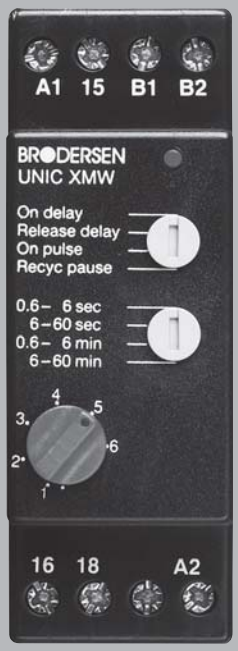
BRODERSEN
simplifying process

ELECTRONIC TIMERS



BRODERSEN COMPONENTS

INTRODUCTION

The Brodersen timer programme includes both multifunction and single-function timers. The selection guide below will help to select the right application.

Brodersen multifunction timers combine a range of timing functions which are easily selected on the front of the timer. The time range is also selectable on the front and the timer will work at any voltage from 10.5-265V AC or DC

In addition to the multifunction timers, Brodersen also manufacture a range of singlefunction timers and specialized multifunction timers with options such as transistor or solid state output, sensor input and remote time setting. All timers are available in versions for DIN rail or 11-pole plug-in mounting.

The compact design, the ease of adjustment and the consistent quality of the entire range of Brodersen timers are the hallmarks of a truly unique product.

SELECTION GUIDE

	Output			Time range and adjustment										Housing				
Function	Output relay, SPDT	Output relay, DPDT	Solid state output	Transistor output	0.1sec-3min.	0.1sec-10min.	0.1sec.-30min.	1.5-60sec.	0.6sec.-60min.	0.6min.-60hrs.	1min.-100hrs.	Potentiometer, front	Remote time adjustment	Remote timer start	Remote timer interrupt	W: 27 mm x H: 75 mm	W: 36 mm x H: 80 mm	**Multi-/singlefunction**	**Type**	**Page**
On delay	●	●							●	●		●				●		Multifunction	XMW	8
	●	●							●			●				●		M	XM	4
			●	●		●						●				●		M	SXM	14
	●	●		●		●					●	●	●	●	●	●		M	TXM	18
	●	●					●					●				●		Singlefunction	XI	24
Release delay	●	●							●	●		●		●		●		M	XMW	8
	●	●							●			●		●		●		M	XW	6
			●	●		●						●		●		●		M	SXM	14
	●	●		●		●					●	●				●		M	TXW	20
Release delay - true off	●	●			●							●	●	●		●		S	XF	32
On pulse	●	●							●	●		●		●		●		M	XMW	8
	●	●							●			●				●		M	XM	4
	●	●							●			●		●		●		M	XW	6
			●	●		●						●		●		●		M	SXM	14
	●	●		●		●					●	●	●	●	●		●	M	TXM	18
	●	●		●		●					●	●	●	●			●	M	TXW	20
	●	●					●					●				●		S	XWI	28
Off pulse	●	●							●			●		●		●		M	XW	6
	●	●		●		●					●	●	●	●			●	M	TXW	20
On-off pulse	●	●							●			●		●		●		M	XW	6
	●	●		●		●					●	●	●	●			●	M	TXW	20
Symmetrical recycler	●	●							●	●		●				●		M	XMW	8
	●	●							●			●				●		M	XM	4
			●	●				●				●				●		M	SXM	14
	●	●		●		●					●	●	●	●	●		●	M	TXM	18
	●	●						●				●				●		S	XB	26
Asymmetrical recycler	●	●							●	●		●				●		M	XT	10
			●	●		●						●				●		M	SXT	16
	●	●		●		●					●	●	●		●		●	M	TXT	22
One shot, asymmetrical	●	●							●			●				●		M	XOT	12
Delayed pulse, Y/Δ-relay	●							●				●				●		S	XIW	30

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DESCRIPTION

Multifunction timer with 4 functions and 4 time ranges. The function and the time range are selectable via 2 front mounted rotary switches. Time ranges: 0.6-6sec, 6-60sec, 0.6-6min, 6-60min. The time is adjustable on the timer front.
The timer can directly be connected to the supply voltage in the range of 10.5-265V AC/DC.
Single or double relay output with LED indication of energized relay.
Intermittent flashing of LED indicating timing period (over 6 sec.).
Versions available for DIN rail or 11-pole plug-in mounting.

VERSIONS/ORDERING CODES

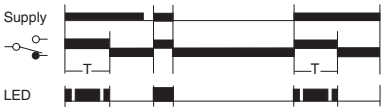
	XM-	S	1
Type:			
On delay. On pulse. Symmetrical recycler.	XM		
Mounting:			
11-pole plug-in.		S	
DIN rail.		D	
Output relay:			
SPDT.			1
DPDT.			2

OPERATION

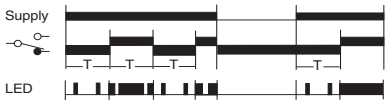
The function is selected via the rotary switch on the timer front. The switch may only be operated, when the supply voltage is disconnected.

On delay.
The timing period starts when supply voltage is connected. When the preset time has elapsed, the relay is energized.
The relay is de-energized when the supply voltage is disconnected.
If the supply voltage is disconnected before the preset time has elapsed, the timer resets.

On pulse.
When supply voltage is connected, the relay is energized and the timing period starts. When the preset time has elapsed, the relay is de-energized.
If the supply voltage is disconnected before the preset time has elapsed, the relay will be de-energized and the timer resets.



Symmetrical recycler with pause or pulse start.
Depending on the setting of the function switch, the timer starts with e.g a pause period, when supply voltage is connected. When the pause period has elapsed, the relay energizes. The relay remains energized during the pulse period. The sequence is repeated until the supply voltage is disconnected.
The duration of the pause and pulse periods is equal.



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TECHNICAL DATA

Time ranges: 0.6-6sec, 6-60sec, 0.6-6min. 6-60min.
Full linearity between the ranges is provided i.e. an adjustment made to a specific time in seconds will give the same time in minutes just by operating the range switch.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Reset time: Max. 100msec.

Output relay: SPDT or DPDT. [1)]
Load (cosφ=1): D1/S1: Max. 8A/240V AC [2)]
Min. 10mA/24VDC
D2/S2: Max. 5A/240V AC [2)]
Min. 100mA/24VDC
Contact material: D1/S1: AgNi 0,15
D2/S2: AgCdO
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate time: Max. 50msec.
Release time: Max. 20msec.

Mounting:
S1/S2: 11-pole plug-in.
D1/D2: Directly on DIN rail TS35 (EN50022).

Terminals: Max. conductor size 4 mm^2.
(D1/D2 only)
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 10.5-265V AC/DC

Mains frequency: 40-440Hz.

Consumption: 0.5-3VA.

Cable lengths:
Supply voltage: Max. 50 m.

Protection:
S1/S2: IP40.
D1/D2: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C.

Housing: Black Noryl SE-1.

Weight: Typically 80 g.

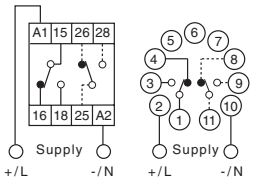
NOTES/REMARKS

1) Double output relay available in S2/D2 versions.
2) When inductive or DC loads are switched the load capacity of the output relay is reduced, see the output load diagrams on fig. 1 and 2. When inductive loads are switched, it is recommended to use a RC-network, see accessories on page 130, to protect the relay contacts.

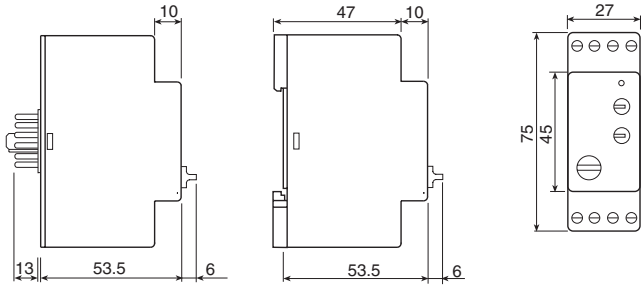
WIRING DIAGRAMS

Supply voltage above 50V.
The installation (all terminals) must be carried out according to the safety regulations! The control input and the supply input must be connected to the same circuit (phase and main switch). The output relay may only be used in circuits made according to the safety regulations.

Supply voltage below 50V.
The output relay may NOT be used for voltages above 50V unless the entire supply circuit is made according to the safety regulations.



MECHANICAL DIMENSIONS



OUTPUT LOAD DIAGRAMS, X & TX TIMERS.

Fig. 1

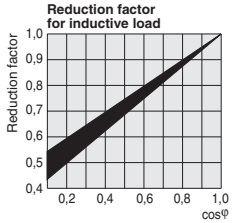
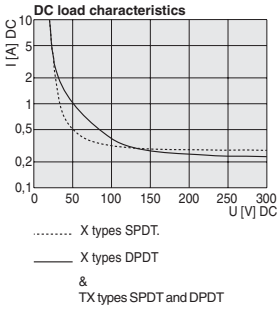


Fig. 2



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DESCRIPTION

Multifunction timer with 5 functions and 4 time ranges. The function and the time range are selectable via 2 front mounted rotary switches.
Time ranges: 0.6-6sec, 6-60sec, 0.6-6min, 6-60min. The time is adjustable on the timer front.
The timer can directly be connected to the supply voltage in the range of 10.5-265V AC/DC.
Single or double relay output with LED indication of energized relay.
Intermittent flashing of LED indicating timing period (over 6 sec.).
Versions available for DIN rail or 11-pole plug-in mounting.

VERSIONS/ORDERING CODES

Type:
Release delay.
On pulse - without control switch.
On pulse - with control switch. XW
Off pulse.
On-off pulse.

Mounting:
11-pole plug in. S
DIN rail. D

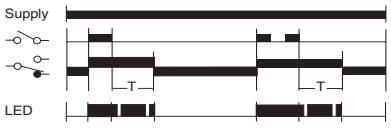
Output relay:
SPDT. 1
DPDT [1]. 2

XW - S 1

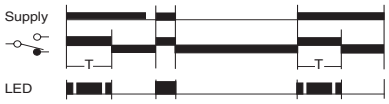
OPERATION

The function is selected via the rotary switch on the timer front. The switch may only be operated, when the supply voltage is disconnected.

Release delay.
The timer must be connected to the supply voltage permanently.
When the switch is closed, the output relay is energized. When the switch is opened again, the timing period starts.
The relay de-energizes when the preset time has elapsed.

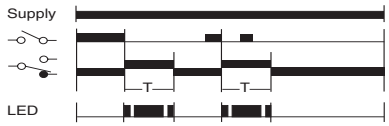


On pulse - without control switch.
A jumper must be connected between 5 and 7 (B1 and B2).
When supply voltage is connected, the relay is energized and the timing period starts. The relay de-energizes when the preset time has elapsed.

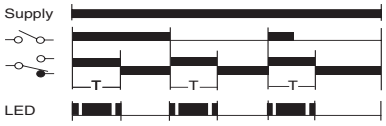


On pulse - with control switch.
The timer must be connected to the supply voltage permanently.
When the control switch is closed, the output relay is energized and the timing period starts. When the preset time has elapsed, the relay de-energizes.
To energize the relay again, the control switch must be opened and closed again, after the relay is de-energized.

