

Features

5 A modular SSR, 1 NO output

- 17.5 mm housing
- AC output (with back to back SCR)
- 5 kV (1.2/50 μ s) insulation between Input and Output
- Zero-crossing and random switch-on versions available
- High switching speed
- High endurance
- Silent switching
- Spark and bounce-free switching
- Low control power
- 35 mm rail (EN 60715) mount

77.01
Screw terminal



* see L77-3 diagram page 6
** see L77-1 and L77-2 diagrams page 5

For outline drawing see page 8

Output specification

Output configuration	1 NO (SPST-NO)
Rated current / Max. peak current (10 ms *) A	5 / 300 *
Rated switching voltage V AC (50/60 Hz)	60...240
Switching voltage range V AC (50/60 Hz)	48...265
Blocking (max. reverse repetitive) voltage V DC	800
Rated load AC7a (cos φ = 0.8) A	5
Rated load AC15 A	5
Single phase motor rating (230 V AC) kW	—
230 V lamps rating:	
incandescent W	1,000
compact fluorescent (CFL) W	800
electronic ballast fluorescent tubes W	1,000
electromagnetic ballast compensated fluorescent tubes W	500
Minimum switching current @ 230 V mA	100
Max. "OFF-state" leakage current@ 230 V mA	3.5
Max "ON-state" voltage drop @25 °C and 5A/100mA V	0.85 / 1.5

Input specification

Nominal voltage (U_N)	V AC (50/60 Hz)	24	110 ... 240	24	110 ... 240
	V DC	12 ... 24	—	12 ... 24	—
Rated power	VA (50 Hz)/W	0.6 / 0.5	3.6 / 0.3	0.6 / 0.5	3.6 / 0.3
Operating range	V AC (50/60 Hz)	16...32	90...265	16...32	90...265
	V DC	9.8...32	—	9.8...32	—
Must drop-out voltage	V AC (50/60 Hz)/DC	2.4	24	2.4	24

Technical data

Electrical life	cycles	10·10 ⁶	10·10 ⁶
Operate / release time	ms	20 / 12	9 / 8
Insulation between input and output (1.2/50 μ s)	kV	5	5
Ambient temperature	°C	-20...+70 **	-20...+70 **
Protection category		IP20	IP20

Approvals (according to type)

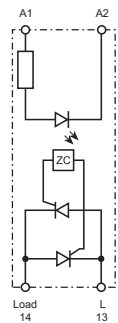
77.01.x.xxx.8050



Zero-crossing switch-on

Suggested applications:

- Lamp inrush current reduction (CFL - Compact Fluorescent energy-saving Lamps and similar)
- Heater control
- Solenoid, contactor driver



Simplified circuit diagram

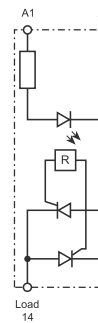
77.01.x.xxx.8051



Random switch-on

Suggested applications:

- Fine controls involving shorter time (specially motor control)
- AC supply phase different from AC output phase
- 3-phase general purpose



Simplified circuit diagram

Features

30 A modular SSR, 1 NO output

- 22.5 mm housing, heat-sink + plastic cover
- AC output (with back to back SCR)
- 6 kV (1.2/50 μ s) insulation between Input and Output
- Zero-crossing and random switch-on versions available
- High switching speed
- High endurance
- Silent switching
- Spark and bounce-free switching
- Low control power
- "Relay-style" terminal arrangement (input and output terminals on opposite sides)
- 35 mm rail (EN 60715) mount

77.31
Screw terminal



* see L77-5 diagram page 6
** see L77-4 diagrams page 5

For outline drawing see page 8

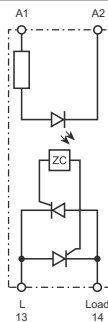
NEW 77.31.x.xxx.8050



Zero-crossing switch-on

Suggested applications:

