

Solid State Relays from 5 to 125 A

77
SERIES



Industrial
motors



Industrial
furnaces
and ovens



Lighting control
in corridors (for
hotels, offices
and hospitals)



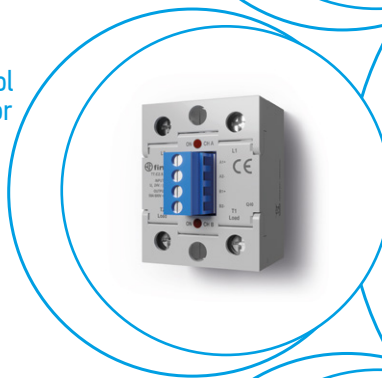
Bottling plant



Labelling
machines



Packaging
machines



5 A modular SSR, 1 NO AC output

- 17.5 mm housing
- 60 to 240 V 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
- 3-phase general purpose
- 35 mm rail (EN 60715) mount

77.01
Box clamp



* See L77-8 diagram page 20

** See L77-1 and L77-2 diagrams page 19

For outline drawing see page 27

Output specification

Output configuration	1 NO (SPST-NO)
Rated current I_N /Max. peak current* (10 ms)	A 5/300*
Rated voltage	V AC (50/60 Hz) 230
Switching voltage range	V AC (50/60 Hz) 48...265
Repetitive peak off-state voltage	V_{pk} 800
Rated load AC7a ($\cos \varphi = 0.8$)	A 5
Rated load AC15	A 5
Single phase motor rating (230 V AC)	kW —
Nominal lamp rating:	
(230 V) incandescent/halogen W	1000
fluorescent tubes with electronic ballast W	1000
fluorescent tubes with electromagnetic ballast W	1000
CFL W	800
(230 V) LED W	800
LV halogen or LED with electronic ballast W	800
LV halogen or LED with electromagnetic ballast W	1000
Minimum switching current @ 230 V	mA 100
Typical "OFF-state" leakage current @ 230 V	mA 0.5
Max "ON-state" voltage drop @ 25 °C and 5 A/100 mA	V 0.85/1.5
Power loss @ 5 A	W 4

Input specification

Nominal voltage (U_N)	V AC (50/60 Hz)	—	230
	V DC	6...24	—
Rated power	VA (50 Hz)/W	—/0.4	3.6/0.3
Operating range	V AC (50/60 Hz)	—	90...265
	V DC	4...32	—
Must drop-out voltage	V AC (50/60 Hz)/DC	3	24

Technical data

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

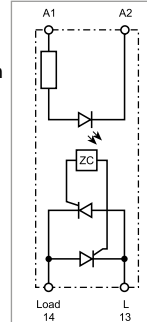
Approvals (according to type)

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

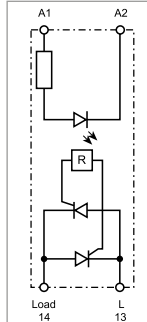
77.01.x.xxx.8051



Random switch-on

Suggested applications:

- Finer control requiring short operate time (specially motor control)
- AC Input phase different from AC Output phase



Simplified circuit diagram

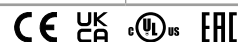
1 NO (SPST-NO)

Rated current I_N /Max. peak current* (10 ms)	A 5/300*
Rated voltage	V AC (50/60 Hz) 230
Switching voltage range	V AC (50/60 Hz) 48...265
Repetitive peak off-state voltage	V_{pk} 800
Rated load AC7a ($\cos \varphi = 0.8$)	A 5
Rated load AC15	A 3
Single phase motor rating (230 V AC)	kW 0.1
Nominal lamp rating:	
(230 V) incandescent/halogen W	800
fluorescent tubes with electronic ballast W	800
fluorescent tubes with electromagnetic ballast W	800
CFL W	400
(230 V) LED W	400
LV halogen or LED with electronic ballast W	400
LV halogen or LED with electromagnetic ballast W	800
Minimum switching current @ 230 V	mA 100
Typical "OFF-state" leakage current @ 230 V	mA 3.5
Max "ON-state" voltage drop @ 25 °C and 5 A/100 mA	V 0.85/1.5
Power loss @ 5 A	W 4

Nominal voltage (U_N)	V AC (50/60 Hz)	—	230
	V DC	6...24	—
Rated power	VA (50 Hz)/W	—/0.4	3.6/0.3
Operating range	V AC (50/60 Hz)	—	90...265
	V DC	4...32	—
Must drop-out voltage	V AC (50/60 Hz)/DC	3	24

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

Approvals (according to type)



7 - 15 A modular SSR, 1 NO DC output

- 17.5 mm housing
- 2 versions, for 24 and 125 V DC mosfet output
- 4 kV (1.2/50 µs) insulation between Input and Output
- Short circuit protection
- High switching speed
- High endurance
- Silent switching
- Spark and bounce-free switching
- Low control power
- 35 mm rail (EN 60715) mount

77.01

Box clamp

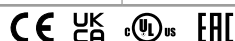


* See L77-3 and L77-4 diagrams page 19

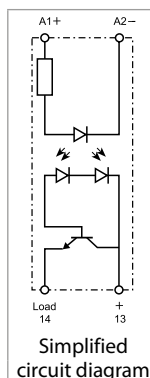
For outline drawing see page 27

Output specification

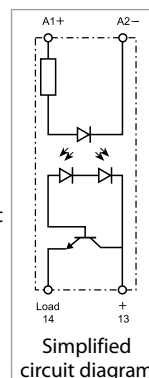
Output configuration		1 NO (SPST-NO)	1 NO (SPST-NO)
Rated current I_N /Max. peak current (10 ms)	A	15/160	7/60
Rated voltage	V DC	24	125
Switching voltage range	V DC	16...32	43...140
Rated load DC13	A	5	2.5
DC motor rating	kW	0.2	—
Minimum switching current	mA	100	50
Typical "OFF-state" leakage current	mA	3	6
Max "ON-state" voltage drop @ 25 °C and I_N	V	0.06	0.2
Power loss @ I_N	W	1	1.5
Input specification			
Nominal voltage (U_N)	V DC	6...24	6...24
Rated power	W	0.4	0.4
Operating range	V DC	4...32	4...32
Must drop-out voltage	V DC	3	3
Technical data			
Electrical life	cycles	$10 \cdot 10^6$	$10 \cdot 10^6$
Operate/release time	ms	0.05/2	0.05/2
Insulation between input and output (1.2/50 µs)	kV	4	4
Ambient temperature	°C	-20...+70*	-20...+70*
Protection category		IP 20	IP 20

Approvals (according to type)**77.01.9.024.9024****24 V DC output switching
15 A rated****Applications in Energy,
Automation and Machines:**

- Control of electric, pneumatic and hydraulic electromagnetic valves
- Direct control of loads such as motors and electromagnets

**77.01.9.024.9125****110...125 V DC output
switching
7 A rated****Applications in Energy,
Automation and Machines:**

- Control of electric, pneumatic and hydraulic electromagnetic valves
- Direct control of loads such as motors and electromagnets



15 A modular SSR, 1 NO output

- 22.5 mm housing, heat-sink + plastic cover
- 24 to 277 V AC output (with TRIAC)
- 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
- 3-phase general purpose
- "Relay-style" terminal arrangement (input and output terminals on opposite sides)
- 35 mm rail (EN 60715) mount

77.11
Box clamp



* See L77-9 diagram page 20

** See L77-5 diagrams page 19

For outline drawing see page 27

Output specification

Output configuration		1 NO (SPST-NO)	1 NO (SPST-NO)
Rated current I _N /Max. peak current* (10 ms)	A	15/400*	15/400*
Rated voltage	V AC (50/60 Hz)	230	230
Switching voltage range	V AC (50/60 Hz)	19...305	19...305
Repetitive peak off-state voltage	V _{pk}	800	800
Rated load AC7a (cos φ = 0.8, @ 25 °C)	A	20	20
Rated load AC15	A	15	15
Single phase motor rating (230 V AC)	kW	—	0.75
Nominal lamp rating:			
(230 V) incandescent/halogen W		4000	2500
fluorescent tubes with electronic ballast W		4000	2500
fluorescent tubes with electromagnetic ballast W		2000	1000
CFL W		3000	1500
(230 V) LED W		3000	1500
LV halogen or LED with electronic ballast W		3000	1500
LV halogen or LED with electromagnetic ballast W		3000	1500
Minimum switching current @ 250 V	mA	100	100
Typical “OFF-state” leakage current @ 250 V	mA	1	1
Max “ON-state” voltage drop @ 25 °C and 15 A			
	V	1.55	1.55
Power loss @ 15 A	W	14	14

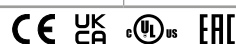
Input specification

Nominal voltage (U_N)	V AC (50/60 Hz)	—	230	—	230
	V DC	24	—	24	—
Rated power 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		IP 20		IP 20	

Approvals (according to type)



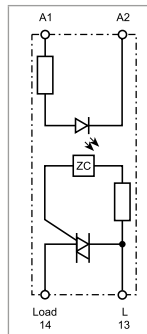
77.11.x.xxx.8250



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

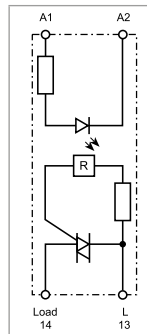
77.11.x.xxx.8251



Random switch-on

Suggested applications:

- Fine controls involving shorter time (specially motor control)



Simplified circuit diagram

25 A modular SSR, 1 NO output

- 22.5 mm housing, heat-sink + plastic cover
- 24 to 277 V AC output (with TRIAC)
- 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
- 3-phase general purpose
- "Relay-style" terminal arrangement (input and output terminals on opposite sides)
- 35 mm rail (EN 60715) mount

77.21
Box clamp

* See L77-10 diagram page 20

** See L77-6 diagrams page 19

For outline drawing see page 27

Output specification

Output configuration

Rated current (@40 °C) I_N /
Max. peak current* (10 ms)

A

Rated voltage V AC (50/60 Hz)

Switching voltage range V AC (50/60 Hz)

Repetitive peak off-state voltage V_{pk} Rated load AC7a ($\cos \varphi = 0.8$, @ 25 °C)

A

Rated load AC15

A

Single phase motor rating (230 V AC)

kW

Nominal lamp rating:

(230 V) incandescent/halogen W

fluorescent tubes with
electronic ballast Wfluorescent tubes with
electromagnetic ballast W

CFL W

(230 V) LED W

LV halogen or LED with
electronic ballast WLV halogen or LED with
electromagnetic ballast W

Minimum switching current @ 250 V

mA

Typical "OFF-state" leakage current @ 250 V

mA

Max "ON-state" voltage drop
@ 25 °C and 25 A

V

Power loss @ 25 A

W

Input specificationNominal voltage (U_N) V AC (50/60 Hz)

—

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 · 10⁶10 · 10⁶

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**

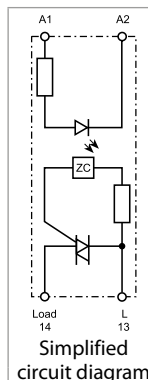
Protection category

IP 20

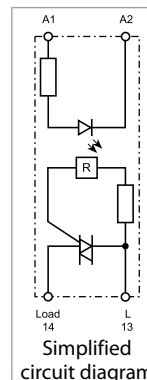
IP 20

Approvals (according to type)**77.21.x.xxx.8250****Zero-crossing switch-on
Suggested applications:**

