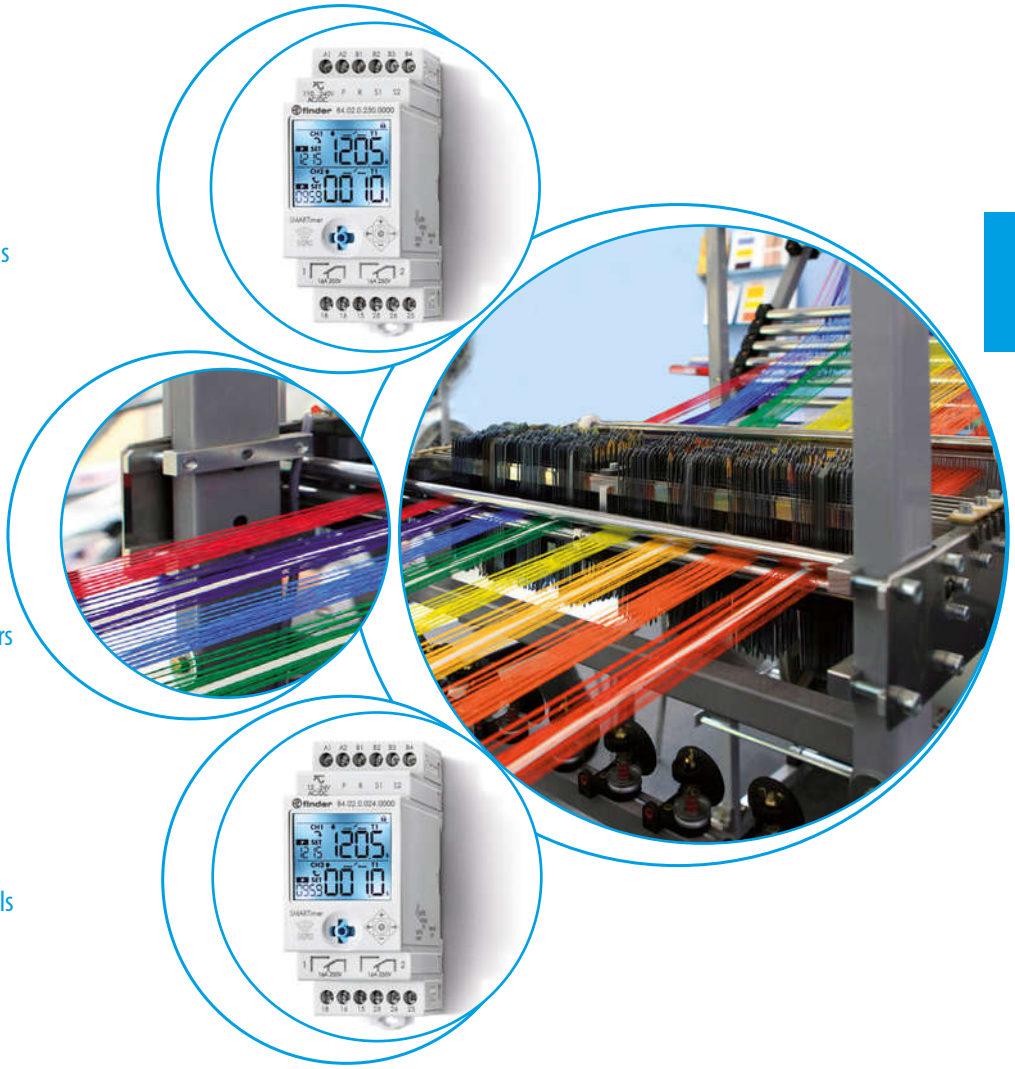
finder®
SWITCH TO THE FUTURE

SMARTimer, digital timer 16 A

- Timers and lighting controls
- Automatic car-washes
- Labelling machines
- Punches, cleaners, planers and sanders
- Industrial furnaces and ovens
- Discotheques, swimming pools and fountains



84
SERIES

FINDER reserves the right to alter characteristics at any time without notice. FINDER assumes no liability for damage to persons or property, caused as a result of the incorrect use or application of its products.