- Lamp inrush current reduction (CFL - Compact Fluorescent energy-saving Lamps and similar)
- Heater control
- Solenoid, contactor driver



Simplified circuit diagram

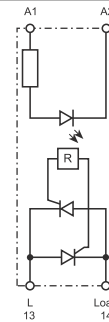
NEW 77.31.x.xxx.8051



Random switch-on

Suggested applications:

- Fine controls involving shorter time (specially motor control)



Simplified circuit diagram

Output specification					
Output configuration		1 NO (SPST-NO)		1 NO (SPST-NO)	
Rated current / Max. peak current (10 ms *) A		30 / 520 *		30 / 520 *	
Rated switching voltage V AC (50/60 Hz)		400		400	
Switching voltage range V AC (50/60 Hz)		40...480		40...480	
Blocking (max. reverse repetitive) voltage V DC		1100		1100	
Rated load AC7a (cos φ = 0.8) A		30		30	
Rated load AC15 A		20		20	
Single phase motor rating (230 V AC) kW		—		2.5	
230 V lamps rating:					
incandescent W		6.000		4.500	
compact fluorescent (CFL) W		4.000		2.500	
electronic ballast fluorescent tubes W		6.000		4.000	
electromagnetic ballast compensated fluorescent tubes W		3.000		1.800	
Minimum switching current @ 230 V mA		300		300	
Max. "OFF-state" leakage current@ 230 V mA		5.0 (Typ 1.0)		5.0 (Typ 1.0)	
Max "ON-state" voltage drop @25 °C and 30 A V		0.85		0.85	
Power loss @ 30 A W		16		16	
Input specification					
Nominal voltage (U _N)					
V AC (50/60 Hz)		—		230	
V DC		24		—	
Rated power @ U _{MAX}					
VA (50 Hz)/W		0.4		7.5 / 0.9	
Operating range					
V AC (50/60 Hz)		—		40...280	
V DC		4...32		—	
Must drop-out voltage V AC (50/60 Hz)/DC		— / 2		6 / —	
Technical data					
Electrical life					
cycles		10·10 ⁶		10·10 ⁶	
Operate / release time					
ms		< 10 / <10		< 10 / < 30	
Insulation between input and output (1.2/50 μ s) kV		6		6	
Ambient temperature		—20...+80 **		—20...+80 **	
Protection category		IP20		IP20	
Approvals (according to type)				CE	

Features

30 A modular SSR, 1 NO output

- 22.5 mm housing, heat-sink + plastic cover
- AC output (with back to back SCR)
- 6 kV (1.2/50 μ s) insulation between Input and Output
- Zero-crossing and random switch-on versions available
- High switching speed
- High endurance
- Silent switching
- Spark and bounce-free switching
- Low control power
- "Contactor-style" terminal arrangement (input and output terminals on adjacent sides)
- 35 mm rail (EN 60715) mount

77.31
Screw terminal



* see L77-5 diagram page 6
** see L77-4 diagrams page 5

For outline drawing see page 8

Output specification

Output configuration	1 NO (SPST-NO)		1 NO (SPST-NO)	
Rated current / Max. peak current (10 ms *) A	30 / 520 *		30 / 520 *	
Rated switching voltage V AC (50/60 Hz)	400		400	
Switching voltage range V AC (50/60 Hz)	40...480		40...480	
Blocking (max. reverse repetitive) voltage V DC	1100		1100	
Rated load AC7a (cos φ = 0.8) A	30		30	
Rated load AC15 A	20		20	
Single phase motor rating (230 V AC) kW	—		2.5	
230 V lamps rating:	incandescent W	6.000	4.500	4.500
	compact fluorescent (CFL) W	4.000	2.500	2.500
	electronic ballast fluorescent tubes W	6.000	4.000	4.000
electromagnetic ballast compensated fluorescent tubes W	3.000	1.800	1.800	1.800
Minimum switching current @ 230 V mA	300		300	
Max. "OFF-state" leakage current@ 230 V mA	5.0 (Typ 1.0)		5.0 (Typ 1.0)	
Max "ON-state" voltage drop @25 °C and 30 A V	0.85		0.85	
Power loss @ 30 A W	16		16	