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

**77.21.x.xxx.8251****Random switch-on****Suggested applications:**

- Finer control requiring short operate time (specially motor control)



1 NO (SPST-NO)

1 NO (SPST-NO)

25/400*

25/400*

230

230

19...305

19...305

800

800

25

25

25

25

—

1

4000

2500

4000

2500

2000

1000

3000

1500

3000

1500

3000

1500

3000

1500

3000

1500

100

100

1

1

1.55

1.55

14

14

—

230

—

230

24

—

24

—

0.4

7.5/0.9

0.4

7.5/0.9

—

40...280

—

40...280

4...32

—

4...32

—

—/2

6/—

—/2

6/—

10 · 10⁶10 · 10⁶

< 10/< 10

< 10/< 30

< 1/< 10

< 2/< 25

6

6

-20...+80**

-20...+80**

IP 20

IP 20

30 A modular SSR, 1 NO output

- 22.5 mm housing, heat-sink + plastic cover
- 60 to 440 V AC output (with back to back SCR)
- 6 kV (1.2/50 µs) 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
- 3-phase general purpose
- "Relay-style" terminal arrangement (input and output terminals on opposite sides)
- 35 mm rail (EN 60715) mount

77.31
Box clamp



* See L77-11 diagram page 20

** See L77-7 diagrams page 19

For outline drawing see page 27

Output specification

Output configuration		1 NO (SPST-NO)	1 NO (SPST-NO)
Rated current I _N /Max. peak current* (10 ms)	A	30/520*	30/520*
Rated voltage	V AC (50/60 Hz)	400	400
Switching voltage range	V AC (50/60 Hz)	48...480	48...480
Repetitive peak off-state voltage	V _{pk}	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	—	1.5
Nominal lamp rating:			
(230 V) incandescent/halogen W		6000	4500
fluorescent tubes with electronic ballast W		6000	4000
fluorescent tubes with electromagnetic ballast W		3000	1800
CFL W		4000	2500
(230 V) LED W		4000	2500
LV halogen or LED with electronic ballast W		4000	2500
LV halogen or LED with electromagnetic ballast W		4000	2500
Minimum switching current @ 400 V	mA	300	300
Typical “OFF-state” leakage current @ 400 V	mA	1	1
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)	24	230	—	230
	V DC	24	—	24	—
Rated power @ U_{MAX} VA (50 Hz)/W		0.24/0.4	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		6/2	6/—	—/2	6/—

Technical data

Electrical life cycles		$10 \cdot 10^6$		$10 \cdot 10^6$	
Operate/release time ms		< 10/< 10	< 10/< 30	< 1/< 10	< 2/< 25
Insulation between input and output (1.2/50 µs) kV		6		6	
Ambient temperature °C		-20...+80**		-20...+80**	
Protection category		IP 20		IP 20	

Approvals (according to type)

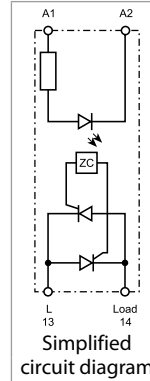


77.31.x.xxx.8050



Zero-crossing switch-on Suggested applications:

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

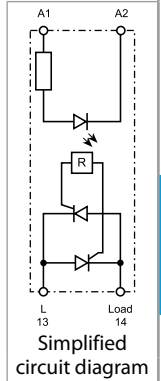


77.31.x.xxx.8051



Random switch-on Suggested applications:

- Finer control requiring short operate time (specially motor control)



30 A modular SSR, 1 NO output

- 22.5 mm housing, heat-sink + plastic cover
- 60 to 440 V 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
- 3-phase general purpose
- "Contactor-style" terminal arrangement (input and output terminals on adjacent sides)
- 35 mm rail (EN 60715) mount

77.31
Box clamp



* See L77-11 diagram page 20

** See L77-7 diagrams page 19

For outline drawing see page 27

Output specification

Output configuration		1 NO (SPST-NO)	1 NO (SPST-NO)
Rated current I _N /Max. peak current* (10 ms)	A	30/520*	30/520*
Rated voltage	V AC (50/60 Hz)	400	400
Switching voltage range	V AC (50/60 Hz)	48...480	48...480
Repetitive peak off-state voltage	V _{pk}	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	—	1.5
Nominal lamp rating:			
(230 V) incandescent/halogen W		6000	4500
fluorescent tubes with electronic ballast W		6000	4000
fluorescent tubes with electromagnetic ballast W		3000	1800
CFL W		4000	2500
(230 V) LED W		4000	2500
LV halogen or LED with electronic ballast W		4000	2500
LV halogen or LED with electromagnetic ballast W		4000	2500
Minimum switching current @ 400 V	mA	300	300
Typical “OFF-state” leakage current @ 400 V	mA	1	1
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	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/—

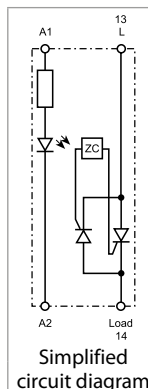
Technical data

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		IP 20		IP 20	

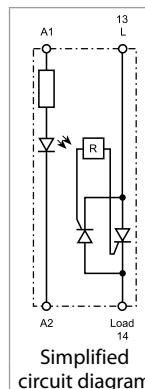
Approvals (according to type)

**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

**77.31.x.xxx.8071****Random switch-on****Suggested applications:**

- Fine controls involving shorter time (specially motor control)



25, 40 and 60 A panel Zero-crossing SSR, "hockey puck" style

Type 77.A1.x.xxx.8x50: 25 A

Type 77.B1.x.xxx.8x50: 40 A

Type 77.D1.x.xxx.8x50: 60 A

8250: 24 to 280 VAC switching load voltage

8650: 24 to 660 VAC switching load voltage

- "hockey puck" housing with folding screw cover
- High endurance and switching speed
- Silent switching
- Spark and bounce-free switching
- Low control power
- "Relay-style": input and output terminals on opposite sides
- Mounting on control cabinet sheet metal or on heatsink

77.A1/B1/D1

Screw terminal (plate clamp)*



* See recommendation for wiring page 17

** See L77-13, L77-14 and L77-15 diagrams page 21

Four outline drawing see page 27

Output specification		77...8250	77...8650	77...8250	77...8650	77...8250	77...8650
Output configuration		1 NO		1 NO		1 NO	
Rated current I _N /Max. peak current (10 ms) A		25/300		40/500		60/700	
Rated voltage							

80, 100 and 125 A panel Zero-crossing SSR, "hockey puck" style**Type 77.F1.x.xxx.8x50:** 80 A**Type 77.G1.x.xxx.8x50:** 100 A**Type 77.H1.x.xxx.8x50:** 125 A**8250:** 24 to 280 VAC switching load voltage**8650:** 24 to 660 VAC switching load voltage

- "hockey puck" housing with folding screw cover
- High endurance and switching speed
- Silent switching
- Spark and bounce-free switching
- Low control power
- "Relay-style": input and output terminals on opposite sides
- Mounting on control cabinet sheet metal or on heatsink

77.F1/G1/H1

Screw terminal (plate clamp)*



* See recommendation for wiring page 17

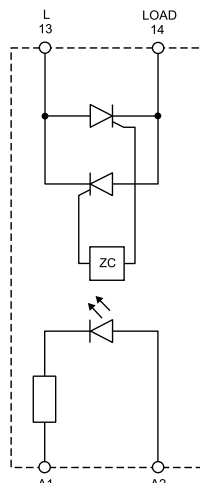
** See L77-16, L77-17 and L77-18 diagrams page 21

For outline drawing see page 27

Output specification		77...8250	77...8650	77...8250	77...8650	77...8250	77...8650
Output configuration		1 NO		1 NO		1 NO	
Rated current I _N /Max. peak current (10 ms)		A		80/800		100/1500	
Rated voltage		V AC (50/60 Hz)		240	600	240	600
Switching voltage range		V AC (50/60 Hz)		24...280	24...660	24...280	24...660
Operating frequency range		Hz		47...400	47...400	47...400	47...400
Repetitive peak off-state voltage		V _{pk}		600	1600	600	1600
Rated load AC53		A		16		20	25
Minimum switching current @ 250 V		mA		100		100	100
Typical "OFF-state" leakage current @ rated voltage		mA		0.1		0.1	0.1
Max "ON-state" voltage drop @ 25 °C and I _N		V		1.5		1.5	1.5
Power loss @ I _N		W		96		120	150
Input specification							
Nominal voltage (U _N)		V AC (50/60 Hz)		230		230	230
		V DC		24		24	24
Rated power @ U _{MAX}		VA (50 Hz)/W		5.3/0.55		5.3/0.55	5.3/0.55
Operating range		V AC (50/60 Hz)		90...280		90...280	90...280
		V DC		3...32		3...32	3...32
Must drop-out voltage		V AC (50/60 Hz)/DC		15/1		15/1	15/1
Technical data							
Electrical life		cycles		—		—	—
Operate/release time		(230 V AC) ms		40/20		40/20	40/20
		(24 V DC) ms		10/10		10/10	10/10
Insulation between input and output (1.2/50 μs)		kV		—		—	—
Ambient temperature		°C		−30...+80**		−30...+80**	−30...+80**
Protection category				—		—	—
Approvals (according to type)		   					

77.F1.x.xxx.8x50**Zero-crossing switch-on**

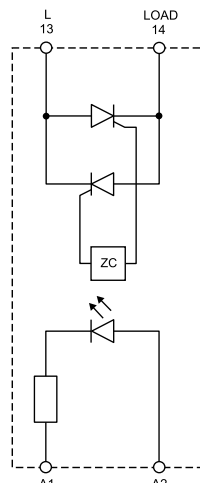
- Output: 80 A
- Suggested applications: heater control, lamps, solenoid, contactor driver



Simplified circuit diagram

77.G1.x.xxx.8x50**Zero-crossing switch-on**

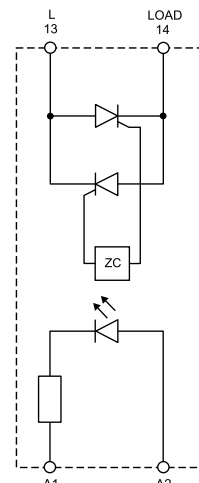
- Output: 100 A
- Suggested applications: heater control, lamps, solenoid, contactor driver



Simplified circuit diagram

77.H1.x.xxx.8x50**Zero-crossing switch-on**

- Output: 125 A
- Suggested applications: heater control, lamps, solenoid, contactor driver



Simplified circuit diagram

25, 50 and 75 A dual phase Random SSR, "hockey puck" style with 2 independent channels

Type 77.A2.9.024.8671: 25 A - 600 V AC

Type 77.C2.9.024.8671: 50 A - 600 V AC

Type 77.E2.9.024.8671: 75 A - 600 V AC

- 2 independent output channel driven by independent low power DC input
- "hockey puck" housing with folding screw cover
- High endurance and switching speed
- Silent switching
- Spark and bounce-free switching
- "contactor-style": input and output terminals on adjacent sides
- Mounting on control cabinet sheet metal or on heatsink