Multi-function SMARTimer

Type 84.02
- 1 CO (16 A) + 1 CO (16 A)

- 2 in 1: two independent channels
- Two supply version available: 12…24 V AC/DC and 110…240 V AC/DC (not polarized)
- Two programming modes: "Smart" mode via smartphone with NFC communication or "Classic" mode via the joystick
- Wide backlit display for easy reading all information during the programming phase and during normal operation
- Flexibility: possible to create new specific functions, mixing the 30 available functions on each channel
- High precision and possibility of choice in time set-up:
  - Time units; 0.1 seconds, seconds, minutes, hours
  - Set-time to 4 digits, anywhere between 000.1 second and 9999 hours
- Large display allows easy viewing: set time, current time, timing in progress, input command state, output state
- Two independent Start inputs - one per channel
- One common Reset input (select to apply to either, or both, channels)
- One common Pause input (select to apply to either, or both, channels)
- PIN to protect access to programming session
- Up or Down timing modes
- Type 84.02.0.024.0000: it's possible to directly connect timer input to proximity sensors (both PNP and NPN)
- 35 mm rail (EN 60715) mount

Screw terminal

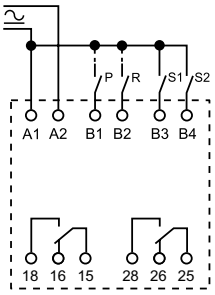


For outline drawing see page 5

84.02



- 2 CO 16 A output contacts
- Digital Timer "Two in one": two totally independent programmable channels, in a single product



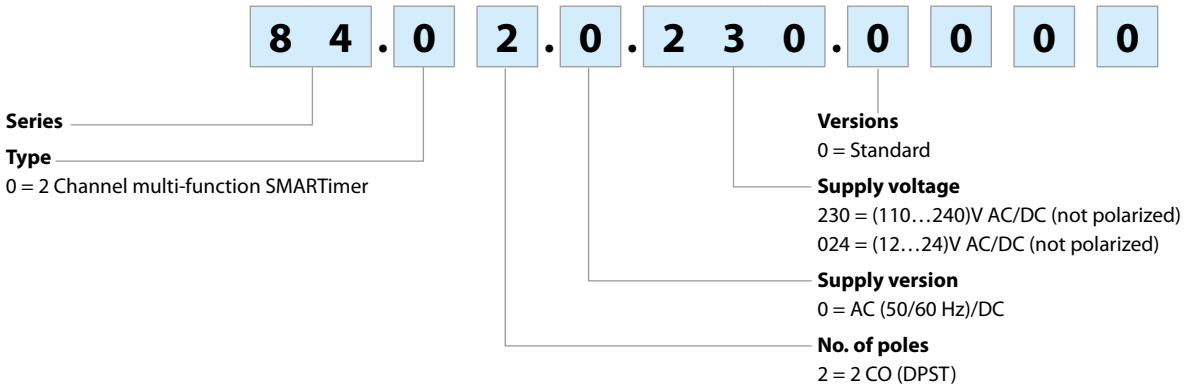
Wiring diagram

Contact specification			
Contact configuration		2 CO (DPDT)	
Rated current/Maximum peak current	A	16/30	
Rated voltage/ Maximum switching voltage	V AC	250/400	
Rated load AC1	VA	4000	
Rated load AC15 (230 V AC)	VA	1000	
Single phase motor rating (230 V AC)	kW	0.55	
Breaking capacity DC1: 30/110/220 V	A	16/0.3/0.12	
Minimum switching load	mW (V/mA)	300 (5/5)	
Standard contact material		AgNi	
Supply specification			
Nominal voltage (U_N)	V DC/AC (50/60 Hz)	12…24	110…240
Rated power AC/DC	VA (50 Hz)/W	2.2/1.2	4/1.6
Operating range	V DC/AC	10…30	90…264
Technical data			
Specified time range		0.1s…9999h	
Repeatability	%	± 0.05	
Recovery time	ms	40*	
Minimum control impulse	ms	40	
Setting accuracy	%	± 0.05	
Electrical life at rated load in AC1	cycles	$100 \cdot 10^3$	
Ambient temperature range	°C	–20…+50	
Protection category		IP 20	
Approvals (according to type)		CE EAC cULus	