Input specification

Nominal voltage (U _N)	V AC (50/60 Hz)	—	230	—	230
	V DC	24	—	24	—
Rated power @ U _{MAX}	VA (50 Hz)/W	0.4	7.5 / 0.9	0.4	7.5 / 0.9
Operating range	V AC (50/60 Hz)	—	40...280	—	40...280
	V DC	4...32	—	4...32	—
Must drop-out voltage	V AC (50/60 Hz)/DC	— / 2	6 / —	— / 2	6 / —

Technical data

Electrical life	cycles	10·10 ⁶		10·10 ⁶	
Operate / release time	ms	< 10 / <10	< 10 / < 30	< 1 / <10	< 2 / < 25
Insulation between input and output (1.2/50 μ s)	kV	6		6	
Ambient temperature	°C	-20...+80 **		-20...+80 **	
Protection category		IP20		IP20	

Approvals (according to type)

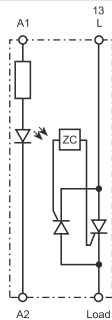
NEW 77.31.x.xxx.8070



Zero-crossing switch-on

Suggested applications:

- Lamp inrush current reduction (CFL - Compact Fluorescent energy-saving Lamps and similar)
- Heater control
- Solenoid, contactor driver



Simplified circuit diagram

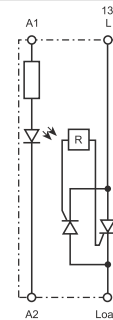
NEW 77.31.x.xxx.8071



Random switch-on

Suggested applications:

- Fine controls involving shorter time (specially motor control)



Simplified circuit diagram

Ordering information

Example: 77 series modular SSR, 1 output 30 A AC, input voltage 230 V AC, relay style terminals arrangement, zero-crossing switch-on.

Series ————

Type
0 = 5 A output, 17.5 mm plastic housing
3 = 30 A output, 22.5 mm heat sink / plastic housing

No. of poles
1 = 1 pole

Input version
0 = DC/AC (50/60 Hz)
8 = AC (50/60 Hz)
9 = DC

Supply voltage
See "input specification"

A B C D

7 7 . 3 1 . 8 . 2 3 0 . 8 0 5 0

D: Switch-on mode
0 = Zero-crossing
1 = Random

C: Terminals arrangement
5 = "Relay style" (input and output on opposite sides)
7 = "Contactor style" (input and output on adjacent sides)

AB: Output circuit
80 = Normally open, AC

Codes / Module width
77.01.8.230.8050 / 17.5 mm 5 A
77.01.0.024.8050 / 17.5 mm 5 A
77.01.8.230.8051 / 17.5 mm 5 A
77.01.0.024.8051 / 17.5 mm 5 A
77.31.8.230.8050 / 22.5 mm 30 A
77.31.9.024.8050 / 22.5 mm 30 A
77.31.8.230.8051 / 22.5 mm 30 A
77.31.9.024.8051 / 22.5 mm 30 A
77.31.8.230.8070 / 22.5 mm 30 A
77.31.9.024.8070 / 22.5 mm 30 A
77.31.8.230.8071 / 22.5 mm 30 A
77.31.9.024.8071 / 22.5 mm 30 A

