

DIN Control and Indication

This section provides a selection of Isolating, Changeover and Selector Switches, Push Buttons, Indicator Lights, Delay Timers, Emergency Lighting Test Packages, DIN Socket Outlets and Contactors that are used for isolation, installation monitoring and circuit control.



Isolating Switches	290
Manual Changeover Switches	291
Selector Switches	292
Contactors	293
Hum-free Contactors	294
Latching and Interface Relays	295
Push Buttons	296
Indicator Lights and DIN Socket Outlets	297
Transformers, Bells and Buzzers	298
Emergency Lighting Discharge Test Packages	299
Technical Information	300

Description

For use as a switch isolator in all types of circuits. As defined in AS/NZS3000-2018, clause 2.3.3.2: "The supply to every installation shall be controlled by a main switch or switches that control the whole installation". Positive contact indication, with ON position 'I' in red and OFF position 'O' in green.

Technical data

- AC 22B duty specification (mixed resistive and inductive loads. Not motors)
- PZ2 terminal screw for all ratings
- Bi-connect terminals

Connection capacity

- In: 40A
- 25mm² rigid cables
- 16mm² flexible cables
- In: 63A and higher
- 50mm² rigid cables
- 35mm² flexible cables

Standards

- Compliant with AS/NZS IEC 60947-3 and IEC60669-2-4 for ratings up to 63A

Technical information: [Page 300](#)



SBR164

Single pole



Characteristics	Width	Cat ref.
1 x 40A 230V~	1 mod	SBR140
1 x 63A 230V~	1 mod	SBR164
1 x 80A 230V~	1 mod	SBR180
1 x 100A 230V~	1 mod	SBR190



SBR264

Double pole

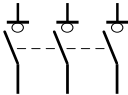


Characteristics	Width	Cat ref.
2 x 40A 230 to 400V~	2 mod	SBR240
2 x 63A 230 to 400V~	2 mod	SBR264
2 x 80A 230 to 400V~	2 mod	SBR280
2 x 100A 230 to 400V~	2 mod	SBR290



SBR399

Triple pole

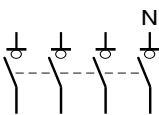


Characteristics	Width	Cat ref.
3 x 40A 400V~	3 mod	SBR340
3 x 63A 400V~	3 mod	SBR364
3 x 80A 400V~	3 mod	SBR380
3 x 100A 400V~	3 mod	SBR390
3 x 125A 400V~	3 mod	SBR399



SBR490

Four pole

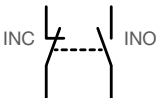


Characteristics	Width	Cat ref.
4 x 63A 400V~ neutral right	4 mod	SBR464
4 x 100A 400V~ neutral right	4 mod	SBR490



ESC080

Auxiliary contacts



Characteristics	Width	Cat ref.
1NO + 1NC 6A AC1 For remote indication, mechanical indicator to show the position of the contact. Maximum one auxiliary module per isolator device (left fitting)	0.5 mod	ESC080

Description

Manual Changeover Switches or DIN Rail Mounted Manual Transfer Switches (MTS) are for the manual switching between two or more electrical circuits.

Technical data

Utilization category: AC22B
(mixed resistive and inductive)

Connection capacity

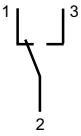

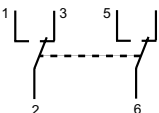
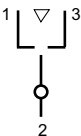
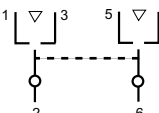
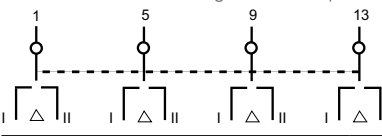
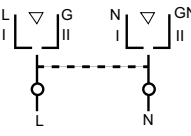
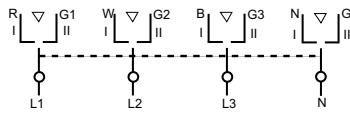
- 16mm² rigid
- 10mm² flexible

Standards

Compliant to IEC 60947-3.
SFx63 comply to IEC 60669-2-4.

Technical information: [Page 301](#)

Manual Changeover Switches

Description	Characteristics	Width	Cat ref.
I-II Single pole, 2 ways with bottom common point 	1 x 25A 230V~	1 mod	SFL125
I-II Single pole, 2 ways, 1NO/1NC w/out common point 	2 x 25A 230V~	1 mod	SFM125
I-II Double pole with bottom common point 	2 x 25A 230V~	2 mod	SFL225
I-O-II Single pole Switches centre - off changeover with top common point 	1 x 25A 230V~ 1 x 40A 230V~	1 mod 1 mod	SFT125 SFT140
I-O-II Double pole Switches centre - off changeover with top common point 	2 x 25A 230V~ 2 x 40A 230V~	2 mod 2 mod	SFT225 SFT240
I-O-II Four pole Switches centre - off changeover with top common point 	4 x 40A 230V~	4 mod	SFT440
I-O-II Double pole Switches centre - off changeover with bottom common point 	2 x 63A 230V~	4 mod	SF263
I-O-II Four pole Switches centre - off changeover with bottom common point 	4 x 63A 400V~	8 mod	SF463



SFL125



SFM125



SFT225



SFT440



SF263



SF463

Description

Provides command signals or
program selection in electrical
control schemes.

Connection capacity

- Rigid conductor: 1.5 to 10mm²
- Flexible conductor: 1 to 6mm²

Standards

Conform to IEC947-3
BS EN 60947-3

Isolating voltage: 500V~
Nominal current: 10-20A



SK602

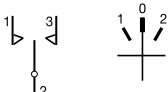
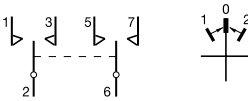


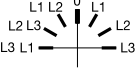

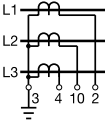
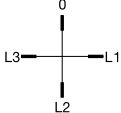

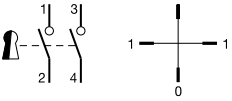


SK603



SK606

Selector Switches

Description	Characteristics	Width	Cat ref.
1 pole selector switch 	20A 400V~ Non spring return	3 mod	SK600
2 pole selector switch 	20A 400V~ Spring return	3 mod	SK601
Voltmeter selector 3Ph&N - 3 readings between phases - 3 readings between phase & neutral - Null position (no reading)   	20A 400V~	3 mod	SK602
Ammeter selector - 4 positions - Use in 3Ph&N - Reading by phase - 0 position (no reading) - Should be used with current transformer (CT)   	20A 400V~	3 mod	SK603
Step selector switch 	20A 400V~	3 mod	SK604
Key selector switch 	10A 400V~	3 mod	SK606
Spare key For SK606			SK001

Description

For remote switching and control of power circuits. Suitable for lighting, heating, ventilation, pumps and home automation.