77.A2/C2/E2

Screw terminal (plate clamp)*

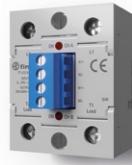


* See recommendation for wiring page 17

** See L77-19, L77-20 and L77-21 diagrams page 22

For outline drawing see page 27

77.A2.9.024.8671



Random switch-on

- Output: 25 A/600 V AC
- Suggested applications: heater or motor control

77.C2.9.024.8671



Random switch-on

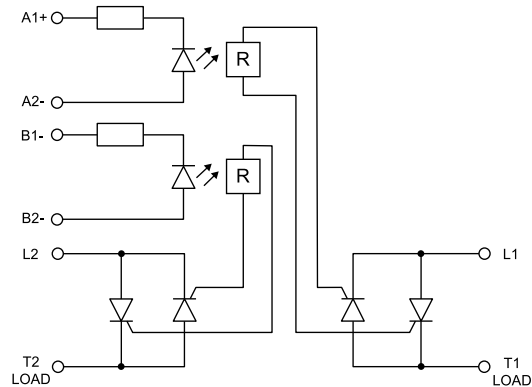
- Output: 50 A/600 V AC
- Suggested applications: heater or motor control

77.E2.9.024.8671



Random switch-on

- Output: 75 A/600 V AC
- Suggested applications: heater or motor control



Simplified circuit diagram

Output specification			
Output configuration	2 NO	2 NO	2 NO
Rated current I_N /Max. peak current (10 ms) A	25/300	50/500	75/750
Rated voltage V AC (50/60 Hz)	600	600	600
Switching voltage range V AC (50/60 Hz)	24...660	24...660	24...660
Operating frequency range Hz	47...400	47...400	47...400
Repetitive peak off-state voltage V_{pk}	1200	1200	1200
Rated load AC53 A	5	10	15
Minimum switching current @ 600 V mA	—	—	—
Typical "OFF-state" leakage current @ rated voltage mA	5	5	5
Max "ON-state" voltage drop @ 25 °C and I_N V	1.5	1.5	1.5
Power loss @ I_N W	60	120	180
Input specification			
Nominal voltage (U_N) V DC	24	24	24
Rated power @ U_{MAX} W	0.3	0.3	0.3
Operating range V DC	4...32	4...32	4...32
Must drop-out voltage V AC (50/60 Hz)/DC	1	1	1
Technical data			
Electrical life cycles	—	—	—
Operate/release time ms	1/10	1/10	1/10
Insulation between input and output (1.2/50 μ s) kV	—	—	—
Ambient temperature °C	-30...+80**	-30...+80**	-30...+80**
Protection category	—	—	—
Approvals (according to type)			

25 and 40 A three phase Random SSR, "hockey puck" style**Type 77.A3.x.xxx.8671:** 25 A - 600 V AC**Type 77.B3.x.xxx.8671:** 40 A - 600 V AC

- High endurance and switching speed
- Silent switching
- Spark and bounce-free switching
- Low control power
- "contactor-style": input and output terminals on adjacent sides
- Mounting on control cabinet sheet metal or on heatsink

77.A3/B3

Screw terminal (plate clamp)*



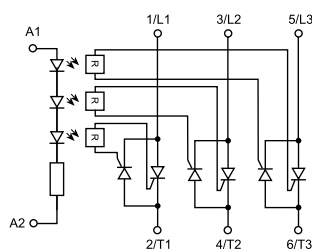
D

77.A3.x.xxx.8671**Random switch-on**

- Output: 25 A/600 V AC
- Suggested applications: heater or motor control

77.B3.x.xxx.8671**Random switch-on**

- Output: 40 A/600 V AC
- Suggested applications: heater or motor control



Simplified circuit diagram

For outline drawing see page 27

Output specification

Output configuration	3 NO	3 NO
Rated current I_N /Max. peak current (10 ms) A	25/300	40/500
Rated voltage V AC (50/60 Hz)	600	600
Switching voltage range V AC (50/60 Hz)	24...660	24...660
Operating frequency range Hz	47...400	47...400
Repetitive peak off-state voltage V_{pk}	1600	1600
Rated load AC53 A	5	8
Minimum switching current @ 600 V mA	—	—
Typical "OFF-state" leakage current @ rated voltage mA	10	10
Max "ON-state" voltage drop @ 25 °C and I_N V	1.6	1.6
Power loss @ I_N W	90	144

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	5.3/0.55	5.3/0.55
Operating range V AC (50/60 Hz)	90...280	90...280
V DC	4...32	4...32
Must drop-out voltage V AC (50/60 Hz)/DC	15/1	15/1

Technical data

Electrical life cycles	—	—
Operate/release time (230 V AC) ms	10/20	10/20
(24 V DC) ms	1	1
Insulation between input and output (1.2/50 μ s) kV	—	—
Ambient temperature °C	-30...+80**	-30...+80**
Protection category	—	—

Approvals (according to type)

60 and 80 A three phase Random SSR, "hockey puck" style

Type 77.D3.x.xxx.8671: 60 A - 600 V AC

Type 77.F3.x.xxx.8671: 80 A - 600 V AC

- High endurance and switching speed
- Silent switching
- Spark and bounce-free switching
- Low control power
- "contactor-style": input and output terminals on adjacent sides
- Mounting on control cabinet sheet metal or on heatsink

77.D3.x.xxx.8671



Random switch-on

- Output: 60 A/600 V AC
- Suggested applications: heater or motor control

77.F3.x.xxx.8671

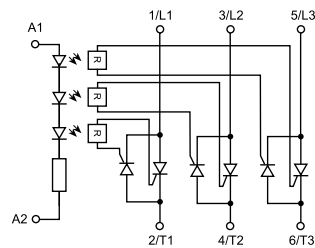


Random switch-on

- Output: 80 A/600 V AC
- Suggested applications: heater control

77.D3/F3

Screw terminal (plate clamp)*



* See recommendation for wiring page 17

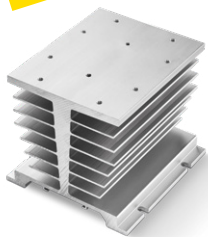
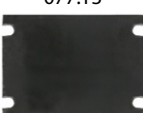
** See L77-24 and L77-25 diagrams page 22

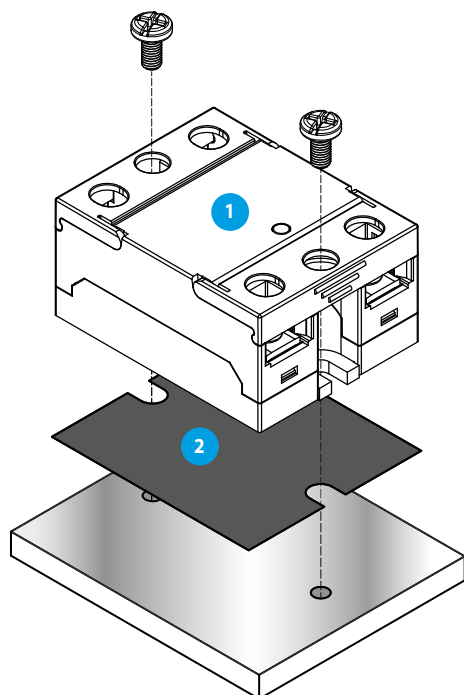
For outline drawing see page 27

Simplified circuit diagram

Output specification			
Output configuration		3 NO	3 NO
Rated current I_N /Max. peak current (10 ms)	A	60/700	80/1280
Rated voltage	V AC (50/60 Hz)	600	600
Switching voltage range	V AC (50/60 Hz)	24...660	24...660
Operating frequency range	Hz	47...400	47...400
Repetitive peak off-state voltage	V_{pk}	1600	1600
Rated load AC53	A	12	16
Minimum switching current @ 600 V	mA	—	—
Typical "OFF-state" leakage current @ 600 V	mA	10	10
Max "ON-state" voltage drop @ 25 °C and I_N	V	1.6	1.6
Power loss @ I_N	W	216	288
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	5.3/0.55	5.3/0.55
Operating range	V AC (50/60 Hz)	90...280	90...280
	V DC	4...32	4...32
Must drop-out voltage	V AC (50/60 Hz)/DC	15/1	15/1
Technical data			
Electrical life	cycles	—	—
Operate/release time	(230 V AC) ms	10/20	10/20
	(24 V DC) ms	1	1
Insulation between input and output (1.2/50 μ s)	kV	—	—
Ambient temperature	°C	-30...+80**	-30...+80**
Protection category		—	—
Approvals (according to type)			

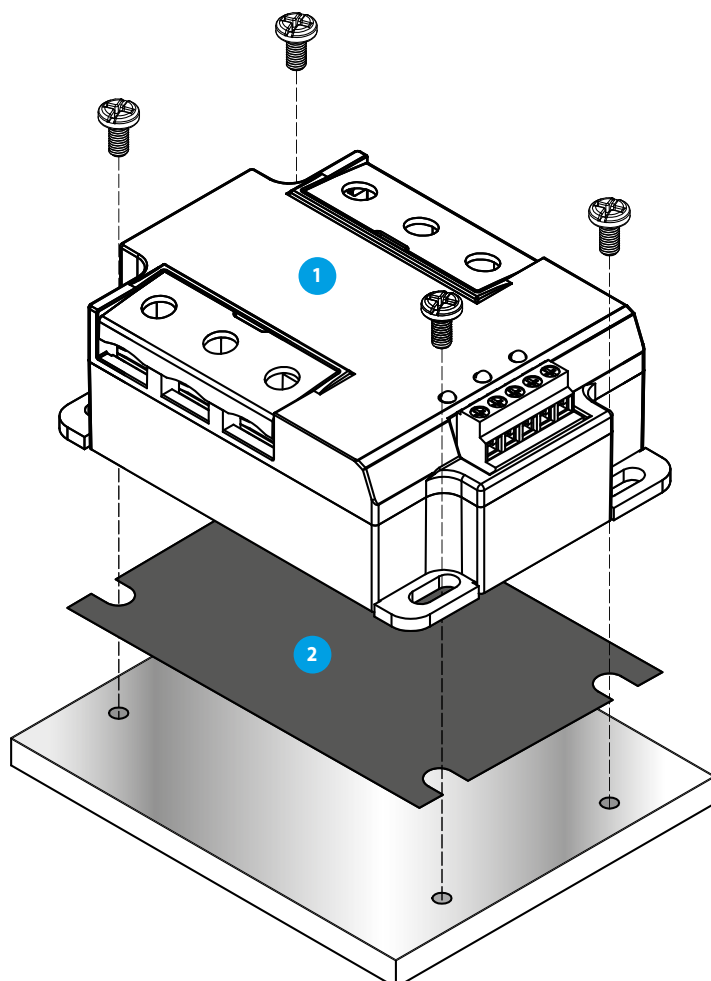
Hockey puck SSR heat sink compatibility chart

Heat sink	SSR relay	Thermal pad	K/W	Product Description
NEW 077.21 	77.A1	077.T1  077.T2 - Adhesive 	2.1	Heat sink SSR 1 phase
NEW 077.13 	77.A1 77.B1	077.T1  077.T2 - Adhesive 	1.3	Heat sink SSR 1 phase
NEW 077.08 	77.B1 - D1 - F1 - G1 - H1 77.A2 - C2 - E2 77.A3 - B3	077.T1  077.T2 - Adhesive  077.T3 	0.8	Heat sink SSR 1, 2, 3 phases
NEW 077.03.9.024 	77.D1 - F1 - G1 - H1 77.A2 - C2 - E2 77.A3 - B3 - D3 - F3	077.T1  077.T2 - Adhesive  077.T3 	0.35	Heat sink with 24 V DC - 5.5 W cooling fan Suitable for SSR 1, 2, 3 phases
NEW 077.03.8.230 	77.D1 - F1 - G1 - H1 77.A2 - C2 - E2 77.A3 - B3 - D3 - F3	077.T1  077.T2 - Adhesive  077.T3 	0.35	Heat sink with 230 V AC - 14.5 W cooling fan Suitable for SSR 1, 2, 3 phases