Technical data

Insulation			77.01		77.31		
			Dielectric strength	Impulse (1.2/50 µs)	Dielectric strength	Impulse (1.2/50 µs)	
Between input and output			2500 V AC	5 kV	3000 V AC	6 kV	
Between input and ground (heat-sink)			—	—	3000 V AC	6 kV	
Between output and ground (heat-sink)			—	—	4000 V AC	6 kV	
EMC specifications		Reference standard	77.01		77.31		
			24 V AC/DC	230 V AC	24 V DC	230 V AC	
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV		4 kV		
	air discharge	EN 61000-4-2	8 kV		8 kV		
Radiated electromagnetic field (80 ... 1000 MHz)		EN 61000-4-3	30 V/m		30 V/m		
Fast transients on supply terminals (burst 5/50 ns, 5 and 100 kHz)		EN 61000-4-4	1 kV	4 kV	1 kV	3 kV	
Voltage pulses on supply terminals (surge 1,2/50 µs)	common mode	EN 61000-4-5	2 kV	4 kV	3 kV	3 kV	
	differential mode	EN 61000-4-5	1 kV	4 kV	0.5 kV	1.5 kV	
Radio-frequency common mode voltage (0.15...230 MHz) on supply terminals		EN 61000-4-6	—		10 V		
Terminals			77.01		77.31		
Screw torque			0.8		0.8		
Max. wire size			solid cable	stranded cable	solid cable	stranded cable	
			mm ²	1x6 / 2x4	1x4 / 2x2.5	1x6 / 2x4	1x6 / 2x4
			AWG	1x10 / 2x12	1x12 / 2x14	1x10 / 2x12	1x10 / 2x12
Wire strip length			9		9		
Other data							
Power lost to the environment	without output current	W	0.5		0.9		
	with rated current	W	4.0		16		

Input specification

77.01

Nominal voltage	Input code	Operating range				Must drop-out voltage (AC/DC) V	Input current I_N at U_N mA
		AC		DC			
		U_{min} V	U_{max} V	U_{min} V	U_{max} V		
U_N V							
24	0.024	16	32	9.8	32	2.4	25
230	8.230	90	265	—	—	24	15

Led indication

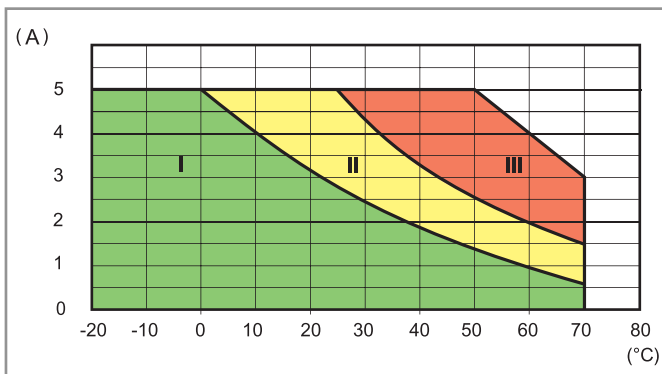
LED	Supply voltage
	OFF
	ON

77.31

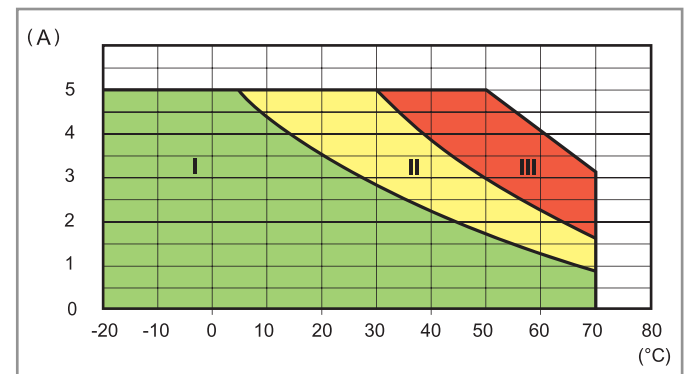
Nominal voltage	Input code	Operating range				Must drop-out voltage (AC/DC) V	Input current I_N at U_N mA
		AC		DC			
		U_{min} V	U_{max} V	U_{min} V	U_{max} V		
U_N V							
24	9.024	—	—	4	32	2	11
230	8.230	40	280	—	—	6	6.7