Manual override

To set output contacts permanently On or Off – Great for fault finding.

Night & Day override

Allows the End User to set output contact permanently Off or temporarily On until next switching cycle.

Specifications:

Coil Voltage:
230V AC (50Hz)
24V AC (50Hz)

Output contacts

1NO, 1NO+1NC, 2NO, 2NC, 2NO+2NC, 3NO, 4NO, 4NC

Output (Heating) AC1/AC7a (50Hz)

25A, 40A, 63A
at 230V AC
4.6kW, 7.3kW, 11.6kW
at 400V AC
13.8kW, 22kW, 35kW

Output (Motor) AC3/AC7b (50Hz)

8.5A, 25A, 32A
at 230V AC
880W, 2.6kW, 3.3kW
at 400V AC
2.6kW, 7.8kW, 10kW

Technical information: [Page 303](#)

Contactors

Type				Rated output current			
		Coil AC (50Hz)	Override	AC1/AC7a	AC3/AC7b	Width	Cat ref.
1NO		230V AC	Manual	25A	8.5A	1 mod	ERC125
		230V AC	No	25A	8.5A	1 mod	ESC125
1NO+1NC		230V AC	No	25A	8.5A	1 mod	ESC227
		24V AC	No	25A	8.5A	1 mod	ESD227
2NC		230V AC	No	25A	8.5A	1 mod	ESC226
2NO		230V AC	Manual	25A	8.5A	1 mod	ERC225
		24V AC	Manual	25A	8.5A	1 mod	ERD225
		230V AC	Night & Day	25A	8.5A	1 mod	ETC225
		230V AC	No	25A	8.5A	1 mod	ESC225
		24V AC	No	25A	8.5A	1 mod	ESD225
		230V AC	No	40A	25A	3 mod	ESC240
		230V AC	No	63A	32A	3 mod	ESC263
3NO		230V AC	No	25A	8.5A	2 mod	ESC325
		230V AC	No	40A	25A	3 mod	ESC340
		230V AC	Night & Day	40A	25A	3 mod	ETC340
2NO+2NC		230V AC	No	25A	8.5A	2 mod	ESC427
		230V AC	No	63A	32A	3 mod	ESC465
4NC		230V AC	No	40A	25A	3 mod	ESC441
		230V AC	No	63A	32A	3 mod	ESC464
4NO		230V AC	Manual	25A	8.5A	2 mod	ERC425
		230V AC	No	25A	8.5A	2 mod	ESC425
		230V AC	No	40A	25A	3 mod	ESC440
		230V AC	No	63A	32A	3 mod	ESC463



ERC225



ESC425



ESC463

Control & indication

Accessories

Description	Characteristics	Cat ref.
Auxiliary contact (1NO+1NC) 	(Leftside fitting - maximum one AUX per contactor device)	ESC080
Heat dissipation insert		LZ060



LZ060

Description

Designed to provide customers with a good nights sleep. Remote switching and control of power circuits that are suitable for lighting, heating, ventilation, pumps and home automation

Manual override

To set output to contacts permanently On or Off – Great for fault finding.

Night & Day override

Allows the End User to set output contact permanently Off or temporarily On until next switching cycle

Specifications:

Coil Voltage:
230V AC (50Hz)

Output contacts

1NO+1NC, 2NO, 2NC, 2NO+2NC, 3NO, 3NO+1NC, 4NO, 4NC

Output AC1/AC7a (50Hz)

25A, 40A, 63A
at 230V AC
4.6kW, 7.3kW, 11.6kW
at 400V AC
13.8kW, 22kW, 35kW

Output AC3/AC7b (50Hz)

8.5A, 25A, 32A
at 230V AC
880W, 2.6kW, 3.3kW
at 400V AC
2.6kW, 7.8kW, 10kW

Technical information: [Page 303](#)



ESC425S



ESC463S

Hum-free Contactors

Type		Coil AC (50Hz) or DC	Override	Rated output current			Cat ref.
				AC1/AC7a	AC3/AC7b	Width	
2NO		230V AC	No	25A	8.5A	1 mod	ESC225S
		230V AC	No	40A	25A	3 mod	ESC240S
		230V AC	No	63A	32A	3 mod	ESC263S
3NO		230V AC	Manual	25A	8.5A	2 mod	ESC325S
		230V AC	No	40A	25A	3 mod	ESC340S
3NO+1NC		230V AC	No	25A	8.5A	2 mod	ESC428S
4NC		230V AC	No	25A	8.5A	2 mod	ESC426S
4NO		230V AC	No	25A	8.5A	2 mod	ESC425S
		230V AC	No	40A	25A	3 mod	ESC440S
		230V AC	No	63A	32A	3 mod	ESC463S

Accessories

Description		Characteristics	Cat ref.
Auxiliary contact (1NO+1NC)		(Leftside fitting - maximum one AUX per contactor device)	ESC080
Heat dissipation insert			LZ060



LZ060

Latching Relays Description

For the control of lighting circuits in private buildings, small industrial buildings and administration buildings. Latching Relays operate when pulsed by a signal voltage. The pulse can be provided via a push button or switch. The first impulse sets the relay into its set (opposite) state, the next impulse returns it to its reset (original) state.

Connection capacity:

- Rigid capacity: 1.5 to 10mm²
- Flexible capacity: 1 to 6mm²

Interface Relay description

To interface between low voltage and extra low voltage circuits to ensure galvanic insulation between LV and ELV to 4kV.

Ideal as an Interface between fire alarm, burglar alarm and other ELV systems and main distribution circuits.

Connection capacity

- 6mm² rigid cables
- 4mm² flexible cables

Technical information: [Page 307](#)

Latching Relays

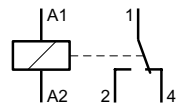
Description	Coil 50/60Hz V ac	Coil V dc	Power circuit AC1	Width	Cat ref.
1NO	230V ac	110V dc	16A-250V	1 mod	EPE510
1NO + 1NC	230V ac	110V dc	16A-250V	1 mod	EPE515
2NO	230V ac	110V dc	16A-250V	1 mod	EPE520
2NO	24V ac	12V dc	16A-250V	1 mod	EPE524



EPE510

Interface Relay ELV/LV 1 way

Description	Characteristics	Width	Cat ref.
Output: 1 changeover	Coil voltage: 10 to 26V AC/DC	1 mod	EN145



Contact
max. 5A 230V~ -
min. 10mA - 12V DC



EN145

Description

2 versions:
 - Impulse push buttons
 - Latching push buttons
 The versions with indicator lights
 are equipped with green or red
 diffuser (LED technology).