- 1 Type**
77.x1
77.x2

- 2 Thermal Pad**
077.T1
077.T2



- 1 Type**
77.A3
77.B3
77.D3
77.F3

- 2 Thermal Pad**
077.T3

Ordering information - Modular SSRs

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

77.31.8.230.8050

Series — 77

Type/rated current — 3
0 = 5/7/15 A output (77.01)
1 = 15 A output (77.11)
2 = 25 A output (77.21)
3 = 30 A output (77.31)

No. of poles/mounting — 1
1 = 1 pole, modular housing
(plastic or heat sink/plastic), DIN rail mounting

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

Supply voltage — 0
See "input specification"

Codes/Module width

77.01.8.230.8050/17.5 mm 5 A	77.11.8.230.8250/22.5 mm 15 A	77.21.8.230.8250/22.5 mm 25 A	77.31.8.024.8050/22.5 mm 30 A
77.01.9.024.8050/17.5 mm 5 A	77.11.9.024.8250/22.5 mm 15 A	77.21.9.024.8250/22.5 mm 25 A	77.31.8.230.8050/22.5 mm 30 A
77.01.8.230.8051/17.5 mm 5 A	77.11.8.230.8251/22.5 mm 15 A	77.21.8.230.8251/22.5 mm 25 A	77.31.9.024.8050/22.5 mm 30 A
77.01.9.024.8051/17.5 mm 5 A	77.11.9.024.8251/22.5 mm 15 A	77.21.9.024.8251/22.5 mm 25 A	77.31.8.230.8051/22.5 mm 30 A
77.01.9.024.9125/17.5 mm 7 A			77.31.9.024.8051/22.5 mm 30 A
77.01.9.024.9024/17.5 mm 15 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

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

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

AB: Output circuit
(rated voltage)
80 = 230 V AC (77.01), 400 V AC (77.31)
82 = 230 V AC (77.11, 77.21)
9024 = 24 V DC
9125 = 110...125 V DC

Ordering information - "Hockey puck" style SSRs

Example: 77 Series modular SSR, 1 output 25 A AC, input voltage 230 V AC, relay style terminal arrangement, zero-crossing switch-on.

77.A1.8.230.8050

Series — 77

Type/rated current — A
A = 25 A output
B = 40 A output
C = 50 A output
D = 60 A output
E = 75 A output
F = 80 A output
G = 100 A output
H = 125 A output

No. of poles/mounting — 1
1 = 1 phase, heat-sink or directly panel mounting
("hockey puck")
2 = 2 phases
3 = 3 phases

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

Supply voltage — 0
See "input specification"

Codes/Module width

1 phase 25 - 40 - 60 - 80 - 100 - 125 A	2 phases 25 - 50 - 75 A	3 phases 25 - 40 - 60 - 80 A
77.x1.8.230.8250/"hockey puck"	77.x2.9.024.8671/"hockey puck"	77.x3.8.230.8671/"hockey puck"
77.x1.9.024.8250/"hockey puck"		77.x3.9.024.8671/"hockey puck"
77.x1.8.230.8650/"hockey puck"		
77.x1.9.024.8650/"hockey puck"		

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

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

AB: Output circuit
(rated voltage)
82 = 230 V AC
86 = 600 V AC

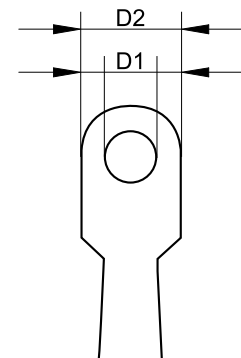
Technical data

Insulation			77.01.8xxx		77.01.9xxx		77.11		77.21		77.31		
			Dielectric strength	Impulse (1.2/50 µs)	Dielectric strength	Impulse (1.2/50 µs)	Dielectric strength	Impulse (1.2/50 µs)	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	4 kV	3000 V AC	6 kV	3000 V AC	6 kV	3000 V AC	6 kV	
Between input and ground (heat-sink)			—	—	—	—	3000 V AC	6 kV	3000 V AC	6 kV	3000 V AC	6 kV	
Between output and ground (heat-sink)			—	—	—	—	2500 V AC	4 kV	2500 V AC	4 kV	4000 V AC	6 kV	
EMC specifications		Reference standard	77.01.8.230		77.01.9.024		77.11		77.21		77.31		
			230 V AC		24 V DC		24 V DC	230 V AC	24 V DC	230 V AC	24 V AC/DC	230 V AC	
Electrostatic discharge	contact discharge	EN 61000-4-2	4 kV		4 kV		4 kV		4 kV		4 kV		
	air discharge	EN 61000-4-2	8 kV		8 kV		8 kV		8 kV		8 kV		
Radiated electromagnetic field (80...1000 MHz)		EN 61000-4-3	30 V/m		20 V/m		20 V/m		20 V/m		30 V/m		
Fast transients on supply terminals (burst 5/50 ns, 5 and 100 kHz)		EN 61000-4-4	1 kV		1 kV		1 kV	3 kV	1 kV	3 kV	1 kV	3 kV	
Voltage pulses on supply terminals (surge 1.2/50 µs)	common mode	EN 61000-4-5	—		—		3 kV	3 kV	3 kV	3 kV	3 kV	3 kV	
	differential mode	EN 61000-4-5	1 kV		0.5 kV		0.5 kV	1.5 kV	0.5 kV	1.5 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		10 V		10 V		10 V		10 V		
Terminals			77.01.x.xxx		77.01.9.xxx		77.11		77.21		77.31		
 Screw torque			Nm		0.8		0.8		0.8		0.8		
Max. wire size			solid cable	stranded cable	solid cable	stranded cable	solid cable	stranded cable	solid cable	stranded cable	solid cable	stranded cable	
			mm²	1 x 4 / 2 x 2.5	1 x 4 / 2 x 2.5	1 x 4 / 2 x 2.5	1 x 6 / 2 x 4	1 x 6 / 2 x 4	1 x 6 / 2 x 4	1 x 6 / 2 x 4	1 x 6 / 2 x 4	1 x 6 / 2 x 4	
			AWG	1 x 12 / 2 x 14	1 x 12 / 2 x 14	1 x 12 / 2 x 14	1 x 10 / 2 x 12	1 x 10 / 2 x 12	1 x 10 / 2 x 12	1 x 10 / 2 x 12	1 x 10 / 2 x 12	1 x 10 / 2 x 12	
Wire strip length			mm	9		9		9		9		9	
Other data													
Power lost to the environment	without output current	W	0.5		0.5		0.9		0.9		0.9		
	with rated current	W	4.0		4.0		14		15		16		

			77.x1	77.x2	77.x3
			Dielectric strength	Dielectric strength	Dielectric strength
Between Input and output			4 kV	4 kV	4 kV
Between input and ground (heat-sink)			4 kV	2.5 kV	2.5 kV
Terminals					
 Screw torque	Input side	Nm	1.5	0.5	0.5
	Output side	Nm	2.2	2.2	2.2
	On heatsink with thermal pad or paste	Nm	2.2	2.2	2.2

Recommendation for wiring

Load current (A)	Cross section area of wire (mm ²)	Wire size (AWG)	DIN 46234 terminal model	D1 (mm)	D2 (mm)
15 - 20	2.5	12	4 - 6	4.3	8
			5 - 6	5.3	10
20 - 35	4	10	4 - 6	4.3	8
			5 - 6	5.3	10
25 - 32	6	10	4 - 6	4.3	8
			5 - 6	5.3	10
32 - 50	10	8	5 - 10	5.3	10
50 - 65	16	6	5 - 16	5.3	11
65 - 85	25	4	5 - 25	5.3	12



Note: If the wire cross section area is bigger than 25 mm², we suggest to use 2 smaller cross section wires and connect them back to back superimposed (in parallel).

Input specification

77.01

Nominal voltage	Input code	Operating range				Must drop-out voltage (AC/DC)	Input current
		AC		DC			
		U _{min}	U _{max}	U _{min}	U _{max}		
U _N		U _{min}	U _{max}	U _{min}	U _{max}		I _N at U _N
V		V	V	V	V	V	mA
24	9.024	—	—	4	32	3.0	18
230	8.230	90	265	—	—	24	15

77.11/77.21

Nominal voltage	Input code	Operating range				Must drop-out voltage (AC/DC)	Input current
		AC		DC			
		U _{min}	U _{max}	U _{min}	U _{max}		
U _N		U _{min}	U _{max}	U _{min}	U _{max}		I _N at U _N
V		V	V	V	V	V	mA
24	9.024	—	—	4	32	2	11
230	8.230	40	305	—	—	6	25

77.31

Nominal voltage	Input code	Operating range				Must drop-out voltage (AC/DC)	Input current I_N at U_N
		AC		DC			
		U_{min}	U_{max}	U_{min}	U_{max}		
U_N		U_{min}	U_{max}	U_{min}	U_{max}		
V		V	V	V	V	V	mA
24	8.024	16	32	—	—	6	10
24	9.024	—	—	4	32	2	11
230	8.230	40	280	—	—	6	25

77.x1.x.xxx.8x50

Nominal voltage	Input code	Operating range				Must drop-out voltage (AC/DC)	Input current I _N at U _N
		AC		DC			
		U _{min}	U _{max}	U _{min}	U _{max}		
U _N		U _{min}	U _{max}	U _{min}	U _{max}		
V		V	V	V	V	V	mA
24	9.024	—	—	3	32	1.25	25
230	8.230	90	280	—	—	1.25	35

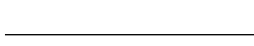
77.x2.9.024.8671

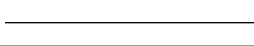
Nominal voltage	Input code	Operating range				Must drop-out voltage (AC/DC)	Input current
		AC		DC			
		U _{min}	U _{max}	U _{min}	U _{max}		
U _N		U _{min}	U _{max}	U _{min}	U _{max}		I _N at U _N
V		V	V	V	V	V	mA
24	9.024	—	—	4	32	1.5	25

77.x3.x.xxx.8671

Nominal voltage	Input code	Operating range				Must drop-out voltage (AC/DC)	Input current
		AC		DC			
		U _{min}	U _{max}	U _{min}	U _{max}		
U _N		U _{min}	U _{max}	U _{min}	U _{max}		I _N at U _N
V		V	V	V	V	V	mA
24	9.024	—	—	4	32	1.6	35
230	8.230	90	280	—	—	1.6	30

Led indication

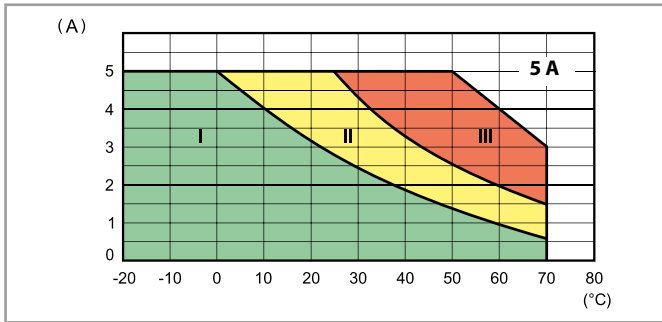
LED	Supply voltage
	OFF
	ON

LED (77.01.9.024.9xxx only)	Short circuit*
	NO
	YES

*To restore normal operation it is necessary to disconnect the power, resolve the short circuit and then restore power.

