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.

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Page

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**

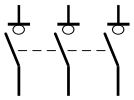

SBR264

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

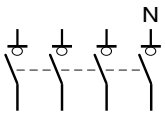
Triple pole



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

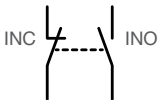
Four pole



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.

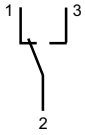
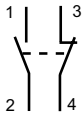
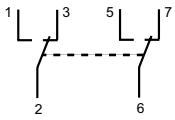
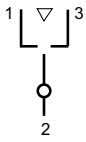
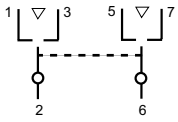
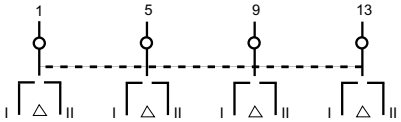
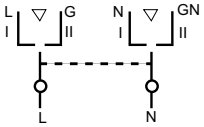
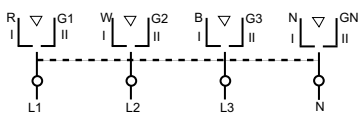
Technical data
Utilization category: AC22B (mixed resistive and inductive)

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 mod	**SFT125**
	1 x 40A 230V~	1 mod	**SFT140**
I-O-II Double pole Switches centre - off changeover with top common point 	2 x 25A 230V~	2 mod	**SFT225**
	2 x 40A 230V~	2 mod	**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


SFL225


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

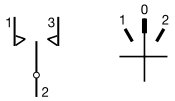
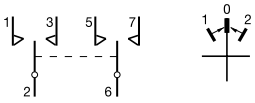
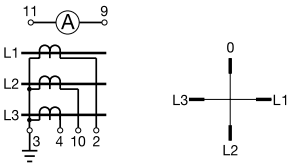
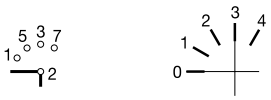
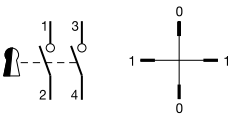
Isolating voltage: 500V~
Nominal current: 10-20A


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)

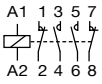
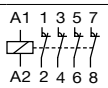
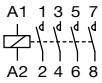
Output contacts
1NO, 1NO+1NC, 2NO, 2NC, 2NO+2NC, 3NO, 4NO, 4NC

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		Coil AC (50Hz)	Override	Rated output current 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

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

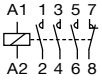
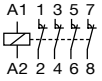
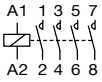
Output AC3/AC7b (50Hz)
8.5A, 25A, 32A
at 230V AC
880W, 2.6kW, 3.3kW
at 400V AC
2.6kW, 7.8kW, 10kW

Technical information: Page 303


ESC425S


ESC463S

Hum-free Contactors

Type		Coil AC (50Hz) or DC	Override	Rated output current AC1/AC7a	AC3/AC7b	Width	Cat ref.
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**


LZ060

Accessories

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

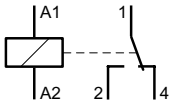
Latching Relays

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 Contact max. 5A 230V~ - min. 10mA - 12V DC	1 mod	**EN145**



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**

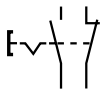

SVN422M

Push Buttons impulse with indicator light

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

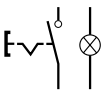

SVN311M

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 ≤ 30min

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**


SU212

Bells

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


SU214

Buzzers

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

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 it's 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 Ith (40°C)	40A	63A	80A	100A	125A	-
Operational frequency	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz	50Hz
Rated insulation voltage (Ui)	440V	440V	440V	440V	440V	240V
Rated impulse withstand voltage (Uimp)	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 Ie (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 (Icw) (rms)	IEC 60947-3	600A	945A	960A	1200A	1500A	-
Rated short circuit making capacity (Icm)	IEC 60669	6kA with 40A MCB C curve	-	-	-	-	-

Mechanical characteristics

Rigid cable section	25mm²	50mm²	50mm²	50mm²	50mm²	10mm²
Flexible cable section	16mm²	35mm²	35mm²	35mm²	35mm²	6mm²
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.)	16mm²	16mm²	16mm²	16mm²	16mm²	16mm²	16mm²	16mm²	25mm²	25mm²
Flexible cable section (max.)	10mm²	10mm²	10mm²	10mm²	10mm²	10mm²	10mm²	10mm²	16mm²	16mm²
Tightening torque	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
Mechanical endurance (number of cycles)	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	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

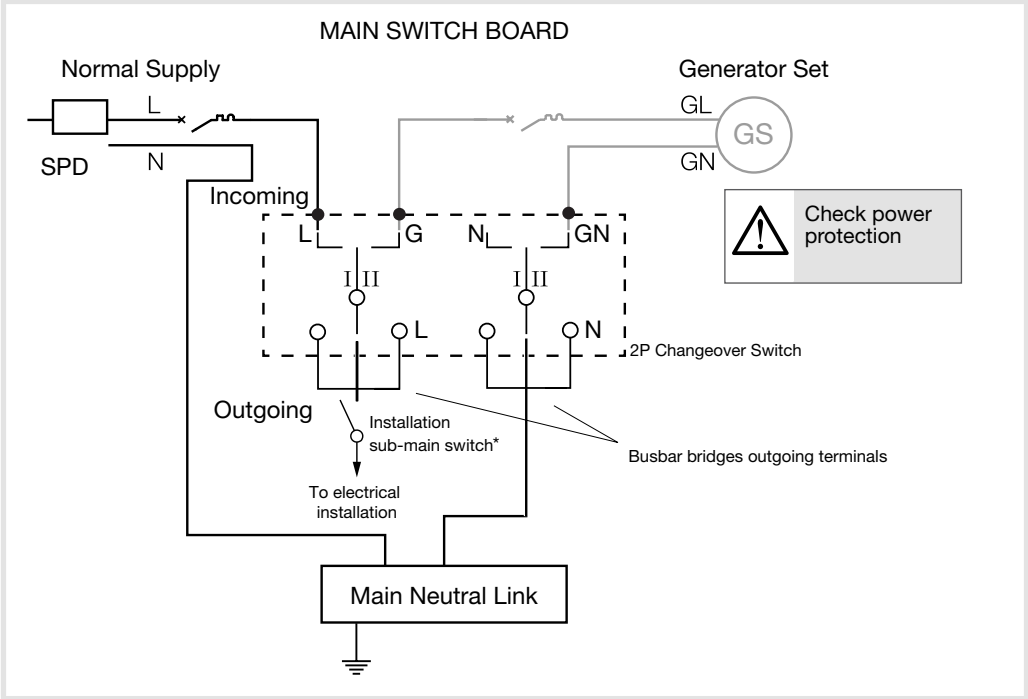
Stand-by generator or Alternative supply generator: typical location of manual changeover device with centre “off” position in the main switch board.

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

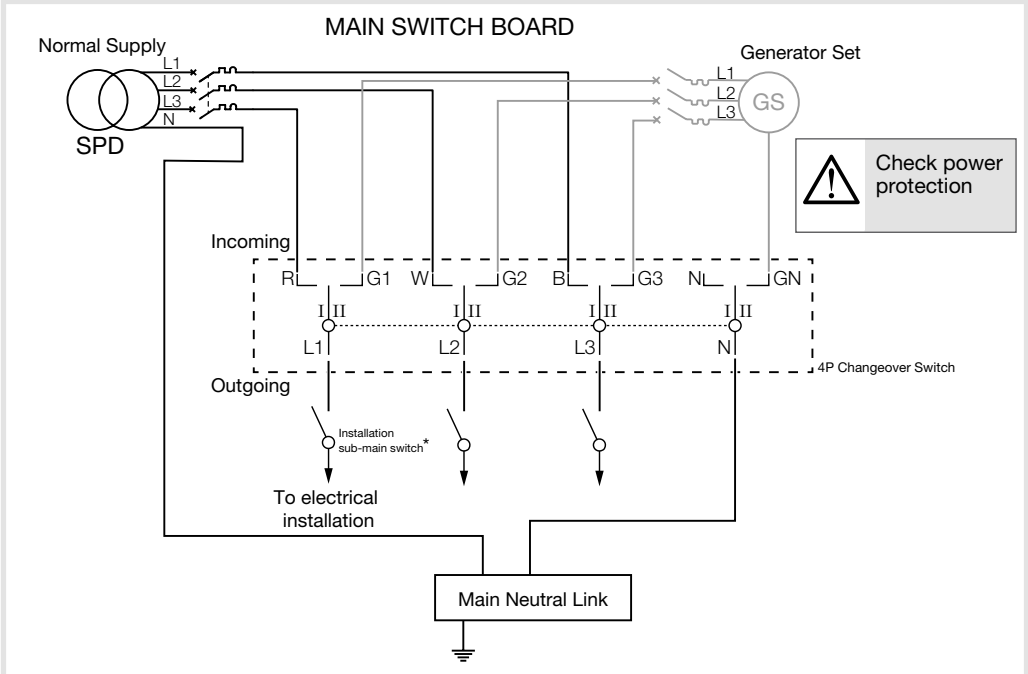
NOTE 1: In Australia and NZ, the Main Supply Neutral upstream of the MEN connection is NOT allowed to be switched.
(AS/NZS 3010: Electrical installations - Generating sets).

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

Single phase SFT2xx



Three phase SFT4xx



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 Ith (40°C)		25A	25A	40A	63A	-
Rated frequency		50Hz	50Hz	50Hz	50Hz	50Hz
Rated insulation voltage (Ui)		250V	440V	440V	440V	240V
Rated impulse withstand voltage (Uimp)		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 Ie		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 Ie		8.5A	8.5A	25A	32A	-
	Rated operating power	230V	880W	880W	2.6kW	3.3kW	-
		400V	-	2.6kW	7.8kW	10kW	-

Mechanical & electrical endurances

Mechanical endurance	no. of operations	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Electrical endurance @ Ie 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 25A-6kA	MCB 25A-6kA	MCB 40A-10kA	MCB 63A-10kA	MCB 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 10mm²	1 to 10mm²	4 to 25mm²	4 to 25mm²	10mm²
	flexible	1 to 6mm²	1 to 6mm²	4 to 16mm²	4 to 16mm²	6mm²
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 10mm²	1 to 10mm²	1 to 10mm²	1 to 10mm²	6mm²
	flexible	1 to 6mm²	1 to 6mm²	1 to 6mm²	1 to 6mm²	6mm²
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 aplication 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 sicharge 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.

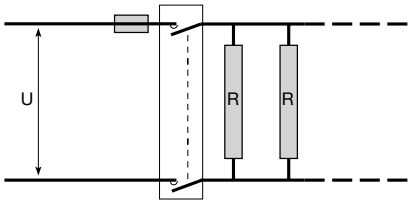
Adjacent fitting

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

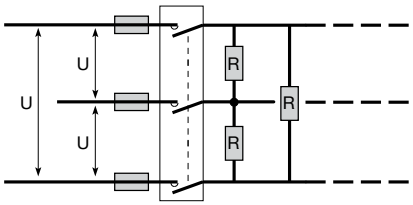
Heating applications

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)				
	25A	1	1.35	3	4	4.6
230V AC	40A	1.6	2.2	4.7	6.3	7.3
	63A	2.5	3.5	7.5	10	11.6
	25A	3	4.3	8.6	12	13.8
400V AC	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.*

Operating temps	Derating factor
Up to 40ºC	1
40o - 50ºC	0.9

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
(Ie) = 25A, maximum load = 4.6kW (230 VAC)

Assume operating temperature = 48^{O}C

The maximum load switching capacity at 48^{O}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^{O}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

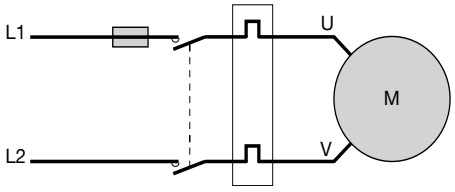
How long will ESC225 (25A) connected to 4kW load last ?

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).

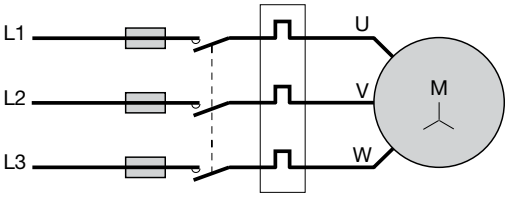
If higher durability is required, the contactor can be up-sized to a higher current rating.

Motor applications (AC7-b equivalent to AC3)

Single phase 230V



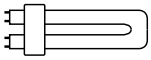
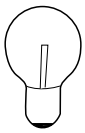
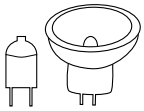
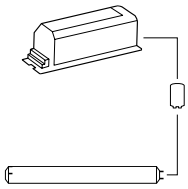
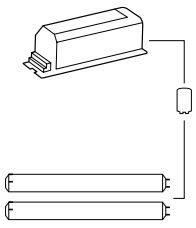
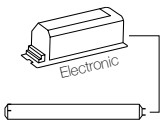
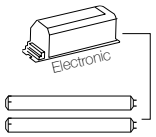
Three phase 400V



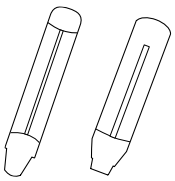
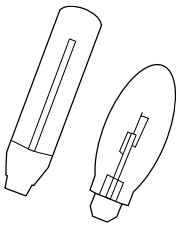
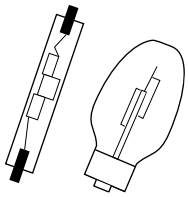
	Contactor rating	Control diagram	
		2P 230V single phase	**3P 400V three phase**
Maximum power for the motor	16A	0.57 kW	1.7 kW
	25A	0.88 kW	2.65 kW
	40A	2.6 kW	7.8 kW
	63A	3.3 kW	10 kW

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
		1000	2	4	7
	Halogen ELV (12 or 24V) with electronic transformer	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
	Single - with starter (High power factor >0.9)	15 - 20	20	36	57
		36	20	34	53
		40 - 42	20	29	45
		58 - 80	15	27	42
		115	15	25	39
	Double - with starter (Low power factor <0.9)	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
		2 x 80	14	22	35
		2 x 115	10	16	25
	Double - with starter (High power factor >0.9)	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
	Single with electronic ballast	15 - 20	22	36	57
		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 characterics 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
		700	0	3	5
		1000	0	2	3
	Low pressure sodium vapour lamps (Low power factor <0.9)	18	20	18	21
		35 - 55	9	14	20
		90	6	9	14
		135 - 180	4	6	8
	Low pressure sodium vapour lamps (High power factor >0.9)	18	8	12	24
		35	7	10	23
		55	5	10	19
		90	4	8	16
		135	2	5	7
		180	2	5	6
	High Pressure sodium lamps (Low power factor <0.9)	35	24	30	50
		50	15	22	34
		70	12	18	28
		110	10	14	22
		150	8	10	16
		250	5	6	10
		400	2	4	6
		1000	1	2	3
	High Pressure sodium lamps (High power factor >0.9)	35	18	31	50
		50	18	22	35
		70	12	16	25
		110	8	13	21
		150	6	8	13
		250	4	7	11
		400	2	5	8
		1000	1	2	3
	Metal - Halide Lamp (Low power factor <0.9)	35	30	42	55
		70	17	26	36
		150	12	14	20
		250	8	9	14
		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
		400	2	5	7
		1000	1	2	3

LED's					
LED 230V integrated Driver, Non dimmable, E27 / GU10		4 - 12	54	86	135
		17 - 22	40	63	101
		30 - 40	28	44	70
		50	22	35	55
	LED 230V integrated driver Dimmable, GU10	4 - 12	120	159	250
		17 - 22	88	118	185
		30 - 40	62	82	130
		50	48	65	102
	LED high bay lighting 230V integrated driver	100	5	6	9
		150	3	4	6
		200	2	4	6
	LED 12V external driver Dimmable	1 - 5	120	180	220
		7 - 10	120	160	200
		15	88	160	200

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 10mm²	1.5 to 10mm²	1.5 to 10mm²	1.5 to 10mm²
Flexible cable section	1 to 6mm²	1 to 6mm²	1 to 6mm²	1 to 6mm²
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 tableshows 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		

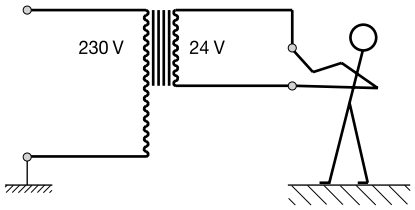
Discharge lamps

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 ≤ 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.

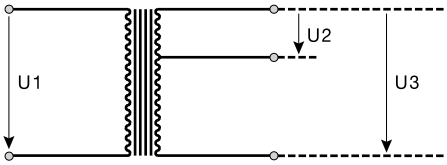


Bell transformers

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.



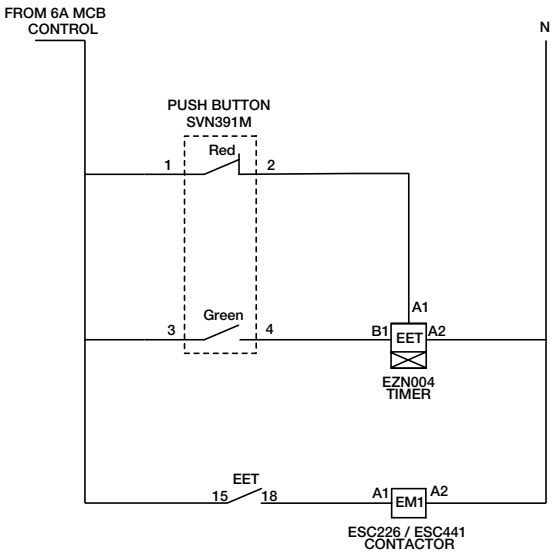
Recommendation of Use

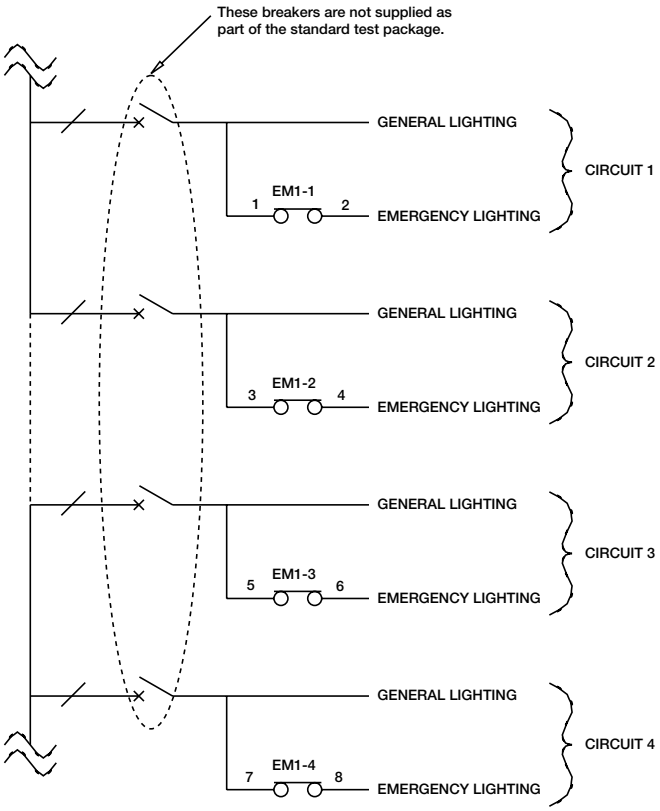
- To link only a secondary (never link both simultaneously)
- Do not connect (in series or in parallel) secondaries of different transformers.

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
		In = 1A	In = 2A	In = 2.08A	In = 5.25A
	U_3	12 volts	12 volts	24 volts	24 volts
		In = 0.67A	In = 1.33A	In = 1.04A	In = 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.