Connection capacity

- 10mm² rigid cables
- 6mm² flexible cables

Standards

- IEC60947-5-1 for push buttons
- IEC62094-1 for indicator lights



SVN391M

Push Buttons impulse without indicator light 16A - 250V~

Description	Characteristics	Width	Cat ref.
	Contacts: 1NO	1 mod	SVN311M
	Contacts: 1NC	1 mod	SVN321M
	Contacts: 1NO+1NC (stop/start)	1 mod	SVN391M



SVN422M

Push Buttons impulse with indicator light

Description	Characteristics	Width	Cat ref.
	Contacts: 1NO green	1 mod	SVN411M
	Contacts: 1NC red	1 mod	SVN422M



SVN311M

Push Buttons latching without indicator light 16A - 250V~

Description	Characteristics	Width	Cat ref.
	Contacts: 1NO	1 mod	SVN312M
	Contacts: 1NO+1NC	1 mod	SVN352M



SVN413M

Push Buttons latching with indicator light

Description	Characteristics	Width	Cat ref.
	Contacts: 1NO green	1 mod	SVN413M

Description

Used for remote controlling
signalisation of any event in any
electric installation (residential,
tertiary & industrial).

Features

- LED technology providing
longer life
- new design and integrated
label holder.


Connection capacity

- 10mm² rigid cable
- 6mm² flexible cable

Standards

- IEC62094-1 for indicator lights

Indicator Lights

Description	Characteristics	Width	Cat ref.
With light 230V~ 	1 x green	1 mod	SVN121M
	1 x red	1 mod	SVN122M
	1 x blue	1 mod	SVN124M
	1 x clear	1 mod	SVN125M
	3 x red	1 mod	SVN127M



SVN122M, SVN125M, SVN124M



SVN121M, SVN122M, SVN127M

DIN Socket Outlets

Description	Characteristics	Width	Cat ref.
DIN mounted, double pole, auto switched complete with safety shutters and 'ON' indicator	10A	2.5 mod	SNO10DA
	15A	2.5 mod	SNO15DA



SNO15DA

Description

Provides safety for extra low voltage 8, 12, 24V~.

Technical data

- Secondary voltage: 8V, 12V, 24V
- Bell transformers are short circuit protected
- Bells/buzzers: Maximum continuous duty $\leq 30\text{min}$

Connection capacity

- Cable clamp type

Output

- Bells: 85dBA
- Buzzers: 78dBA

When a bell transformer is installed in an enclosure with mains voltage equipment, 230V cable should be used on the secondary side of the transformer or extra low voltage cable should be sheathed within the enclosure.

Note

The transformers have a higher no load voltage. The stated voltages correspond to the voltages at nominal load

Technical information: [Page 308](#)



ST312

Safety Transformers

Description	Characteristics	Width	Cat. ref.
Frequency: 50/60Hz Primary voltage: 230V Secondary voltage: 12 / 24V~	25VA	4 mod	ST312



63VA	6 mod	ST315
------	-------	--------------



ST303

Bell Transformers

Description	Characteristics	Width	Cat. ref.
	Frequency: 50/60Hz Primary voltage 230V~ 8VA Secondary voltage: 8V~ 1A 12V~ 0.67A	2 mod	ST303
	Frequency: 50/60Hz Primary voltage 230V~ 16VA Secondary voltage: 8V~ 2A 12V~ 1.33A	3 mod	ST305

Bells

Description	Characteristics	Width	Cat. ref.
	8/12V~ 4VA - 0.35A	1 mod	SU212
	230V~ 6.5VA - 0.03A	1 mod	SU213



SU212

Buzzers

Description	Characteristics	Width	Cat. ref.
	8/12V~ 4VA - 0.35A	1 mod	SU214
	230V~ 6.5VA - 0.03A	1 mod	SU215



SU214

Description

Our Emergency Lighting Discharge Test Package has been developed to meet the needs of the electrical industry. In accordance with AS2293.1, 'Emergency Evacuation Lighting for Buildings', a discharge test circuit MUST be installed in both existing and new installations for the purpose of testing the charge. The test facility must also be able to be reset manually.

Application

The wired 'off-the-shelf' package may be mounted using the supplied enclosure where space in the switchboard is limited. It can also be installed in the Hager range of performa Panelboards by taking advantage of the DIN rail area at the top of the switchboard.

Use and implementation

Upon engaging the Green push button for 1 second, the timer starts its operation and energises the contactor coil. The four normally closed contacts open, initiating operation of the emergency lights. The timer, to be set at 2hrs (for initial commissioning, 90mins thereafter), completes its operation, de-energising the contactor coil returning the contacts to the normally closed position. If the red push button is pressed the timer resets and is ready for the green push button to start the timing cycle again.

Technical information: [Page 308](#)

Emergency Lighting Discharge Test Packages - Wired

Description	Characteristics	Cat ref.
Emergency test package 1 - Wired in enclosure - For use as standalone - 4 circuits	Includes: - 6 pole surface mount IP40 enclosure with a lockable door - 4 Pole 40A N/C Contactor - Push button 1N/O (green) + 1N/C (red) - Delay timer 0.1sec to 10hrs	EMERG1W
Emergency test package 2 - Wired in enclosure - For use as standalone - 2 circuits	Includes: - 4 pole surface mount IP40 enclosure with a lockable door - 2 Pole 25A N/C Contactor - Push button 1N/O (green) + 1N/C (red) - Delay timer 0.1sec to 10hrs	EMERG2W
Emergency test package 3 - Wired without enclosure - For use in panelboards and/or other enclosures - 4 circuits	Includes: - 4 Pole 40A N/C Contactor - Push button 1N/O (green) + 1N/C (red) - Delay timer 0.1sec to 10hrs	EMERG3W
Emergency test package 4 - Wired without enclosure - For use in panelboards and/or other enclosures - 2 circuits	Includes: - 2 Pole 25A N/C Contactor - Push button 1N/O (green) + 1N/C (red) - Delay timer 0.1sec to 10hrs	EMERG4W



EMERG2W and EMERG1W



EMERG3W

Electrical characteristics

Family	SBRx40	SBRx64	SBRx80	SBRx90	SBR399	ESC080
Thermal current I _{th} (40°C)	40A	63A	80A	100A	125A	-
Operational frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50Hz
Rated insulation voltage (U _i)	440V	440V	440V	440V	440V	240V
Rated impulse withstand voltage (U _{imp})	6kV	6kV	6kV	6kV	6kV	4kV
Protection degree	3	3	3	3	3	2
Working temperature	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-10 to 50°C
Storage temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C

Operational currents I_e (AS/NZS IEC 60947-3)

Utilisation category	Rated voltage						
AC 21A/B	230-400V AC	40A	63A	80A	100A	125A	-
AC 22A/B	230-400V AC	40A	63A	80A	100A	125A	-

A category = Frequent operation

B category = Infrequent operation

Short circuit characteristics

Rated short time withstand current 1s (I _{cw}) (rms)	IEC 60947-3	600A	945A	960A	1200A	1500A	-
Rated short circuit making capacity (I _{cm})	IEC 60669	6kA with 40A MCB C curve	-	-	-	-	-