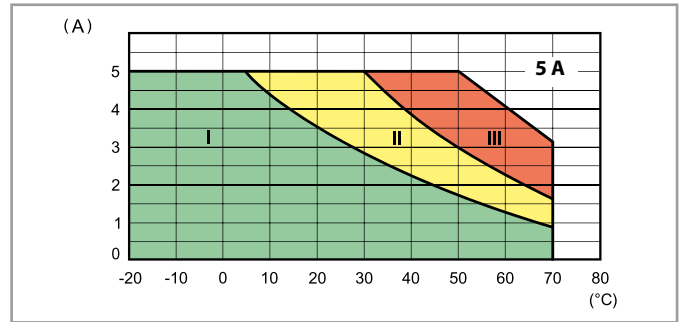
Output specification

L77-1 Output RMS current v ambient temperature
77.01.9.024.805x @ 32 V DC

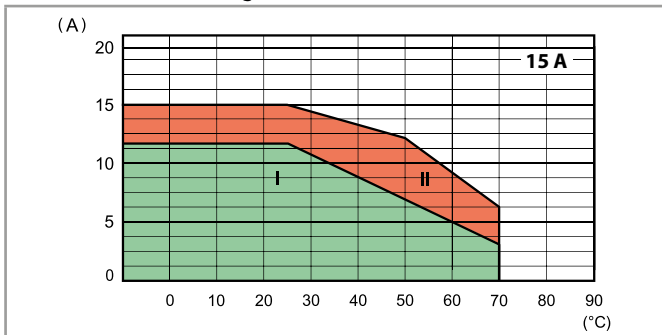


- I - Modular SSR installed as a group (without gap)
- II - Modular SSR installed as a group (9 mm gap between each SSR)
- III - Modular SSR installed individually in free air (without a significant influence from nearby components)

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

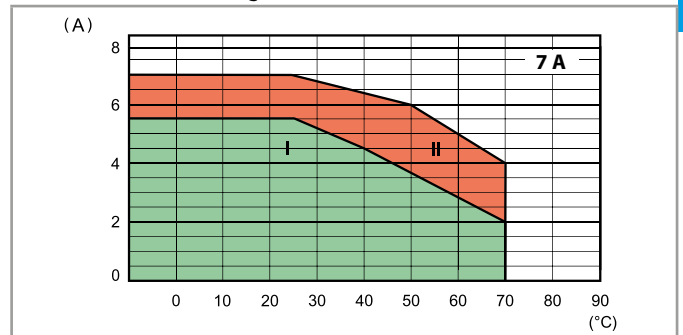


L77-3 Output DC current v ambient temperature
77.01.9.024.9024 @ 32 V DC

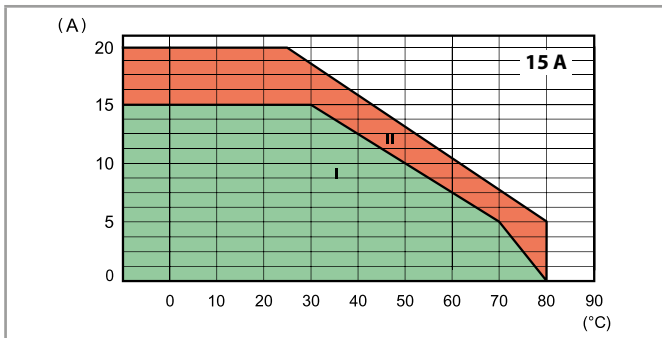


- I - Modular SSR installed as a group (without gap)
- II - Modular SSR installed individually in free air, or with a gap ≥ 9 mm, which implies a not significant influence from nearby components

L77-4 Output DC current v ambient temperature
77.01.9.024.9125 @ 32 V DC

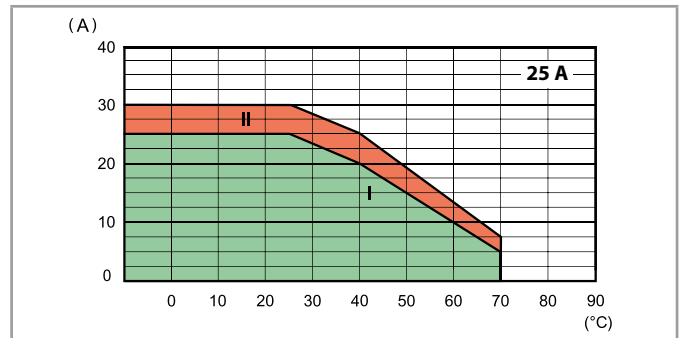


L77-5 Output RMS current v ambient temperature
77.11.x.xxx.82xx



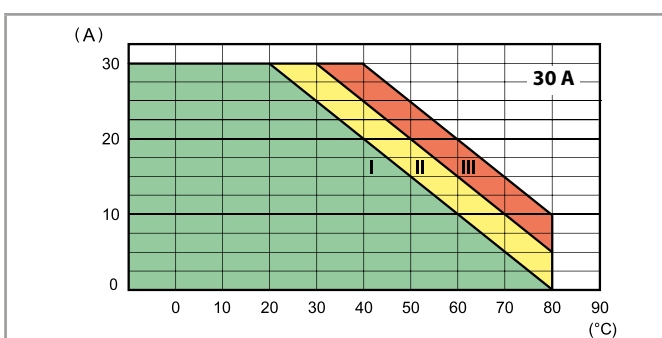
- I - Modular SSR installed as a group (without gap)
- II - Modular SSR installed individually in free air, or with a gap ≥ 20 mm, which implies a not significant influence from nearby components

L77-6 Output RMS current v ambient temperature
77.21.x.xxx.825x



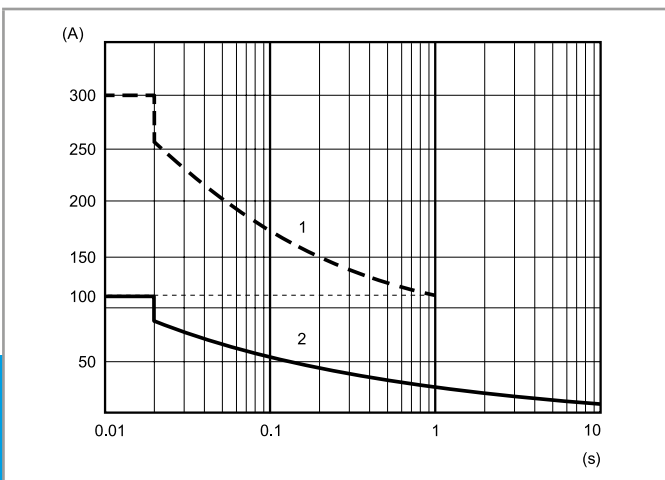
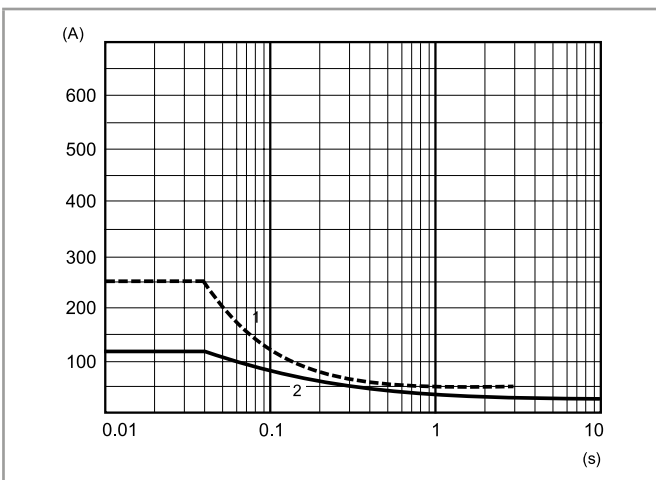
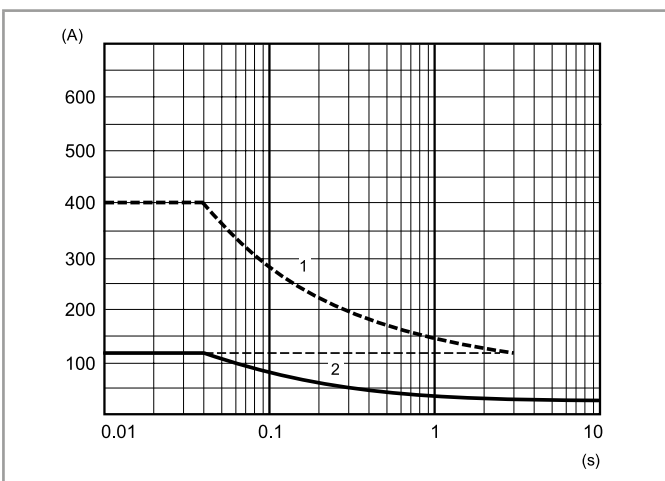
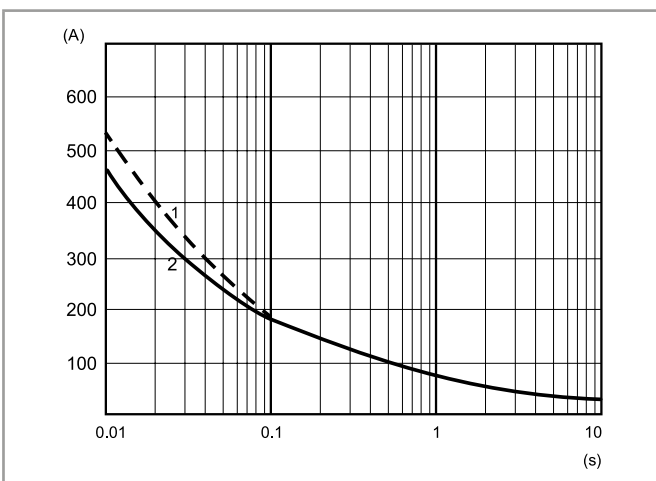
- I - Modular SSR installed as a group (without gap)
- II - Modular SSR installed individually in free air, or with a gap ≥ 20 mm, which implies a not significant influence from nearby components

L77-7 Output RMS current v 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

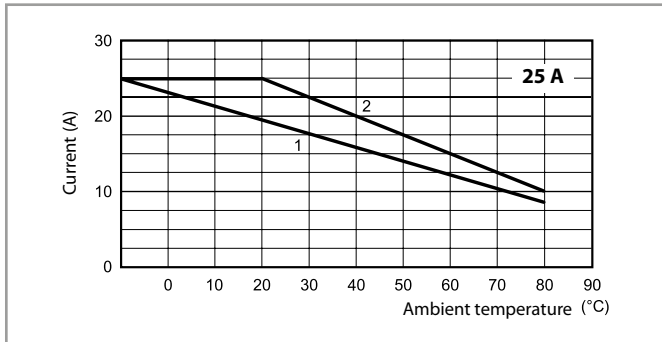
L77-8 Inrush peak current (AC) v inrush time
77.01.x.xxx.80xxL77-9 Inrush peak current (AC) v inrush time
77.11.x.xxx.82xxL77-10 Inrush peak current (AC) v inrush time
77.21.x.xxx.825xL77-11 Inrush peak current (AC) v inrush time
77.31.x.xxx.80xx