* Applies where timer function is controlled by an input to B terminal(s). Where power-off is used to reset the timer, the recovery time can increase up to 500 ms, depending on supply voltage.

Ordering information

Example: 84 series, SMARTimer, 2 CO - 16 A, supply rated at (110…240)V AC/DC.



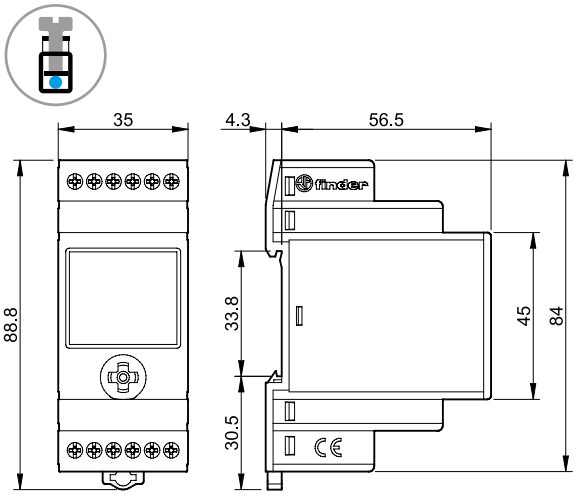
Technical data

Insulation					
Dielectric strength	between input and output circuit	V AC	4000		
	between open contacts	V AC	1000		
	between input/output and display	V AC	2000		
Insulation (1.2/50 µs) between input and output		kV	6		
EMC specifications					
Type of test			**Reference standard**	**84.02.0.230**	**84.02.0.024**
Electrostatic discharge	contact discharge		EN 61000-4-2	4 kV	4 kV
	air discharge		EN 61000-4-2	8 kV	8 kV
Radio-frequency electromagnetic field (80 ÷ 1000 MHz)			EN 61000-4-3	10 V/m	10 V/m
Fast transients (burst) (5-50 ns, 5 kHz) on Supply terminals			EN 61000-4-4	4 kV	4 kV
Surges (1.2/50 µs) on Supply terminals	common mode		EN 61000-4-5	4 kV	2 kV
	differential mode		EN 61000-4-5	4 kV	1.5 kV
on start terminal (B1…B4)	common mode		EN 61000-4-5	4 kV	2 kV
	differential mode		EN 61000-4-5	3 kV	1 kV
Radio-frequency common mode (0.15 ÷ 80 MHz) on Supply terminals			EN 61000-4-6	10 V	10 V
Radiated and conducted emission			EN 55022	class B	class B
Other data					
Current absorption on control terminals (B1…B4)			< 2.4 mA (0.230), < 5.5 mA (0.024)		
Power lost to the environment	without contact current	W	1.6		
	with rated current	W	3.6		
Screw torque		Nm	0.8		
Max. wire size			solid cable	stranded cable	
		mm^2	1 x 6 / 2 x 4	1 x 4 / 2 x 2.5	
		AWG	1 x 10 / 2 x 12	1 x 12 / 2 x 14	

I-2019, www.findernet.com

Outline drawing

Type 84.02
Screw terminal



Two programming modes



"Smart"

Mode via smartphones with NFC communication using Finder toolbox Android App.