Mechanical characteristics

Rigid cable section	25mm ²	50mm ²	50mm ²	50mm ²	50mm ²	10mm ²
Flexible cable section	16mm ²	35mm ²	35mm ²	35mm ²	35mm ²	6mm ²
Tightening torque	2.8Nm	3.6Nm	3.6Nm	3.6Nm	3.6Nm	3.6Nm
IP protection degree	20	20	20	20	20	20
Mechanical endurance (number of cycles)	60,000	40,000	40,000	40,000	40,000	1,000,000
Electrical endurance @ AC22 (number of cycles)	5,000	2,500	2,500	2,500	2,500	60,000

Overall dimensions

No. of poles

Width (mm)	1P	17.5	17.5	17.5	17.5	17.5	1/2P 8.75
	2P	36	36	36	36	36	-
	3P	53	53	53	53	53	-
	4P	72	72	72	72	72	-
Height (mm)		83	83	83	83	83	83
Depth (mm)		72	72	72	72	72	60

Electrical characteristics

Family	SF									
Reference	SFL125	SFM125	SFL225	SFT125	SFT140	SFT225	SFT240	SFT440	SF263	SF463
Type	I-II	I-II	I-II	I-O-II	I-O-II	I-O-II	I-O-II	I-O-II	I-O-II	I-O-II
Modular size	1 module	1 module	2 module	1 module	1 module	2 module	2 module	4 module	4 module	8 module
Number of Poles	1P	1P	2P	1P	1P	2P	2P	4P	2P	4P
Thermal current Ith (40°C)	25A	25A	25A	25A	40A	25A	40A	40A	63A	63A
Operational frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Rated operation voltage in AC	230V	230V	230V	230V	230V	230V	230V	400V	230V	400V
Rated insulation voltage (Ui)	440V	440V	440V	440V	440V	440V	440V	440V	500V	500V
Rated impulse withstand voltage Uimp	4kV	4kV	4kV	4kV	4kV	4kV	4kV	4kV	4kV	4kV
Protection degree	2	2	2	2	2	2	2	2	2	2
Working temperature	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C
Storage temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C

Operational currents Ie (IEC 60947-3)

Load duty category	Rated voltage										
AC 21A	230-400V AC	25A	25A	25A	25A	40A	25A	40A	40A	63A	63A
AC 22A	230-400V AC	25A	25A	25A	25A	40A	25A	40A	40A	40A	40A
AC 22B	230-400V AC	25A	25A	25A	25A	40A	25A	40A	40A	40A	40A

A category = Frequent operation

B category = Infrequent operation

Short circuit characteristics

Rated short time withstand current 1s Icw (rms)	IEC 60947-3	375A	375A	375A	375A	600A	375A	600A	600A	N/A	N/A
Rate conditional short circuit current (rms)	IEC 60947-3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.5kA with 63A MCB C curve	4.5kA with 63A MCB C curve

Mechanical characteristics

Rigid cable section (max.)	16mm ²	16mm ²	16mm ²	16mm ²	16mm ²	16mm ²	16mm ²	16mm ²	16mm ²	25mm ²	25mm ²
Flexible cable section (max.)	10mm ²	10mm ²	10mm ²	10mm ²	10mm ²	10mm ²	10mm ²	10mm ²	10mm ²	16mm ²	16mm ²
Tightening torque	1.8Nm	1.8Nm	1.8Nm	1.8Nm	1.8Nm	1.8Nm	1.8Nm	1.8Nm	1.8Nm	2.9Nm	2.9Nm
IP protection degree	20	20	20	20	20	20	20	20	20	20	20
Mechanical endurance (number of cycles)	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	100,000	100,000
Electrical endurance @ AC22 (number of cycles)	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	5,000	5,000

Overall dimensions

Width (mm)	17.5	17.5	35	17.5	17.5	35	35	70	71.5	143
Height (mm)	83	83	83	83	83	83	83	83	90	90
Depth (mm)	68	68	68	68	68	70	70	70	72	72

Wiring Diagrams for the use of changeover switches (I-0-II) with stand-by generators

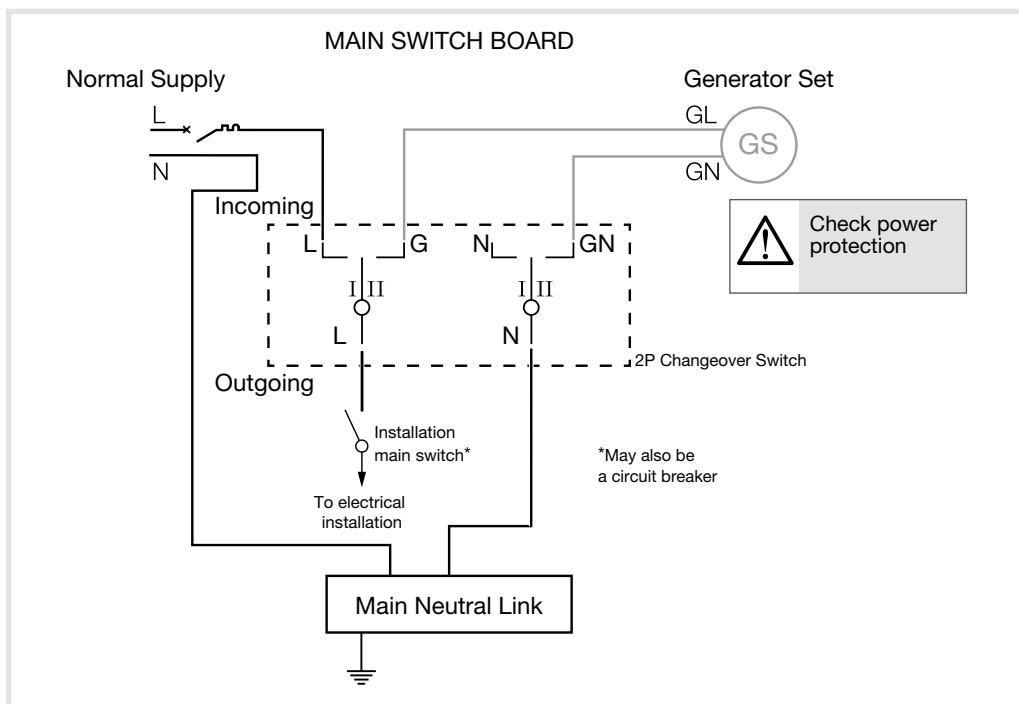
Stand-by generator or Alternative supply generator: typical location of manual changeover device with centre "off" position in the main switch board.

The incoming changeover must be protected with an appropriate MCB 63A - 6kA - C curve to protect against short circuit and disconnection.