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)

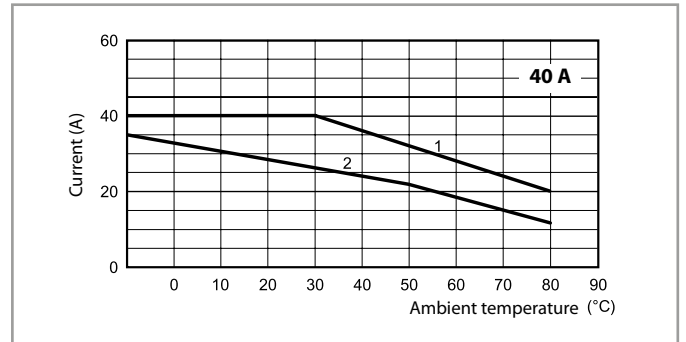
Output specification

L77-12 Output RMS current v ambient temperature
77.A1.x.xxx.8x50



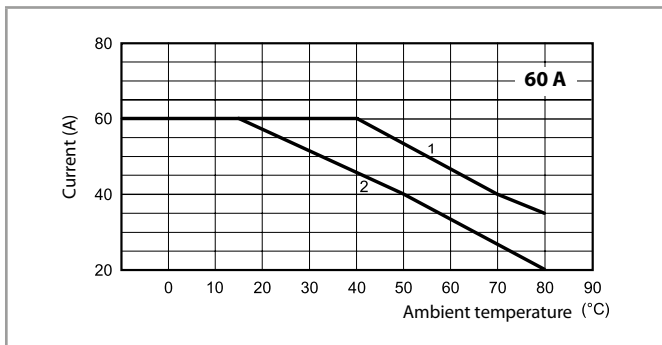
- 1 - Installation on heat-sink 077.21 (2.1 K/W)
2 - Installation on heat-sink 077.13 (1.3 K/W)

L77-13 Output RMS current v ambient temperature
77.B1.x.xxx.8x50



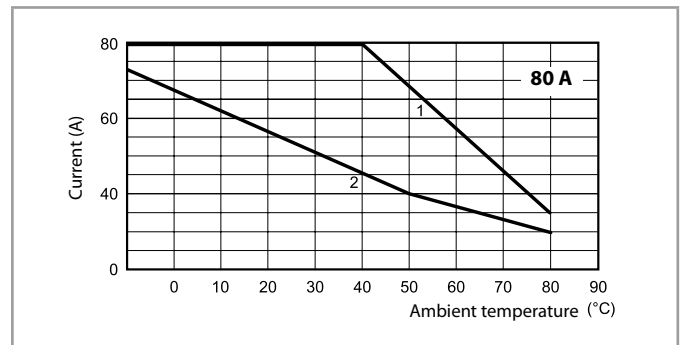
- 1 - Installation on heat-sink 077.08 (0.8 K/W)
2 - Installation on heat-sink 077.13 (1.3 K/W)

L77-14 Output RMS current v ambient temperature
77.D1.x.xxx.8x50



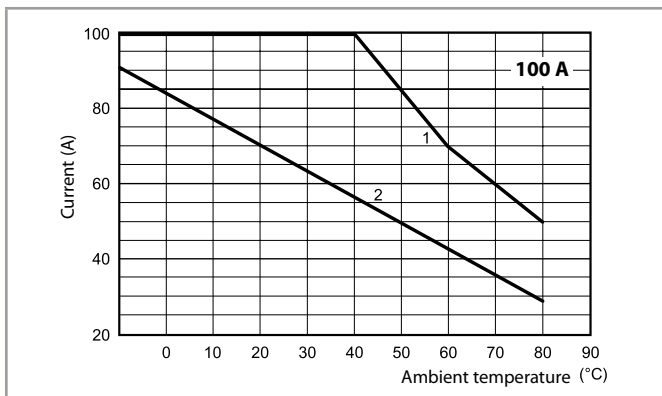
- 1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)
2 - Installation on heat-sink 077.08 (0.8 K/W)

L77-15 Output RMS current v ambient temperature
77.F1.x.xxx.8x50



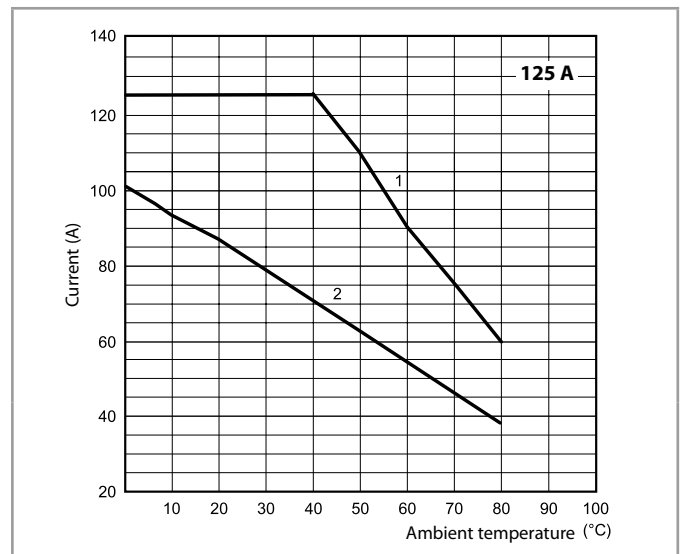
- 1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)
2 - Installation on heat-sink 077.08 (0.8 K/W)

L77-16 Output RMS current v ambient temperature
77.G1.x.xxx.8x50



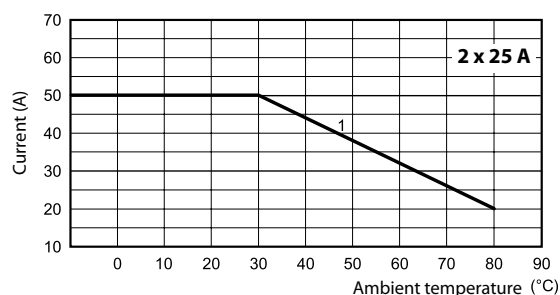
- 1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)
2 - Installation on heat-sink 077.08 (0.8 K/W)

L77-17 Output RMS current v ambient temperature
77.H1.x.xxx.8x50

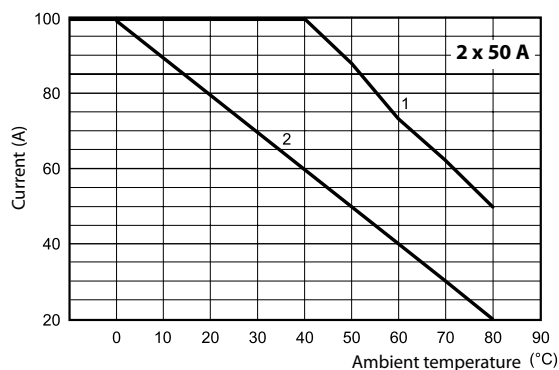


- 1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)
2 - Installation on heat-sink 077.08 (0.8 K/W)

Output specification

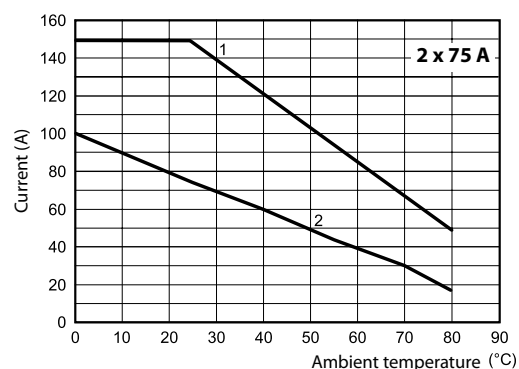
L77-18 Output RMS current v ambient temperature
77.A2.9.024.8671

1 - Installation on heat-sink 077.08 (0.8 K/W)

L77-19 Output RMS current v ambient temperature
77.C2.9.024.8671

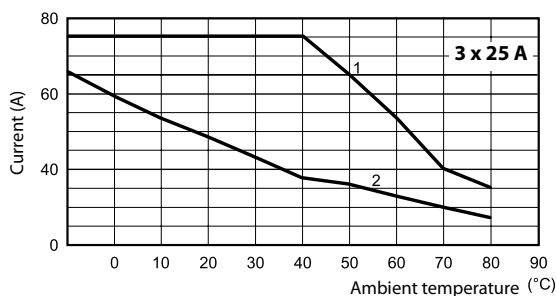
1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

2 - Installation on heat-sink 077.08 (0.8 K/W)

L77-20 Output RMS current v ambient temperature
77.E2.9.024.8671

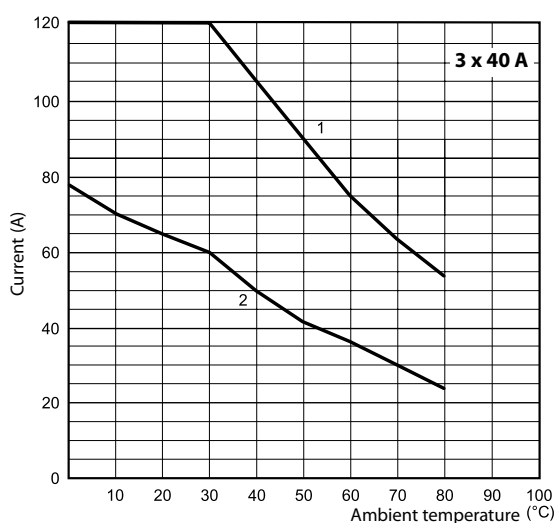
1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

2 - Installation on heat-sink 077.08 (0.8 K/W)

L77-21 Output RMS current v ambient temperature
77.A3.x.xxx.8671

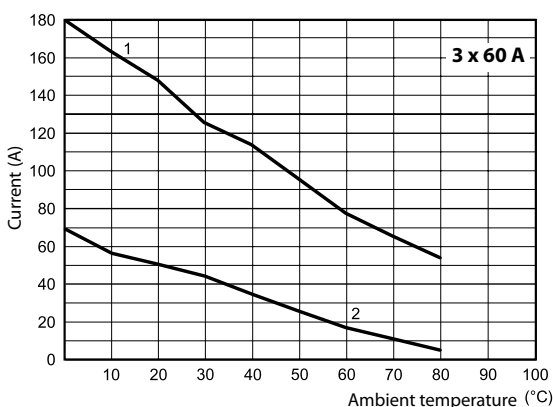
1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

2 - Installation on heat-sink 077.08 (0.8 K/W)

L77-22 Output RMS current v ambient temperature
77.B3.x.xxx.8671

1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

2 - Installation on heat-sink 077.08 (0.8 K/W)

