Mors Smitt Industrial Technology

High performance plug-in relays

Mors Smitt
A Wabtec Company

Power generation and distribution operators across the world rely on our relays

SERVING SAFETY

D-relays series

The unique plug-in D-relay concept is specifically designed for heavy duty applications in power utilities, petro chemical industries and mining.

High DC breaking capacity and inductive load switching offer long electrical life and low life cycle costs. The Solve-All relay application concept offers ultimate flexibility to design and supply tailor made D-relays. Today D-relays are used in millions across the world.

Instantaneous auxiliary and trip relays

Direct switching power relays designed for heavy duty applications in demanding markets. The instantaneous auxiliary and trip relay range include 4 and 8 contact models with a pull-in time of less than 20 ms. The fast switching models have a pull-in less than 7 ms.

Bistable / latching trip and lockout relays

A bistable or latching relay is designed to be voltage pulse activated. The voltage pulse will activate the relay to pull-in or release the contacts. The relay will hold its contact position till the next voltage pulse. The relay range includes 2, 4 and 8 contact models.

Time relays (delay-on and -off)

The plug-in electronic timer relays with 2, 3 of 4 change-over contacts are available in delay-on or delay-off function. The delay time is adjustable with a lockable knob, but can also be supplied with a fixed time delay (no knob). The relay is equipped with a LED to indicate the presence of energising voltage.

Measuring and monitoring relays

Electronic measuring and monitoring relays for voltage or current monitoring of power utility applications. Available in various voltage and current configurations.

Trip circuit supervision relays

The trip circuit supervision relay has been designed as a simple and cost effective device to monitor the condition of the trip circuit supply, trip circuit wiring and circuit breaker operate coil continuity. Local visual indication of fuse or circuit failure is provided by a large ultra high intensity LED. Remote indication is possible by a single alarm relay output contact.

Mors Smitt
A Wabtec Company

Mors Smitt is part of Wabtec Corporation, the NYSE stock exchange listed, global supplier of highly engineered components and solutions for rail and selected industrial markets. Operations in 17 countries and world wide sales in over 100 countries. Wabtec Corporation holds over 1.200 patents and has world class internal processes based on lean manufacturing and continuous improvement principles (Wabtec Performance System). Within the Wabtec group Mors Smitt has its own name & identity and is focused on satisfying the needs of customers in the power grid, industry and installation sectors.

April 2014

Technical details

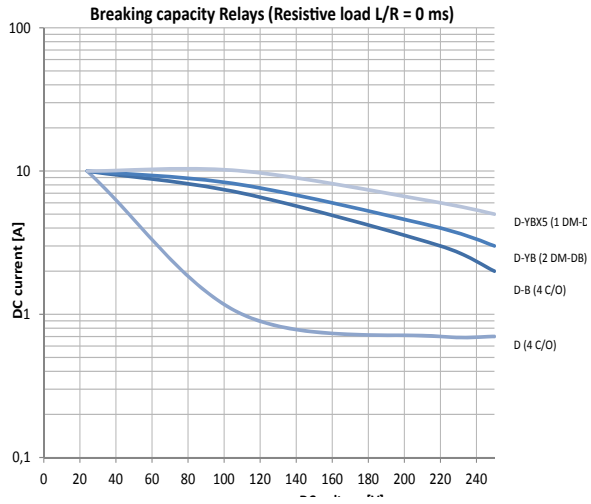
Features

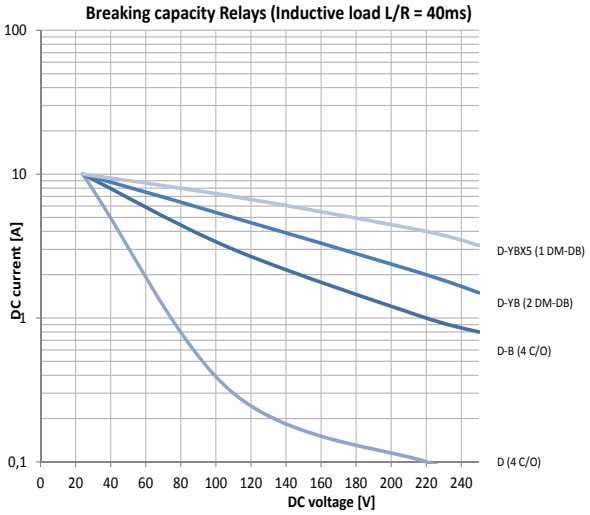
D-relays

- Mechanical trip indicator
- Bistable / latching models
- Fast switching up to < 7 ms
- High DC breaking capacity
- Low power consumption
- Optional time functions

Type*	Contacts	Reset / type	Voltage range	Operating burden	Transient overvoltage	Operating voltage	Operating time
Auxiliary relays							
D	4	Self reset	12, 24, 30/32, 48, 110, 125, 220, 240, 250 VAC/DC	Self reset relays < 5 W Reset coils = 0 W	5 kV	70 %...120 % AC 80 %...110 % AC	< 20 ms DC 5 ms AC
D8	8						
High speed tripping relays							
D-R	3	Self reset	12, 24, 30/32, 48, 110, 125, 220, 240, 250 VDC	During pull-in 25 W Continuous 1 W	5 kV	80 %...110 % DC	< 7 ms
D8-R	7						
Bistable / latching remote relays							
BD	4	Electrical reset	6, 12, 24, 30/32, 48, 110, 125, 220, 240, 250 VDC 12, 24, 48, 110, 120, 240, 380 VAC	During pull-in 1.7 W / 4 VA Reset coils = 0 W	5 kV	70 %...120 % AC 80 %...110 % AC	-
KDN	8						
KCD	2		12, 24, 30/32, 48, 110, 125,	0.7 W - 1.2 W			
Time relays							
TDB4	5	Pick-up timing	24, 30/32, 48, 110, 125, 220, 240, 250 VAC/DC	0.5 - 2.2 W	5 kV	80 %...110 % DC	0.1 s - 60 min
TDE3	3	Drop-out timing		2.2 W			
TDE4	4			1-9 W			0.1 s - 100 s

* See our website for more types and voltages





Options

The D-relays (and derived models) can be equipped with options mentioned below. This Solve-All relay concept allows the D-relay to be composed to a solution for almost any application.

