UK 6-FSI/C-LED 12**	**30 01 92 5**	**50**
	LED red / 24	2.0	**UK 6-FSI/C-LED 24**	**30 01 93 8**	**50**
(1) Fixed Bridge for cross connections in the terminal center, screw heads with insulating collar, 10-position, divisible, with 10 screws			**FBI 10-8** i_{max}**:34 A**	**02 03 26 3**	**50**
(2) Separating Plate for electrical separation of neighboring bridges, can be fitted later, no loss of pitch			**TS-KK 3**	**27 70 21 5**	**100**
(3) Zack Strip, 10-section, white			**ZB 8: UNPRINTED**	**10 52 00 2**	**10**
(4) Screwdriver			**SZS 1.0 x 4.0**	**12 05 06 6**	**10**

Dimensions		
Width / length	[mm / in.]	Width: 8.2 mm / 0.32 in.; Length: 64 mm / 2.52 in.
Height (NS 35:7.5/NS 35:15/NS 32)	[mm / in.]	NS 35:7.5: 7.5 mm / 0.30 in.; NS 35:15: 15 mm / 0.60 in.
Technical data in accordance with IEC/DIN VDE		
Fuse type ISO/DIS 8820/DIN 72-581-3	-	C
Maximum current with single arrangement[1])	[A]	30
Maximum power dissipation		
Rated surge voltage / contamination class	[kV] / -	4 / 3
Surge voltage category / insulation material group	- / -	III / I
Connection capacity		
Stranded with ferrule without/with plastic sleeve [mm² / in.²]		Without: 0.25-6 mm² / 0.00039-0.00930 in.²; With: 0.25-4 mm² / 0.00039-0.00620 in.²
Multi-conductor connection (2 cond. with same cross section)		
Solid / stranded	[mm²]	Solid: 0.2-2.5; Stranded: 0.2-2.5
Stranded with ferrule without plastic sleeve	[mm²]	0.25 - 2.5
Stranded with TWIN ferrule with plastic sleeve	[mm²]	0.5 - 4
Stripping length	[mm]	10
Internal cylindrical gauge (IEC 60 947-1)		A5
Screw thread/torque	- / [Nm] / in. lbs	M 4 / 1.5-1.6 / M 4 / 13.3-14.2
Insulation material		Polyamide (PA), non-reinforced
Inflammability class in accordance with UL 94		V0
Approval data (UL and cUL)[2])	UL: [V] / [A] / AWG	300 / 30 / 26 - 8
Nom. voltage / nom. current / conduc. sizes	cUL: [V] / [A] / AWG	300 / 30 / 26 - 8

[1]) Special arrangement on request

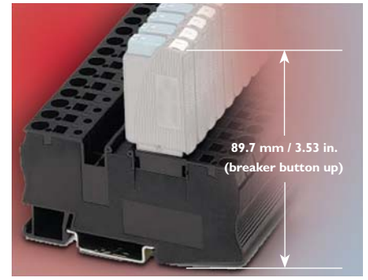
[2]) File number E 140459

Thermal Miniature Circuit Protector Base

Base terminal block with spring-cage connection for accommodating the TCP circuit breaker ST 4-FSI/C

(IEC)	rigid	flexible			
[mm²]	solid	stranded	AWG	[A]	[V]
Connection data	0.2 - 6	0.2 - 4	24 - 10	*	400*

*The current and voltage are determined by the thermal circuit breaker



Technical Data			Type	Order No.	Pcs./Pkt.
Fuse Terminal Block with universal foot for mounting on 35 DIN rail			**ST 4-FSI / C**	**30 36 37 2**	**50**
Fuse Terminal Block, [1])	Light indicator / voltage [V DC]	Current [mA]			
as shown above with light indicator	LED red / 12	2.0	**ST 4-FSI / C-LED12**	**30 36 49 5**	**50**
	LED red / 24	2.0	**ST 4-FSI / C-LED 24**	**30 36 50 5**	**50**
(1) Insulating stop sleeve, prevents unintentional clamping of the insulation in the case of smaller cross sections					
Cross section range 0.25-0.5 mm² / 0.0039-0.0077 in.²		Gray	**ISH 4 / 0.5**	**30 02 88 5**	**50**
0.75-1 mm² / 0.00116-0.00155 in.²		Black	**ISH 4 / 1**	**30 02 89 8**	**50**
(2) Plug-in bridge, for cross connections in the terminal center		2-position	**FBS 2-8** i_{max}**:41 A**	**30 30 28 4**	**10**
		3-position	**FBS 3-8 41A**	**30 30 29 7**	**10**
		4-position	**FBS 4-8 41A**	**30 30 30 7**	**10**
		5-position	**FBS 5-8 41A**	**30 30 31 0**	**10**
		10-position	**FBS 10-8 41A**	**30 30 32 3**	**10**
(3) Test adapter, for 4 mm Ø test adapter PS and 4 mm safety test plugs, making contact in the bridge shaft			**PAI 4**	**30 30 92 5**	**10**
(4) 2.3 mm Ø test plus [2], consisting of a metal part and a red insulating sleeve			**MPS-RD**	**02 01 55 3**	**10**
(5) Modular test plug, can be labeled with ZBFM 8			**PS 8**	**30 31 00 5**	**10**
(6) Zack marker sheet, flat, 50-section, for labeling in the outer marker grooves			**ZBFM 8/WH: UNPRINTED**	**08 00 73 4**	**10**
(7) Zack strip, 10-section, for labeling in the terminal center			**ZB 8: UNPRINTED**	**10 52 00 2**	**10**
(8) Screwdriver, for actuating the spring cage			**SZF 1 - 0.6x3.5**	**12 04 51 7**	**10**