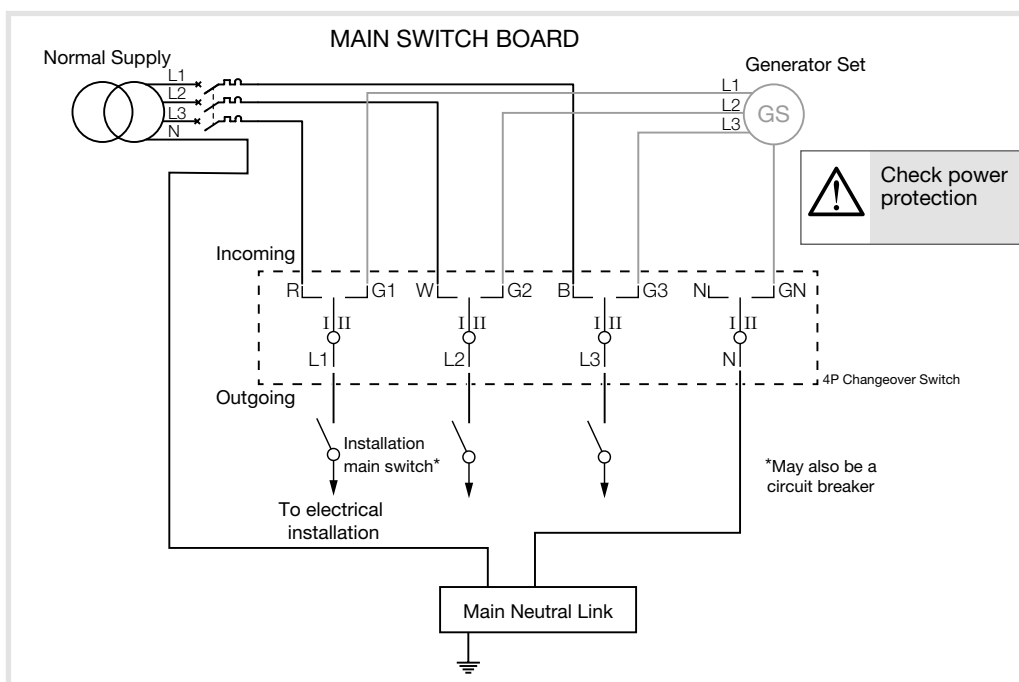
NOTE 1: In Australia and NZ, the Main Supply Neutral upstream of the MEN connection is NOT allowed to be switched.
(AS/NZS 3010: Electrical installations - Generating sets).

NOTE 2: Refer to AS/NZS 3000, 3010 and local Service and Installation Rules for specific requirements.

Single phase SFT2xx, SF263



Three phase SFT4xx, SF463



Electrical Characteristic

Type	ERxxxx, ESxxxx, ETCxxx				ESC080
Description	Modular contactor				Aux. contact
Standard conformity	IEC/EN 61095				
Number of module	1	2	3	3	½
Thermal current I _{th} (40°C)	25A	25A	40A	63A	-
Rated frequency	50Hz	50Hz	50Hz	50Hz	50Hz
Rated insulation voltage (U _i)	250V	440V	440V	440V	240V
Rated impulse withstand voltage (U _{imp})	4kV	4kV	4kV	4kV	4kV
Protection degree (IP rating)	2	2	2	2	2

Rated operating currents & power ratings in AC

AC1/AC7a	Rated operating currents I _e		25A	25A	40A	63A	-
	Rated operating power	230V	4.6kW	4.6kW	7.3kW	11.6kW	-
		400V	-	13.8kW	22kW	35kW	-
AC3/AC7b	Rated operating currents I _e		8.5A	8.5A	25A	32A	-
	Rated operating power	230V	880W	880W	2.6kW	3.3kW	-
		400V	-	2.6kW	7.8kW	10kW	-

Mechanical & electrical endurance

Mechanical endurance	no. of operations	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Electrical endurance @ I _e AC7a (AC12 for aux)	no. of operations	60,000	60,000	60,000	60,000	60,000

MCB protected short-circuit withstand

Associated protection	MCB	MCB	MCB	MCB	MCB
	25A-6kA	25A-6kA	40A-10kA	63A-10kA	6A - 6kA

Power dissipation

Power dissipation per current path	1.5W	1.5W	3.2W	5W	0.4W
------------------------------------	------	------	------	----	------

Magnetic system for standard contactor

Pick-up	7.4VA	9.2VA	60VA	60VA	-
Coil consumption	1.8VA	1.85VA	7VA	7VA	-
Closing delay	20ms	20ms	20ms	20ms	-
Opening delay	15ms	15ms	20ms	20ms	-

Magnetic system for Hum free contactor

Pick-up	2.2W	2.8W	5W	5W	-
Coil consumption	2.2W	2.8W	5W	5W	-
Closing delay	25ms	25ms	25ms	25ms	-
Opening delay	15ms	15ms	20ms	20ms	-

Magnetic system for Lighting contactors (control)

Std and eco	Pick-up	9.5VA	16.3VA	16.3VA	16.3VA	-
	Coil Consumption	2.5VA	3.1VA	3.1VA	3.1VA	-
Hum-free	Pick-up	2.5VA	3.2VA	3.2VA	3.2VA	-
	Coil Consumption	2.5VA	3.2VA	3.2VA	3.2VA	-

Connection

Main contact cable section	rigid	1 to 10mm ²	1 to 10mm ²	4 to 25mm ²	4 to 25mm ²	10mm ²
	flexible	1 to 6mm ²	1 to 6mm ²	4 to 16mm ²	4 to 16mm ²	6mm ²
Main contact connection screw	Type	M3.4	M3.4	M5	M5	M3.4
	Posidrive	PZ2	PZ2	PZ2	PZ2	PZ2
	Max. tight. torque	1.2Nm	1.2Nm	3.5Nm	3.5Nm	1.2Nm
Coil connection cable section	rigid	1 to 10mm ²	1 to 10mm ²	1 to 10mm ²	1 to 10mm ²	6mm ²
	flexible	1 to 6mm ²	1 to 6mm ²	1 to 6mm ²	1 to 6mm ²	6mm ²
Coil connection screw	Type	M3.5	M3.5	M4	M4	-
	Posidrive	PZ2	PZ2	PZ2	PZ2	-
	Max. tight. torque	1.2Nm	1.2Nm	2.5Nm	2.5Nm	-

Working temperature	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C
---------------------	----------------	----------------	----------------	----------------	----------------

Storage temperature	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C
---------------------	----------------	----------------	----------------	----------------	----------------

Choice of Contactors

Knowing the type of application will assist in the selection of suitable contactors. Typical application parameters include ambient operating temperature, the number of operations and the electrical load type (Heating / Motors / Lighting). Taking all into consideration will ensure continuous service and unnecessary call backs.