Output specification

L77-1 Output RMS current vs. ambient temperature
77.01.0.024.805x @ 32 V DC

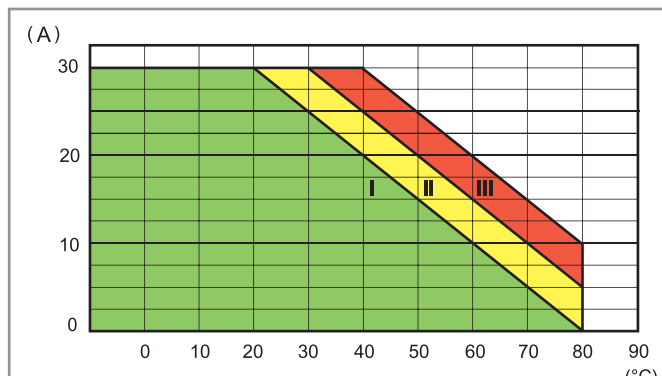


L77-2 Output RMS current vs. ambient temperature
77.01.8.230.805x @ 265 V AC



- I - Modular SSR installed as a group (without gap)
- II - Modular SSR installed as a group (9 mm gap between each SSR)
- III - Modular SSR installed individually in free air (without a significant influence from nearby components)

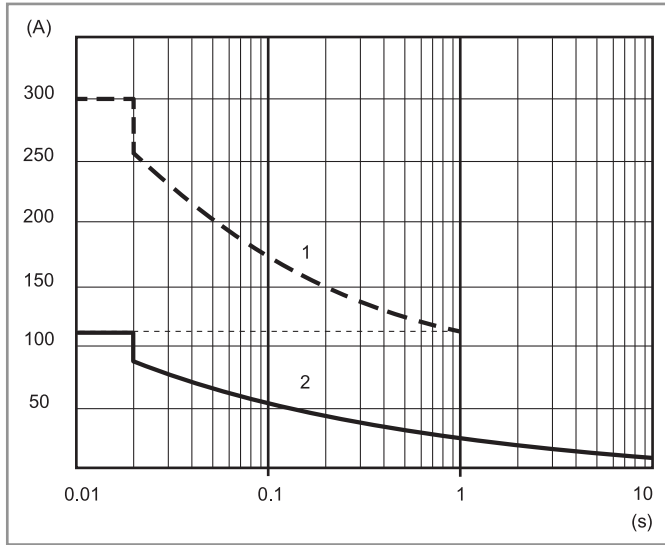
L77-4 Output RMS current vs. ambient temperature
77.31.x.xxx.80xx



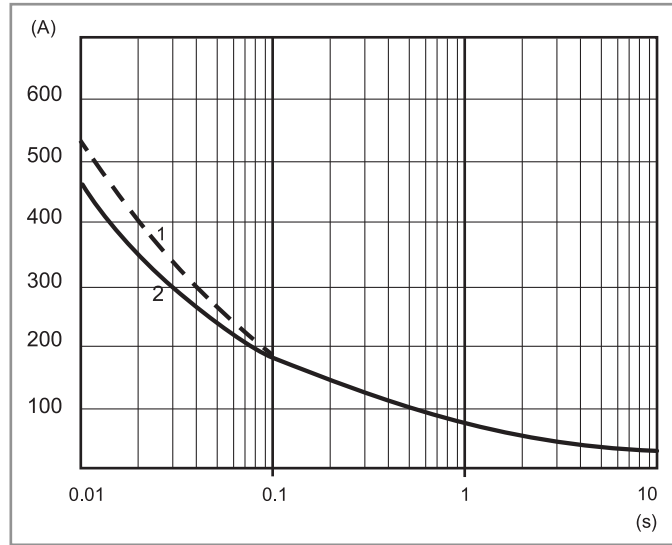
- I - Modular SSR installed as a group (without gap)
- II - Modular SSR installed as a group (20 mm gap between each SSR)
- III - Modular SSR installed individually in free air, or with a gap ≥ 40 mm, which implies a not significant influence from nearby components