Off pulse.
The timer must be connected to the supply voltage permanently.
When the control switch is opened after having been closed, the relay is energized and the timing period starts. When the preset time has elapsed, the relay de-energizes.



On-off pulse.
The timer must be connected to supply voltage permanently.
When the control switch is opened or closed, the relay is energized and the timing period starts. When the preset time has elapsed, the relay de-energizes.
During the timing period the control switch cannot change the status of the relay.



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TECHNICAL DATA

Time ranges: 0.6-6sec, 6-60sec, 0.6-6min. 6-60min.
Full linearity between the ranges is provided i.e. an adjustment made to a specific time in seconds will give the same time in minutes just by operating the range switch.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Start pulse: Min. 30msec.

Reset time: Max. 100msec.

Input current (control switch): 3-5mA (max. 0.2A peak).

Output relay: SPDT or DPDT. 1)
Load (cosφ=1): D1/S1: Max. 8A/240V AC 4)
Min. 10mA/24VDC
S2: Max. 5A/240V AC 4)
Min. 100mA/24VDC
Contact material: D1/S1: AgNi 0,15
S2: AgCdO
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate and release time: Max. 20msec.

Mounting:
S1/S2: 11-pole plug-in.
D1: Directly on DIN rail TS35 (EN50022).

Terminals: (D1 only) Max. conductor size 4 mm^2.
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 10.5-265V AC/DC

Mains frequency: 40-440Hz.

Consumption: 0.5-3VA.

Cable lengths:
Supply voltage: Max. 50 m.
Control switch: Max. 50 m.

Protection:
S1/S2: IP40.
D1: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C.

Housing: Black Noryl SE-1.

Weight: Typically 80 g.

NOTES/REMARKS

1) Double output relay only available in S2 versions.
2) Terminals 2 and 7 (A1 & B2) are internally connected.
3) Terminals 5 and 7 (B1 & B2) are not galvanically isolated from the supply terminals 2 and 10 (A1 & A2), the control switch must therefore be approved for the actual supply voltage.
4) When inductive or DC loads are switched the load capacity of the output relay is reduced, see the output load diagrams on fig. 1 and 2. When inductive loads are switched, it is recommended to use a RC-network, see accessories on page 130, to protect the relay contacts.

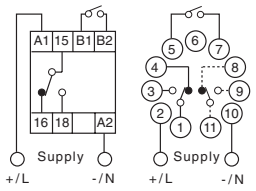
WIRING DIAGRAMS

Supply voltage above 50V.
The installation (all terminals) must be carried out according to the safety regulations! The control input and the supply input must be connected to the same circuit (phase and main switch). The output relay may only be used in circuits made according to the safety regulations.

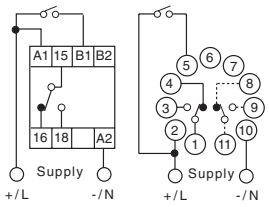
Supply voltage below 50V.
The output relay may NOT be used for voltages above 50V unless the entire supply circuit is made according to the safety regulations.

Release delay. On pulse - with control switch. Off pulse. On-Off pulse.

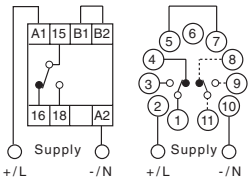
Alternative 1



Alternative 2

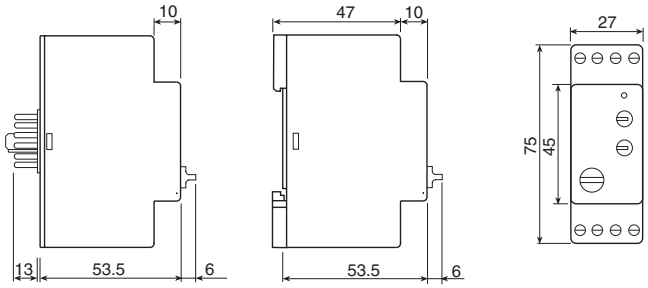


note 1-3



note 1-3

MECHANICAL DIMENSIONS



OUTPUT LOAD DIAGRAMS

Fig. 1

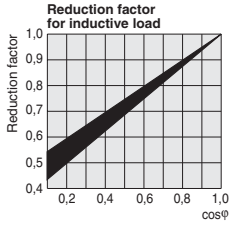
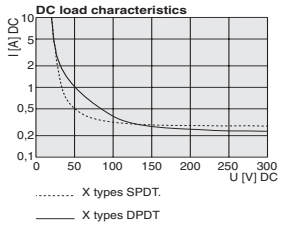


Fig. 2



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BRODERSEN

DESCRIPTION

Multifunction timer with 5 functions and 4 time ranges. The function and the time range are selectable via 2 front mounted rotary switches.
The time ranges cover 0.6sec.-60min. or 0.6min.-60hrs. The time is adjustable on the timer front.
The timer can directly be connected to the supply voltage in the range of 10.5-265V AC/DC.
Single or double relay output with LED indication of energized relay.
Intermittent flashing of LED indicating timing period (over 6 sec.).
Versions available for DIN rail or 11-pole plug-in mounting.

VERSIONS/ORDERING CODES

XMW- S 1 H

Type:
On delay.
Release delay.
On pulse - without control switch. XMW
On pulse - with control switch.
Symmetrical recycler with pause start.

Mounting:
11-pole plug-in. S
DIN rail. D

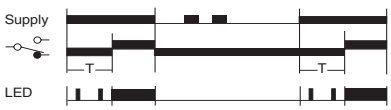
Output relay:
SPDT. 1
DPDT [1]. 2

Timing range:
0.6sec.-60min.
0.6min.-60hrs. H

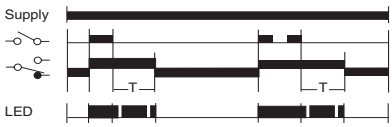
OPERATION

The function is selected via the rotary switch on the timer front. The switch may only be operated, when the supply voltage is disconnected.

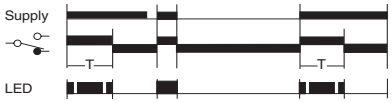
On delay.
The timing period starts when supply voltage is connected. When the preset time has elapsed, the relay is energized.
The relay is de-energized when the supply voltage is disconnected.



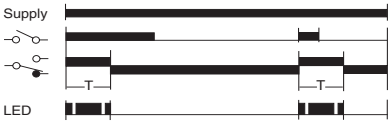
Release delay.
The timer must be connected to supply voltage permanently.
When the switch is closed, the output relay is energized. When the switch is opened again, the timing period starts.
The relay de-energizes when the preset time has elapsed.



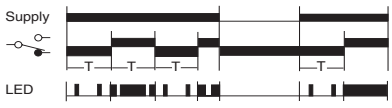
On pulse - without control switch.
A jumper must be connected between 5 and 7 (B1 and B2).
When supply voltage is connected, the relay is energized and the timing period starts. The relay de-energizes when the preset time has elapsed.



On pulse - with control switch.
The timer must be connected to supply voltage permanently.
When the control switch is closed, the output relay is energized and the timing period starts. When the preset time has elapsed, the relay de-energizes.
To energize the relay again, the control switch must be opened and closed again, after the relay is de-energized.



Symmetrical recycler with pause start.
When supply voltage is connected and the pause period has elapsed, the relay energizes. The relay remains energized during the pulse period. The sequence is repeated until the supply voltage is disconnected.
The duration of the pause and pulse periods is equal.



TECHNICAL DATA

Time ranges:

Code	Time ranges			
	0.6-6sec.	6-60sec.	0.6-6min.	6-60min.
H	0.6-6min.	6-60min.	0.6-6hrs.	6-60hrs.

Full linearity between the ranges is provided i.e. an adjustment made to a specific time in seconds will give the same time in minutes just by operating the range switch.

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Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Start pulse: Min. 30msec.

Reset time: Max. 100msec.

Input current (control switch): 3-5mA (max. 0.2A peak).

Output relay: SPDT or DPDT. [1)]
Load (cosφ=1): D1/S1: Max. 8A/240V AC [5)]
Min. 10mA/24VDC
S2: Max. 5A/240V AC [5)]
Min. 100mA/24VDC
Contact material: D1/S1: AgNi 0,15
S2: AgCdO
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate time: Max. 50msec.
Release time: Max. 20msec.

Mounting:
S1/S2: 11-pole plug-in.
D1: Directly on DIN rail TS35 (EN50022).

Terminals: (D1 only) Max. conductor size 4 mm^2.
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 10.5-265V AC/DC

Mains frequency: 40-440Hz.

Consumption: 0.5-3VA.

Cable lengths:
Supply voltage: Max. 50 m.
Control switch: Max. 50 m.

Protection:
S1/S2: IP40.
D1: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C.

Housing: Black Noryl SE-1.

Weight: Typically 80 g.

NOTES/REMARKS

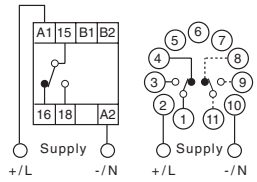
1) Double output relay only available in S2 versions.
2) Terminals 2 and 7 (A1 & B2) are internally connected.
3) Terminals 5 and 7 (B1 & B2) are not galvanically isolated from the supply terminals 2 and 10 (A1 & A2), the control switch must therefore be approved for the actual supply voltage.
4) Terminals 5 and 6 are internally connected.
5) When inductive or DC loads are switched the load capacity of the output relay is reduced, see the output load diagrams on fig. 1 and 2. When inductive loads are switched, it is recommended to use a RC-network, see accessories on page 130, to protect the relay contacts.

WIRING DIAGRAMS

Supply voltage above 50V.
The installation (all terminals) must be carried out according to the safety regulations! The control input and the supply input must be connected to the same circuit (phase and main switch). The output relay may only be used in circuits made according to the safety regulations.

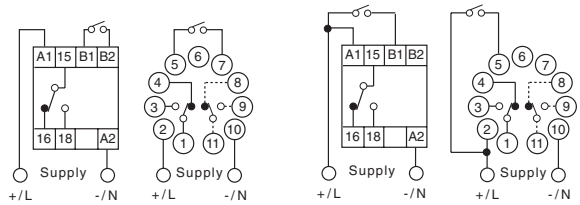
Supply voltage below 50V.
The output relay may NOT be used for voltages above 50V unless the entire supply circuit is made according to the safety regulations.

On delay. Symmetrical recycler.



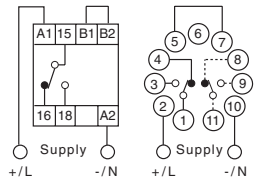
note 1-4

Release delay. On pulse - with control switch.
Alternative 1 Alternative 2



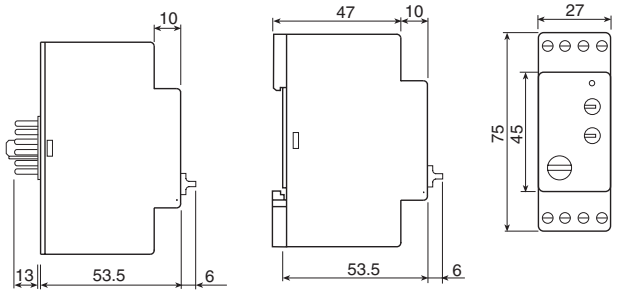
note 1-4 note 1-4

On pulse - without control switch.