- **Heating applications:** Suitable for slightly inductive loads such as heating elements or convectors.
- **Motor applications:** Suitable for motor loads such as fans and pool pumps.
- **Lighting loads:** Incandescent, fluorescent and discharge lamps are classified as 'high inrush' due to the higher current draw when first switched on compared to the operating / running current.

The contactors are AC7-a (resistive load) and AC7-b (inductive load) approved.

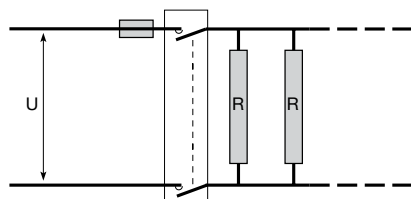
Adjacent fitting

LZ060 inserts are to be fitted between all contactors and adjacent devices to ensure optimum operation and heat dissipation.

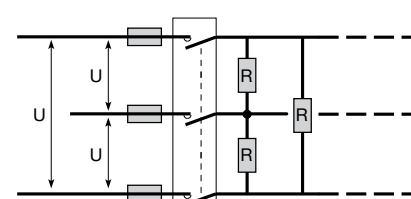
Heating applications

The choice of the contactor is based on the electrical heating load, and the targeted life time.

Single phase



Three phase supply



Rated ouput voltage	Rated output current	AC1/AC7A (maximum load in kilowatts)					Operating temps	Derating factor
230V AC	25A	1	1.35	3	4	4.6	Up to 40°C	1
	40A	1.6	2.2	4.7	6.3	7.3	40o - 50°C	0.9
	63A	2.5	3.5	7.5	10	11.6		
400V AC	25A	3	4.3	8.6	12	13.8		
	40A	5	6.3	14.385	18 500	22		
	63A	7.6	10.2	22.6	30	35		
No. of operations (# see note)		600 000	300 000	150 000	100 000	60 000		

#NOTE: 1 opening +1 closing contact = 2 operations. *On three phase configuration the maximum load per phase corresponds to the values stated divided by 3.

Example application:

4kW (230V AC) heating element ie. AC1/AC7a load

Determine suitability of ESC225 (2 pole, 25A) using load calculation with temperature derating. According to data sheet for AC1/AC7a load on ESC225 – (1 module 25A) the rated operational current (I_e) = 25A, maximum load = 4.6kW (230 VAC)

Assume operating temperature = 48°C

The maximum load switching capacity at 48°C is calculated as follows: Maximum Load x Derating factor = 4.6kW x 0.9 = 4.14kW

Thus, ESC225 is suitable for a 4kW heating element operating at 48°C maximum.

Duty cycle or durability

The number of reliable operations of ESC225 (2 pole, 25A) contactor depends on the connected load.

Connected to 1kW (230V AC) load = 600,000 operations
 Connected to 3kW (230V AC) load = 150,000 operations
 Connected to 4kW (230V AC) load = 100,000 operations

How long will ESC225 (25A) connected to 4kW load last ?

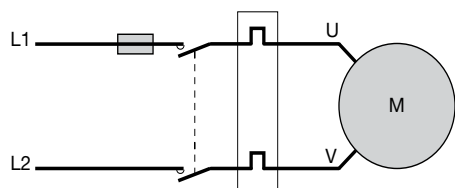
At 100 operations per day it will last a minimum of 1000 days
 (ie 100,000 ÷ 100 = 1000 days).

At 500 operations per day it will last a minimum of 200 days
 (ie 100,000 ÷ 500 = 200 days).

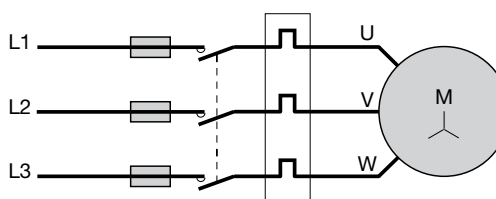
If higher durability is required, the contactor can be up-sized to a higher current rating.

Motor applications (AC7-b equivalent to AC3)

Single phase 230V




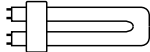

Three phase 400V



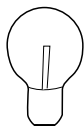
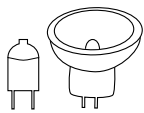
	Contactor rating	Control diagram	
		2P 230V single phase	3P 400V three phase
Maximum power for the motor	16A	0.57 kW	1.7 kW
	25A	0.88 kW	2.65 kW
	40A	2.6 kW	7.8 kW
	63A	3.3 kW	10 kW

Modern lighting systems generate high inrush currents. Therefore we recommend to use the table below to calculate the maximum number of lamps (or dual fittings) which can be connected to each pole of a Hager contactor on 230V 50Hz circuits.

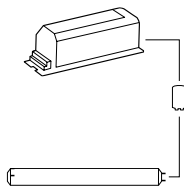
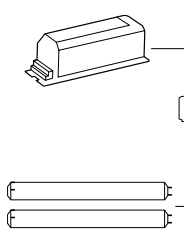
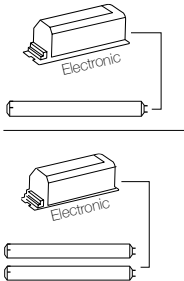
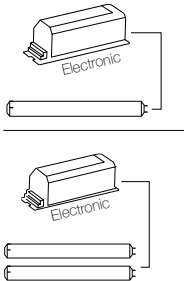
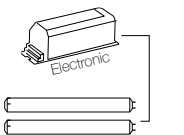
- From June 2014, Hager has improved the performance of 1 and 2 module contactors. The products identified on the front face with the pictogram  can accept a higher number of lamps.

Compact Fluorescent Lamps (CFL's)		Lamp wattage (W)	Rated output (per pole)		
			25A '+'	40A	63A
	CFL with external electronic ballast	5 - 7	27	49	76
		9 - 11	26	40	63
		15 - 26	22	36	57
	CFL with integrated electronic ballast	5 - 15	54	86	135
		18 - 26	40	63	100

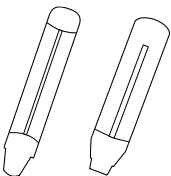
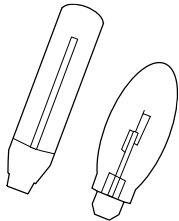
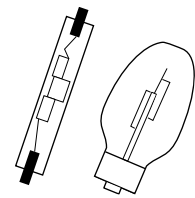
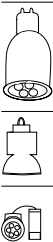
Incandescent lamps

	Tungsten Halogen Lamps 230V	40	57	76	120
		60	45	67	105
		75	38	63	100
		100	28	41	65
		150	18	29	45
		200	14	22	35
		300	10	15	23
		500	6	9	14
	Halogen ELV (12 or 24V) with electronic transformer	1000	2	4	7
		20	40	139	218
		35	26	82	129
		50	18	60	94
		75	12	52	82
		100	6	35	55
		150	4	20	31