Dimensions		
Width / length	[mm / in.]	Width 8.2 mm / 0.32 in. / Length 86.5 mm / 3.4 in.
Height (NS 35:7.5/NS 35:15)	[mm / in.]	7.5 mm / 0.30 in. / 15 mm / 0.60 in.
Technical data in accordance with IEC/DIN VDE		
Fuse type ISO/DIS 8820/DIN 72 581-3	-	C
Maximum current with single arrangement	[A]	30
Maximum power dissipation		
Rated surge voltage / contamination class	[kV] / -	6 / 3
Surge voltage category / insulation material group	- / -	III / I
Connection capacity		
Stranded with ferrule without / with plastic sleeve	[mm²] / AWG	0.25-4 mm² / 24-12
Stranded with TWIN ferrule with plastic sleeve	[mm²] / AWG	0.5-1 mm² / 20-18
Stripping length	[mm / in.]	10 / 0.39
Internal cylindrical gauge (IEC 60 947-1)		A4
Insulation material		Polyamide (PA), non-reinforced
Inflammability class in accordance with UL 94		V0
Approval data (UL and cUL)	UL: [V] / [A] / AWG	300 / 30 / 24 - 10
Nominal voltage/nominal current/conduc. sizes	cUL: [V] / [A] / AWG	300 / 30 / 24 - 10

[1]) If the fuse is defective, the downstream circuit is not off-load

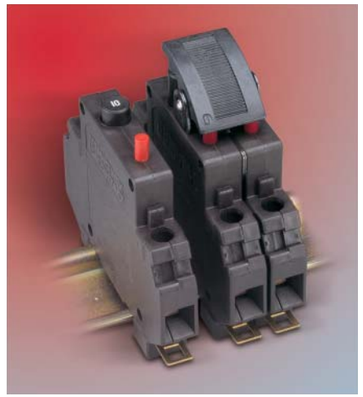
[2]) Additional colors are available on request

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Thermal Magnetic Circuit Breaker

TMC 42-01/42-02

One- and two-pole thermal magnetic circuit breaker with tease-free, trip-free, snap action mechanism and two-button operation (M-type TMCBE to IEC 934). The one-pole features a narrow profile housing, recessed terminals, standard DIN rail-mounting and precision CBE performance.



Typical Applications

Circuit protection for process control systems, equipment manufacturers and instrumentation.

Approvals

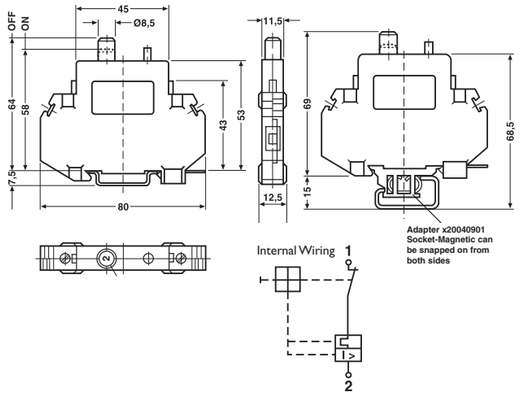
Authority	Voltage Ratings	Current Ratings
VDE, Demko	AC 250 V, DC 65 V	0.10 to 16 A
UL 1077, CSA	AC 250 V, DC 80 V	0.10 to 16 A

Label Slot

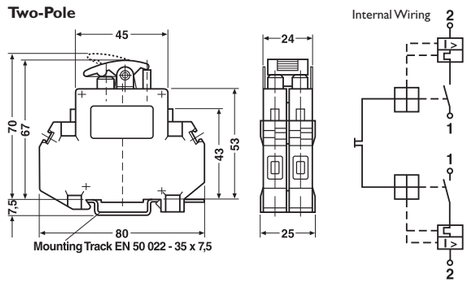
Technical Data		
Maximum Voltage Rating	250 V AC, 50 / 60 Hz; 80 V DC	
Current Rating Range	42-01 : 0.10...16 A	
Typical Life	5,000 operations at 2 x IN	
Temperature Range	0° to 55° C (32° to 131° F)	
Creepage Resistance	PTI 600 to IEC 112	
Insulation Coordination (IEC 664 and 664A)	Rated Impulse Withstand Voltage	Pollution Degree
Operating Area	4k V	3
Dielectric Strength (IEC 664 and 664A)	Test Voltage	
Operating Area	AC 4,000 V (double insulation)	
Insulation Resistance Interrupting Capacity	>100 MΩ (DC 500 V)	
(VDE 0660, Part 101, P-2)	0.05 to 0.8 A	Self Limiting
	1 to 2 A	200 A
	2.5 to 16 A	400 A
Interrupting Capacity (UL 1077/EN60934 PC1)	IN	UN / Self Limiting
	0.05 to 16 A	250 V AC / 1,000 A
	0.05 to 16 A	80 V DC / 1,000 A
Environmental Protection (IEC 529/DIN 40050)	Operating Area IP 40, Terminal Area IP 20	
Vibration	5g (57-50 Hz), +0.38 mm (10-57 Hz) to IEC 68-2-6, Test Fc 10 frequency cycles/axis	
Shock	25g (11ms) to IEC 68-2-27, Test Ea	
Corrosion	96 hours at 5% saltspray to IEC 68-2-11, Test Ka	
Humidity	240 hours at 95% RH to IEC 68-2-3, Test Ca	
Weight	Approx. 60g	
Conductor Size	0.5-6mm² (AWG 20-AWG 10)	
Recommended Torque	0.8 Nm max	
Mounting Adapter	5650505 (TMC 42 C-Rail Adapter)	