Output specification

L77-3 Inrush peak current (AC) vs. time capacity
77.01.x.xxx.80xx



L77-5 Inrush peak current (AC) vs. time capacity
77.31.x.xxx.80xx



1 - "Cold" conditions (ambient temperature = 23 °C, no output current during the last 15 minutes)

2 - "Hot" conditions (ambient temperature = 50 °C, rated output current)

Max recommended switching frequency (Cycles/Hour, with 50 % Duty-cycle)

Load	77.01	77.31
5 A 230 V (AC1)	5000	—
1 A (AC15)	10000	—
0,5 A (AC15)	20000	—
30 A 480 V $\cos \varphi = 0.8$	—	1800
30 A 480 V $\cos \varphi = 0.5$	—	1200

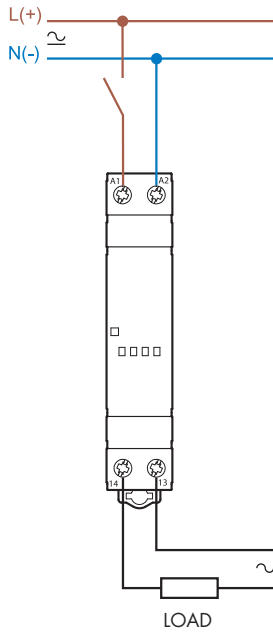
Other data

	77.01	77.31
Critical rising voltage dv/dt @ $T_j = 125\text{ °C}$	$> 1,000\text{ V}/\mu\text{s}$	$> 1,000\text{ V}/\mu\text{s}$
Critical rising current di/dt @ $t_r < 100\text{ ns}$, $T_j = 125\text{ °C}$	$> 50\text{ A}/\mu\text{s}$	$> 150\text{ A}/\mu\text{s}$
I^2t for fusing @ $t_p = 10\text{ ms}$	450 A ² s	1350 A ² s*

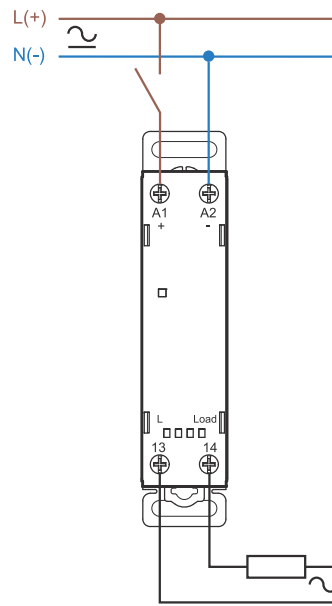
* Recommended fuse for short-circuit protection: 30 A, 660 V AC, 10x38 mm, 200 kA, 1000 A²s.

Wiring diagrams

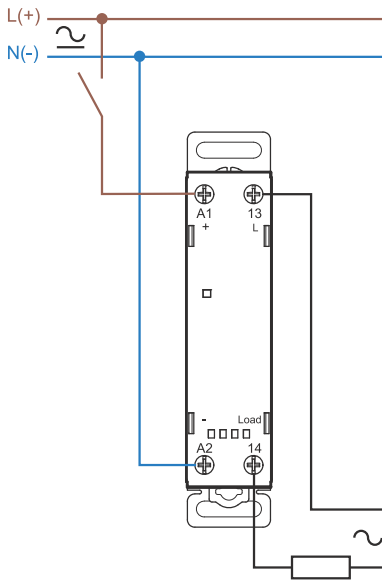
Single-phase connection (77.01)