Fluorescent tubes (T5)

	Single - with starter (Low power factor <0.9)	15 - 20	30	70	100
		36	28	60	90
		40	26	60	90
		42	24	55	83
		58-65	17	35	56
		80	15	30	48
		115	10	20	32
		140	10	16	26
		15 - 20	20	36	57
		36	20	34	53
	Double - with starter (Low power factor <0.9)	40 - 42	20	29	45
		58 - 80	15	27	42
		115	15	25	39
		2 x 18	40	50	78
		2 x 20	38	50	78
		2 x 36	30	44	69
		2 x 40	26	40	63
		2 x 42	24	40	63
		2 x 58	18	27	42
		2 x 65	16	27	42
	Double - with starter (High power factor >0.9)	2 x 80	14	22	35
		2 x 115	10	16	25
		2 x 18	22	34	53
		2 x 20	22	29	45
		2 x 36 - 42	20	27	42
		2 x 58	20	25	39
		2 x 65	14	23	36
		2 x 80	14	20	31
		2 x 115	10	17	25
		15 - 20	22	36	57
	Single with electronic ballast	36	22	34	53
		40 - 42	22	29	45
		58 - 80	20	27	42
		115	20	25	39
	Double with electronic ballast	2 x 18	22	34	53
		2 x 20	22	29	45
		2 x 36 - 42	20	27	42
		2 x 58	20	25	39
		2 x 65	14	23	36
		2 x 80	14	20	31
		2 x 115	10	17	25

The information given below should be considered as indicative and is provided on an "as is" basis. Considerable variations may occur depending on the electrical installation and equipment used. Only experienced professionals with the expertise to determine the characteristics of the electrical installation (value and duration of inrush currents, general characteristics of the installation, types of loads, etc.) may approve and implement a configuration, in accordance with the currently applicable installation standards. Hager accepts no liability for the use made of this information.

Discharge lamps		Lamp wattage (W)	Rated output (per pole)		
			25A '+'	40A	63A
	High pressure mercury vapour lamps (Low power factor <0.9)	50	28	32	50
		80	18	24	37
		125	10	18	28
		250	6	10	15
		400	2	6	9
		700	0	4	5
	High pressure mercury vapour lamps (High power factor >0.9)	50	22	26	40
		80	16	22	34
		125	10	15	23
		250	6	9	14
		400	2	5	8
	Low pressure sodium vapour lamps (Low power factor <0.9)	700	0	3	5
		1000	0	2	3
		18	20	18	21
		35 - 55	9	14	20
	Low pressure sodium vapour lamps (High power factor >0.9)	90	6	9	14
		135 - 180	4	6	8
		18	8	12	24
		35	7	10	23
	High Pressure sodium lamps (Low power factor <0.9)	55	5	10	19
		90	4	8	16
		135	2	5	7
		180	2	5	6
	High Pressure sodium lamps (High power factor >0.9)	35	24	30	50
		50	15	22	34
		70	12	18	28
		110	10	14	22
	Metal - Halide Lamp (Low power factor <0.9)	150	8	10	16
		250	5	6	10
		400	2	4	6
		1000	1	2	3
	Metal - Halide Lamp (High power factor >0.9)	35	18	31	50
		50	18	22	35
		70	12	16	25
		110	8	13	21
	LED 230V integrated driver, Non dimmable, E27 / GU10	150	6	8	13
		250	4	7	11
		400	2	5	8
		1000	1	2	3
	LED 230V integrated driver Dimmable, GU10	35	30	42	55
		70	17	26	36
		150	12	14	20
		250	8	9	14
	Metal - Halide Lamp (Low power factor <0.9)	400	4	6	9
		1000	0	3	5
	Metal - Halide Lamp (High power factor >0.9)	35	18	22	39
		70	13	22	39
		150	8	12	22
		250	7	9	16
	LED 12V external driver Dimmable	400	2	5	7
		1000	1	2	3
	LED high bay lighting 230V integrated driver	100	5	6	9
		150	3	4	6
		200	2	4	6
	LED 230V integrated driver Dimmable, GU10	1 - 5	120	180	220
		7 - 10	120	160	200
		15	88	160	200
		50	48	65	102

Electrical characteristics

Family	EPE			
Reference	EPE510	EPE515	EPE520	EPE524
Modular size	1 module	1 module	1 module	1 module
Number of contacts	1	2	2	2
Type of contacts	1NO	1NC + 1NO	2NO	2NO
Contact rating AC1	16A	16A	16A	16A
Rated operation voltage in AC	230V	230V	230V	24V
Rated operation voltage in DC	110V	110V	110V	12V
Operational frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Rated insulation voltage (Ui)	250V	250V	250V	250V
Power consumption	25 VA	25 VA	25 VA	25 VA
Power dissipation per contact	1.2W	1.2W	1.2W	1.2W
Min duration of command impulse	50ms	50ms	50ms	50ms
Max duration of command impulse	60s	60s	60s	60s
Current at rest	6mA	6mA	6mA	6mA
Working temperature	-5°C to 40°C	-5°C to 40°C	-5°C to 40°C	-5°C to 40°C
Storage temperature	-40°C to 80°C	-40°C to 80°C	-40°C to 80°C	-40°C to 80°C

Mechanical characteristics

Rigid cable section	1.5 to 10mm ²	1.5 to 10mm ²	1.5 to 10mm ²	1.5 to 10mm ²
Flexible cable section	1 to 6mm ²	1 to 6mm ²	1 to 6mm ²	1 to 6mm ²
Tightening torque	1.6Nm	1.6Nm	1.6Nm	1.6Nm
IP protection degree	20	20	20	20
Mechanical endurance (number of cycles)	500,000	500,000	500,000	500,000
Electrical endurance @ AC22 (number of cycles)	150,000	150,000	150,000	150,000

Overall dimensions

Width (mm)	17.5	17.5	17.5	17.5
Height (mm)	83	83	83	83
Depth (mm)	63	63	63	63

Utilisation Advice

The following table shows the number of lamps that can be connected per phase at 230V 50Hz

Incandescent lamps

Tungsten filament and 230V halogen	Power	40W	60W	75W	100W	150W	200W	300W	500W	1000W
	Max. No.	45	30	24	18	12	9	5	3	2
ELV halogen (12 or 24V) with electronic transformer	Power	20W	50W	75W	100W	150W	300W			
	Max. No.	70	28	19	14	9	3			