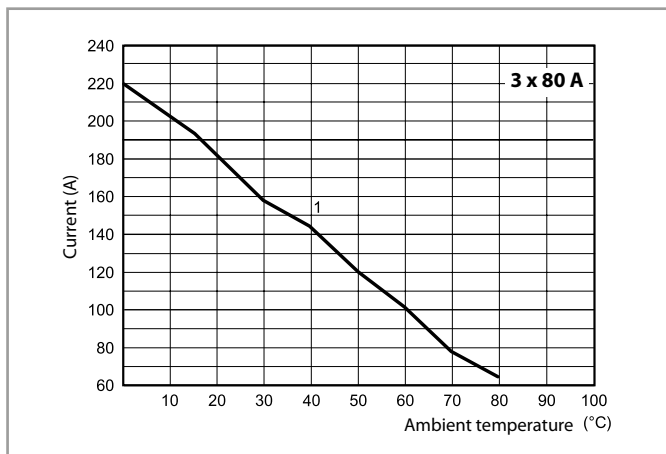
L77-23 Output RMS current v ambient temperature
77.D3.x.xxx.8671

1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

2 - Installation on heat-sink 077.08 (0.8 K/W)

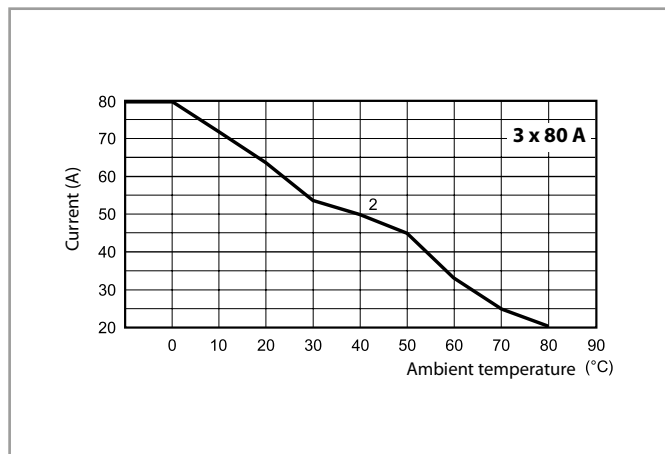
Output specification

L77-24 Output RMS current v ambient temperature
77.F3.x.xxx.8671



1 - Installation on heat-sink 077.03.x.xxx (0.35 K/W)

L77-25 Output RMS current v ambient temperature
77.F3.x.xxx.8671



2 - Installation on heat-sink 077.08 (0.8 K/W)

D

Output specification

Max recommended switching frequency (Cycles/Hour, with 50% Duty-cycle)				
Load	77.01.x.xxx.805x	77.01.9.024.9xxx	77.11/21	77.31
5 A 230 V (AC1)	5000	—	—	—
5 A 24 V DC L/R = 20 ms	—	3600	—	—
1 A (AC15)	10 000	—	—	—
0.5 A (AC15)	20 000	—	—	—
15 A 305 V cos φ = 0.8	—	—	1800	—
15 A 305 V cos φ = 0.5	—	—	1200	—
30 A 480 V cos φ = 0.8	—	—	—	1800
30 A 480 V cos φ = 0.5	—	—	—	1200
25 A 230 V cos φ = 0.7	—	—	—	—
40 A 230 V cos φ = 0.7	—	—	—	—
50 A 230 V cos φ = 0.7	—	—	—	—

Other data				
	77.01.x.xxx.805x	77.01.9.024.9xxx	77.11/21	77.31
Critical rising voltage dv/dt without input control (gate open) @ T _j = 125 °C	> 1000 V/μs	> 1000 V/μs	> 500 V/μs > 10 V/μs (with di/dt = 20 A/ms)	> 1000 V/μs
Critical rising current di/dt @ T _j = 125 °C	> 50 A/μs	> 50 A/μs	> 50 A/μs	> 150 A/μs
I²t for fusing @ t _p = 10 ms	450 A ² s	450 A ² s	1000 A ² s*	1350 A ² s**

Suggested fuse (depending on application) for short-circuit protection (Ultra-Fast acting types for semiconductors):

* 20 A, 660 V AC, 10 x 38 mm, 200 kA, 360 A²s.** 30 A, 660 V AC, 10 x 38 mm, 200 kA, 1000 A²s.

Max recommended switching frequency (Cycles/Hour, with 50% Duty-cycle)						
Load	77.A1.x.xxx	77.B1.x.xxx	77.D1.x.xxx	77.F1.x.xxx	77.G1.x.xxx	77.H1.x.xxx
25 A 230 V cos φ = 0.7	1800	—	—	—	—	—
40 A 230 V cos φ = 0.7	—	1800	—	—	—	—
60 A 230 V cos φ = 0.7	—	—	1800	—	—	—
80 A 230 V cos φ = 0.7	—	—	—	1800	—	—
100 A 230 V cos φ = 0.7	—	—	—	—	1800	—
125 A 230 V cos φ = 0.7	—	—	—	—	—	1800

Other data						
	77.A1.x.xxx	77.B1.x.xxx	77.D1.x.xxx	77.F1.x.xxx	77.G1.x.xxx	77.H1.x.xxx
Critical rising voltage dv/dt without input control (gate open) @ T _j = 125 °C	500 V/μs	500 V/μs	500 V/μs	500 V/μs	500 V/μs	500 V/μs
I²t for fusing @ t _p = 10 ms	450 A ² s	1250 A ² s	2450 A ² s*	3200 A ² s**	11 250 A ² s	25 000 A ² s

Max recommended switching frequency (Cycles/Hour, with 50% Duty-cycle)			
Load	77.A2.x.xxx	77.C2.x.xxx	77.E2.x.xxx
25 A 230 V cos φ = 0.7	1800	—	—
50 A 230 V cos φ = 0.7	—	1800	—
75 A 230 V cos φ = 0.7	—	—	1800

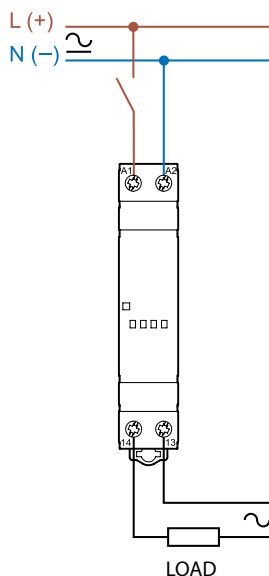
Other data			
	77.A2.x.xxx	77.C2.x.xxx	77.E2.x.xxx
Critical rising voltage dv/dt without input control (gate open) @ T _j = 125 °C	500 V/μs	500 V/μs	500 V/μs
I²t for fusing @ t _p = 10 ms	450 A ² s	2110 A ² s	2810 A ² s*

Max recommended switching frequency (Cycles/Hour, with 50% Duty-cycle)				
Load	77.A3.x.xxx	77.B3.x.xxx	77.D3.x.xxx	77.F3.x.xxx
25 A 230 V cos φ = 0.7	1800	—	—	—
40 A 230 V cos φ = 0.7	—	1800	—	—
60 A 230 V cos φ = 0.7	—	—	1800	—
80 A 230 V cos φ = 0.7	—	—	—	1800

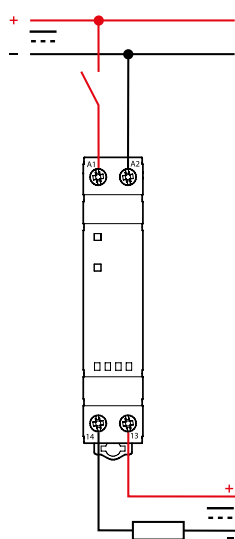
Other data				
	77.A3.x.xxx	77.B3.x.xxx	77.D3.x.xxx	77.F3.x.xxx
Critical rising voltage dv/dt without input control (gate open) @ T _j = 125 °C	500 V/μs	500 V/μs	500 V/μs	500 V/μs
I²t for fusing @ t _p = 10 ms	450 A ² s	1250 A ² s	2450 A ² s*	8190 A ² s**

Wiring diagrams

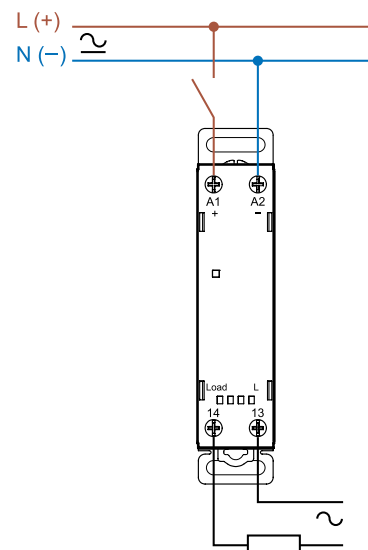
**Single-phase connection
(77.01...805x)**



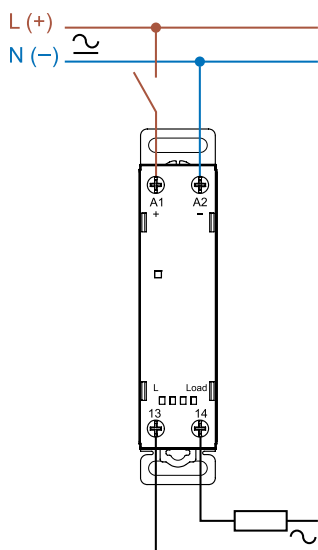
**Single-phase connection DC
(77.01...9x2x)**



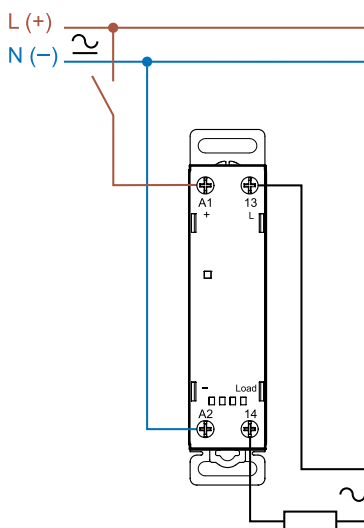
**Single-phase connection
(77.11/77.21)**



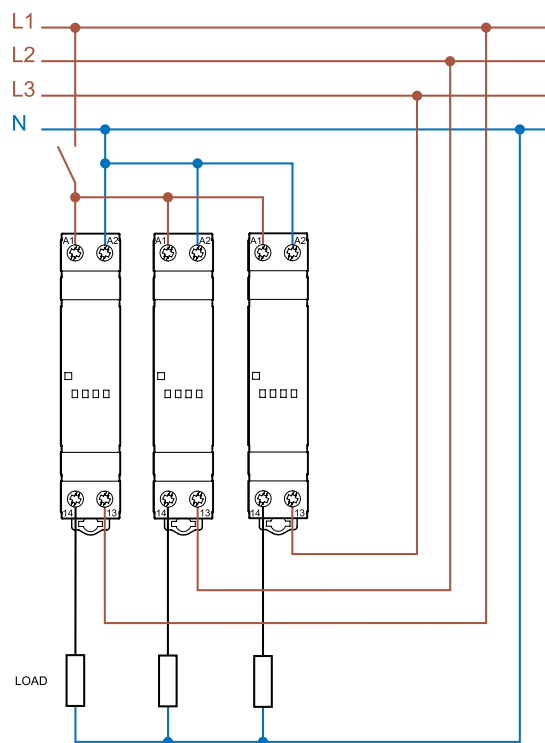
**Single-phase connection
(77.31...805x)**



**Single-phase connection
(77.31...807x)**



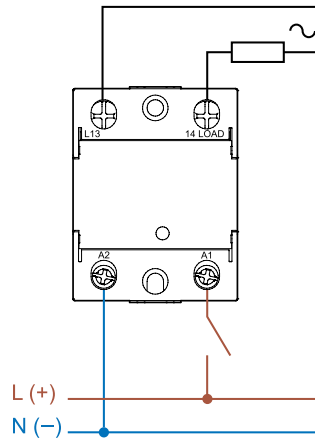
**Example of three-phase connection
(with 3 x 77.01)**



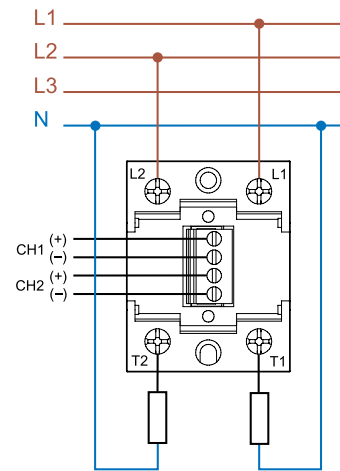
Note: this connection can be used with all 77 series types.