Dimension

One-Pole



Two-Pole

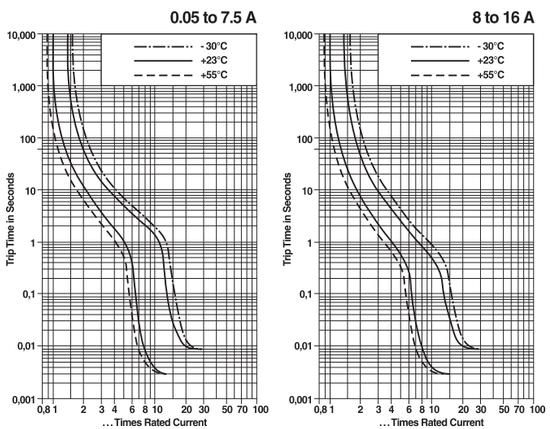


Standard current ratings and typical internal resistance values

Thermal Magnetic Circuit Breakers					
		TMC 42-01 One-Pole		TMC 42-02 Two-Pole	
Ohms	**Current Rating**	**Type**	**Part#**	**Type**	**Part #**
447.00	0.05	TMC42-01-0.05 A	5600509*	N/A	N/A
131.00	0.10	**TMC42-01-0.1 A**	**5530915**	TMC42-02-0.1 A	5650123*
40.00	0.20	TMC42-01-0.2 A	5650102*	TMC42-02-0.2 A	5650124*
19.30	0.30	TMC42-01-0.3 A	5650103*	TMC42-02-0.3 A	5650127*
10.40	0.40	**TMC42-01-0.4 A**	**5530944**	TMC42-02-0.4 A	5531244*
7.10	0.50	TMC42-01-0.5 A	5650106*	TMC42-02-0.5 A	5531257*
4.30	0.60	TMC42-01-0.6 A	5530960*	TMC42-02-0.6 A	5531260*
3.30	0.70	N/A	N/A	TMC42-02-0.7 A	5650128*
2.50	0.80	TMC42-01-0.8 A	5530986*	TMC42-02-0.8 A	5531286*
1.67	1.00	**TMC42-01-1.0 A**	**5650108**	**TMC42-02-1.0 A**	**5531299**
1.22	1.22	TMC42-01-1.2 A	5531008*	TMC42-02-1.2 A	5531309*
0.61	1.50	**TMC42-01-1.5 A**	**5650109**	TMC42-02-1.5 A	5650129*
0.55	1.80	TMC42-01-1.8 A	5650110*	TMC42-02-1.8 A	5531325*
0.38	2.00	**TMC42-01-2.0 A**	**5600314**	**TMC42-02-2.0 A**	**5531338**
0.24	2.50	TMC42-01-2.5 A	5650113*	TMC42-02-2.5 A	5650130*
0.19	3.00	**TMC42-01-3.0 A**	**5650114**	**TMC42-02-3.0 A**	**5650131**
0.16	3.50	TMC42-01-3.5 A	5531053*	TMC42-02-3.5 A	5531367*
0.09	4.00	**TMC42-01-4.0 A**	**5531066**	TMC42-02-4.0 A	5650134*
0.09	4.50	TMC42-01-4.5 A	5650115*	TMC42-02-4.5 A	5650135*
0.06	5.00	**TMC42-01-5.0 A**	**5531082**	**TMC42-02-5.0 A**	**5651396**
0.07	5.50	TMC42-01-5.5 A	5531095*	TMC42-02-5.5 A	5531406*
0.04	6.00	**TMC42-01-6.0 A**	**5531105**	TMC42-02-6.0 A	5650136*
0.04	6.50	TMC42-01-6.5 A	5650116*	TMC42-02-6.5 A	5650137*
0.03	7.00	TMC42-01-7.0 A	5650117*	TMC42-02-7.0 A	5531435*
0.02	8.00	**TMC42-01-8.0 A**	**5650120**	TMC42-02-8.0 A	5650138*
0.02	9.00	TMC42-01-9.0 A	5531147*	TMC42-02-9.0 A	5531451*
<0.02	10.00	**TMC42-01-10 A**	**5650121**	**TMC42-02-10 A**	**5531464**
<0.02	11.00	TMC42-01-11 A	5531163*	TMC42-02-11 A	5531477*
<0.02	12.00	TMC42-01-12 A	5650122*	TMC42-02-12 A	5650141*
<0.02	13.00	TMC42-01-13 A	5531189*	TMC42-02-13 A	5531493*
<0.02	14.00	TMC42-01-14 A	5531192*	TMC42-02-14 A	5531503*
<0.02	15.00	**TMC42-01-15 A**	**5600310**	**TMC42-02-15 A**	**5600309**
<0.02	16.00	**TMC42-01-16 A**	**5531202**	TMC42-02-16 A	5650142*

* Indicates breakers that are made-to-order and may require an 8 to 10 week lead time.

Typical time / current characteristics at 23 degrees Celsius



Direct Current – Magnetic tripping currents are increased by 30 percent in DC circuits with the effect of shifting the magnetic trip range 30 percent to the right of AC trip curves.

The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, multiply the circuit breaker current ratings by the derating factor shown below.

Ambient temperature								
°F	-22	-4	14	32	73.4	104	122	140
°C	-30	-20	-10	0	23	40	50	60
Derating factor	**0.76**	**0.79**	**0.83**	**0.88**	**1**	**1.08**	**1.16**	**1.24**

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Thermal Magnetic Circuit Breakers - UL 1077

TMC 60 Series for mounting on 35 mm DIN rail

Overview

The TMC 60 Series provides supplemental overload and short-circuit protection. An interrupt capacity of 10 kAIC at 480 / 277 V AC and DC ratings make the series ideal for a wide range of applications.