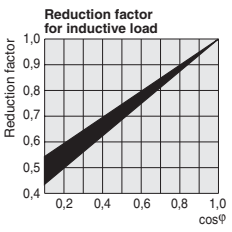
note 1-4

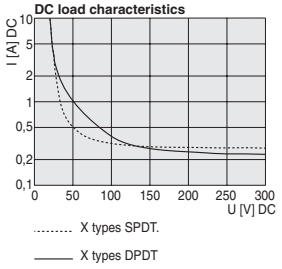
MECHANICAL DIMENSIONS



OUTPUT LOAD DIAGRAMS

Fig. 1 Fig. 2





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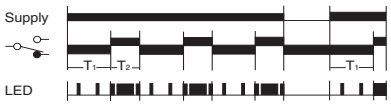
BRODERSEN

DESCRIPTION

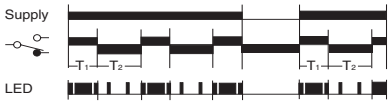
Asymmetrical recycler with 2 functions and 4 time ranges. The function is selected by mounting a jumper and the time range is selectable via the front mounted rotary switch.
The pulse and pause time ranges cover 0.6sec.-60min. or 0.6min.-60hrs. Pulse and pause time are individually adjustable on the timer front.The timer can directly be connected to the supply voltage in the range of 10.5-265V AC/DC.
Single or double relay output with LED indication of energized relay.
Intermittent flashing of LED indicating timing period (over 6 sec.).
Versions available for DIN rail or 11-pole plug-in mounting.

OPERATION

Asymmetrical recycler with pause start.
When supply voltage is connected and the pause time has elapsed, the output relay is energized. The relay remains energized through the pulse period. The sequence is repeated until the supply voltage is disconnected.
When the supply voltage is disconnected, the timer resets.



Asymmetrical recycler with pulse start.
By connecting terminals 5 and 7 (B1 and B2) the recycler starts with a pulse i.e. the relay is energized when supply voltage is applied.



Please note that the function: Pause start/pulse start is determined at power up. If the terminals 5 and 7 (B1 and B2) are connected or disconnected after power up, it will not change function.

VERSIONS/ORDERING CODES

		XT - S 1 . LH
Type:		
Asymmetrical recycler.	XT	XT
Mounting:		
11 pole plug-in.	S	S
DIN rail.	D	
Output relay:		1
SPDT.	1	
DPDT [1].	2	2
Timing range (pause/pulse):		LH
0.6sec-60min./0.6sec-60min.		
0.6sec-60min./0.6min-60hours.	LH	
0.6min-60hours. /0.6sec-60min.	HL	HL
0.6min-60hours. /0.6min-60hours.	HH	HH

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TECHNICAL DATA

Time ranges:

Code	Time ranges
	0.6-6sec.6-60sec.0.6-6min. 6-60min.
H	0.6-6min. 6-60min.0.6-6hrs. 6-60hrs.

Full linearity between the ranges is provided i.e. an adjustment made to a specific time in seconds will give the same time in minutes just by operating the range switch.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Reset time: Max. 100msec.

Output relay: SPDT or DPDT. [1)]
Load (cosφ=1): D1/S1: Max. 8A/240V AC [3)]
Min. 10mA/24VDC
S2 : Max. 5A/240V AC [3)]
Min. 100mA/24VDC
Contact material: D1/S1: AgNi 0,15
S2: AgCdO
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate time: Max. 50msec.
Release time: Max. 20msec.

Mounting:
S1/S2: 11-pole plug-in.
D1: Directly on DIN rail TS35 (EN50022).

Terminals: (D1 only) Max. conductor size 4 mm^2.
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 10.5-265V AC/DC

Mains frequency: 40-440Hz.

Consumption: 0.5-3VA.

Cable lengths:
Supply voltage: Max. 50 m.

Protection:
S1/S2: IP40.
D1: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C.

Housing: Black Noryl SE-1.

Weight: Typically 80 g.

NOTES/REMARKS

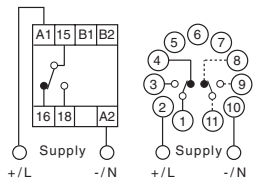
1) Double output relay only available in S2 versions.
2) Terminals 2 & 7 (A1 & B2) are internally connected.
3) When inductive or DC loads are switched the load capacity of the output relay is reduced, see the output load diagrams on fig. 1 and 2. When inductive loads are switched, it is recommended to use a RC-network, see accessories on page 130, to protect the relay contacts.

WIRING DIAGRAMS

Supply voltage above 50V.
The installation (all terminals) must be carried out according to the safety regulations! The control input and the supply input must be connected to the same circuit (phase and main switch). The output relay may only be used in circuits made according to the safety regulations.

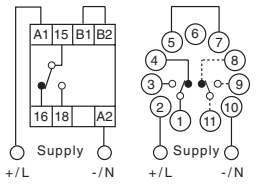
Supply voltage below 50V.
The output relay may NOT be used for voltages above 50V unless the entire supply circuit is made according to the safety regulations.

Pause start



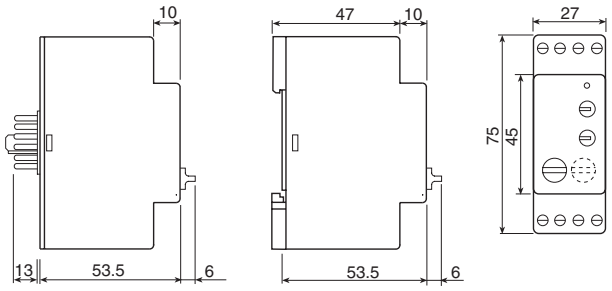
note 1, 2

Pulse start



note 1, 2

MECHANICAL DIMENSIONS



OUTPUT LOAD DIAGRAMS

Fig. 1

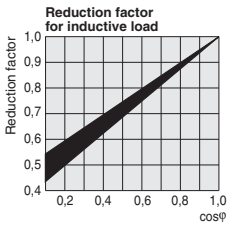
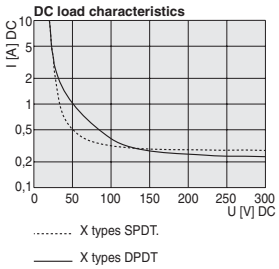


Fig. 2



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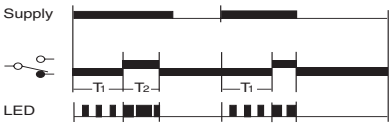
BRODERSEN

DESCRIPTION

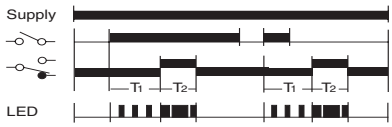
One shot asymmetrical timer with 4 time ranges.
The time range is selectable via the front mounted rotary switch.
The pulse and pause time ranges cover 0.6sec.-60min. or 0.6min.-60hrs. Pulse and pause time are individually adjustable on the timer front.The timer can directly be connected to the supply voltage in the range of 10.5-265V AC/DC.
Single or double relay output with LED indication of energized relay.
Intermittent flashing of LED indicating timing period (over 6 sec.).
Versions available for DIN rail or 11-pole plug-in mounting.

OPERATION

One-shot asymmetrical without control switch.
A jumper must be connected between 5 and 7 (B1 and B2).
When supply voltage is connected and the pause time has elapsed, the output relay is energized. The relay remains energized through the pulse period and de-energize when the puls period has elapsed.
This is one time sequenze (one shot).



One-shot asymmetrical with control switch.
The timer must be connected to supply permanently.
When the switch is closed, the pause timing period starts. When the preset pause time has elapsed, the output relay is energized. The relay remains energized through the pulse period and de-energize when the puls period has elapsed.
To start a one-shot sequenze again, the control switch must be opened and closed again, after the relay is de-energized.



VERSIONS/ORDERING CODES

XOT- S 1 . LH

Type:
One shot asymmetrical. XOT

Mounting:
11 pole plug-in. S
DIN rail. D

Output relay:
SPDT. 1
DPDT [1]. 2

Timing range (pause/pulse):
0.6sec-60min./0.6sec-60min.
0.6sec-60min./0.6min-60hours. LH
0.6min-60hours. /0.6sec-60min. HL
0.6min-60hours. /0.6min-60hours. HH

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E-mail: ba@brodersen.de

TECHNICAL DATA

Time ranges:

Code	Time ranges
	0.6-6sec.6-60sec.0.6-6min. 6-60min.
H	0.6-6min. 6-60min.0.6-6hrs. 6-60hrs.

Full linearity between the ranges is provided i.e. an adjustment made to a specific time in seconds will give the same time in minutes just by operating the range switch.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Reset time: Max. 100msec.

Output relay: SPDT or DPDT. [1)]
Load (cosφ=1): D1/S1: Max. 8A/240V AC [5)]
Min. 10mA/24VDC
S2 : Max. 5A/240V AC [5)]
Min. 100mA/24VDC
Contact material: D1/S1: AgNi 0,15
S2: AgCdO
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate time: Max. 50msec.
Release time: Max. 20msec.

Mounting:
S1/S2: 11-pole plug-in.
D1: Directly on DIN rail TS35 (EN50022).

Terminals: (D1 only) Max. conductor size 4 mm^2.
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 10.5-265V AC/DC

Mains frequency: 40-440Hz.

Consumption: 0.5-3VA.

Cable lengths:
Supply voltage: Max. 50 m.

Protection:
S1/S2: IP40.
D1: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C.

Housing: Black Noryl SE-1.

Weight: Typically 80 g.

NOTES/REMARKS

1) Double output relay only available in S2 versions.
2) Terminals 2 and 7 (A1 & B2) are internally connected.
3) Terminals 5 and 7 (B1 & B2) are not galvanically isolated from the supply terminals 2 and 10 (A1 & A2), the control switch must therefore be approved for the actual supply voltage.
4) Terminals 5 and 6 are internally connected.
5) When inductive or DC loads are switched the load capacity of the output relay is reduced, see the output load diagrams on fig. 1 and 2. When inductive loads are switched, it is recommended to use a RC-network, see accessories on page 130, to protect the relay contacts.

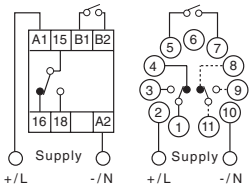
WIRING DIAGRAMS

Supply voltage above 50V.
The installation (all terminals) must be carried out according to the safety regulations! The control input and the supply input must be connected to the same circuit (phase and main switch). The output relay may only be used in circuits made according to the safety regulations.

Supply voltage below 50V.
The output relay may NOT be used for voltages above 50V unless the entire supply circuit is made according to the safety regulations.

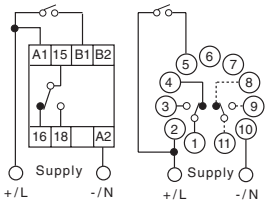
Function - with control switch.

Alternative 1



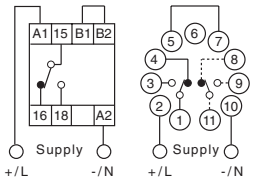
Note 1-4

Alternative 2



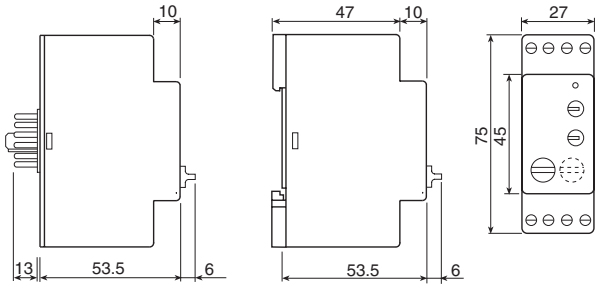
Note 1-4

Function - Without control switch.