Wiring diagrams

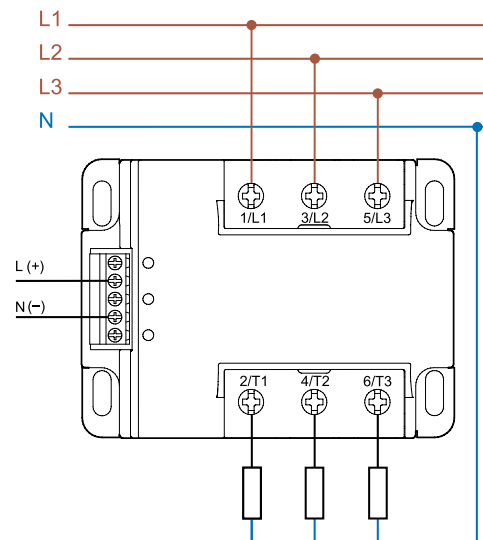
**Single-phase connection
(77.x1)**



**Dual phase connection
(77.x2)**

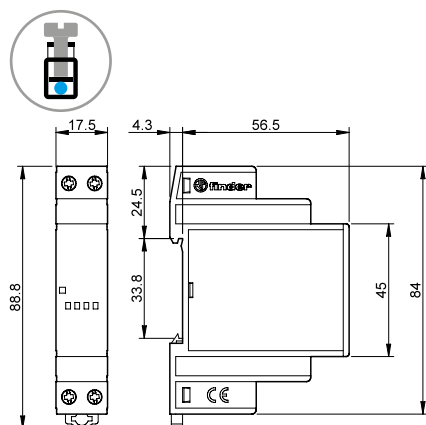


**Three phase connection
(77.x3)**

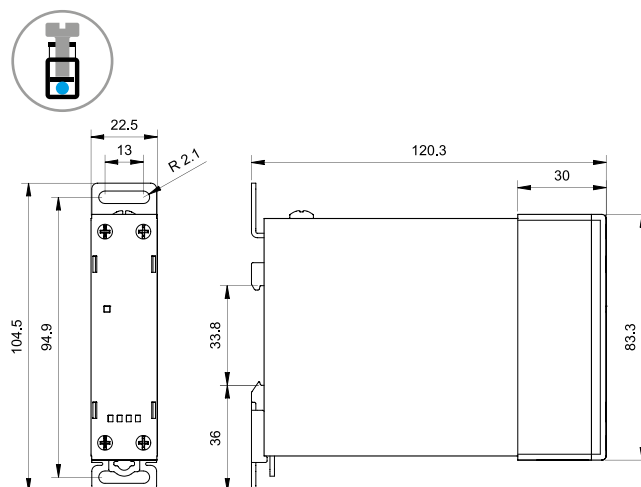


Outline drawings

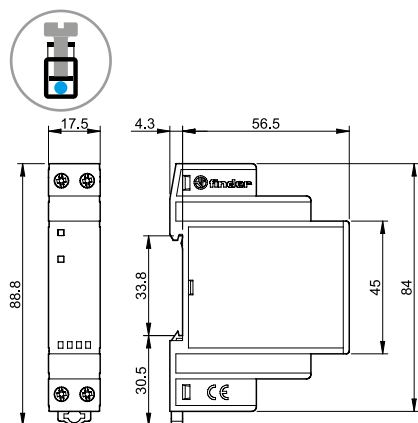
Type 77.01
Box clamp



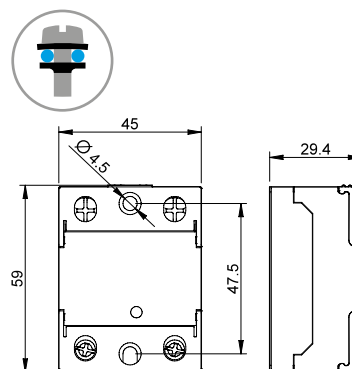
Types 77.11/21/31
Box clamp



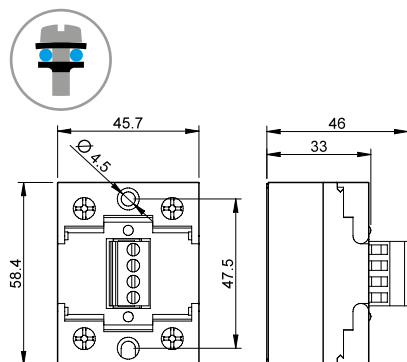
Type 77.01 DC
Box clamp



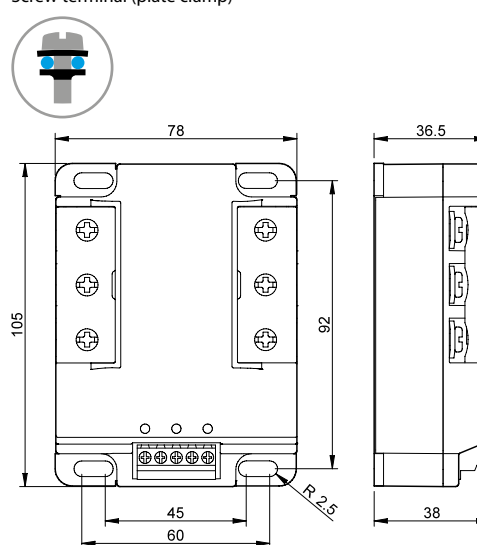
Type 77.x1
Screw terminal (plate clamp)



Type 77.x2
Screw terminal (plate clamp)



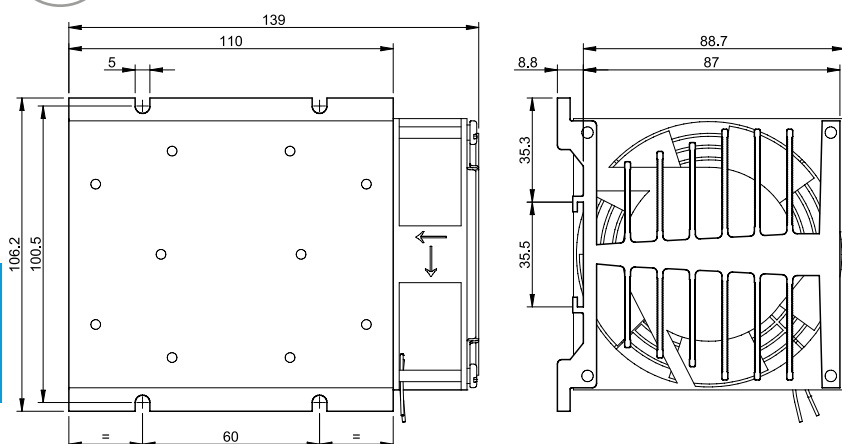
Type 77.x3
Screw terminal (plate clamp)



Outline drawings

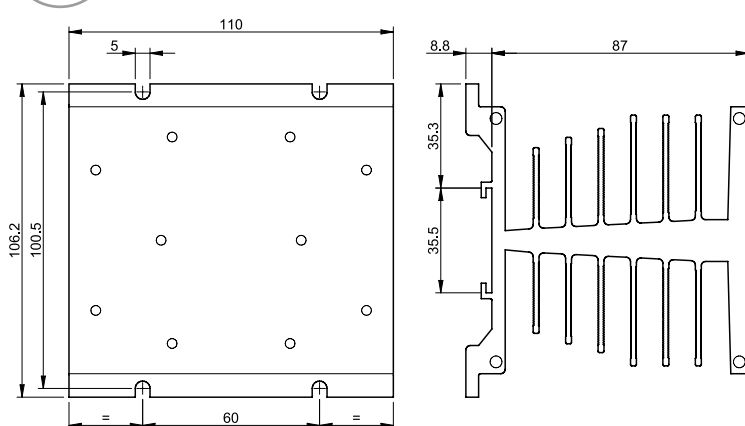
Type 077.03.x.xxx

Box clamp



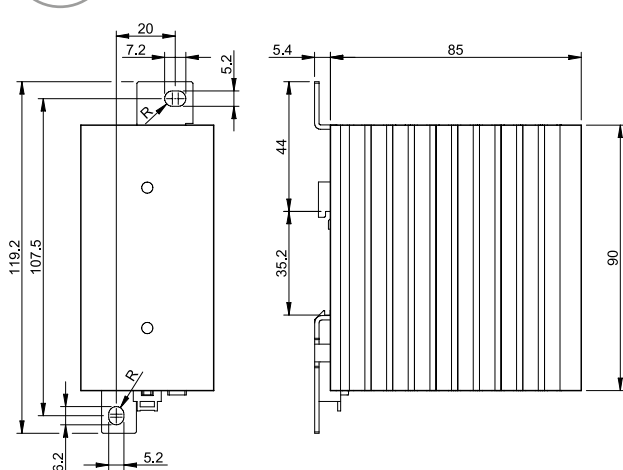
Type 077.08

Box clamp



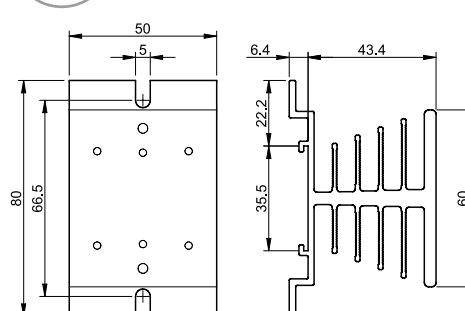
Type 077.13

Box clamp



Type 077.21

Box clamp



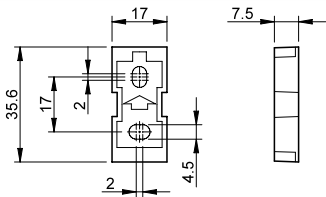
Accessories



020.01

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

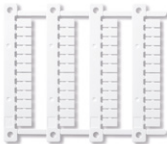
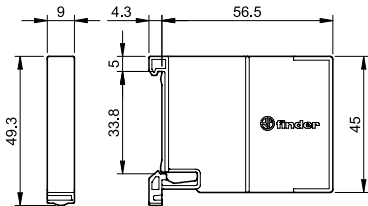
020.01



022.09

Separator for rail mounting, plastic, 9 mm wide

022.09



060.48

Sheet of marker tags (CEMBRE Thermal transfer printers) for all relays (48 tags), 6 x 12 mm

060.48

D