These DIN rail-mountable circuit breakers are available in one-, two- and three-pole configurations. An auxiliary contact in S- or H-function status output is also available. The TMC 60 Series is UL recognized, CSA approved and carries the CE mark.



Typical Application

Circuit protection for power supplies, UPS, controller I/O points, relay/contactor coils, control circuits, appliances and motor circuits.

Technical Data

Maximum Voltage Rating	AC 277 / 480 V		
Interrupting Capacity	10,000 Amps		
Current Rating Range	0.05 A to 63 A		
Temperature Range			
Operating Temperature	-25° to +55°C (-13° to +131°F)		
Storage Temperature	-55° to +55°C (-67° to +131°F)		
Insulation Values (IEC 664 and 664A)	Rated Impulse Withstand Voltage	Pollution Degree	
Operating Area	6.0 k V	3	
Insulation Resistance	>100 MΩ (DC 500 V)		
Life at Rated Current Mechanical	6,000 operations (UL tested) 10,000 operations		
Cable Size	max 35 mm² / AWG 2 (LINE) max 25 mm² / AWG 3 (LOAD) max 2.5 mm² / AWG 12 (auxiliary circuits)		

Minimum 1 mm² or AWG 16 for all circuits. Use a ferrule with wire sizes smaller than 16 AWG.

Vibration	3 g (10 to 55 Hz) to IEC 68-2-6		
Trip Characteristics	C: 0.5-63A		
Torque	4.5 Nm / 39.8 lb_f-in		
Vibration (per IEC 60077)	3 g (in x, y, z direction)		
Plastics Rating per UL 94	V0		
Protection Level	IP 20		
Configuration	1 pole	2 pole	3 pole
Weight	125 g	250 g	375 g

Standard current ratings and typical internal resistance values

One-pole

Part Number	Description
0902014	TMC 61C 0,5A
0902027	TMC 61C 01A
0902030	TMC 61C 02A
0902043	TMC 61C 03A
0902056	TMC 61C 04A
0902069	TMC 61C 06A
0902072	TMC 61C 10A
0902085	TMC 61C 13A
0902098	TMC 61C 16A
0902108	TMC 61C 20A
0902111	TMC 61C 25A
0902124	TMC 61C 32A
0902137	TMC 61C 40A
0902140	TMC 61C 50A
0902153	TMC 61C 63A

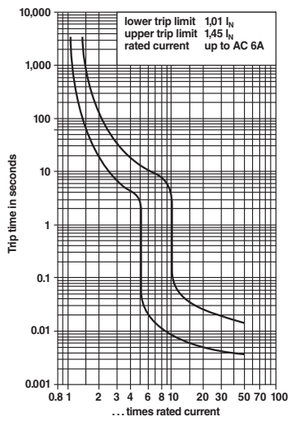
Two-pole

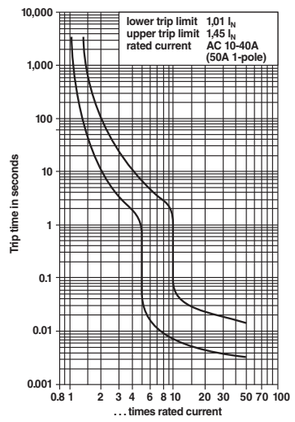
Part Number	Description
0902166	TMC 62C 0,5A
0902179	TMC 62C 01A
0902182	TMC 62C 02A
0902195	TMC 62C 03A
0902205	TMC 62C 04A
0902218	TMC 62C 06A
0902221	TMC 62C 10A
0902234	TMC 62C 13A
0902247	TMC 62C 16A
0902250	TMC 62C 20A
0902263	TMC 62C 25A
0902276	TMC 62C 32A
0902289	TMC 62C 40A
0902292	TMC 62C 50A
0902302	TMC 62C 63A

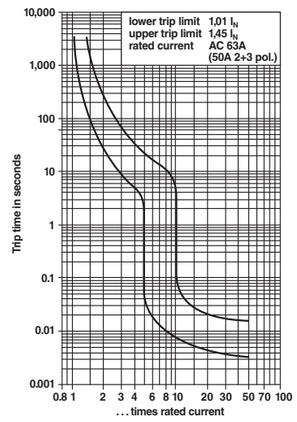
Three-pole

Part Number	Description
0902315	TMC 63C 0,5A
0902328	TMC 63C 01A
0902331	TMC 63C 02A
0902344	TMC 63C 03A
0902357	TMC 63C 04A
0902360	TMC 63C 06A
0902373	TMC 63C 10A
0902386	TMC 63C 13A
0902399	TMC 63C 16A
0902409	TMC 63C 20A
0902412	TMC 63C 25A
0902425	TMC 63C 32A
0902438	TMC 63C 40A
0902441	TMC 63C 50A
0902454	TMC 63C 63A

Typical time/current characteristics at 23 degrees Celsius







Direct Current -
Magnetic tripping currents are increased by 30 percent in DC circuits with the effect of shifting the magnetic trip range 30 percent to the right of Alternating Current (AC) trip curves.

(multipole types: all poles symmetrically loaded)

The time/current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, multiply the circuit breaker current ratings by the derating factor shown at right.

