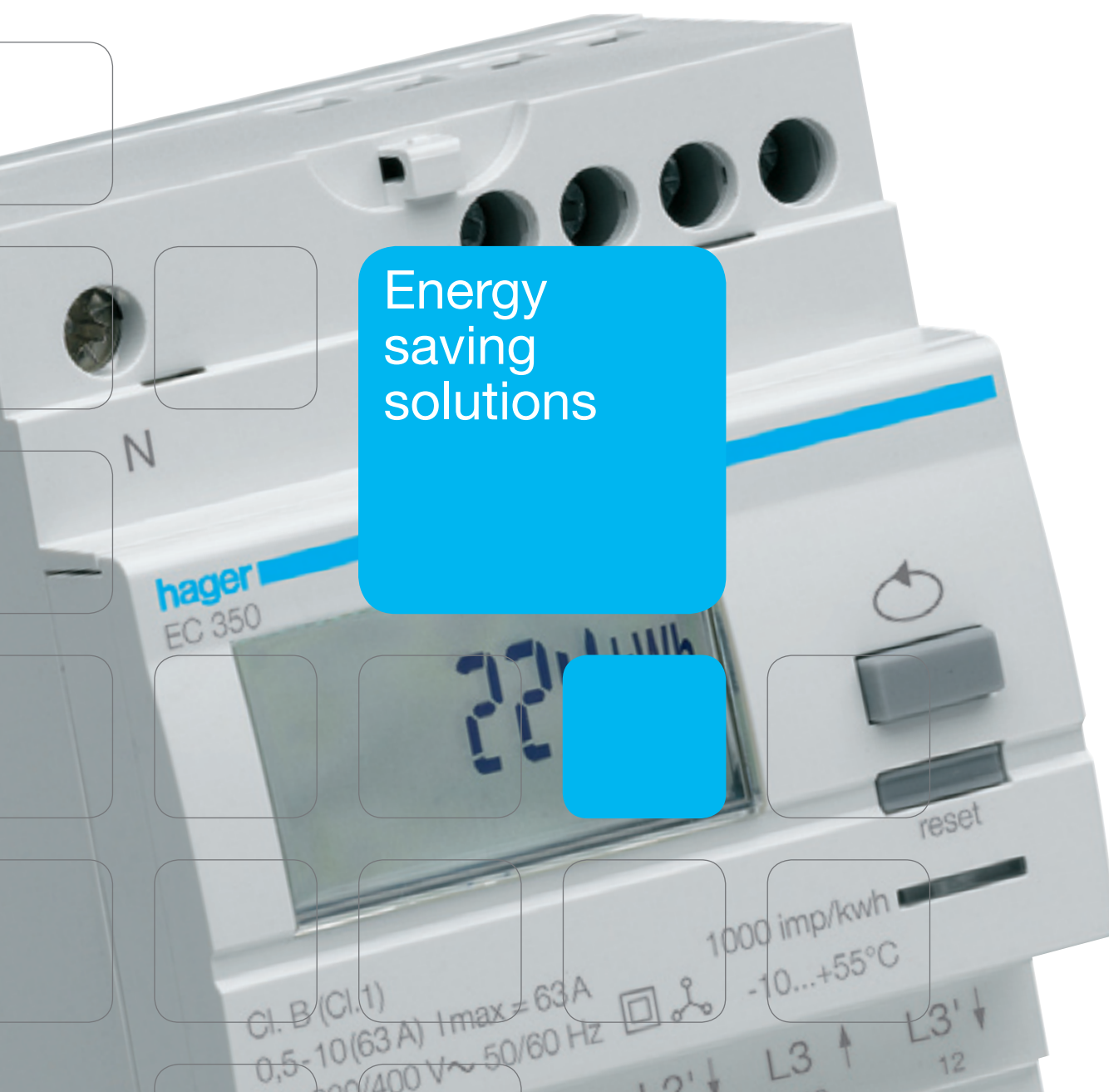


Modular devices

Simple energy saving solutions

Time based switches such as time switches and programmers provide selectable on-off periods during the day, week and year or a combination of all to control various electrical loads.

Simple and effective energy savings can be achieved by setting these devices so that the various loads are only switched on when they are actually needed, thereby saving unnecessary usage of energy.



Switch Disconnecter	5.2
2 Way / Centre-Off Changeover	5.3
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new kWh Meters	5.26

Description

For use as a Switch
Disconnecter in all types of
circuits. Complies with: BS EN
60947-3 all ratings.

Technical Data

Utilisation Category
AC22B
240V/415VAC

In: 25 - 32A

Shrouded cable clamps
Connection capacity:
10mm² - Rigid conductor
6mm² - Flexible conductor

In: 40 - 63A

Cable clamps
Connection capacity:
25mm² - Rigid conductor
16mm² - Flexible conductor

In: 80 - 100A

Cable clamps
Connection capacity:
50mm² - Rigid conductor
35mm² - Flexible conductor

All switches have a green / red
indication on the handle giving
positive contact indication.

1 Mod = 17.5mm

2 Mod = 35mm

3 Mod = 52.5mm

4 Mod = 70mm



SB140

Single Pole Switch Disconnecter

	Characteristics	Width	Cat ref.
	1 x 25A 250V~	1 Mod	SB125
	1 x 25A 250V~ with Pilot Light	1 Mod	SB125V
	1 x 32A 250V~	1 Mod	SB132
	1 x 32A 250V~ with Pilot Light	1 Mod	SB132V
	1 x 40A 250V~	1 Mod	SB140
	1 x 63A 250V~	1 Mod	SB163
	1 x 80A 250V~	1 Mod	SB180
	1 x 100A 250V~	1 Mod	SB199



SB140

Double Pole Switch Disconnecter

	Characteristics	Width	Cat ref.
	2 x 25A 250V~	1 Mod	SB225
	2 x 25A 250V~ with Pilot Light	1 Mod	SB225V
	2 x 32A 250V~	1 Mod	SB232
	2 x 32A 250V~ with Pilot Light	1 Mod	SB232V
	2 x 40A 250V~	2 Mod	SB240
	2 x 63A 250V~	2 Mod	SB263
	2 x 80A 250V~	2 Mod	SB280
	2 x 100A 250V~	2 Mod	SB299

Triple Pole Switch Disconnecter

	Characteristics	Width	Cat ref.
	3 x 25A 250V~	2 Mod	SB325
	3 x 32A 250V~	2 Mod	SB332
	3 x 40A 250V~	3 Mod	SB340
	3 x 63A 250V~	3 Mod	SB363
	3 x 80A 250V~	3 Mod	SB380
	3 x 100A 250V~	3 Mod	SB399

Four Pole Switch Disconnecter

	Characteristics	Width	Cat ref.
	4 x 25A 250V~	2 Mod	SB425
	4 x 32A 250V~	2 Mod	SB432
	4 x 40A 250V~	4 Mod	SB440
	4 x 63A 250V~	4 Mod	SB463
	4 x 80A 250V~	4 Mod	SB480
	4 x 100A 250V~	4 Mod	SB499

Characteristics
Locking device

Cat ref.
MZN175



SF118F

2 Way Switch Single Pole



Characteristics	Width	Cat ref.
1 x 25A 250V~	1 Mod	SF118F

1 x NO 1 x NC Double Pole



Characteristics	Width	Cat ref.
2 x 25A 250V~	1 Mod	SF115

Changeover Double Pole



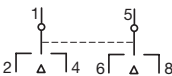
Characteristics	Width	Cat ref.
2 x 25A 250V~	2 Mod	SF218F

Centre-Off Changeover Single Pole



Characteristics	Width	Cat ref.
1 x 25A 250V~	1 Mod	SF119F

Centre-Off Changeover Double Pole

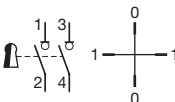


Characteristics	Width	Cat ref.
2 x 25A 250V~	2 Mod	SF219F



SF219F

Lockable Rotary Switch On/Off (4 Positions)



Characteristics	Width	Cat ref.
10A 400Vac	3 Mod	SK606

Description

Latching relays - operate when impulsed by a signal voltage. The impulse can be provided via a pushbutton or pushswitch. The first pulse operates the relay and latches it to its set (opposite) state, the next operation of the

pushbutton returns the relay to its reset (original) state.

Auxiliary Contacts (EPN050, EPN051)

Are available for remote signalling and centralised control applications and can be

easily combined with the latching relays.

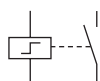
Connection: 10mm² flexible
6mm² rigid

1 Mod = 17.5mm
2 Mod = 35mm
3 Mod = 52.5mm
4 Mod = 70mm



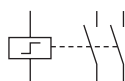
EPN510

Latching Relay 1 NO



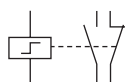
Coil	Power circuit AC1	Width	Cat ref.
230V 50Hz	16A - 250V~	1 Mod	EPN510
24V 50Hz	16A - 25V~	1 Mod	EPN513

Latching Relay 2 NO



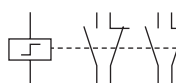
Coil	Power circuit AC1	Width	Cat ref.
230V 50Hz	16A - 250V~	1 Mod	EPN520
24V 50Hz	16A - 250V~	1 Mod	EPN524
12V 50Hz	16A - 250V~	1 Mod	EPN521

Latching Relay 1 NC + 1 NO



Coil	Power circuit AC1	Width	Cat ref.
230V 50Hz	16A - 250V~	1 Mod	EPN515
24V 50Hz	16A - 250V~	1 Mod	EPN518
12V 50Hz	16A - 250V~	1 Mod	EPN519

Latching Relay 2 NC + 2 NO

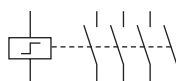


Coil	Power circuit AC1	Width	Cat ref.
230V 50Hz	16A - 250V~	2 Mod	EPN525
24V 50Hz	16A - 250V~	2 Mod	EPN528
12V 50Hz	16A - 250V~	2 Mod	EPN529



EPN540

Latching Relay 4 NO



Coil	Power circuit AC1	Width	Cat ref.
230V 50Hz	16A - 400V~	2 Mod	EPN540
24V 50Hz	16A - 400V~	2 Mod	EPN541

Auxiliary Contacts

Description	Power circuit	Width (8.75mm)	Cat ref.
Auxiliary Contact	2A - 250V~	½ Mod	EPN051
Auxiliary Contacts for Centralised Control	24A - 230V~	½ Mod	EPN050

Description

To provide control of low power circuits max 16A; associated with push buttons, switches, time switches etc for remote control applications.

The relays will accept an auxiliary contact for remote signalling applications. (EP071)
For the command of ELV circuits use interface relays EN145 and EN146.

For the command of high power circuits (20, 40 & 63 Amps) use contactors as shown on page 5.8 - 5.10

1 Mod = 17.5mm
2 Mod = 35mm
3 Mod = 52.5mm
4 Mod = 70mm



ER123

Relays 1 NC + 1 NO

Coil AC Voltage	Power circuit AC1	Width (17.5mm)	Cat ref.
230V 50Hz	16A - 250V~	1 Mod	ER120
24V 50Hz	16A - 250V~	1 Mod	ER123
12V 50Hz	16A - 250V~	1 Mod	ER124

Relays 2 NC + 2 NO

Coil AC Voltage	Power circuit AC1	Width (in 17.5mm)	Cat ref.
230V 50Hz	16A - 250V~	2 Mod	ER135
24V 50Hz	16A - 250V~	2 Mod	ER138
12V 50Hz	16A - 250V~	1 Mod	ER139

Auxiliary Contact

Power circuit AC1	Width (8.75mm)	Cat ref.
2A - 250V~	½ Mod	EP071



EP071

Description

To interface between low voltage and extra low voltage circuits to ensure galvanic isolation to 4kV.

Application

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

Connection

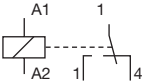
Flexible 4mm²
Rigid 6mm²

1 Mod = 17.5mm
2 Mod = 35mm
3 Mod = 52.5mm
4 Mod = 70mm

Interface Relay ELV/LV 1 Way



EN145

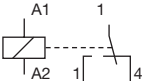


Characteristics	Width	Cat ref.
Coil Voltage: 10 to 26V ac/dc Output: 1 Changeover Contact Max. 5A 230V~ Min. 10mA 12V dc	1 Mod	EN145

Interface Relay LV/ELV 1 Way



EN146



Characteristics	Width	Cat ref.
Coil Voltage: 230V~ 50Hz Output: 1 Changeover Contact Max. 5A 230V~ Min. 10mA 12V dc	1 Mod	EN146

Description

For the remote switching and control of power circuits (20A-63A AC1)

Technical Data

The choice of contactor depends upon a number of parameters, e.g.

- The nature of the supply.
- The power it is switching.
- The characteristics of the load.
- The control voltage required.
- Number of operations

All contactor ratings are for AC1 loads only – if the load differs from AC1 the contactor may need de-rating.

The use of LZ060 (heat dissipation inserts) between all contactors installed or between contactors and adjacent devices is required.

Options

Contact choice

- Normally open (NO)
- Normally closed (NC)

1 Mod = 17.5mm

2 Mod = 35mm

3 Mod = 52.5mm

4 Mod = 70mm

Auxiliary

20A contactors will accept auxiliary, EP071 contact.



ES263



ES365

Standard Contactors

Description	Coil AC voltage	Power circuit AC1	Width	Cat ref.
20A 1NO	230V 50Hz	20A - 250V~	1 Mod	ES110
20A 2NO	230V 50Hz	20A - 250V~	1 Mod	ES220
20A 2NO Manual Override	230V 50Hz	20A - 250V~	1 Mod	ES220A
40A 2NO	230V 50Hz	40A - 400V~	3 Mod	ES240
63A 2NO	230V 50Hz	63A - 400V~	3 Mod	ES263
20A 2NO	24V 50Hz	20A - 250V~	1 Mod	ES224
20A 2NO Manual Override	24V 50Hz	20A - 250V~	1 Mod	ES224A
40A 2NO	24V 50Hz	40A - 250V~	3 Mod	ES252
20A 2NC	230V 50Hz	20A - 250V~	1 Mod	ES230
20A 1NO 1NC	24V 50Hz	20A - 250V~	1 Mod	ES239
20A 3NO	230V 50Hz	20A - 400V~	2 Mod	ES320
40A 3NO	230V 50Hz	40A - 400V~	3 Mod	ES340
40A 3NO + Auxiliary Contact 1NC	230V 50Hz	40A - 400V~	3 Mod	ES345
63A 3NO + Auxiliary Contact 1NC	230V 50Hz	63A - 400V~	3 Mod	ES365
20A 4NO	230V 50Hz	20A - 400V~	2 Mod	ES420
40A 4NO	230V 50Hz	40A - 400V~	3 Mod	ES440
63A 4NO	230V 50Hz	63A - 400V~	3 Mod	ES463
20A 4NO	24V 50Hz	20A - 400V~	2 Mod	ES424
20A 4NC	230V 50Hz	20A - 400V~	2 Mod	ES430
40A 4NC	230V 50Hz	40A - 400V~	3 Mod	ES480
63A 4NC	230V 50Hz	63A - 400V~	3 Mod	ES490
63A 2NC + 2NO	230V 50Hz	63A - 250V~	3 Mod	ES470

Auxiliaries and Accessories

Description	Power circuit AC1	Width	Cat ref.
Heat Dissipation Insert	-	½ Mod	LZ060
NO+NC Auxiliary Contact	2A - 25V~	½ Mod	EP071



LZ060

Description

For the remote switching and control of power circuits where noise may be a concern i.e hotel bedrooms etc. (20A-63A AC1)

Technical Data

The choice of contactor depends upon a number of parameters, e.g.