Note 1-4

MECHANICAL DIMENSIONS



OUTPUT LOAD DIAGRAMS

Fig. 1

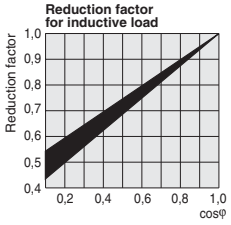
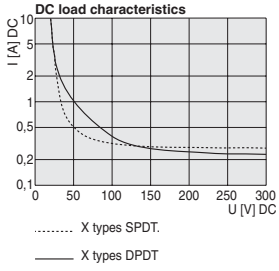


Fig. 2



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BRODERSEN

DESCRIPTION

Multifunction timer with 5 functions and 4 time ranges. The function and the time range are selectable via 2 front mounted rotary switches.
Time ranges: 0.1-1sec, 1-10sec, 0.1-1min, 1-10min. The time is adjustable on the timer front.
The timer can be supplied from a.c. mains(10/A2) or from 12-24V AC/DC (11/A3) depending on the terminal used.
Solid state output with triac (AC) or transistor (DC) with LED indication of energized output. Intermittent flashing of LED indicating timing period (over 6 sec.).The version with a.c. output includes zero voltage switching. Supply and output are galvanically isolated.
Versions available for DIN rail or 11-pole plug-in mounting.

VERSIONS/ORDERING CODES

SXM - S A 230

Type:
On delay.
Release delay.
On pulse - without control switch. SXM
On pulse - with control switch.
Symmetrical recycler with pause start.

Mounting:
11-pole plug-in. S
DIN rail. D

Output:
AC. (12-240V). A
DC (12-48V). D

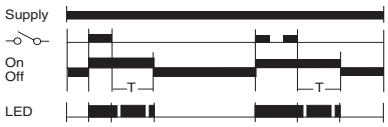
Supply voltage:
110/120V AC/12-24V AC/DC 115
220/240V AC/12-24V AC/DC 230

OPERATION

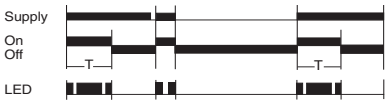
The function is selected via the rotary switch on the timer front. The switch may only be operated, when the supply voltage is disconnected.

On delay.
The timing period starts when the supply voltage is connected. When the preset time has elapsed, the output is energized.
The output is de-energized when the supply voltage is disconnected.

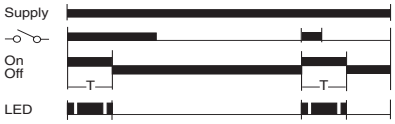
Release delay.
The timer must be connected to supply voltage permanently.
When the switch is closed, the output is energized. When the switch is opened again, the timing period starts.
The output is de-energized when the preset time has elapsed.



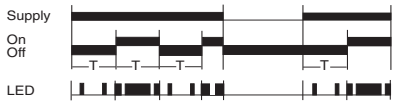
On pulse - without control switch.
A jumper must be connected between 5 and 7 (B1 and B2).
When supply voltage is connected, the output is energized and the timing period starts. The output is de-energized when the preset time has elapsed.



On pulse - with control switch.
The timer must be connected to supply voltage permanently.
When the control switch is closed, the output is energized and the timing period starts. When the preset time has elapsed, the output de-energizes.
To energize the output again, the control switch must be opened and closed again, after the output is de-energized.



Symmetrical recycler with pause start.
When supply voltage is connected and the pause period has elapsed, the output is energized. The output remains energized during the pulse period. The sequence is repeated until the supply voltage is disconnected.
The duration of the pause and pulse periods is equal.



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TECHNICAL DATA

Time ranges: 0.1-1sec, 1-10sec, 0.1-1min, 1-10min.
Full linearity between the ranges is provided, i.e. an adjustment made to a specific time in seconds will give the same time in minutes just by operating the range switch.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Start pulse: Min. 30msec.

Reset time: Max. 100msec.

Input current (control switch): 3-5mA (max. 0.2A peak).

Output :
Load (cosφ=1): DC: Max. 2A/60V (3A/60V peak). [1) on page 17]
AC: Max. 1A/240V (1.5A/240V peak). [1) on page 17]
Voltage: DC: 12-48V (10-60V).
AC: 12-240 V (10-265V).
Minimum current: DC: 0.
AC: 5mA/cosφ>0.25.
Voltage drop: DC: Max. 0.2V.
AC: Max. 1.2V.
Leakage current: DC: Max. 0.1mA.
AC: Max. 1mA.
Release time: Typ. 20msec.

Mounting:
S: 11-pole plug-in.
D: Directly on DIN rail TS35 (EN50022).

Terminals: (D1 only) Max. conductor size 4 mm².
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 110/120V AC (95-135V) and
12-24V AC/DC (10-30V).
220/240V AC (195-265V) and
12-24V AC/DC (10-30V).

Mains frequency: 47-63Hz.

Consumption: 0.5-3VA.

Cable lengths:
Supply voltage: Max. 25 m.
Control switch: Max. 50 m.

Protection:
S: IP40.
D: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to output: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C. [1) on page 16]

Housing: Black Noryl SE-1.

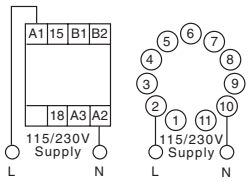
Weight: Approx. 80 g.

WIRING DIAGRAMS

Supply voltage above 50V.
The installation (all terminals) must be carried out according to the safety regulations! The control input and the supply input must be connected to the same circuit (phase and main switch). The output may only be used in circuits made according to the safety regulations.

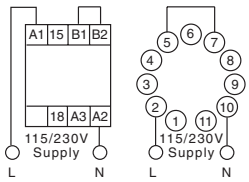
Supply voltage below 50V.
The output may NOT be used for voltages above 50V unless the entire supply circuit is made according to the safety regulations.

On delay. Symmetrical recycler.



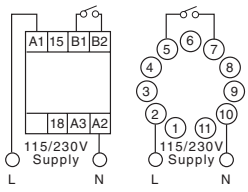
See notes on page 17

On pulse (without control switch).



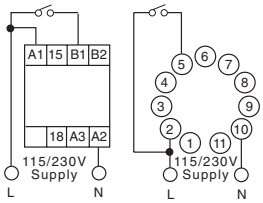
See notes on page 17

Release delay. On pulse (with control switch).
Alternative 1



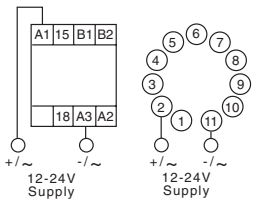
See notes on page 17

Alternative 2

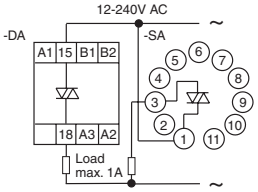


See notes on page 17

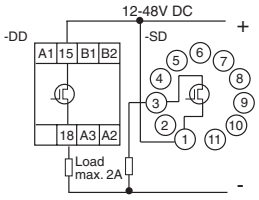
12-24V supply (all functions).



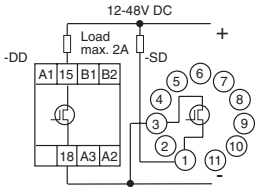
AC output.



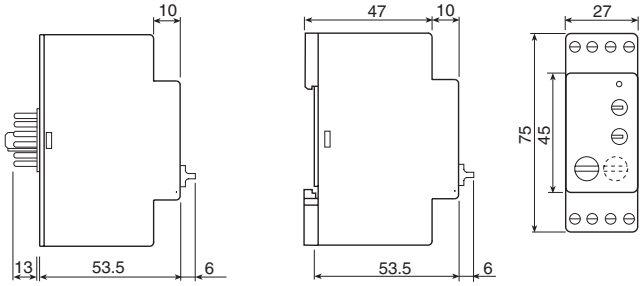
DC output.
Negative common



Positive common



MECHANICAL DIMENSIONS, SXM & SXT



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BRODERSEN

DESCRIPTION

Asymmetrical recycler with 2 functions and 4 time ranges. The function is selected by mounting a jumper and the time range is selectable via the front mounted rotary switch.
Time ranges: 0.1-1sec, 1-10sec, 0.1-1min, 1-10min. The pulse and pause times are individually adjustable on the timer front.
The timer can be supplied from a.c. mains (10/A2) or from 12-24V AC/DC (11/A3) depending on the terminal used.
Solid state output with triac (AC) or transistor (DC) with LED indication of energized output. Intermittent flashing of LED indicating timing period (over 6 sec.). The version with AC output includes zero voltage switching. Supply and output are galvanically isolated.
Versions available for DIN rail or 11-pole plug-in mounting.

OPERATION

Asymmetrical recycler with pause start.
When supply voltage is connected and the pause time has elapsed, the output is energized. The output remains energized during the pulse period. The sequence is repeated until the supply voltage is disconnected.
When the supply voltage is disconnected, the timer resets.

Asymmetrical recycler with pulse start.
By connecting terminals 5 and 7 (B1 and B2) the recycler starts with a pulse, i.e. the output is energized when supply voltage is applied.

Please note that the function: Pause start/pulse start is determined at power up. If the terminals 5 and 7 (B1 and B2) are connected or disconnected after power up, it will not change function.

VERSIONS/ORDERING CODES

SXT - S A 230

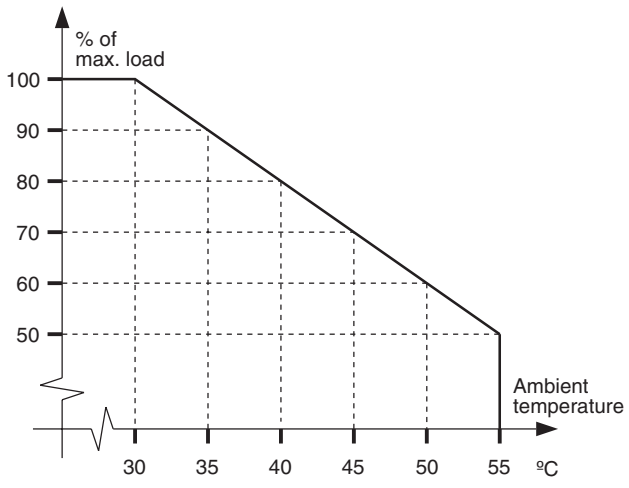
Type:
Asymmetrical recycler. SXT

Mounting:
11-pole plug-in. S
DIN rail. D

Output:
AC (12-240V) A
DC (12-48V) D

Supply voltage:
110/120VAC/12-24V AC/DC 115
220/240V AC/12-24V AC/DC 230

OUTPUT LOAD DIAGRAM, SXM & SXT



note 1

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TECHNICAL DATA

Time ranges: 0.1-1sec, 1-10sec, 0.1-1min, 1-10min.
Full linearity between the ranges is provided, i.e. an adjustment made to a specific time in seconds will give the same time in minutes just by operating the range switch.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Reset time: Max. 100msec.

Output:
Load (cosφ=1): DC: Max. 2A/60V (3A/60V peak). 1)
AC: Max. 1A/240V (1.5A/240V peak). 1)
Voltage: DC: 12-48V (10-60V).
AC: 12-240 V (10-265V).
Minimum current: DC: 0.
AC: 5mA/cosφ>0.25.
Release time: Typ. 20msec.
Voltage drop: DC: Max. 0.2V.
AC: Max. 1.2V.
Leakage current: DC: Max. 0.1mA.
AC: Max. 1mA.

Mounting:
S: 11-pole plug-in.
D: Directly on DIN rail TS35 (EN50022).

Terminals: (D1 only) Max. conductor size 4 mm².
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 110/120V AC (95-135V) and
12-24V AC/DC (10-30V).
220/240V AC (195-265V) and
12-24V AC/DC (10-30V).

Mains frequency: 47-63Hz.

Consumption: 0.5-3VA.

Cable lengths:
Supply voltage:Max. 25 m.

Protection:
S: IP40.
D: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to output: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C. 1)

Housing: Black Noryl SE-1.

Weight: Approx. 80 g.

NOTES/REMARKS, SXM & SXT

1) At high ambient temperature the output current must be derated, see the output load diagram on page 16. If the output is energized for less than 2 seconds the load may be calculated as:

$$\frac{I_{load} \times t_{pulse}}{t_{pulse} + t_{pause}}$$ (Max 3A DC/1.5A AC)

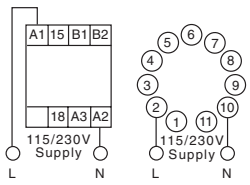
If energized for more than 2 seconds the load equals I_{load}.
2) Terminals 2 and 7 (A1 & B2) are internally connected.
3) Terminals 5 and 7 (B1 & B2) are not galvanically isolated from the supply terminals 2 and 10 (A1 & A2), the control switch must therefore be approved for the actual supply voltage.

WIRING DIAGRAMS

Supply voltage above 50V.
The installation (all terminals) must be carried out according to the safety regulations! The control input and the supply input must be connected to the same circuit (phase and main switch). The output may only be used in circuits made according to the safety regulations.

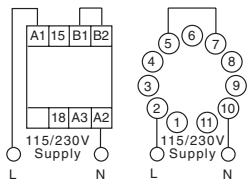
Supply voltage below 50V.
The output may NOT be used for voltages above 50V unless the entire supply circuit is made according to the safety regulations.

Pause start.



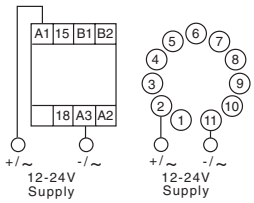
note 1-3

Pulse start.

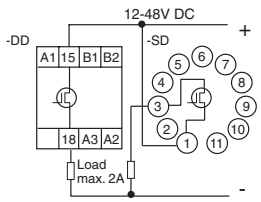


note 1-3

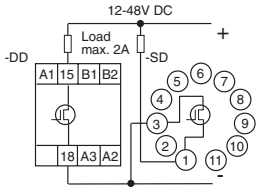
12-24V supply (all functions).



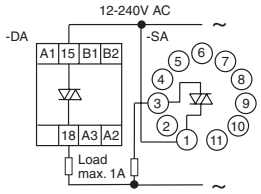
DC output.
Negative common



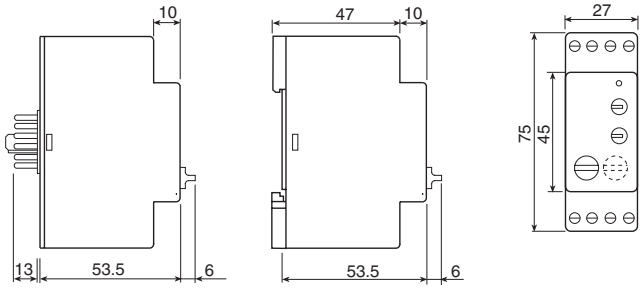
Positive common



AC output.



MECHANICAL DIMENSIONS, SXM & SXT



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BRODERSEN

DESCRIPTION

Multifunction timer with 4 functions and 4 time ranges. The function and the time range are selectable via 2 front mounted rotary switches.
The time ranges cover 0.1sec.-10min. or 1min.-100hours. The time is adjustable on the timer front.
The timer is available in different versions for AC or DC supply voltage.Single or double output relay or NPN transistor output with LED indica-tion of energized output.
Options as remote timer start or timer interrupt from control switch or NPN sensor and remote time adjustment are available.
Versions available for DIN rail or 11-pole plug-in mounting.

VERSIONS/ORDERING CODES

TXM - S 1 230 . L / E

Type:	
On delay. On pulse. Symmetrical recycler.	TXM
Mounting:	
11-pole plug-in.	S
DIN rail.	D
Output relay:	
SPDT.	1
DPDT.	2
Supply voltage:	
12V AC/DC	912
24V AC/DC	924
24V AC	024
110/120V AC	115
220/240V AC	230
380/415V AC	400
Timing range:	
0.1sec.-10min.	L
1min.-100hours.	H
Options:	
Remote time adjustment.	E
Remote timer start.	H [1]
Remote timer interrupt.	S [1]
Transistor output.	N

OPERATION

The function is selected via the rotary switch on the timer front. The switch may only be operated, when supply voltage is disconnected.

On delay.
The timing period starts when supply voltage is connected. When the preset time has elapsed, the relay is energized.
The relay is de-energized when the supply voltage is disconnected.

On pulse.
When supply voltage is connected, the relay is energized and the timing period starts. The relay de-energizes when the preset time has elapsed.

Symmetrical recycler with pause or pulse start.
Depending on the setting of the function switch the timer starts with e.g a pause, when supply voltage is connected. When the pause period has elapsed, the relay energizes. The relay remains energized during the pulse period. The sequence is repeated until the supply voltage is disconnected.
The duration of the pause and pulse periods is equal.

OPTIONS

Remote time adjustment. E
Connection for remote potentiometer. The timer is without the potentiometer knob on the timer front.

Remote timer start. H [1]
The timer is controlled from a switch or an NPN sensor instead of the supply voltage which must be connected permanently.
If the supply voltage is disconnected the output relay de-energizes.

Remote timer interrupt. S [1]
The timing period is interrupted by closing the remote control switch. The timing resumes when the control switch is opened again.

Transistor output. N
The open collector NPN transistor output should be used when a high switching frequency is required. The transistor output may be connected to a solid state relay.

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TECHNICAL DATA

Time ranges:

Code	Time ranges			
L	0.1-1sec.	1-10sec.	0.1-1min.	1-10min.
H	1-10min.	10-100min.	1-10hrs.	10-100hrs.

Full linearity between the ranges is provided i.e. an adjustment made to a specific time in seconds will give the same time in minutes just by operating the range switch.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Start time: Min. 10msec.

Reset time: Max. 100msec.

Input current (control switch): 2-3mA.

Output relay: SPDT or DPDT.
Load (cosφ=1): Max. 5A/240V AC 2) on page 5
Min. 100mA/24VDC
Contact material: AgCdO.
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate and release time: Max. 20msec.

Transistor output (option N only):
Load: Max. 100mA/30V DC
Frequency: Max. 18,000 operations per hour.

Internal power supply:
Voltage: Typ. 15-17V DC (9-23V depending on supply voltage and load).
Load: Max. 10mA (30mA with transistor output).

Mounting:
S1/S2: 11-pole plug-in.
D1/D2: Directly on DIN rail TS35 (EN50022).

Terminals(D1/D2 only): Max. conductor size 4 mm^2.
Screw type terminals with self-lifting clamps shrouded in accordance with VDE0106 (finger and back of hand protection).

Supply voltage: 12V AC/DC (10-15V), 24V AC/DC (18-30V), 24V AC (21.6-26.4V), 110/120V AC (95- 135V), 220/240V AC (195-265V), 380/415V AC (340-460V).

DC supply voltage rise time: Max. 20msec. (10-90% of nom. supply).

Mains frequency: 45-66Hz.

Consumption: 1-3VA.

Cable lengths:

Supply voltage:	Max. 50 m.
Remote start:	Max. 50 m.
Remote interrupt:	Max. 1 m.
Remote pot.meter:	Max. 3 m unshielded. Max. 25 m shielded.

Protection:
S/D: IP40/IP20

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

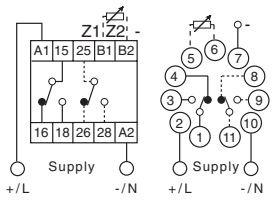
Ambient temperature: -20 to +55°C.

Housing: Black Noryl SE-1.

Weight: Typically 120 g.

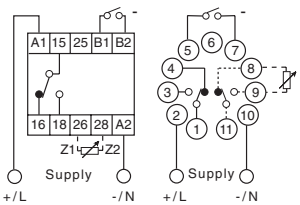
WIRING DIAGRAMS

Standard.



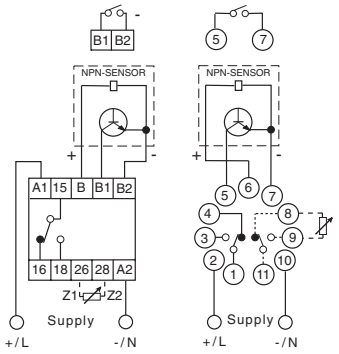
note 2

Remote timer interrupt.



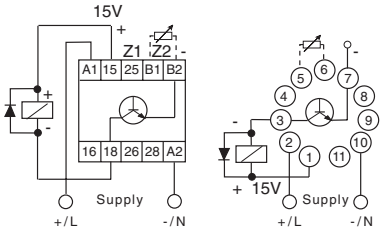
note 1, 2

Remote timer start.



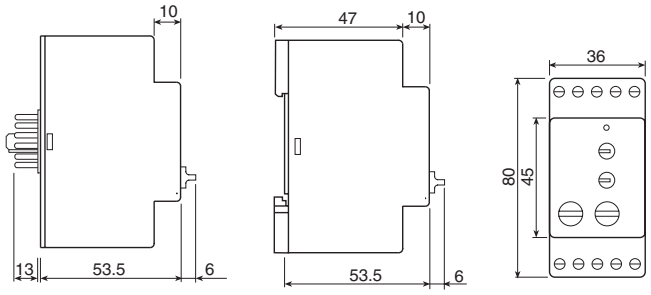
note 1, 2

Transistor output.



note 2

MECHANICAL DIMENSIONS



NOTES/REMARKS

1) Timers for DIN rail mounting with remote timer start or interrupt are only available with a single output relay.
Timers for plug-in mounting with remote time adjustment and timer start or interrupt are only available with a single output relay.
Remote timer start and interrupt cannot be combined.
2) The potentiometer is only used with remote time adjustment.

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BRODERSEN

DESCRIPTION

Multifunction timer with 4 functions and 4 time ranges. The function and the time range are selectable via 2 front mounted rotary switches.
The time ranges cover 0.1sec-10min or 1min-100hours. The time is adjustable on the timer front.
The timer is available in different versions for AC or DC supply voltage.Single or double output relay or NPN transistor output with LED indica-tion of energized output.
Optional remote time adjustment is available.
Versions available for DIN rail or 11-pole plug-in mounting.

VERSIONS/ORDERING CODES

TXW - S 1 230 . L / E

Type:
Release delay.
On pulse. TXW
Off pulse.
On-off pulse.

Mounting:
11-pole plug-in. S
DIN rail. D

Output relay:
SPDT. 1
DPDT. 2

Supply voltage:
12V AC/DC 912
24V AC/DC 924
24V AC 024
110/120V AC 115
220/240V AC 230
380/415V AC 400

Timing range:
0.1sec.-10min. L
1min.-100hours. H

Options:
Remote time adjustment. E [1)]
Transistor output. N

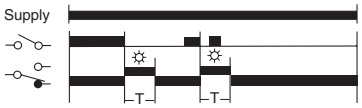
OPERATION

The function is selected via the rotary switch on the timer front. The switch may only be operated, when supply voltage is disconnected.

Release delay.
Supply voltage must be connected permanently. When the switch is closed, the output relay is energized. When the switch is opened again, the timing period starts.
The relay de-energizes when the preset time has elapsed.

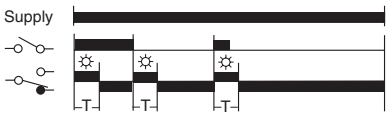
On pulse.
Supply voltage must be connected permanently. When the control switch is closed, the output relay is energized and the timing period starts. When the preset time has elapsed, the relay de-energizes. To energize the relay again the control switch must be opened and closed again, after the relay is de-energized.

Off pulse.
Supply voltage must be connected permanently. When the control switch is opened after having been closed, the relay is energized and the timing period starts. When the preset time has elapsed, the relay de-energizes.



On-off pulse.

Supply voltage must be connected permanently. When the control switch is opened or closed, the relay is energized and the timing period starts. When the preset time has elapsed, the relay de-energizes.
During the timing period the control switch cannot change the status of the relay.



OPTIONS

Remote time adjustment. E [1)]
Connection for remote potentiometer. The timer is without the potentiometer knob on the timer front.

Transistor output. N
The open collector NPN transistor output should be used when a high switching frequency is required. The transistor output may be connected to a solid state relay.

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TECHNICAL DATA

Time ranges:

Code	Time ranges
L	0.1-1sec.1-10sec. 0.1-1min.1-10min.
H	1-10min. 10-100min.1-10hrs. 10-100hrs

Full linearity between the ranges is provided i.e. an adjustment made to a specific time in seconds will give the same time in minutes just by operating the range switch.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Start time: Min. 10msec.

Reset time: Max. 100msec.

Input current (control switch): 2-3mA.

Output relay: SPDT or DPDT. [3]
Load (cosφ=1): Max. 5A/240V AC. [2] on page 5
Min. 100mA/24VDC
Contact material: AgCdO.
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate and release time: Max. 20msec.

Transistor output (option N only):
Load: Max. 100mA/30V DC
Frequency: Max. 18,000 operations per hour.

Internal power supply:
Voltage: Typ. 15-17V DC (9-23V depending on sup ply voltage and load).
Load: Max. 10mA (30mA with transistor output).

Mounting:
S1/S2: 11-pole plug-in.
D1/D2: Directly on DIN rail TS35 [3] (EN50022).

Terminals (D1/D2 only): Max. conductor size 4 mm^2.
Screw type terminals with self-lifting clamps shrouded in accordance with VDE0106 (finger and back of hand protection).

Supply voltage: 12V AC/DC (10-15V),24V AC/DC (18-30V)24V AC (21.6-26.4V),110/120V AC (95-135V),220/240V AC (195-265V), 380/415V AC (340-460V).

DC supply voltage rise time: Max. 20msec. (10-90% of nom. supply voltage).

Mains frequency: 45-66Hz.

Consumption: 1-3VA.

Cable lengths:
Supply voltage: Max. 50 m.
Control switch: Max. 50 m.
Remote pot.meter: Max. 3 m unshielded.
Max. 25 m shielded.

Protection:
S1/S2: IP40.
D1/D2: IP20.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

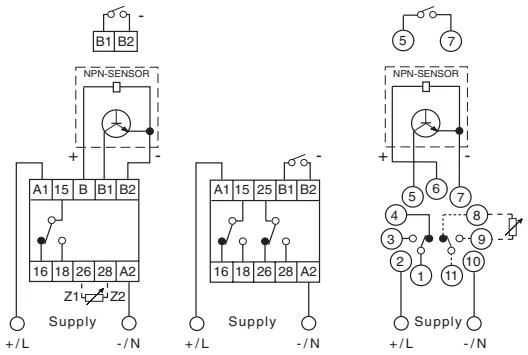
Ambient temperature: -20 to +55°C.

Housing: Black Noryl SE-1.

Weight: Typically 120 g.

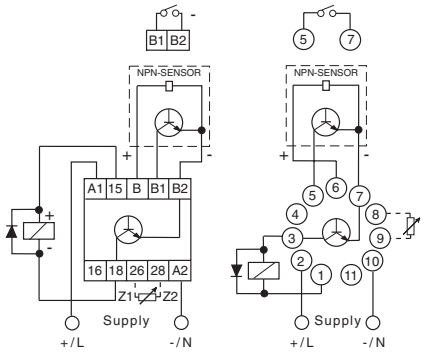
WIRING DIAGRAMS

Standard.



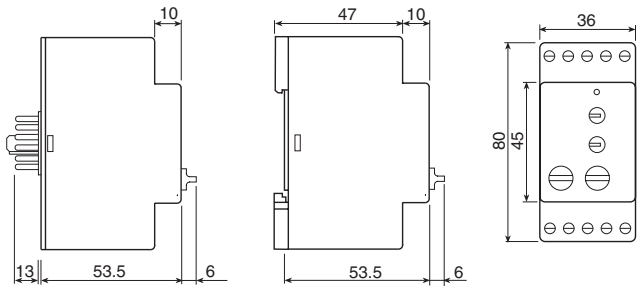
note 1-3

Transistor output.



note 1-3

MECHANICAL DIMENSIONS



NOTES/REMARKS

1) Timers with remote time adjustment are only available with a single output relay.
2) The potentiometer is only used with remote time adjustment.
3) Timers for DIN rail mounting with double output relay cannot be controlled from an NPN sensor.

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BRODERSEN

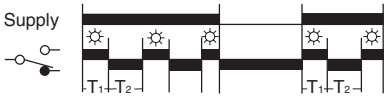
DESCRIPTION

Multifunction timer with 2 functions and 4 time ranges. The function is selected by mounting a jumper and the time range is selectable via the front mounted rotary switch.
Pulse and pause time are individually selectable within the ranges 0.1sec.-100hours.
Pulse and pause time are individually adjustable on the timer front.
The timer is available in different versions for AC or DC supply voltage.
Single or double output relay or NPN transistor output with LED indica-tion of energized output.
Options as timer interrupt from control switch and remote time adjustment are available.
Versions available for DIN rail or 11-pole plug-in mounting.

OPERATION

Pause start.
When supply voltage is connected and the pause time has elapsed, the output relay is energized. The relay remains energized during the pulse period. The sequence is repeated until the supply voltage is disconnected.
When the supply voltage is disconnected, the timer resets.

Pulse start.
By connecting terminals 5 and 7 (B1 and B2) the recycler starts with a pulse i.e. the relay is energized when supply voltage is applied.



VERSIONS/ORDERING CODES

TXT - S 1 230 . LL / E

Type:
Asymmetrical recycler. TXT

Mounting:
11-pole plug-in. S
DIN rail. D

Output relay:
SPDT. 1
DPDT. 2

Supply voltage:
12V AC/DC 912
24V AC/DC 924
24V AC 024
110/120V AC 115
220/240V AC 230
380/415V AC 400

Timing range(pause/pulse):
0.1sec.-10min./0.1sec.-10min. LL
0.1sec.-10min./1min.-100hours. LH
1min.-100hours/0.1.sec-10min. HL
1min.-100hours/1min.-100hours. HH

Options:
Remote time adjustment. E [1)]
Remote timer interrupt. S [2)]
Transistor output. N

OPTIONS

Remote time adjustment. **E** [1)]
Connection for remote potentiometers. The timer is without the potentiometer knobs on the timer front.

Remote timer interrupt. **S** [2)]
The timing period is interrupted by closing the remote control switch. The timing resumes when the control switch is opened again.

Transistor output. **N**
The open collector NPN transistor output should be used when a high switching frequency is required. The transistor output may be connected to a solid state relay.

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TECHNICAL DATA

Time ranges:

Code	Pause	Pulse
LL	0.1sec.-10min.	0.1sec.10min.
LH	0.1sec.-10min.	1min.-100hrs.
HL	1min.-100hrs.	0.1sec.-10min.
HH	1min.-100hrs.	1min.-100hrs.

Full linearity between the ranges is provided i.e. an adjustment made to a specific time in seconds will give the same time in minutes just by operating the range switch.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Reset time: Max. 100msec.

Input current (control switch): 2-3mA.

Output relay: SPDT or DPDT.
Load (cosφ=1): Max. 5A/240V AC [2) on page 5]
Min. 100mA/24VDC
Contact material: AgCdO.
Frequency: Max. 1000 operations per our at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate and release time: Max. 20msec.

Transistor output (option N only):
Load Max. 100mA/30V DC
Frequency: Max. 18,000 operations per hour.

Internal power supply (option N only):
Voltage: Typ. 12-15V DC (12V supply voltage).
Load: Max. 30mA.

Mounting:
S1/S2: 11-pole plug-in.
D1/D2: Directly on DIN rail TS35 (EN50022).

Terminals (D1/D2 only): Max. conductor size 4 mm^2.
Screw type terminals with self-lifting clamps shrouded in accordance with VDE0106 (finger and back of hand protection).

Supply voltage: 12V AC/DC (10-15V),
24V AC/DC (18-30V),
24V AC (21.6-26.4V),
110/120V AC (95-135V),
220/240V AC (195-265V),
380/415V AC (340-460V).

DC supply voltage rise time: Max. 20msec. (10-90% of nom. supply voltage).

Mains frequency: 45-66Hz.

Consumption: 1-3VA.

Cable lengths:
Supply voltage: Max. 50 m.
Remote interrupt: Max. 1 m.
Remote pot.meters: Max. 3 m unshielded.
Max. 25 m shielded.

Protection:
S1/S2: IP40.
D1/D2: IP20.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

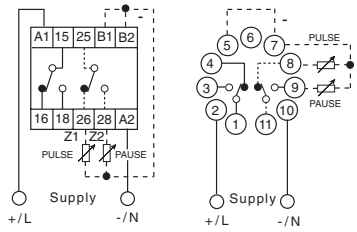
Ambient temperature: -20 to +55°C.

Housing: Black Noryl SE-1.

Weight: Typically 120 g.

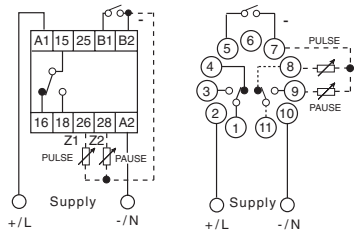
WIRING DIAGRAMS

Standard.



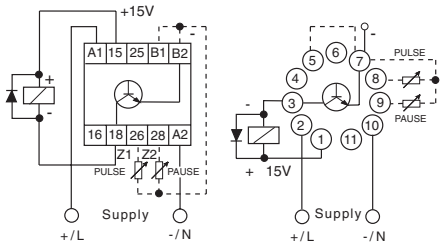
note 3

Remote timer interrupt.



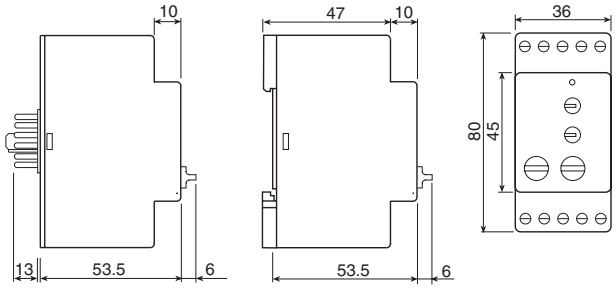
note 2, 3

Transistor output



note 3

MECHANICAL DIMENSIONS



NOTES/REMARKS

1) Timers with remote time adjustment are only available with a single output relay.
2) Timers for DIN rail mounting with remote timer interrupt are only available with a single output relay.
3) The potentiometers are only used with remote time adjustment.

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BRODERSEN

DESCRIPTION

Timer with on delay function.
Fixed time ranges: 0.1-3sec, 1-30sec, 0.1-3min or 1-30min. The time is adjustable on the timer front.
The timer is available in different versions for AC and DC supply voltage.
Single or double relay output with LED indication of energized relay.
Versions available for DIN rail or 11-pole plug-in mounting.

OPERATION

On delay.
The timing period starts when supply voltage is connected. When the preset time has elapsed, the relay is energized.
The relay is deenergized when the supply voltage is disconnected. If the supply voltage is disconnected before the preset time has elapsed, the timer resets.

VERSIONS/ORDERING CODES

		XI	-	S	1	230	N1
Type:							
On delay.	XI	✓					
Mounting:							
11-pole plug-in.	S			✓			
DIN rail.	D						
Output relay:							
SPDT.	1				✓		
DPDT.	2						
Supply voltage:							
24V AC/DC	024					✓	
48V AC/DC	048						
110/120V AC	115						
220/240V AC	230						
380/415V AC	400						
Timing range:							
0.1-3sec.	N1						✓
1-30sec.	N2						
0.1-3min.	N3						
1-30min	N4						

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TECHNICAL DATA

Time ranges: 0.1-3sec, 1-30sec, 0.1-3min, 1-30min.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Reset time: Max. 100msec.

Output relay: SPDT or DPDT. [1)]
Load (cosφ=1): D1/S1: Max. 8A/240V AC [2)]
Min. 10mA/24VDC
D2/S2: Max. 5A/240V AC [2)]
Min. 100mA/24VDC
Contact material: D1/S1: AgNi 0,15
D2/S2: AgCdO
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate and release time: Max. 20msec.

Mounting:
S1/S2: 11 pole plug-in.
D1/D2: Directly on DIN rail TS35 (EN50022).

Terminals: Max. conductor size 4 mm^2.
(D1/D2 only)
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 24V AC/DC (20-28V),
48V AC/DC (40-56V),
110/120V AC (95-135V),
220/240V AC (195-265V),
380/415V AC (340-460V).

Mains frequency: 40-60Hz.

Consumption: 0.3-5VA.

Cable lengths:
Supply voltage: Max. 50 m.

Protection:
S1/S2: IP40.
D1/D2: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C.

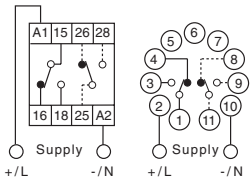
Housing: Black Noryl SE-1.

Weight: Typically 80 g.

NOTES/REMARKS

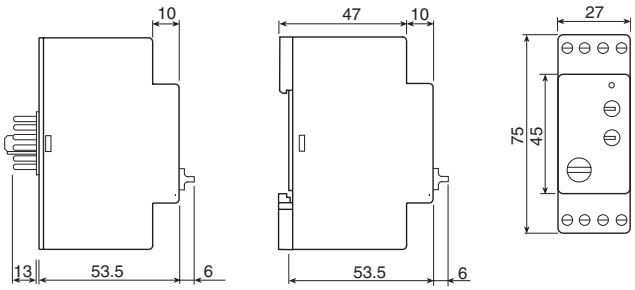
1) Double output relay available in S2/D2 versions.
2) When inductive or DC loads are switched the load capacity of the output relay is reduced, see the output load diagrams on fig. 1 and 2. When inductive loads are switched, it is recommended to use a RC-network, see accessories on page 130, to protect the relay contacts.

WIRING DIAGRAMS



note 1

MECHANICAL DIMENSIONS



OUTPUT LOAD DIAGRAMS

Fig. 1

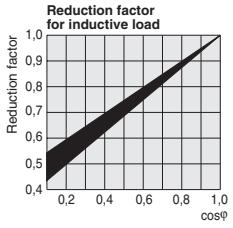
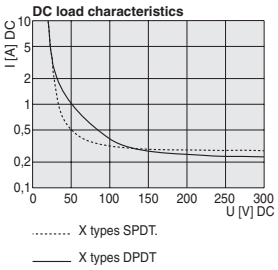


Fig. 2



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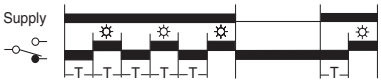
BRODERSEN

DESCRIPTION

Timer with symmetrical recycler function.
Fixed time range: 0.1-3sec, 1-30sec, 0.1-3min. or 1-30min. The time is adjustable on the timer front.
The timer is available in different versions for AC and DC supply voltage.
Single or double relay output with LED indication of energized relay.
Versions available for DIN rail or 11-pole plug-in mounting.

OPERATION

Symmetrical recycler.
When supply voltage is connected and the pause period has elapsed, the relay energizes. The relay remains energized during the pulse period.
The sequence is repeated until the supply voltage is disconnected.
The duration of the pause and pulse periods is equal.



VERSIONS/ORDERING CODES

		XB	-	S	1	230	N1
Type:							
Symmetrical recycler.	XB						
Mounting:							
11 pole plug-in.	S						
DIN rail.	D						
Output relay:							
SPDT.	1						
DPDT.	2						
Supply voltage:							
24V AC/DC	024						
48V AC/DC	048						
110/120V AC	115						
220/240V AC	230						
380/415V AC	400						
Timing ranges:							
0.1-3sec.	N1						
1-30sec.	N2						
0.1-3min.	N3						
1-30min.	N4						

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TECHNICAL DATA

Time ranges: 0.1-3sec, 1-30sec, 0.1-3min, 1-30min.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Reset time: Max. 100msec.

Output relay: SPDT or DPDT. [1)]
Load (cosφ=1): D1/S1: Max. 8A/240V AC [2)]
Min.10mA/24V DC
D2/S2: Max. 5A/240V AC [2)]
Min.100mA/24V DC
Contact material: D1/S1: AgNi 0,15
D2/S2: AgCdO
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate and release time: Max. 20msec.

Mounting:
S1/S2: 11 pole plug-in.
D1/D2: Directly on DIN rail TS35 (EN50022).

Terminals: Max. conductor size 4 mm^2.
(D1/D2 only)
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 24V AC/DC (20-28V),
48V AC/DC (40-56V),
110/120V AC (95-135V),
220/240V AC (195-265V),
380/415V AC (340-460V).

Mains frequency: 40-60Hz.

Consumption: 0.3-5VA.

Cable lengths:
Supply voltage: Max. 50 m.

Protection:
S1/S2: IP40.
D1/D2: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C.

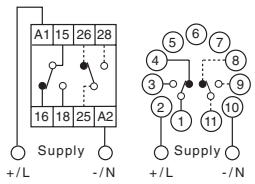
Housing: Black Noryl SE-1.

Weight: Typically 80 g.

NOTES/REMARKS

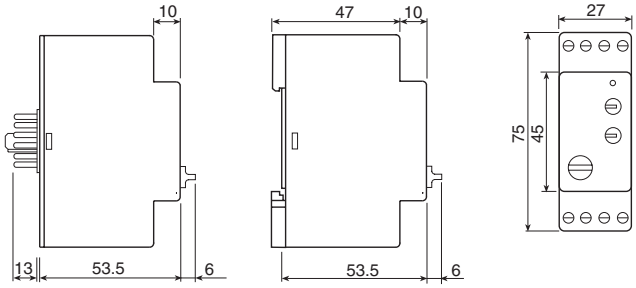
1) Double output relay available in S2/D2 versions.
2) When inductive or DC loads are switched the load capacity of the output relay is reduced, see the output load diagrams on fig. 1 and 2. When inductive loads are switched, it is recommended to use a RC-network, see accessories on page 130, to protect the relay contacts.

WIRING DIAGRAMS



note 1

MECHANICAL DIMENSIONS



OUTPUT LOAD DIAGRAMS

Fig.1

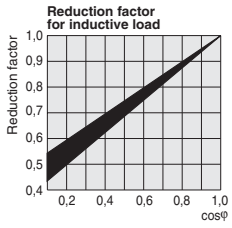
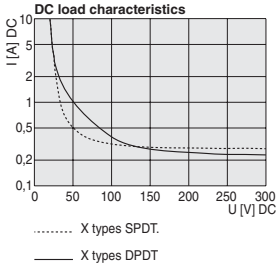


Fig. 2



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BRODERSEN

DESCRIPTION

Timer with on pulse function.
Fixed time range: 0.1-3sec, 1-30sec, 0.1-3min or 1-30min. The time is adjustable on the timer front.
The timer is available in different versions for AC and DC supply voltage.
Single or double relay output with LED indication of energized relay.
Versions available for DIN rail or 11-pole plug-in mounting.

OPERATION

On pulse.
When supply voltage is connected, the relay is energized and the timing period starts. The relay de-energizes when the preset time has elapsed.
If the supply is disconnected before the preset time has elapsed, the relay de-energizes.

VERSIONS/ORDERING CODES

	XWI	-	S	1	230	N1
Type:						
On pulse.	XWI					
Mounting:						
11-pole plug-in.			S			
DIN rail.			D			
Output relay:						
SPDT.				1		
DPDT.				2		
Supply voltage:						
24V AC/DC					024	
48V AC/DC					048	
110/120V AC					115	
220/240V AC					230	
380/415V AC					400	
Timing ranges:						
0.1-3s.						N1
1-30s.						N2
0.1-3min.						N3
1-30min.						N4

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TECHNICAL DATA

Time ranges: 0.1-3sec, 1-30sec, 0.1-3min, 1-30min.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Reset time: Max. 100msec.

Output relay: SPDT or DPDT. [1)]
Load (cosφ=1): D1/S1: Max. 8A/240V AC [2)]
Min.10mA/24V DC
D2/S2: Max. 5A/240V AC [2)]
Min.100mA/24V DC
Contact material: D1/S1: AgNi 0,15
D2/S2: AgCdO
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate and release time: Max. 20msec.

Mounting:
S1/S2: 11-pole plug-in.
D1/D2: Directly on DIN rail TS35 (EN50022).

Terminals: Max. conductor size 4 mm^2.
(D1/D2 only)
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 24V AC/DC (20-28V),
48V AC/DC (40-56V),
110/120V AC (95-135V),
220/240V AC (195-265V),
380/415V AC (340-460V).

Mains frequency: 40-60Hz.

Consumption: 0.3-5VA.

Cable lengths:
Supply voltage: Max. 50 m.