Amps	Temperature														
	-20°C	-15°	-10°	-5°	0°	+5°	+10°	+15°	+20°	+25°	+30°	+35°	+40°	+45°	+50°
	-4°F	+5°	+14°	+23°	+32°	+41°	+50°	+59°	+68°	+77°	+86°	+95°	+104°	+113°	+122°
0.5 - 4.0	0.84	0.85	0.87	0.88	0.89	0.91	0.93	0.94	0.96	0.98	1.00	1.02	1.04	1.06	1.09
8.0 - 10	0.75	0.77	0.78	0.81	0.83	0.85	0.88	0.90	0.93	0.96	1.00	1.04	1.09	1.14	1.20
13 - 40	0.79	0.80	0.82	0.84	0.86	0.88	0.90	0.93	0.94	0.97	1.00	1.03	1.06	1.11	1.15
50-60	0.81	0.83	0.84	0.85	0.87	0.89	0.91	0.93	0.94	0.97	1.00	1.02	1.05	1.09	1.12

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

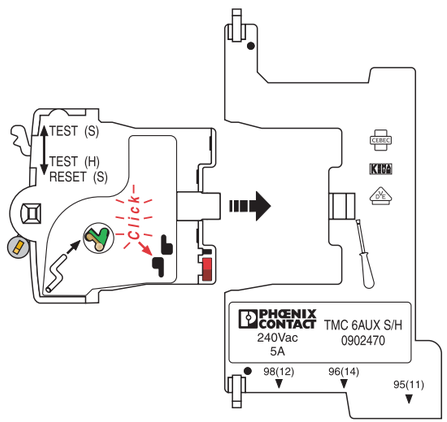
Thermal Magnetic Circuit Breakers - UL 1077

TMC 60 Series Accessories

Technical Data

Auxiliary Contact		
Ratings	Voltage / Current	AC 240 V / 5 A
		DC 24 V / 4 A
		DC 60 V / 1 A
		DC 220 V / 0.4 A
Contacts	1 Form C	
Rated Wire Sizes	2.5 mm² / 14 AWG	
Weight	70 g	
Contact Functions*	Auxiliary (H) or Signal (S)	

* The TMC 6AUX S / H can operate as either an auxiliary contact (H function) or a signal contact (S function). The operation of the auxiliary switch is determined at the time of installation. The signal contact (function S) status provides the automatic trip status of the protection device. The auxiliary (H function) provides the OPEN/CLOSED status of the protective device. A test button on the front of the auxiliary switch simulates functions S or H. The test button also acts as a reset for the trip signal (function S) contacts.



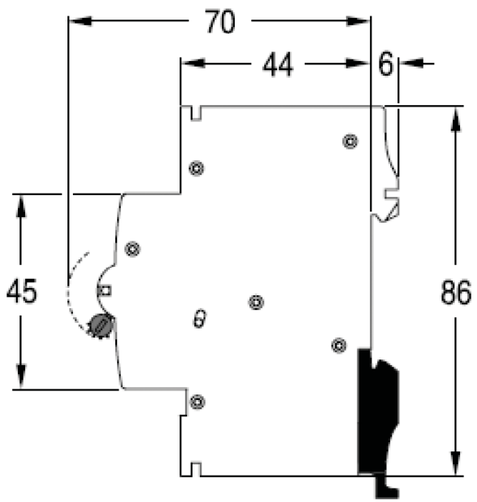
Accessories

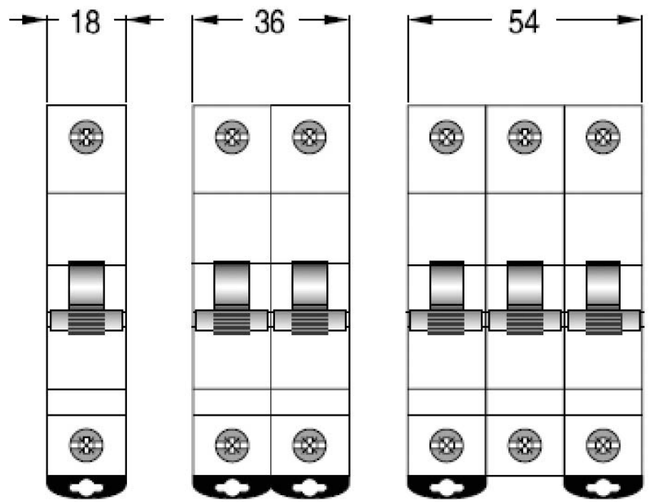


Auxiliary Contact	Lock Out Component	3-Phase Comb Bridge	Single Row Comb Bridge
0902470 TMC 6AUX S / H	0902467 TMC 6LOCKOUT	2809241* 3-Phase / 6 position	2809212* Single Phase / 3 position



Marking	End Covers
2809128 ZBN 18: UNBEDRUCKT quantity: 10 pieces	2809322 3-Phase bridge end cover

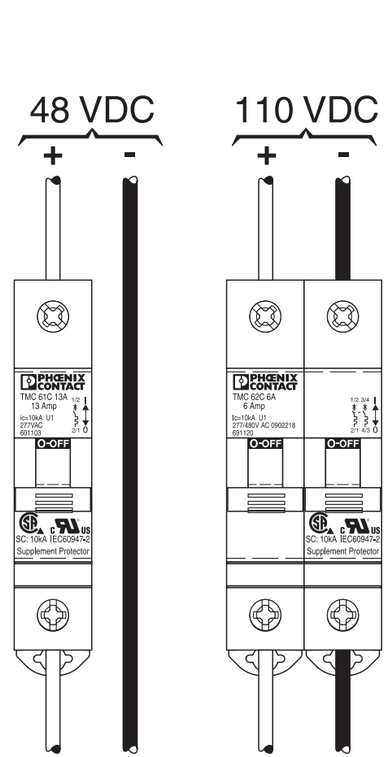




Dimensions

Note: all measurements in millimeters

DC Circuit Wiring



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Thermal Magnetic Circuit Breaker (TMC)

TMC 1/2/3

One-, two- and three-pole thermal magnetic circuit breakers with trip-free, snap action mechanism and toggle actuation (S-type: IEC 934). Breaker has a universal mounting foot so it can be snapped on both NS 35 and NS 32 mounting rail profiles. Available with auxiliary contact (1 x N / O or 1 x N / C) for status signaling. Two- and three-pole models are internally linked to ensure that all poles trip in the event of an overload on one pole, even if the actuator is held in the ON position. This circuit breaker can be supplied in current ratings to 32 A with a choice of characteristic curves. All screw terminals are recessed for safety.