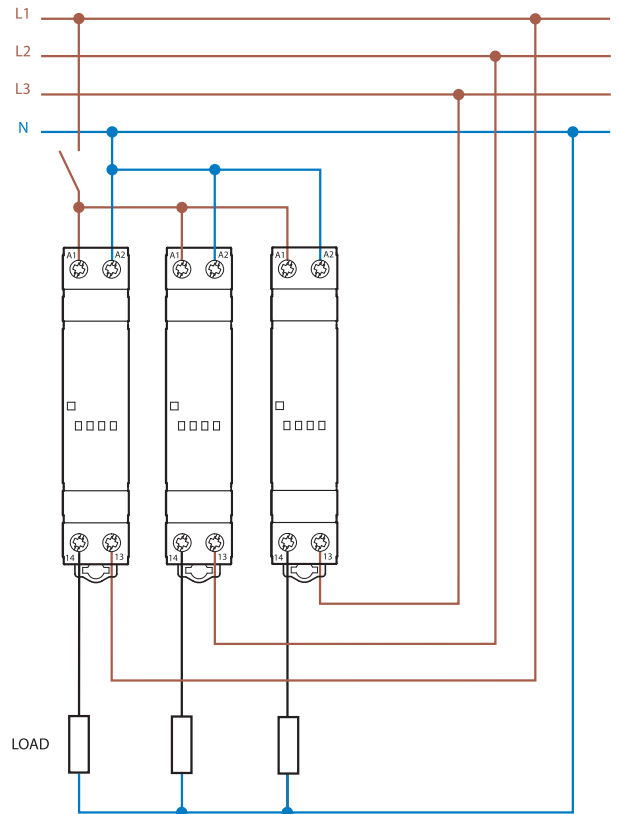
Single-phase connection (77.31.....5x)



Single-phase connection (77.31.....7x)

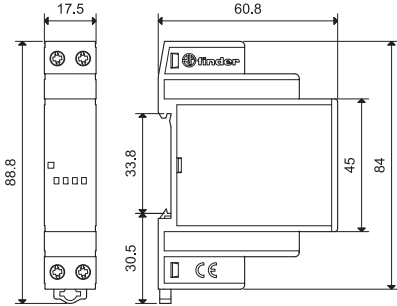


Example of three-phase connection (with 3 x 77.01.8.230.8051)

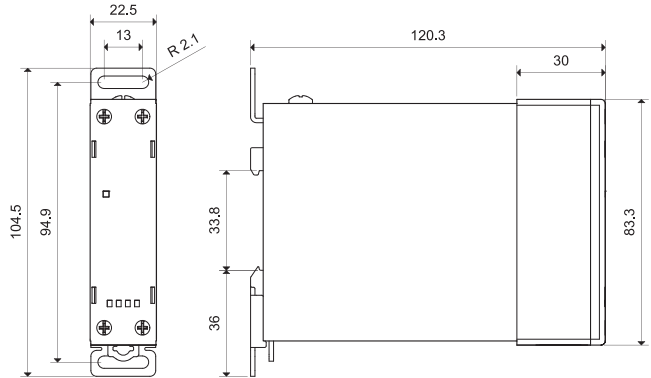


Outline drawings

77.01
Screw terminal



77.31
Screw terminal



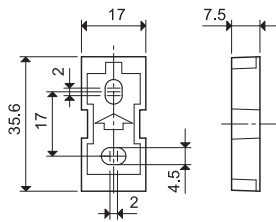
Accessories



020.01

Adaptor for panel mounting, plastic, 17.5 mm wide for 77.01 only

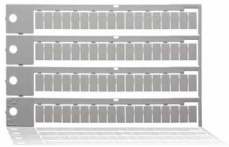
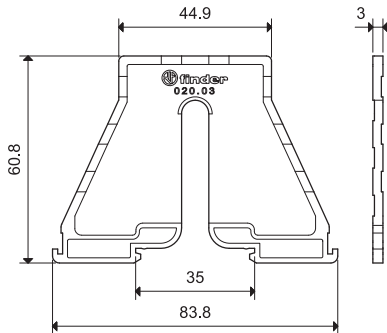
020.01



020.03

Separator for panel mounting, plastic, 3 mm wide

020.03



060.72

Sheet of marker tags, plastic, 72 tags, 6x12 mm

060.72