Fluorescent tubes

Non compensated - single (no capacitor)	Power	15W	18W	30W	36W	58W				
	Max. No.	29	25	25	24	14				
Parallel compensated - single (capacitor added)	Power	15W	18W	30W	36W	58W				
	Max. No.	27	27	25	25	16				
	C total max ^(a)	121µF	121µF	112µF	112µF	72µF				
Series compensated - double (capacitor added)	Power	2x18W	2x20W	2x36W	2x40W	2x58W	2x65W			
	Max. No.	40	40	22	22	12	12			
	C total max ^(a)	2.7µF	2.7µF	3.4µF	3.4µF	5.3µF	5.3µF			
Electronic ballast - single	Power	18W	36W	58W						
	Max. No.	30	26	15						
Electronic ballast - double	Power	2x18W	2x36W	2x58W						
	Max. No.	15	13	8						
Compact fluorescent w/ electromagnetic ballast no compensation	Power	7W	10W	18W	26W					
	Max. No.	50	45	40	25					
Compact fluorescent w/ electromagnetic ballast	Power	11W	15W	20W	23W					
	Max. No.	80	60	50	40					

Discharge lamps

High pressure mercury - no compensation	Power	50W	80W	125W	250W	400W				
	Max. No.	11	9	7	3	2				
High pressure mercury - parallel compensation	Power	50W	80W	125W	250W	400W				
	Max. No.	9	8	6	3	2				
	C total max ^(a)	63µF	56µF	60µF	54µF	50µF				
High pressure sodium - no compensation	Power	70W	150W	250W	400W					
	Max. No.	9	5	3	2					
High pressure sodium - compensated	Power	70W	150W	250W	400W					
	Max. No.	5	3	2	1					
	C total max ^(a)	60µF	54µF	64µF	50µF					

(a): Maximum capacity

Safety transformers

These transformers are designed to ensure personal safety, their primary winding are electrically separated from their secondary windings and they are intended to feed safety extra low voltage (SELV) circuits $\leq 50V$. A thermal overload, in the primary windings, ensures that if a short circuit or an overload occurs in the output it will not damage the device.

Bell transformers

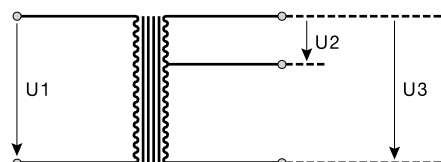
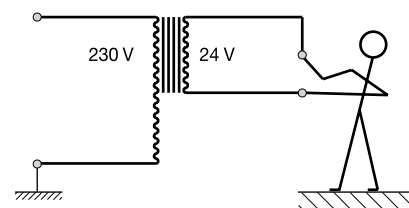
Bell transformers are similar to safety transformers but the secondary voltages do not exceed 24 volts, they are also similarly protected against short circuits and overloads, by thermal protection in the primary winding.

Compliance with the standards

The bell and safety transformers conform with EN 61558 (BS 3535). Where transformers are to be used in a common enclosure with other devices, heat dissipation inserts should be used.

Recommendation of Use

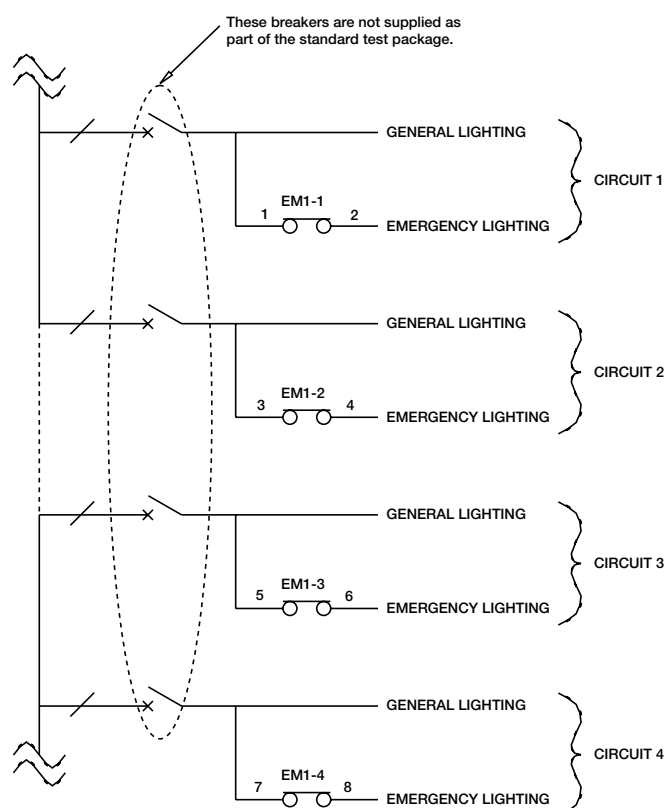
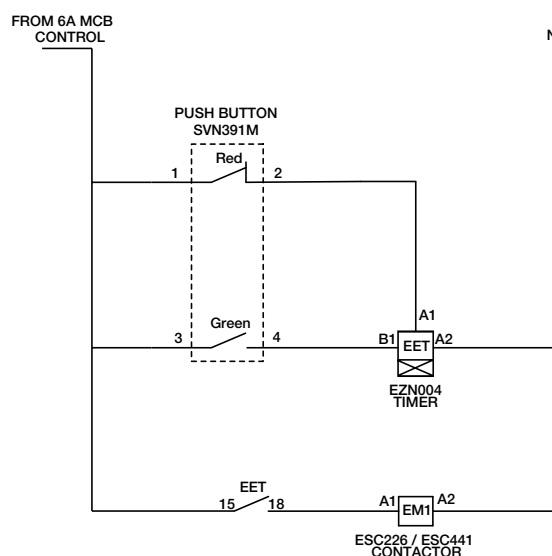
- To link only a secondary (never link both simultaneously)
- Do not connect (in series or in parallel) secondaries of different transformers.



Technical specification

Reference		ST303	ST305	ST312	ST315
Nominal power		8VA	16VA	25VA	63VA
Designation		Bell	Bell	Safety	Safety
Primary voltage	U_1	230 volts	230 volts	230 volts	230 volts
Secondary voltage	U_2	8 volts	8 volts	12 volts	12 volts
	U_3	12 volts	12 volts	24 volts	24 volts
		$I_n = 1A$	$I_n = 2A$	$I_n = 2.08A$	$I_n = 5.25A$
		$I_n = 0.67A$	$I_n = 1.33A$	$I_n = 1.04A$	$I_n = 2.63A$
No load secondary	U_2	15 volts	12 volts	14 volts	14 volts
Voltage	U_3	22 volts	13 volts	29 volts	27 volts
Galvanic insulation		4kV	4kV	4kV	4kV
Max functional temperature		35°C	35°C	35°C	35°C
Insulation class		H	B	B	H
Overload and S/C protection		Thermal cut out in the primary winding			

Emergency lighting discharge test packages





Changeover switches



Our modular manual changeover switches are a unique solution which have a three stable position switch (I-O-II) to allow you to control two power supply sources. They are available in both 2 and 4 pole versions, for single (25A, 40A or 63A) and three phase (40A or 63A) applications including the switching of generators, luminaires, machines etc.