Technical Data

Maximum Voltage Rating	AC 277 V; 3 AC 480 V (50/60 Hz) DC 65 V		
Current Rating Range	0.1...32 A non-inductive		
Auxiliary Circuit	1 A, AC 277 V / DC 65 V		
Typical Life	10,000 operations at 1 x I_N		
Temperature Range	0° to +55°C (+32° to +131°F)		
Creepage Resistance	PTI 400 to IEC 112		
Insulation Coordination			
(IEC 664 and 664A)	Rated Impulse Withstand Voltage		Pollution Degree
Operating Area	2.5 k V		2
Main/Auxiliary Circuit	2.5 k V		2
Pole/Pole	2.5 k V		2
Dielectric Strength			
(IEC 664 and 664A)	Test Voltage		
Operating Area	AC 3,000 V (double insulation)		
Main / Auxiliary Circuit	AC 3,000 V		
Pole / Pole	AC 1,500 V		
Insulation Resistance	>100 MΩ (DC 500 V)		
Interrupting Capacity	0.1...5 A 400 A; 6...32 A 800 A		
(VDE 0660, Part 101, P-2)	Curve T2; 0.1...32 A 15 I_N		
(AC 250/415 V, DC 65 V)	Curve M3; 0.1...2 A 200 A AC		
Interrupting Capacity	I_N	U_N	Self Limiting
(UL 1077/EN 60934 PC 1)	0.1...16 A	AC 277 V	5,000 A
	20...32 A	AC 277 V	2,000 A
	0.1...16 A	3 AC 480 V	5,000 A
	20...32 A	3 AC 480 V	2,000 A
	0.1...32 A	DC 65 V	2,000 A
Environmental Protection	Operating Area IP 30		
(IEC 529/DIN 40050)	Terminal Area IP 20		
Vibration	Curve F1:		
	3g (57-500 Hz) ±0.23 mm (10-57 Hz)		
	Curves M1, M3, T1, T2:		
	5g (57-500 Hz ±0.38 mm (10-57 Hz) to IEC 68-2-6, Test FC 10 Frequency Cycles/Axis		
Shock	Curve F1:	25g (11 ms), directions 1-5	
		10g (11 ms), direction 6	
	Curves M1, M3, T1, T2		
		25g (11 ms), directions 1-5	
		20g (11 ms), direction 6 to IEC 68-2-27, Test Ea	
Corrosion	96 hours at 5% saltspray to IEC 68-2-11, Test Ka		
Humidity	240 hours at 95% RH to IEC 68-2-3, Test Ca		
Weight	Approximately 60g per Pole		

Typical Applications
Process control equipment, robotics, machine tool control, communications systems, instrumentation.

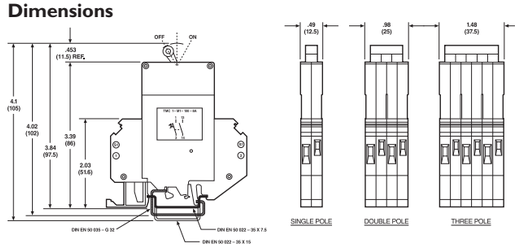
TMC Type Key for Orders

TMC 1 M1 100 1A

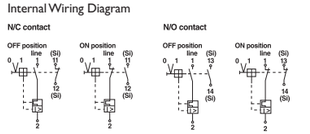
- **Nominal Current** 0.2; 0.3; 0.4; 0.5; 0.6; 0.8; 1.5; 2; 2.5; 3; 4; 5; 6; 8; 10; 12; 15; 16; 20
- **Auxiliary Contact Variants** 100: 1 position: 1 N / O contact; 200: 1 position: 1 N / C contact; 120: 2 position: 1 N / O, 1 N / C contact; 122: 3 position: 1 N / O, 2 N / C contact
- **Characteristic Curve** F1: Therm. 1.05-1.4 IN, magn. 2-4 IN DC (fast), only for DC applications; M1: Therm. 1.05-1.4 IN, magn. 6-12 IN AC, 7, 8-15, 6 DC (normal below)
- **Number of Main Current Paths** 1: 1 position; 2: 2 position; 3: 3 position

Type Designation Thermal Magnetic Circuit Breaker

Dimensions



Internal Wiring Diagram



In the OFF position (contacts between terminals 1 and 2 are open), the auxiliary contacts between terminals 11 and 12 are considered N/C