"Classic"

Mode via the joystick

ANDROID APP ON Google play

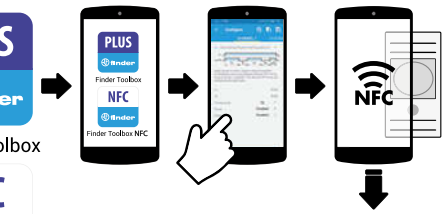
Android, Google Play and the Google Play logo are trademarks of Google Inc.

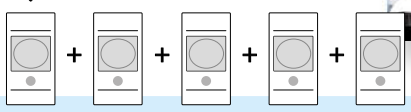
PLUS finder

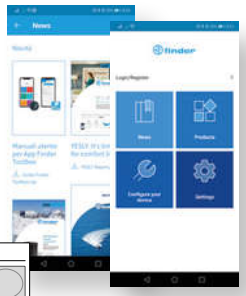
Finder Toolbox

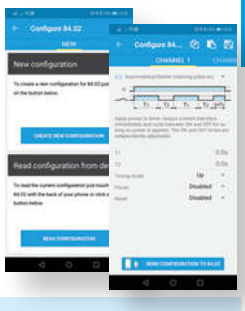
NFC finder

Finder Toolbox NFC









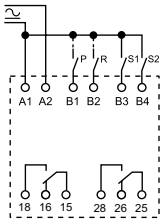
Finder Toolbox for programming
Once the App FINDER Toolbox is downloaded and installed, you can read an existing program, or program your device with maximum flexibility, changing the smallest details and saving your program directly to your smartphone.
At this point you simply touch the time switch with the smartphone to transfer the data.

Finder Toolbox for reference
Finder Toolbox provides all technical data sheets and news from Finder.

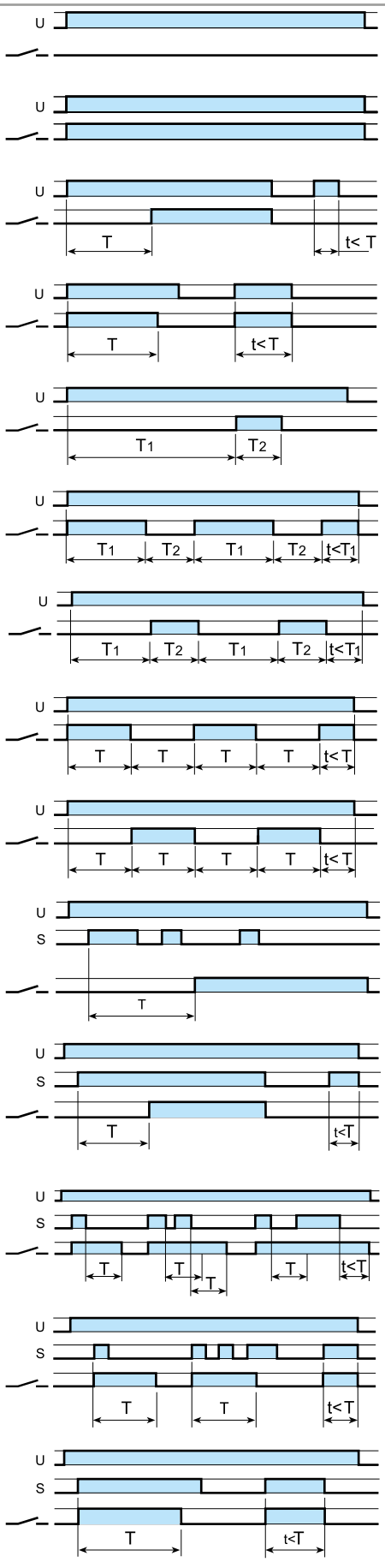
H

Functions

Wiring diagram



Type 84.02



(OFF) Relay OFF.
The output contact stays permanently open.

(ON) Relay ON.
The output contact stays permanently closed.

(AI) On-delay.
Apply power to timer. Output contact transfers after preset time has elapsed. Reset occurs when power is removed.

(DI) Interval.
Apply power to timer. Output contact transfers immediately. After the preset time has elapsed, contact resets.

(GI) Pulse delayed.
Apply power to timer. Output contact transfers after time T1 has elapsed. Reset occurs after T2 time.

(LI) Asymmetrical flasher (starting pulse on).
Apply power to timer. Output contact transfers immediately and cycle between ON and OFF for as long as power is applied. The ON and OFF times are independently adjustable.

(PI) Asymmetrical flasher (starting pulse off).
Apply power to timer. Output contact transfers after time T1 has elapsed and cycle between OFF and ON for as long as power is applied. The ON and OFF times are independently adjustable.

(SW) Symmetrical flasher (starting pulse on).
Apply power to timer. Output contact transfers immediately and cycle between ON and OFF for as long as power is applied. The ratio is 1:1 (time on = time off).

(SP) Symmetrical flasher (starting pulse off).
Apply power to timer. First transfer of contact occurs after preset time has elapsed. The timer now cycles between OFF and ON as long as power is applied. The ratio is 1:1 (time on = time off).

(AE) On-delay with control signal.
Power is permanently applied to the timer. Closing the Signal Switch (S) initiates the preset delay, after which the output contact transfers and remains so until the power is removed.

(AC) On-delay with maintained control signal.
Power is permanently applied to the timer. Closing the Signal Switch (S) initiates the preset delay, after which the output contact transfers and remains so, until the Signal Switch (S) is opened. If the Signal Switch (S) opens during the timing, the function will reset.

(BE) Off-delay with control signal.
Power is permanently applied to the timer. The output contact transfers immediately on closure of the Signal Switch (S). Opening the Signal Switch initiates the preset delay, after which the output contact resets.

(DE) Interval with control signal on.
Power is permanently applied to the timer. On momentary or maintained closure of Signal Switch (S), the output contact transfers, and remain so for the duration of the preset delay, after which it resets.

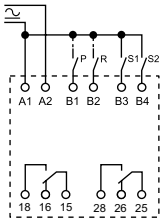
(DC) Interval with maintained control signal.
Power is permanently applied to the timer. On closure of Signal Switch (S), the output contact transfers and remain so for the duration of the preset delay, unless the Signal Switch opens before the preset time has elapsed in which case the output contact resets immediately.

H

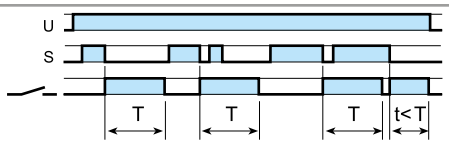
I-2019, www.findernet.com

Functions

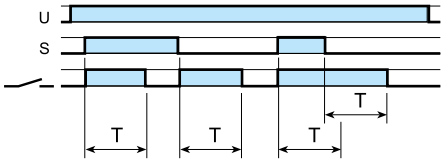
Wiring diagram



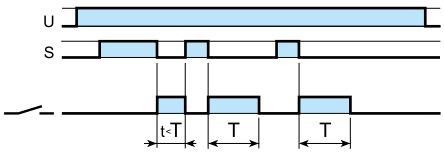
Type 84.02



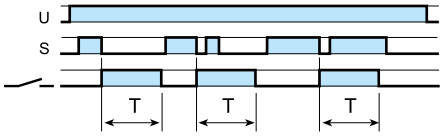
(EE) Interval with control signal off.
Power is permanently applied to the timer. On opening of the Signal Switch (S) the output contact transfers, and remain so for the duration of the preset delay, after which it resets.



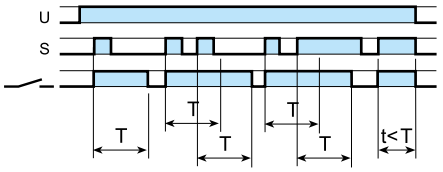
(FE) Interval with control signal on and off.
Power is permanently applied to the timer. Both the opening and the closing of the Signal Switch (S) initiates the transfer of the output contact (or extends the time). In both instances the contact resets after the preset delay has elapsed.



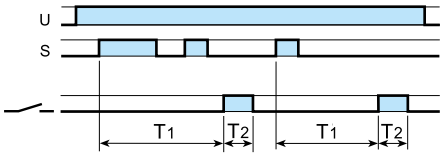
(EEa) Interval with control signal off (retriggerable).
Power is permanently applied to the timer. On opening of the Signal Switch (S) the output contact transfers, and remain so for the duration of the preset delay, after which it resets.



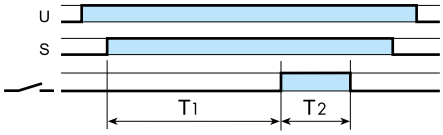
(EEb) Interval with control signal off.
Power is permanently applied to the timer. On opening of the Signal Switch (S) the output contact transfers, and remain so for the duration of the preset delay, after which it resets.



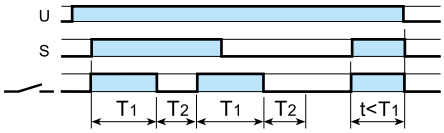
(WD) Watchdog
(retriggerable interval with control signal on).
Power is permanently applied to the timer. On momentary or maintained closure of Signal Switch (S), the output contact transfers, and remain so for the duration of the preset delay, after which it resets; subsequent closures of Signal Switch during the delay will extend the time. If the closure of the Signal Switch (S) is longer than the preset time (T) then the output contact resets.



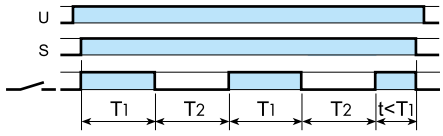
(GE) Pulse delayed with control signal on.
Power is permanently applied to the timer. Closing the Signal Switch (S) initiates T1 delay, after which the output contact transfers. Reset occurs after T2 time.



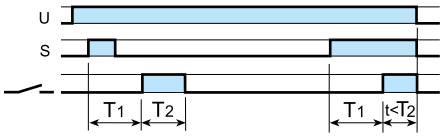
(GC) Pulse delayed with maintained control signal.
Power is permanently applied to the timer. On closure of Signal Switch (S), the output contact will transfer after time T1 has elapsed. Reset occurs after T2 time. If the Signal Switch (S) opens during T1 /T2, the timing function/output contact will reset.



(LE) Asymmetrical flasher (starting pulse on) with control signal.
Power is permanently applied to the timer. Closing Signal Switch (S) causes the output contact to transfer immediately and cycle between ON and OFF, until opened.



(LC) Asymmetrical flasher (starting pulse on) with maintained control signal.
Power is permanently applied to the timer. On closure of Signal Switch (S), the output contact transfers immediately and cycles between ON and OFF for as long as the control signal is applied. The ON and OFF times are independently adjustable. After the Signal Switch (S) is opened, the output contact resets.

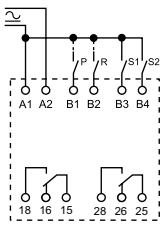


(PE) Asymmetrical flasher (starting pulse off) with control signal.
Power is permanently applied to the timer. Closing the Signal Switch (S) initiates delay T1 after which the output contact transfers and continues to cycle between OFF and ON, until the Signal Switch is opened.

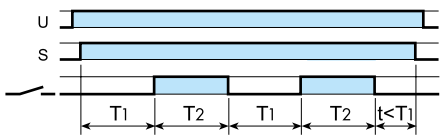
H

Functions

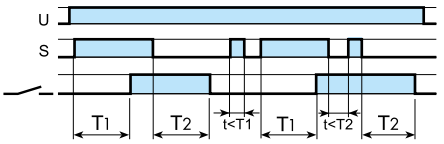
Wiring diagram



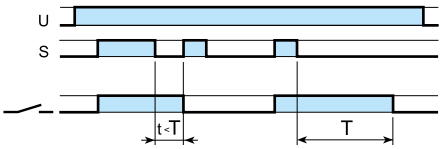
Type 84.02



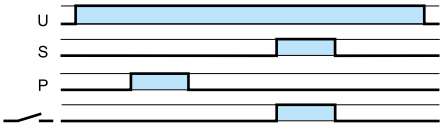
(PC) Asymmetrical flasher (starting pulse off) with maintained control signal.
Power is permanently applied to the timer. On closure of Signal Switch (S), the output contact transfers after time T1 has elapsed and cycles between OFF and ON for as long as the control signal is applied. The OFF and ON times are independently adjustable. After the Signal Switch (S) is opened, the output contact resets.



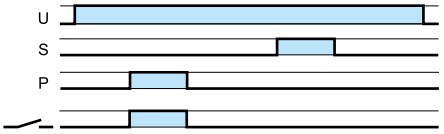
(CEb) On and off independent delays with control signal.
Power is permanently applied to the timer. Closing the Signal Switch (S) initiates the preset delay T1, after which the output contact transfers. Opening the Signal switch initiates the preset delay T2, after which the output contact resets.



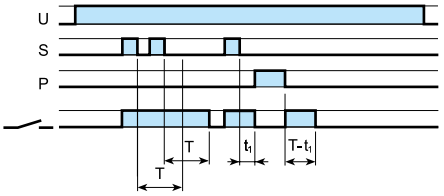
(IT) Timing step.
Closing the Signal Switch (S) the output contact transfers and remains so after S opening, for the duration of the preset delay, after which it resets. During the timing period it is possible to immediate open the contact with a further impulse on S.



(SS) Monostable controlled by Signal switch.
The output contact follows the status of Signal Switch (S).

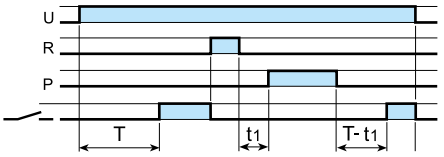


(PS) Monostable controlled by Pause switch.
The output contact follows the status of Pause Switch (P).



(SHp) "Shower" (off-delay with control signal and pause signal).
Power is permanently applied to the timer. The output contact transfers immediately on closure of the Signal Switch (S). Opening the signal switch initiates the preset delay, after which the output contact resets. Closure of the Pause Switch (P) will immediately halt the timing process, but the elapsed time will be retained. During the pause, the output contact will be open. On opening of the Pause Switch, timing resumes from the retained value and the output contact will take the previous condition.

PAUSE and RESET options



Ex. **(AI)** function

(P) PAUSE option*
Closure of the pause switch will immediately halt the timing process, but the elapsed time will be retained. The current state of the output contacts will be maintained. On opening of the pause switch, timing resumes from the retained value.

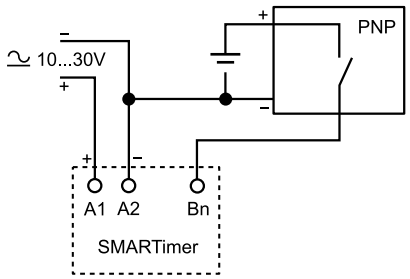
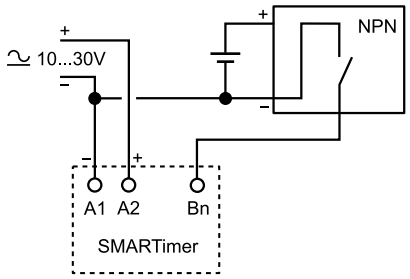
(R) RESET option*
For each and every function and time range, the timer is immediately reset when the reset switch is closed.

* Select to apply to either, or both, channels.

I-2019, www.findernet.com

Interfacing the SMARTimer with proximity PNP-NPN sensors

Wiring diagram

With PNP sensors		It is possible to directly connect the output of proximity sensors (either PNP or NPN types) to the inputs of the 24V version of the SMARTimer.
With NPN sensors		

H