Protection:
S1/S2: IP40.
D1/D2: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C.

Housing: Black Noryl SE-1.

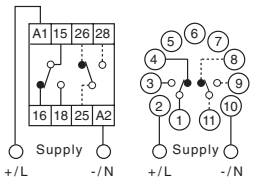
Weight: Typically 80 g.

NOTES/REMARKS

1) Double output relay available in S2/D2 versions.

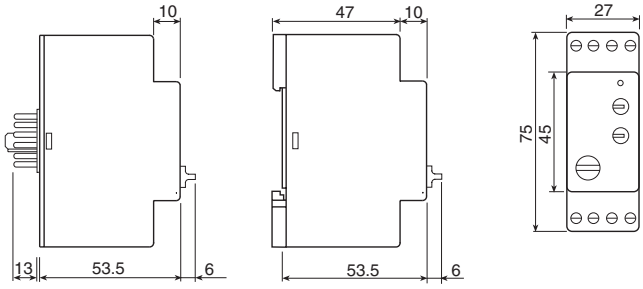
2) When inductive or DC loads are switched the load capacity of the output relay is reduced, see the output load diagrams on fig. 1 and 2. When inductive loads are switched, it is recommended to use a RC-network, see accessories on page 130, to protect the relay contacts.

WIRING DIAGRAMS



note 1

MECHANICAL DIMENSIONS



OUTPUT LOAD DIAGRAMS

Fig.1

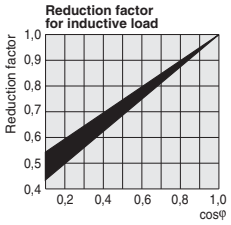
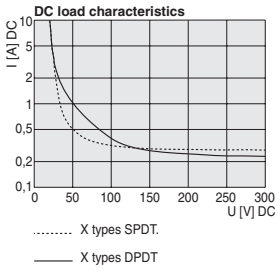


Fig. 2



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BRODERSEN

DESCRIPTION

Timer with delayed pulse function for automatic star/delta motor star-ters.
Fixed time range: 1.5-60sec. The time is adjustable on the timer front.
The timer is available in different versions for AC and DC supply voltage and has a single relay output.
Versions available for DIN rail or 11-pole plug-in mounting.

OPERATION

Delayed pulse.
The timing period starts when supply voltage is connected and the LED lights up (low intensity). When the preset time has elapsed, the relay is energized for 75msec. and is afterwards de-energized again.
The LED lights up (normal intensity) when the relay is energized and remains lit until supply voltage is disconnected.
When the supply voltage is disconnected, the timer resets.

VERSIONS/ORDERING CODES

		XIW	-	S	1	230
Type:						
Star/delta starter.	XIW	✓				
Mounting:						
11-pole plug-in.	S			✓		
DIN rail.	D					
Output relay:						
SPDT.	1				✓	
Supply voltage:						
24V AC/DC	024					
48V AC/DC	048					
110/120V AC	115					✓
220/240V AC	230					
380/415V AC	400					

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TECHNICAL DATA

Time range: 1.5-60sec.

Pulse duration: 75msec. ± 15msec.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Reset time: Max. 100msec.

Output relay: SPDT.
Load (cosφ=1): D1/S1: Max. 8A/240V AC [1)]
Min.10mA/24V DC
Contact material: AgNi 0,15
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. Load.
Operate and release time: Max. 20msec.

Mounting:
S1: 11-pole plug-in.
D1: Directly on DIN rail TS35 (EN50022).

Terminals: (D1 only): Max. conductor size 4 mm².
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 24V AC/DC (20-28V),
48V AC/DC (40-56V),
110/120V AC (95-135V),
220/240V AC (195-265V),
380/415V AC (340-460V).

Mains frequency: 40-60Hz.

Consumption: 0.5-5VA.

Cable lengths:
Supply voltage: Max. 50 m.

Protection:
S1: IP40.
D1: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C.

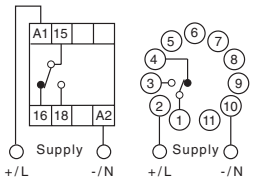
Housing: Black Noryl SE-1.

Weight: Typically 80 g.

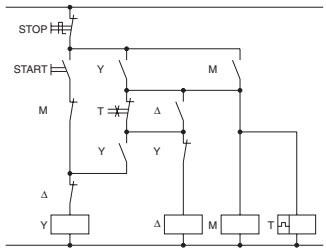
NOTES/REMARKS

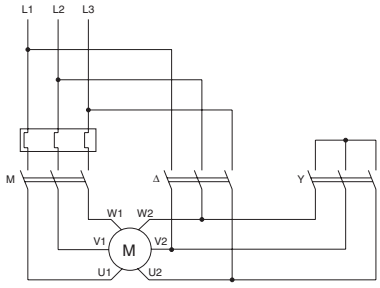
1) When inductive or DC loads are switched the load capacity of the output relay is reduced, see the output load diagrams on fig. 1 and 2. When inductive loads are switched, it is recommended to use a RC-network, see accessories on page 130, to protect the relay contacts.

WIRING DIAGRAMS

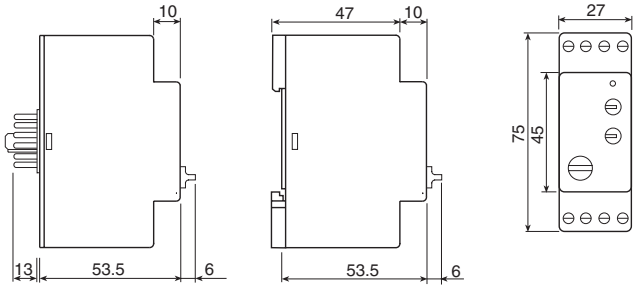


WIRING DIAGRAMS FOR AUTOMATIC STAR/DELTA MOTOR STARTER





MECHANICAL DIMENSIONS



OUTPUT LOAD DIAGRAMS

Fig.1

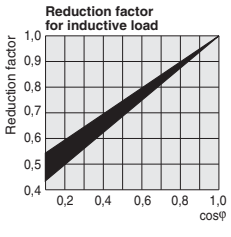
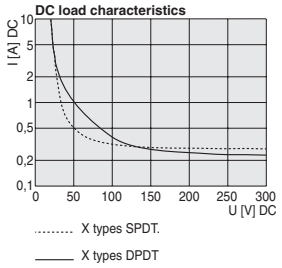


Fig.2



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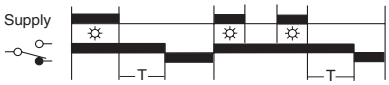
DESCRIPTION

Timer with release delay function, the timer operates without auxiliary supply voltage during the timing period.
Fixed time ranges: 0.1-3sec, 1-30sec. or 0.1-3min. The time is adjustable on the timer front.
The timer is available in different versions for AC and DC supply voltage.
Single or double relay output with LED indication of energized relay.
Versions available for DIN rail or 11-pole plug-in mounting.

OPERATION

Release delay - true off.
When supply voltage is connected, the output relay is energized. When the supply voltage is disconnected, the timing period starts and the output relay remains energized until the preset time has elapsed.



VERSIONS/ORDERING CODES

		XF	-	S	1	230	1
Type:							
Release delay - true off.	XF						
Mounting:							
11-pole plug-in.	S						
DIN rail.	D						
Output relay:							
SPDT.	1						
DPDT.	2						
Supply voltage:							
24V AC/DC	024						
48V AC/DC	048						
110/120V AC	115						
220/240V AC	230						
380V AC	380						
Timing ranges:							
0.1-3sec.	1						
1-30sec.	2						
0.1-3min.	3						

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TECHNICAL DATA

Time ranges: 0.1-3sec, 1-30sec, 0.1-3min.

Timer accuracy:
Repeating accuracy: ± 0.5% at constant conditions.
Setting accuracy: ± 10%.
Temperature drift: Max. 0.15% per °C.

Start time: Min. 100msec. [2)]

Reset time: Max. 100msec.

Output relay: SPDT or DPDT. [1)]
Load (cosφ=1): D1/S1: Max. 8A/24V AC [3)]
Min.10mA/240V DC
D2/S2: Max. 5A/240V AC [3)]
Min.100mA/24V DC
Contact material: AgNi 0,15.
Frequency: Max. 1000 operations per hour at max. load.
Mechanical life time: Min. 10 x 10^6 operations.
Electrical life time: Min. 100,000 operations at max. load.
Operate and release time: Max. 20msec.

Mounting:
S1/S2: 11-pole plug-in.
D1/D2: Directly on DIN rail TS35 (EN50022).

Terminals: Max. conductor size 4 mm^2.
(D1/D2 only)
Screw type terminals with self-lifting clamps shrouded in accordance to VDE0106 (finger and back of hand protection).

Supply voltage: 24V AC/DC (20-28V),
48V AC/DC (40-56V),
110/120V AC/DC (95-135V),
220/240V AC (195-265V),
380V (340-420V).

Mains frequency: 40-60Hz.

Consumption: 0.7-1VA [2)].

Cable lengths:
Supply voltage: Max. 50 m.

Protection:
S1/S2: IP40.
D1/D2: IP20.

EMC: Conforming to EN 50081-1/EN 50082-2.

Isolation:
Supply to relay contacts: 2kV AC according to EN 60950 class I.

Ambient temperature: -20 to +55°C.

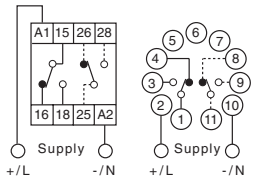
Housing: Black Noryl SE-1.

Weight: Typically 80 g.

NOTES/REMARKS

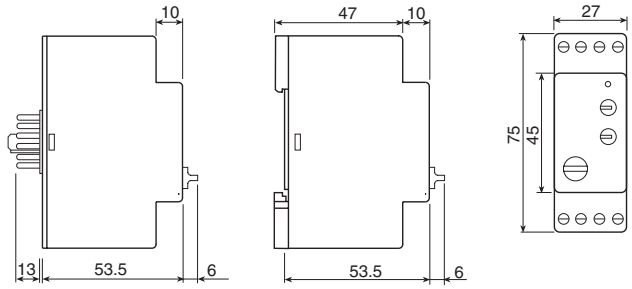
1) Double output relay available in S2/D2 versions.
2) The supply voltage must be applied for minimum 100 msec. or the output relay will remain activated after the preset time has elapsed. The power supply must be able to supply an in-rush current of minimum 300mA during the 100msec. start time.
3) When inductive or DC loads are switched the load capacity of the output relay is reduced, see the output load diagrams on fig. 1 and 2. When inductive loads are switched, it is recommended to use a RC-network, see accessories on page 130, to protect the relay contacts.

WIRING DIAGRAMS



note 1

MECHANICAL DIMENSIONS



OUTPUT LOAD DIAGRAMS

Fig.1

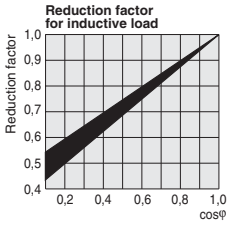
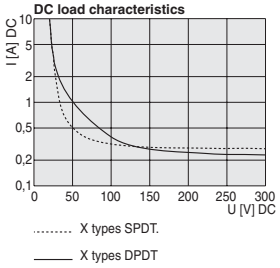


Fig. 2



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