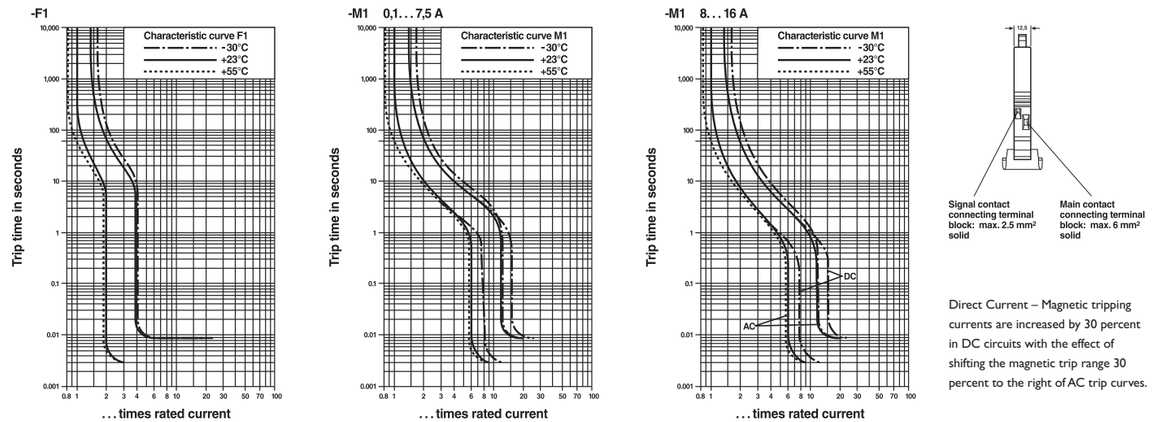
In the OFF position (contacts between terminals 1 and 2 are open), the auxiliary contacts between terminals 13 and 14 are considered N/O

Standard current ratings and typical internal resistance values

Thermal Magnetic Circuit Breakers							
Internal Resistance per Pole (ohms)	**Current Ratings (amps)**	**TMC 1 M1 100 One-Pole N/O Aux.Con.** ** **Part #**	**TMC 1 M1 200 One-Pole N/C Aux. Con.** ** **Part #**	**TMC 1 F1 100 One-Pole N/O Aux.Con. Part #**	**TMC 1 F1 200 One-Pole N/C Aux.Con. Part #**	**TMC 2 M1 120 Two-Pole NO/NC Aux.Con. Part #**	**TMC 3 M1 122 Three-Pole 1N/O 2N/C Aux.Con. Part #**
92	0.1	5650299*	5650418*	N/A	N/A	5650425*	5650467*
26.1	0.2	**5531422**	5531040*	5650525*	**5531231**	5650426*	5650470*
11.6	0.3	5650267*	5650416*	5650526*	N/A	5650427*	5650471*
6.6	0.4	5650411*	5650417*	5650527*	N/A	5650428*	5650472*
4.1	0.5	**5531370**	5531752*	**5650528**	**5651057**	5650429*	5650473*
3	0.6	5650412*	5650419*	5531817*	N/A	5650430*	5650435*
1.65	0.8	**5531273**	5650420*	5650529*	N/A	5650431*	5650436*
1.1	1.0	**5531723**	5531341*	**5531914**	**5531532**	**5650254**	**5532997**
0.47	1.5	5531176*	**5531558**	5650530*	5650282*	5650385*	5650437*
0.28	2.0	**5531820**	5531448*	**5530928**	5650352*	5517967*	5650438*
0.183	2.5	5531079*	5650421*	5650531*	N/A	**5650432**	5650439*
0.124	3.0	**5531927**	5531545*	**5531024**	5602531*	**5650255**	5650440*
0.077	4.0	**5530973**	5531354*	**5531875**	5650829*	**5650266**	5650441*
0.063	5.0	**5530931**	**5531642**	**5531121**	5650830*	**5512014**	**5650384**
0.045	6.0	**5531969**	5600358*	5650532*	5650366*	**5530863**	5650442*
<0.02	7.0	N/A	N/A	N/A	N/A	**5605074**	N/A
<0.02	8.0	**5531037**	5531749*	5531228*	**5650831**	**5517954**	5650443*
<0.02	10	**5531862**	**5530957**	**5650533**	5650283*	**5511170**	**5650354**
<0.02	12	**5531134**	5531846*	5650534*	5602532*	5650433*	**5518979**
<0.02	15	**5510757**	5650475*	N/A	N/A	**5600432**	**5650353**
<0.02	16	**5531765**	5531943*	**5531574**	5651032*	**5530892**	**5530876**
<0.02	20	5650413*	5650422*	N/A	N/A	**5650308**	**5650445**
<0.02	25	5650414*	5650423*	N/A	N/A	5650476*	5650446*
<0.02	32	5650415*	5650424*	N/A	N/A	**5650434**	**5650447**

* Indicates breakers that are made-to-order and may require an 8- to 10-week lead time.
** N/O = Normally Open, N/C = Normally Closed

Typical time/current characteristics at 23 degrees Celsius



Direct Current – Magnetic tripping currents are increased by 30 percent in DC circuits with the effect of shifting the magnetic trip range 30 percent to the right of AC trip curves.

The time / current characteristic curve depends on the ambient temperature prevailing. In order to eliminate nuisance tripping, multiply the circuit breaker current ratings by the derating factor shown below.