Options*	Function	Specification
A	Mechanical hand reset flag	
B	Heavy duty contacts, magnetic arc blow-out	7 A, DC1 @ 110 V
H	High burden	10 µF, 1.5 Un
S	Mechanical following flag	
T	Test button	
V	Wide operating and temperature range	70 % ...125 % Unom / -25 °C...+70 °C

* Not all options can be combined, see our website for more details and options

Sockets





V23	V29	V33	V93	V99
35 mm rail mounting	35 mm rail mounting	Flush mounting	35 mm rail mounting	35 mm rail mounting
Screw terminals	Spring clamp terminals	Spring clamp terminals	Screw terminals	Spring clamp terminals

19" rack

The 19" relay rack is equipped with 8x V33 sockets to carry any combination of relays. (D-, BD-, TDE4-, TDBA-, KDN-, D8 relays)

The racks are available in black mat finish or RAL 7035 grey.

D

Instantaneous auxiliary relay
10 A, 4 C/O

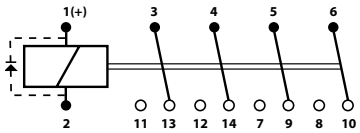
Trip and control applications, switching of AC & DC voltages, resistive and inductive loads.

- Plug-in
- 4 C/O contacts
- DC (with back EMF diode) and AC coil
- LED indicator (standard)
- Cadmium free contacts
- HD contacts optional
- Trip indicator optional
- Following flag optional

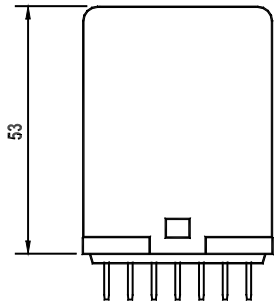
Standards
EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

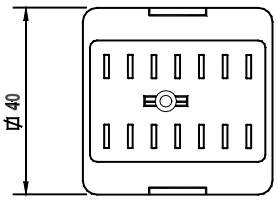
Pin arrangement
Smitt-style

Connection diagram



Dimensions





Most common types

D 24 VDC	330219702
D 48 VDC	330219703
D 110 VDC	330219706
D 24 VAC 50 Hz	330219752
D 230 VAC 50 Hz	330219757

For more types check your local sales office

Contact specifications

Contact material	Ag
Number & configuration	4 C/O
Rated continuous current	10 A
Breaking capacity AC 1	10 A / 230 V
Breaking capacity DC 1	1 A / 110 V
Max. make current	16 A
Max. switching voltage	350 VDC / 440 VAC
Min. switched voltage	12 V
Min. switched current	10 mA (Au, 1µV, 1µA)
Peak inrush current	200 A for 10 ms, 40 A for 0.5 s, 30 A for 1 s

Coil specifications

Nominal voltage (U_n DC)	12, 24, 48, 72, 110, 125, 220, 250 VDC
Nominal voltage (U_n AC)	12, 24, 48, 72, 100, 120, 230, 350, 380 VAC
Power consumption (AC / DC)	2 VA / 2 W
Operating range	0.8...1.1 U_n (0.7...1.25 U_n option V)

Technical data

Mechanical life cycles (AC/DC)	10×10^6 / 50×10^6
Dielectric strength, coil-contact	2500 VAC
Dielectric strength contacts	4000 VAC
Isolation class	C 380
Pull-in time DC/AC	≤ 20 / 10 ms
Release time DC/AC	18 / 5 ms
Ambient temperature	-25 °C...+55 °C
Humidity	95% / 40 °C
Salt mist	5% NaCl, 35 °C for 4 days
Weight	125 g
Dimensions	40 x 40 x 53 mm
Protection category	IP40

Remarks

Standard AC coil is 50 Hz, 60 Hz coil on request
Other voltages on request

SERVING SAFETY

D-R

Fast trip relay
10 A, 3 C/O

Trip applications, switching of AC & DC voltages, resistive and inductive loads.

- Plug-in
- 3 C/O contacts
- Cadmium free contacts
- 'Smitt-style' pinning with integrated retaining silver plated clip
- Fast switching <7 ms (for DC only) (option R, standard)
- HD contacts optional
- Trip indicator optional
- Following flag optional

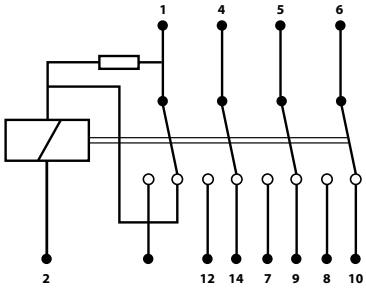
Standards

EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

Pin arrangement

Smitt-style

Connection diagram



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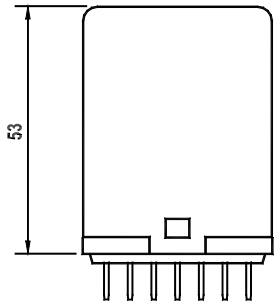
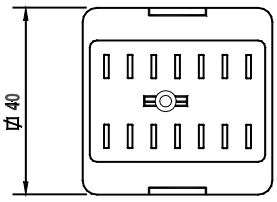




Most common type

D-R 24 VDC	334931361
D-R 48 VDC	334931365
D-R 110 VDC	334931360
D-R 220 VDC	334931366

For more types check your local sales office

Contact specifications

Contact material	Ag
Number & configuration	3 C/O
Rated continuous current	10 A
Breaking capacity AC1	10 A / 230 V
Breaking capacity DC1	1 A / 110 V
Max. make current	16 A
Max. switching voltage	350 VDC
Min. switched voltage	12 V
Min. switched current	10 mA (Au, 1 μV, 1 μA)
Peak inrush current	200 A for 10 ms, 40 A for 0.5 s, 30 A for 1 s

Coil specifications

Nominal voltage (U_n DC)	12, 24, 48, 72, 110, 125, 220, 250 VDC
Power consumption	25 W (during pull-in), 1 W (continuous)
Operating range	0.8 ... 1.1 U_n

Technical data

Mechanical life cycles DC	50 x 10^6
Dielectric strength, coil-contact	2500 VAC
Dielectric strength contacts	4000 VAC
Isolation class	C 380
Pull-in time DC	≤ 7 ms
Release time DC	10 ms
Ambient temperature	-25 °C...+55 °C
Humidity	95% / 40 °C
Salt mist	5% NaCl, 35 °C for 4 days
Weight	125 g
Dimensions	40 x 40 x 53 mm
Protection category	IP40

Remarks: Other voltages on request

D8-UL

Instantaneous auxiliary relay
10 A, 8 C/O

(Picture D8-U204 railway version)

Heavy duty applications, switching of AC & DC voltages, resistive and inductive loads.

- Plug-in
- 8 C/O contacts
- AC/DC coil voltage (rectifier bridge, option U, standard)
- Coil is suitable for AC/DC voltage
- LED indicator (option L, standard)
- Cadmium free contacts
- HD contacts optional
- Trip indicator optional

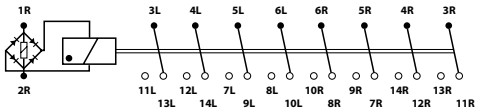
Standards

EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

Pin arrangement

Smitt-style

Connection diagram



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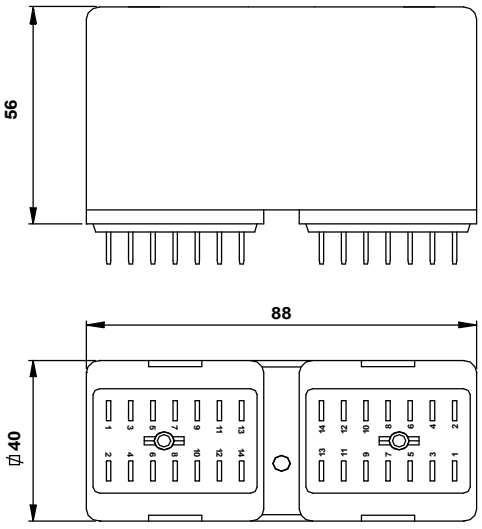


Contact specifications

Contact material	Ag
Number & configuration	8 C/O
Rated continuous current	10 A
Breaking capacity AC1	10 A / 230 V
Breaking capacity DC1	1 A / 110 V
Max. make current	16A
Max. switching voltage	350 V DC / 440 VAC
Min. switched voltage	12 V
Min. switched current	10 mA (Au, 1 µV, 1 µA)
Peak inrush current	200 A for 10 ms, 40 A for 0.5 s, 30 A for 1 s

Coil specifications

Nominal voltage (U_n AC / DC)	12, 24, 48, 72, 110, 125, 220, 250 VAC / DC
Power consumption (DC / AC)	2.5 - 3.5 W / VA
Operating range	0.8 ... 1.1 U_n (0.7...1.25 U_n option V)

Technical data

Mechanical life cycles	10 x 10^6
Dielectric strength, coil-contact	2500 VAC
Dielectric strength contacts	4000 VAC
Isolation class	C 380
Pull-in time DC/AC	≤ 17 / 18 ms
Release time DC/AC	12 / 12 ms
Ambient temperature	-25 °C...+55 °C
Humidity	95% / 40 °C
Salt mist	5% NaCl, 35 °C for 4 days
Weight	330 g
Dimensions	40 x 88 x 53 mm
Protection category	IP40

Remarks — Other voltages on request

Most common types

D8-UL 24-28 VAC/DC	334980502
D8-UL 42-48 VAC/DC	334980503
D8-UL 60-70 VAC/DC	334980504
D8-UL 100-110 VAC/DC	334980506
D8-UL 220-230 VAC/DC	334980507
D8-UL 250 VAC/DC	334980512

For more types check your local sales office

SERVING SAFETY

D8-R

Fast trip relay
10 A, 7 C/O

(Picture D8-U204 railway version)

Heavy duty applications, switching of AC & DC voltages, resistive and inductive loads.

- Plug-in
- 7 C/O contacts
- AC/DC coil voltage (rectifier bridge, option U, standard)
- Coil is suitable for AC/DC voltage
- LED indicator (option L, standard)
- Cadmium free contacts
- HD contacts optional
- Trip indicator optional

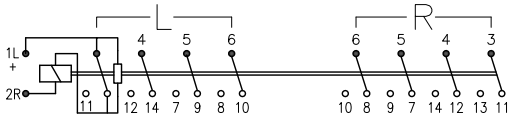
Standards

EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

Pin arrangement

Smitt-style

Connection diagram



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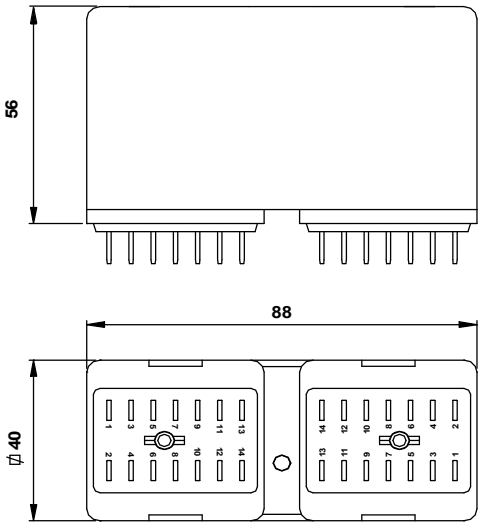


Contact specifications

Contact material	Ag
Number & configuration	7 C/O
Rated continuous current	10 A
Breaking capacity AC1	10 A / 230 V
Breaking capacity DC1	1 A / 110 V
Max. make current	16A
Max. switching voltage	350 VDC
Min. switched voltage	12 V
Min. switched current	10 mA (Au, 1 µV, 1 µA)
Peak inrush current	200 A for 10 ms, 40 A for 0.5 s, 30 A for 1 s

Coil specifications

Nominal voltage (U_n AC / DC)	12, 24, 48, 72, 110, 125, 220, 250 VAC / DC
Power consumption (DC / AC)	25 W (during pull-in) 1 W (continuous)
Operating range	0.8 ... 1.1 U_n (0.7...1.25 U_n option V)

Technical data

Mechanical life cycles	10×10^6
Dielectric strength, coil-contact	2500 VAC
Dielectric strength contacts	4000 VAC
Isolation class	C 380
Pull-in time DC/AC	10 ms
Release time DC/AC	12 ms
Ambient temperature	-25 °C...+55 °C
Humidity	95% / 40 °C
Salt mist	5% NaCl, 35 °C for 4 days
Weight	330 g
Dimensions	40 x 88 x 53 mm
Protection category	IP40

Remarks — Other voltages on request

Most common types

D8-R 24 VDC	on request
D8-R 32 VDC	on request
D8-R 48 VDC	on request
D8-R 110 VDC	on request
D8-R 125 VDC	on request
D8-R 240 VDC	on request

For more types check your local sales office

BD

Lockout relay
10 A, 3 C/O + 1 N/C

Heavy duty applications, switching of AC & DC voltages, resistive and inductive loads.

- Plug-in
- 3 C/O + 1 N/C contacts
- DC and AC coil
- Cadmium free contacts
- Puls activated resolving in less heat dissipation and energy consumption
- Continuous coil energization permitted

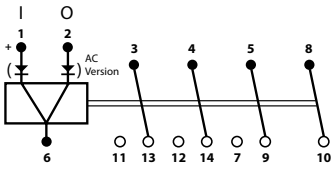
Standards

EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

Pin arrangement

Smitt-style

Connection diagram



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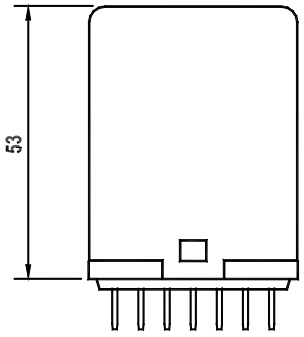
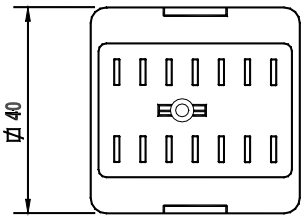




Contact specifications

Contact material	Ag
Number & configuration	3 C/O + 1 N/C
Rated continuous current	10 A
Breaking capacity AC1	10 A / 230 V
Breaking capacity DC1	1 A / 110 V
Max. make current	16 A
Max. switching voltage	250 VDC / 440 VAC
Min. switched voltage	12 V
Min. switched current	10 mA (Au, 1 µV, 1 µA)
Peak inrush current	200 A for 10 ms, 40 A for 0.5 s, 30 A for 1 s

Coil specifications

Nominal voltage (U_n DC)	12, 24, 48, 72, 110, 125, 220, 250 VDC
Nominal voltage (U_n AC)	12, 24, 48, 72, 100, 120, 230, 350, 380 VAC
Power consumption (DC / AC)	1.7 W / 4 VA
Operating range	0.85 ... 1.1 U_n (0.7...1.25 U_n option V)

Technical data

Mechanical life cycles	10×10^6
Dielectric strength, coil-contact	2000 VAC
Dielectric strength contacts	4000 VAC
Isolation class	C 380
Pull-in time DC/AC	≤ 25 / 50 ms
Ambient temperature	-25 °C...+55 °C
Humidity	95% / 40 °C
Salt mist	5% NaCl, 35 °C for 4 days
Weight	135 g
Dimensions	40 x 40 x 53 mm
Protection category	IP40

Remarks

Other voltages on request
≥ 25 ms energization needed to set or reset the relay
Coil can be permanently energised

Standard types

BD 24 VDC	332310600
BD 48 VDC	332310700
BD 110 VDC	332310800
BD 24 VAC	332310100
BD 220-240 VAC	332310057

For more types check your local sales office

SERVING SAFETY

KDN

Lockout relay
10 A, 8 C/O

Heavy duty applications, switching of AC & DC voltages, resistive and inductive loads.

- Plug-in
- 8 C/O contacts
- DC and AC coil
- Cadmium free contacts
- Position indicator (red/green)
- Continuous coil energization permitted

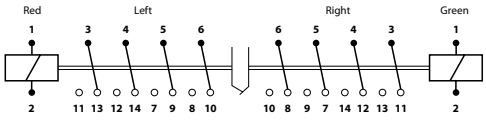
Standards

EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

Pin arrangement

Smitt-style

Connection diagram



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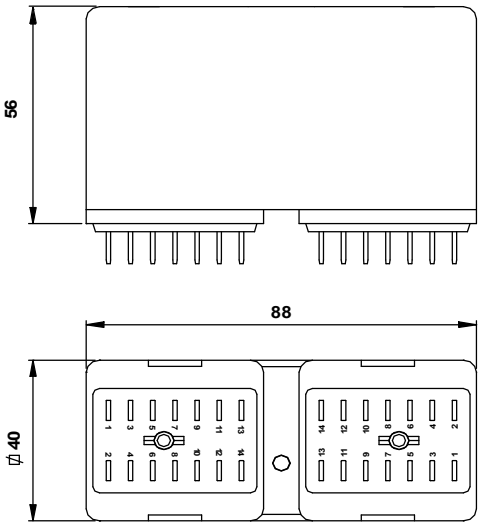


Contact specifications

Contact material	Ag
Number & configuration	8 C/O
Rated continuous current	10 A
Breaking capacity AC1	10 A / 230 V
Breaking capacity DC1	1 A / 110 V
Max. make current	16 A
Max. switching voltage	350 VDC / 440 VAC
Min. switched voltage	12 V
Min. switched current	10 mA (Au, 1 µV, 1 µA)
Peak inrush current	200 A for 10 ms, 40 A for 0.5 s, 30 A for 1 s

Coil specifications

Nominal voltage (U_n DC)	12, 24, 48, 72, 110, 125, 220, 250 VDC
Nominal voltage (U_n AC)	12, 24, 48, 72, 100, 120, 230, 350, 380 VAC
Power consumption (DC / AC)	3,2 W / 3,5 VA
Operating range	0.8 ... 1.1 U_n (0.7...1.25 U_n option V)

Technical data

Mechanical life cycles	10×10^6
Dielectric strength, coil-contact	2500 VAC
Dielectric strength contacts	4000 VAC
Isolation class	C 380
Minimum impuls time	50 ms
Ambient temperature	-25 °C...+55 °C
Humidity	95% / 40 °C
Salt mist	5% NaCl, 35 °C for 4 days
Weight	320 g
Dimensions	40 x 88 x 56 mm
Protection category	IP40

Remarks

Standard AC coil is 50 Hz, 60 Hz coil on request
Other voltages on request
≥ 50 ms energization needed to set or reset the relay

Standard types

KDN 24 VDC	331610600
KDN 48 VDC	331610700
KDN 110 VDC	331610900
KDN 24 VAC 50 Hz	331610100
KDN 220 VAC 50 Hz	331610500

For more types check your local sales office

KCD

Lockout relay
6 A, 2 C/O

Pulse activated applications, resolving in less heat dissipation and energy consumption.

- Plug-in
- 2 C/O contacts
- DC and AC coil
- Flash barriers
- Weld no transfer contacts
- Cadmium free contacts
- 'Smitt-style' pinning with integrated retaining silver plated clip
- Contious coil energisation permitted

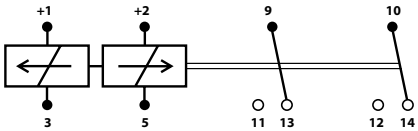
Standards

EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

Pin arrangement

Smitt-style

Connection diagram



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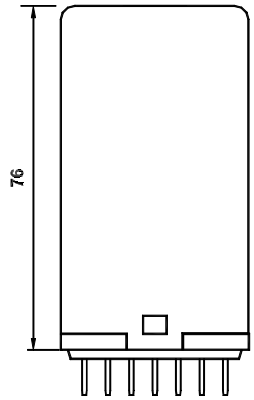
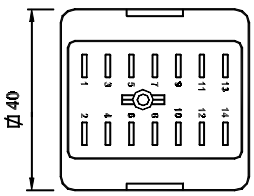




Contact specifications

Contact material	Ag + 0.2 µm Au
Number & configuration	2 C/O
Rated continuous current	6 A
Breaking capacity AC1	6 A / 230 V
Breaking capacity DC1	300 mA / 300 V
Max. make current	15 A
Max. switching voltage	350 VDC / 440 VAC
Min. switched voltage	12 V
Min. switched current	10 mA

Coil specifications

Nominal voltage (U_n DC)	12, 24, 48, 72, 110, 125, 220 VAC/DC
Power consumption (DC / AC)	1.1 W / 0.85 VA
Operating range	0.8 ... 1.2 U_n (0.7...1.25 U_n option V)

Technical data

Mechanical life cycles	30 x 10^6
Dielectric strength, coil-contact	3000 VAC
Isolation class	C 250
Pick up time DC/AC	25 ms
Ambient temperature	-25 °C...+70 °C
Weight	95 g
Dimensions	40 x 40 x 76 mm
Protection category	IP40
Options	B. E
Remarks	Other voltages on request Coil voltages 110, 125 and 220 V has a built-in resistor

Standard types

KCD-012	12 VDC	331640203
KCD-024	24 VDC	331640207
KCD-060	60 VDC	331640205
KCD-110	110 VDC	on request
KCD-125	125 VDC	331640208
KCD-220	220 VDC	on request

For more types check your local sales office

TDB4

Electronic, time delay-on (pick-up)
10 A, 4 C/O

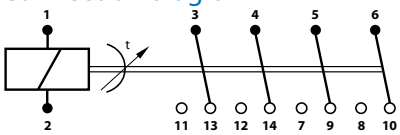
Delay-on time relay for demanding applications, switching of AC & DC voltages, resistive and inductive loads.

- Plug-in
- 4 C/O contacts
- DC and AC input
- Double LED indicator (presence of supply and energyzing of contacts)
- Cadmium free contacts
- 'Smitt-style' pinning with integrated retaining silver plated clip
- Adjustable with a lockable knob (optional with fixed time)

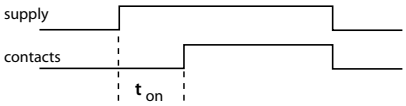
Standards
EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

Pin arrangement
Smitt-style

Connection diagram



Time diagram



Available time ranges

0.1 - 1 s	0.3 - 3 s	0.6 - 6 s	1 - 10 s	3 - 30 s	6 - 60 s
	0.3 - 3 min	0.6 - 6 min	1 - 10 min	3 - 30 min	6 - 60 min

Contact specifications

Contact material	Ag
Number & configuration	4 C/O
Rated continuous current	10 A
Breaking capacity AC1	10 A / 230 V
Breaking capacity DC1	1 A / 110 V
Max. make current	16 A
Max. switching voltage AC/DC	110 V, 1 A / 440 V
Min. switched voltage	12 V
Min. switched current	10 mA
Insulation between contacts	1 kV, 50 Hz, 1 m
Peak inrush current	200 A for 10 ms, 40 A for 0.5 s, 30 A for 1 s

Coil specifications

Nominal voltage (U_n AC/DC)	24, 48, 60, 110, 125, 220, 230, 250 VAC/DC
Power consumption	0.5 - 2.2 W
Operating range	0.8 ... 1.2 U_n (0.7...1.25 U_n option V)

Technical data

Mechanical life cycles (AC/DC)	10×10^6 / 50×10^6
Dielectric strength, coil-contact	2000 VAC
Isolation class	C 380
Pull-in time	Adjustable, fixed possible
Release time	< 40 ms
Ambient temperature	-25 °C...+70 °C
Humidity	95% / 40 °C
Salt mist	5% NaCl, 35 °C for 4 days
Weight	140 g
Dimensions	40 x 40 x 89 mm (incl. knob)
Protection category	IP40

Options	B, E, K, Q
Remarks	Standard coil is 50 Hz, 60 Hz coil on request

Standard types

TDB4-024-XX	24 VAC/DC
TDB4-048-XX	48 VAC/DC
TDB4-060-XX	60 VAC/DC
TDB4-110-XX	110 VAC/DC
TDB4-125-XX	125 VAC/DC
TDB4-220-XX	220 VAC/DC

xx= time range
Check the datasheet on www.morssmitt.com for ordering codes

For more types check your local sales office

TDE3

Electronic, time delay-off (drop-out)
10 A, 3 C/O

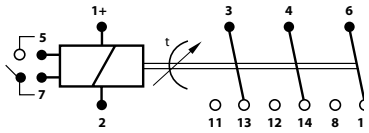
Delay-off time functions in demanding applications, switching of AC & DC voltages, resistive and inductive loads. The relay is activated by an external N/O contact.

- Plug-in
- 3 C/O contacts
- DC and AC input
- LED indicator 2x (power / energized)
- Cadmium free contacts
- 'Smitt-style' pinning with integrated retaining silver plated clip
- Adjustable with a lockable knob (optional with fixed time)

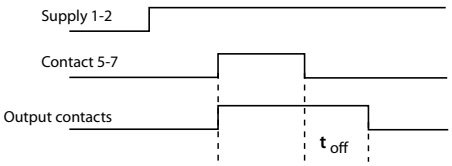
Standards
EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

Pin arrangement
Smitt-style

Connection diagram



Time diagram



Available time ranges

0.1 - 1 s	0.3 - 3 s	0.6 - 6 s	1 - 10 s		6 - 60 s
	0.3 - 3 min	0.6 - 6 min	1 - 10 min	3 - 30 min	6 - 60 min

Contact specifications

Contact material	Ag
Number & configuration	3 C/O
Rated continuous current	10 A
Breaking capacity AC1	10 A / 230 V
Breaking capacity DC1	1 A / 110 V
Max. make current	16 A
Max. switching voltage AC/DC	250 V / 440 V
Min. switched voltage	12 V
Min. switched current	10 mA
Insulation between contacts	1 kV, 50 Hz, 1 m
Peak inrush current	200 A for 10 ms, 40 A for 0.5 s, 30 A for 1 s

Coil specifications

Nominal voltage (U_n AC/DC)	24, 48, 60, 110, 125, 220, 230, 250 VAC/DC
Power consumption	2.2 W
Operating range	0.8 ... 1.1 U_n (0.7...1.25 U_n option V)

Technical data

Mechanical life cycles	50×10^6
Dielectric strength, coil-contact	2000 VAC
Isolation class	C 250
Pull-in time	50 ms
Release time	Adjustable, fixed possible
Ambient temperature	-25 °C...+70 °C
Humidity	95% / 40 °C
Salt mist	5% NaCl, 35 °C for 4 days
Weight	140 g
Dimensions	40 x 40 x 89 mm (incl. knob)
Protection category	IP40

Options	V, C, E, B, K
Remarks	Standard coil is 50 Hz, 60 Hz coil on request

Standard types

TDE3-024-xx	24 VAC/DC
TDE3-048-xx	48 VAC/DC
TDE3-060-xx	60 VAC/DC
TDE3-110-xx	110 VAC/DC
TDE3-125-xx	125 VAC/DC
TDE3-220-xx	220 VAC/DC

xx= time range
Check the datasheet on www.morssmitt.com for ordering codes

For more types check your local sales office

TDE4

Electronic, time delay-off (drop-out)
10 A, 4 C/O

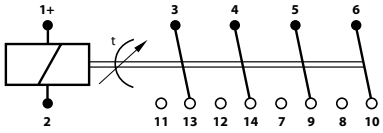
Delay-off time functions in demanding applications, switching of AC & DC voltages, resistive and inductive loads. The energizing voltage must have a step function for correct operating.

- Plug-in
- 4 C/O contacts
- DC and AC input
- LED indicator (power / energized)
- Cadmium free contacts
- 'Smitt-style' pinning with integrated retaining silver plated clip
- Adjustable with a lockable knob (optional with fixed time)

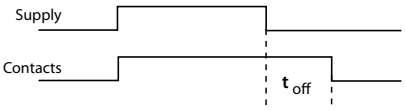
Standards
EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

Pin arrangement
Smitt-style

Connection diagram



Time diagram



Available time ranges
0.1 - 1 s 0.3 - 3 s 0.6 - 6 s 1 - 10 s 3 - 30 s 6 - 60 s 10-100 s

Contact specifications

Contact material	Ag
Number & configuration	4 C/O
Rated continuous current	10 A
Breaking capacity AC1	10 A / 230 V
Breaking capacity DC1	1 A / 110 V
Max. make current	16 A
Max. switching voltage AC/DC	250 V / 440 V
Min. switched voltage	12 V
Min. switched current	10 mA
Insulation between contacts	1 kV, 50 Hz, 1 m
Peak inrush current	200 A for 10 ms, 40 A for 0.5 s, 30 A for 1 s

Coil specifications

Nominal voltage (U_n AC/DC)	24, 48, 60, 110, 125, 220, 230, 250 VAC/DC
Power consumption	1 ... 9 W (model depending)
Operating range	0.8 ... 1.1 U_n (0.7...1.25 U_n option V)

Technical data

Mechanical life cycles	10 x 10^6
Dielectric strength, coil-contact	2000 VAC
Isolation class	C 380
Pull-in time	< 40 ms
Release time	adjustable, fixed possible
Ambient temperature	-25 °C...+70 °C
Humidity	95% / 40 °C
Salt mist	5% NaCl, 35 °C for 4 days
Weight	270 g
Dimensions	45 x 55 x 89 mm (incl. knob)
Protection category	IP40

Options	V, C, E, K, N, see page 14
Remarks	Standard coil is 50 Hz, 60 Hz coil on request

Standard types

TDE4-024-xx	24 VAC/DC
TDE4-048-xx	48 VAC/DC
TDE4-060-xx	60 VAC/DC
TDE4-110-xx	110 VAC/DC
TDE4-125-xx	125 VAC/DC
TDE4-220-xx	220 VAC/DC

xx= time range
Check the datasheet on www.morssmitt.com for ordering codes

For more types check your local sales office

ACD

Electronic DC voltage monitoring
6 A, 1 C/O + 1 N/O

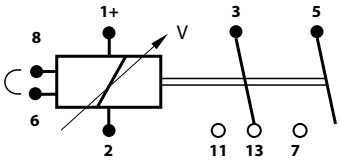
The relay reacts on the value of a DC voltage with ripple. The pull-in voltage and hysteresis is adjustable by multiturn trimpotentiometers. The pull-in time after crossing the setpoint is < 15 ms and the drop-out time is approx. 20 ms, which can be extended to 250 ms.

- Plug in
- 1 C/O + 1 N/O contact
- DC input
- Flash barriers
- Cadmium free contacts
- 'Smitt-style' pinning with integrated retaining silver plated clip
- Adjustable pull-in & hysteresis
- Triptime, 20 ms (if terminals 6 & 8 connected 0.25 s)

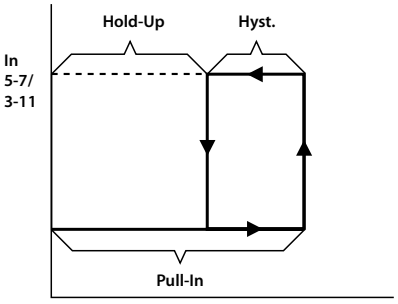
Standards
EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

Pin arrangement
Smitt-style

Connection diagram



Working principe



Contact specifications

Contact material	Ag + 0.2 µm Au
Number & configuration	1 C/O + 1 N/O
Rated continuous current	6 A
Breaking capacity AC1	2.6 A / 250 V
Breaking capacity DC1	300 mA / 300 V
Max. make current	15 A
Max. switching voltage	300 VDC / 250 VAC
Min. switched voltage	4 V
Min. switched current	2 mA

Coil specifications

Nominal voltage (U_n DC)	24, 48, 60, 110, 125 VDC
Operating range	0.9 ... 1.3 U_n

Technical data

Mechanical life cycles	30 x 10^6
Dielectric strength, coil-contact	4000 VAC
Isolation class	C 250
Pull-in time DC	15 ms
Release time DC	120 ms
Ambient temperature	-25 °C...+70 °C
Humidity	95% / 40 °C
Salt mist	5% NaCl, 35 °C for 4 days
Weight	120 g
Dimensions	40 x 40 x 76 mm
Protection category	IP40

Options — See page 14
Remarks — Standard coil is 50 Hz, 60 Hz coil on request

Measuring range

Type	U_{nom} (V)	U_{max} (V)	$U_{pull-in}$ (V)	$U_{hysteresis}$ (V)	Power consumption
ACD-024	24	35	21...33	1...8	< 0.55
ACD-048	48	70	42...66	2...16	< 0.85
ACD-060	60	88	52...82	3...20	< 1.10
ACD-110	110	160	90...140	4...32	< 1.35
ACD-125	125	180	110...160	5...40	< 1.50

Standard types

ACD-012	12 VDC	330402100
ACD-024	24 VDC	330402200
ACD-048	48 VDC	330402500
ACD-110	110 VDC	330402700

For more types check your local sales office

UMD

Electronic voltage monitoring
6 A, 1 C/O + 1 N/O

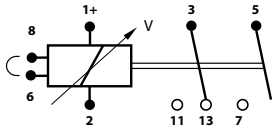
For demanding AC or DC applications, over and under voltage monitoring. The pull-in voltage is adjustable and lockable with a knob. Fixed settings are possible.

- Plug-in
- 1 C/O + 1 N/O contact
- DC and AC input
- Flash barrier
- 2 LED indicators (energization and contact switching)
- Cadmium free contacts
- 'Smitt-style' pinning with integrated retaining silver plated clip
- Adjustable with a lockable knob
- No auxiliary supply required
- Weld no transfer contacts

Standards
EN 60255
EN 60947
EN 60947-5-1
IEC 61810
CE

Pin arrangement
Smitt-style

Connection diagram



Contact specifications

Contact material	Ag + 0.2 µm Au
Number & configuration	1 C/O + 1 N/O
Rated continuous current	6 A
Breaking capacity AC1	2.6 A / 250 V
Breaking capacity DC1	300 mA / 300 V
Max. make current	15 A
Max. switching voltage	300 VDC / 250 VAC
Min. switched voltage	12 V
Min. switched current	10 mA

Coil specifications

Nominal voltage (U_n DC)	24, 110, 220, 240 VDC
Nominal voltage (U_n AC)	24, 48, 110, 220 VAC
Operating range	0.7...1.3 U_n

Technical data

Mechanical life cycles	30 x 10^6
Dielectric strength, coil-contact	2000 VAC
Isolation class	C 250
Ambient temperature	-25 °C...+70 °C
Humidity	95% / 40 °C
Salt mist	5% NaCl, 35°C for 4 days
Weight	130 g
Dimensions	40 x 40 x 89 mm
Protection category	IP40

Options See page 14

Measuring range

Type	U_{nom} (VAC)	U_{nom} (VDC)	$U_{adj, min}$ (V)	$U_{adj, max}$ (V)	Power consumption
UMD-C1	240		165	280	< 6.0 VA
UMD-1	220		150	260	< 6.0 VA
UMD-01	110		80	140	< 1.4 VA
UMD-41	24		18	30	< 0.6 VA
UMD-91		220	150	260	< 1.6 W
UMD-81		110	80	140	< 1.0 W
UMD-61		48	35	60	< 0.6 W
UMD-31		24	18	30	< 0.3 W

Standard types

UMD-31	24 VDC	330442600
UMD-61	48 VDC	330442500
UMD-81	110 VDC	330442400
UMD-91	220 VDC	330442700
UMD-41	24 VAC	330442300
UMD-01	110 VAC	330442200
UMD-1	220 VAC	330442100

For more types check your local sales office

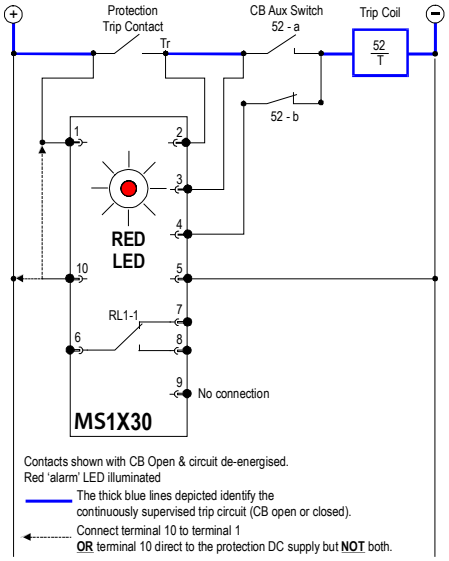
MS1X30

Trip circuit supervision relay
5 A, 1 C/O

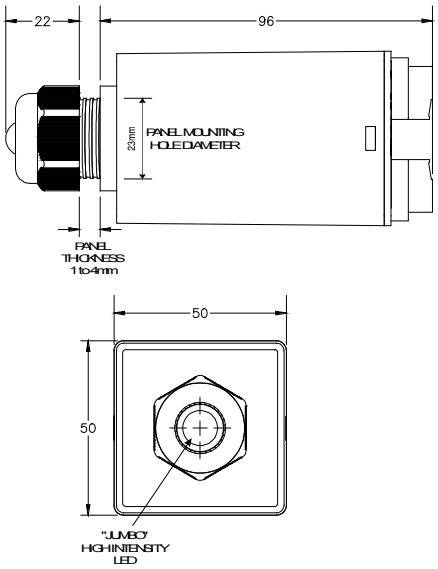
A compact size monitoring device for monitoring the condition of the trip circuit supply, trip circuit wiring and circuit breaker operate coil continuity.

- Panel mounting
- 1 C/O contact
- Compact design
- Remote indication possible
- LED indicator (ultra high intensity)

Connection diagram



Dimensions



Contact specifications

Output contact rating	
Make and carry	**30 AAC or DC (limits L/R = 40 ms and 300 V max.) for 0.2 s 20 AAC or DC (limits L/R = 40 ms and 300 V max.) for 0.5 s 5 AAC or DC continuously**
Break (limits 5 A and 300 V max.)	**1250 VA AC resistive 250 VA at 0.4 PF AC inductive 75 W DC resistive 30 W DC inductive L/R = 40 ms 50 W DC inductive L/R = 10 ms**
Min. recommended load	**0.5 W, 10 mA or 5 V**
Output relay contact configuration	**1 contact as indicated in supervision scheme diagrams 1 kV isolation across open contacts**

Technical data

Visual indicator	**Panel mounted extra large red, yellow or green LED**
Insulation withstand	**In accordance with IEC 255-5; 2 kV RMS and 1.2/50 5 kV impulse between imput and output**
Alarm delay	**> 300 ms at nominal operating voltage**
Voltage operating range	**70 %...125 % of nominal range**
Drop-out voltage	**25 %...40 % of nominal rated operate voltage**
Supervision operating current	**The MS1X30 circuit design is optimised to minimise the supervision current in the trip coil to avoid the possibility of nuisance tripping**

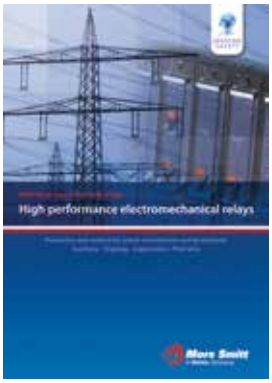
Nominal supply	Supervision circuit (CB open and closed)		
	Resistance (ohms)		Supervision current
	MS1X30	Trip coil (maximum)*	
24 VDC	640	19	37 mA
32 VDC	1.600	34	20 mA
48 VDC	2.500	77	20 mA
110 VDC	22.000	400	5 mA
125 VDC	25.000	520	5 mA

***The maximum recommended CB trip coil resistance stated above equates to a minimum CB operating power of 30 W**

Mors Smitt brochures are also available on our website: www.morssmitt.com

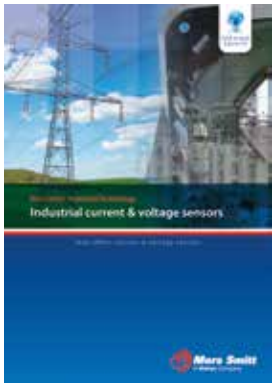
Heavy duty relays

General purpose relays



Actus relays

Surge protection devices



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