- The nature of the supply.
- The power it is switching.
- The characteristics of the load.

- The control voltage required.
 - Number of operations
- All contactor ratings are for AC1 loads only – if the load differs from AC1 the contactor may need de-rating.

Options

- Contact choice
- Normally open (NO)
 - Normally closed (NC)

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm

The use of LZ060 (heat dissipation inserts) between all contactors installed or between contactors and adjacent devices is required.



ESN420B

Low Noise Contactors

Description	Coil AC voltage	Power circuit AC1	Width	Cat ref.
20A 2NO	230V 50Hz	20A - 400V~	1 Mod	ESN220B
40A 2NO	230V 50Hz	40A - 400V~	3 Mod	ESN240B
63A 2NO	230V 50Hz	63A - 400V~	3 Mod	ESN263B
25A 3NO	230V 50Hz	25A - 400V~	2 Mod	ESN320B
40A 3NO	230V 50Hz	40A - 400V~	3 Mod	ESN340B
25A 3NO + 1NC	230V 50Hz	25A - 400V~	2 Mod	ESN444B
25A 4NO	230V 50Hz	25A - 400V~	2 Mod	ESN420B
25A 4NO	230V 50Hz	40A - 400V~	3 Mod	ESN440B
63A 4NO	230V 50Hz	63A - 400V~	3 Mod	ESN463B
25A 4NC	230V 50Hz	25A - 400V~	2 Mod	ESN430B

Auxiliaries and Accessories

Description	Power circuit AC1	Width	Cat ref.
Heat Dissipation Insert	-	1/2 Mod	LZ060
Sealable Terminal Cover for 2 Module Contactors	-	-	ESN002B
Sealable Terminal Cover for 3 Module Contactors	-	-	ESN003B
NO + NC Auxiliary Contact	2A - 250V~	1/2 Mod	ESN071B



ESN071B

Override contactors

Manual override facility allows temporary override, with automatic return at next coil energisation. Permanent off can also be selected.
ET201 low noise version.

Technical Data

The choice of contactor depends upon a number of parameters, e.g.

- The nature of the supply.
- The power it is switching.
- The characteristics of the load.
- The control voltage required.
- Number of operations

All contactors ratings are for AC1 loads only – if the load differs from AC1 the contactor may need de-rating.

The use of LZ060 (heat dissipation inserts) between all contactors installed or between contactors and adjacent devices is recommended.

Options

Contact choice

- Normally open (NO)
- Normally closed (NC)

1 Mod = 17.5mm

2 Mod = 35mm

3 Mod = 52.5mm

4 Mod = 70mm

Auxiliary

20A contactors will accept auxiliary, EP071 contact.

2 NO

Coil AC voltage	Power circuit AC1	Width	Cat ref.
230V 50 Hz	16A - 250V~	1 Mod	ETN221B ¹
230V 50Hz	20A - 250V~	1 Mod	ET221

¹ Low noise device



ET341

3 NO

Coil AC voltage	Power circuit AC1	Width	Cat ref.
230V 50 Hz	20A - 400V~	2 Mod	ET321
	40A - 400V~	3 Mod	ET341

4 NO







Coil AC voltage	Power circuit AC1	Width	Cat ref.
230V 50 Hz	20A - 400V~	2 Mod	ET421
	40A - 400V~	3 Mod	ET441

Auxiliary for 20A Contactors

Power circuit AC1	Width	Cat ref.
2A - 250V~	½ Mod	EP071

Accessories

Description	Width	Cat ref.
Heat Dissipation Insert	½ Mod	LZ060

	Electromechanical Time Clocks		Digital Time Clocks			
	1 Channel		1 Channel		2 Channels	4 Channels
						
	1 Modules	3 Modules	1 Modules	2 Modules	2 Modules	4 Modules
	EH010 EH011	EH110 EH111 EH171	EG071 EG010	EG103 EG103V EG103E	EG203 EG203E	EG493E
Programming Cycle	Electromechanical		Digital			
	1 Channel 1 Module	3 Modules	1 Channel 1 Modules	2 Modules	2 Channels 2 Modules	4 Channels 4 Modules
24 Hours	EH010 EH011	EH110 EH111	EG010			
7 Days		EH171	EG071	EG103 EG103V EG103E	EG203 EG203E	
Annual						EG493E

Electromechanical Time Switches

Description

Electromechanical time switches 1 and 2 channel.
For hourly, daily or weekly programming.
To control lighting, heating, ventilation, household appliances etc.
To save energy and to improve comfort.

Technical Data

- Programming by captive segments
 - Manual override:
- For 1 module products:
- Automatic
 - Permanent ON
- For 3 module products:
- Automatic
 - Permanent ON
 - Permanent OFF

Minimum Switching Time

- 15 min for daily dial
- 2h for weekly dial

Connection

Protected tunnel terminals.
1-4mm²

1 Mod = 17.5mm
2 Mod = 35mm
3 Mod = 52.5mm
4 Mod = 70mm

1 Channel Time Switches without Supply Failure Reserve

Quartz: Without supply failure reserve.

Characteristics	Voltage supply	Width	Cat ref.
Daily Dial, 1 Changeover contact, 16A 250V~ AC1	230V~ 50Hz	1 Mod	EH010
Daily Dial, 1 NO Contact, 16A 250V~ AC1	230V~ 50Hz	3 Mod	EH110

1 Channel Time Switches with Supply Failure Reserve

Quartz: With supply failure reserve 200 hours after being connected for 120 hours.

Characteristics	Voltage supply	Width	Cat ref.
Daily Dial, 1 Changeover contact, 16A 250V~ AC1	230V~ 50/60Hz	1 Mod	EH011
Daily Dial, 1 NO Contact, 16A 250V~ AC1	230V~ 50/60Hz	3 Mod	EH111
Weekly Dial, 1 NO Contact, 16A 250V~ AC1	230V~ 50/60Hz	3 Mod	EH171

For the control of lighting, heating, household appliances, shop windows, signage etc., to improve comfort and to save energy.

EG103 and EG203

(Basic Version) Product set at current time and date when delivered. Automatic change of Summer / Winter time.

Programming Key

- To allow easy back up and re-installation of the program to allow permanent program overrides
- Programming per day or group of days
- 56 ON / OFF programme steps
- Permanent ON/OFF overrides
- Temporary ON/OFF overrides bar graph indication showing the daily profile
- Possibility of locking the keyboard with EG004

- Programming without the need to be energised

EG103E/V and EG203E

(Evolution Versions)
Same characteristics as EG103 and EG203 plus more:

- Holidays mode: forcing ON or OFF between two dates
- Presence simulation - random switching
- Backlit screen
- Impulse programming capability (1s to 30 min)

Connection

EG010 / EG 071 : 0.5 to 4mm²
EG 103 and EG 203/E :
1 to 6mm² Flexible
1.5 to 10mm² Rigid

Operating Voltage

230~ 50/60 Hz
(except EG103V
- 12/24V AC/DC)



EG071

1 Channel Digital Time Switch

Not compatible with program key

Characteristics	Width	Cat ref.
Daily Cycle, 5 Adjustable pre-recorded programs 6 Switchings per day (3 on and 3 off), Output: 1 changeover contact 16A - 250V~ AC 1, 3 year reserve	1 Mod	EG010
Weekly Cycle, Output: 1 changeover contact, 16A - 250V~ AC 1, Capacity 20 program steps, 3 year reserve	1 Mod	EG071



EG103

1 Channel Digital Time Switch

Characteristics	Width	Cat ref.
Weekly Cycle (Basic Version), Output: 1 changeover contact 16A - 250V~ AC 1, Delivered with key EG005	2 Mod	EG103
Weekly Cycle (Evolution Version), Output: 1 changeover contact 16A - 250V~ AC 1, Delivered with key EG005	2 Mod	EG103E
Weekly Cycle (Evolution Version), Output: 1 changeover contact 16A - 250V~ AC 1, Operating Voltage 12/24V AC/DC, Delivered with key EG005	2 Mod	EG103V

2 Channel Digital Time Switch

Characteristics	Width	Cat ref.
Weekly Cycle (Basic Version), Output: 2 changeover contact 16A - 250V~ AC 1, Delivered with key EG005	2 Mod	EG203
Weekly Cycle (Evolution Version), Output: 2 changeover contact 16A - 250V~ AC 1, Delivered with key EG005	2 Mod	EG203E

PC Interface and Software Tool

Interface between PC and key interface module with software on CD

Connection	Pack qty.	Cat ref.
RS232	1	EG003
USB	1	EG003U

Accessories

Description	Pack qty.	Cat ref.
Locking key (yellow colour) to prevent unauthorised re-programming of all EG time clocks (except EG010, EG071)	1	EG004
Spare programming key (grey colour) for timers EG103, EG103V, EG203, EG103E, EG203E	1	EG005
DIN Rail storage module for EG004 or EG005	1	EG006

Description

The hager range is composed of two astrological time switches EE180/EE181.

The range offers the following features:

- Programming of the lighting interruption
- Automatic change of winter / summer time

- Astro program and expert program with individual Astro program steps
- Programming for day or group of days (same concept as our existing clocks with key)
- Weekly programming
- Permanent override
- Temporary overrides

- Programming of holiday period
- Programming via the PC software and the associated interface (EG003)

For technical information see page 5.38

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm

1 Channel Astrological Time Switch



EE180

Characteristics	Width	Cat ref.
Weekly Cycle, 230V~, 50Hz Changeover Contact 16A AC1, Operating reserve lithium battery 5 years, Delivered with key EG005	2 Mod	EE180

2 Channel Astrological Time Switch



EE181

Characteristics	Width	Cat ref.
Weekly Cycle, 230V~, 50Hz 2 Changeover Contact 16A AC1, Operating reserve lithium battery 5 years, Delivered with key EG005	2 Mod	EE181

4 Channel Digital Time Switch Weekly and Annual Cycle

In commercial premises timed programming often requires the use of multi-circuit equipment with large programming capacities for a weekly or annual cycle.

Applications

- Command of lighting circuits
- Control of heating
- Ventilation control
- Bell
- Alarm

Functions

- Summer/winter time pre-programmed
- Delivered with time set
- External input for override (permanent, temporary, timed)
- Easy programming with words in display
- The output can be defined as ON/OFF, impulse or cycle

- 4 different cycles can be defined
- Calculates automatically all dates linked with easter.
- Holidays program
- 10 specific weekly programs
- Random mode
- Input for external mode
- Hour counter on each output
- Keyboard locking with PIN code

Connection

Quick connect terminals
Capacity: 0.75 to 2.5mm²

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm



EG493E

4 Channel Yearly Time Switch

Characteristics

Voltage rating: 230V~ 50/60Hz
Outputs: 3 changeover contacts 10A - 25V~ AC1
1 NO contact: 10A - 25V~ AC1

Width

4 Mods

Cat ref.

EG493E

PC Interface and Software Tool

Interface between PC and key interface module with software on CD



EG003

Connection

RS232

USB

Cat ref.

EG003

EG003U

Accessories

Description

Programming key for EG493E

Cat ref.

EG002



EG002

Description

A photo-electric cell measures the light level and in conjunction with the relay provides on/off control of a circuit.

This device controls lighting circuits in relation to ambient light, based on user settings.

Front cover sealability

Applications

Street lighting, display lighting, illuminated signs etc.

Connection

Protected cable clamps

Capacity:

Rigid: 1.5 to 10mm²

Flexible: 1 to 6mm²

On board LED shows status of changeover contact.

Technical Data

4 position override switch allowing:

- Auto: normal operating mode
- On: permanently switched on
- Off: permanently switched off
- Test: setting mode for easy adjustment.

1 Mod = 17.5mm

2 Mod = 35mm

3 Mod = 52.5mm

4 Mod = 70mm



EE100

Light Sensitive Switch

2 sensitivity ranges: 5 to 50 lux, 50 to 2000 lux

Delivered with a separate surface photo-electric cell EE003

Must be used in conjunction with a suitably rated contactor (page 5.7 - 5.8) where load conditions demand

Characteristics	Width	Cat ref.
Voltage rating: 230V~ 50/60Hz	3 Mod	EE100
Outputs: 1 changeover AC 1 contact 16A AC1 - 230V~		
Maximum distance: 50m between photocell and controller		

Light Sensitive Programmer

Description

To control the lighting installation in relation to time and ambient light.

It is a weekly programmer associated with a light sensitive switch.

Working Principle

The user programmes both on/off periods and a desired light level. The cell measures the light level within the on period. Depending on the light level (below or above the programmed threshold, the output will be switched on/off. 20 program steps, 1 minute switching increments

Programming Function

Programming by keys and display on LCD screen. On/off override facility, permanent working. Display and control of the programme.

Test setting for easy adjustment.

1 Mod = 17.5mm

2 Mod = 35mm

3 Mod = 52.5mm

4 Mod = 70mm



EE171

Light Sensitive Programmer

2 sensitivity ranges: 5 to 50 lux, 50 to 2000 lux

Delivered with a separate surface photo-electric cell EE003

Must be used in conjunction with a suitably rated contactor (page 5.7 - 5.8) where load conditions demand

Characteristics	Width	Cat ref.
Voltage rating: 230V~ 50/60Hz	3 Mod	EE171
Outputs: 1 changeover AC 1 contact 16A AC1 - 230V~		
Maximum distance: 50m between photocell and controller		



EE003

Replacement Photo Electric Cell

Mounting	For Cat ref.	Pack qty.	Cat ref.
Flush	EE100, EE171	1	EE002
Surface	EE100, EE171	1	EE003

Application

For both residential and commercial applications

Installed in a consumer unit or distribution board, the lamp can be configured to light automatically in the event of power failure.

It can also be withdrawn from its base, thereby acting as a mini torch with an operating duration of 1 hour 30 mins

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm

Emergency Lighting Module



EE960

Description	Width	Cat ref.
Emergency Lighting Module	3 Mod	EE960

	Areas of use			
	Residential	Communal / Landlords Areas	Commercial	Industrial
Communal Stairwells and Landlord Areas		EMN001 & EMN005		
External Lighting	EMN001 & EMN005			
Landlords Areas / Bathrooms	EZN002 EZN006			
Heating Overrides			EZN001 EZN006	
Shop Windows / Signage			EZN005 EZN006	
Timer Function	EZN004 EZN006			
Door Closing Mechanisms	EZN004 EZN006			
Alarm Bell			EZN004 + EZN006 EZN006	
Variation of Alarm Frequency			EZN005 EZN006	

Staircase Time Lag Switches

Description

To provide control of lighting circuits with automatic switch-off after a pre-set time.

Compact design with a 2 position switch permanent / timed lighting control facility.

EMN005 incorporates a pre-warning of switch OFF to improve the safety for users and a double delay function: 30 sec. to 10 min, or 1 hour by pressing the push-button more than 3 seconds.

1 Mod = 17.5mm
2 Mod = 35mm
3 Mod = 52.5mm
4 Mod = 70mm

Basic Staircase Time Lag Switches

Adjustable time delay setting 30 sec. to 10 minutes

Characteristics	Width	Cat ref.
Supply voltage 230V~ 50/60Hz 16A - 250V AC1 2300W incandescent halogen and flurescent	1 Mod	EMN001

Multifunction Staircase Time Lag Switches

Basic staircase time lag switch
Pre-warning mode
Double delay mode 30 sec. to 10 min or 1 hour
Double delay with pre-warning mode

Characteristics	Width	Cat ref.
Supply voltage 230V~ 50/60Hz μ 16A - 250V AC1 2300W incandescent halogen and flurescent	1 Mod	EMN005



EMN005

Description

To provide all types of automatic control i.e. lighting, ventilation, watering, machine pre-heating, automatic door and visual audible indication, cycle control etc. with automatic switch off after preset time.

Applications

For timing and automation in domestic and commercial premises. The input signal can be via various switching devices (pushbutton, latching switch, timeclock etc.) and the timed output used to control the application.

Technical Data

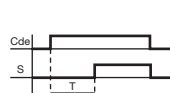
Voltage range:
12 to 48V DC
12 to 230V AC
Adjustable: Time delay from 0.1s to 10hrs.
Complies with BS EN 60669-2-1

Terminal Capacity

6mm² max flexible
1.5 - 10mm² rigid

1 Mod = 17.5mm
2 Mod = 35mm
3 Mod = 52.5mm
4 Mod = 70mm

Delay On

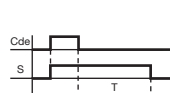


Characteristics
1 changeover contact
10A / 230V~ AC1
Time delay T:0.1s to 10hr

Width
1 Mod

Cat ref.
EZN001

Delay Off

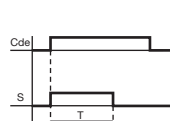


Characteristics
1 changeover contact
10A / 230V~ AC1
Time delay T:0.1s to 10hr

Width
1 Mod

Cat ref.
EZN002

Adjustable Time On

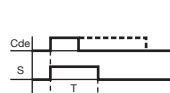


Characteristics
1 changeover contact
10A / 230V~ AC1
Time delay T:0.1s to 10hr

Width
1 Mod

Cat ref.
EZN003

Timer



Characteristics
1 changeover contact
10A / 230V~ AC1
Time delay T:0.1s to 10hr

Width
1 Mod

Cat ref.
EZN004

Symmetrical Flasher



Characteristics
1 changeover contact
10A / 230V~ AC1
Time delay T:0.1s to 10hr

Width
1 Mod

Cat ref.
EZN005

Multifunction

Characteristics
1 changeover contact
10A / 230V~ AC1
Time delay T:0.1s to 10hr

Functions
Delay On, Delay Off, Adjustable Time On, Adjustable Time Off, Timer, Symmetrical Flasher (On, Off)

Width
1 Mod

Cat ref.
EZN006

Description

Pushbuttons to actuate loads either directly or via contactors etc.

Technical Data

Modular pushbuttons

- Without light
 - With grey button, red/green optional
- With light
 - With red, green button

Light Technology

LED

Connection

Cage terminals

Terminal Capacity

10mm² rigid conductor.
6mm² flexible conductor.

BS EN 60947-5-1

1 Mod = 17.5mm

2 Mod = 35mm

3 Mod = 52.5mm

4 Mod = 70mm



SVN311

Pushbuttons (Impulse)

16A - 250V~

Without indicator light

Characteristics	Width	Cat ref.
Contacts: 1 NO	1 Mod	SVN311
Contacts: 2 NO	1 Mod	SVN331
Contacts: 2 NO, Double Pushbutton	1 Mod	SVN371
Contacts: 1 NC	1 Mod	SVN321
Contacts: 2 NC	1 Mod	SVN341
Contacts: 1 NO + 1 NC	1 Mod	SVN351
Contacts: 1 NO + 1 NC, Double Pushbutton	1 Mod	SVN391



SVN411

Pushbuttons (Impulse)

16A - 250V~

With indicator light

Characteristics	Width	Cat ref.
Contacts: 1 NO : Green	1 Mod	SVN411
Contacts: 2 NO : Red	1 Mod	SVN432
Contacts: 1 NC : Red	1 Mod	SVN422
Contacts: 2 NC : Green	1 Mod	SVN441
Contacts: 1 NO + 1 NC	1 Mod	SVN452



SVN312

Pushbuttons (Latching)

16A - 250V~

Without indicator light

Characteristics	Width	Cat ref.
Contacts: 1 NO	1 Mod	SVN312
Contacts: 2 NO	1 Mod	SVN332
Contacts: 1 NC	1 Mod	SVN322
Contacts: 2 NC	1 Mod	SVN342
Contacts: 1 NO + 1 NC	1 Mod	SVN352



SVN413

Pushbuttons (Latching)

16A - 250V~

With indicator light

Characteristics	Width	Cat ref.
Contacts: 1 NO : Green	1 Mod	SVN413
Contacts: 2 NO : Green	1 Mod	SVN433

Modular Indicator Lights

Available with red, green, amber, blue, colourless lens

Light Technology
LED

Options

DIN rail mountable

Connection

Cage terminals

Capacity

10mm² rigid conductor
6mm² flexible conductor

BS EN 62094-1

1 Mod = 17.5mm

2 Mod = 35mm

3 Mod = 52.5mm

4 Mod = 70mm



SVN122

Indicator Lights (230V~)

Indicator Colour	Width	Cat ref.
Green	1 Mod	SVN121
Red	1 Mod	SVN122
Orange	1 Mod	SVN123
Blue	1 Mod	SVN124
Clear	1 Mod	SVN125
Red & Green (Double Indicator)	1 Mod	SVN126
Red (Triple Indicator)	1 Mod	SVN127

Indicator Lights (12/48V)

Indicator Colour	Width	Cat ref.
Green	1 Mod	SVN131
Red	1 Mod	SVN132

Description

Provide separated extra low voltage 8, 12, 24V~.

Technical Data

Secondary voltages:
8V, 12V, 24V~
Bell transformers are short-circuit protected.
Bells/buzzers:
Max. continuous duty ≤ 30 minutes.
Cable capacities: 6mm²
Cable clamp type

Output

Bells: 85 dBA
Buzzers: 78 dBA

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 on nominal load.

1 Mod = 17.5mm
2 Mod = 35mm
3 Mod = 52.5mm
4 Mod = 70mm
6 Mod = 95mm

Safety Transformers

ST313

Characteristics	Width	Cat ref.
230V/12-24V~ 50Hz, 25VA 50/60 Hz	4 Mod	ST312
230V/12-24V~ 50Hz, 16VA 50/60 Hz	4 Mod	ST313
230V/12-24V~ 50Hz, 40VA 50/60 Hz	4 Mod	ST314
230V/12-24V~ 50Hz, 60VA 50/60 Hz	6 Mod	ST315

Bell Transformers

ST301

Characteristics	Width	Cat ref.
230V/8V~ 50/60 Hz, 8-12V, 4VA	2 Mod	ST301
230V/8-12V~ 50/60 Hz, 8-12V, 8VA	2 Mod	ST303
230V/8-12V~ 50/60 Hz, 8-12V, 16VA	3 Mod	ST305

Bells

Characteristics	Width	Cat ref.
8/12V~, 5VA - 0.33A	1 Mod	SU212
230V~, 6.5VA - 0.03A	1 Mod	SU213

Buzzers

Characteristics	Width	Cat ref.
8/12V~, 4VA - 0.33A	1 Mod	SU214
230V~, 6.5VA - 0.03A	1 Mod	SU215

Description

Electronic thermostats for any application requiring temperature control (from cold room to steam room).

Applications

EK081 fixed ambient probe for night temperature regulation.
 EK083 used as floor probe to limit floor temperature.
 EK083 used to control hot water

temperature (with its collar) in case of probe disconnection.

3 working modes are possible (selected by wiring):

1. Permanent off
2. Permanent on
3. Cyclic operation 1 minute in every 4.

Output status is displayed by an LED.

EK187**Electronic Thermostat Suitable for Heating Control**

Two adjustable temperature levels are selected by external signals (operation by time switch or digital programmer).

Additionally there is an adjustable low level temperature for frost protection etc. In the event of probe disconnection the heating system is switched on one minute in every four.

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm

Multi-range Thermostats

Delivered without probe. Compatible with EK081 or EK083 probes

Characteristics	Width	Cat ref.
Voltage rating: 230V~ - 50/60 Hz Output: 1 changeover contact, 2A AC1 - 230V~ 4 ranges: -30 to 0°C, 0 to +30°C, 30 to +60°C, 60 to +90°C To associate with contactors (page 6.8 - 6.10)	3 Mod	EK186



EK187

Multi-order Thermostats

Delivered without probe. Compatible with EK081 or EK082 probes

Characteristics	Width	Cat ref.
Accuracy $\pm 0.2^{\circ}\text{C}$, Voltage rating: 230V~ - 50/60 Hz Output: 1 changeover contact, 2A AC1 - 230V~ Temperature Level 1 (Comfort) Adjustable 5 - 30°C Temperature Level 2 (Night setting) Adjustable 2 - 8°C less than Level 1 setting Temperature level 3 (Frost setting) Adjustable 5 - 30°C To associate with contactors (page 6.8 - 6.10)	3 Mod	EK187

Fixed Ambient Probe

Can be associated with
 EK186, EK187 thermostats
 EG502 programmable thermostat

Cat ref.
EK081



EK082

Adjustable Ambient Probe

This probe is equipped with a potentiometer for the correction of the set temperature ($\pm 3^{\circ}\text{C}$)

Can be associated with
 EK187 thermostats
 EG502 programmable thermostat

Cat ref.
EK082



EK083

Universal Probe (Removable Collar)

Can be associated with
 EK186 thermostats
 EG502 programmable thermostat

Cat ref.
EK083

Programmable Thermostat
Description

To save energy by managing the heating system according to the periods of occupation.

It is a weekly programmer associated with a 3 setting thermostat:

- “Comfort”,
- “Reduced”,
- “Anti-frost”

Connection: Protected Cable
Clamps

Capacity: 1.5 to 10 mm² rigid
Capacity: 1 to 6 mm² flexible

Thermostatic Function

- Adjustable comfort and reduced temperature
- Fixed anti-frost temperature
- Display of state of output,
- Display of selected mode,
- Push button selection of working mode:
- Automatic cycle comfort T° / reduced T°
- Permanent comfort temperature
- Permanent reduced temperature
- Permanent anti-frost temperature.

Probes

EG502 can be associated with:

- EK081 fixed ambient probe,
- EK082 adjustable ambient probe
- EK083 universal probe (see page 5.21)

1 Mod = 17.5mm
2 Mod = 35mm
3 Mod = 52.5mm
4 Mod = 70mm

Programmable Thermostat

Delivered without probe. Compatible with EK081, EK082t or EK083 probes

Characteristics

Voltage rating: 230V; 50 Hz
Output: 1 changeover contact, 2A – 250V; AC1
2 Temperature settings “comfort” and “reduced” adjustable + 8°C to + 28°C,
Anti-frost temperature setting + 8°C (constant)

Width

4 Mod

Cat ref.

EG502



EG502

Analogue Voltmeters

For domestic and commercial installations

- Single phase: direct connection
- Three phase: use of a voltmeter selector switch SK602 (see page 5.25).

Frequency

50 Hz

Connection Capacity

Rigid conductor 10mm²
Flexible conductor 6mm²

Analogue Ammeters

For domestic and commercial installations.

Indirect reading via current transformers: 50-100-150-250-400A

1 Mod = 17.5mm
2 Mod = 35mm
3 Mod = 52.5mm
4 Mod = 70mm

Voltmeter

Consumption	Accuracy	Width	Cat ref.
2.5VA	2%	4 Mod	SM500

Ammeters

Connection via a current transformer (CT) (page 6.25)

Scale	Accuracy	Width	Cat ref.
0 - 50A	2%	4 Mod	SM050
0 - 100A	2%	4 Mod	SM100
0 - 150A	2%	4 Mod	SM150
0 - 250A	2%	4 Mod	SM250
0 - 400A	2%	4 Mod	SM400



SM050

Digital Voltmeters & Ammeters

Digital Voltmeters

SM501
For domestic and commercial installations

- Three phase: use of a voltmeter selector switch SK602

Digital Ammeters

SM151, SM401, SM601: reading via a current transformer (see below)

1 Mod = 17.5mm
2 Mod = 35mm
3 Mod = 52.5mm
4 Mod = 70mm



SM501

Digital Voltmeter

Voltage rating: 220/230V; 50/60Hz
Accuracy: $\pm 1\%$
Consumption: 4 VA

Scale	Width	Cat ref.
0 - 500V	4 Mod	SM501

Digital Ammeters

Voltage rating: 220/230V; 50/60Hz
Accuracy: $\pm 1\%$
Consumption: 4 VA

Description	Scale	Width	Cat ref.
Reading via CT 150/5A (SR150)	Scale: 0 - 150A	4 Mod	SM151
Reading via CT 400/5A (SR400)	Scale: 0 - 400A	4 Mod	SM401
Reading via CT 600/5A (SR600)	Scale: 0 - 600A	4 Mod	SM601

Current transformers are used to feed analogue and digital ammeters and kilowatt hour meters.

The current on the secondary circuit (0 - 5A) is proportional to the current on primary circuit class: 1.

Can be mounted on copper bar or on cable. Can be mounted on DIN rail.

Current Transformers (C.T)

Ratio	Cat ref.
50/5	SR051
100/5	SR101
150/5	SR150
200/5	SR200
250/5	SR250
300/5	SR300
400/5	SR400
600/5	SR600



SR300

Description

For use with Voltmeters and
Ammeters.

Applications

Complies with IEC 947-3
BS EN 60947-3

Terminal Capacity

1 - 6mm² Flexible
1.5 - 10mm² Rigid

Isolating voltage 500VAC
Nominal current 10-20A

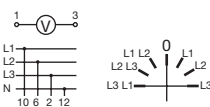
1 Mod = 17.5mm
2 Mod = 35mm
3 Mod = 52.5mm
4 Mod = 70mm

Voltmeter Selector

3 Ph&N
3 Readings between phases
3 Readings between phase & neutral
Null position (no reading)



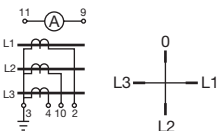
SK602



Characteristics	Width	Cat ref.
20A 400Vac	3 Mod	SK602

Ammeter Selector

4 Positions
Use in 3 Ph&N
Reading by phase
Null position (no reading)
Should be used with Current Transformer (see page 5.24)



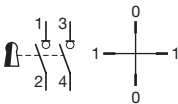
Characteristics	Width	Cat ref.
20A 400Vac	3 Mod	SK603

Lockable Rotary Switch

On / Off (4 Positions)



SK606



Characteristics	Width	Cat ref.
10A 400Vac	3 Mod	SK606

Description

Energy meters are used to measure the active energy consumed by an installation. They allow the user to understand and control the real cost of an installation and to divide the consumption between the different appliances.

MID approval for sub billing on EC154M.

Characteristics

- Fully compliant with the European standard EN 50470-3
- Class B
- Accuracy 1%
- Energy readout: 7 digits
- Backlit display
- Indication of instantaneous power consumption
- Total / partial counter (expected MID references)

- Pulsed output
- Unlimited saving of measurements
- LED flashes according to consumption
- Option: tariff 1/ tariff 2

- Three phase energy meters are adapted to all kind of networks
- Display indication in case of incorrect wiring

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm



EC050

Single Phase kWh Meters

Voltage 230V~ 50Hz
Direct connection
In = 320mA - 32A

Use of heat dissipation inserts (cat ref. LZ060) are recommended on each side of direct connection meters.

Characteristics	Width	Cat ref.
Total counter, non resettable counter	1 Mod	EC050
Total counter, non resettable counter, pulsed output 1 pulse = 100Wh	1 Mod	EC051

new



EC150

Single Phase kWh Meters - Direct 63A

Voltage 230V~ 50/60Hz
Starting current = 40mA
Base current = 10A
Max current = 63A

Characteristics	Width	Cat ref.
Energy meter with pulsed output and total / partial counter	3 Mod	EC150
Energy meter with pulsed output - total / partial counter and 2 tariffs	3 Mod	EC152
Energy meter with pulsed output - with MID approval	3 Mod	EC154M

new



EC154M

Description

Energy meters are used to measure the active energy consumed by an installation. They allow the user to understand and control the real cost of an installation and to divide the consumption between the different appliances.

MID approval for sub billing on EC364M.

Characteristics

- Fully compliant with the European standard EN 50470-3
- Class B
- Accuracy 1%
- Energy readout: 7 digits
- Backlit display
- Indication of instantaneous power consumption
- Total / partial counter (expected MID references)

- Pulsed output
- Unlimited saving of measurements
- LED flashes according to consumption
- Option: tariff 1/ tariff 2
- Three phase energy meters are adapted to all kind of networks
- Display indication in case of incorrect wiring

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm
- 7 Mod = 122.5mm

new



EC350

Three Phase kWh Meters - Direct 63A

Voltage 230/400V~ 50/60Hz
Starting current = 40mA
Base current = 10A
Max current = 63A

Characteristics	Width	Cat ref.
Energy meter with pulsed output and total / partial counter	4 Mod	EC350
Energy meter with pulsed output - total / partial counter and 2 tariffs	4 Mod	EC352

new



EC364M

Three Phase kWh Meters - Direct 100A

Voltage 230/400V~ 50/60Hz
Starting current = 80mA
Base current = 20A
Max current = 100A

Characteristics	Width	Cat ref.
Energy meter with pulsed output and total / partial counter	7 Mod	EC360
Energy meter with pulsed output - total / partial counter and 2 tariffs	7 Mod	EC362
Energy meter with pulsed output - with MID approval	7 Mod	EC364M
Energy meter with bidirectional counter	7 Mod	EC365B
Energy meter with KNX output	7 Mod	TE360

new



EC370

Three Phase kWh Meters - Connection via Current Transformers

To be connected to CT with 5A on the secondary

Voltage 230/400V~ 50/60Hz
Starting current = 10mA
Max current on CT secondary = 6A

Characteristics	Width	Cat ref.
Energy meter with pulsed output and total / partial counter	4 Mod	EC370
Energy meter with pulsed output - total / partial counter and 2 tariffs	4 Mod	EC372
Energy meter with KNX output	4 Mod	TE370

Description

To measure the total operating time of any circuit/load non resettable

Application Example

- Total time of plant running
- Connection in parallel with contactor coil
- Recording of lighting hours for relamping purposes

- 1 Mod = 17.5mm
- 2 Mod = 35mm
- 3 Mod = 52.5mm
- 4 Mod = 70mm

Hours Counter

Voltage0	Width	Cat ref.
230V - 50Hz	2 Mod	EC100



EC100

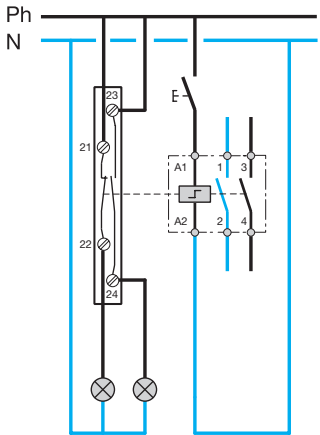
Technical Characteristics

	EPN510 EPN515 EPN520	EPN513 EPN518 EPN524	EPN519	EPN525 EPN540	EPN528 EPN541	EPN529
Voltage	230V	24V	12V	230V	24V	12V
Start Consumption	24VA	24VA	24VA	48VA	47VA	TBC
Contact Rating AC1	-	-	16A 250V~ ¹	-	-	-
Electrical Endurance AC1 - 16A	150,000 Operations					
Mechanical Endurance	500,000 Operations					
Current in Open Position	8 mA					
Max Duration of Voltage Supply to Coil	1h					
Min Duration of Current Supply to Coil	0.1s					
Working Temperature	-5 to +40°C					
Storage Temperature	-40 to +80°C					
Connections						
Coil: Flexible Rigid	0.5 to 4mm² 1 to 6mm²					
Power: Flexible Rigid	1 to 6mm² 1.5 to 10mm²					

¹ 400~ for EPN540 and EPN541.

Auxiliary Contacts (EPN051)

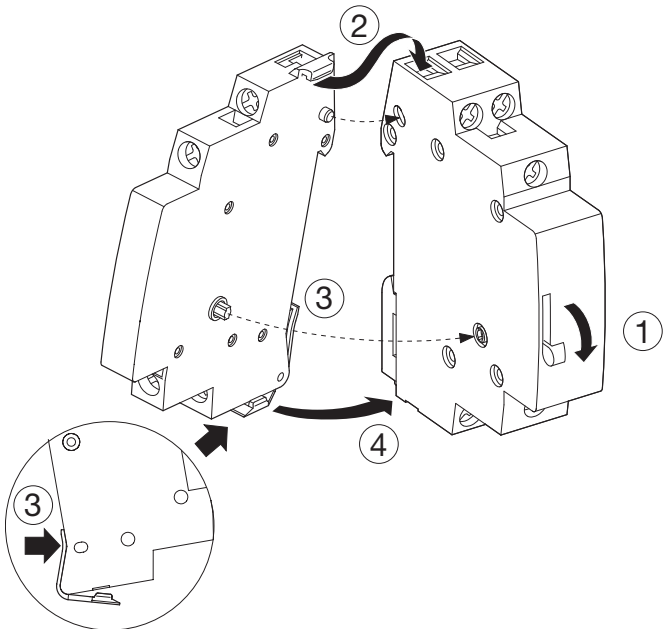
The range of latching relays have been designed for use with an auxiliary contact. The devices simply clip on the side of the relay.



Technical Characteristics

	EPN	EPN051
Voltage	¹ 24 to 230V	-
Contact Rating	-	2A / 250V
Imin / 230V	-	15mA
Connection		
Flexible	6mm ²	
Rigid	10mm ²	

¹ Voltage dependant on associated relay



Heating

The choice of the contactor depends on the mechanical endurance (number of operations) and on the electrical heating load i.e. resistive elements, infra-red element, convectors.

Choice of Contactors

The choice of contactor is dependant upon many parameters i.e. operating voltage, size of contacts, number of operations, ambient temperature, type of load supplied etc.

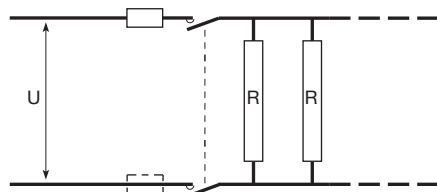
Type of Load

Loads are categorised into various AC ratings, (AC1, AC2, AC3 etc.) and the higher the AC rating the more inductive the load becomes. All Hager contactor ratings are given at AC1, therefore they must be de-rated if used on other types of AC load.

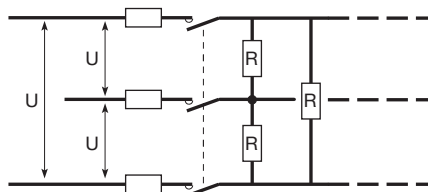
Heat Dissipation Inserts

The ambient temperature around a contactor can affect its life expectancy, therefore, we strongly recommend that heat dissipation inserts (LZ060) are fitted between all contactors and adjacent devices.

Single Phase



Three Phase



Maximum load ¹ in kW	Number of Operations					Single Phase 230V	Three Phase ¹ 400V
	50,000	100,000	150,000	200,000	300,000		
	4.4	4.4	3.9	3.5	2.9		
	7.8	5.9	5	4.4	3.7		
	12	8.8	7.7	6.6	5.9		
	12	10.5	8.5	6.5	5.8		
	23.2	17.7	51	13.1	10.8		
						ES220 - ES230	
						ES240	
						ES263	
							ES320 - ES430
							ES340

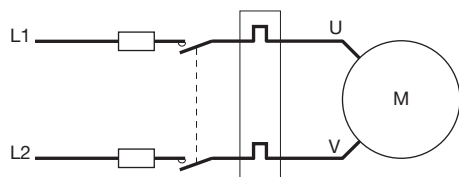
¹ On three phase configuration the maximum load per phase corresponds to the values states divided by 4

Example:

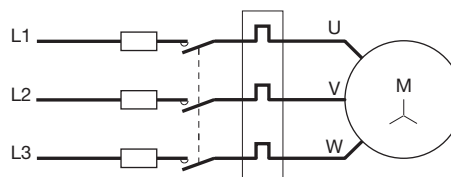
Function of a heating installation 200 days/annum, 100 operations per day (1 opening + 1 closing = 2 operations)
Mechanical life = 10 years
Total number of operations: 200 x 100 x 10 = 200,000
in that case select an ES240 to control a load of 4.4 kW (single phase 230V)

Motors

Single Phase 230V



Three Phase 400V



	Single Phase with Capacitor 230V	Three Phase (AC3 cat.) 400V	Choice of Contactor According to control diagram	
			150,000	200,000
Maximum load ¹ in kW	1.1		ES220	
	2.2		ES240	
		4		ES320 - ES420
		7.5		ES340 - ES345
		15		ES365

Requirements of Use

Influence of Working Temperature

Derating factor between 40°C and 50°C : 0.9

Example: Heating with convector

The maximum load of ES220 is 4.4kW for 50,000 operations and for a temperature <40°C.
between 40°C and 50°C, the load is 4.4 x 0.9 i.e. 3.96kW

Close Fitting

It is necessary to put a heat dissipation insert (reference LZ060) between each contactor.

Technical Characteristics

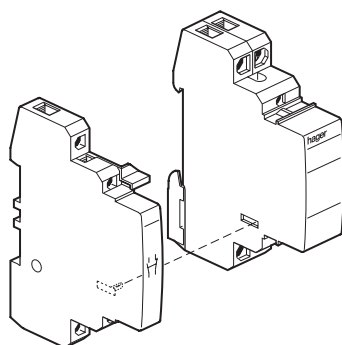
		Contactors								Relays	Interface Relay	
		ETN221B ES220 ET221 ES230 ESN430	ESN320 ESN340 ESN420 ESN345 ES441 ESN480	ES240 ESN365 ES463B ESN470 ES440B	ESN263 ESN490	ES224	ESN424	ER120 ER135	ER123 ER135	ER124 ER139	EN146	EN145
Operating Voltage	V	230	230	230	230	24	24	230	24	12	230	10 to 26
Frequency Hz	%	+10 / -15 50 50/60Hz										
Starting Consumption	VA	15	20	50	50	15	20	15/20	15/20	15/20	5	¹
Maintained Consumption	VA	5	5	7	7	5	5	5	5	5	5	¹
Max perm. Current AC 1	A	20	20	40	63	20	20	16	16	16	5	5
Insulation Voltage	V	250	400	400	400	400	250	250	250	250	250	250
Mechanical Endurance		1,000,000										
Working Temp	°C	-10 / +50										
Storage Temp	°C	-40 / +80										
Connection												
Control:												
Flexible	mm²	0.5 to 4	0.5 to 4	1 to 2.5	1 to 2.5	0.5 to 4	0.5 to 4	0.5 to 4	0.5 to 4	0.5 to 4	0.5 to 4	0.5 to 4
Rigid	mm²	1 to 6	1 to 6	1.5 to 4	1.5 to 4	1 to 6	1 to 6	1 to 6	1 to 6	1 to 6	1 to 6	1 to 6
Power												
Flexible	mm²	1 to 6	1 to 6	4 to 25	4 to 25	1 to 6	1 to 6	1 to 6	1 to 6	1 to 6	0.5 to 4	0.5 to 4
Rigid	mm²	1.5 to 10	1.5 to 10			1.5 to 10	1.5 to 10	1.5 to 10	1.5 to 10	1.5 to 10	1 to 6	1 to 6

¹ Power consumption of EN145 and EN146

Control Voltage	Start and Maintained Consumption
12V DC	0.5W
24V DC	1.5W
12V AC	1VA
24V AC	2VA

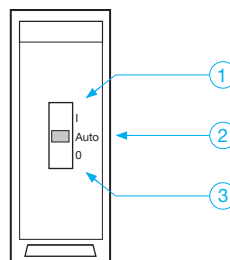
Auxiliary Contacts

Auxiliary contacts are available for 20A contactors to indicate remotely the status of the main contacts - Cat Ref. EP071



20A Relays and Contactors with Manual Override

1. Permanently on
2. Automatic
3. Permanently off



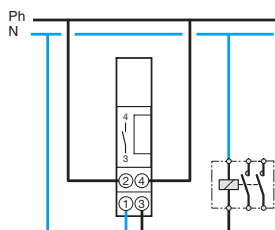
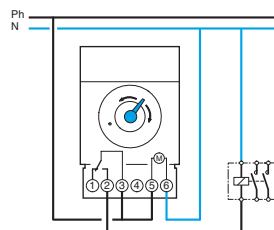
Contactor Selection

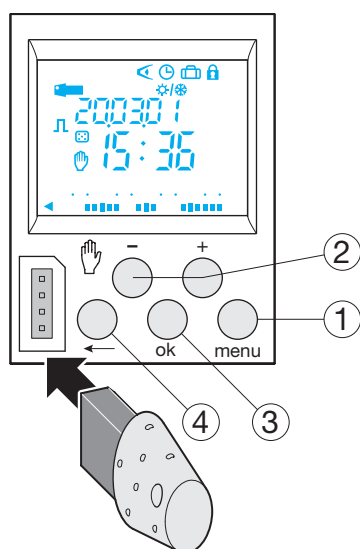
The table below indicates the number of lamps that can be connected to each pole of the contactor on 230V 50Hz circuits.

Type		25A	40A	63A
Incandescent Lamps				
Tungsten	60W	25	65	85
	100W	15	40	50
	200W	7	20	25
	500W	3	8	10
	1000W	1	4	5
Halgoen Lamps	200W	5	15	20
	300W	3	10	13
	500W	2	6	8
	1000W	1	3	4
Fluorescent Tubes				
Energy Saving Lamps	7W	15	100	150
	11W	15	100	150
	15W	15	100	150
	20W	10	70	70
Single with Starter Non-Compensated	18W	24	90	140
	36W	20	65	95
	58W	13	40	60
Single with Starter Compensated	18W	8	45	70
	36W	8	45	70
	58W	5	25	43
Double with Starter Non Compensated	2 x 18W	48	100	150
	2 x 36W	24	65	95
	2 x 58W	15	40	60
Fluorescent Tubes				
Single with Electronic Ballast	18W	15	60	80
	36W	14	30	42
	58W	12	22	30
Double with Electronic Ballast	3 x 18W	13	40	48
	3 x 36W	9	20	26
	3 x 58W	7	10	18
Discharge Lamps				
Low Pressure Sodium Vapour Lamps (uncompensated)	35W	6	13	20
	55W	6	13	20
	90W	4	9	14
	135W	3	6	9
	180W	3	6	9
High Pressure Sodium Vapour Lamps (uncompensated)	50W	12	24	38
	70W	10	20	30
	110W	7	16	25
	150W	5	10	16
	250W	3	6	10
	400W	2	4	6
	1000W	-	2	3
Low Pressure Sodium Vapour Lamps (compensated)	35W	1	10	16
	55W	1	10	16
	90W	1	8	12
	135W	-	4	7
	180W	-	4	7
High Pressure Sodium Vapour Lamps (compensated)	50W	3	22	33
	70W	3	18	27
	110W	2	18	27
	150W	1	10	16
	250W	1	6	9
	400W	-	4	7
	1000W	-	2	3

Technical Specifications

	EH011	EH010	EH111	EH110	EH171	EG103	EG103E	EG103V	EG203	EG203E	EG493E
Version	Daily	Daily	Daily	Daily	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly	Weekly & Annual
Voltage Supply	230V 50/60Hz	230V 50Hz	230V 50/60Hz	230V 50Hz	230V 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz
Consumption	0.5VA	0.5VA	0.5VA	0.5VA	0.5VA	6VA	6VA	0.8VA	6VA	6VA	6VA
Output	1 NO Contact Volt Free	1 NO Contact Volt Free	1 C/O Contact Volt Free	1 C/O Contact Volt Free	1 C/O Contact Volt Free	1 Volt Free Changeover Contact	1 Volt Free Changeover Contact	1 Volt Free Changeover Contact	2 Volt Free Changeover Contacts	2 Volt Free Changeover Contacts	2 Volt Free Changeover Contacts 2 NO Contact
Switching Capacity											
AC 1	16A / 250V	16A / 250V	16A / 250V	16A / 250V	16A / 250V	16A AC 1 / 250V 4A DC 1 / 12V	16A AC 1 / 250V 4A DC 1 / 12V	16A AC 1 / 250V 4A DC 1 / 12V	16A AC 1 / 250V 4A DC 1 / 12V	16A AC 1 / 250V 4A DC 1 / 12V	10A AC 1 / 250V
Inductive Load cos 0.6	4A / 250V	4A / 250V	4A / 250V	4A / 250V	2.5A / 250V	10A / 250V	10A / 250V	10A / 250V	10A / 250V	10A / 250V	10A / 250V
Incandescent Lamp	900W	900W	900W	900W	900W	2300W	2300W	2300W	2300W	2300W	1500W
Halogen Lighting 230V	-	-	-	-	-	2300W	2300W	2300W	2300W	2300W	1500W
Compensated Fluorescent Tubes (max 45µF)	-	-	-	-	-	400W	400W	400W	400W	400W	400W
Non Compensated Fluorescent Tubes Compensated in Series	-	-	-	-	-	1000W	1000W	1000W	1000W	1000W	800W
Compact Fluorescent Tubes	-	-	-	-	-	500W	500W	500W	500W	500W	400W
Minimum Current AC 1	-	-	-	-	-	100mA / 250V	100mA / 250V	-	100mA / 250V	100mA / 250V	100mA / 250V
Minimum Current DC 1	-	-	-	-	-	-	-	100mA / 12V	-	-	-
Galvanic Insulation Between Power Supply and Output	-	-	-	-	-	< 4 kV	< 4 kV	< 4 kV	< 4 kV	< 4 kV	< 4 kV
Characteristics											
Technology	Quartz	Quartz	Quartz	Quartz	Quartz	-	-	-	-	-	-
Dial	24hrs	24hrs	24hrs	24hrs	7 days	-	-	-	-	-	-
Minimum Switching	5min	5min	5min	5min	2h	-	-	-	-	-	-
Programming Capacity	-	-	-	-	-	56 Steps	56 Steps	56 Steps	56 Steps	56 Steps	300 Steps
Minimum Time Between 2 Steps	-	-	-	-	-	1min	1min	1min	1min	1min	1min
Working Accuracy	1sec per day	1sec per day	1sec per day	1sec per day	1sec per day	±1.5sec / 24h	±1.5sec / 24h	±1.5sec / 24h	±1.5sec / 24h	±1.5sec / 24h	±0.2sec / 24h
Supply Failure Reserve	200hrs	No	200hrs	No	200hrs	5 years lithium battery	5 years lithium battery	5 years lithium battery	5 years lithium battery	5 years lithium battery	5 Years Lithium Battery
Reached in	120h	120h	120h	120h	120h	-	-	-	-	-	-
Manual Switch Type	On Auto On	Off Auto On	Off Auto On	Off Auto On	Off Auto On	-	-	-	-	-	-
Protection Degree	-	-	-	-	-	IP20	IP20	IP20	IP20	IP20	IP20
Environment											
Working Temperature	-10°C to +45°C	-10°C to +45°C	-10°C to +45°C	-10°C to +45°C	-10°C to +45°C	-5°C to +45°C	-5°C to +45°C	-5°C to +45°C	-5°C to +45°C	-5°C to +45°C	-10°C to +45°C
Storage Temperature	-100°C to +50°C	-100°C to +50°C	-100°C to +50°C	-100°C to +50°C	-100°C to +50°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C
Connection											
Flexible	0.5 to 4mm ²	0.5 to 4mm ²	0.5 to 4mm ²	0.5 to 4mm ²	0.5 to 4mm ²	1.5 to 10mm ²	1.5 to 10mm ²	1.5 to 10mm ²	1.5 to 10mm ²	1.5 to 10mm ²	1 to 4mm ²
Rigid	-	-	-	-	-	1 to 6mm ²	1 to 6mm ²	1 to 6mm ²	1 to 6mm ²	1 to 6mm ²	1.5 to 6mm ²

EH010 / EH011
230 VM ±10% 50/60HzEH110 / EH111 / EH171
230 VM ±10% 50/60Hz



Keys

1. Menu Selection of operating mode
 - Auto Mode of running according to the program selected
 - Prog New for programming mode
 - Prog To modify an existing program
 - ☞ Checking of the program
 - 🕒 Modification of time, date and selection of the winter/summer time change mode.
 - 📅 Holidays
2. + / - Navigation or setting of values
 - 👉 In auto, mode, selection of overrides, waivers or random operation
3. OK To validate flashing information on display
4. ⬅ To return to the previous step

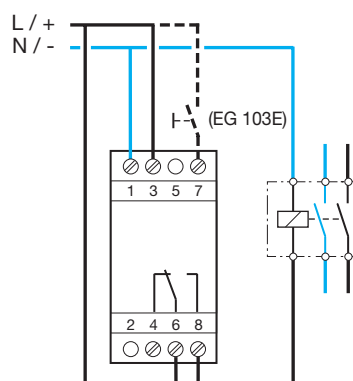
You may return into auto mode at any moment using menu.
If no action is taken for 1 min, the switch returns to auto mode.

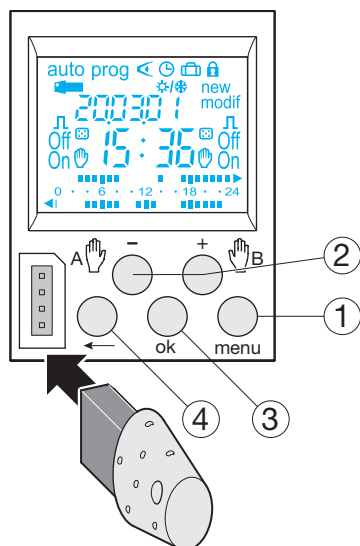
Major Characteristics

- Product delivered with current time and date set
- Automatic change of winter / summer time ☼/🌙
- Programming key ⬅
 - For permanent waivers
 - For program copy or save
- Programming for day or group of days
- 56 program steps On, Off
- Impulses ⏏ (1 sec to 30 min)*
- Permanent overrides On or Off (👉 permanent light on)
- Temporary overrides On or Off (👉 flashing)
- Holiday mode 📅 : overrides On or Off between two dates*
- Simulation of presence 🏠 *
- Display bar graph of daily profile
- Keyboard locking possible 🔒
- Programmable with power off
- Back lit display*

* Evolution models E or V only

Connection Diagram





Keys

- | | |
|----------|---|
| 1. Menu | Selection of operating mode |
| Auto | Mode of running according to the program selected |
| Prog | New for programming mode |
| Prog | To modify an existing program |
| ⏪ | Checking of the program |
| 🕒 | Modification of time, date and selection of the winter/summer time change mode. |
| 📅 | Holidays |
| 2. + / - | Navigation or setting of values |
| A 🖐 | In auto, mode, selection of overrides, waiver or random operation. |
| B 🖐 | |
| 3. OK | To validate flashing information on display |
| 4. ⬅ | To return to the previous step |

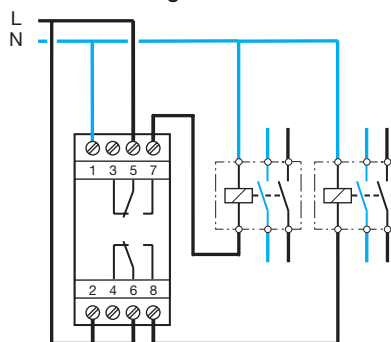
You may return into auto mode at any moment using menu.
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Major Characteristics

- Product delivered with current time and date set
- Automatic change of winter / summer time 🕒/🕒
- Programming key ⬅
 - For permanent waivers
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- 56 program steps On, Off
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- Holiday mode 📅 : overrides On or Off between two dates*
- Simulation of presence 🏠 *
- Display bar graph of daily profile
- Keyboard locking possible 🔒
- Programmable with power off
- Back lit display*

* evolution models E only

Connection Diagram



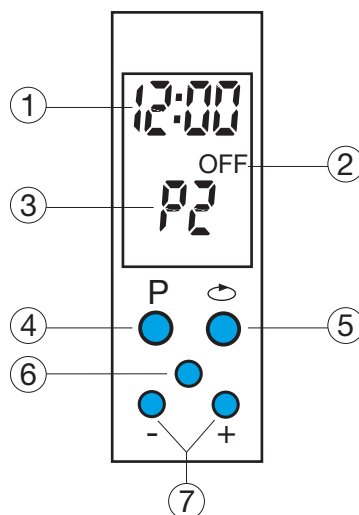
Technical Characteristics

Electrical Characteristics	
Voltage Supply	230V $\pm 10\%$ 50/60Hz
Consumption	1VA
Output	1 Changeover contact 16A - 250V AC 1 3A - 250V cos ϕ = 0.6 1000W Incandescent lighting
Functional Characteristics	
Number of programs	5 Adjustable Pre-recorded Programs
Accuracy	± 6 min per year
Supply Failure Reserve	Total of 3 years
Environment	
Working Temperature	-10°C to +50°C
Storage Temperature	-10°C to +60°C
Cable Capacity	
1 to 4mm ²	
Main Characteristics	
Easy to program: 5 programs are pre-recorded. The user just has to select the program which corresponds to its use and modify time switches if necessary.	

The 5 pre-registered programs are as follows

P	Prog
P0	OFF
P1	ON
P2	6.00 23.00
P3	6.00 8.00 17.00 23.00
P4	6.00 8.00 11.00 13.00 17.00 23.00

Product Presentation



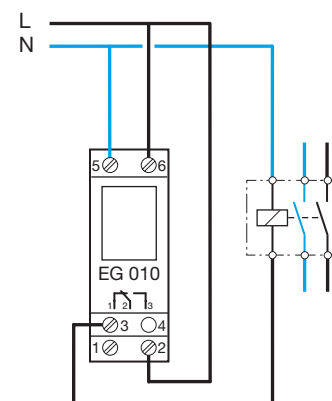
Display

1. Time
2. Circuit Status
3. Program Selection

Buttons

4. P to select the program to apply
5. Reset
6. + and - to scroll program steps
7. + and - to input time

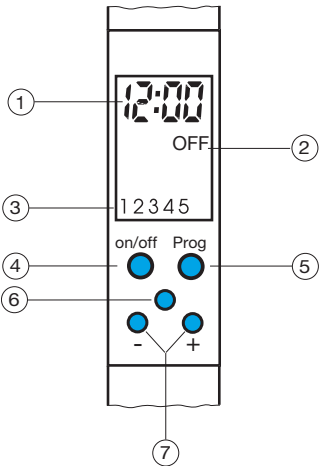
Electrical Connection



Technical Characteristics

Electrical Characteristics	
Voltage Supply	230V \pm 10% 50/60Hz
Consumption	1VA
Output	1 Changeover contact 16A - 250V AC 1 3A - 250V cos ϕ = 0.6 1000W Incandescent lighting
Functional Characteristics	
Number of programs	20 Program Steps (each program step can be applied to one of several days)
Accuracy	\pm 6min per year
Supply Failure Reserve	Total of 3 years
Environment	
Working Temperature	-10°C to +50°C
Storage Temperature	-10°C to +60°C
Cable Capacity	1 to 4mm ²

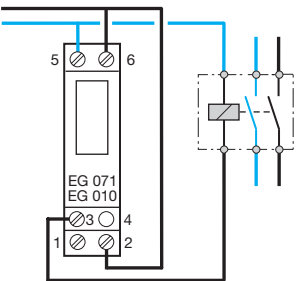
Product Presentation



- Display**
1. Time
 2. Circuit Status
 3. Days of the week

- Buttons**
4. ON / OFF : to select the circuit status
 5. Reset
 6. Prog: to program the device and scroll program steps
 7. To input time and day

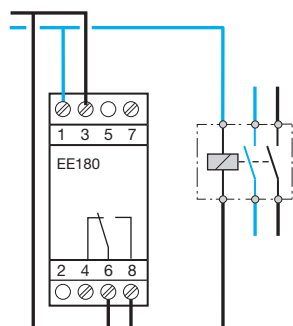
Electrical Connection



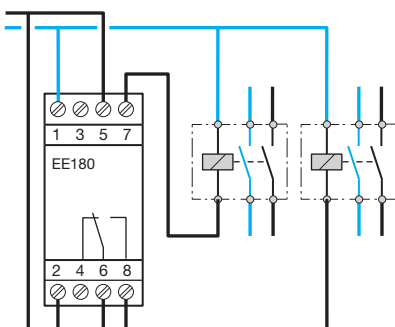
Technical Characteristics

	EE180 (1 Channel)	EE181 (2 Channel)
Width in 17.5mm Modules	2	2
Supply Voltage	230V AC (+10 % / -15%, 50/60Hz	
Number of Outputs	1	2
Characterisitics of Relay	Change over contact 16A C 1 250V /10A cos phi = 0.6	
Incandescent	2300W	
230V Halogen	2300W	
Standards	CE + CTICK and CEI 60-669	
Connection		
Flexible	1 to 6mm²	
Rigid	1.5 to 10mm²	
Environment		
Storage Temperature	-20°C to +60°C	
Working Temperature	-10°C to +55°C	
IP	IP20	
Functional Characteristics		
Display LCD	Without backlight screen	
Operating reserve	Lithium battery 5 years	
Precision	+/- 1.5s/day	
Programming Key	Yes	
Automatic change of winter / summer time	Yes	
Functions available in free programming	Weekly programming / permanent override / temporary override	
Astro Functions		
Astro mode	Yes	Independent programming for each channel
Programming of the lighting interruption	Yes (if channel Astro)	
Temporary override	15 / 30 / 60min	
Maintained ON	Adjustment common to the 2 channels	
Anticipation ON	Adjustment common to the 2 channels	

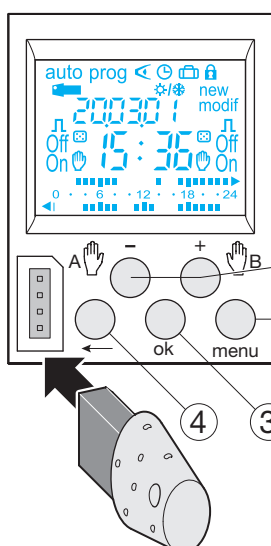
Electrical Connection EE180 : 1 Channel



EE181 : 2 Channels



Product Presentation



Keys

- Menu Selection of operating mode
- Auto Mode of running according to the program selected
- Prog New for programming mode
- Prog To modify an existing program
- ☑ Checking of the program
- ⌚ Modification of time, date and selection of the winter/summer time change mode
- Astro Astronomical mode
- ☆ Indicated that the channel is in astronomical mode
2. + / - Navigation or setting of values
- A In auto, mode, selection of overrides, waiver or random operation
- B
3. OK To validate flashing information on display
4. ⬅ To return to the previous step

You may return into auto mode at any moment using menu.
If no action is taken for 1 min, the switch returns to auto mode.

Delay Timers

Delay timer devices are used to control a variety of processes where the requirement is for switching circuits on, off or delaying the on or off switching for a pre-set period of time. Typical device types are...

- Delay on - intended to delay the starting or switching of a circuit for a set period of time following the command signal e.g. to delay the starting of motor loads where a large number of motors are to be started by the same switch to reduce the effects of the starting currents.
- Delay off - intended to delay the stopping or switching off of a circuit for a set period of time following the removal of the command signal e.g. to overrun an extractor following the switching off of a process that creates fumes.
- Adjustable time on - intended to switch on for a set period, the command signal must remain on throughout the set period e.g. to switch on two sets of heaters with one set (the boost) switching off after the set period.
- Impulse timer - intended to switch on for a set period, the command signal length is not important e.g. to boost a time clock controlled circuit such as a water storage heater.
- Symmetrical timer - intended to toggle a circuit on and off in regular time patterns e.g. to run an extractor intermittently.

Multifunction Timer - 6 Individual Functions

A = Timer.

B = Delay off (output relay opens either at end of command or after set time period - whichever is shorter).

C = Delay off.

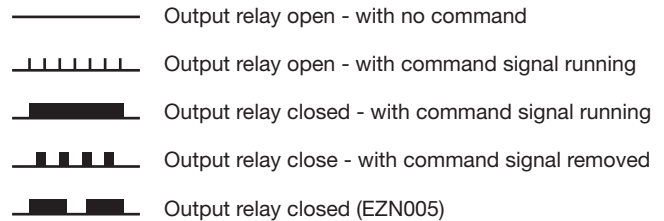
D = Delay on.

E = Delay on (output relay closes either at end of command or after set time period - whichever is shorter).

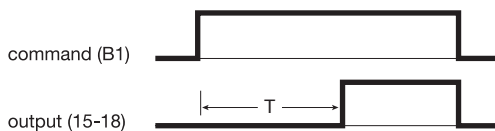
F = Symmetrical timer.

On selection - contact permanently closed

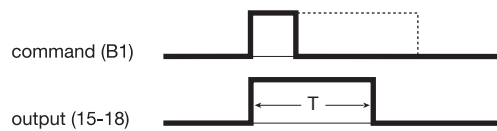
Off selection - contact permanently open



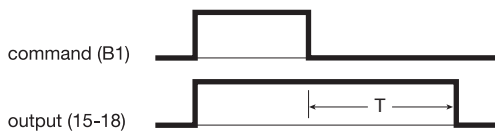
Delay On EZN001 & EZN006 Function D



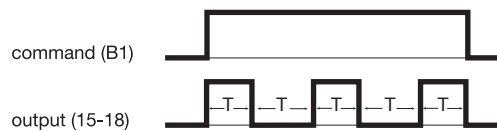
Impulse Timer EZN004 & EZN006 Function A



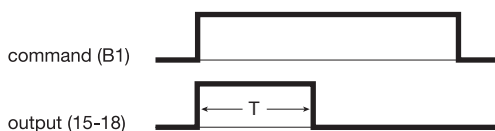
Delay Off EZN002 & EZN006 Function C



Symmetrical Timer EZN005 & EZN006 Function F



Adjustable Time On EZN003 & EZN006 Function E

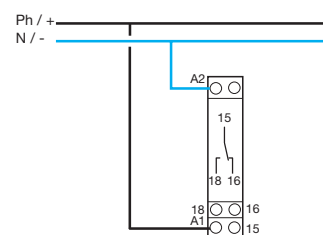


Technical Specifications

EZN001, EZN002, EZN003, EZN004, EZN005, EZN006t	
Electrical Characteristics	
Supply Voltage	24-28 Vdc 12-48 Vdc (+10%) Terminals A1 & A2 12-230 Vac (+10%) Terminals A3 & A2
Output	1 Volt Free C/O Contact
Life Expectancy	
Max Load AC 1	8A / 230V~ 50,000 Cycles
Incandescent	450W~ 500,000 Cycles
Fluorescent Non Comp.	600W~ 50,000 Cycles
Inductive Load 0.6pf	5A / 230V~ 100,000 Cycles
Min Power	
AC	100mA at 230V
DC	100mA at 12V
Galvanic Isolation	2kV
Standard / Norm	BS EN 60669-2-1
Functional Characteristics	
Timer Range	0.1s - 10 hours
Min. Command Period	
AC	50ms
DC	30ms
Operating Temperature	
Working	-20°C to +50°C
Storage	-40°C to +50°C
Connection Capacity	
Flexible	1 to 6mm ²
Rigid	1.5 to 10mm ²

Functional characteristics EZN001, EZN003, EZN005, EZN006 (functions D,E,F)

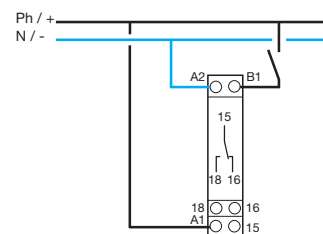
CD : Command.
O : Output.
T : Time delay.



EZN002, EZN004, EZN006 (functions A,B,C)

indicator light (for versions with NO contact).

ON
OFF



Time Delay Breakers	1 sec to 1 hour	0.1 min to 10 hour	0.1 sec to 10 mins	0.2 mins to 20 hours
Ranges	1 sec to 10 secs 0.1 min to 1 min 1 min to 10 min 0.1 hour to 1 hour	0.1 min to 1 min 1 min to 10 min 0.1 hour to 1 hour 1 hour to 10 hour	0.1 secs to 1 sec 1 second to 10 secs 0.1 min to 1 min 1 min to 10 mins	0.2 min to 2 min 2 min to 20 min 0.2 hour to 2 hour 2 hour to 20 hour

Time Lag Switches

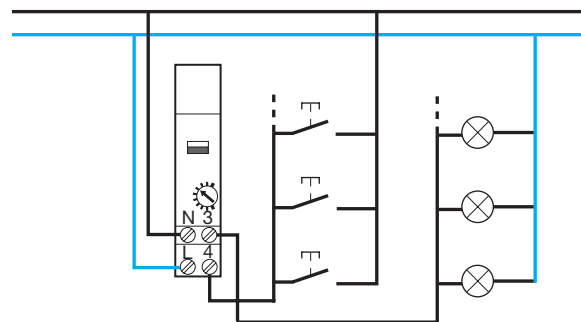
A common area where time delay devices are used is stairways and corridors in multi occupancy buildings where they provide a level of energy efficiency. The EMN001 device provides basic time lag control.

Technical Specification

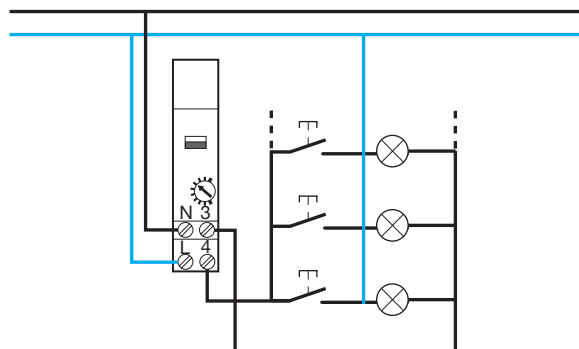
	EMN001	EMN002
Electrical Characteristics		
Supply voltage	230V +10 -15% 50/60Hz	230V +10 -15%50/60Hz
Consumption	1VA	0.5W Permanent 8W Max.
Size	1	-
Breaking Capacity		
AC1	16A 230V AC	4A 230V~
Incandescent	2300W	1000W
Halogen 230V	2300W	1000W
Ferro Magnetic Transformer	1600W	-
Parallel Compensated	Capacitor 112µF	-
Fluorescent Lamps	1000W	-
Series Compensated	3600W	-
Electronic Transformer	2300W	-
Compact Fluorescent Lamps with Electronic Ballast	60 x 7W or 40 x 11W or 32 x 15W or 20 x 23W	-
with Conventional Ballast	23000W	-
Functional Characteristics		
Time Delay	30s to 10min	24s
Retrigger	Yes	-
Max. Current in Rest Position	100mA	-
Automatic 3/4 Recognition	Yes	-
Local Command	Automatic / Override On	-
Environment		
Working Temperature	-10 to +55°C	-15 to +55°C
Storage Temperature	-20 to +60°C	-25 to +70°C
Connection		
Flexible	1 to 6mm ²	1 to 6mm ²
Rigid	1.5 to 10mm ²	1.5 to 10mm ²
Connection EM001/EM002	-	2 wires 1.5

Wiring Diagrams

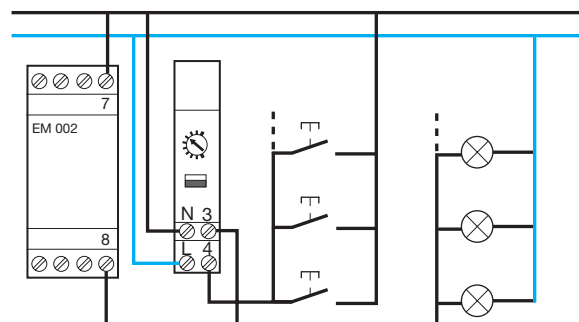
4-Wire



3-Wire



Combination EM002 with EMN001



Light Sensitive Switches

Using light sensitive switches can prevent the unnecessary use of lighting circuits where sufficient daylight exists. The benefit of modular devices is the facility to set the ambient lighting level at which the device will operate, and as the device is fitted at the distribution point prevent unauthorised tampering. The remote photocell unit can be mounted up to a distance of 50 metres from the device. Two devices are available the standard EE100 light sensitive switch and an enhanced programmable version the EE171 that also allows time clock control.

Principle of Operation

Both devices control lighting systems according to natural illumination;

- The user sets the working level:
- The photo cell measures the external light level

The output of the EE100 is:

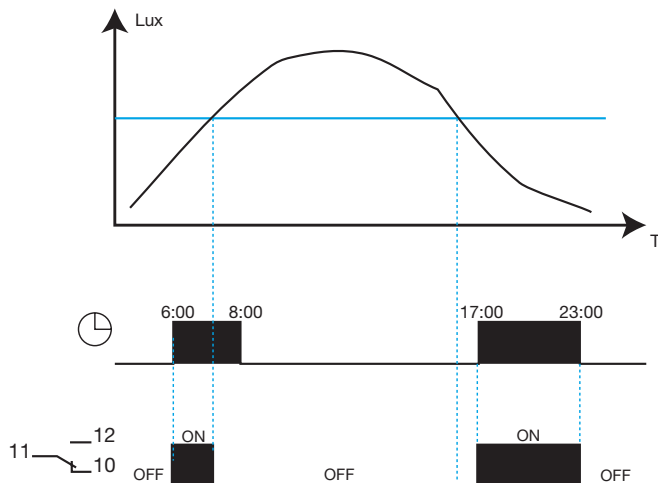
- ON, when the measured level is lower than the pre-set light level
- OFF, when the measured level is higher than the pre-set light level

The output of the EE171 during the programmed ON time period is:

- ON, when the measured level is lower than the pre-set light level
- OFF, when the measured level is higher than the pre-set light level

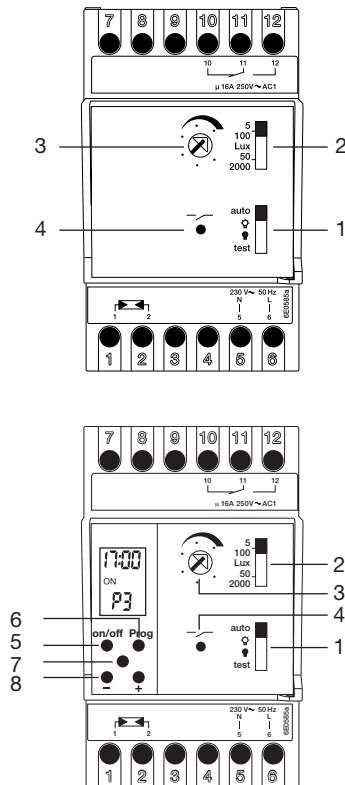
The output of the EE171 during the programmed off time period is:

- OFF, regardless of the lighting level



The light sensitive switches include a built in time delay which avoids unnecessary switching due to temporary factors such as car head-light beams etc...

Description



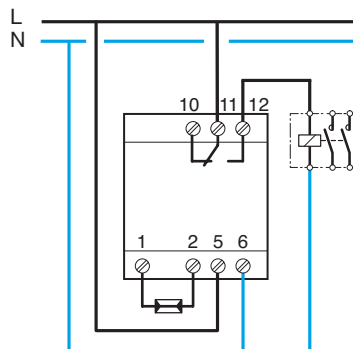
The programmable light sensitive switch EE171 has two main functions:

- Light sensitive switch comprising
 - 1 Override selector switch to allow permanent ON or OFF, auto or test mode
 - 2 Lighting range selector
 - 3 Potentiometer to set light level
 - 4 Indicator to show output switching status

- A programmer to establish the automatic operating cycle

The programmer comprises 4 keys:

- 5 **ON / OFF** to choose whether the circuit is on or off.
- 6 **Prog** to set the program and scroll program steps
- 7 **Reset**
- 8 **+** and **-** to change settings



Mounting the Cell

To ensure correct operation of the light sensitive switch, the cell must not be influenced by artificial light or direct solar radiation and should be sheltered from dust and humidity. In case of disconnection of the link between the cell and the light sensitive switch, the output of the device will be switched on. Make sure the light sensitive switch is unplugged before connecting the cell.

	EE002	EE003
Type	Flush Mounting	Surface Mounting
Dimensions (mm)	89 x 48 x 32	25 x 25 x 20 Hole 25mm
Connection	Cable 1m 2 x 0.75mm ²	0.75 to 4mm ²
Protection Class	IP54	IP54
Working & Storage Temperature	-30°C to +60°C	-30°C to +60°C

Adjustment of the Working Level

The test position of the override selector 1 makes setting the preset level easier by removing the ON and OFF delay.

Select the sensitivity range which suits your application (selector 1) 5 to 100 lux (low light level) application examples; public lighting, shop windows, signals...

50 to 2000 lux (high light level) application examples; controls of shades

At the appropriate moment of the day, put the selector 1 in test position; turn the potentiometer 2 up to the switching point (the indicator 4 lights); put the selector back to position 'auto' the normal operating mode of the device.

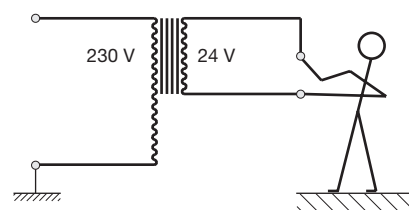
Technical Specification

Electrical Specification	
Voltage Rating	230V +10 -15% 50Hz
Consumption	1.5VA Max
Output	1 Voltage Free Changeover Contact
Max Breaking Capacity	AC1 16A 250V~
Incandescent Lamp	2000W 230V~
Halogen Lamp	1000W 230V~
Fluorescent Lamp Uncompensated	1000W 230V~
Compensated in Series (10μF)	1000W 230V~
// Compensated (15μF)	200W 230V~
Duo	1000W 230V~
Functional Characteristics	
Sensitivity Range	5 to 100 lux, 50 to 2000 lux
Cycle	Weekly
Programs	8 Pre-defined Program
Program Setting	1 Minute Increments*
Accuracy	+6min / annum*
Operating Reserve	Lithium Battery Total of 3 Years Supply Failure*
On and Off Delay	15 to 60s
Working Temperature	-30°C to +60°C (cell) -10°C to +50°C (modular device)
Storage Temperature	-20°C to +60°C
Protection Class (cell)	IP54
Insulation Class	II
Connection Capacity	
Modular Device	0.5 to 4mm ²
Cell	0.75 to 2.5mm ²
Max Length between Cell and Modular Device	50m
Mounting of the Cell with 2 Screws	2.5mm

* EE171 only

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 safe extra low voltage circuits $U \leq 50V$. 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.

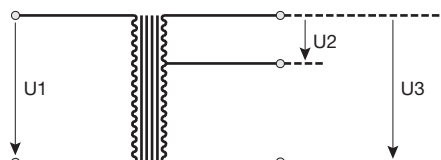


Bell Transformers

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 60742 (BS 3535). Where transformers are to be used in a common enclosure with other devices heat dissipation inserts LZ060 should be used.



Technical Specification

		ST301	ST303	ST305	ST312	ST313	ST314	ST315
Nominal Power		4VA	8VA	16VA	25VA	16VA	40VA	60VA
Designation		Bell	Bell	Bell	Safety	Safety	Safety	Safety
Primary Voltage		230 Volts	230 Volts	230 Volts	230 Volts	230 Volts	230 Volts	230 Volts
	U2	12 Volts	8 Volts	8 Volts	12 Volts	12 Volts	12 Volts	12 Volts
		In = 0.33A	In = 1A	In = 2A	In = 2.08A	In = 1.33A	In = 3.33A	In = 5.25A
Secondary Voltage	U3	12 Volts	12 Volts	12 Volts	24 Volts	24 Volts	24 Volts	24 Volts
		In = 0.5A	In = 0.67A	In = 1.33A	In = 1.04A	In = 0.67A	In = 1.67A	In = 2.63A
No Load	U2	12 Volts	15 Volts	12.4 Volts	14 Volts	15.5 Volts	13.7 Volts	13.6 Volts
Secondary Voltage	U3	18 Volts	21.8 Volts	18.5 Volts	29 Volts	29.7 Volts	26.5 Volts	27 Volts
Galvanic Isolation		4kV	4kV	4kV	4kV	4kV	4kV	4kV
Max Functional Temperature		35°C	35°C	35°C	35°C	35°C	35°C	35°C
Overload and S/C Protection		Thermal cut out in the primary winding						

Number of products that can be operated simultaneously by a transformer

Transformer	Reference	ST301		ST303		ST305		ST312		ST313		ST314		ST315	
		8V	12V	8V	12V	8V	12V	12V	24V	12V	24V	12V	24V	12V	24V
Power		4	4	8	8	16	16	25	25	16	16	40	40	63	63
Bell	SU212 8/12V	1	1	3	2	5	3	-	-	-	-	-	-	-	-
Buzzer	SU214 8/12V	1	1	3	2	5	3	-	-	-	-	-	-	-	-
Relays	ER124 12V	-	-	-	-	-	-	4	-	2	-	7	-	8	-
	ER139 12V	-	-	-	-	-	-	2	-	1	-	3	-	4	-
	ER123 24V	-	-	-	-	-	-	-	2	-	2	-	7	-	8
	ER138 24V	-	-	-	-	-	-	-	2	-	1	-	3	-	4
Contactors	ES224 24V	-	-	-	-	-	-	-	5	-	3	-	11	-	12
	ES424 24V	-	-	-	-	-	-	-	3	-	2	-	7	-	8
Latching Relays	EPN519 12V	-	-	-	-	-	2	3	-	2	-	4	-	4	-
	EPN529 12V	-	-	-	-	-	1	2	-	1	-	3	-	3	-
	EPN513 24V	-	-	-	-	-	-	-	2	-	2	-	3	-	3
	EPN518 24V	-	-	-	-	-	-	-	2	-	2	-	3	-	3
	EPN525 24V	-	-	-	-	-	-	-	2	-	2	-	3	-	3
	EPN528 24V	-	-	-	-	-	-	-	2	-	1	-	3	-	3
	EPN541 24V	-	-	-	-	-	-	-	2	-	1	-	3	-	3

Technical Specifications

Electrical Characteristics	
Voltage Supply	230V +10 -15% 50/60Hz
Consumption	1.5VA
Output	1 Changeover Contact 2A 230V AC1
Functional Characteristics	
4 Temperature Ranges	-30 to 0°C 0 to +30°C +30 to +60°C +60°C to +90°C (Varying accuracy)
Environment	
Working Temperature	-10 to +50°C
Storage Temperature	-20 to +70°C
Connection Capacity	
Flexible	1 to 6mm ²
Rigid	1.5 to 10mm ²
Probe	Maximum Distance 50m

Main Characteristics

Multiple Applications

A single device to solve all your problems of regulation or temperature control, from cold room to incubator.

Varying Accuracy

The accuracy can be adapted according to the application. e.g.: low for ambient temperature regulation, high for incubator regulation.

Safety Feature for Probe Failure

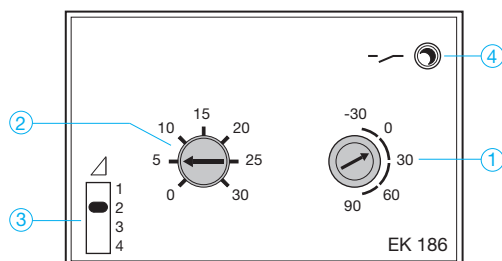
To protect the installation in case of disconnection from the probe, various connections can be made so the thermostat will be:

- Permanent OFF
- Permanent ON
- Cyclical operation: output ON 1 minute in every 4

Display

State of output.

Product Presentation



1. Selection of the range
2. Adjustment of the temperature setting
3. Selection of temperature range
4. Display of state of output

Working Principle

the EK186 regulates the temperature according to all or nothing principle, it can be associated with different probes, according to the application the accuracy is a function of the temperature range and is selected by a slide switch.

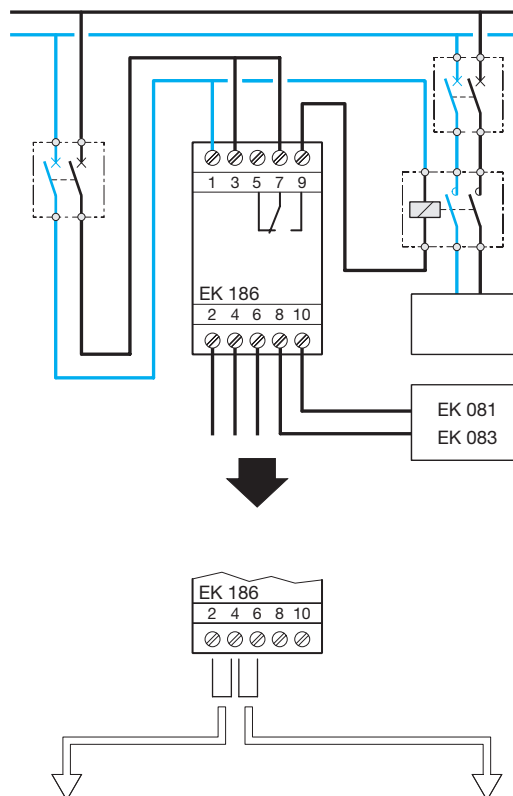
Position on Slide Switch	Temperature range °C			
	-30 to 0	0 to 30	30 to 60	60 to 90
1	± 2.15	± 2.54	± 2.98	± 3.43
2	± 0.15	± 0.18	± 0.21	± 0.24
3	± 0.38	± 0.45	± 0.53	± 0.61
4	± 1.23	± 1.45	± 1.70	± 1.96

Bold - Preferential accuracies for each temperature range.

Example of Choice of Accuracy

- Regulation of ambient temperature
Range: 0 to +30°C
Accuracy: $\pm 0.18^\circ\text{C} = 2$
- Control of hot water outgoing circuit
Range: 30 to +60°C
Accuracy: $\pm 0.53^\circ\text{C} = 3$

Electrical Connection



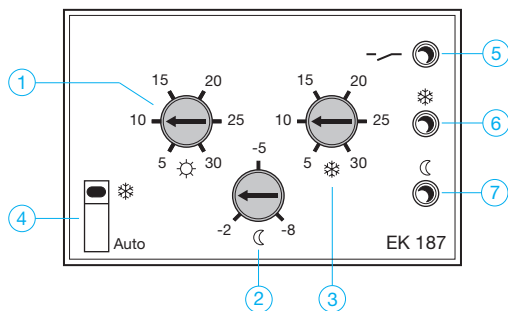
Caution

When the temperature ranges 30 to 60°C and 60 to 90°C are selected and the temperature measured by the probe is below 30°C, the safety feature for probe failure must be "permanent on", until the measured temperature reaches the minimum temperature corresponding to the range (i.e. 30°C for the range 30°C to 60°C and 60°C for the range 60°C to 90°C).

Technical Specifications

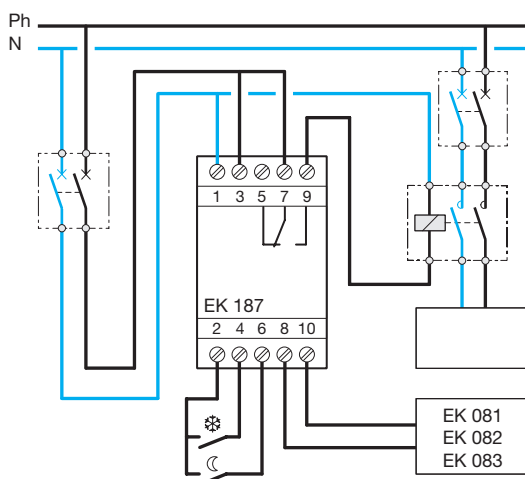
Electrical Characteristics	
Voltage Supply	230V +10 -15% 50/60Hz
Consumption	1.5VA
Output	1 Changeover Contact 2A 230V AC1
Functional Characteristics	
3 Temperature Ranges Controllable by External Setting	Comfort: Adjustable from +5 to +30°C Reduced: Decrease 2 to 8°C in Comparison with Comfort Setting Dispensation: Adjustable from +5 to +30°C Accuracy ±0.2°C
Environment	
Working Temperature	-10 to +50°C
Storage Temperature	-20 to +70°C
Connection Capacity	
Flexible	1 to 6mm²
Rigid	1.5 to 10mm²
Probe	Maximum Distance 50m

Product Presentation



1. Reference setting: comfort TO
2. Decrease in comparison with reference setting: reduced to TO
3. Dispensation setting
4. Dispensation setting override
5. Display of state of output i.e. contact position
6. Pilot light indicating the regulation in comparison with a dispensation setting
7. Pilot light indicating the regulation in comparison with a reduced setting

Electrical Connection



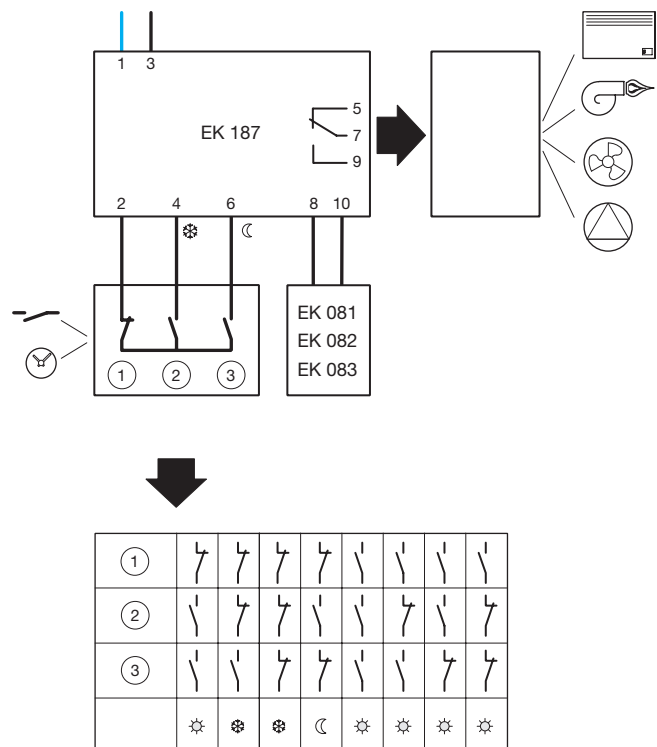
Main Characteristics

- **Temperature settings controllable by external setting** when associating a digital time switch, it is possible to regulate the heating in relation with a program established by the user.
- **2 wires link** between the probe and the unit, enables the easy replacement of the ambient thermostats of an existing installation.
- **Safety feature for “probe failure”** in case of probe disconnection, the output will be switched 1 minute in every 4; so that in case of disconnection during winter, it will protect the installation from frost.
- **Display** of state of the output and of the setting.

Working Principle

EK187 adjusts the temperature under the “all or nothing” principle it is associated to an ambient probe and thus works in closed loop the temperature settings are selected by external settings (contacts free of potential).

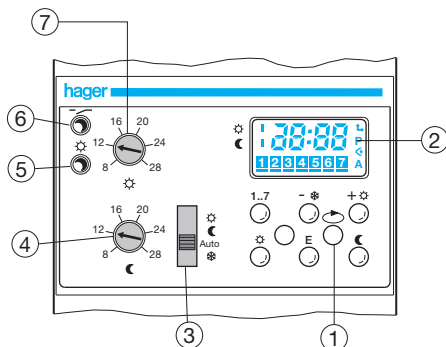
EK187 is thus generally associated to a time switch or a digital time switch in the case of absence of external signal, EK187 regulates the heating in comparison with the reference setting, a switch enables the override of the dispensation setting.



Technical Specifications

Electrical Characteristics	
Voltage Supply	230V +10 -15% 50Hz
Consumption	4VA
Output	1 Changeover Contact 2A 230V AC1
Functional Characteristics	
Adjustment of Temperature Setting	Comfort and Reduced Temp From +8 to +28°C Fixed Anti-Frost Temperature Setting +8°C Fixed Accuracy: $\pm 0.2^\circ\text{C}$
Cycle	Weekly Cycle
Programming Capacity	24 Steps
Program Setting	1 Minute Increments
Accuracy	± 5 min/Annum
Supply Failure Reserve	24hours loss of time setting only, program still in memory
Environment	
Working Temperature	-5 to +45°C
Storage Temperature	-20 to +60°C
Connection Capacity	
Flexible	1 to 6mm ²
Rigid	1.5 to 10mm ²
Probe	Maximum Distance 50m

Product Presentation



1. Programming of automatic cycle "comfort temperature", "reduced temperature", the principle of programming is similar to EG100.
2. LCD screen
3. Facility for permanent override of "comfort temperature", "reduced temperature", or "anti-frost"
4. Adjustment of the reduced temperature setting
5. Display of setting (comfort or reduced)
6. Display of state of output
7. Adjustment of the comfort temperature setting

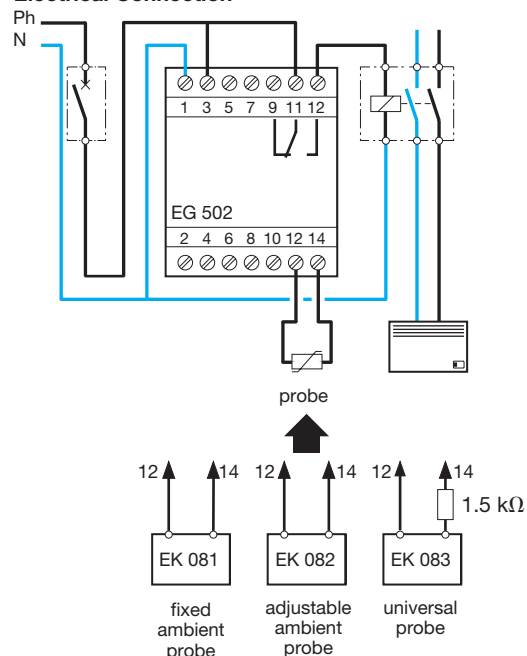
Main Characteristics

- **Simplified summer/winter time setting**
Summer/winter time setting is obtained by pressing two separate keys
- **No loss of program in event of unlimited power failure**
Loss of time setting only, program still in memory
- **Override**
 - Permanent: "comfort, reduced, anti-frost" temperature setting:
 - With automatic return to: "comfort and reduced" temperature setting:
- **2 wires link**
Between the probe and the unit, this enables the easy replacement of the ambient thermostats in an existing installation
- **Display Mode**
Allows program to be checked without risk of alteration
- **Groups of days**
Days can be grouped in order to save program steps (so, a common setting for several days counts only as 1 program step)

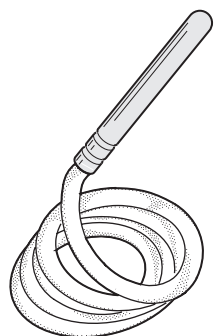
Working Principle

The programmable thermostat regulates the heating thanks to 2 temperature settings: "comfort" and "reduced", according to a program established by the user; in cases of long absence, it is possible to maintain an anti-frost temperature.

Electrical Connection



EK083 Universal Probe



- To associate with EK186 thermostat
- To associate with EK187 thermostat and EK618 time programmable thermostat (for those applications insert in series with the probe a resistance of 1500Ω)

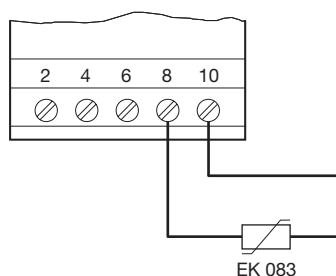
EK083: 10 kOhms at 25°C
cable length: 4m

Environment

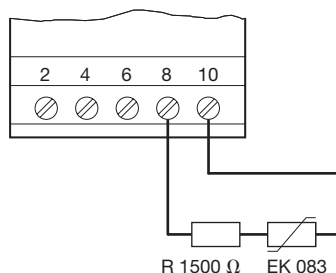
- Working temperature: -30 to +90°C
- Storage temperature: -30 to +100°C

Electrical Connection

- Associated with EK186



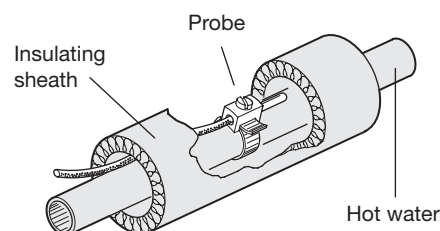
- Associated with EK187 - EK618



Examples of Applications

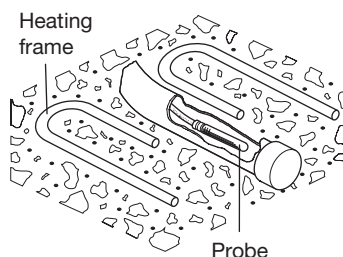
Use with the clamp collar

- For the control of hot water

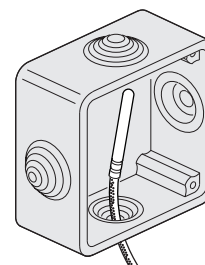


Use with the clamp collar

- Protected by a sheath for the control of floor temperature



- Used as an external probe in a weatherproof box.



Resistance of Probes According to Temperature

Temperature °C	EK083 R (KΩ)	EK081* R (KΩ)	EK081** EK082 R (KΩ)
+90	0.91	On a wall	-
+80	1.25	1.25	2.83
+70	1.75	1.75	3.33
+50	3.60	3.60	5.18
+30	8.06	8.06	9.64
+25	10	10	11.58
+20	12.49	12.49	14.07
+15	15.71	15.71	17.28
+10	19.90	19.90	21.48
+5	25.39	25.39	26.98
+0	32.65	32.65	34.23

Temperature °C	EK083 R (KΩ)	EK081* R (KΩ)	EK081** EK082 R (KΩ)
-5		42.31	-
-10	55.29	-	-
-15	72.89	-	-
-20	96.97	-	-
-25	130.24	-	-
-30	176.68	-	-

Face value at 25°C

Note: *Association with EK186

**Association with EK187 and EK618

Technical Specification

- Working voltage : 230 V~ 50/60 Hz - resolution : 1 unit
- Update of the display: 3 / seconds
- Input impedance > 1 MV for the voltmeter SM501
- Isolating resistance : 10 MV
- Maximum voltage: 660 V - number of digits : 3

Connection

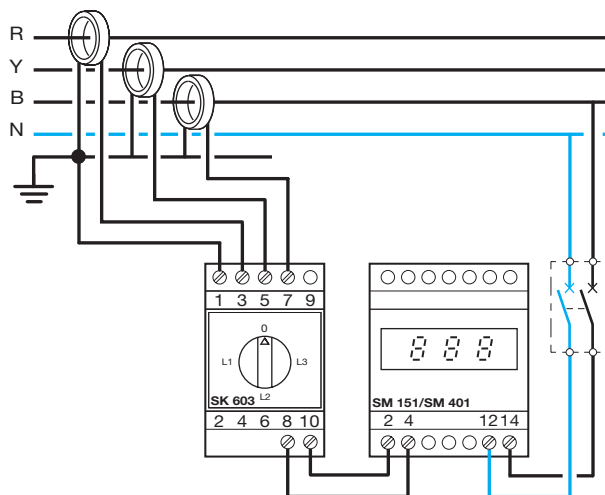
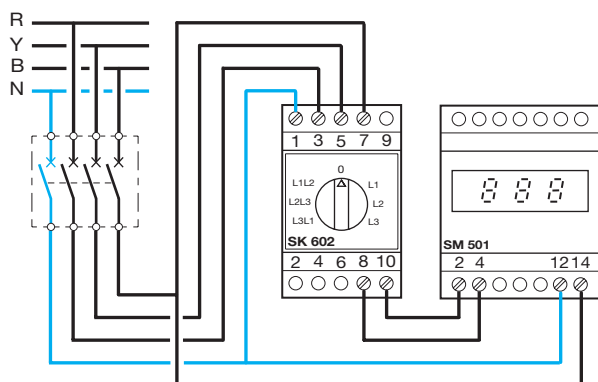
- Flexible: 6mm²
- Rigid: 10mm²

Environment

- Working temperature: -10 to +55 °C
- Storage temperature : -40 to +70 °C

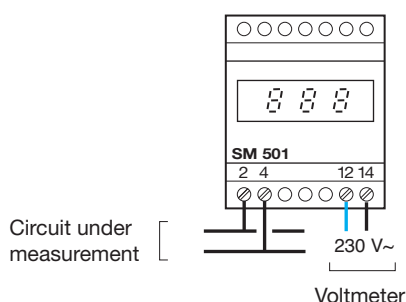
Cat ref.	Product	Range	Consump.	Accuracy %	Ref Temp °C	Accuracy Variation / °C	Maximum Continuous	Momentary Maximum	Frequency Hz	Isolating Voltage
SM501	Voltmeter	500V	≤4.5 VA	±1	23 ± 1°C	± 0.03% / °C	1.2 Un	2 Un / 5 sec.	45-65	2kV/50Hz - 1 min
SM151 SM401	Ammeter with CT	0-150A 0-400A	≤1 VA	±1	23 ± 1°C	± 0.03% / °C	2 In	10 In / 5 sec.	45-65	2kV/50Hz - 1 min

Electrical Connection

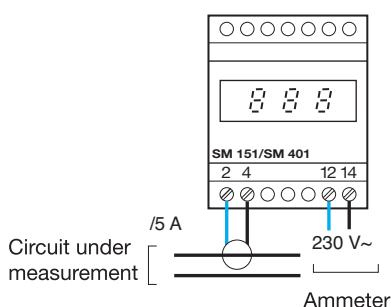


Modular
Devices

Electrical Connection SM501



SM151, SM401



Hours Counter Technical Specifications

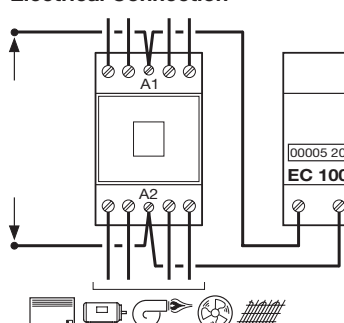
Electrical Characteristics

- Working voltage: 230V~

Electrical Connection

- Connection in parallel on the command of the receiver (contactor coil)

Electrical Connection



Technical Specification

Environment

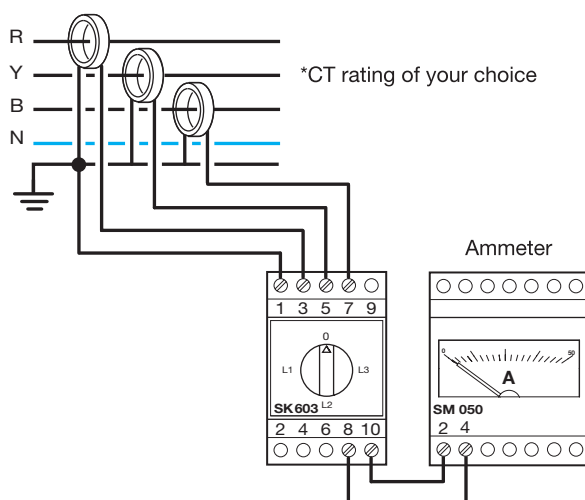
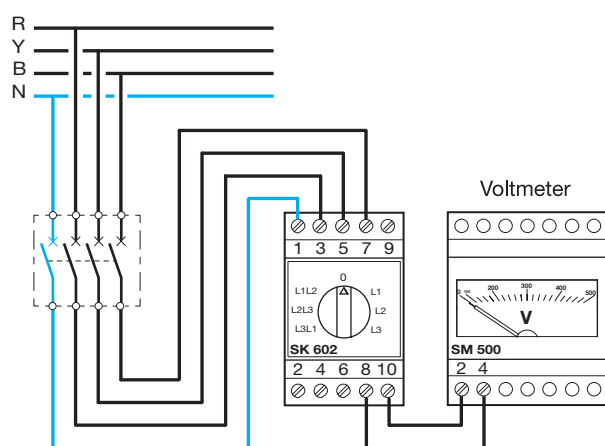
- Working Temperature: -25 to +50 °C
- Storage Temperature: -40 to +80 °C

Connection

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

Cat ref.	Product	Range	Consump.	Accuracy %	Ref Temp °C	Accuracy Variation °C	Maximum Continuous	Momentary Maximum	Frequency Hz	Isolating Voltage
SM500	Voltmeter	500V	≤3 VA	1.5	23 ± 2°C	± 0.03% / °C	1.2 Un	2Un / 5 sec	45 - 65	2kV/50H z-1min
SM050	Ammeter with CT	0-50A	≤1.1 VA	1.5	23 ± 2°C	± 0.03% / °C	1.2 Un	10Un / 5 sec	45 - 65	2kV/50H z-1min
SM100		0-100A								
SM150		0-150A								
SM250		0-250A								
SM400		0-400A								

Electrical Connection



Current Transformers (CT)

Technical Specification

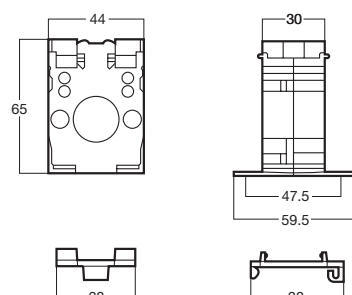
- Secondary current: 0 - 5 A
- Frequency: 50/60 Hz
- Maximum permanent overload: 1,2 In
- Working Temperature: -25 to +50 °C
- Storage Temperature: -40 to +80 °C

Accuracy Class / VA

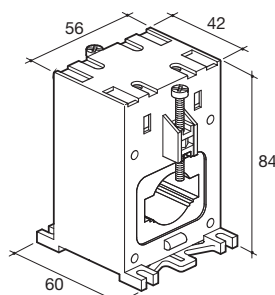
Cat ref.	Rating	Accuracy		
		0.5	1	3
SR051	50A	-	1.25	1.5
SR101	100A	2	2.5	3.5
SR150	150A	-	-	1.5
SR200	200A	-	2	3
SR250	250A	-	2	3
SR300	300A	4	8	12
SR400	400A	8	12	15
SR600	600A	12	15	15

Range of CT's

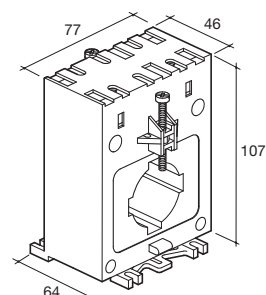
SR051, SR101, for cable B 21 max busbar 20 x 5mm



SR 150, SR 200, SR 250, for cable B 23 max busbar 30 x 10 max



SR 300, SR 400, SR600, for cable B 35 max maximum busbar 40 x 10 max



	EC150	EC152	EC154M	EC350	EC352	EC360	EC362	EC364M	EC365B	TE360	EC370	EC372	TE370	
Electrical Characteristics														
Voltage	230V~ ±15%			230V~ ±15% 400V~ ±15%										
Frequency	50/60Hz			50/60Hz										
Consumption	< 10VA and 1W			< 10 VA and 3W										
Metrological Data														
Connection	Direct			Direct	Direct					Via current transformer				
Display	Digital display 6+1 digits			Digital display 7 digits										
Accuracy	Accuracy 1% Class B according to EN 50470-3													
I max	63A			63A	100A					6A on CT secondary				
I Starting	40mA			40mA	80mA					10mA on CT secondary				
Base current	10A			10A	20A					5A				
Metrological LED														
	1000 blinking per kWh					500 blinking per kWh					1000 blinking per kWh			
Pulsed Output														
	1 pulse = 100Wh / 100ms / 27V DC max (excepted on KNX meters)													
Tariff														
	1	2	2	1	2	1	2	2	1	2	1	2	2	
Mechanical Characteristics														
Width	3 Modules			4 Modules	7 Modules					4 Modules				
Protection degree	IP20 IP51 (front part)													
Temperature	Storage temperature: -20°C to +70°C Operating temperature: -10°C to +55°C													
Connection capacity	Rigid: 1.5 to 16mm ² Flexible: 1 to 16mm ²					Rigid: 1.5 to 35mm ² Flexible: 1 to 35mm ²					Rigid: 1.5 to 10mm ² Flexible: 1 to 6mm ²			