Ambient temperature

°F	-22	-4	14	32	50	73.5	86	104	122	140
°C	-30	-20	-10	0	10	23	30	40	50	60
Multiplication factor	**0.76**	**0.79**	**0.83**	**0.88**	**0.93**	**1**	**1.04**	**1.11**	**1.19**	**1.29**

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Circuit Protector Comparison Sheet

Protector	Type (1)	Breaker Construction	Mechanism	Poles	Amps	UL Voltage	Interrupting Capacity (2) (3)	Maximum Interrupting Capacity (4)	Trip Speed (5)	AWG	Overall Size (mm) HxDxW	Auxiliary Contacts (6)	Trip Free (7)	Tease Free (8)	Bus Connection Available (9)	Characteristics
TMC 42	Thermal Magnetic	Single Body	Push Button	1, 2	0.1-16	AC 250	Self-Limiting (0.1-8 A)	200A @ AC 250V (0.05-4.5A)	Medium *[similar to C-type breaker]*	20-8 Sol. 20-10 Str.	70 x 80 x 12	None	Yes	Yes	Yes	General Purpose, High Density Pkg.
1						AC 250	200 A (1-2 A)	1,000A @ AC 250 / 125 (0.05-16A)								
2						DC 80	400 A (2.5-16 A)	1,000 @ DC 80V (0.05-16A)								
TMC 1	Thermal Magnetic	Single Body	Toggle	1, 2, 3	0.1-32	AC 277	400 A (0.1-5 A)	5,000A @ AC 277 / 480V (0.1-16A)	Delayed *[similar to D-type breaker]*	Main – Up to 10 Sol. Aux. – Up to 16 Sol.	90 x 80 x 12	1 N/O or N/C	Yes	Yes	Yes	Trip Speed Options, Aux. Contacts
2						3 AC 480	800 A (6-32 A)	2,000A @ AC 277 / 480V (20-32A)	Medium *[similar to C-type breaker]*			2 N/O, N/C				
3						DC 65		2,000A @ DC 65V	Fast *[similar to B-type breaker]*			3 N/O, 2 N/C				
TMC 61	Thermal Magnetic	Single Body	Toggle	1	0.5-63	AC 277/480 (0.5-63 A)	10,000 A	10,000A @ AC 277 / 480V (0.5-63A) 6,000A @ DC 48V	Medium *[C-type breaker]*	Line to 2 Load to 3	70 x 95 x 18	Available	Yes	No	Yes	Low to High AC Amperage
TMC 62				2												
TMC63				3												
TCP Plugs into UK6-FSI/C Screw or ST 4-FSI/C Spring Blk.	Thermal	Two Piece: TCP Plugs in Terminal Blocks	Push Button	1	0.1-10	AC 250 DC 65	6 x Inductive Load (0.1-5 A) 8 x Inductive Load (6-10 A)	AC 250V: 2,000A DC 65V: 200A	Slow *[similar to D-type breaker]*	26-8 Screw Block; 24-10 Spring Block	92.0 x 64.0 x 8.2 Screw; 89.7 x 86.5 x 8.2 Spring	None	Yes	Yes	Yes Bridge possible on Base Blocks	Plug-in, Thermal only, LED Available on Base Block

(1) Thermal Magnetic – Thermal provides overload protection; magnetic provides short-circuit protection.

(2) Interrupting capacity is the maximum fault current that can be repeatedly (3x minimum) interrupted without failure of the breaker.

(3) Self-limiting means that internal resistance is high enough to restrict the flow of current to a level that will not harm the circuit breaker.

(4) Maximum current at a given voltage at which the circuit breaker can interrupt safely without damage to surrounding components.

(5) Review trip curve for precise trip behavior of the breaker.

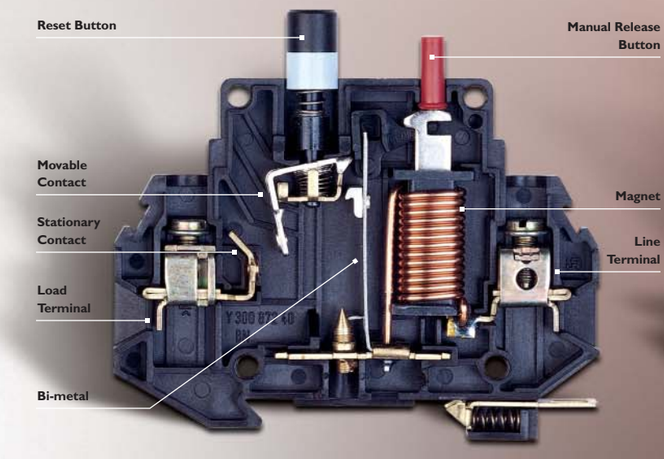
(6) N/O means auxiliary contacts are open and N/C means auxiliary contacts are closed when main terminal contacts are open.

(7) Trip-free means the breaker contacts cannot be forced or held closed during any fault condition (overloads or short circuits).

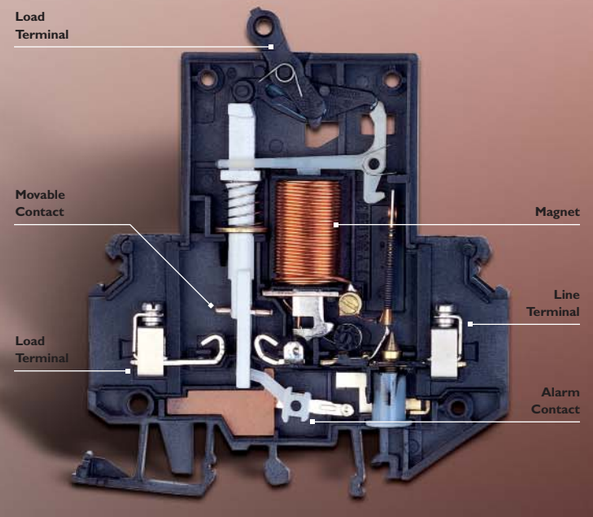
(8) Tease-free means breaker contacts cannot be forced close enough for current to arc (and potentially weld together) under a fault condition.

(9) A bus bar can connect to the supply terminal and can feed a series of breakers.

TMC 42 Series



TMC 1 Series (with Alarm Contact)



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Notes

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Phoenix Contact:

5531066

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP