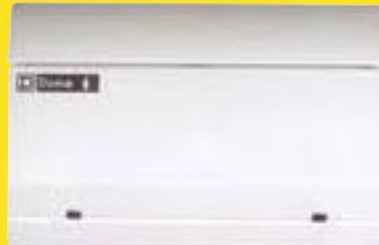


Ready to install

Distribution and control products



Contents

Domae and Qwikline II consumer units

Page 1/1

1

LoadCentre KQII distribution boards

Page 2/1

2

Control and Command

Page 3/1

3

I-Line panelboards

Page 4/1

4

Switch and fusegear

Page 5/1

5

Technical data

Page 6/1

6

Dimensions

Page 7/1

7

Established over 50 years ago, Square D has a comprehensive range of ready to install products. As ever, we're committed to providing innovative, functional and reliable products that are tailored to your needs.

In addition to the products shown in this catalogue, we can provide the following:

- Fully assembled and tested custom built distribution switchgear
- Busbar trunking, Power Factor Correction and active filtering
- Integrated metering and communications solutions
- Project management, site supervision, testing and commissioning
- Training to European and British standards

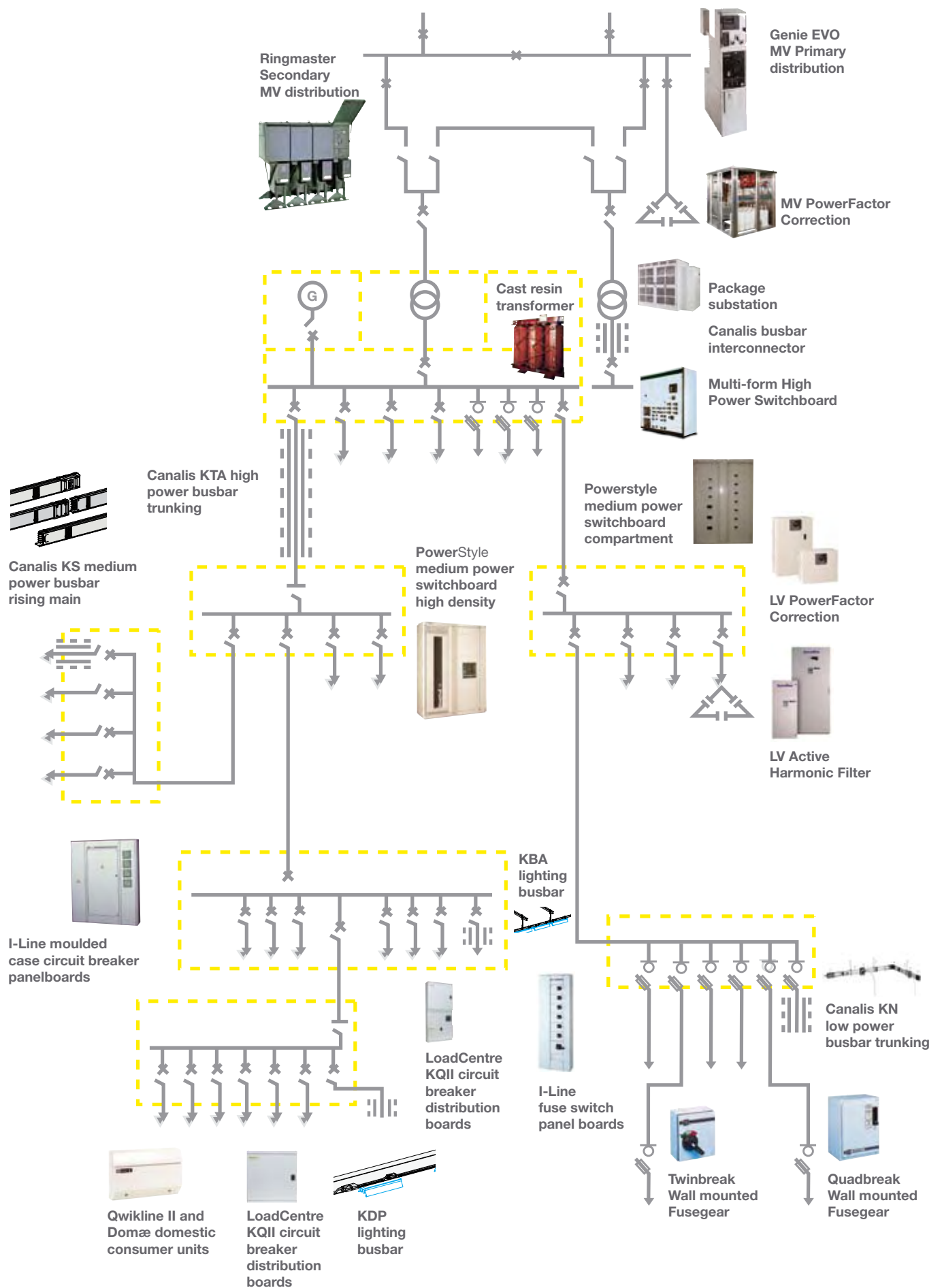
Low voltage equipment from Square D

One of the great advantages of the Square D solution is the unique and world-renowned plug on technology which is simple to install and upgrade.

Located in Telford in the heart of Shropshire, Schneider Electric's LVE facility is a modern 3000m² factory utilising skilled personnel and market leading products. From design and build to installation and maintenance, Square D and Schneider Electric provide the complete electrical solution from package substations to Low Voltage distribution boards within commercial and industrial applications.

All our product ranges are supported by routine and type tested documentation, comprehensive catalogues and operation and maintenance information. In addition to this we operate to ISO9001, ISO14001 and Investors in People.

For more information on LVE please ask your Square D sales engineer for brochure SQD6256



Section 01

Consumer units

Domae and Qwikline II

1

Domae consumer units

Features	Page 1/1
Quick selector - reference numbers & descriptions	Page 1/2
Dimensions	Page 7/1

Qwikline II consumer units

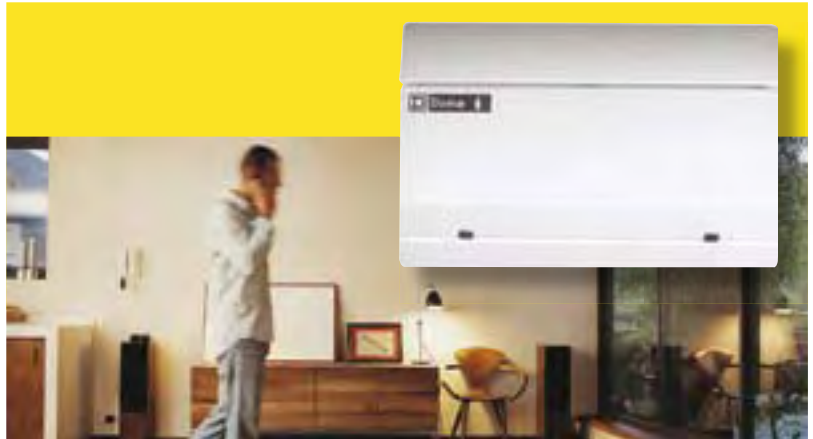
Features	Page 1/1
Quick selector - reference numbers & descriptions	Page 1/4
Dimensions	Page 7/2 - 7/3

RSD

RCDs & Loose insulated IP40/54 enclosures	Page 1/7
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Consumer units

Domae and Qwikline II



Domae consumer units

- Highly flexible - Domae consumer units can be used with a single main incomer or used as a split load board
- Configurable on site - choose the split of protected or unprotected RCD ways. Standard single incomer boards can be converted to split load at a later date
- Ideal for rewire applications - right hand incomer for easier installation where existing incoming cables fall on the right
- Controls flexibility - control devices can be easily installed within the same enclosure
- Additional installer safety - the busbar shield is firmly held in place when fitted and requires a tool to remove
- Value for money - backed by the Square D brand you can be assured that Domae is a cost effective and quality solution



Qwikline II consumer units

- Fully type tested to BS EN 60439-3 and CM16 tested
- Unrestricted cable entry can be made from any side
- Totally encapsulated busbar system. Provides complete finger safety to IP2XB, bringing new levels of safety to consumer unit design
- Incoming devices can be ordered separately giving over 1000 combinations from just 46 references
- Single pole RCBO. Tested to BS EN 61009
- Unique MCB/RCBO fixing system. Retains plug-on philosophy for speed of installation and guaranteed connections. Provides the additional benefit of a rear clip which increases device security once plugged on
- Control devices may be installed on any outgoing way. No extra mounting accessories required
- Lockable cover option now available on metal units

Domae and Qwikline II

Consumer units

1



The Domae range of consumer units offers the ultimate in terms of onsite flexibility at a very affordable price.

There are no bespoke split load consumer units, however any Domae enclosure can be taken and used with a single incomer or converted to a split load board with the minimum of effort.

A wide range of RCD protected and unprotected ways is possible and a standard board can be converted to a split load type at any time in the future. In terms of safety Domae offers a wide range of protective devices and installer safety is maximised via a busbar shield which, once fitted, can only be removed with the use of a tool.

Domae is now available with insulated or metal enclosures.



The Qwikline II range of consumer units provides arguably the highest levels of residential circuit protection safety.

A wide range of switch disconnectors, RCDs and MCBs is also complemented by an SP RCBO offer for maximum continuity of supply in the event of fault.

What really sets Qwikline II apart, is the plug-on breaker concept and fully encapsulated busbars. All outgoing devices can be connected in seconds and with no incoming terminal to tighten, the correct mechanical connection force is guaranteed every time. For unused ways, Qwikline II's unique fully encapsulated busbar system means that the highest levels of installer and end user protection are always guaranteed.

Even with the front cover of the enclosure removed, the main busbar is protected to IP2X, meaning it remains finger safe but allows access with test probes by the installer. For energy management and safety Qwikline II can also accept a wide range of control devices.

Square D, a brand of Schneider Electric is a market leader in the design and manufacture of British Standard consumer units. To help compliance with the 17th Edition of the Wiring Regulations, Square D has expanded both the Domae and Qwikline II ranges to include new devices and consumer units. The consumer units are fully type tested to BSEN60439-3.

Supported by a network of nation wide stockists, Square D is now able to provide two dramatically different styles of consumer units, Domae and Qwikline II. Suitable for installation in domestic dwellings, schools, colleges etc., both offers provide high levels of quality and installer flexibility.

17th Edition wiring regulations

Domae and Qwikline II

1

17th Edition of the wiring regulations BS7671:2008

The 17th Edition of the Wiring Regulations fully comes into effect from July 1 2008. There are significant changes from the previous editions of the wiring regulations which mean that for many installations, the traditional configurations for consumer units will change. The regulations require for most installations the increased use of RCDs. For residential installations the following changes in particular are required:-

Regulation 522.6.6 & 522.6.7 - Cables concealed in walls or partitions Regulation 522.6.6 describes methods of protecting cables concealed in walls or partitions.

For practical purposes and for most residential installations Regulation 522.6.7 will be applied where circuits will be protected by means of a 30mA RCD.

Regulation 413.3 - Socket outlets. Regulation 413.3 describes the need to protect socket outlets up to 20A for general use by ordinary persons e.g. home owners, and mobile equipment used outdoors up to 32A. There are exceptions, but in most cases this will mean such circuits must be protected by a 30mA RCD.

Regulation 314.1 - Division of circuits. Regulation 314.1 describes the requirements to divide circuits in order to meet several needs. Point iv means that circuits should not all be protected by an individual RCD.

Section 701 - Locations containing a bath or shower. Under certain conditions 13A sockets can be installed in bathrooms, these must be protected by a 30mA RCD.

Option 1



Incoming switch disconnecter & outgoing RCBO's

Option 1 is the safest option, providing each outgoing way with individual over current, and residual current protection.

Option 2



Split load consumer unit, using RCBO's

Option 2 shows how a split load consumer unit can be used. Safety circuits such as smoke alarms, and other circuits such as sockets can be individually protected by RCBOs.

Option 3



Incoming switch disconnecter with RCBO ways, plus two RCD protected busbars

Option 3 is a new configuration that allows safety circuits such as smoke alarms to be individually protected. In addition other circuits are protected by one of two RCCB's.

Option 4



Incoming switch disconnecter feeding two RCD protected busbars

Option 4 provides two busbars each fed by an RCCB.

Select consumer unit



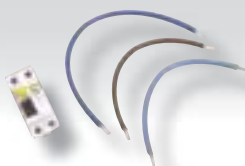
Insulated units		Metal units	
Number of ways	Reference number	Number of ways	Reference number
2	DOM2CU	2	DOM2MCU
4	DOM4CU	4	DOM4MCU
6	DOM6CU	6	DOM6MCU
8	DOM8CU	8	DOM8MCU
12	DOM12CU	12	DOM12MCU
16	DOM16CU	16	DOM16MCU
20	DOM20CU		

Select incoming device



Description	Rating	Max cable size mm ²	Reference number
Switch Disconnecter	63A	35	DOM63SW
Switch Disconnecter	100A	50	DOM100SW
RCCB (RCD)	63A 30mA	35	DOM63R30
RCCB (RCD)	80A 30mA	50	DOM80R30

For split load applications select a split load kit



Description	Rating	Reference number
RCCB & cables	63A 30mA	DOM63R30KIT2
RCCB & cables	80A 30mA	DOM80R30KIT2
Includes cables & RCCB (RCD)		

Select consumer units with switch/RCD's fitted to comply with 17th Edition of Wiring Regulations



Total no. of ways	Description	Switch only way	RCD 1 protected ways	RCD 2	Reference number
12	6+6 way configurable Domae CU 100A Sw & 2 63A RCDs		6	6	DOMR6R6DCU
12	6+6 way configurable Domae CU 100A Sw & 2 80A RCDs		6	6	DOMR6R6DCU
16	8+8 way Domae CU 100A Sw & 2 x 80A RCDs		8	8	DOMR8R8DCU*
12	2+5+5 way Domae CU 100A Sw & 2 x 80A RCDs	2	5	5	DOMS2R5R5DCU
16	2+7+7 way Domae CU 100A Sw & 2 x 80A RCDs	2	7	7	DOMS2R7R7DCU*

*Available September 2008

Select consumer unit package



Pre-assembled ready to install consumer unit packages

Description	Typical application	Reference number
2 way enclosure + 63A 30mA RCCB & 40A MCB	Electric shower supply	SHOWER6340D
2 way enclosure + 63A 30mA RCCB & 45A MCB	Electric shower supply	SHOWER6345D
2 way IP55 enclosure + 63A RCD, 6A & 16A MCB	Electricity supply to a garage	GARAGE63D

Domae ready to install consumer unit packages are supplied complete with enclosure, incoming and outgoing devices and all internal connections required. Order 1 part number then simply fix, connect, test and energise.

Pre-assembled ready to install consumer unit packages

Insulated kitbox - Typical application general residential rebuild or rewire

Description	Reference number
12 way enclosure, Switch, 63A 30mA RCCB kit, 3 x 6A MCB's, 2 x 16A MCB's, 4 x 32A MCB's, 1 x 40A MCB	KITBOXD
12 way enclosure, Switch, 80A 30mA RCCB kit, 3 x 6A MCB's, 2 x 16A MCB's, 4 x 32A MCB's, 1 x 40A MCB	KITBOXD80
12 way enclosure, Switch, 63A 30mA RCCB kit, 2 x 6A MCB's, 2 x 16A MCB's, 3 x 32A MCB's, 1 x 40A MCB	KITBOXD1263
12 way enclosure, Switch, 80A 30mA RCCB kit, 2 x 6A MCB's, 2 x 16A MCB's, 3 x 32A MCB's, 1 x 40A MCB	KITBOXD1280
16 way enclosure, Switch, 80A 30mA RCCB kit, 3 x 6A MCB's, 2 x 16A MCB's, 4 x 32A MCB's, 1 x 40A MCB	KITBOXD1680

Metal kitbox - Typical application general residential rebuild or rewire

Description	Reference number
12 way enclosure, Switch, 63A 30mA RCCB kit, 3 x 6A MCB's, 2 x 16A MCB's	KITBOXDM
12 way enclosure, Switch, 63A 30mA RCCB kit, 2 x 6A MCB's, 2 x 16A MCB's, 3 x 32A MCB's, 1 x 40A MCB	KITBOXDM1263
12 way enclosure, Switch, 80A 30mA RCCB kit, 2 x 6A MCB's, 2 x 16A MCB's, 3 x 32A MCB's, 1 x 40A MCB	KITBOXDM1280

Select outgoing devices or accessories

SP 6kA MCBs (B curve)

Description	Rating	Max cable size mm ²	Reference number
MCB (B curve)	3A	25	DOM03B6
MCB (B curve)	6A	25	DOM06B6
MCB (B curve)	10A	25	DOM10B6
MCB (B curve)	16A	25	DOM16B6
MCB (B curve)	20A	25	DOM20B6
MCB (B curve)	32A	35	DOM32B6
MCB (B curve)	40A	35	DOM40B6
MCB (B curve)	45A	35	DOM45B6
MCB (B curve)	50A	35	DOM50B6

SP 6kA MCBs (C curve)

MCB (C curve)	6A	25	DOM06C6
MCB (C curve)	10A	25	DOM10C6
MCB (C curve)	16A	25	DOM16C6

SP 6kA 1 module RCBO (B curve)

RCBO 30mA 1 module 1P&N	6A	10	DOM06B6R30
RCBO 30mA 1 module 1P&N	10A	10	DOM10B6R30
RCBO 30mA 1 module 1P&N	16A	10	DOM16B6R30
RCBO 30mA 1 module 1P&N	20A	10	DOM20B6R30
RCBO 30mA 1 module 1P&N	32A	10	DOM32B6R30
RCBO 30mA 1 module 1P&N	40A	10	DOM40B6R30
RCBO 30mA 1 module 1P&N	45A	10	DOM45B6R30
RCBO 30mA 1 module 1P&N	50A	10	DOM50B6R30

Qwikline II

Consumer units

Consumer units - insulated



Standard units

Number of ways	Dimensions			Reference number
	Height	Width	Depth	
2	240	189	127	SQO2
4	240	224	127	SQO4
6	240	260	127	SQO6
8	240	296	127	SQO8
12	240	368	127	SQO12
16	240	440	127	SQO16
24	480	368	127	SQO23

Split load units

Number of ways		Dimensions			Reference number
Circuit A	RCD ways	Height	Width	Depth	
2	4	240	296	127	SQOS2R4
3	3	240	296	127	SQOS3R3
4	2	240	296	127	SQOS4R2
4	6	240	368	127	SQOS4R6
5	5	240	368	127	SQOS5R5
6	4	240	368	127	SQOS6R4
7	3	240	368	127	SQOS7R3
7	7	240	440	127	SQOS7R7

Dual incomer units

Number of ways		Dimensions			Reference number
Circuit A	RCD ways	Height	Width	Depth	
2	4	240	296	127	SQO204
3	3	240	296	127	SQO303
4	2	240	296	127	SQO402
4	6	240	368	127	SQO406
5	5	240	368	127	SQO505
6	4	240	368	127	SQO604
7	3	240	368	127	SQO703
7	7	240	440	127	SQO707

New consumer units to meet the new 17th Edition of Wiring Regulations

Multiple split busbars supplied with switch disconnectors and RCDs

No. of ways	Switch ways	RCD 1 ways	RCD 2 ways	Reference number
12	-	6	6	SQOSR6R6
12	2	5	5	SQODS2R5R5

Consumer units - metal



Standard units

Number of ways	Dimensions			Reference number
	Height	Width	Depth	
2	247	181	111	SQOM2
4	247	217	111	SQOM4
6	247	253	111	SQOM6
8	247	289	111	SQOM8
12	247	361	111	SQOM12
16	247	433	111	SQOM16
24	487	361	111	SQOM23

Split load units

Number of ways		Dimensions			Reference number
Circuit A	RCD ways	Height	Width	Depth	
4	6	247	378	111	SQOMS4R6
5	5	247	378	111	SQOMS5R5
6	4	247	378	111	SQOMS6R4
7	7	247	450	111	SQOMS7R7

Dual incomer units

Number of ways		Dimensions			Reference number
Circuit A	RCD ways	Height	Width	Depth	
4	6	247	378	111	SQOM406
5	5	247	378	111	SQOM505
6	4	247	378	111	SQOM604
7	7	247	450	111	SQOM707

Multi tariff units

Number of ways			Dimensions			Reference number
Circuit A	Circuit B	Circuit B	Height	Width	Depth	
6	5	1	247	450	111	SQOM60501
7	4	1	247	450	111	SQOM70401
8	3	1	247	450	111	SQOM80301

Note: Flush mounted standard metal consumer units are available by adding an 'F' suffix to the above reference numbers. e.g. SQOM2F = 2 way flush mounted unit. For flush mounting of split load, dual incomer and multi tariff boards use SQOFC12 for 10 mod. boards and SQOFC16 for 14 mod. boards

Incoming devices



Description	Number of poles	Current rating	Operating voltage (V)	Max. cable cap. mm ²	Standards Approval	Width (17.5mm mods)	Reference number
Switch dis.	2	100A	230/240	50	BS EN 60947-3	2	SQO1100M
Term block	2	100A	230/240	50	-	2	SQO1100L
RCCB	2	100A, 30mA	230/240	50	BS EN 61008	2	SQOE100030
RCCB	2	100A, 100mA	230/240	50	BS EN 61008	2	SQOE100100
RCCB	2	100A, 300mA	230/240	50	BS EN 61008	2	SQOE100300
RCCB	2	100A, 100mA TD	230/240	50	BS EN 61008	2	SQOE100100S
RCCB	2	63A, 30mA	230/240	35	BS EN 61008	2	SQOE063030
RCCB	2	63A, 100mA	230/240	35	BS EN 61008	2	SQOE063100

Note: All Qwikline II consumer units are supplied without incoming devices. Any incoming device may be installed at any incoming point, or busbar split in any Qwikline II consumer unit.

Requirements

Standard units	1 incoming device required.
Dual incomer units	2 incoming devices required.
Split load units	2 incoming devices required.
Multi tariff units	3 incoming devices required.

Outgoing devices



Single pole circuit breakers (B curve)

Current rating	Operating voltage (V)	Breaking capacity (Icn (kA))	Max cable cap. mm ²	Standards approval	Reference number
3A	230/240	6	25	BS EN 60898	SQO103EB6
6A	230/240	6	25	BS EN 60898	SQO106EB6
10A	230/240	6	25	BS EN 60898	SQO110EB6
16A	230/240	6	25	BS EN 60898	SQO116EB6
20A	230/240	6	25	BS EN 60898	SQO120EB6
25A	230/240	6	25	BS EN 60898	SQO125EB6
32A	230/240	6	35	BS EN 60898	SQO132EB6
40A	230/240	6	35	BS EN 60898	SQO140EB6
50A	230/240	6	35	BS EN 60898	SQO150EB6
63A	230/240	6	35	BS EN 60898	SQO163EB6

Miniature circuit breakers (C curve)

Current rating	Operating voltage (V)	Breaking capacity (Icn (kA))	Max cable cap. mm ²	Standards approval	Reference number
3A	230/240	6	25	BS EN 60898	SQO103EC6
6A	230/240	6	25	BS EN 60898	SQO106EC6
10A	230/240	6	25	BS EN 60898	SQO110EC6
16A	230/240	6	25	BS EN 60898	SQO116EC6
20A	230/240	6	25	BS EN 60898	SQO120EC6
25A	230/240	6	25	BS EN 60898	SQO125EC6
32A	230/240	6	35	BS EN 60898	SQO132EC6
40A	230/240	6	35	BS EN 60898	SQO140EC6
50A	230/240	6	35	BS EN 60898	SQO150EC6
63A	230/240	6	35	BS EN 60898	SQO163EC6

RCBOs (B curve)

Current rating	Operating voltage (V)	Breaking capacity (Icn (kA))	Max cable cap. mm ²	Standards approval	Reference number
6A, 30mA (AC class)	230/240	6	10	BS EN 61009	SQOR106B03
10A, 30mA (AC class)	230/240	6	10	BS EN 61009	SQOR110B03
16A, 30mA (AC class)	230/240	6	10	BS EN 61009	SQOR116B03
20A, 30mA (AC class)	230/240	6	10	BS EN 61009	SQOR120B03
32A, 30mA (AC class)	230/240	6	10	BS EN 61009	SQOR132B03
45A, 30mA (AC class)	230/240	6	10	BS EN 61009	SQOR145B03

Control devices



Device	Coil (V)	Ways occupied	Reference number
2P 25A contactor	230/240	1	CCN225
4P 25A contactor	230/240	2	CCN425
2P 40A contactor	230/240	2	CCN240
3P 40A contactor	230/240	3	CCN340
4P 40A contactor	230/240	3	CCN440
3P 63A contactor	230/240	4	CCN363
1P Impulse relay (16A)	230/240	1	CIR116
2P Impulse relay (16A)	230/240	1	CIR216
1P Changeover relay (10A)	230/240	1	CCR110
Bell (8V)		1	CBL8
Transformer 240-8V (8VA)		2	CBX8
Buzzer (8V)		1	CBZ8
Light sensitive switch		3.5	CLS110
Single pole time switch		1	CTS24
Single channel electrical time switch		2.5	CPT11
Dual channel electrical time switch		2.5	CPT21
1P Delay off timer		1	CDT116

Accessories

Device	Ways occupied	Reference number
DIN blanking plates	5	SQODNBP
Half mod spacer	0.5	CPS9
Padlock device (suitable for use with all Qwikline II devices)	-	QOEPLA
Padlock	-	QOPL
Door lock kit (metal units only)	-	DOMLKIT

Note: All control devices are suitable for mounting in any Qwikline II consumer unit.

Residual current breakers

Description	Terminal capacity mm ²	Dimensions			Weight Kg	Reference number
		Height	Width	Depth		
25A RCCB 30mA trip 2 pole	35	81	36	75	0.227	RSD25032
25A RCCB 300mA trip 2 pole	35	81	36	75	0.227	RSD25302
40A RCCB 30mA trip 2 pole	35	81	36	75	0.227	RSD40032
40A RCCB 100mA trip 2 pole	35	81	36	75	0.227	RSD40102
40A RCCB 300mA trip 2 pole	35	81	36	75	0.227	RSD40302
63A RCCB 30mA trip 2 pole	35	81	36	75	0.227	RSD63032
63A RCCB 100mA trip 2 pole	35	81	36	75	0.227	RSD63102
63A RCCB 300mA trip 2 pole	35	81	36	75	0.227	RSD63302
80A RCCB 30mA trip 2 pole	50	81	36	75	0.227	RSD80032
100A RCCB 30mA trip 2 pole	50	81	36	75	0.227	RSD100032
100A RCCB 100mA trip 2 pole	50	81	36	75	0.227	RSD100102

RSD unit mounted RCCB's and insulated enclosures

Unit mounted RCCB's and their associated enclosures offer a cost effective method of supplementing existing installations with the benefits of earth fault protection. Enclosures may be mounted at the incoming point of the installation or locally to the load eg, in garages or sheds with socket outlets.

- Test button enables RCCB to be tested periodically
- Comply with BS EN 61008. Specification for residual current operated circuit breakers
- Rated voltage 240/415Vac single/three phase

For short circuit back-up protection, maximum fuse rating:-

RSD 25A	Fuse to BS 88 Type T 40A or BS 1361 Type RH 30A
RSD 40A	Fuse to BS 88 Type T 50A or BS 1361 Type RH 40A
RSD 63A	Fuse to BS 88 Type T 63A or BS 1361 Type RH 60A
RSD 80A	Fuse to BS 88 Type T 80A or BS 1361 Type RH 80A
RSD 100A	Fuse to BS 88 Type T 100A or BS 1361 Type RH 100A

Individual RCCB insulated enclosures

A cost effective method of providing earth fault protection for existing single circuits or entire installations.

Description	Dimensions			Weight Kg	Reference number
	Height	Width	Depth		
2 x 18mm module IP40 protection	150	50	60	0.10	RSD2IP40
4 x 18mm module IP54	200	110	112	0.35	RSD4IP54



Section 02

Contents

LoadCentre KQII distribution boards

Distribution boards

Single phase A type distribution boards - 125A	Page 2/2
Single phase A type distribution board incoming devices & accessories	Page 2/3
Three phase B type distribution boards - 125A	Page 2/4
Three phase B type distribution board incomers - 125A	Page 2/5
Three phase B type distribution boards - 250A	Page 2/6
Three phase B type distribution board incomers - 160A, 200A and 250A	Page 2/7
Technical data	Page 6/1 - 6/2
Dimensions	Page 7/4 - 7/7

Circuit protection devices

Miniature circuit breakers	Page 2/8
Residual Current Circuit Breakers with integral overcurrent protection (RCBO's)	Page 2/9
DIN rail mounted control and command device	Page 2/10
Residual Current Circuit Breakers and DIN rail enclosures	Page 2/11
Technical data	Page 6/4

Extension enclosures and interiors

Enclosures	Page 2/12
Cover assemblies and interiors	Page 2/13
Dimensions	Page 7/7

Distribution boards

LoadCentre KQII



Safety

IP2X finger safe factory fitted busbar assembly with non removable insulating barriers, provide protection against accidental direct contact. This is particularly useful if work such as testing and commissioning is required on an energised enclosure.

- Neutral terminal bar cover provides additional shielding of live parts. This is secured by screw fixing to prevent accidental disturbance in order to maintain safety levels
- Distribution boards and devices are 3rd party type tested to 20kA (MCCB incomer), to BS EN 60439
- Guaranteed connection between MCB and busbar

High performance

- Two frame sizes – 125A B boards and 250A B boards with up to 72 outgoing SP ways. LoadCentre KQII is designed to cater for the most demanding of installations
- Boards accept 10kA MCB's and RCBO's to BS EN 60898
- 20kA conditional short circuit rating
- Range of three and four pole incoming devices

Versatility

- Interchangeable incoming devices can easily be upgraded to meet the changing needs of an application
- Control devices such as contactors, time clocks and impulse relays can be mounted in any unused outgoing way
- Boards can be joined top/bottom or side by side to form split load or extra service

Easy installation

- Guaranteed Plug-On system for MCB's and RCBO's
- A new integral cable way is provided for control cables, making installation easier
- A new split earth and neutral bar design means all terminals are easily accessible from either side of the distribution board
- Common enclosure sizes and a range of extension boxes simplify group mounting of boards
- Removable gland plates (one plain and one with knockouts) provide quick and safe cable entry
- 25mm² earth and neutral termination points
- Improved symmetrical layout and increased enclosure size provides more wiring space and avoids cable bunching
- Incoming devices are an integral feature of all distribution boards. No extension boxes, joining kits or special tools are needed to fit incoming devices
- Our modified standards design and production facility means Square D can now engineer bespoke products to meet your specific needs. Typical applications include: boards to meet the exact colour scheme of the buildings interior or a customers corporate image; distribution boards with enclosure dimensions to accommodate electrical cupboards with restricted access fully populated, wired and labelled

Extensive choice

- Extensive choice
- Over 500 distribution board and incomer combinations to choose from
- Standard distribution boards, with high flexibility
- Over 300 combinations of split load board in standard offer
- Over 400 combinations of extra service boards in standard offer

LoadCentre KQII

Single phase A type distribution boards - 125A

- Manufactured and tested to BS EN 60439 parts 1 and 3
- Maximum busbar rating 125A
- Voltage rating 230/240V AC
- External IP3X protection to BS EN 60529
- Internal IP2XB protection to BS EN 60529 provided by permanent, non removable, factory fitted barriers
- Shielded neutral bars
- Cable knockouts on all sides for speed of installation
- Earth bar capacity 25mm²
- Neutral bar capacity 25mm²
- Wide range of bolt-on incomers, Plug-On outgoers
- All A boards accept DIN control products e.g. contactors, time clocks, in any unused outgoing way without adaptation

2

Standard type (excluding incomers)



Number of SP ways	Dimensions			Reference number
	Height	Width	Depth	
6	270	266	127	KQ125A6
8	270	321	127	KQ125A8
12	270	376	127	KQ125A12
16	270	456	127	KQ125A16
24	500	376	127	KQ125A24

Split load type* (excluding incomers)

Number of ways		Dimensions			Reference number
Unprotected SP	Protected RCD	Height	Width	Depth	
4	6	270	376	127	KQ125A4SL6
5	5	270	376	127	KQ125A5SL5
4	8	270	456	127	KQ125A4SL8
6	6	270	456	127	KQ125A6SL6

Split load boards are designed for use with earth protection devices (RCD's) on the secondary side and provide the user with additional protection for selected units.

Notes * 2 incoming devices required for split load units. e.g. Switch and RCCB's. Secondary incomer is a plug on device - see page 2/3. All devices are supplied separately.

Split meter board (including incomers)



Number of ways		Dimensions			Reference number
Lighting	Power	Height	Width	Depth	
12	12	484	470	139	KQA12S12

The split metering board is supplied with 2 meters, an overall switch disconnector and individual switch disconnectors for lighting and power. Meters are direct connected with pulse output.

LoadCentre KQII

Single phase A type distribution boards - 125A

Type A LoadCentre KQ+ DIN incoming devices



Device type	Current rating	Number of poles	Standard approval	Cable capacity mm ²	Reference number
Terminal block	125A	2	-	50	KQ125L2
Switch disc.	125A	2	BS EN 60947-3	50	KQ125SW2
RCCB	63A, 30mA	2	BS EN 61008	35	RSD63032
RCCB	63A, 100mA	2	BS EN 61008	35	RSD63102
RCCB	63A, 300mA	2	BS EN 61008	35	RSD63302
RCCB	100A, 30mA	2	BS EN 61008	50	RSD100032
RCCB	100A, 100mA	2	BS EN 61008	50	RSD100102

Note For a wider range of RCCB incomers see the RSD offer on page 2/11

2



Plug on RCCB secondary incomers for split load A boards



Device type	Current rating	Number of poles	Standard approval	Cable capacity mm ²	Reference number
RCCB	63A 30mA	2	BS EN 61008	35	SQOE063030
RCCB	63A 100mA	2	BS EN 61008	35	SQOE063100
RCCB	100A 30mA	2	BS EN 61008	50	SQOE100030
RCCB	100A 100mA TD	2	BS EN 61008	50	SQOE100100S
RCCB	100A 100mA	2	BS EN 61008	50	SQOE100100
RCCB	100A 300mA	2	BS EN 61008	50	SQOE100300

125A A board accessories

Device type	Reference number
Barrel lock and 2 keys new square door catch	KQK
Blanking plate (5 poles)	SQODNBP
MCB padlock attachment (pack of 5)	QOEPLA
Padlock for use with QOEPLA 3.7/4mm shank	QOPL
A type din rail extension enclosure (16 SP ways available)	KQAE16
100A lug unit single pole	KQ1100L
Replacement door catch	KQSDC
63A direct connected Kwh meter with pulsed output	SDMEIZR
Blank plate 25 x 5	KQBP25

LoadCentre KQII

Three phase B type distribution boards - 125A

- Manufactured and tested to BS EN 60439 parts 1 and 3
- Maximum busbar rating 125A
- Voltage Rating 400/415V AC
- External IP3X protection to BS EN 60529
- IP2XB finger safe with door and cover removed to BS EN 60529, provided by permanent, non removable, factory fitted barriers
- Fully shielded neutral bars
- Earth and neutral bar cable capacity 25mm²
- All incoming devices fit integral to the board, no extension boxes required
- All incoming connections are the same length i.e. 4 pole configuration
- Range of integral incomers for all applications including lugs, switches and RCCB's
- Outgoing MCB's available up to 63A B, C or D curves
- 18mm wide RCBO available, minimising use of outgoing ways
- Plug-On outgoing for speed of installation and guaranteed connection
- All B boards accept DIN control products (timers, contactors) in any unused outgoing way without adaptation
- Control wiring cable way integrated to moulding

Standard type (excluding incomers)

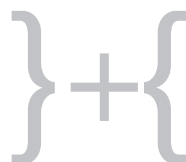


Number of TP ways	Dimensions			Reference number
	Height	Width	Depth	
4	484	470	139	KQ12B125
6	484	470	139	KQ18B125
8	538	470	139	KQ24B125
12	700	470	139	KQ36B125
16	808	470	139	KQ48B125
18	808	470	139	KQ54B125
24	970	470	139	KQ72B125

Split load (excluding incomers)



Number of ways Protected TP	Reference number
4	KQ12B125
6	KQ18B125
8	KQ24B125
12	KQ36B125
16	KQ48B125
18	KQ54B125
24	KQ72B125



Number of ways Unprotected TP	Reference number
4	KQ12B125
6	KQ18B125
8	KQ24B125
12	KQ36B125
16	KQ48B125
18	KQ54B125
24	KQ72B125

Split load joining kit for mechanical connection **KQJK**.
63A tapoff to feed protected board (including joining kit) **KQ63SLK**

Extra service units 125A (combination of a standard board and DIN rail enclosure)



Number of TP Busbar ways	Reference number		Number of rows	Number of modules	Dimensions			Reference number
					Height	Width	Depth	
4	KQ12B125	} + {	1	17	270	470	139	KQ17BES
6	KQ18B125		2	34	484	470	139	KQ12B2D
8	KQ24B125		2	34	538	470	139	KQ18B2D
12	KQ36B125		3	51	700	470	139	KQ36B3D
16	KQ48B125		4	68	808	470	139	KQ54B4D
18	KQ54B125		5	85	970	470	139	KQ54B2504D
24	KQ72B125							

Extra service units are designed for application using numerous control products and RCCB's.
These units provide a professional finish while economising on ease and speed of installation.

LoadCentre KQII

Three phase B type distribution boards - 125A

Split metering board 125A



Number of TP ways		Rating A	Dimensions			Reference number
Section 1	Section 2		Height	Width	Depth	
12	8	125	1290	470	139	KQB36S24125
14	6	125	1290	470	139	KQB42S18125
16	4	125	1290	470	139	KQB48S12125

125A boards are supplied with a switch disconnecter
2 x PM750 meters included (pulsed and ModBus output)

125A type B LoadCentre KQII incoming devices



Device type	Current rating	Number of poles	Standard approval	Cable capacity mm ²	Reference number
Terminal block	125A	4	-	50	KQ125L4
Switch disc.	125A	4	BS EN 60947-3	50	KQ125SW4
Switch disc.	125A	3+N lug	BS EN 60947-3	50	KQ125SW3L
RCCB	80A, 30mA	4	BS EN 61008	35	RSD80034
RCCB	100A, 300mA	4	BS EN 61008	50	RSD100304
RCCB	100A, 300mA TD	4	BS EN 61008	50	RSD100304S
Contactor + switch	100A	4	BS EN 60439	50	KQCSW100

Note For a wider range of RCCB incomers see the RSD offer on page 2/11

Metering kit



KQ250MET	
Description	Multi function metering kit for LoadCentre KQII 3 phase B type distribution boards.
Components	PM750 multi function meter provides V, A, Power factor kW/h, kVA/h. Three current transformers. Three single pole MCB's.
Voltage rating	415V nominal, 455V maximum. 3 phase 4 wire 50-60 Hz
Output	Pulse output contact is standard + ModBus

Contactor control kit

Reference number	
KQCSW100	100A contactor control kit

B board accessories



Device type	Reference number	Device type	Reference number
Side joining kit	KQSJK	24 way extra earth kit	KQ24EE
Top/bottom joining kit	KQJK	36 way extra earth kit	KQ36EE
63A Top off or split load	KQ63SLK	48 way extra earth kit	KQ48EE
Barrel lock and 2 keys for catch	KQK	54 way extra earth kit	KQ54EE
Spare keys for above	KQK33	72 way extra earth kit	KQ72EE
MCCB locking attachment	W29370	100A lug unit single pole	KQ1100L
125A single phasing kit for use with RCD and switch incomers	KQ125SPP	Spare gland plate with knockouts	KQGPKO
Blanking plate (5 poles)	SQODNBP	Spare gland plate	KQGP
MCB padlock attachment (pack of 5)	QOEPLA	Clean earth 12 terminals	KQCE12T
Padlock for use with QOEPLA	QOPL	Clean earth 24 terminals	KQCE24T
Circuit directory and wallet (pack of 10)	WALLET	Spare way label 72 ways	KQ72BL
12 way extra earth kit	KQ12EE	Spare gland plate for extension box	KQEXGP
18 way extra earth kit	KQ18EE	Spare door catch	KQSDC
Padlocking door kit	KQPD	Neutral terminal cover	KQBNC
Plain extension box	KQBES	Spare cover fixing (24)	KQBFCF

LoadCentre KQII

Three phase B type distribution boards - 250A

- Manufactured and tested to BS EN 60439 parts 1 and 3
- Maximum busbar rating 250A
- Voltage Rating 400/415V AC
- External IP3X protection to BS EN 60529
- Internal IP2XB protection to BS EN 60529, provided by permanent, non removable, factory fitted barriers
- Neutral bar shields supplied as standard
- Earth and neutral bar cable capacity 25mm²
- All incoming devices fit integral to the board, no extension boxes required
- Integral incomers for all applications including lugs, switch, MCCB's and RCCB's
- All incoming connections are the same length i.e. 4 pole configuration
- Outgoing MCB's available up to 63A B, C or D curves
- 18mm wide RCBO available, maximising use of outgoing ways
- Plug-On outgoing for speed of installation and guaranteed connections
- All B boards accept DIN control products timers, contactors in any unused outgoing way without adaptation
- Control wiring cable way integral to moulding

Standard type (excluding incomers)



Number of TP ways	Dimensions			Reference number
	Height	Width	Depth	
4	754	470	139	KQ12B250
6	754	470	139	KQ18B250
8	808	470	139	KQ24B250
12	970	470	139	KQ36B250
16	1078	470	139	KQ48B250
18	1078	470	139	KQ54B250
24	1240	470	139	KQ72B250

Extra service units 250A (combination of a standard board and DIN rail enclosure)



Number of TP Busbar ways	Reference number		Number of rows	Number of modules	Dimensions			Reference number
					Height	Width	Depth	
4	KQ12B250	} + {	1	17	270	470	139	KQ17BES
6	KQ18B250		2	34	484	470	139	KQ12B2D
8	KQ24B250		2	34	538	470	139	KQ18B2D
12	KQ36B250		3	51	700	470	139	KQ36B3D
16	KQ48B250		4	68	808	470	139	KQ54B4D
18	KQ54B250		5	85	970	470	139	KQ54B2504D
24	KQ72B250							

Extra service units are designed for application using numerous control products and RCCB's. These units provide a professional finish while economising on ease and speed of installation.

Joining kit **KQJK** (not required for **KQ17BES**).

Split metering board 250A



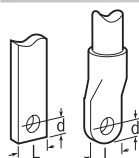
Number of TP ways	Rating A	Dimensions			Reference number
		Section 1	Section 2	Height Width Depth	
12	250	8		1290 470 139	KQB36S24250
14	250	6		1290 470 139	KQB42S18250
16	250	4		1290 470 139	KQB48S12250

250A boards require a switch disconnector to be added
2 x PM750 meter included (pulsed and ModBus output)

LoadCentre KQII

Three phase B type distribution boards - 250A

250A type B LoadCentre KQII incoming devices



L <25mm
d <10mm
Ø >8mm



Device type	Current rating	Number of poles	Cable capacity mm ²	Standard approval	Reference number
Terminal block	250A	4	185	-	KQ250L4P
Switch disconnecter	160A	3+N	95	BS EN 60947-3	KQ160SW3L
Switch disconnecter	200A	3+N	185	BS EN 60947-3	KQ200SW3L
Switch disconnecter	250A	3+N	185	BS EN 60947-3	KQ250SW3L
Switch disconnecter	160A	4	95	BS EN 60947-3	KQ160SW4
Switch disconnecter	200A	4	185	BS EN 60947-3	KQ200SW4
Switch disconnecter	250A	4	185	BS EN 60947-3	KQ250SW4
MCCB	100A	3+N	95	BS EN 60947-2	KQ100MCCB3L
MCCB	160A	3+N	95	BS EN 60947-2	KQ160MCCB3L
MCCB	200A	3+N	185	BS EN 60947-2	KQ200MCCB3L
MCCB	250A	3+N	185	BS EN 60947-2	KQ250MCCB3L
RCCB 160A	Adjustable 30mA -10A	4	95	BS EN 61008	KQ160RCD

Metering kit



KQ250MET

Description	Multi function metering kit for LoadCentre KQII 3 phase B type distribution boards.
Components	PM750 multi function meter provides V, A, Power factor kW/h, kVA/h. Three current transformers. Three single pole MCB's.
Voltage rating	415V nominal, 455V maximum. 3 phase 4 wire 50-60 Hz
Output	Pulse output contact is standard + Modbus

B board accessories



Device type	Reference number	Device type	Reference number
Side joining kit	KQSJK	24 way extra earth kit	KQ24EE
Top/bottom joining kit	KQJK	36 way extra earth kit	KQ36EE
63A Top off or split load	KQ63SLK	48 way extra earth kit	KQ48EE
Barrel lock and 2 keys for catch	KQK	54 way extra earth kit	KQ54EE
Spare keys for above	KQK33	72 way extra earth kit	KQ72EE
MCCB locking attachment	W29370	100A lug unit single pole	KQ1100L
250A single phasing kit for use with RCD and switch incomers	KQ250SPP	Spare gland plate with knockouts	KQGPKO
Blanking plate (5 poles)	SQODNBP	Spare gland plate	KQGP
MCB padlock attachment (pack of 5)	QOEPLA	Clean earth 12 terminals	KQCE12T
Padlock for use with QOEPLA	QOPL	Clean earth 24 terminals	KQCE24T
Circuit directory and wallet (pack of 10)	WALLET	Spare way label 72 ways	KQ72BL
12 way extra earth kit	KQ12EE	Spare gland plate for extension box	KQEXGP
18 way extra earth kit	KQ18EE	Spare door catch	KQSDC
Padlocking door kit	KQPD	Neutral terminal cover	KQBNC
Plain extension box	KQBES	Spare cover fixing (24)	KQBFCF

LoadCentre KQII

KQ miniature circuit breakers (MCB's)

- Manufactured and tested to BS EN 60898
- 10kA breaking capacity 15kA to BS EN 60947-2
- Let through energy classification of 3 (lowest let through energy giving best cable protection classification)
- Positive contact indication (guaranteed on/off indication)
- Trip free mechanism operates even when the toggle is locked on
- Lockable in the ON or OFF position
- Speed of connection of Plug-On devices - guaranteed connection Plug-On devices
- For use in LoadCentre KQII A and B boards
- All MCB's have their part number clearly printed on the front face for ease of identification

Type B (magnetic setting 3-5 in)

For resistive and light reactive loads, e.g. heating, incandescent lighting etc



Current rating (Icn*)	Cable capacity mm ²	Reference numbers		
		1 pole	2 pole	3 pole
3A	25	KQ10B103	-	-
6A	25	KQ10B106	-	-
10A	25	KQ10B110	-	-
16A	25	KQ10B116	-	-
20A	25	KQ10B120	-	-
25A	25	KQ10B125	-	-
32A	35	KQ10B132	-	-
40A	35	KQ10B140	-	-
50A	35	KQ10B150	-	-
63A	35	KQ10B163	-	-

Type C (magnetic setting 5-10 in)

For moderately light reactive loads, e.g. fluorescent lighting



Current rating (Icn*)	Cable capacity mm ²	Reference numbers		
		1 pole	2 pole	3 pole
6A	25	KQ10C106	KQ10C206	KQ10C306
10A	25	KQ10C110	KQ10C210	KQ10C310
16A	25	KQ10C116	KQ10C216	KQ10C316
20A	25	KQ10C120	KQ10C220	KQ10C320
25A	25	KQ10C125	KQ10C225	KQ10C325
32A	35	KQ10C132	KQ10C232	KQ10C332
40A	35	KQ10C140	KQ10C240	KQ10C340
50A	35	KQ10C150	KQ10C250	KQ10C350
63A	35	KQ10C163	KQ10C263	KQ10C363

Type D (magnetic setting 10-14 in)

For highly reactive loads, e.g. motors, pumps and transformers



Current rating (Icn*)	Cable capacity mm ²	Reference numbers		
		1 pole	2 pole	3 pole
6A	25	KQ10D106	KQ10D206	KQ10D306
10A	25	KQ10D110	KQ10D210	KQ10D310
16A	25	KQ10D116	KQ10D216	KQ10D316
20A	25	KQ10D120	KQ10D220	KQ10D320
25A	25	KQ10D125	KQ10D225	KQ10D325
32A	35	KQ10D132	KQ10D232	KQ10D332
40A	35	KQ10D140	KQ10D240	KQ10D340
50A	35	KQ10D150	KQ10D250	KQ10D350
63A	35	KQ10D163	KQ10D263	KQ10D363

DIN rail mounted 80/100A MCB

Suitable for use in extension enclosures or extra service units



Description	Terminal capacity	Modular size	Reference number
MCB 3P 100A Type C	50	4.5	KQ10C3100
MCB 3P 80A Type C	50	4.5	KQ10C380

Must be used with **KQ17BES** enclosure and 3 x **KQ1100L**.

LoadCentre KQII

Residual current circuit breakers (RCBO's)

- Manufactured and tested to BS EN 61009
- 10kA breaking capacity
- Let through energy classification of 3 (lowest let through energy giving best cable protection classification)
- Positive contact indication on toggle (guaranteed on/off indication)
- Trip free MCB mechanism
- Lockable in on or off position
- Automatic trip on loss of neutral
- Automatic protection against reverse polarity
- Type C tripping characteristics (5In to 10In)
- Operating voltage 150 - 230Vac
- 6 - 45A; 10, 30 and 100mA sensitivities
- AC class sensitivity
- For use in LoadCentre A and B boards
- One single pole way occupied in a distribution board ideal for retrofitting earth fault protection
- Cable capacity 16mm²
- Speed of connection of Plug-On devices
- Assured system integrity, no other devices fit KQ+ boards
- All RCBO's have part numbers marked on the front of device

2

Applications

RCBO's are available with various earth leakage sensitivities to suit numerous applications including 10mA devices for protection of sensitive machine/equipment, 30mA devices which are generally used for personnel protection and 100mA for meeting high earth loop impedance levels.

RCBO's should be carefully selected for the relevant application.

Residual current circuit breakers



Current rating (A)	Residual tripping current	Cable capacity mm ²	Reference number
6	10mA	16	KQE106C01
10	10mA	16	KQE110C01
16	10mA	16	KQE116C01
20	10mA	16	KQE120C01
32	10mA	16	KQE132C01
45	10mA	16	KQE145C01
6	30mA	16	KQE106C03
10	30mA	16	KQE110C03
16	30mA	16	KQE116C03
20	30mA	16	KQE120C03
32	30mA	16	KQE132C03
45	30mA	16	KQE145C03
6	100mA	16	KQE106C10
10	100mA	16	KQE110C10
16	100mA	16	KQE116C10
20	100mA	16	KQE120C10
32	100mA	16	KQE132C10
45	100mA	16	KQE145C10

Accessories

	Reference number
Padlocking device (pack of 5)	QOEPLA
Padlock for above	QOPL

LoadCentre KQII

Control and command devices

All LoadCentre KQII A and B type LoadCentres accept DIN rail mounted control devices in any unused MCB way.

For high density control applications a range of extra service units can be created using standard product providing 17 to 72 SP ways. For stand alone control applications a range of insulated or metal enclosures are available.

Control and command devices

Description	Application	Modular size	Reference number
Bell 8V ac	Audible alarm	1	CBL8
Transformer 240/8V 8VA	Bell circuits	2	CBX8
Buzzer 8V ac	Audible alarm	1	CBZ8
Contactor 2 pole 25A	Switching large single phase loads	1	CCN225
Contactor 2 pole 40A	Switching large single phase loads	2	CCN240
Contactor 3 pole 40A	Switching 3 phase loads	3	CCN340
Contactor 3 pole 63A	Switching 3 phase loads	3	CCN363
Contactor 4 pole 100A	Switching 3 phase loads	6	CCN4100
Contactor 4 pole 25A	Switching 3 phase loads	2	CCN425
Contactor 4 pole 40A	Switching 3 phase loads	3	CCN440
Changeover relay 10A	Switching small loads	1	CCR110
Delay OFF timer 16A	1-7 min timer for stairs/corridor lighting	1	CDT116
Multi function meter	Metering KWh	6	CEM01
Impulse relay 1 pole 16A	Lighting switching	1	CIR116
Impulse relay 2 pole 16A	Lighting switching	1	CIR216
Light sensitive switch 10A	Lighting during low light levels	3.5	CLS110
Presence detector	Detecting persons in the area	-	CPD360
PIR detector	Movement detection	-	CPIR
Contactor spacer	Spacing contactors in boards	0.5	CPS9
7 day elect. time switch, 1 channel 16A	7 day programmable time switch	2.5	CPT11
7 day elect. time switch, 2 channel 16A	7 day programmable time switch	2.5	CPT21
Astronomic time switch 16A	Lighting control	2.5	CPLST110
Time delay ON relay	Delay switch on	1	CTR1
24 hour time switch 16A	24 hour regular switching	1	CTS24
Multi function time switch	Time switch with conditional functions	5	CPT9
Memory cartridge for CPT9	-	-	CPT9MC
KQ metering kit	KQ B type distribution boards	-	KQ250MET
100A Contactor in extension enclosure	KQII	-	KQCSW100
KQ metering enclosure	-	-	MSKQ1277*
Insulated enclosure, 4 modules	IP54 enclosure with door	-	RSD4IP54
Metal enclosure, 3 modules	IP30 enclosure, sealable	-	SDEN3
Metal enclosure, 4 modules	IP30 enclosure, sealable	-	SDEN4
Metal enclosure, 5 modules	IP30 enclosure, sealable	-	SDEN5
Insulated enclosure, 4 modules	IP40 enclosure with door	-	SDEN4P
Insulated enclosure, 6 modules	IP40 enclosure with door	-	SDEN6P
Insulated enclosure, 8 modules	IP40 enclosure with door	-	SDEN8P
Extension enclosure	Accepts 17 modules of devices	17	KQ17BES
Plain extension enclosure	-	-	KQBES

Note When installing several CCN contactors, side by side in an enclosure, include a 1/2 module spacer (CPS9) between every two units. This also applies to adjacent MCB's.

* Supplied as **KQ250MET** less meter, see page 4/21 for selection of meters.

LoadCentre KQII

Residual current circuit breakers (RCCB's)

All RSD residual current circuit breakers are suitable for use as main incomers in LoadCentre KQII distribution boards.

- Comply with BS EN 61008. Specification for residual current operated circuit breakers
- Rated voltage 240/415V AC 50/60 Hz
- Test button enables RCCB to be tested periodically
- 30mA device suitable for use as additional protection on final sub circuits e.g. equipment outside equipotential zone or items requiring 2/4 pole protection i.e. switched neutral applications

Residual current circuit breakers



Description	Cable capacity mm ²	Dimensions			Weight Kg	Reference number
		Height	Width	Depth		
25A RCCB 30mA trip 2 pole	35	81	36	75	0.227	RSD25032
25A RCCB 300mA trip 2 pole	35	81	36	75	0.227	RSD25302
40A RCCB 30mA trip 2 pole 3	35	81	36	75	0.227	RSD40032
40A RCCB 100mA trip 2 pole	35	81	36	75	0.227	RSD40102
40A RCCB 300mA trip 2 pole	35	81	36	75	0.227	RSD40302
63A RCCB 30mA trip 2 pole	35	81	36	75	0.227	RSD63032
63A RCCB 100mA trip 2 pole	35	81	36	75	0.227	RSD63102
63A RCCB 300mA trip 2 pole	35	81	36	75	0.227	RSD63302
80A RCCB 30mA trip 2 pole	50	81	36	75	0.227	RSD80032
100A RCCB 30mA trip 2 pole	50	81	36	75	0.227	RSD100032
100A RCCB 100mA trip 2 pole	50	81	36	75	0.227	RSD100102
25A RCCB 300mA trip 4 pole	35	81	72	75	0.428	RSD25304
25A RCCB 30mA trip 4 pole	35	81	72	75	0.428	RSD25034
25A RCCB 100mA trip 4 pole	35	81	72	75	0.428	RSD25104
40A RCCB 30mA trip 4 pole	35	81	72	75	0.428	RSD40034
40A RCCB 100mA trip 4 pole	35	81	72	75	0.428	RSD40104
40A RCCB 300mA trip 4 pole	35	81	72	75	0.428	RSD40304
63A RCCB 30mA trip 4 pole	35	81	72	75	0.428	RSD63034
63A RCCB 100mA trip 4 pole	35	81	72	75	0.428	RSD63104
63A RCCB 300mA trip 4 pole	35	81	72	75	0.428	RSD63304
80A RCCB 30mA trip 4 pole	35	81	72	75	0.500	RSD80034
100A RCCB 300mA trip 4 pole	50	81	72	75	0.500	RSD100304
100A RCCB 300mA trip 4 pole +TD	50	81	72	75	0.500	RSD100304S

For short circuit back-up protection, maximum fuse rating

RSD 25A	Fuse to BS88 Type T 40A or BS1361 type RH 30A
RSD 40A	Fuse to BS88 Type T 50A or BS1361 type RH 40A
RSD 63A	Fuse to BS88 Type T 63A or BS1361 type RH 60A
RSD 80A	Fuse to BS88 Type T 80A or BS1361 type RH 80A
RSD 100A	Fuse to BS88 Type T 100A or BS1361 type RH 100A

Individual RCCB insulated enclosures



Description	Dimensions			Weight Kg	Reference number
	Height	Width	Depth		
4 x 18mm Module IP54 protection	200	110	112	0.35	RSD4IP54

RSD insulated enclosures are also suitable for any DIN rail mounted product including time clocks, timers, contactors, switches and relays.

LoadCentre KQII

Extension enclosures

LoadCentre KQII enclosures are available for applications where matching extension boxes are required to house system extensions or stand alone control systems.

There are two configurations, plain enclosures with door, enclosures with DIN rail, door and front cover assembly.

Steel enclosures with plain cover and door



Dimensions			Reference number
Height	Width	Depth	
484	470	139	KQ12BCD
538	470	139	KQ18BCD
700	470	139	KQ36BCD
808	470	139	KQ54BCD
970	470	139	KQ54B250CD

Steel enclosures with DIN rails and a front cover assembly and door



Dimensions			Number of rows	Total number of SP modules	Reference number
Height	Width	Depth			
484	470	139	2	34	KQ12B2D
538	470	139	2	34	KQ18B2D
700	470	139	3	51	KQ36B3D
808	470	139	4	68	KQ54B4D
970	470	139	5	85	KQ54B2504D

Steel enclosure with 1 row of DIN rails and a front cover assembly and door



Dimensions			Number of rows	Total number of SP modules	Reference number
Height	Width	Depth			
270	470	139	1	17	KQ17BES

Steel enclosure



Dimensions			Number of rows	Total number of SP modules	Reference number
Height	Width	Depth			
270	470	124	-	-	KQBES

LoadCentre KQII

Cover assemblies and interiors

- Manufactured and tested to BS EN 60439 parts 1 and 3
- Maximum busbar rating A type 125A, B type 125A or 250A
- Voltage rating A type 230/240V AC, B type 400/415V AC
- IP2XB with doors and covers removed to BS 60529
- Provided by permanent, non-removable, factory fitted barriers
- Fully shielded neutral bars
- Earth and neutral bar cable capacity 25mm²
- All incoming connections are the same length i.e. 4 pole configuration
- Range of incomers for all application including lugs, switch disconnectors, RCCB's and MCCB's (250A only)
- Outgoing MCB's available up to 63A in B, C or D curves
- 18mm wide RCBO available, minimising use of outgoing ways
- Plug-On outgoing for speed of installation and guaranteed connection
- Interiors accept a range of control product which may be mounted in any unused outgoing way

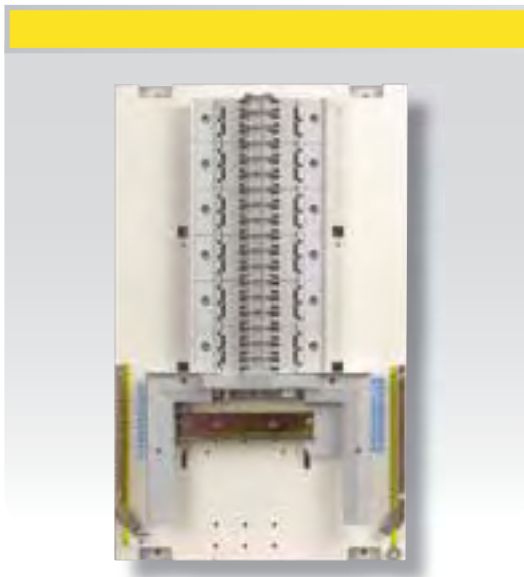
2

A Type 125A



Number of SP ways	Reference numbers		
	Interior	Door and cover assembly	Cover assembly
6	KQ125INTA6	KQ125INTCD6	KQ125INTAC6
8	KQ125INTA8	KQ125INTCD8	KQ125INTAC8
12	KQ125INTA12	KQ125INTCD12	KQ125INTAC12
16	KQ125INTA16	KQ125INTCD16	KQ125INTAC

B Type 125A



Number of SP ways	Number of TP ways	Reference numbers	
		Interior	Door and cover assembly
12	4	KQ12B125INT	KQ12B125CP
18	6	KQ18B125INT	KQ18B125CP
24	8	KQ24B125INT	KQ24B125CP
36	12	KQ36B125INT	KQ36B125CP
48	16	KQ48B125INT	KQ48B125CP
54	18	KQ54B125INT	KQ54B125CP
72	24	KQ72B125INT	KQ72B125CP

B Type 250A

Number of SP ways	Number of TP ways	Reference numbers	
		Interior	Door and cover assembly
12	4	KQ12B250INT	KQ12B250CP
18	6	KQ18B250INT	KQ18B250CP
24	8	KQ24B250INT	KQ24B250CP
36	12	KQ36B250INT	KQ36B250CP
48	16	KQ48B250INT	KQ48B250CP
54	18	KQ54B250INT	KQ54B250CP
72	24	KQ72B250INT	KQ72B250CP

Section 03

Contents

Control and Command products

Lighting control	Page 3/2
Heating control	Page 3/3
Motor control	Page 3/4
Sounds	Page 3/5
Metering	Page 3/6
Technical information	Page 6/13 - 6/35



Since the introduction of the Climate Change Levy, wasting energy is not just bad for the environment: it now carries a heavy financial penalty, with electricity the most heavily taxed fuel of all. In addition, the introduction of the building regulations part L2 calls for the implementation of energy efficient technology and metering of specific loads.

With a Square D consumer unit or distribution board, you have access to a unique range of control and command devices designed to make savings in every area of consumption and ensure compliance with current regulation.

This catalogue contains all the components you need to help your organisation save energy. All devices connect directly to distribution boards and consumer units, so installation couldn't be simpler. All devices are available independently, giving you the flexibility to select only those which you actually need.

If you would like more information about control and command devices from Square D, call 0870 608 8 608 or visit www.schneider-electric.co.uk

Control and Command

Lighting control

Natural daylight is the best and lowest cost form of light but unfortunately, it is not always available when or where required. It is necessary to provide electric lighting to supplement natural light during the day and provide full illumination at night.

Electricity costs money so it is necessary to make efficient use of the lighting and switch it off when not required. This control may either be manual or have a level of automation introduced. The government encourage the use of automated technology with the energy technology list. Many Square D products feature on the list.

Products



Description	Application	Modular size	Reference
24 hour time switch, contact rating 16A resistive	24 hour regular switching	1	CTS24
7 day electronic time switch, 1 channel, contact rating 16A resistive	7 day programmable time switch	2.5	CPT11
7 day electronic time switch, 2 channel, contact rating 16A resistive	7 day programmable time switch	2.5	CPT21
Multi function time switch, contact rating 10A resistive	Time switch with conditional functions	5	CPT9
Presence detector 10A	Detecting persons in the area	N/A	CPD360
PIR detector, contact rating 10A resistive	Movement detection	N/A	CPIR
Light sensitive switch,	Lighting during low light levels contact rating 10A resistive	3.5	CLS110
Astronomical switch,	Lighting control at sunrise/sunset contact rating 16A resistive	2.5	CPLST110
Changeover relay 10A	Switching small loads	1	CCR110
Contactor 2 pole 25A 240V coil	Switching large single phase loads	1	CCN225
Contactor 4 pole 25A 240V coil	Switching 3 phase loads	2	CCN425
Contactor 2 pole 40A 240V coil	Switching large single phase loads	2	CCN240
Contactor 3 pole 40A 240V coil	Switching 3 phase loads	3	CCN340
Contactor 4 pole 40A 240V coil	Switching 3 phase loads	3	CCN440
Contactor 3 pole 63A 240V coil	Switching 3 phase loads	3	CCN363
Contactor 4 pole 100A	Switching 3 phase loads	6	CCN4100
Contactor spacer	Spacing contactors in boards (1)	0.5	CPS9
Time delay ON relay, contact rating 8A resistive	Delay switch on	1	CTR1
Delay OFF timer	1–7 min timer for stairs & corridor lighting	1	CDT116
Impulse relay 1 pole 16A	Multi location switching	1	CIR116
Impulse relay 2 pole 16A	Multi location switching	1	CIR216
Metal enclosure, 3 modules,	IP30, sealable		SDEN3
Metal enclosure, 4 modules,	IP30, sealable		SDEN4
Metal enclosure, 5 modules,	IP30, sealable		SDEN5
Insulated enclosure with door,	4 modules, IP40		SDEN4P
Insulated enclosure with door,	6 modules, IP40		SDEN6P
Insulated enclosure with door,	8 modules, IP40		SDEN8P
Insulated enclosure with door,	4 modules, IP54		RSD4IP54

Notes (1) when installing several CCN contactors, side by side in an enclosure, include a half module spacer CPS9 between every two units. This also applies if the contactors are mounted adjacent to MCBs.

Control and Command

Heating control

Electricity is an expensive means of heating so it is essential to make the most efficient use of the heating, to have it on only when required and to switch it off when not required. The most common forms of electric heating are water heating and space heating. These notes apply equally to both these functions. The control may either be manual or have a level of automation introduced.

Products



Description	Application	Modular size	Reference
24 hour time switch, contact rating 16A resistive	24 hour regular switching	1	CTS24
7 day electronic time switch, 1 channel, contact rating 16A resistive	7 day programmable time switch	2.5	CPT11
7 day electronic time switch, 2 channel, contact rating 16A resistive	7 day programmable time switch	2.5	CPT21
Multi function time switch, contact rating 10A resistive	Time switch with conditional functions	5	CPT9
Memory cartridge for CPT9		N/A	CPT9MC
Presence detector	Supply heat only when persons present	N/A	CPD360
Contactors 2 pole 25A	Switching large single phase loads	1	CCN225
Contactors 4 pole 25A	Switching 3 phase loads	2	CCN425
Contactors 2 pole 40A	Switching large single phase loads	2	CCN240
Contactors 3 pole 40A	Switching 3 phase loads	3	CCN340
Contactors 4 pole 40A	Switching 3 phase loads	3	CCN440
Contactors 3 pole 63A	Switching 3 phase loads	3	CCN363
Contactors 4 pole 100A	Switching 3 phase loads	6	CCN4100
Contactors spacer	Spacing contactors in boards (1)	0.5	CPS9
Time delay ON relay, contact rating 8A resistive	Delay switch on	1	CTR1
Metal enclosure, 3 modules,	IP30, sealable		SDEN4
Metal enclosure, 4 modules,	IP30, sealable		SDEN5
Metal enclosure, 5 modules,	IP30, sealable		SDEN4P
Insulated enclosure with door,	4 modules, IP40		SDEN6P
Insulated enclosure with door,	6 modules, IP40		SDEN8P
Insulated enclosure with door,	8 modules, IP40		RSD4IP54

Notes (1) when installing several CCN contactors, side by side in an enclosure, include a half module spacer CPS9 between every two units. This also applies if the contactors are mounted adjacent to MCBs.

Control and Command

Motor control

In the commercial and light industrial environment there are a number of applications where a small motor drive is required. The switching duty may be light therefore it is not necessary to use industrial style control equipment.

The Square D range of contactors may be used for these light duty applications, category of duty AC7b to BS60947-1. BS7671 requires that all motors of ratings greater than 0.37kW must have control equipment incorporating a means of protection against overload.

Products



Description	Application	Modular size	Reference
Small Motors			
Contactors 2 pole 25A	1.4kW single phase motor with capacitor	1	CCN225
Contactors 2 pole 40A	2.5kW single phase motor with capacitor	2	CCN240
Contactors 3 pole 63A	4.0kW single phase motor with capacitor	4	CCN363
Contactors 4 pole 25A	4.0kW three phase motor	2	CCN425
Contactors 3 pole 40A	7.5kW three phase motor	3	CCN340
Contactors 3 pole 63A	15kW three phase motor	3	CCN363
Contactors spacer	Spacing contactors in boards (1)	0.5	CPS9
Metal enclosure, 3 modules,	IP30, sealable		SDEN3
Metal enclosure, 4 modules,	IP30, sealable		SDEN4
Metal enclosure, 5 modules,	IP30, sealable		SDEN5
Insulated enclosure with door, 4 modules,	IP40		SDEN4P
Insulated enclosure with door, 6 modules,	IP40		SDEN6P
Insulated enclosure with door, 8 modules,	IP40		SDEN8P
Insulated enclosure with door, 4 modules,	IP54		RSD4IP54

Notes (1) when installing several CCN contactors, side by side in an enclosure, include a half module spacer CPS9 between every two units. This also applies if the contactors are mounted adjacent to MCBs.

Control and Command

Sounds

In the commercial and light industrial environment there are a number of applications where a small motor drive is required. The switching duty may be light therefore it is not necessary to use industrial style control equipment.

The Square D range of contactors may be used for these light duty applications, category of duty AC7b to BS60947-1. BS7671 requires that all motors of ratings greater than 0.37kW must have control equipment incorporating a means of protection against overload.

Products



Description	Application	Modular size	Reference
Bell transformer 230V primary, 8V or 12V	Voltage source for bell and buzzer secondary 8VA	2	CBX8
Bell 8Vac 70dB	Audible signal	1	CBL8
Buzzer 8Vac 70dB	Audible signal	1	CBZ8
Metal enclosure, 3 modules	IP30, to contain transformer &/or bell / buzzer		SDEN3
Insulated enclosure, 4 modules	IP40, to contain transformer &/or bell / buzzer*		SDEN4P
Insulated enclosure, 4 modules	IP54, to contain transformer &/or bell / buzzer*		RSD4IP54

* Sound volume likely to be reduced due to higher IP rating of enclosure

Control and Command

Metering

The recent introduction of the building regulations part L2 strengthened the requirements for the conservation of fuel and power in buildings. The document is concerned with the efficient use of fuel and power and ensuring that no more energy is used than is reasonable in the circumstances. Part L2 calls for the implementation of energy efficient technology and metering of specific loads.

Section 3 of Document L2, titled "Providing information" is concerned with the installation of sufficient facilities, including energy meters to enable building owners or occupiers to measure their actual energy consumption and to take steps to minimise it.

Products

Description	Application	Reference
Metering kit for KQ distribution board	Any KQ type 'B' board	KQ250MET*
3 phase multi function meter	For door/panel mounting DIN96	PM700
3 phase multi function meter (for pulsed output)	For door/panel mounting DIN96	PM700P
3 phase multi function meter (for pulsed output)	For door/panel mounting DIN96	PM710
3 phase multi function meter pulse & ModBus output	For door/panel mounting DIN96	PM750
Single phase 63A direct connected Kwh meter with pulsed output		SDMEIZR

* KQ250MET is also supplied with a PM750 meter (pulsed and ModBus output), three current transformers, three single pole MCBs and all wiring looms.



Split meter board (including incomers)

Number of ways		Dimensions			Reference number
Lighting	Power	Height	Width	Depth	
12	12	484	470	139	KQA12S12

The split metering board is supplied with 2 meters, an overall switch disconnecter and individual switch disconnectors for lighting and power. Meters are direct connected with pulse output.



Split metering board 125A

Number of TP ways		Rating A	Dimensions			Reference number
Section 1	Section 2		Height	Width	Depth	
12	8	125	1290	470	139	KQB36S24125
14	6	125	1290	470	139	KQB42S18125
16	4	125	1290	470	139	KQB48S12125

125A boards are supplied with a switch disconnecter
2 x PM750 meters included



Split metering board 250A

Number of TP ways		Rating A	Dimensions			Reference number
Section 1	Section 2		Height	Width	Depth	
12	8	250	1290	470	139	KQB36S24250
14	6	250	1290	470	139	KQB42S18250
16	4	250	1290	470	139	KQB48S12250

250A boards require a switch disconnecter to be added
2 x PM750 meter included

Section 04

Contents

I-Line panelboards

Size 1 - 250A/400A MCCB panelboards	Page 4/2
Size 2 - 630A MCCB panelboards	Page 4/5
Size 3 - 800A MCCB panelboards	Page 4/8
Size 4 - 1600A - 2000A MCCB panelboards	Page 4/12
Panelboard accessories	Page 4/16
MCCB accessories	Page 4/18
Metering facilities	Page 4/20
Size 1 - 400A fuse switch panelboards	Page 4/22
Size 2 - 630A fuse switch panelboards	Page 4/23
Size 3 - 800A fuse switch panelboards	Page 4/24
Enclosed MCCBs	Page 4/25
Technical data	Page 6/36
Dimensions	Page 7/8 - 7/15

Panelboards

I-Line



To help electrical contractors and installers Square D provide:

- An extensive range of easy to install products.
- Readily available products from our authorised distributors
- Distributor staff training to help develop familiarity and the ability to promptly resolve queries
- A team of Sales Engineers to support both distributors and electrical contractors
- A ready assembled product service for applications requiring either;
 - Non-standard products
 - Completely assembled products to help reduce site installation time

The benefits of I-Line panelboards

- High levels of safety to protect against contact with live parts. Incoming devices are fully shrouded to protect against accidental contact. With the use of blanking plates for unused outgoing ways the busbar is finger safe
- **Simplicity** - Boards are supplied complete and ready to install. Simply affix to the wall and fit the required MCCBs and switch-disconnector-fuse units. The board is then ready for cabling
- **Fast installations** - Plug-On devices help reduce installation time
- **Flexibility** - It is very easy to add or retrospectively change outgoing devices
- **Durability** - Boards are constructed from anti-corrosion treated sheet steel
- **Quality** - All I-Line busbar systems are ASTA certified and the unique I-Line mounting system ensures devices cannot be incorrectly fitted
- **Proven experience** - During the last 30 years Square D panelboards have been used extensively across industry and commerce

Easy to install Plug-On MCCB's

Plug-On MCCB's - Plug-On breaker connections are designed so that under short circuit conditions, the magnetic forces developed push the jaws together, gripping the busbar more firmly. There are no wiring connections to be made to the busbars as the connectors form an integral part of the circuit breakers. All MCCB's plug onto the busbar stack. Modular I-Line construction lets you mount branch breakers anywhere to save valuable space.

Busbar assembly - Moulded polyester glass insulators separate and continuously support each busbar. High strength insulated bolts clamp the vertical busbar assembly securely together.

Breakers on the left-hand side of bus structure are completely independent of position or frame size of those on right-hand side.

Single, double and three pole devices can be fitted in any combination without loss of outgoing ways.

Circuit breaker Plug-On connectors shrouded and braced in moulded protective insulator.

Circuit breaker mounting bracket, a permanent part of each circuit breaker, securely supports and aligns load end of circuit breaker.

Insulating shroud keys into slots in base insulator. Aligns and supports line end of circuit breaker.

I-Line MCCB panelboards

Size 1 250A/400A

Size 1 250/400A panelboards



- Single sided to give best possible space utilisation
- Incomers can be mounted at top or bottom of the panelboard
- Ample cabling space
- Plated copper 50kA for 1s busbars
- Degree of protection IP3X
- Hinged lift off cable way cover
- MCCB separation to form 3b Type 2 BSEN 60439-1
- Fully rated earth and neutral bars
- Simple ordering
- Removable top and bottom gland plates

Step 1 Select panelboard required



Description	Modules	Reference number	
		250A	400A
4 triple pole outgoing ways	12	-	MP40041
6 triple pole outgoing ways	18	MP25061	-
7 triple pole outgoing ways	21	-	MP40071
12 triple pole outgoing ways	36	MP250121	MP400121

Step 2 Select incoming device

250A	Reference number
250A 36kA triple pole MCCB	CNAE34250
250A 50kA triple pole MCCB	CHAE34250
100A automatic switch disconnecter (isolator)	CNAE34000S10
160A automatic switch disconnecter (isolator)	CNAE34000S15
250A automatic switch disconnecter (isolator)	CNAE34000S25
225A plug on lug unit	SL225
400A*	
400A 36kA triple pole MCCB	SLA3400
400A automatic switch disconnecter (isolator)	SLA3000M
400A switch-disconnector-fuse	MFS400

*Trim, required when 250A incomer fitted

TKA4, TKA7, TKA12

Step 3 Select outgoing devices

Single and double pole MCCB's are phase dedicated. To obtain correct reference add suffix as below example:
40A SP MCCB to fit L3 will be SFA1040C

MCCB							
16-100A 25kA	Single Pole (1 Mod)				Double Pole (2 Mod)		
	L1	L2	L3		L1/L2	L2/L3	
	Suffix				Suffix		
16A	SFA1016	A	B	C	SFA2016	AB	BC
20A	SFA1020				SFA2020		
32A	SFA1032				SFA2032		
40A	SFA1040				SFA2040		
50A	SFA1050				SFA2050		
63A	SFA1063				SFA2063		
80A	SFA1080				SFA2080		
100A	SFA1100				SFA2100		

I-Line MCCB panelboards

Size 1 250A/400A

Step 3 Select outgoing devices cont.



Triple pole (3 mods)				Additional tunnel terminals Reference No.	Acceptable cable size
	25kA	36kA	50kA		
16A	CDAE34016	CNAE34016	CHAE34016	W29242	1.5-95mm
25A	CDAE34025	CNAE34025	CHAE34025		
32A	CDAE34032	CNAE34032	CHAE34032		
40A	CDAE34040	CNAE34040	CHAE34040		
50A	CDAE34050	CNAE34050	CHAE34050		
63A	CDAE34063	CNAE34063	CHAE34063		
80A	CDAE34080	CNAE34080	CHAE34080		
100A	CDAE34100	CNAE34100	CHAE34100		
125A		CNAE34125	CHAE34125	W29259	95-185mm
160A		CNAE34160	CHAE34160		
200A		CNAE34200	CHAE34200	W29259	1.5-95mm
250A		CNAE34250	CHAE34250	W29259	
160A electronic		CNAE34160E20		W29242	1.5-95mm
250A electronic		CNAE34028E20		W29259	95-185mm

Note: extension blanking plate **EKW** or **EKW4BL** must be fitted on devices 250A and below when fitted on the LHS. Triple Pole MCCB's are available in 3 different breaking capacities.

Step 4 Select metering

The I-Line Panelboard product range has been enhanced to include the facility to meter incoming and outgoing circuits. This enables contractors to easily and simply meet the requirements of Part L2 of the Building Regulations. These metering kits allow great flexibility in the choice of meter and also in the configuration of the boards.

Incoming metering

This metering kit is for the incoming supply to the board. It comprises an extension box that can be fitted to the top or the bottom of a standard board. This box contains a three-phase block current transformer, fuses for the voltage supply and a PM750 multi-function meter. Because the main incoming cables pass through this enclosure it is not suitable for a retrofit. The kit comes complete: no other parts are required to install this metering kit.

Reference number

MPME2501	250A	top/bottom metering extension box
-----------------	------	-----------------------------------

Outgoing metering

A standard board can be adapted to meter the incoming supply and some or all of the outgoing circuits by the addition of three components. These components are:

1 Metering kit. This contains a replacement wireway door with 96 sq cutouts for the number of outgoing ways of the board plus one. This additional cutout is to meter the incoming supply as required. Blanking plates are supplied for unused meter positions. One door kit per board.

A. Select metering kit

Size 1 400A

Reference number

MPMK104	4 way I-Line metering kit
MPMK107	7 way I-Line metering kit
MPMK112	12 way I-Line metering kit

B. Select metering CT set for each MCCB to be monitored



2 Current transformer kit. One kit for each circuit to be measured. The kit will comprise a three phase CT block, mounting plate and cable loom. The CT blocks fit to the breakers. The CT size and ratio matches the breaker.

Reference number		CT ratio
MPCT125	C frame breaker	125/5
MPCT150	C frame breaker	150/5
MPCT250	C frame breaker	250/5

I-Line MCCB panelboards

Size 1 250A/400A

C. Select PowerLogic meters for each circuit to be measured



Reference number	
PM700	Multi function PowerMeter.
PM700P	Multi function PowerMeter with pulse outputs
PM710	Multi function PowerMeter with Modbus RS485 output
PM750	Same functions as the PM710, plus two digital inputs, one digital output, alarms and signed power factor. The PM750 digital output can be simply configured as a kWh pulse output

Step 5 Select accessories

Panelboard	MP25061	MP250121	MP40041	MP40071	MP400121
Blanking plates for all unused ways					
Single pole	HNM1BL	HNM1BL	HNM1BL	HNM1BL	HNM1BL
Triple pole	HNM4BL	HNM4BL	HNM4BL	HNM4BL	HNM4BL
Blanking plates for every MCCB way when one or more PF devices fitted					
Single pole	-	-	HN1BL	HN1BL	HN1BL
Triple pole	-	-	HN4BL	HN4BL	HN4BL
Trim, required when 250A incomer fitted			TKA4	TKA7	TKA12
Side extension box					
508mm wide	EXMS20411		EXMS20681		-
550mm wide	-	-	EXMS827	EXMS1170	EXMS1742
Top / bottom extension box					
226mm high	EXS91	EXS91	-	-	-
379mm high	-	-	EXS151	EXS151	EXS151
MCCB Incomer padlocking device					
250A	W29370	W29370	W29370	W29370	W29370
400A	-	-	HPALM	HPALM	HPALM
Door lock					
	QOKS1	QOKS1	QOKS1	QOKS1	QOKS1
2 Spare keys	KQK33	KQK33	KQK33	KQK33	KQK33
Terminal shields x 2					
	W29323	LCA1	MCA1	FTS	
Plug-on metering kit for incoming supply - occupies 4 modules					
Analogue, voltmeter & ammeter	MP250INS	MP250INS	MP400INS	MP400INS	MP400INS
* Digital, multi function meter	MP250kW	MP250kW	MP400kW	MP400kW	MP400kW
Weight in kg					
	46	76	44	74	100
Overall dimensions H x W x D					
	1041x508x184	1727x508x184	827x680x258	1170x680x258	1742x680x258
Fixing centres					
	800	1486	533	876	1448

* See page 4/16 for outgoing metering

I-Line MCCB panelboards

Size 2 630A panelboards

Size 2 630A panelboards



- Degree of protection IP3X
- Door lock fitted as standard
- Ample cabling space
- Plated copper busbars 50kA for 1s
- Removable neutral link
- Hinged lift off cable way covers
- MCCB separation to form 3b Type 2 BSEN 60439-1
- Fully rated earth and neutral bars
- Removable top and bottom gland plates
- Simple ordering
- Maximum outgoing 250A

Step 1 Select panelboard required

6 triple pole outgoing ways	9+9	MP63062
10 triple pole outgoing ways	15+15	MP630102
14 triple pole outgoing ways	21+21	MP630142
18 triple pole outgoing ways	27+27	MP630182

Step 2 Select incoming device

250A 36kA triple pole MCCB	SLA3250
400A 36kA triple pole MCCB	SLA3400
400A automatic switch disconnect (isolator)	SLA3000M
630A 50kA triple pole MCCB	SMA3630
630A automatic switch disconnect (isolator)	SMA30006M
630A main lugs kit	ML630

Note. Any SLA MCCB or switch disconnect up to 400A and any SMA MCCB or switch disconnect up to 630A can be used as an alternative incoming device.

Step 3 Select outgoing devices

Single and double pole MCCB 's are phase dedicated. To obtain correct reference add suffix as below example: 40A SP MCCB to fit L3 will be SFA1040C

MCCB

16-100A 25kA	Single Pole (1 Mod)			Double Pole (2 Mod)	
	L1	L2	L3	L1/L2	L2/L3
	Suffix			Suffix	
16A	SFA1016	A	B	SFA2016	BC
20A	SFA1020			SFA2020	
32A	SFA1032			SFA2032	
40A	SFA1040			SFA2040	
50A	SFA1050			SFA2050	
63A	SFA1063			SFA2063	
80A	SFA1080			SFA2080	
100A	SFA1100			SFA2100	

Triple pole (3 mods)

	25kA	36kA	50kA	Additional tunnel terminals Reference No.	Acceptable cable size
16A	CDAE34016	CNAE34016	CHAE34016	W29242	1.5-95mm
25A	CDAE34025	CNAE34025	CHAE34025		
32A	CDAE34032	CNAE34032	CHAE34032		
40A	CDAE34040	CNAE34040	CHAE34040		
50A	CDAE34050	CNAE34050	CHAE34050		
63A	CDAE34063	CNAE34063	CHAE34063		
80A	CDAE34080	CNAE34080	CHAE34080		
100A	CDAE34100	CNAE34100	CHAE34100		
125A		CNAE34125	CHAE34125	W29259	95-185mm
160A		CNAE34160	CHAE34160		
200A		CNAE34200	CHAE34200		
250A		CNAE34250	CHAE34250	W29259	
160A electronic		CNAE34160E20		W29242	1.5-95mm
250A electronic		CNAE34028E20		W29259	95-185mm

Note: extension blanking plate **EKW** or **EKW4BL** must be fitted on devices 250A and below when fitted on the LHS. Triple Pole MCCB's are available in 3 different breaking capacities.

I-Line MCCB panelboards

Size 2 630A panelboards

Step 4 Select metering

The I-Line Panelboard product range has been enhanced to include the facility to meter incoming and outgoing circuits. This enables contractors to easily and simply meet the requirements of Part L2 of the Building Regulations. These metering kits allow great flexibility in the choice of meter and also in the configuration of the boards.

A standard board can be adapted to meter the incoming supply and some or all of the outgoing circuits by the addition of three components.

These components are:

1 Metering kit. This contains a replacement wireway door with 96 sq cutouts for the number of outgoing ways of the board plus one. This additional cutout is to meter the incoming supply as required. Blanking plates are supplied for unused meter positions. One door kit per board.

A. Select metering kit

Size 2 630A

Reference number

MPMK206 6 way I-Line metering kit

MPMK210 10 way I-Line metering kit

MPMK214 14 way I-Line metering kit

MPMK218 18 way I-Line metering kit

B. Select metering CT set for each MCCB to be monitored

2 Current transformer kit. One kit for each circuit to be measured. The kit will comprise a three phase CT block, mounting plate and cable loom. The CT blocks fit to the breakers. The CT size and ratio matches the breaker.

Reference number

CT ratio

MPCT125 C frame breaker

125/5

MPCT150 C frame breaker

150/5

MPCT250 C frame breaker

250/5

MPCT400 L frame breaker

400/5

MPCT600 M & P frame breakers

600/5

C. Select PowerLogic meters for each circuit to be measured

Reference number

PM700 Multi function PowerMeter.

PM700P Multi function PowerMeter with pulse outputs

PM710 Multi function PowerMeter with Modbus RS485 output

PM750 Same functions as the PM710, plus two digital inputs, one digital output, alarms and signed power factor. The PM750 digital output can be simply configured as a kWh pulse output

I-Line MCCB panelboards

Size 2 630A panelboards

Step 5 Select accessories

Panelboard		MP63062	MP630102	MP630142	MP630182
Blanking plates for all unused ways					
	Single pole	HNM1BL	HNM1BL	HNM1BL	HNM1BL
	Triple pole	HNM4BL	HNM4BL	HNM4BL	HNM4BL
Side extension box	550mm wide	EXMS53	EXMS62	EXMS71	EXMS80
Top / bottom extension box	226mm high	EXS29	EXS29	EXS29	EXS29
Corner unit, to complete enclosure when top/bottom and side extension are both fitted					
		MSIL636	MSIL636	MSIL636	MSIL636
Door lock					
	2 Spare keys	KQK33	KQK33	KQK33	KQK33
Terminal shields x 2		W29323	LCA1	MCA1	FTS
Integral metering kit for incoming supply					
	Analogue, voltmeter & ammeter				
	400A	400INSKN	400INSKN	400INSKN	400INSKN
	630A	600INSKN	600INSKN	600INSKN	600INSKN
	* Digital, multi function meter				
	400A	400kW	400kW	400kW	400kW
	630A	630kW	630kW	630kW	630kW
Weight in kg		112	128	145	164
Overall dimensions H x W x D		1350x1100x258	1579x1100x258	1807x1100x258	2036x1100x258

* See page 4/16 for outgoing metering

I-Line MCCB panelboards

Size 3 800A panelboards

Size 3 800A panelboards



- Degree of protection IP3X
- Door lock fitted as standard
- Ample cabling space
- Plated copper busbars 50kA for 1s
- Removable neutral link
- Hinged lift off cable way covers
- MCCB separation to form 3b Type 2 BSEN 60439-1
- Fully rated earth and neutral bars
- Removable top and bottom gland plates
- Simple ordering

Step 1 Select panelboard required

Description	Modules LH+RH ⁽¹⁾	Reference number MCCB incomer Order separately
6 triple pole outgoing ways	9+9	MP80063
10 triple pole outgoing ways	15+15	MP800103
14 triple pole outgoing ways	21+21	MP800143
18 triple pole outgoing ways	27+27	MP800183

Notes: (1) Only left hand (LH) side of board accepts SLA or SMA.

Step 2 Select incoming device

630A	Reference number
630A 50kA triple pole MCCB	SMA3630
630A automatic switch disconnecter (isolator)	SMA30006M
Lugs kit	ML630

800A	Reference number
800A 50kA triple pole MCCB	SMA3800
800A automatic switch disconnecter (isolator)	SMA3000M
Lugs kit	ML800

Note: Any SMA MCCB or switch disconnecter up to 800A can be used as an alternative incoming device

Step 3 Select outgoing devices

Single and double pole MCCB 's are phase dedicated. To obtain correct reference add suffix as below example: 40A SP MCCB to fit L3 will be SFA1040C

MCCB							
16-100A 25kA	Single Pole (1 Mod)				Double Pole (2 Mod)		
	L1	L2	L3		L1/L2	L2/L3	
	Suffix				Suffix		
16A	SFA1016	A	B	C	SFA2016	AB	BC
20A	SFA1020				SFA2020		
32A	SFA1032				SFA2032		
40A	SFA1040				SFA2040		
50A	SFA1050				SFA2050		
63A	SFA1063				SFA2063		
80A	SFA1080				SFA2080		
100A	SFA1100				SFA2100		

I-Line MCCB panelboards

Size 3 800A panelboards

Step 3 Select outgoing devices cont.



Triple pole (3 mods)

	25kA	36kA	50kA	Additional tunnel terminals Reference No.	Acceptable cable size
16A	CDAE34016	CNAE34016	CHAE34016	W29242	1.5-95mm
25A	CDAE34025	CNAE34025	CHAE34025		
32A	CDAE34032	CNAE34032	CHAE34032		
40A	CDAE34040	CNAE34040	CHAE34040		
50A	CDAE34050	CNAE34050	CHAE34050		
63A	CDAE34063	CNAE34063	CHAE34063		
80A	CDAE34080	CNAE34080	CHAE34080		
100A	CDAE34100	CNAE34100	CHAE34100		
125A		CNAE34125	CHAE34125		
160A		CNAE34160	CHAE34160		
200A		CNAE34200	CHAE34200	W29259	95-185mm
250A		CNAE34250	CHAE34250	W29259	
160A electronic		CNAE34160E20		W29242	1.5-95mm
250A electronic		CNAE34028E20		W29259	95-185mm

Note: extension blanking plate **EKW** or **EKW4BL** must be fitted on devices 250A and below when fitted on the LHS. Triple Pole MCCB's are available in 3 different breaking capacities.

	36kA 4mods	50kA 6mods	10mods
300/1250A*			
300A	SLA3300	SMA3300	
350A	SLA3350	SMA3350	
400A	SLA3400	SMA3400	
450A		SMA3450	
500A		SMA3500	
630A		SMA3630	
700A		SMA3700	
800A		SMA3800	
900A			SNA3900
1000A			SNA31000
1250A			SNA31250

*Restricted to LHS of panelboard only

Fuse outgoing (can also be used along side MCCB outgoing)



32/160A Switch-disconnector fuse device 50kA*

		Mods 6 mods	Fuse fitted	BS88 fuse link
32A	Triple Pole	PF32	3	AAO32
63A		PF63	4	BAO63
100A		PF100	5	CEO100
160A		PF160	5	DEO160
				A1,A2
				A2, A3
				A2,A3,A4 max dia 32mm
				A2, A3, A4

* Restricted to LHS of panelboard only

I-Line MCCB panelboards

Size 3 800A panelboards

Step 4 Select metering

The I-Line Panelboard product range has been enhanced to include the facility to meter incoming and outgoing circuits. This enables contractors to easily and simply meet the requirements of Part L2 of the Building Regulations. These metering kits allow great flexibility in the choice of meter and also in the configuration of the boards.

A standard board can be adapted to meter the incoming supply and some or all of the outgoing circuits by the addition of three components.

These components are:

1 Metering kit. This contains a replacement wireway door with 96 sq cutouts for the number of outgoing ways of the board plus one. This additional cutout is to meter the incoming supply as required. Blanking plates are supplied for unused meter positions. One door kit per board.

A. Select metering kit

Size 3 800A

Reference number

MPMK306 6 way I-Line metering kit

MPMK310 10 way I-Line metering kit

MPMK314 14 way I-Line metering kit

MPMK318 18 way I-Line metering kit

B. Select metering CT set for each MCCB to be monitored

2 Current transformer kit. One kit for each circuit to be measured. The kit will comprise a three phase CT block, mounting plate and cable loom. The CT blocks fit to the breakers. The CT size and ratio matches the breaker.

Reference number

CT ratio

MPCT125 C frame breaker

125/5

MPCT150 C frame breaker

150/5

MPCT250 C frame breaker

250/5

MPCT400 L frame breaker

400/5

MPCT600 M & P frame breakers

600/5

MPCT800 M & P frame breakers

800/5

C. Select PowerLogic meters for each circuit to be measured

Reference number

PM700 Multi function PowerMeter.

PM700P Multi function PowerMeter with pulse outputs

PM710 Multi function PowerMeter with Modbus RS485 output

PM750 Same functions as the PM710, plus two digital inputs, one digital output, alarms and signed power factor. The PM750 digital output can be simply configured as a kWh pulse output

I-Line MCCB panelboards

Size 3 800A panelboards

Step 5 Select accessories

Panelboard		MP80063	MP800103	MP800143	MP800183
Blanking plates for all unused ways					
	Single pole	HNM1BL	HNM1BL	HNM1BL	HNM1BL
	Triple pole	HNM4BL	HNM4BL	HNM4BL	HNM4BL
Blanking plates for every way on L.H.S. of board when one or more PF devices fitted					
	Single pole	HNF1BL	HNF1BL	HNF1BL	HNF1BL
	Triple pole	HNF4BL	HNF4BL	HNF4BL	HNF4BL
Extension blanking plates					
	Single pole	EKW1BL	EKW1BL	EKW1BL	EKW1BL
	Triple pole	EKW4BL	EKW4BL	EKW4BL	EKW4BL
Side extension box	550mm wide	EXMS62	EXMS71	EXMS80	EXMS89
Top / bottom extension box	226mm high	EXS39	EXS39	EXS39	EXS39
Corner unit, to complete enclosure when top/bottom and side extension are both fitted					
		MSIL636	MSIL636	MSIL636	MSIL636
Plinth	305mm high	PLN312	PLN312	PLN312	PLN312
Door lock	2 Spare keys	KQK33	KQK33	KQK33	KQK33
Terminal shields x 2		W29323	LCA1	MCA1	FTS
Integral metering kit for incoming supply					
	Analogue, voltmeter & ammeter	800INSKN	800INSKN	800INSKN	800INSKN
	* Digital, multi function meter	800kW	800kW	800kW	800kW
Weight in kg		160	185	195	210
Overall dimensions H x W x D		1579x1300x258	1807x1300x258	2036x1300x258	2265x1300x258
Plinth dimensions H x W x D		360x1220x258	360x1220x258	360x1220x258	360x1220x258

* See page 4/16 for outgoing meters

I-Line MCCB panelboards

Size 4 1600A - 2000A panelboards

Size 4 1600 panelboards

The Size 4 I-Line Panelboards, having ratings of 1600A & 2000A have been totally redesigned to meet the ever changing requirements of the market. Now offering up to 26 – 250A outgoing ways (78 modules). The boards have main incoming breakers with the latest technology to ensure full discrimination with the outgoing breakers. As standard, the incoming circuit is fitted with a PowerLogic multi-function meter type PM750. Facilities are provided to enable customers to meet the metering requirements of Part L of the Building Regulations on the outgoing circuits. The base unit consists of the incoming section and a right hand side outgoing section. This outgoing section is able to accept up to 13 – 250A TP breakers or any combination of SFA, C frame, SLA, SMA and SNA breakers up to 39 modules. All breakers may be fitted in any position. A side extension cubicle, supplied separately, is recommended to give adequate space for the termination of the outgoing cables. Top and bottom cable entry is possible.

Technical Data

- Manufactured and tested to BSEN60439-1
- Busbars rated at 1600 / 2000A at 415V 50Hz
- Short circuit withstand 50kA 1s
- Rigid modular framework construction with removable side, rear and front covers
- Steelwork finished in polyester epoxy powder, cream colour RAL9001
- Degree of protection: IP30
- Degree of protection against mechanical impacts: IK07 minimum
- The multi-function meter in the incoming section is a Square D PM700P Power Meter with pulse output for kWh & kVarh
- The meter is factory set up for <480V 3ph 4w 50Hz supply & for the installed CTs

Step 1 Select panelboard required

Main boards - 13TP ways (39 mods.)

MP1600134	1600A board for bottom entry main incoming supply
MP1600134T	1600A board for top entry main incoming supply

Extension boards - to increase outgoing TP ways to 26 in total

MP1600EX134	Bottom entry extension panel 1600A 13 way for MP1600134
MP1600EX134T	Top entry extension panel 1600A 13 way for MP1600134T

Step 2 Select incoming device

The recommended incomer is a MCCB fitted with a Micrologic 5.0 trip unit. This device, when correctly set up, will provide full discrimination with the outgoing breakers. Alternative incomers are MCCBs with Micrologic 2.0 which gives less adjustment. A switch disconnecter may be fitted if overcurrent protection is provided upstream.

Incoming devices rating amps	Reference numbers		
	MCCB with Micrologic 5.0	MCCB with Micrologic 5.0	Switch disconnecter
800	PNFE36080U33R	PNFE36080U32R	PNFE36000S80
1000	PNFE36100U33R	PNFE36100U32R	PNFE36000S10
1250	PNFE36125U33R	PNFE36125U32R	PNFE36000S12
1600	PNFE36160U33R	PNFE36160U32R	PNFE36000S16

I-Line MCCB panelboards

Size 4 2000A panelboards

These boards are supplied with the incoming breaker RNFE36200U33R fitted. This breaker is complete with a Micrologic 5.0 trip unit.

Reference number - 13TP ways (39 mods.)

MP2000134	Size 4 2000A board, 13 way, for bottom entry main incoming supply
MP2000134T	Size 4 2000A board, 13 way, for top entry main incoming supply

Extension boards - to increase outgoing TP ways to 26 in total

MP2000EX134	Bottom entry extension panel 2000A 13 way for MP2000134
MP2000EX134T	Top entry extension panel 2000A 13 way for MP2000134T

Cablings cubicles	For use with 1600A and 2000A boards
--------------------------	-------------------------------------

A side extension cubicle is strongly recommended for easy termination of the outgoing cables. Two versions are available, both 400mm deep and 400mm wide

EXMS400	Cubicle with plain front lockable door
EXMS401M	Cubicle with front lockable door able to accept up to 12 off – 96 sq DIN case meters

Being modular, more than one extension cubicle can be fitted if additional space is required for cabling or for mounting other equipment

I-Line MCCB panelboards

Size 4 1600A - 2000A panelboards

Step 3 Select outgoing devices

Single and double pole MCCB 's are phase dedicated. To obtain correct reference add suffix as below example: 40A SP MCCB to fit L3 will be SFA1040C

MCCB

16-100A 25kA	Single Pole (1 Mod)			Double Pole (2 Mod)	
	L1	L2	L3	L1/L2	L2/L3
	Suffix			Suffix	
16A	SFA1016	A	B	SFA2016	AB
20A	SFA1020			SFA2020	
32A	SFA1032			SFA2032	
40A	SFA1040			SFA2040	
50A	SFA1050			SFA2050	
63A	SFA1063			SFA2063	
80A	SFA1080			SFA2080	
100A	SFA1100			SFA2100	BC

Triple pole (3 mods)

	25kA	36kA	50kA	Additional tunnel terminals Reference No.	Acceptable cable size
16A	CDAE34016	CNAE34016	CHAE34016	W29242	1.5-95mm
25A	CDAE34025	CNAE34025	CHAE34025		
32A	CDAE34032	CNAE34032	CHAE34032		
40A	CDAE34040	CNAE34040	CHAE34040		
50A	CDAE34050	CNAE34050	CHAE34050		
63A	CDAE34063	CNAE34063	CHAE34063		
80A	CDAE34080	CNAE34080	CHAE34080		
100A	CDAE34100	CNAE34100	CHAE34100	W29259	95-185mm
125A		CNAE34125	CHAE34125		
160A		CNAE34160	CHAE34160		
200A		CNAE34200	CHAE34200	W29259	1.5-95mm
250A		CNAE34250	CHAE34250	W29259	
160A electronic		CNAE34160E20		W29242	
250A electronic		CNAE34028E20		W29259	95-185mm

Note: extension blanking plate **EKW** or **EKW4BL** must be fitted on devices 250A and below when fitted on the LHS. Triple Pole MCCB's are available in 3 different breaking capacities.

300/1250A*	36kA 4mods	50kA 6mods	10mods
300A	SLA3300	SMA3300	
350A	SLA3350	SMA3350	
400A	SLA3400	SMA3400	
450A		SMA3450	
500A		SMA3500	
630A		SMA3630	
700A		SMA3700	
800A		SMA3800	SNA3900 SNA31000 SNA31250
900A			
1000A			
1250A			

*Restricted to LHS of panelboard only

Fuse outgoers (can also be used along side MCCB outgoers)

32/160A Switch-disconnector fuse device 50kA*

		Mods 6 mods	Fuse fitted	BS88 fuse link
32A	Triple Pole	PF32	AAO32	A1,A2
63A		PF63	BAO63	A2, A3
100A		PF100	CEO100	A2,A3,A4 max dia 32mm
160A		PF160	DEO160	A2, A3, A4

* Restricted to LHS of panelboard only

I-Line MCCB panelboards

Size 4 1600A - 2000A panelboards

Step 4 Select metering

Incoming metering

As standard, the incoming circuit is fitted with a PowerLogic multi-function meter type PM750

Outgoing metering

To meet the metering requirements of Part L of the Building Regulations on the outgoing circuits

A. Select metering cubicle

Reference number

EXMS401M

Cubicle with front lockable door able to accept up to 12 off – 96 sq
DIN case meters

B. Select metering CT set for each MCCB to be monitored

2 Current transformer kit. One kit for each circuit to be measured. The kit will comprise a three phase CT block, mounting plate and cable loom. The CT blocks fit to the breakers. The CT size and ratio matches the breaker.

Reference number

MPCT125

C frame breaker

CT ratio

125/5

MPCT150

C frame breaker

150/5

MPCT250

C frame breaker

250/5

MPCT400

L frame breaker

400/5

MPCT600

M & P frame breakers

600/5

MPCT800

M & P frame breakers

800/5

MPCT1000

N & R frame breakers

1000/5

MPCT1250

N & R frame breakers

1250/5

C. Select PowerLogic meters for each circuit to be measured

Reference number

PM700

Multi function PowerMeter.

PM700P

Multi function PowerMeter with pulse outputs

PM710

Multi function PowerMeter with Modbus RS485 output

PM750

Same functions as the PM710, plus two digital inputs, one digital output, alarms and signed power factor. The PM750 digital output can be simply configured as a kWh pulse output

Step 5 Select accessories

Panelboard

MP1600134

MP2000134

Blanking plates for all unused ways

Single pole

HNM1BL

HNM1BL

Triple pole

HNM4BL

HNM4BL

Extension blanking plates (1)

Single pole

EKW1BL

EKW1BL

Triple pole

EKW4BL

EKW4BL

Meter Blanking Plates

03908

Cream 96sq blanking plate

Notes:

For spare ways - HNM and EKW are required

For 250A MCCB and below - EKW only is required

For 300A MCCB and above - no blanks are required

I-Line MCCB panelboards

Panelboard accessories

Blanking plates



Suitable for all sizes of panelboard, blanking plates must be fitted in all unoccupied outgoing ways to maintain appropriate busbar shrouding.

Panelboards are supplied without blanking plates.

1 module way: **HNM1BL** pack quantity 1

3 module way: **HNM4BL** pack quantity 1

Side extension boxes



Supplied with hinged door, side extension boxes may be used to provide additional wiring space or fitting of control equipment or Qwikline II MCB distribution boards.

Side extension boxes can be fitted to either side of the panelboard and may be coupled together to form larger units.

Box width
250A boards: 508mm.
400A, 630A & 800A boards: 550mm.

Top/bottom extension boxes



Supplied with a flat front plate the extension box provides additional cable spreading space.

Box heights
250A, 630A, 800A: 226mm.
400A: 380mm.

Corner units are available to 'square off' a board when a side and a top/bottom extension box are fitted.

Plinth



Supplied with a removable flat front plate the plinth provides additional floor support to the wall mounting size 3 panelboard height 305mm.

Available on size 3 only **PLN312**

Door lock



All keys are identical.
For size 1 panelboard, field installable.

Door lock **QOKS1** supplied with 2 keys.

Panelboard sizes 2, 3 and 4 are supplied with door locks as standard.
If replacement locks are required, order reference **QOKSB**. Set of 2 spare keys KQK 33

I-Line MCCB panelboards

Panelboard accessories

Termination bars



Solid brass terminal bars provide tunnel terminals. Main neutral and earth bars are pre-drilled to accept the termination bars indicated. Bars suitable for size 1, 2 and 3.

Reference number	Number of ways	Conductor size
NE916	9	25
NE1816	18	25
NE950	9	50
NE7150	7	150
NE13150	13	150

MCCB locking devices



Provide facilities for padlocking MCCB's.

Frame	Reference number	Facility	Padlocks
SFA	HPAFK	On/Off	1
C 3 pole	W29370	Off	3
SLA/SMA	HPALM	Off	1
SLA/SMA	HPAXLM*	Off	1
SNA	HPANE	Off	1

* Use with handle extension

Extension blanking plates



To shroud left hand side of busbar stack on size 3 and 4 boards only, when fitted with CD, CN, CH and SF frame circuit breakers and HNM blanking plates.

	Reference number	
1 module way	EKW1BL	Pack quantity 1
3 module way	EKW4BL	Pack quantity 1

I-Line MCCB panelboards

MCCB accessories

Cable clamp terminals



Triple pole CD, CN and CH MCCB's are supplied with bolt connections. Field fitted terminals.

	Reference number	
16- 160A	W29242	1.5 - 95mm ²
200- 250A	W29259	95 - 185mm ²

Supplied in sets of 3

Crimp cable lugs



Special lugs for fitting oversize cables to CD, CN and CH MCCB's

Reference number		
W29252	120mm ²	Copper
W29253	150mm ²	Copper
W29254	185mm ²	Copper
W29504	150mm ²	Aluminium
W29506	185mm ²	Aluminium

Supplied in sets of 3. Required for oversized cables only

Terminal shields

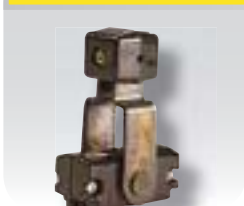


	Reference number	Quantity
CD, CN and CH short (15mm)	W29321	2
CD, CN and CH long (80mm)	W29323	2
SLA	LCA1	2
SMA	MCA1	2
SFA single pole	FTS	1

Use short terminal shields with tunnel terminals.

Use long terminal shields with crimp terminals.

Handle extension



For use in providing extra leverage when operating larger frame I-Line MCCB's.

	Reference number
SLA frame	AHEXLI
SM, SNA frame	MAHEX

Terminal extension pads



3 plated copper pads to which crimp type lugs may be fastened (unshrouded).

	Reference number
C frame	W31563
SLA frame	LATK3
SMA frame	MATK3

The pads require an air gap of 25mm between them and adjacent MCCB's the use of an HNM1BL either side of the MCCB will provide the necessary spacing.

I-Line MCCB panelboards

MCCB accessories

Shunt trip (ST)

Energisation of shunt trip coil will initiate MCCB tripping.

CD, CN and CH	Connection terminals accept wires up to 1.5mm ²
SL, SM, SN	Supplied with 1mm ² flying leads
Field installable.	

Under voltage release (UVR)

The coil must be energised before the MCCB can be switched on.

CD, CN and CH	Connection terminals accept wires up to 1.5mm ²
SL, SM, SN	Supplied with 1mm ² flying leads
Field installable.	

Auxiliary switches (aux)

Change over contacts indicate MCCB contact position.
For CD, CN and CH may be used as an alarm switch.

CD, CN and CH	Connection terminals accept wires up to 1.5mm ²
SL, SM, SN	Supplied with 1mm ² flying leads
Field installable.	

Order references

Description	CD-CN-CH	SLA	SMA	SNA	SPA
Shunt trip 110/130V 50Hz	W29386	-	-	-	-
Shunt trip 200/240V 50Hz	W29387	-	-	-	-
Shunt trip 120/240V 50Hz	-	LA11021	MA11021	NA11021	PA11021
Shunt trip 277/480V 50Hz	-	LA11037	MA11037	NA11037	PA11086
Shunt trip 24V dc	W29390	LA11027	MA11027	NA11027	PA11027
Under voltage release 110/130V 50Hz	W29406	LA11121	MA11121	NA11121	PA11101
Under voltage release 200/240V 50Hz	W29407	LA11124	MA11124	NA11124	PA11104
Under voltage release 24V dc	W29410	LA11127	MA11127	NA11127	-
Auxiliary switch 1 change over contact	W29450	LA11212	MA11212	NA11212	PA11212
Auxiliary switch 2 change over contact	W29450 x 2	LA11352	MA11352	-	PA11352

Lug unit

To sub-feed power from, or into the busbar stack. Current rating of plug-on lug must be equal to or greater than the incoming protective device.

Reference number reference	Rating	Modules	Terminal capacity mm ²
SL100	100A	3	50
SL225	225A	3	185
SL400	400A	4	300
SL800	800A	6	3 x 240

I-Line MCCB panelboards

Metering facilities

Metering facilities

The I-Line Panelboard product range has been enhanced to include the facility to meter incoming and outgoing circuits. This enables contractors to easily and simply meet the requirements of Part L2 of the Building Regulations. These metering kits allow great flexibility in the choice of meter and also in the configuration of the boards. The metering arrangement varies depending on the size of board.

For the Size 1 250A board there is an extension box which may be fitted to the top or bottom of a board to meter the incoming supply.

For Size 1 400A, Size 2 and Size 3 boards components are provided to meter some or all outgoing ways and / or the incoming supply.

Currently most boards have incoming metering kits. These new kits may be used as well as or instead of these existing arrangements.

Size 1 250A boards

This metering kit is for the incoming supply to the board. It comprises an extension box that can be fitted to the top or the bottom of a standard board. This box contains a three-phase block current transformer, fuses for the voltage supply and a PM700P multi-function meter. Because the main incoming cables pass through this enclosure it is not suitable for a retrofit. The kit comes complete: no other parts are required to install this metering kit.

Size 1

Reference number **MPME2501** 250A top/bottom metering extension box

Size 1, Size 2 and size 3 panelboards

A standard board can be adapted to meter the incoming supply and some or all of the outgoing circuits by the addition of three components.

These components are

1 Metering kit. This contains a replacement wireway door with 96 sq cutouts for the number of outgoing ways of the board plus one. This additional cutout is to meter the incoming supply as required. Blanking plates are supplied for unused meter positions. One door kit per board.

2 Current transformer kit. One kit for each circuit to be measured. The kit will comprise a three phase CT block, mounting plate and cable loom. The CT blocks fit to the breakers. The CT size and ratio matches the breaker.

3 The multi-function meter for each circuit to be measured. The meter is selected from the Square D Power Meter range. See below for details.

Size 1 400A

Reference number

MPMK104	4 way I-Line metering kit
MPMK107	7 way I-Line metering kit
MPMK112	12 way I-Line metering kit

Size 2 630

Reference number

MPMK206	6 way I-Line metering kit
MPMK210	10 way I-Line metering kit
MPMK214	14 way I-Line metering kit
MPMK218	18 way I-Line metering kit

Size 3 800

Reference number

MPMK306	6 way I-Line metering kit
MPMK310	10 way I-Line metering kit
MPMK314	14 way I-Line metering kit
MPMK318	18 way I-Line metering kit

Size 4 1600/2000

As standard, the incoming circuit is fitted with a PowerLogic multi-function meter type PM750. To meet the metering requirements of Part L of the Building Regulations on the outgoing circuits

Reference number

EXMS401M	Cubicle with front lockable door able to accept up to 12 - 96 sq DIN case meters
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I-Line MCCB panelboards

Metering facilities

Metering CT set for each MCCB to be monitored

Reference number		CT ratio
MPCT125	C frame breaker	125/5
MPCT150	C frame breaker	150/5
MPCT250	C frame breaker	250/5
MPCT400	L frame breaker	400/5
MPCT600	M & P frame breakers	600/5
MPCT800	M & P frame breakers	800/5
MPCT1000	N & R frame breakers	1000/5
MPCT1250	N & R frame breakers	1250/5

Meter blanking plates

Reference number	
3908	Cream 96sq blanking plate

PowerLogic meters

Reference number	
PM700	Multi function PowerMeter.
PM700P	Multi function PowerMeter with pulse outputs.
PM710	Multi function PowerMeter with Modbus RS485 output
PM750	Multi function PowerMeter with Modbus RS485 and pulse outputs

I-Line fuse switch panelboards

Size 1 400A

Step 1 Select panelboard required



Reference number	Outgoing modules	Max outgoing TP fuse switch units		
		63A	100/160A	250A
FP40061	30	7	6	4

Step 2 Select incoming device

Reference number	Module ways	Max current rating	Max fuse size	Terminal stud
FP100	5	100	A4	6mm
FP160	5	160	B2	M8
FP250	7	250	B3	M10
FP400	7	400	B4	M10
FPSL160*	5	160	Link	M8
FPSL400*	7	400	Link	M10

* Lug units - not fitted with circuit protection or isolating device
All terminals accept cable lugs up to 25mm wide

Step 3 Select outgoing devices



Reference number	Module ways	Max current rating	Fuse ref	Terminal stud	Max lug width (mm)
FP32	4	32	A2	M4	8.5
FP63	4	63	A3	M6	7
FP100	5	100	A4	6mm	25
FP160	5	160	B2	M8	25
FP250	7	250	B3	M10	25
FP400	7	400	B4	M10	25

Step 4 Select accessories

Catalogue number	Description	Dimensions (mm)			Weight (kg)
		Height	Width	Depth	
EXS3811	Cable spreader box	381	680	258	14
EXMS1960	Side extension box 30 mod	1960	550	258	60

- Cable spreader box to assist in easier termination of larger feeder cables. May be used on the top or bottom of the fuse switch panelboard
- Side extension box with steel covers may be used to accommodate auxiliary equipment

I-Line fuse switch panelboards

Size 2 630A

Step 1 Select panelboard with factory fitted incomer



Reference number	Outgoing modules		Max outgoing TP fuse switch units		
	LH	RH	63A	100/160A	250A
Main switch					
FPS63062	15	15	6	6	4
FPS630102	25	25	12	10	6
FPS630142	35	35	16	14	10
Main fuse switch					
FPF63062	15	15	6	6	4
FPF630102	25	25	12	10	6
FPF630142	35	35	16	14	10
Main Lugs					
FPL63062	15	15	6	6	4
FPL630102	25	25	12	10	6
FPL630142	35	35	16	14	10

Step 2 Select outgoing switch disconnecter

Reference number	Module ways	Max current rating A	Fuse reference
	100/160A		
FP32	4	32	A2
FP63	4	63	A3
FP100	5	100	A4
FP160	5	160	B2
FP250	7	250	B3
FP400	7	400	B4

Step 3 Select accessories

Catalogue number	Description	Dimensions (mm)			Weight (kg)
		Height	Width	Depth	
EXS3812	Cable spreader box	381	1100	258	17
FP630INS2	Instrumentation kit 600:5	236	543	187	8.2
EXMS1579	Side extension box 6 way	1579	550	258	54
EXMS1960	Side extension box 10 way	1960	550	258	60
EXMS2341	Side extension box 14 way	2341	550	258	82

- Cable spreader box to assist in easier termination of larger feeder cubicles. May be used on the top or bottom of the fuse switch panelboard
- Instrumentation kit field installable, comprising of three ammeters and CT's, voltmeter and selector switch and phase indication lamps
- Side extension box with steel covers may be used to accommodate auxiliary equipment and could provide extra cabling space

Main incoming terminals

Reference number	Terminal stud
FPS	M10, 25mm pad width
FPF	M10, 38mm pad width
FPL	M10, 38mm pad width

I-Line fuse switch panelboards

Size 3 800A

Step 1 Select panelboard with factory fitted incomer



Reference number	Outgoing modules		Max outgoing TP fuse switch units		
	LH	RH	63A	100/160A	250A
Main switch					
FPS80063	15	15	6	6	4
FPS800103	25	25	12	10	6
FPS800143	35	35	16	14	10
Main fuse switch					
FPF80063	15	15	6	6	4
FPF800103	25	25	12	10	6
FPF800143	35	35	16	14	10
Main Lugs					
FPL80063	15	15	6	6	4
FPL800103	25	25	12	10	6
FPL800143	35	35	16	14	10

Step 2 Select outgoing switch disconnecter fuse

Reference number	Module ways	Max current rating A	Fuse reference
	100/160A		
FP32	4	32	A2
FP63	4	63	A3
FP100	5	100	A4
FP160	5	160	B2
FP250	7	250	B3
FP400	7	400	B4

Step 3 Select accessories

Reference number	Description	Dimensions (mm)			Weight (kg)
		Height	Width	Depth	
EXS3813	Cable spreader box	381	1300	258	21
FP800INS3	Instrumentation kit 800:5	236	543	187	8.2
EXMS1579	Side extension box 15 way	1579	550	258	54
EXMS1960	Side extension box 25 way	1960	550	258	60
EXMS2341	Side extension box 35 way	2341	550	258	82

- Cable spreader box to assist in easier termination of larger feeder cables. May be used on the top or bottom of the fuse panelboard
- Instrumentation kit field installable, comprising of three ammeters and CT's, voltmeter and selector switch and phase indication lamps
- Side extension box with steel covers may be used to accommodate auxiliary equipment

Enclosed circuit breakers

Selection



A new range of enclosed circuit breakers suitable for commercial and industrial applications.

Benefits

- Easy to mount heavy duty enclosure
- Simple breaker mounting
- Breakers provide overcurrent protection and isolation feature
- Easy selection of breaker and enclosure
- Enclosures for oversize cables
- All accessories are user installable
- Wide range of termination accessories

Features

- Complies with BS EN 60947-2
- IP42 enclosure
- Ample cable spreading space
- Heavy duty removable gland plates
- Positive contact indication - clear and reliable indication of OFF
- AC23A switching capacity for the control of motor circuits and other highly inductive loads
- Excellent side and front access for cabling
- Disconnectable neutral link

Use the information in table A to determine which enclosure you require
Use table B to choose which combination of breaker and enclosure you require

Table A - Enclosures

Ratings from 16A to 250A

Small - suitable for cables up to 50mm²

SDENC1 420H x 230W x 145D

Large - suitable for cables up to 120mm²

SDENC1 620H x 230W x 145D

Ratings up to 630A

Small - suitable for cables up to 120mm²

SDEND1 700H x 356W x 169D

Large - suitable for cables up to 300mm²

SDEND1 940H x 356W x 169D

Table B

Select Breaking capacity at 415V Rating	Overload adjustment range	One circuit breaker MCCB references			And	One enclosure	
		25kA	36kA	50kA		Large	Small
16	13-16	CDLE34016		CHLE34016	Choose the correct enclosure by referring to Table A	SDENC2	SDENC1
25	20-25	CDLE34025		CHLE34025		SDENC2	SDENC1
32	26-32	CDLE34032		CHLE34032		SDENC2	SDENC1
40	32-40	CDLE34040		CHLE34040		SDENC2	SDENC1
50	40-50	CDLE34050		CHLE34050		SDENC2	SDENC1
63	50-63	CDLE34063		CHLE34063		SDENC2	SDENC1
80	64-80	CDLE34080		CHLE34080		SDENC2	SDENC1
100	80-100	CDLE34100		CHLE34100		SDENC2	SDENC1
125	100-125		CNLE34125	CHLE34125		SDENC2	SDENC1
160	128-160		CNLE34160	CHLE34160		SDENC2	SDENC1
200	160-200		CNLE34200	CHLE34200		SDENC2	SDENC1
250	200-250		CNLE34250	CHLE34250		SDENC2	SDENC1
400	160-400			DHLE34400		SDENC2	SDENC1
630	252-630			DHLE34630		SDENC2	SDENC1
Switch disconnectors							
100			CNLE34000S10			SDENC2	SDENC1
160			CNLE34000S15			SDENC2	SDENC1
250			CNLE34000S25			SDENC2	SDENC1
400			DNLE34000S40			SDENC2	SDENC1
630			DNLE34000S63			SDENC2	SDENC1

Enclosed circuit breakers

Terminal sizes

Breaker rating	Terminal bolt	Torque Nm	Tool	Maximum (lug width mm)
100A	M6*	10	Cross head screw	25
160A	M8	15	6mm hexagon key	25
250A	M8	15	6mm hexagon key	25
400A	M10	50	17mm hexagon	32
630A	M10	50	17mm hexagon	32

Note: The neutral link has same terminal arrangement as the breaker.

* Except 100A where neutral has M8 bolt requiring 6mm hex key.

Accessories

For C frame breakers, all ratings up to 250A

Cable terminations

W29242	Clamp terminals for 1.5 - 95mm ² (160A maximum), set of 3
W29259	Clamp terminals for 1.5 - 185mm ² , set of 3
W29252	Crimp cable lugs for 120mm ² Cu, set of 3
W29253	Crimp cable lugs for 150mm ² Cu, set of 3
W29254	Crimp cable lugs for 185mm ² Cu, set of 3
W29504	Crimp cable lugs for 150mm ² Al, set of 3
W29506	Crimp cable lugs for 185mm ² Al, set of 3
W29329	Phase barriers, set of 6

Terminal shields

W29320	Pair single pole terminal shields for neutral link
W29323	Pair terminal shields for 3 pole breaker

Electrical auxiliaries

W29450	Auxiliary switch (maximum 2) or alarm switch
W29387	Shunt trip 220/240V AC
W29407	Undervoltage release 220/240V AC

Handles and locking arrangements

W29337	Rotary handle, black
W29339	Rotary handle, red/yellow
W29371	Fixed type padlocking device
W29370	Removable padlock device

For D frame breakers, all ratings up to 630A

Cable terminations

W32479	Clamp terminals for 35 - 300mm ² , set of 3
W32481	Clamp terminals for 2 x 95 - 240mm ² , set of 3
W32500	Crimp cable lugs for 240mm ² Cu, set of 3
W32502	Crimp cable lugs for 300mm ² Cu, set of 3
W32504	Crimp cable lugs for 240mm ² Al, set of 3
W32506	Crimp cable lugs for 300mm ² Al, set of 3
W32570	Phase barriers, set of 6

Terminal shields

W32564	Pair terminal shields for 3 pole breaker
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Electrical auxiliaries

W29450	Auxiliary switch (maximum 3) or alarm switch
W29387	Shunt trip 220/240V AC
W29407	Undervoltage release 220/240V AC

Handles and locking arrangements

W32597	Rotary handle, black
W32599	Rotary handle, red/yellow
W32631	Fixed type padlocking device
W29370	Removable padlock device

Section 05

Contents

Switch and Fusegear

Twinbreak	Page 5/2
Twinbreak busbar chambers	Page 5/2
Quadbreak	Page 5/3
Quadbreak busbar chambers	Page 5/4
Dimensions	Page 7/12 - 7/13
Technical data	Page 6/38

Switch and Fusegear

Twinbreak and Quadbreak



Fully rated to meet the requirements of AC23 up to 100A, Twinbreak eliminates the need to have a complete knowledge of the circuit and its application before selecting a device.

Twinbreak is available as a switch disconnecter fuse or switch disconnecter. It is supplied complete for individual mounting, mounting on cable trunking or for mounting on the Twinbreak range of busbar chambers.

- Units tested and constructed to BSEN60947-3
- Live terminal barriers
- Clear visual indication of the contact position
- Door interlock preventing the door being opened with the switch on
- Door interlock has integral defeat mechanism
- Operating handle is padlockable in the ON or OFF position (padlock shackle 5-10mm dia.)
- Operating handle stays in position once the door is opened
- Supplied with fuses fitted
- Fully removable single piece switch unit, for ease of installation
- ASTA certified to AC23B up to 100A (AC22B 125A & 160A)
- ASTA certified short circuit rating of 50kA and 12 x rated current for 1 second
- IP41 degree of protection
- Fully removable cross rails 100A and above for ease of cabling as cables can be laid in
- Fully removable gland plate allows the unit to be directly connected to 3" cable trunking
- Positive contact indication
- Easy access to fuses
- Cable knockouts provided as standard
- Lift off door provides greater access to switch units, for ease of cabling and for installation
- The door opens within its own overall dimensions allowing Twinbreak units to be mounted adjacent to each other
- Keyhole slots on the enclosure base allow ease of installation
- Fully shrouded operating mechanism ensure cables etc. do not interfere with the switch operation
- Neutral terminal block with link fitted as standard
- Earthing kit supplied as standard

Switch and Fusegear

Twinbreak

Switch disconnecter fuse



Application

Heavy duty fuse products for use in commercial and industrial environments, providing isolation and traditional fuse protection for electrical loads.

Features

- Rated for 240/415V 50/60Hz
- Ratings 20A, 32A, 63A, 100A, SP&SwN, TP&N
- Utilisation category AC20A, AC21A, AC22A, AC23B at rated current
- Degree of protection IP41
- Handle position provides positive contact indication
- Door handle prevents door being opened when switch is ON or padlocked
- Handle padlockable in ON and OFF positions
- Fuse links supplied as standard

Construction

- Live terminals fully shrouded
- Door interlock has integral defeat mechanism allowing door to be opened without switching OFF. This feature is not operable when the handle is padlocked
- Removable gland plates with cable knockouts
- Lift off door provides greater access for installation and cabling
- Door opens within the width of the unit allowing units to be mounted adjacent
- Neutral has disconnectable link and capacity for 3 outgoing cables
- Keyhole slots in the enclosure base allow easy installation
- Earthing kit provided as standard
- Easy access to fuse links
- Steelwork finished in polyester epoxy powder

Technical data

Standard	BS EN 60947-3			
Rated operational voltage	415V 50/60Hz			
Rating	20A	32A	63A	100A
Rated current at 400C, A	20	32	63	100
Rated impulse voltage	6kV	6kV	6kV	6kV
Rated short time withstand Icw, A		416	416	756
Rated short circuit making capacity Icm	1.35kA	1.35kA	1.35kA	3.5kA
Rated short circuit breaking capacity Icn	50kA	50kA	50kA	50kA
Utilisation category at rated current	AC-20A/ 21A/ 22A/ 23B			
Kilowatt rating	11kW	15kW	30kW	55kW
Cable size, maximum mm ²	10mm ²	10mm ²	25mm ²	50mm ²

Reference numbers

Rating AC21/22/23	Single pole & switched neutral		Three pole with neutral link	
	Switch disconnecter fuse	Switch disconnecter	Switch disconnecter fuse	Switch disconnecter
20A	SD202SFK	SD202SW	SD203SFK	SD203SW
32A	SD322SFK	SD322SW	SD323SFK	SD323SW
63A	SD632SFK	SD632SW	SD633SFK	SD633SW
100A	SD1002SFK	SD1002SW	SD1003SFK	SD1003SW
125A				SD1253SW
160A				SD1603SW

Busbar chambers

Step 1

Select Twinbreak units required. If a 125 or 160A unit is fitted the rating of the adjacent units cannot exceed 63A.

Step 2

Select appropriate busbar chamber.

Current ratings Amps	Number of units 4	Number of units 6
160	SBC106	SBC109

SBC106 is supplied complete with 4 x TBCKIT.

SBC109 is supplied complete with 6 x TBCKIT.

Switch and Fusegear

Quadbreak

Fuse switch disconnecter



Application

Heavy duty fuse products for use in commercial and industrial environments, providing isolation and traditional fuse protection for electrical loads.

Features

- Rated for 240/415V 50/60Hz
- Ratings 100A, 160A, 200A, 250A, 315A, 400A, 500A, 630A TP&N
- Utilisation category AC20A, AC21A, AC22A, AC23B at rated current, AC23A for ratings up to 160A
- Handle position provides positive contact indication
- Door handle prevents door being opened when switch is ON or padlocked
- Handle padlockable in ON and OFF positions
- Device may be fed to either top or bottom terminals
- Fuse links or copper links supplied as standard

Construction

- All terminals are fully shrouded
- Quick make and break silver plated contacts
- Door interlock has defeat mechanism allowing switch to be closed with door open
- Removable plain gland plates are fitted at top and bottom
- Cabling space may be increased by the addition of the cable boxes
- Lift off door provides greater access for installation and cabling
- Door opens within the width of the unit allowing units to be mounted adjacent
- Neutral is fitted with disconnectable link
- Earthing kit provided as standard
- Easy access to fuse links
- Removable cross rails allow cables to be laid in easily
- Direct front access to terminals without dismantling the mechanism
- Clear shrouds allow easy access for inspection and visual indication of contact position
- Steelwork finished in polyester epoxy powder

Reference numbers

Rating AC21/22/23	Single pole & switched neutral		Three pole with neutral link		Recommended cable box	Spare links
	Switch disconnecter fuse	Switch disconnecter	Switch disconnecter fuse	Switch disconnecter		
63A	SQB0632K	SQB0632L	SQB0633K	SQB0633L	SQBX100	XCL160
100A	SQB1002K	SQB1002L	SQB1003K	SQB1003L		
160A	SQB1602K	SQB1602L	SQB1603K	SQB1603L	SQBX160	
200A	SQB2002K	SQB2002L	SQB2003K			
250A	SQB2502K	SQB2502L	SQB2503K	SQB2503L	SQBX250	XCL250
315A			SQB3153K		SQBX500	
400A			SQB4003K	SQB4003L		XCL400
500A			SQB5003K	SQB5003L	SQBX630	XCL630
630A			SQB6303K	SQB6303L		
800A				SQB8003L		XCL800

Castell figure locks

Quadbreak can be factory fitted with Castell interlock type FS for locking in off position

To order:

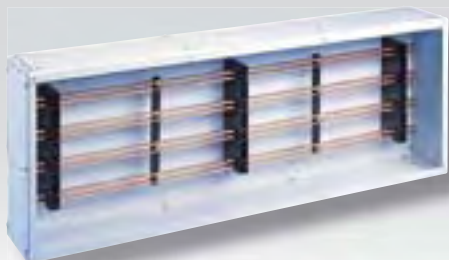
- 1 Specify required unit e.g. SQB2503K
- 2 Add Castle figure lock order suffix EY
- 3 Add Castle key symbol e.g. A

Thus the order reference for a 250A switch disconnecter fuse fitted with a Castell lock symbol A is SQB2503KEYA.

Switch and Fusegear

Quadbreak busbar chambers

Busbar chambers



Primarily designed for Quadbreak switch disconnector (fuse) the Quadbreak busbar chamber can be used for the mounting of any equipment.

- Manufactured in accordance with BSEN60439-1
- 200, 400, 630 and 800 rated copper busbars
- Available in 750, 1200 and 1800mm lengths
- Rigid construction
- Copper link kits available for direct connection of Quadbreak switch disconnector (fuse)
- Overall height and depth of units remains unchanged for the different current ratings

Height = 450mm

Depth = 215mm

Busbar chambers ratings

Rating	Length (mm) 750	Length (mm) 1200	Length (mm) 1800
	Reference number	Reference number	Reference number
200	SBC20007TN	SBC20012TN	SBC20018TN
400	SBC40007TN	SBC40012TN	SBC40018TN
630	SBC63007TN	SBC63012TN	SBC63018TN
800	SBC80007TN	SBC80012TN	SBC80018TN

Busbar connection kits

Each kit comprises connections for three phases and neutral

Rating (A)	Busbar interconnections to link busbar chambers*	Flexible busbar inter connections to link non Square D busbar chambers	Cable connections to connect to busbars**
	Reference number	Reference number	Reference number
200	CEC200	-	FTC200
400	CEC400	CED400	FTC400
600	CEC630	CED630	FTC630
800	CEC800	CED800	FTC800

* The busbar connection kits allow 2 or more busbar chambers to be electrically and mechanically joined together providing facilities for a greater number of outgoing circuits.

** The cable connection kits comprise 4 bolts, nuts and washers to connect a set of cables fitted with crimped lugs to the busbars.

Fuse switch connection kits



Each kit comprises connections for three phases and neutral

Rating (A)	Top mounted Reference number	Bottom mounted Reference number
63/160A	QBL160TN	QBL160TN
200/250A	QBL250TN	QBL250TN
315/630A	QBL630TTN	QBL630BTN
800A	-	QBL800BTN

KQII MCB discrimination and cascading	Page 6/1
KQII MCB temperature de-rating	Page 6/2
Protection of lamp circuits	Page 6/4
Control and command performance figures	Page 6/7
Moulded case circuit breaker application data	Page 6/9
Moulded case circuit breaker ratings	Page 6/10
Moulded case plug-on circuit breakers	Page 6/11
Moulded case circuit breaker maximum earth loop impedance values	Page 6/12
Control and Command lighting control	Page 6/13
Control and Command heating control	Page 6/17
Control and Command motor control	Page 6/18
Control and Command sounds	Page 6/19
Control and Command metering	Page 6/20
Control and Command contactors	Page 6/21
Control and Command impulse relays	Page 6/22
Control and Command analogue time switches	Page 6/23
Control and Command digital time switches	Page 6/23
Control and Command multi functional time switch	Page 6/24
Control and Command presence detector	Page 6/25
Control and Command audible alarms	Page 6/26
Control and Command light sensitive switch	Page 6/27
Control and Command astronomical switch	Page 6/28
Control and Command control relay	Page 6/29
Control and Command delay OFF timer	Page 6/30
Control and Command PIR detector	Page 6/31
Control and Command metering	Page 6/32
Control and Command individual enclosures	Page 6/35
Switch and Fusegear	Page 6/36

Technical data

KQII MCB discrimination and cascading

Discrimination

Discrimination is the co-ordination of circuit breakers so that when a fault occurs in a network, it is cleared by the breaker immediately upstream of the fault. No breaker further upstream operates, thus, the number of circuits affected by the fault is minimised. In many cases full discrimination is achieved up to the breaking capacity of the breaker disconnecting the fault. This is indicated by 'F' in the table below. In other cases discrimination is achieved up to a lesser current as indicated below in amps.

Downstream breaker					Upstream breaker					Electronic breaker							
CD/CN/CH breaker with Thermal magnetic trip units										CN/CH				DH		SMAL SPAF	
16	25	32	40	50	63	80	100	125	160	200	250	160	250	400	630	Discrimination is achieved up to the Magnetic setting of the Upstream breaker	
KQ/SQO=<10	200	300	300	500	500	630	800	F	F	F	F	F	F	F	F		
16	300	300	500	500	500	630	800	F	F	F	F	F	F	F	F		
20				500	500	630	800	F	F	F	F	F	F	F	F		
25				500	500	630	800	F	F	F	F	F	F	F	F		
32					500	630	800	F	F	F	F	F	F	F	F		
40					500	630	800	F	F	F	F	F	F	F	F		
50							800	F	F	F	F	F	F	F	F		
63							800	F	F	F	F	F	F	F	F		

F = Full discrimination

Cascading chart

Cascading permits the installation of a circuit breaker having a breaking capacity lower than the prospective at its point of installation. The upstream breaker, which must have the required breaking capacity, limits the fault current to that which may safely be interrupted by the downstream breaker.

In the case of a high fault current both breakers may operate.

For example: A KQ breaker rated at 10kA may be used at a point in the network having a prospective fault current of 40kA provided that it is protected by a CH breaker (50kA).

Downstream breaker Upstream breaker

			CD	CN	CN	CH	CH
Ref Rating			100A	100A	250A	100A	250A
Ref	Rating	Icu	25kA	36kA	36kA	50kA	50kA
SQO/KQ	3-63A	6 & 10 kA	25	25	30	40	30

I²t let through values for KQ MCB's/RCBO's

KQ 1P devices @ 230 / 240v B, C & D curve

Rating (A)	Fault level (kA)				
	2	4	6	8	10
(A2 s/1000)					
≤6	4	7	9	10	11
10	6	12	17	19	24
16	7	16	23	30	37.5
20	7	16	23	30	37.5
25	7	16	23	30	37.5
32	10	23	32.5	42.5	55
40	10	23	32.5	42.5	55
50	13	28	35	55	70
63	13	28	35	55	70

KQ 1P 2 & 3 devices @ 400 / 415v C & D curve

Rating (A)	Fault level (kA)				
	2	4	6	8	10
(A2 s/1000)					
≤6	4	8	8.5	9.5	10
10	6	12	16	19	22
16	7	15	22	29	35
20	7	15	22	29	35
25	7	15	22	29	35
32	10	21	32.5	35	50
40	10	21	32.5	35	50
50	12	26	40	55	68
63	12	26	40	55	68

Square D KQ (and SQO) MCB's have an energy let through classification of '3', this is the highest current limiting classification to BS EN 60898.

Compared with the protection offered by lower performance devices, MCB's having a class of "3" may be used to protect cables having a smaller cross section area. This eases installation and reduces cost. To provide adequate short circuit protection for a conductor, the I²t value of the MCB should always be less than the K2S2 value of the conductor (as stated in BS 7671).

Technical data

KQII temperature de-rating

Standard conditions for operation in service

Circuit breakers complying with BS EN 60898 shall be capable of operating under the following standard conditions:

- The ambient air temperature does not exceed +40°C and its average over a period of 24 hours does not exceed +35°C
- The lower limit of the ambient air temperature is -15°C
- Circuit breakers intended to be used in ambient air temperatures above +40°C (particularly in tropical countries) or below -5°C shall either be specially designed or be used according to the information given in the manufacturer's catalogue

Circuit breakers type KQ KQ 2 and 3P devices @ 200/415v C and D curve

Current (A)	Ambient temperature °C				
	20	30	40	50	60
3	3.2	3	2.8	2.6	2.3
6	6.3	6	5.6	5.2	4.6
10	10.5	10	9.4	8.6	7.6
16	16.8	16	15.0	13.8	12.2
20	21.0	20	18.8	17.2	15.2
25	26.3	25	23.5	21.5	19.0
32	33.6	32	30.1	27.5	24.3
40	42.0	40	37.6	34.4	30.4
50	52.5	50	46.5	43.0	38.0
63	66.2	63	58.0	52.9	46.6

Temperature de-rating of circuit breakers

Circuit breakers listed in the service current table may be used at temperatures from -30°C to +60°C.

The table indicates the maximum current to be used as a function of the ambient temperature.

Figures in bold type are the nominal current rating at calibrated temperature.

This avoids the necessity to derate for normal ambient temperatures likely to be encountered when circuit breakers are grouped together in an enclosure.

Technical data

KQII temperature de-rating

Three phase circuit breaker ratings for infrequent start motor loads.

Circuit breakers are not generally intended to provide close current protection for motors. Normally they are used in conjunction with a recognised motor over current protective device. Under these conditions the circuit breaker will protect the cable to the motor whilst the motors own protective device will protect the motor itself. The comparison between full load current and kW rating, is based upon an average efficiency and power factor for each motor rating.

3 phase circuit breaker ratings for infrequent start motor loads

Reference number	MCB current rating	DOL starting Full load current	kW @400Vac	Reduced voltage starting Full load current	kW @400Vac
KQ10C306	6	3	1.5	4	2.2
KQ10C310	10	5	2.6	6	3.6
KQ10C316	16	7	4.1	10	5
KQ10C320	20	8	5.2	13	6
KQ10C325	25	10	6.5	16	8
KQ10C332	32	13	9	20	10
KQ10C340	40	16	11	25	13
KQ10C350	50	20	14	32	16
KQ10C363	63	26	17	40	21
KQ10D306	6	3	1.5	4	2.2
KQ10D310	10	5.2	6	6	3.6
KQ10D316	16	7	4.1	10	5
KQ10D320	20	8	5.2	13	6
KQ10D325	25	10	6.5	16	8
KQ10D332	32	13	9	20	10
KQ10D340	40	16	11	25	13
KQ10D350	50	20	14	32	16
KQ10D363	63	26	17	40	21

The circuit breaker ratings used to protect the cable to the motor are based upon DOL starting = Up to 4kW, 7 x full load current for 4.5 seconds 4.1kW to 30kW, 7 x full load current for 6 seconds.

Reduced voltage starting = Up to 18.5kW, 3.5 x full load current for 10 seconds 19kW to 30kW, 4 x full load current for 18 seconds.

Circuit breaker ratings for infrequent start motor loads

Reference number	Current rating	DOL starting Full load current	kW @230Vac
KQ10C106	6	3.2	0.4
KQ10C110	10	5.4	0.7
KQ10C116	16	9	1.1
KQ10C120	20	11	1.4
KQ10C125	25	13	1.7
KQ10C132	32	17	2.2
KQ10C140	40	21	2.8
KQ10C150	50	27	3.5
KQ10C163	63	34	4.3
KQ10D106	6	3.2	0.4
KQ10D110	10	5.4	0.7
KQ10D116	16	9	1.1
KQ10D120	20	11	1.4
KQ10D125	25	13	1.7
KQ10D132	32	17	2.2
KQ10D140	40	21	2.8
KQ10D150	50	27	3.5
KQ10D163	63	34	4.3

DOL starting = Up to 4kW, 7 x full load current for 4.5 seconds 4.1 to 10kW, 7 x full load current for 6 seconds.

Technical data

Protection of lamp circuits

Circuits with a large number of lamp fittings may cause some inconvenience in the event of a fault, as due regard for safety in the working environment must be considered with a large area of lighting being extinguished (e.g. lamps in shaded area). Consideration must also be given to the number of lamp fittings used in each circuit as this may entail the use of unusually large cable and terminals, based on the rating of the required circuit breaker. The number of lamp fittings switched on at once must also be carefully considered, as high inrush current may cause the circuit breaker to operate.

Circuits are based on distance to the first lamp of 20 metres and 7 metres between additional fittings. Cable size used is based on the circuit breaker rating, with the maximum size recommended and 10mm² and 63A rating and calculated on the basis of steady circuit current of each lamp and control gear at stated voltage.

Low pressure sodium (SOX-SOXE with PF correction) @ Vac = 230

Lamp wattage (W)	Circuit current (A)	Number of lamps in circuit																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
18	0.14	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
26	0.16	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
35/36	0.22	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
55	0.35	6	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10
91	0.49	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	16	16	16	16
131	0.66	6	6	6	10	10	10	10	10	10	10	10	10	16	16	16	16	16	16	16	20
135	0.73	6	6	6	10	10	10	10	10	10	10	10	16	16	16	16	16	16	20	20	20
180	1	6	6	10	10	10	10	10	10	16	16	16	16	20	20	20	20	25	25	25	25
Electronic																					
36	0.16	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
55	0.23	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
66	0.28	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10
91	0.5	6	6	6	6	6	10	10	10	10	10	10	10	10	10	10	10	16	16	16	16

High pressure sodium (SON-SONT-SONC with PF correction) @ Vac = 230

Lamp wattage (W)	Circuit current (A)	Number of lamps in circuit																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
50	0.3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10	10
70	0.45	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	16	16	16
100	0.6	6	6	6	6	6	6	6	6	10	10	10	10	10	16	16	16	16	16	16	16
150	0.85	6	6	10	10	10	10	10	10	10	16	16	16	16	16	16	20	20	20	25	25
250	1.4	6	10	16	16	16	20	20	20	20	16	20	25	25	25	32	32	32	32	40	40
400	2.2	10	16	20	25	32	32	32	32	32	32	32	40	40	40	50	50	50	50	63	63
1000	5.4	16	32	40	50	50	50	50	63	63	-	-	-	-	-	-	-	-	-	-	-
Electronic																					
35	0.2	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
50	0.35	6	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10
100	0.55	6	6	6	6	6	6	6	6	10	10	10	10	10	10	16	16	16	16	16	16

High pressure metal halide (MH-MHN-MHC-HPI with PF correction) @ Vac = 230

Lamp wattage (W)	Circuit current (A)	Number of lamps in circuit																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
35	0.24	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
70	0.45	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	16	16	16
150	0.85	6	6	10	10	10	10	10	10	10	16	16	16	16	16	16	20	20	20	25	25
250	1.4	6	10	16	16	16	20	20	20	20	20	20	25	25	25	32	32	32	32	40	40
1000	5.4	16	32	40	50	50	50	50	63	63	-	-	-	-	-	-	-	-	-	-	-
1800	8.6	25	40	63	63	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MHC																					
35	0.23	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
70	0.4	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	10
150	0.75	6	6	6	10	10	10	10	10	10	10	16	16	16	16	16	16	16	20	20	20
HPI																					
250	1.35	6	10	16	16	16	20	20	20	20	20	20	25	25	25	32	32	32	32	40	40
400	2.15	6	16	20	25	25	32	32	32	32	32	32	40	40	40	50	50	50	50	63	63
1000	5.3	16	32	40	50	50	50	50	63	63	-	-	-	-	-	-	-	-	-	-	-
2000	9.9	25	50	63	63	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

High pressure metal halide (MHN-HPI with PF correction) @ Vac = 400

Lamp wattage (W)	Circuit current (A)	Number of lamps in circuit																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
MHN																					
1800	5.6	16	32	40	50	50	50	50	63	63	-	-	-	-	-	-	-	-	-	-	-
2000	5.6	16	32	40	50	50	50	50	63	63	-	-	-	-	-	-	-	-	-	-	-
HPI																					
2000	6	16	32	40	50	50	50	50	63	-	-	-	-	-	-	-	-	-	-	-	-

Technical data

Protection of lamp circuits

High pressure mercury vapour (HPL with PF correction) @ Vac = 230

Lamp wattage (W)	Circuit current (A)	Number of lamps in circuit					6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Circuit breaker type C trip																			
50	0.3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10	10
80	0.45	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	16	16	16
125	0.7	6	6	6	10	10	10	10	10	10	10	10	16	16	16	16	16	16	16	20	20
250	1.35	6	10	10	16	16	16	16	16	16	20	20	25	25	25	32	32	32	32	40	40
400	2.15	6	16	20	25	25	32	32	32	32	32	32	40	40	40	50	50	50	50	63	60
1000	5.3	16	32	40	50	50	50	50	63	63	-	-	-	-	-	-	-	-	-	-	63

Low pressure sodium (SOX-SOXE with PF correction) @ Vac = 230

Lamp wattage (W)	Circuit current (A)	Number of lamps in circuit					6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Circuit breaker type D trip																			
18	0.14	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
26	0.16	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
35/36	0.22	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
55	0.35	6	6	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10
91	0.49	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	16	16	16
131	0.66	6	6	6	6	6	6	6	10	10	10	10	10	16	16	16	16	16	16	16	20
135	0.73	6	6	6	6	6	6	10	10	10	10	10	16	16	16	16	16	16	20	20	20
180	1	6	6	6	6	10	10	10	10	16	16	16	16	20	20	20	20	25	25	25	25
Electronic																					
36	0.16	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
55	0.23	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
66	0.23	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10
91	0.5	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	16	16	16	16

Low pressure sodium (SON-SONT – SONC with PF correction) @ Vac = 230

Lamp wattage (W)	Circuit current (A)	Number of lamps in circuit					6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Circuit breaker type D trip																			
50	0.3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10	10
70	0.45	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	16	16	16
100	0.6	6	6	6	6	6	6	6	6	10	10	10	10	10	16	16	16	16	16	16	16
150	0.85	6	6	6	6	6	10	10	10	10	16	16	16	16	16	16	20	20	20	25	25
250	1.4	6	6	10	10	16	16	16	16	16	20	20	25	25	25	32	32	32	32	40	40
400	2.2	6	10	16	16	20	20	25	25	25	32	32	40	40	40	50	50	50	50	63	63
1000	5.4	10	20	32	32	40	40	50	63	63	-	-	-	-	-	-	-	-	-	-	-
Electronic																					
35	0.2	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
50	0.35	6	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10
100	0.55	6	6	6	6	6	6	6	6	10	10	10	10	10	10	16	16	16	16	16	16

High pressure metal halide (MH-MHN-MHC-HPI with PF correction) @ Vac = 230

Lamp wattage (W)	Circuit current (A)	Number of lamps in circuit					6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Circuit breaker type D trip																			
35	0.24	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
70	0.45	6	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	16	16	16
150	0.85	6	6	6	6	6	10	10	10	10	16	16	16	16	16	16	20	20	20	25	25
250	1.4	6	6	10	10	16	16	16	16	16	20	20	25	25	25	32	32	32	32	40	40
MHN																					
1000	5.4	10	20	32	32	40	50	50	63	63	-	-	-	-	-	-	-	-	-	-	-
1800	8.6	16	32	40	50	63	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Electronic																					
35	0.23	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
70	0.4	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	10
150	0.75	6	6	6	6	6	6	6	10	10	10	16	16	16	16	16	16	16	20	20	20
HPI																					
250	1.35	6	6	10	10	16	16	16	16	16	20	20	25	25	25	32	32	32	32	40	40
400	2.15	6	10	16	16	20	20	25	25	25	32	32	40	40	40	50	50	50	50	63	63
1000	5.3	10	20	25	32	40	40	50	63	63	-	-	-	-	-	-	-	-	-	-	-
2000	9.9	20	32	40	50	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Technical data

Protection of lamp circuits

High pressure metal halide (MHN-HPI with PF correction) @ Vac = 400

Lamp wattage (W)	Circuit current (A)	Number of lamps in circuit Circuit breaker type D trip																			
MHN		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1800	5.6	16	20	32	32	32	32	50	63	63	-	-	-	-	-	-	-	-	-	-	-
2000	5.6	16	20	32	32	32	32	50	63	63	-	-	-	-	-	-	-	-	-	-	-
HPI																					
2000	6	16	25	32	32	32	40	50	63	-	-	-	-	-	-	-	-	-	-	-	-

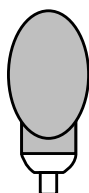
High pressure metal halide (MHN-HPI with PF correction) @ Vac = 400

Lamp wattage (W)	Circuit current (A)	Number of lamps in circuit Circuit breaker type D trip																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
50	0.3	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	10	10	10	10
80	0.45	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	16	16	16
125	0.7	6	6	6	6	6	6	10	10	10	10	10	16	16	16	16	16	16	16	20	20
250	1.35	6	6	10	10	10	10	16	16	16	20	20	25	25	25	32	32	32	32	40	40
400	2.15	6	10	16	16	20	20	25	25	25	32	32	40	40	40	50	50	50	50	63	63
1000	5.3	10	20	25	32	40	40	50	63	63	-	-	-	-	-	-	-	-	-	-	-

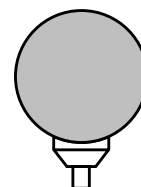
Ecotone, ambiance globe, PL-EU @ Vac = 230

Lamp wattage (W)	Circuit current (A)	Number of lamps in circuit Circuit breaker type C and D trip																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
6	0.048	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
9	0.07	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
11	0.088	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
14	0.093	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
16	0.105	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
18	0.12	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
20	0.14	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

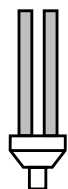
Compact fluorescent lamps



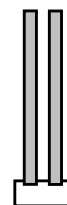
Ecotone ambiance



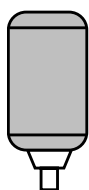
Globe ambiance



Ecotone economy
PL PE professional



Non integrated PL-L



Prismatic professional
SL comfort

Technical data

Control and command - performance figures

Lighting loads with contactors

High pressure metal halide (MHI, MHN, MHC, HPI with PF correction)

Wattage and lamp number	Circuit current	Contactor rating		
		25 A	40 A	63 A
(W/N°)	(A)	Lamp unit number per phase		
MH				
35	0.24	54	87	137
70	0.45	29	46	73
150	0.85	15	24	39
250	1.40	9	15	23
MHN				
1000	5.4	2	4	6
1800	8.6	2	2	4
MHC Electronic				
35	0.23	57	90	142
50	0.40	33	52	82
150	0.75	17	28	44
HPI				
250	1.35	10	15	24
400	2.15	6	10	15
1000	5.3	2	4	6
2000	9.9	1	2	3

Low pressure sodium lamps (SOX-SOXE with PF correction)

Wattage and lamp number	Circuit current	Contactor rating		
		25 A	40 A	63 A
(W/N°)	(A)	Lamp unit number per phase		
18	0.14	93	149	234
26	0.16	81	130	205
35/36	0.22	59	95	149
55	0.35	37	59	94
91	0.49	27	42	67
131	0.66	20	32	50
135	0.73	18	28	45
180	1.0	13	21	33
Electronic				
36	0.16	81	130	205
55	0.23	57	90	142
66	0.28	46	74	117
91	0.50	26	42	66

High pressure mercury vapour lamps (HPL with PF correction)

Wattage and lamp number	Circuit current	Contactor rating		
		25 A	40 A	63 A
(W/N°)	(A)	Lamp unit number per phase		
50	0.30	43	69	109
80	0.45	29	46	73
125	0.67	19	31	49
250	1.35	10	15	24
400	2.15	6	10	15
1000	5.30	2	4	6

Technical data

Control and command - performance

Contactors type CCN

Determination of contactor rating-lighting loads.

Based on 230/240V AC rated fittings.

■ 2 pole contactor used on a single phase two wire system

■ 3 and 4 pole contactor used on a three phase four wire system

Electronic control fluorescent lamps

Wattage and lamp number	Circuit current	Contactor rating		
		25 A	40 A	63 A
(W/N°)	(A)	Lamp unit number per phase		
14/18	0.09	144	231	364
14 x2	0.15	87	139	218
14 x3	0.23	57	90	142
18 x2	0.18	72	116	182
21/24	0.12	108	173	273
21/24 x2	0.24	54	87	137
28	0.16	81	130	205
28 x2	0.28	46	74	117
35/36/39	0.19	68	109	172
36 x2	0.34	38	61	96
38/39 x2	0.38	34	55	86
40/42	0.21	62	99	156
42 x2	0.41	32	51	80
49/50	0.24	54	87	137
49/50 x2	0.48	27	43	68
54/55	0.27	48	77	121
54/55 x2	0.54	24	39	61
60	0.30	43	69	109
70	0.38	34	55	86
80	0.41	32	51	80
90	0.45	29	46	73

High pressure sodium lamps (SON-SONT-SONC with PF correction)

Wattage and lamp number	Circuit current	Contactor rating		
		25 A	40 A	63 A
(W/N°)	(A)	Lamp unit number per phase		
50	0.30	43	69	109
70	0.45	29	46	73
100	0.60	22	35	55
150	0.85	15	24	39
250	1.4	9	15	23
400	2.2	6	9	15
1000	5.4	2	4	6
Electronic				
35	0.20	65	104	164
50	0.35	37	59	94
100	0.55	24	38	60

Technical data

Circuit breaker application data

Three phase circuit breaker ratings for infrequent start motor loads

Circuit breakers are not generally intended to provide close current protection for motors. Normally they are used in conjunction with a recognised motor over current protective device. Under these conditions the circuit breaker will protect the cable to the motor whilst the motors own protective device will protect the motor itself.

The comparison between full load current and kW rating, is based upon an average efficiency and power factor for each motor rating at 400Vac. The circuit breaker rating used to protect the cable to the motor are based upon :-

D.O.L. starting =

Up to 4kW, 7x full load current for 5 seconds

4.1kW to 18.5kW, 7x full load current for 6 seconds

19kW to 35kW, 7x full load current for 10 seconds

Assisted starting =

Up to 4kW, 4x full load current for 5 seconds

4.1kW to 18.5kW, 4x full load current for 7 seconds

19kW to 35kW, 4x full load current for 10 seconds

36kW to 110kW, 4x full load current for 15 seconds

Reference number also CDLE CNLE	Short time setting (I _m)	Long time setting (I _r)	Thermal setting A	D.O.L. starting motor		Assisted start motor	
				Load current A	Rating at 400Vac kW	Load current A	Rating at 400Vac kW
CDAE34016	Fixed	1	16	8	4	12	6
		0.9	14	7.5	3.6	10	5.3
		0.8	13	7	3	9	5
		1	25	11	5	16	8
CDAE34025	Fixed	0.9	23	10	4.9	14	7
		0.8	20	9	4	13	6
		1	32	15	7	20	10
CDAE34032	Fixed	0.9	29	13	7	18	9
		0.8	26	12	6	16	8
		1	40	18	9	26	13
CDAE34040	Fixed	0.9	36	16	8	23	12
		0.8	32	15	7	20	10
		1	50	23	12	32	16
CDAE34050	Fixed	0.9	45	21	10	29	15
		0.8	40	18	9	26	13
		1	63	29	15	40	21
CDAE34063	Fixed	0.9	57	26	13	36	19
		0.8	50	23	12	32	17
		1	80	54	28	60	32
CDAE34080	Fixed	0.9	72	49	25	54	29
		0.8	64	43	22	48	26
		1	100	68	36	75	40
CDAE34100	Fixed	0.9	90	61	32	68	36
		0.8	80	54	29	60	32
Long time settings			I _r = 0.8, 0.9, 1				
Short time settings			16 to 100A I _m = fixed				

D.O.L. starting =

Up to 4kW, 7x full load current for 5 seconds

4.1kW to 18.5kW, 7x full load current for 6 seconds

19kW to 35kW, 7x full load current for 10 seconds

Assisted starting =

Up to 4kW, 4x full load current for 5 seconds

4.1kW to 18.5kW, 4x full load current for 7 seconds

19kW to 35kW, 4x full load current for 10 seconds

36kW to 110kW, 4x full load current for 15 seconds

Reference number	Short time setting (Im)	Long time setting (Ir)	Thermal setting A	D.O.L. starting motor Load current A	D.O.L. starting motor Rating at 400Vac kW	Assisted start motor Load current A	Assisted start motor Rating at 400Vac kW
CNLE34160E20	10	1	160	108	58	120	64
CHLE34160E20	8	0.9	144	97	52	108	58
CNAE34160E20	8	0.8	128	86	46	96	51
	8	0.7	112	76	40	84	45
	8	0.6	96	65	35	72	39
	8	0.5	80	54	29	60	32
	8	0.4	64	43	23	48	26
CNLE34250E20	10	1	250	169	90	188	100
CHLE34250E20	8	0.9	225	152	81	169	90
CNAE34250E20	8	0.8	200	135	72	150	80
	8	0.7	175	118	63	131	70
	8	0.6	150	101	54	113	60
	8	0.5	125	84	45	94	50
	8	0.4	100	68	36	75	40
DHLE34400	10	1	400	270	144	300	160
	8	0.9	360	243	130	270	144
	8	0.8	320	216	116	240	128
	8	0.7	280	189	101	210	112
	8	0.6	240	162	87	180	96
	8	0.5	200	135	72	150	80
	8	0.4	160	108	58	120	64
DHLE34630	10	1	630	425	227	473	253
	8	0.9	567	383	205	425	227
	8	0.8	504	340	182	378	202
	8	0.7	441	298	159	331	177
	8	0.6	378	255	136	284	152
	8	0.5	315	213	114	236	126
	8	0.4	252	170	91	189	101
Long time settings		Ir = 0.8, 0.85, 0.88, 0.9, 0.93, 0.95, 0.98, 1					
		Io = 0.5, 0.63, 0.7, 0.8, 0.9, 1					
Short time settings		Im = 2, 3, 4, 5, 6, 7, 8, 10 x long time setting					

Technical data

MCCB ratings

MCCB ratings

MCCB's	SFA	CD	CN	CH	CN Electronic	SLA	SM	SN	PA
Standard	BSEN 60947 - 2								
Poles	1, 2	3	3	3	3	3	3	3	3
Ratings in	16 - 100A	16 - 100A	16 - 250A	16 - 250A	160 - 250A	250 -400A	300 - 800A	630 - 1250A	630 - 2000A
Category	A								
Rated Insulation Voltage Ui	500V							750	
Rated Impulse Voltage Uimp	6KV								
Rated Operational Voltage Ue	415V 50/60HZ								
Ultimate Breaking Capacity Icu	25kA	25kA	36kA	50kA	36kA	36kA	50kA	50kA	50kA
Service Breaking Capacity Ics	50%	75%	75%	75%	75%	50%	50%	50%	75%
Thermal Overload	Fixed	Adjustable 0.8 - 1In			Adj 0.4-1xIn	Fixed			
Magnetic Overload	16 to 160A Fixed			200 to 250A Adj 5-10xIn		Adjustable 5-10xIn			
Connection	Tunnel		Crimp			Tunnel			Crimp

I²t Energy let through

The cable withstand depends upon the conductor material, the insulation used and the conductor size.

Maximum let through at various prospective fault currents in Ampere² seconds x 10⁶

Prospective fault current kA

Frame	Ratings	10	20	25	30	36	40	50
CD	16-100A	0.28	0.42	0.47				
CN	125-250A	0.52	0.7	0.71	0.72	0.73		
CH	16-250A	0.52	0.7	0.71	0.72	0.73	0.74	0.75
SMA	300-800A		8.6	12	15	21	25	36

For PVC insulated copper cable the thermal withstand in A²s x 10⁶ (k = 115)

Cable size mm²	4	6	10	16	25	35	50
Max thermal stress I²t	0.212	0.476	1.32	3.4	8.26	16.2	33.1

Panelboards

Standard	BSEN 60439-1 Form 3b Type 2 (with terminal shields fitted)
IP rating	IP4X to BSEN 60529
Short circuit withstand	50kA for 1 second
Busbars	Plated copper fully braced and supported
Neutral bar	Plated copper fully rated pre-drilled
Earth bar	Plated copper fully rated pre-drilled
Enclosure	Corrosion resistant folded sheet steel
Paint	Epoxy powder coated light blue grey

Technical data

Plug-On circuit breakers

Discrimination

Discrimination is the co-ordination of Circuit breakers such that when a fault occurs in a network it is cleared by the breaker immediately upstream of the fault. No breaker further upstream operates. Thus the number of circuits affected by the fault is minimised. In many cases full discrimination is achieved up to the breaking capacity of the breaker disconnecting the fault. This is indicated by "F" in the table below. In other cases discrimination is achieved up to a lesser current as indicated below in amps. When no figure is shown discrimination is not achieved.

Downstream breakers	Upstream breakers												Electronic breakers					
	I-Line CD/CN/CH breaker with Thermal magnetic trip units												CN/CH DH	SMAL	SPAF			
	16	25	32	40	50	63	80	100	125	160	200	250	160	250	400	630	1000	2000
KQ/SQO=<10	200	300	300	500	500	500	630	800	F	F	F	F	F	F	F	F		
16		300	300	500	500	500	630	800	F	F	F	F	F	F	F	F		
20					500	500	630	800	F	F	F	F	F	F	F	F		
25					500	500	630	800	F	F	F	F	F	F	F	F		
32							630	800	F	F	F	F	F	F	F	F		
40							630	800	F	F	F	F	F	F	F	F		
50								800	F	F	F	F	F	F	F	F		
63								800	F	F	F	F	F	F	F	F		
16 CD				500	500	500	630	800	2000	2000	F	F	2000	F	F	F		
25						500	630	800	2000	2000	F	F	2000	F	F	F		
32							630	800	2000	2000	F	F	2000	F	F	F		
40							630	800	2000	2000	F	F	2000	F	F	F		
50								800	2000	2000	F	F	2000	F	F	F		
63								800	2000	2000	F	F	2000	F	F	F		
80									1250	1250	F	F		F	F	F		
100										1250	F	F		F	F	F		
125 CN											4000	5000		3000	F	F		
160												5000			F	F		
200																F		
250																	F	
16 CH				500	500	500	630	800	2000	2000	F	F	2000	3000	F	F		
25						500	630	800	2000	2000	F	F	2000	3000	F	F		
32							630	800	2000	2000	F	F	2000	3000	F	F		
40							630	800	2000	2000	F	F	2000	3000	F	F		
50								800	2000	2000	F	F	2000	3000	F	F		
63								800	2000	2000	F	F	2000	3000	F	F		
80									1250	1250	F	F		3000	F	F		
100										1250	F	F		3000	F	F		
125											4000	5000		3000	F	F		
160												5000			F	F		
200																	F	
250																		F
400 DH																		
630																		

F = Full Discrimination

Discrimination is achieved up to the magnetic setting of the upstream breaker

Cascading chart

Cascading permits the installation of a circuit breaker having a breaking capacity lower than the prospective at its point of installation. The upstream breaker, which must have the required breaking capacity, limits the fault current to that which may safely be interrupted by the downstream breaker. In the case of a high fault current both breakers may operate. For example: a KQ breaker rated at 10kA may be used at a point in the network having a prospective fault current of 40kA provided that it is protected by a CH breaker (50kA).

Downstream breaker		Upstream breaker									
		Ref	CD	CN	CN	CH	CH	SLA	DH	SMAL	SPAF
		Rating	100A	100A	250A	100A	250A	400A	630A	1000A	2000A
Ref	Rating	Icu	25kA	36kA	36kA	50kA	50kA	36kA	50kA	50kA	50kA
KQ	63A	6&10kA	25	25	30	40	30				
CD	100A	25kA		36	36	50	50	36	50	36	36
CN	250A	36kA				50	50		50	50	50
SLA	400A	36kA								50	50

Technical data

Maximum earth loop impedance values

Frame	Rating	Max. Zs ohms at 230V 0.4s	5s
SFA	16	0.58	2.36
	20	0.58	1.89
	32	0.48	1.12
	40	0.38	0.90
	50	0.38	0.72
	63	0.23	0.57
	80	0.19	0.45
	100	0.19	0.36
C	16	1.21	2.30
	25	0.77	1.67
	32	0.58	1.33
	40	0.46	1.06
	50	0.46	0.85
	63	0.46	0.68
	80	0.36	0.36
	100	0.29	0.29
	125	0.18	0.18
	160	0.18	0.18
	200	0.12	0.12
	250	0.09	0.09
C electronic	160	0.14	0.22
	250	0.09	0.14
SL	250	0.092	0.092
	300	0.077	0.077
	350	0.066	0.066
	400	0.058	0.058
	400	0.058	0.058
SM	300	0.077	0.077
	350	0.066	0.066
	400	0.058	0.058
	450	0.051	0.051
	500	0.046	0.046
	630	0.037	0.037
	700	0.033	0.033
	800	0.029	0.029
SN	630	0.029	0.037
	700	0.029	0.033
	800	0.029	0.032
	900	0.023	0.027
	1000	0.023	0.026
	1250	0.023	0.023

For adjustable breakers the figures given refer to the breaker with settings on maximum.

Switch-disconnector-fuse outgoing units

	PF32	PF63	PF100	PF160
Standard	BSEN 60947-3			
Poles	3	3	3	3
Rating In	32	63	100	160
Utilisation category	415V	AC23A	AC23A	AC23A
Rated Insulation voltage	750	750	750	750
Rated Operational voltage	750	750	750	750
Rated Impulse voltage	8kA	8kA	8kA	8kA
Rated s.c. making capacity Icm	415V	176kA	176kA	176kA
Rated s.c. breaking capacity Icn	415V	80kA	80kA	80kA

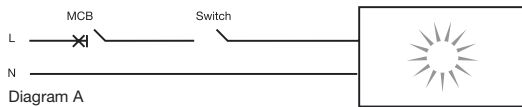
Connections	Clamp	Clamp	Clamp	Clamp
BS88 fuse reference	A1, A2, A3	A2, A3	A2, A3, A4*	A2, A3, A4

* A4 maximum dia 32 mm

Technical data

Control and Command lighting control

Manual control



This circuit shows the simplest form of control. A manual switch controls the lighting. This arrangement is adequate if the load is small, the cable runs are short and people can be relied upon to turn the lights out when they are not needed.

Diagram A

Automatic control

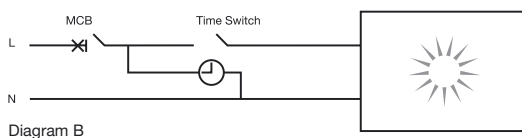
The introduction of some form of automatic control can reduce electricity costs and simplify the total electrical installation. Whilst automation in some form may add to the initial installation costs, this has to be balanced against the electricity consumption costs over the life of the electrical installation.

Products that may be used to automate the installation, in part or fully, are:

- Time switches
- Passive infra red detectors
- Presence detectors
- Contactors
- Light sensitive switches
- Bi-stable relays
- Astronomical switch

All these devices may be used individually or in combination to provide the best possible installation to suit the needs of the occupants.

Time switches



Typical applications are retail trading areas where the main lighting is required to be switched at set times each day without the need for manual intervention. The type of time switch to be used depends upon the level of sophistication required.

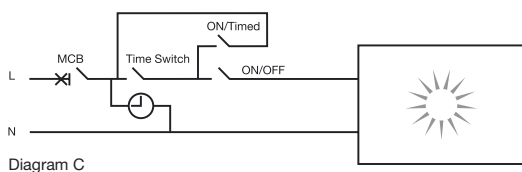
Diagram B

Simple 24 hour time switch, repeating the same pre-set switching sequence each day. Battery back up is included to eliminate the need to reset the device every time there is a power cut.

Digital time switch, 7 day type. These are available with 1 or 2 programmable contacts. The program can be set to have different switching times each day or day omission if required. e.g. no switching at weekends. The two contacts of the 2-channel version can be programmed completely independently. Battery back up stores the switching programme for at least 5 years.

Multi function time switch, having 4 independently programmable time contacts. Each contact can have a conditional input associated with it. In addition ON delays and OFF delays, hours counters and switching counters can be incorporated. The programme is stored in a cartridge which enables the programme to be copied to another device.

Astronomically programmable light sensitive switch, time control automatically calculated, based upon sunrise and sunset times in a given geographical position. Can be beneficial in certain applications. This type of control is provided by an astronomical switch.



Control by light sensitive switch, this device enables lighting to be switched, not according to time but according to the level of daylight. The threshold can be adjusted to determine the light level below which the lighting is switched ON. This may be used with external or internal lighting. An ON / OFF override facility exists on the time switches. On the digital devices this override can be temporary, until the next switch operation or permanent. To prevent unauthorised access to the time switch and possible tampering it may be preferred to have external ON / Timed / OFF control. This switching arrangement can be achieved by using a standard 2-gang single pole one way light switch. The supply to the time switch motor is maintained. On loss of supply the time switch will continue to keep time but the contacts will not switch.

Diagram C

Presence detectors and PIR detectors

Both of these devices can be used to control lighting but their functions are very different. Presence detectors are used to turn lights ON when people are present in the room and to turn them OFF when the room is unoccupied. Normally ceiling mounted they detect human presence. Their use saves energy consumption. They are intended for use in offices, hotels etc where areas are not permanently occupied.

PIR detectors most obvious use is for security purposes to switch external lighting ON when movement is detected within the sensing area. This area is an arc of up to 180° with a radius of 12 metres.

Technical data

Control and Command lighting control

Larger lighting schemes

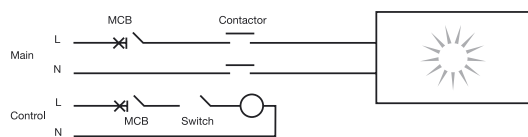


Diagram D

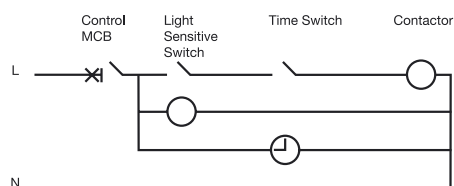


Diagram E

The previous lighting schemes are very effective in the small environment but as the lighting load increases and the floor area to be lit increases so does the electrical load. In addition, the longer cable runs introduce greater voltage drops making the need for larger cables more likely. Whilst it may seem a paradox to introduce more components to simplify the arrangement, the use of contactors in the lighting circuits makes the installation easier to install and simpler to calculate. Voltage drop calculations are greatly simplified as the switching circuit is not part of the main circuit. This main circuit is direct from the distribution board to the luminaries. The switching circuit only carries the load of the contactor coil, which at switch on is of the order of 0.2A.

A separate control circuit MCB is required if the main MCB is of such a rating that it does not protect the control circuit cable against overcurrent.

Diagram D

Contactor control is essential when the lighting is controlled by BMS system. The control circuits are run from the distribution boards to the BMS controller that may be positioned wherever convenient for the operation of the building.

Time switches, presence detectors and PIR detectors can all be used with contactor controlled circuits. These controlling devices are all connected in the switch circuit so only carry and switch the contactor coil current giving longer contact life.

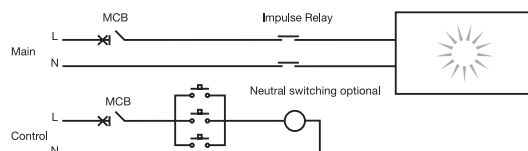
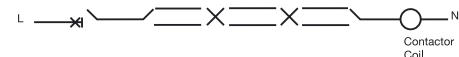
Controlling devices can be combined to provide more sophisticated control. These combinations are much easier with contactor control.

e.g. Combine light sensitive switch & time switch: with their contacts connected in series they ensure that lights are only on during permitted hours and when the natural light level is below the set threshold.

Whether the main lighting load is single or 3 phase, only one set of control devices is required. Apart from the light sensitive switch sensor, all the components and wiring is contained in the distribution board.

Diagram E

Multi location switching



The use of contactor control has its limitations if control is required at more than one switch position.

If the switches are wired in series all switches must be closed before the lights will be ON.

Alternatively if the switches are in parallel any one closed will put the lights on and they must all be off before the lights are extinguished.

The introduction of 2 way switching and intermediate switches solves this problem but still leaves complications if the lights are to be controlled from a large number of switch positions.

There is a simpler way and that is to introduce impulse relays instead of contactors into the circuit. Contactor coils need to be permanently energised to maintain the supply to the lighting load. This means that heat is being continuously dissipated in the panel.

Impulse relays are relays, rated at 16A which have two stable operating states: with the main contacts open or closed. An electrical supply does not have to be maintained to the coil to keep the contacts closed. A short impulse to the coil will change the contact state. Another impulse will change the contact back. Thus one pushbutton can be used to switch the lights on or off.

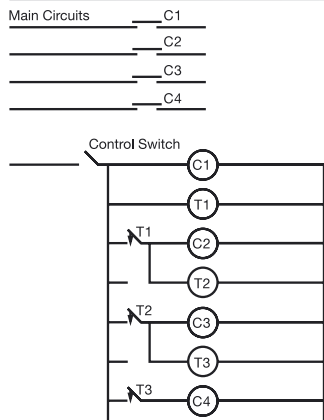
The simplicity of the circuit means that any number of pushbuttons can be connected in parallel to provide lighting control at any number of locations.

Thus the lighting of a large area can be switched on at any entrance and switched off at any exit. The pushbuttons only carry control current and then only when they are actually pressed. Voltage drop calculations and problems can be forgotten in the control circuit. Additional switch positions can be introduced without the need to change any of the existing cabling.

Technical data

Control and Command lighting control

Multi step control



In large warehouses there is often a need to switch all the lights on using one switch or control. If all the luminaires are energised at the same time there is likely to be a severe current surge in the supply causing problems elsewhere in the installation.

T1, T2 and T3 are time delay relays having a delay on energisation. If the timers are set as follows: T1 = 5 sec, T2 = 10 sec and T3 = 15 sec, the sequence is:

- Closing the control switch energises C1, T1, T2 and T3, turns first row of lights ON (C1) and start T1, T2 and T3 counting
- 5 sec after closing the control switch T1 allows C2 to close and turns second row of lights ON (C2)
- 10 sec after closing the control switch T2 allows C3 to close and turns third row of lights ON (C3)
- 15 sec after closing the control switch T3 allows C4 to close and turns fourth row of lights ON (C4)
- On opening the control switch all lights are extinguished. Breaking the supply resets all timers

The use of time delay relays allows the sequenced control of the lighting without a large current inrush.

Stairwells

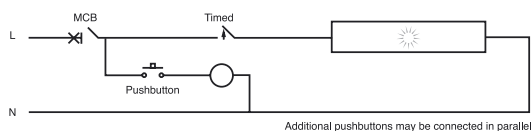


Diagram F

Stairwells and hallways need to be well lit whilst people are present but as the areas are only occasionally occupied energy is wasted by leaving the lights on permanently.

Use a timer relay to switch the lights ON when required and then to switch OFF automatically after a time delay.

With the location of switches at every point that people would use to enter the stairwell it is easy for users to switch the lights ON.

Diagram F

The period that the lights stay ON can be set between 1 and 7 minutes. The switches need to be push button (retractive) types. If required they may be fitted with a neon indicator, wired across the contacts, to aid location in the dark.

Installation costs vs savings

Generally the extra cost of the additional components in the electrical distribution equipment will be recovered many times over by the reduction in electricity consumption over the life of the installation.

For high density control applications a range of extra service distribution boards are available, each one providing 13 module spaces for control products.

For stand alone control applications or where there is insufficient space within the boards a range of insulated and metal enclosures are available.

Run on timer

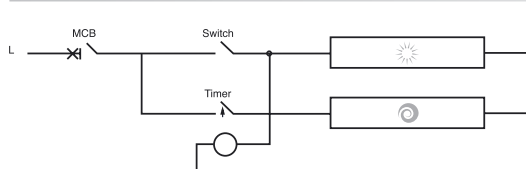


Diagram G

The circuit is designed to switch lights and an associated ventilation fan. On closing the switch the lights and the ventilation fan are switched ON. When the switch is opened the lights go out but the fan continues to run for a period of time, adjustable between 1 and 7 minutes.

Diagram G

Technical data

Control and Command lighting control

Impulse relay - type CIR 16A - operational information

Determination of relay rating – lighting loads.
Incandescent and halogen lamps

Lamp wattage W	Lamp current A	Line current A	1 pole @240Vac lamp number (max)
Incandescent and halogen lamps			
20	0.09	8	89
40	0.18	8	44
60	0.27	8	30
75	0.34	8	24
100	0.45	8	18
150	0.68	8	12
200	0.90	8	9
300	1.35	8	6
500	2.25	8	4
750	3.38	8	2
1000	4.50	8	2

Fluorescent lamps			
18	0.8	8	100
36	0.19	8	42
42	0.21	8	38
58	0.26	8	31
70	0.30	8	27

Low pressure sodium lamps (SOX)			
35	0.23	8	35
55	0.36	8	22
90	0.49	8	16
135	0.73	8	11
180	1.00	8	8

High pressure sodium lamps (SON)			
150	0.83	8	9
250	1.38	8	6
400	2.20	8	4
700	3.85	8	2
1000	5.50	8	1

High pressure mercury vapour lamps (HPL/MBF)			
50	0.30	8	27
80	0.44	8	18
125	0.69	8	12
250	1.31	8	6
400	2.30	8	3
700	3.85	8	2
1000	5.50	8	1

Installation recommendations

- Contactor and relay controls must be bounce free
- When several contactors are mounted side by side a half module spacer must be fitted between every two contactors
- It is advisable to mount electronic units at the bottom of modular enclosures and to separate them from electro-mechanical devices by a space equal to one module or by two CPS9 half module spacers
- For applications where the temperature inside the enclosure is likely to exceed 40°C refer to: Square D - Technical Department Tel: 0870 608 8 608

Technical data

Control and Command heating control

Time switches

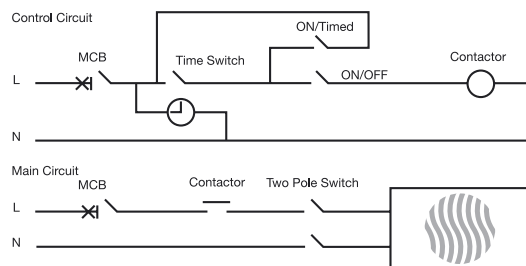


Diagram A

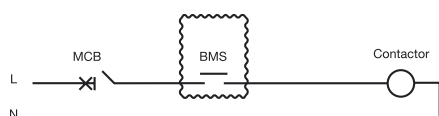


Diagram B

Typical applications are office areas where the heating is required to be switched at set times each day without the need for manual intervention.

The type of time switch to be used depends upon the level of sophistication required. Simple 24 hour time switch, repeating the same pre-set switching sequence each day. Battery back up is included to eliminate the need to reset the device every time there is a power cut. Digital time switch, 7 day type. These are available with 1 or 2 programmable contacts. The programme can be set to have different switching times each day or day omission if required. e.g. no switching at weekends. The two contacts of the 2-channel version are programmed completely independently. Battery back up stores the switching programme for at least 5 years.

An ON / OFF override facility exists on all the time switches but it may be preferred to have external ON / Timed / OFF control. This allows control without giving access to the time switch settings. When the heater is controlled by a contactor this can be achieved by using a standard 2-gang single pole one way light switch. The supply to the time switch motor is maintained. On loss of supply the time switch will continue to keep time but the contacts will not switch.

Diagram A

Contactor control is essential when the heating is controlled by a BMS system. The control circuits are run from the distribution board to the BMS controller positioned wherever convenient for the operation of the building.

Diagram B

Generally the extra cost of the additional components in the electrical distribution equipment will be recovered many times over by the reduction in electricity consumption over the life of the installation if suitable controlling products are used.

Operational information

Heating may be controlled, at one extreme, by a time switch, giving a small number of switching operations per day or, at the other extreme by a close tolerance thermostat when the number of daily switchings may be very high. Before selecting a contactor it is necessary to estimate the likely number of switching operations in an average day.

Single phase (230Vac) heater loads

Contactor N°. of switching operations per day	kW CCN225	kW CCN240	kW CCN363 (using 1 or 2 poles)
25	5.4	8.6	14.0
50	5.4	8.6	14.0
75	4.6	7.4	12.0
100	4.0	6.0	9.5
250	2.5	3.8	6.0
500	1.7	2.7	4.5

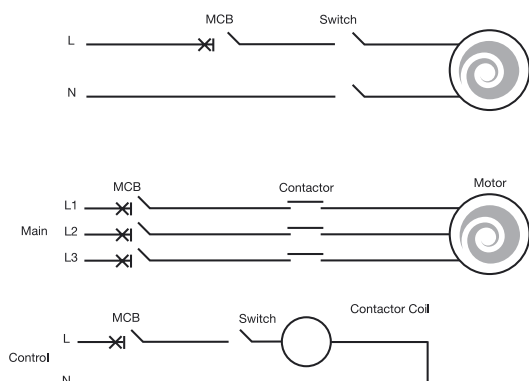
Three phase (415Vac) heater loads

Contactor N°. of switching operations per day	kW CCN425	kW CCN340 CCN440	kW CCN363
25	16	26	41
50	16	26	41
75	14	22	35
100	11	17	26
250	5	8	13
500	4	6	9

Technical data

Control and Command motor control

Motor control



For very small motors the control method can be a directly connected switch-disconnector in the circuit that is used for isolation and control.

This arrangement requires that the control device is near to the motor and that it is capable of the switching duty required by the application.

For larger drives or where a more sophisticated control scheme is required the use of a contactor in the circuit gives many advantages.

Control by contactor means that the contactor performs the switching duty. The switching is achieved by energising and de-energising the contactor coil by remote pushbuttons or switches. These control devices only carry and switch the current taken by the contactor coil which is less than 0.25A. This means that voltage drop calculations are usually not necessary for these control circuits.

For simplicity it is normal to derive the control circuit supply from one phase to neutral ie 230V 50Hz.

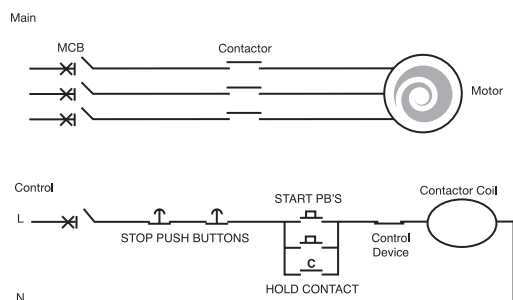
This arrangement eliminates the need for a separate supply or a control circuit transformer. Control circuit protection (MCB) is required unless the main breaker is of such a rating that it provides protection for the control circuit cabling. Generally, if the main breaker is rated more than 10A with the control circuit cabled in 1.0mm² a separate control MCB is required. Contactor control can be either 'two wire' or 'three wire' depending on the circuit configuration.

Two wire control

As its name implies this means of control has two wires to the remote control station. If more than one switch is in the circuit they must all be closed before the contactor is energised. On loss of supply the contactor will drop out.

On return of the supply the contactor will close automatically causing the motor restart without warning. Consideration must be given as to whether this situation is acceptable, which it may be in many applications. This method of control is used in contactor controlled lighting circuits where it would be a great inconvenience have to reset the lights after every loss of supply.

Three wire control



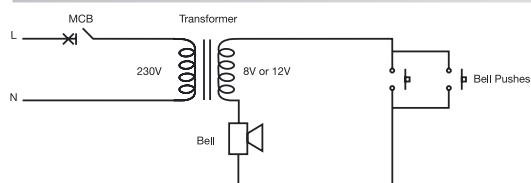
The control device, installed if required, may be an overtemperature switch, vane switch or any other safety device to cut off the supply if an unsafe situation occurs.

In addition to the contactors shown in this catalogue Square D have a range of enclosed control gear suitable for the control of motors:

- Direct on line up to 11kW with or without switch-disconnectors
- Single direction or reversing
- Star-delta up to 22kW with or without switch-disconnectors
- Switch-disconnectors up to 63A
- A wide range of pushbutton stations

Please see the T-Express product range in our Select product catalogue.

Sounds



Many domestic bells are battery operated but in a commercial situation this is not practical nor economic.

It is preferable to operate bell circuits as separated extra-low voltage circuits where the circuit is isolated from earth in such a way that a single fault cannot give rise to a risk of electric shock. The voltage source is derived from a safety transformer complying with BS3535 and having a secondary voltage of 8V or 12V.

The transformer may be mounted in the distribution board or in an individual enclosure along with the audible device.

Metering

The regulations recommend that owners or occupiers should be provided with sufficient instructions, including an overall metering strategy that show how to attribute energy consumptions to end users and how the meter readings can be used to compare operating performance with published benchmarks.

Being reliant on a single meter, belonging to the electricity supply company is insufficient to understand the electrical consumption on a commercial or industrial site and to comply with the Building Regulations.

The regulations say that reasonable provision would be to enable at least 90% of the estimated annual energy consumption of each fuel to be accounted for. To achieve this, the regulations suggest that it would be reasonable for final electrical distribution boards having a load of 50kW or more to be provided with suitable metering.

The introduction of metering does not, by itself, reduce electrical consumption but it does allow a measure of usage so that positive actions can be taken to save costs. For ease of ordering and installation the metering requirement needs to be met by an off the shelf solution which is easy and quick to install without the need for special tools or skills.

To measure energy consumed it is necessary to have a voltage sensing circuit and a current sensing circuit. Voltage sensing is achieved from a three phase outgoing circuit on the main distribution board. To prevent the metering being switched off this circuit should be locked in the on position by a padlocking device. Current sensing is achieved via three current transformers, suitably rated for the maximum current taken by the board, normally the board's rated current.

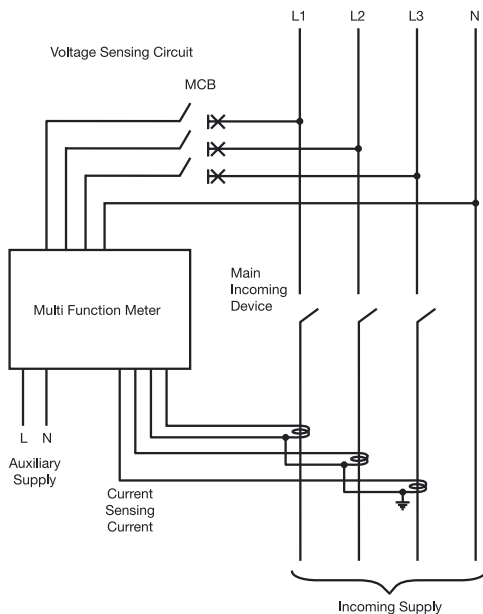
These two inputs are fed to the multi function meter which provides the readings shown on the display. Designed to fit any three phase KQII board used on a three phase four wire system. One kit for all incoming 240V 50/60Hz supplies up to 250A.

The kit contains a multi function meter, reference PM700P which displays the following readings:

- Voltage of each phase
- Current in each phase
- Kilowatts taken by each phase and the total
- Total kilowatt-hours absorbed by the loads
- Total kVAh absorbed by the loads
- Power factor of each phase

In addition there is a pulse output, 1 pulse per kWh for use with a BMS system
Pulse output contact rated 27V ac or dc, 20mA.

For an inexpensive and compact (96mmx96mm) meter that offer all the basic measurement capabilities, the PM700 or PM700P meter product is the best fit. With a large easy to read anti glare display that can show multiple readings on a single screen, the 50mm deep unit is the proven choice to meet the requirements of the building regulations part L2.



Technical data

Control and Command contactors

Contactors

Description	A range of contactors specially designed for distribution applications such as Lighting Heating Small motor control
Ratings	For specific application ratings refer to the relevant section of this catalogue.
Specifications	Comply with BSEN61095, IEC1095 Suitable for use on 415V 50Hz 3 phase 3 or 4 wire systems
Tropicalisation	Suitable for 95% relative humidity at 55°C
Temperature range	Suitable for use in temperatures from -5°C to +50°C Half module spacers CPS9 should be used between every two contactors. Suitable for 60°C ambient if spacers are fitted either side of each contactor
Indication	Indicator on front face of contactor: red when coil energised, white when unenergised
Main contacts	Normally open. Nominal ratings are at 40°C.
Main terminals	Tunnel type, capacities given in table below.
Control circuit	230/240v -15% +6% 50Hz
Control terminals	Tunnel type, capacity: rigid cable 2x2.5mm ² , flexible 2x1.5mm ²
Operating time	Closing: 10 - 25 mS, Opening: 10 - 30 mS
Noise level	<20dB
Mounting	On symmetrical DIN rail in KQ boards, Qwikline II units or individual enclosures

Reference	CCN225	CCN240	CCN340	CCN363	CCN425	CCN440	CCN4100
Rating	25A	40A	40A	63A	25A	40A	100A
No of poles	2	2	3	3	4	4	4
Voltage rating	250V	250V	415V	415V	415V	415V	415V
Making capacity	60A	120A	120A	200A	60A	120A	350A

Main terminals cable capacity

Standard stranding	6mm ²	25mm ²	25mm ²	25mm ²	6mm ²	25mm ²	50mm ²
Flexible stranding	2x2.5mm ²	2x10mm ²	2x10mm ²	2x10mm ²	2x2.5mm ²	2x10mm ²	2x35mm ²

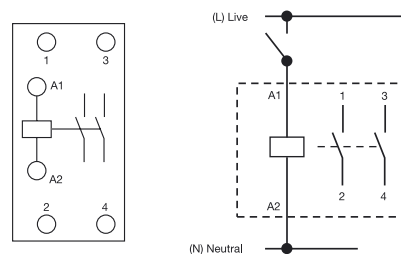
Coil consumption

Pick-up VA	15	34	53	53	34	53	106
Hold VA	3.8	4.6	6.5	6.5	4.6	6.5	13
Hold W	1.3	1.6	2.1	2.1	1.6	2.1	4.2

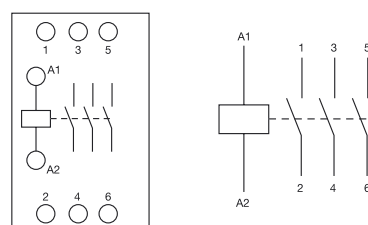
Dimensions

Width mm (modules)	18 (1)	36 (2)	54 (3)	54 (3)	36 (2)	54 (3)	108 (6)
Height mm	81	81	81	81	81	81	81
Depth mm	65	65	65	65	65	65	65

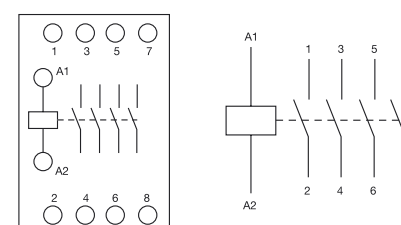
Contactor 2 pole



Contactor 3 pole



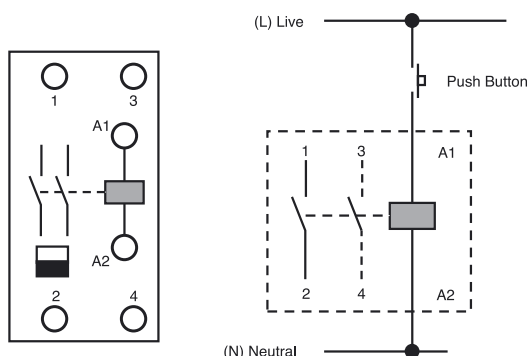
Contactor 4 pole



Technical data

Control and Command impulse relays

Impulse relays



References

CIR116 One main contact

CIR216 Two main contacts (always the same status)

Description

Impulse relays, otherwise known as bi-stable relays are relays having two stable operating positions. The coil is energised for a short time to change the relay from one state to the other. Energising the coil again changes it back to its original position. Thus the coil is only energised momentarily to change the relay state. This has the advantage that there is not a coil being kept energised for long periods of time that would be expected with a contactor in a lighting circuit. Operation of the relay is by a pushbutton or retractive switch. Any number of pushbuttons may be connected into the circuit to give a switching facility at various switch positions. Each switch is connected in parallel and may be looped as required. Thus the need for two way switches and intermediates is eliminated.

Because the switch circuit only carries the coil operating current the voltage drop calculations are greatly simplified.

Only the main circuit need be considered.

Ratings

The main contacts are rated at 16A at 0.6pf 250V 50Hz. For specific ratings in lighting circuits refer to that section.

Specifications

Comply and tested to IEC 669-1 and 669-2

Status indication

Toggle on front face

Manual control

Toggle on front face

Endurance

200,000 cycles at AC22, pf = 0.6, 400,000 cycles at AC21, pf = 1.0

Coil circuit

230 /240 V -15% +6% 50Hz Pick up 19VA

Coil energisation

Minimum duration 50mS, Maximum 1 hour.

Maximum switching 5 operations per hour

Main terminals

Tunnel type terminals, capacity 0.5 - 6mm²

Control terminals

Tunnel type terminals, capacity 0.5 - 2.5mm²

Mounting

On symmetrical DIN rail in KQ boards, Qwikline II units or individual enclosures.

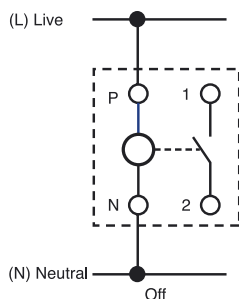
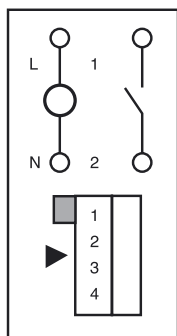
Dimensions

Width mm (modules)	18mm (1)
Height	81mm
Depth	65mm

Technical data

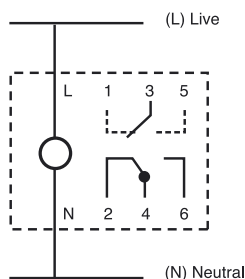
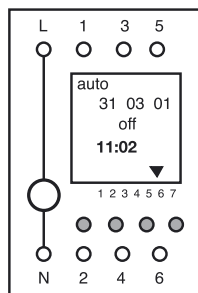
Control and Command time switches

Analogue time switch



Reference	CTS24
Description	24 hour programmable timer
Time base	Quartz
Time accuracy	One second per day, not accumulative
Programming	Mechanical sliders, minimum interval 15 minutes Maximum 48 switchings per day
Manual control	3 position switch under front cover: ON - Automatic - OFF
Motor supply	230V +/- 10% 50-60Hz Load 2VA
Back up	100 hour capacitor type battery
Contact	1 changeover, rated 250V 50-60 Hz 16A resistive. 4A at 0.6 pf
Operating temp.	-10°C to +50°C
Terminals	Tunnel type, up to 6mm ²
Cover	Clear plastic, sealable
Mounting	On symmetrical DIN rail in KQ boards, Qwikline II units or individual enclosures
Dimensions	Width 18 (1 module) Height 90 Depth 66

Digital time switch



References	CPT11 7 day Digital time switch - one channel CPT21 7 day Digital time switch - two channel
Description	7 day programmable digital time switch
Time base	Quartz
Time accuracy	One second per day, not accumulative
Display	Time, day, date, contact status and mode
Programming	Multi lingual menu driven programming
Languages	English, French, Italian, Spanish, Portuguese or German
Manual control	Override, temporary or permanent
Min. switch time	One minute
Switching operations	CPT11: 28, CPT21: 42
Summer / winter	Manual or automatic control for UK, Europe or USA
Cover	Clear plastic, sealable
Motor supply	230V +/- 10% 50-60Hz Load 6VA
Back up	Battery: CPT11 - 3 years, CPT21 - 5 years
Contacts	1 changeover, rated 250V 50-60 Hz 16A resistive. 10A at 0.6 pf Motor load: 2300 VA
Operating temp	-10°C to +50°C
Mounting	On symmetrical DIN rail in KQ boards, Qwikline II units or individual enclosures
Terminals	Tunnel type, up to 6mm ²
Dimensions	Width 45mm (2.5 module) Height 90mm Depth 66mm

Technical data

Control and Command time switches

Multi functional time switch

Reference	CPT9
Description	Multi functional time switch
Function	Controls the switching of up to four channels depending on the function allocated. There are 8 functions for the management of power and lighting Time programming: either daily, weekly or annually. Impulse programming: from 1 to 59 seconds Close delay: up to 10 hours Open delay: up to 10 hours Timer function Flashing facility Hours counter Impulse counter
Memory	45 time ranges for weekly time programming 15 time ranges for yearly time programming 20 different impulses for impulse programming Programme stored using EEPROM
Minimum switch time	1 minute between two programmed operations
Back up	Using a lithium battery. Autonomy 5 years. Life span 10 years.
Terminals	Tunnel terminals, 0.2 to 6mm ² or 2x2.5mm ²
Cover	Clear plastic, sealable
Supply	230V +/-10% 50Hz
Inputs	6
Outputs	4; 2 NO relays and 2 CO relays 10A
Display	Time, day, date, contact status and mode
Operating temperature	-5°C to 50°C
Storage temperature	-25°C to 70°C
Electrical endurance	>20 x 10 ⁶ operations
Mechanical endurance	>0.1 x 10 ⁶ operations
Mounting	On symmetrical DIN rail in KQ boards, Qwikline II units or individual enclosures
Dimensions	Width 90mm (5 modules) Height 90mm Depth 65mm

Memory card for Multi functional time switch

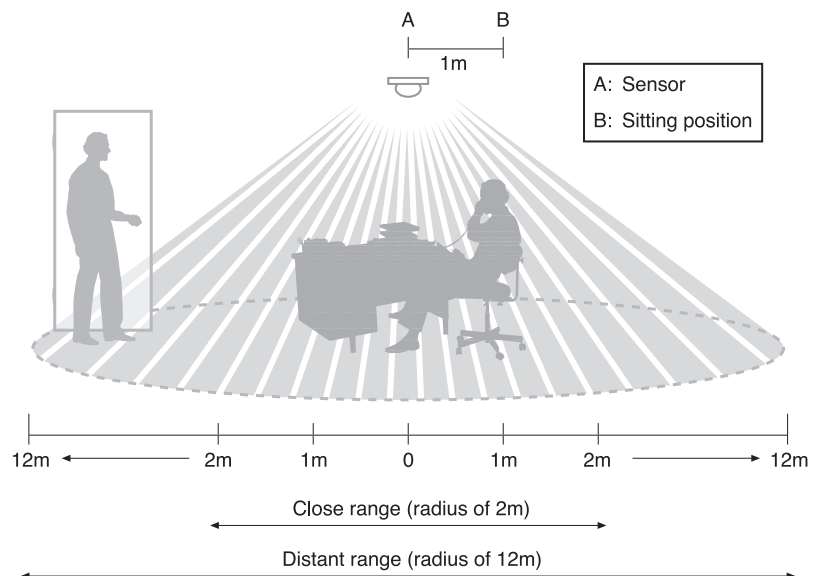
Reference	CPT9MC
Description	Memory cartridge for CPT9

Technical data

Control and Command presence detector

Presence detector

Reference	CPD360
Description	Infra red sensor for lighting control Lighting is switched if persons are detected and the lighting level is below the pre set threshold
Location	Ceiling mounted 2.5 to 3 m above floor level
Supply	230V 50Hz
Detection zone	360°C horizontally 180°C vertically
Contact rating	2000W incandescent lamps, 1000W LV halogen lamps 1000VA fluorescent tubes with standard control gear 16x(1x36W), 12x(2x36), 12x(1x58W) or 8x(2x58W) fluorescents with electronic control gear For higher ratings use contactor to switch the load
Maximum reach	High resolution close range 4m dia, safe distance range 24m dia
Switching threshold	20 - 1300 lux
Switch off delay	4 - 15 minutes adjustable
Enclosure	IP20
Operating temp.	-15°C to +50°C

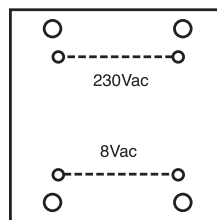


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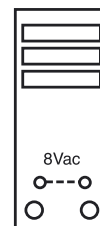
Control and Command audible

Audible alarms

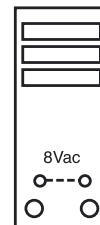
References	CBL8 Bell CBZ8 Buzzer
Description	Audible alarms
Supply	8V ac for use with SQD bell transformer reference CBX8
Load	3.6VA
Sound level	70dB
Mounting	On symmetrical DIN rail in KQ boards, Qwikline II units or individual enclosures
Terminals	Tunnel terminals for cables up to 4mm ²
Dimensions	Width 18mm (1 module) Height 82mm Depth 63mm
Reference	CBX8
Description	Double insulated bell transformer
Standards	Designed and tested to BS3535 Pt 1, BSEN 60742, BSEN 61558
Supply	Primary 240V 50Hz Secondary 8V or 12V 8VA
Mounting	On symmetrical DIN rail in KQ boards, Qwikline II units or individual enclosures
Terminals	Tunnel terminals for cables up to 4mm ²
Dimensions	Width 36mm (2 modules) Height 80mm Depth 74mm



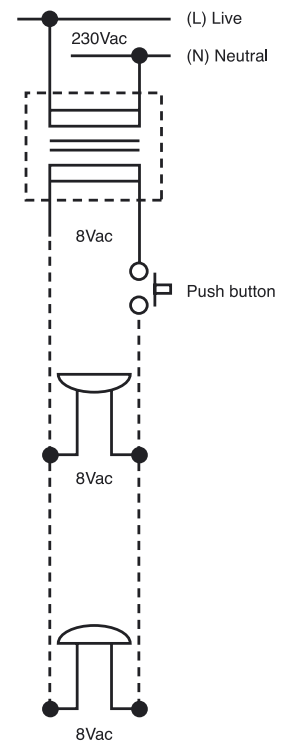
CBX8 Transformer



CBZ8 Buzzer



CBL8 Bell

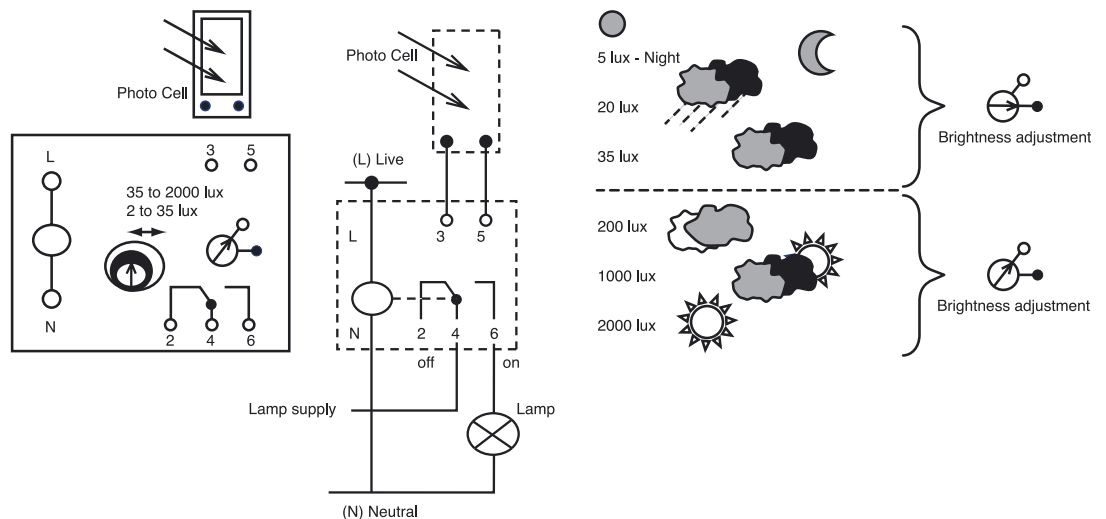


Technical data

Control and Command light sensitive switch

Light sensitive switch

Reference	CLS110
Description	Light sensitive switch
Function	Monitors the ambient light level to switch on lighting when this falls below the preset threshold.
Sensor	The switch is supplied with a photo cell for remote mounting
Light levels	2 ranges are selectable: 2 - 35 lux or 35 - 2000 lux
Time delay	80 seconds to prevent inadvertent operation due to sudden light level changes
Status	LED indicator on front face of switch
Supply	220 / 240 V 50Hz
Burden	2.2VA
Contact	1 changeover, rated 250V 10A resistive, 1100W lighting, For larger loads use a suitable contactor to switch the load
Terminal capacity	Main terminals 0.5 - 6mm ² , control terminals 0.5 - 2.5mm ²
Mounting	On symmetrical DIN rail in KQ boards, Qwikline II units or individual enclosures
Dimensions	Width 63mm (3.5 modules) Height 81mm Depth 65mm



Technical data

Control and Command astronomical switch

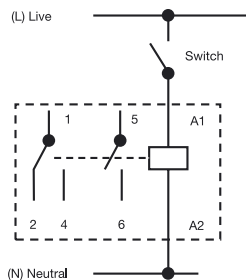
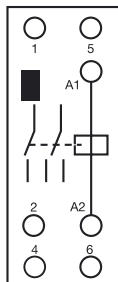
Astronomical switch

Reference	CPLST110	
Description	Astronomical switch	
Function	Monitors sunrise and sunset dependent upon geographical location to activate switch	
Memory	14 switching locations	
Minimum switch time	1 minute between two programmed intervals	
Back up	Using a lithium battery. Autonomy 6 years, lifetime 12 years	
Programming	Longitude -180° ... +180° in steps of 1° Latitude -90° ... +90° in steps of 1°	
Terminals	Tunnel terminals 0.2 to 6mm ² or 2x2.5mm ²	
Cover	Clear plastic	
Supply	230Vac +/- 10% 50/60Hz	
Enclosure	IP20	
Operating temp	-20°C ... +50°C	
Display	Time, day, date, mode	
Languages	English, French, Italian, Portuguese and German	
Contacts	1 changeover, rated 16A resistive, 10A at 0.6pf at 250v 50/60Hz	
Mounting	On symmetrical DIN rail	
Dimensions	Width	45mm (2.5 modules)
	Height	81mm
	Depth	65mm

Technical data

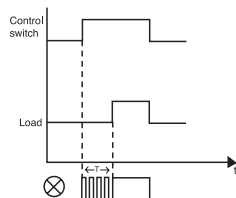
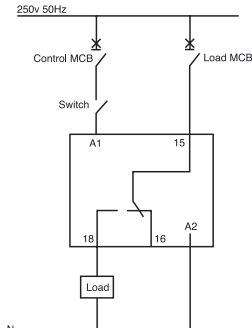
Control and Command relays

Control relay



Reference	CCR110	
Description	Control relay	
Function	General purpose relay.	
Contacts	One changeover contact and one normally open contact, rated 250Vac 10A resistive.	
Manual control	The relay has a pushbutton on the front for testing purposes which also acts as an indicator, showing red when the coil is energised.	
Supply	230 / 240V 50Hz	
Consumption	4VA inrush and hold	
Mounting	On symmetrical DIN rail in KQ boards, Qwikline II units or individual enclosures	
Terminals	Main	Tunnel type, 0.5 - 6mm ²
	Coil	Tunnel type, 0.5 - 2.5mm ²
Dimensions	Width	18mm (1 module)
	Height	81mm
	Depth	69mm

Time delay ON relay



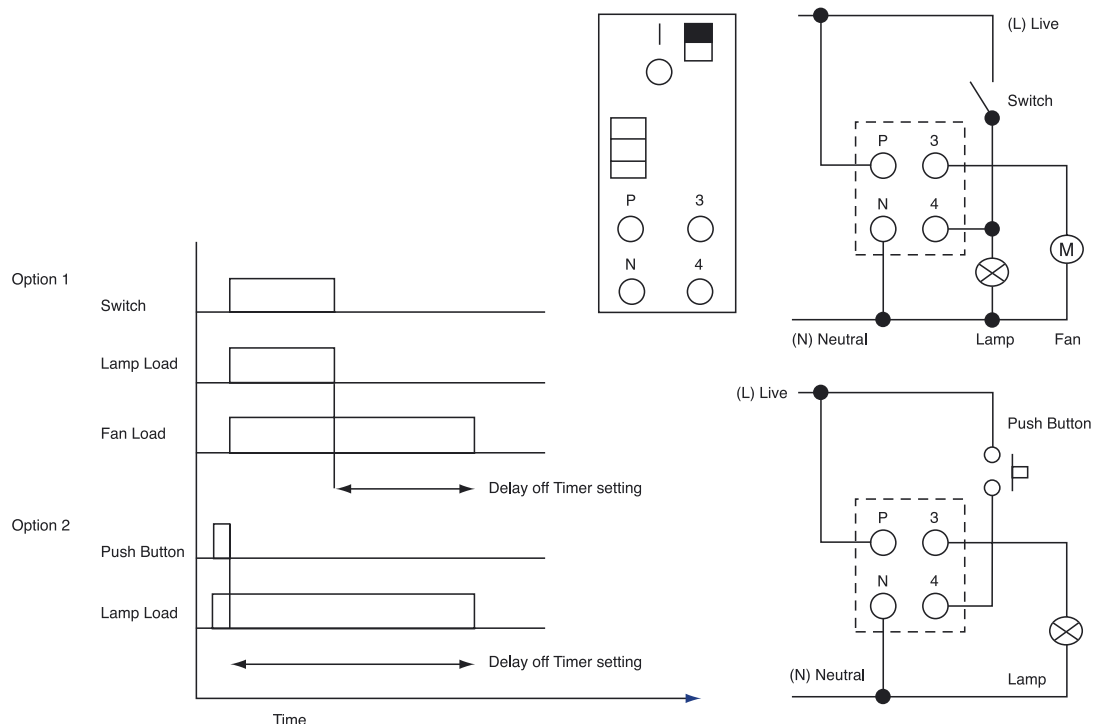
Reference	CTR1	
Description	Time delay ON relay. After coil energisation the contacts close at the end of the set time delay.	
Function	Use to delay the switching of a circuit. In large lighting schemes they can be used to stagger the lighting switch-on to limit the inrush current.	
Time range	0.1 seconds to 10 hours in 7 ranges. Accuracy +/- 10% of full scale	
Adjustment	2 adjustment knobs on the front face, under a transparent sealable cover	
Indication	Green indicator on front face. Flashes during timing period	
Contact	1 changeover contact	
Contact rating	250Vac. 8A resistive	
Supply	220 / 240V 50Hz	
Mounting	On symmetrical DIN rail in KQ boards, Qwikline II units or individual enclosures	
Terminals	Tunnel type, 0.5 - 6mm ² or 2x2.5mm ²	
Dimensions	Width	18 mm (1 module)
	Height	81mm
	Depth	60mm

Technical data

Control and Command delay OFF timer

Delay OFF timer

Reference	CDT116
Description	Time delay relay, relay de-energises after preset time, adjustable 1-7 minutes
Function	Relay is intended for use in lighting circuits. On energisation of the relay the lighting is switched on. After the preset time period the lighting is switched off. This ensures that lighting is not left on unnecessarily and is therefore ideal for areas where persons are not continually present, such as hallways and stairways (option 2). The relay may also be used to control a ventilation fan so that it runs on after the lights have been switched off (option 1).
Time range	1 to 7 minutes in 15 second steps
Manual control	Override switch on front face allows lighting to be switched on permanently
Contact	1 normally open contact
Note	The switch on the side of the device must be in position '4' if the control switches are placed in the live side (normal practice)
Contact rating	250Vac. 16A resistive, 2000W maximum lighting load
Supply	220 / 240V 50Hz
Consumption	200VA inrush, 1.1VA hold
Mounting	On symmetrical DIN rail in KQ boards, Qwikline II units or individual enclosures
Terminals	Main Tunnel type, 0.5 - 6mm ² Coil Tunnel type, 0.5 - 2.5mm ²
Dimensions	Width 18mm (1 module) Height 87mm Depth 70mm



Technical data

Control and Command PIR detector

PIR detector

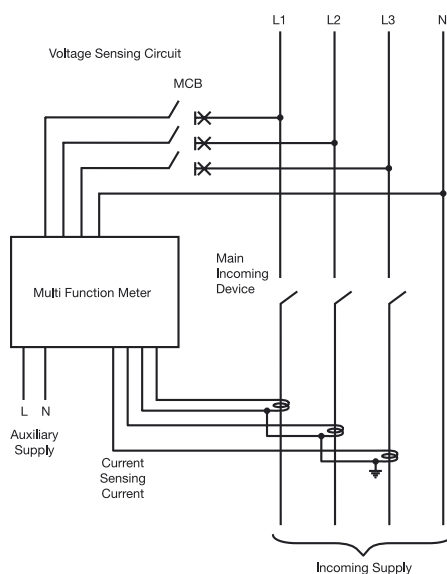
Reference	CPIR
Description	Passive infra red detector for sensing movement within the specified detection zone. A built in cell ensures that the lighting is only switched when the ambient light level is below that set on the device
Function	For switching security or safety lighting
Detection zone	12 metres and 180°C. The angular range may be reduced by using the shroud supplied
Ambient light level	Adjustable 3 - 80 lux
Switch off delay	After movement detection the contacts stay closed for an adjustable time period of 4 seconds to 15 minutes.
Contact rating	250Vac 10A resistive , 6A at 0.6 pf
Supply	230V +/- 10% 50Hz
Operating temp.	-25°C to +55°C
Protection	IP54
Mounting	Wall mounted positioned to cover the area to be secured

Technical data

Control and Command metering

Multi function meter

References	PM700 PM700P PM710 PM750
Description	Panel/Door mounted digital multifunction meter as used in KQ250MET metering kit
Applications	Panel instrumentation, submetering, harmonic monitoring, in compliance with part L2 of the building regulations.
Specification	IEC 61036 class 1 (real energy) IEC 61036 class 2 (reactive energy)
Readings	Voltage of each phase, current in each phase Real, active, apparent power per phase Frequency powerfactor Active, apparent, relative energy (kwh, KVaR, KVArh) current demand power demand min/max of instantaneous reading Voltage total harmonic distortion Current total harmonic distortion
Supply	Three phase star connected or single phase
Auxiliary supply	110 to 415 \pm 10% Vac 125 to 250 \pm 20% Vdc
Frequency	45-65 Hz
Current	5A secondary from current transformer range 5 to 65534A
Pulse output (PM700P)	Static output (240 \pm 10% Vac or 300 \pm 10% Vdc, 100mA max) 2.41kV rms isolated
Communication RS 485 port (PM710)	2-wire, up to 19200 bauds, modbus RTU SELV circuit, 6kV impulse (double insulation)
Protection	IP52 front display IP30 meter body
Temperature range	-10°C to +50°C
Relative humidity	95%RH at 50°C
Terminals	0.5-6mm ²
Mounting	Front panel DIN96
Dimensions	96x96x88mm (meter with display) 96x96x50mm (behind mounting surface)



Technical data

Control and Command metering

Multi function meter

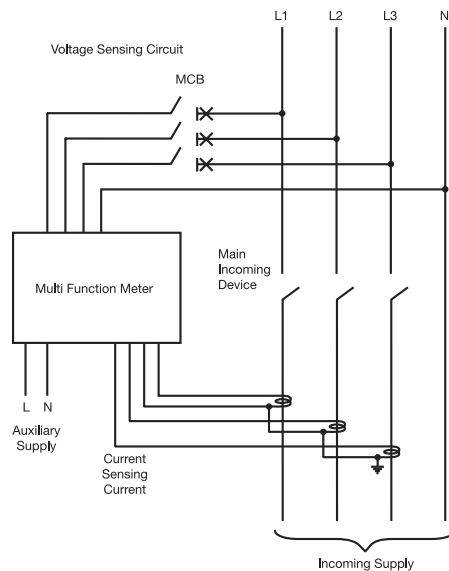
Reference	CEM01					
Description	Multi function meter					
Application	This meter may be used to measure the energy used by an electrical load in compliance with part L2 of the building regulations. It is particularly easy to fit when the circuit components are DIN rail mounted.					
Specification	IEC 1010 class 2					
Readings	Readings displayed Voltage of each phase Current in each phase kilowatts taken by each phase and the total total kilowatt-hours absorbed by the loads total kVAh absorbed by the loads power factor of each phase					
Supply	Three phase, star connected or single phase					
Inputs Voltage	250V nominal, 264V maximum					
Frequency	20 - 800 Hz					
Current	5A from secondary of current transformers Display can be set for the following current transformer ratios					
	5/5	75/5	200/5	500/5	1200/5	2000/5
	25/5	80/5	250/5	600/5	1250/5	2500/5
	40/5	100/5	300/5	750/5	1500/5	3200/5
	50/5	120/5	320/5	800/5	1600/5	4000/5
	60/5	150/5	400/5	1000/5	1800/5	
Pulse output	Set of normally open contacts provide an output of one pulse per kWh Pulse duration 0.4 - 0.5 seconds Contact rating 27V ac or dc, 20mA					
Auxiliary supply	200 - 240V 50Hz					
Protection	IP20 Do not expose display to direct sunlight					
Temperature range	-10°C to +40°C					
Relative humidity	90% RH maximum. No condensation must fall on the meter					
Terminals	Tunnel type, 0.5 - 2.5mm ²					
Mounting	On symmetrical DIN rail					
Dimensions	Width	106mm (6 modules)				
	Height	90mm				
	Depth	58mm				

Technical data

Control and Command metering

Metering kit

Reference	KQ250MET
Description	Multi function metering kit for KQ 3 phase B type distribution boards
Function	This metering kit is designed to be field installable to any Square D LoadCentre KQ B type distribution board allowing the contractor to provide a full metering facility without the need to purchase a special bespoke board. One kit for all ratings.
Format	This kit comprises an extension box to be fixed to the bottom of the KQ distribution board. All fixings are supplied. All components except three single pole MCBs are supplied fully fitted and wired. The MCBs are supplied but require to be fitted on the distribution stack and connected to prepared tails.
Components	PM750 multi function meter Three current transformers Three single pole MCBs Wiring looms
Readings	For the readings provided see details of the PM700P meter
Current rating	The kit is rated at 250A and is suitable for all ratings of incomer
Voltage rating	415V nominal, 455V maximum. 3 phase 4 wire 50-60 Hz
Output	Pulse output contact is available. Contact rated at 27V 20mA ac or dc.
Dimensions	Width 456mm Height 450mm Depth 127mm



Technical data

Control and Command individual enclosures

Individual enclosures

Sheet steel

Description	Range of wall mounting sheet steel enclosures containing symmetrical DIN rail for fitting DIN profile products		
Protection	IP30 to IEC529		
Covers	Screw fixing with facilities for sealing		
Finish	Square D blue grey epoxy paint		
Knockouts	One 25mm knockout at each end		
References	SDEN3	SDEN4	SDEN5
Nº. of 18mm modules	3	4	5
Height	200	250	250
Width	101	123	123
Depth	63	63	63

Insulated case (IP40)

Description	Range of wall mounting insulated enclosures containing symmetrical DIN rail for fitting DIN profile products		
Protection	IP40 to IEC529		
Covers	Screw fixing with opaque front door opening upwards		
Finish	Self extinguishing material, white colour to RAL 9003		
Terminals blocks	Two earth – neutral blocks having 4 terminals (8 for SDEN8P)		
References	SDEN4P	SDEN6P	SDEN8P
No of 18mm modules	4	6	8
Height	200	200	200
Width	112	148	184
Depth	94	94	94
Weight g	305	370	435

Insulated case (IP54)

Description	Wall mounting insulated enclosure containing symmetrical DIN rail for fitting DIN profile products		
Protection	IP54 to IEC529		
Covers	Screw fixing with clear front door opening upwards		
Finish	Self extinguishing material, white colour to RAL 9003		
Terminals blocks	Two earth – neutral blocks having 4 terminals		
References	RSD4IP54		
No of 18mm modules	4		
Height	200		
Width	110		
Depth	112		
Weight g	350		
References	SQODNBP KQBP25		
Description	Blanking plate for unused ways in all enclosures, 5 modules		
Pack quantity	1	25	

Technical data

Switch and Fusegear

Twinbreak

Ratings	20A	32A	63A	100A	125A	160A
Standard			BSEN60947-3	I.E.C. 947-3		
Rated current I _e	20A	32A	63A	100A	125A	160A
Voltage U _e /U _{imp} 50/60Hz			415/500/6kV			
Rated short time withstand I _{cs}	416A	416A	756A	1300A	1300A	1300A
Rated short circuit making capacity I _{cm}	1.35kA	1.35kA	1.35kA	3.5kA	3.5kA	3.5kA
Rated short circuit breaking capacity I _{cn}	50kA	50kA	50kA	50kA	50kA	50kA
Utilisation category	AC20/21/22A/23B				AC20/21/22B	
Kilowatt rating	11kW	15kW	30kW	55kW	55kW	55kW
Mechanical endurance			As per BSEN60947-3			
Electrical endurance			As per BSEN60947-3			
Rated service temperature			40°C			

Quadbreak

Ratings	63A	100A	160A	200/250A	315/400A	500A	630A	800A
Standard				BSEN60947-3	I.E.C. 947-3			
Rated current I _e	63A	100A	160A	200/250A	315/400A	500A	630A	800A
Voltage U _e /U _{imp} 50/60Hz				415/500/8kV				
Rated short time withstand I _{cs}	3.4kA	3.4kA	3.4kA	5.23kA	12kA	12kA	12kA	12kA
Rated short circuit making capacity I _{cm}	5kA	5kA	5kA	8kA	24kA	24kA	24kA	24kA
Rated short circuit breaking capacity I _{cn}	50kA	50kA	50kA	50kA	50kA	50kA	50kA	50kA
Utilisation category	AC20/21/22/23A				AC20/21/22/23B			AC20/21/22B
Kilowatt rating	30kW	55kW	90kW	110/130kW	175/220kW	250	300kW	-
Mechanical endurance				As per BSEN60947-3				
Electrical endurance				As per BSEN60947-3				
Rated service temperature				40°C				

I-Line fuse switch units

Ratings	32A	63A	100A	160A	250A	400A
Standard				BSEN60947-3		
Rated current I _e	32A	63A	100A	160A	250A	400A
Voltage U _e /U _{imp} 50/60Hz	690/1000/8kV			690/1000/12kV		
Rated short time withstand I _{cs}				As per BSEN60947-3		
Rated short circuit making capacity I _{cm}				50kA		
Rated short circuit breaking capacity I _{cn}				50kA		
Utilisation category				AC21/22/23B		
Kilowatt rating	30kW	30kW	55kW	59kW	147kW	220kW
Mechanical endurance				As per BSEN60947-3		
Electrical endurance				As per BSEN60947-3		
Rated service temperature				35°C		

Section 07

Contents

Dimensions

Domae consumer units

Insulated units	Page 7/1
Metal units	Page 7/1

Qwikline II consumer units

Insulated units	Page 7/2
Metal units	Page 7/3

LoadCentre KQII distribution boards

A type distribution board	Page 7/4
A type interior and cover	Page 7/5
B type distribution board	Page 7/6
B type interior	Page 7/7

I-Line MCCB panelboards

Size 1 250A/400A	Page 7/8
Size 2 630A	Page 7/9
Size 3 800A	Page 7/10
Size 4 1200A - 2000A	Page 7/11

I-Line fuse switch panelboards

Size 1 400A	Page 7/12
Size 2 630A	Page 7/13
Size 3 800A	Page 7/14
Size 4 1200A - 2000A	Page 7/15

Switch and Fusegear

Twinbreak	Page 7/16
Quadbreak	Page 7/17
Busbar chambers	Page 7/17
Fuse switch panelboards	Page 7/17

Dimensions (mm)

Domae consumer units

Insulated units

Reference number	Dimensions		
	Height	Width	Depth
DOM2CU	240	189	127
DOM4CU	240	224	127
DOM6CU	240	260	127
DOM8CU	240	296	127
DOM12CU	240	368	127
DOM16CU	240	440	127

Metal units

Reference number	Dimensions		
	Height	Width	Depth
DOM4MCU	247	222	111
DOM6MCU	247	258	111
DOM8MCU	247	294	111
DOM12MCU	247	366	111
DOM16MCU	247	438	111

Dimensions (mm)

Qwikline II consumer units

Insulated units

Reference number	Number of ways	Type	Dimensions	
			A	B
SQO2	2	Standard	189	126
SQO4	4	Standard	224	162
SQO6	6	Standard	260	198
SQO8	8	Standard	296	234
SQO12	12	Standard	368	306
SQO16	16	Standard	440	378
SQO23	24	Standard	368	306
SQO204	2+4	Dual	296	234
SQO303	3+3	Dual	296	234
SQO402	4+2	Dual	296	234
SQO406	4+6	Dual	368	306
SQO505	5+5	Dual	368	306
SQO604	6+4	Dual	368	306
SQO703	7+3	Dual	368	306
SQO707	7+7	Dual	440	378
SQOS2R4	2+4	Split	296	234
SQOS3R3	3+3	Split	296	234
SQOS4R2	4+2	Split	296	234
SQOS4R6	4+6	Split	368	306
SQOS5R5	5+5	Split	368	306
SQOS6R4	6+4	Split	368	306
SQOS7R3	7+3	Split	368	306
SQOS7R7	7+7	Split	440	378

Height = 480

Cable access points

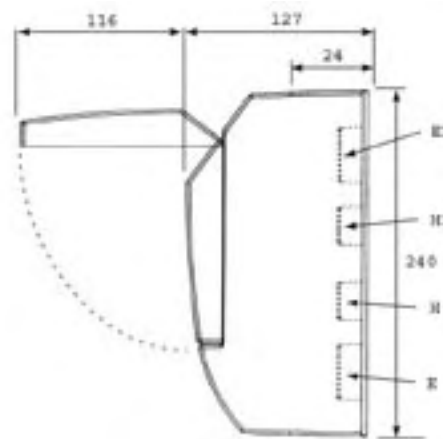
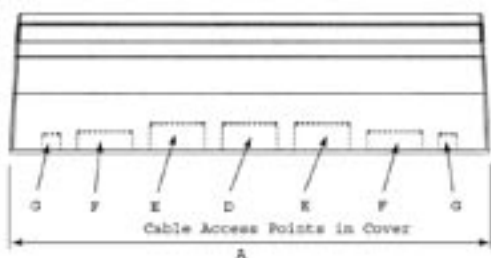
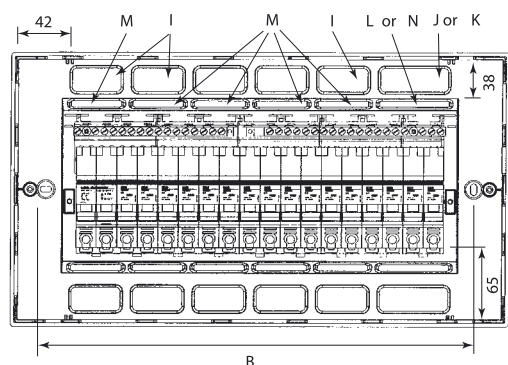
Type	D	E	F	G	H	I	J	K	L	M	N
2 way		6		4	6	2	2		2	a2	
4 way		6		4	8	4				4	
6 way	2	8		4	4	6				6	
8 way	2	4	4	4	4	6	2		2	6	
12 way	4	6	2	4	4	10				10	
16 way	6	4	4	4	4	10		2		10	2

Note: 24 way unit is made up of 2, stacked, 12 way enclosures.

Knockout quantities for Split load and Dual incomer units are obtained by adding the total number of outgoing ways, plus 2 then relating to the table, eg. 7 + 7 ways + 2 = 16/16 way knockout quantity.

Cable entry size

Entry sizes			
D	23 x 51	J	25 x 30
E	15 x 38	K	25 x 65
F	15 x 51	L	13 x 30
G	13 x 16	M	13 x 48
H	15 x 25	N	13 x 65
I	25 x 48		



SQO23 480mm high

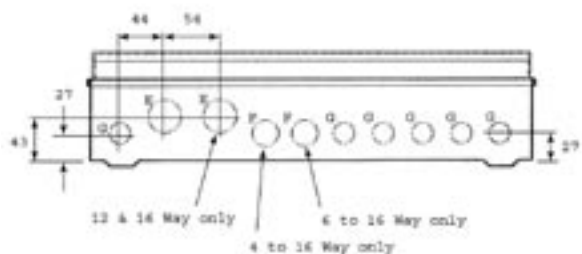
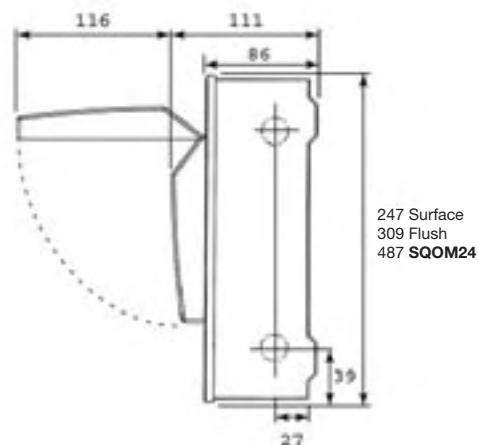
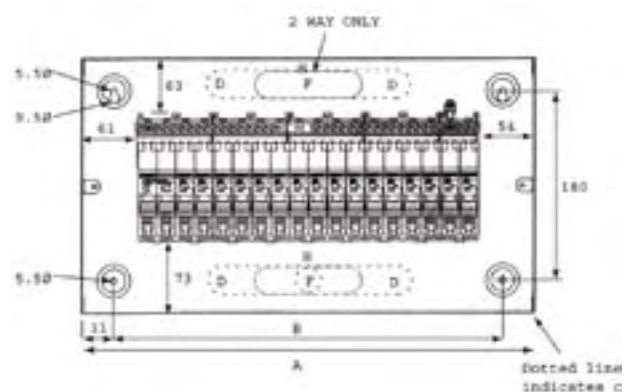
Dimensions (mm)

Qwikline II consumer units

Metal units

Reference number	Number of ways	Type	Dimension A	Number of knockouts				
				D 250 x 76	E 30	F 25	G 20	H 250 x 192
SQOM2	2	Standard	181	-	2	2	8	-
SQOM4	4	Standard	217	2	2	2	8	-
SQOM6	6	Standard	253	-	2	4	8	-
SQOM8	8	Standard	289	-	2	4	10	2
SQOM12	12	Standard	361	4	4	4	12	-
SQOM16	16	Standard	433	4	4	4	16	-
SQOM24	24	Standard	487	6	4	4	8	-
SQOM2F	2	Flush	248	-	2	2	8	-
SQOM4F	4	Flush	284	2	2	2	8	-
SQOM6F	6	Flush	320	-	2	4	8	2
SQOM8F	8	Flush	356	-	2	4	10	2
SQOM12F	12	Flush	428	4	4	4	12	-
SQOM16F	16	Flush	500	4	4	4	16	-
SQOMS4R6	4+6	Split	378	4	4	4	12	-
SQOMS5R5	5+5	Split	378	4	4	4	12	-
SQOMS6R4	6+4	Split	378	4	4	4	12	-
SQOMS7R7	7+7	Split	450	4	4	4	16	-
SQOM406	4+6	Dual	378	4	4	4	12	-
SQOM505	5+5	Dual	378	4	4	4	12	-
SQOM604	6+4	Dual	378	4	4	4	12	-
SQOM707	7+7	Dual	450	4	4	4	16	-
SQOM60501	6+5+1	Multi tariff	450	4	4	4	16	-
SQOM70401	7+4+1	Multi tariff	450	4	4	4	16	-
SQOM80301	8+3+1	Multi tariff	450	4	4	4	16	-

Note: Rear of enclosure = 242mm high



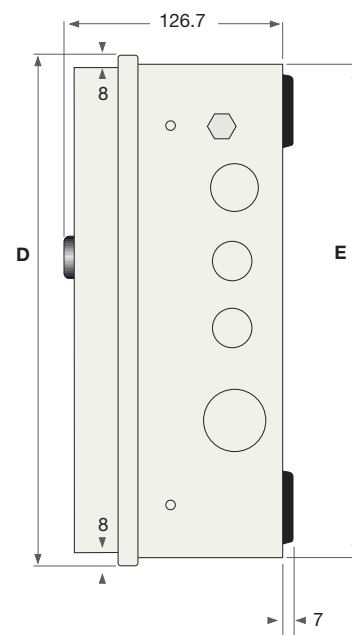
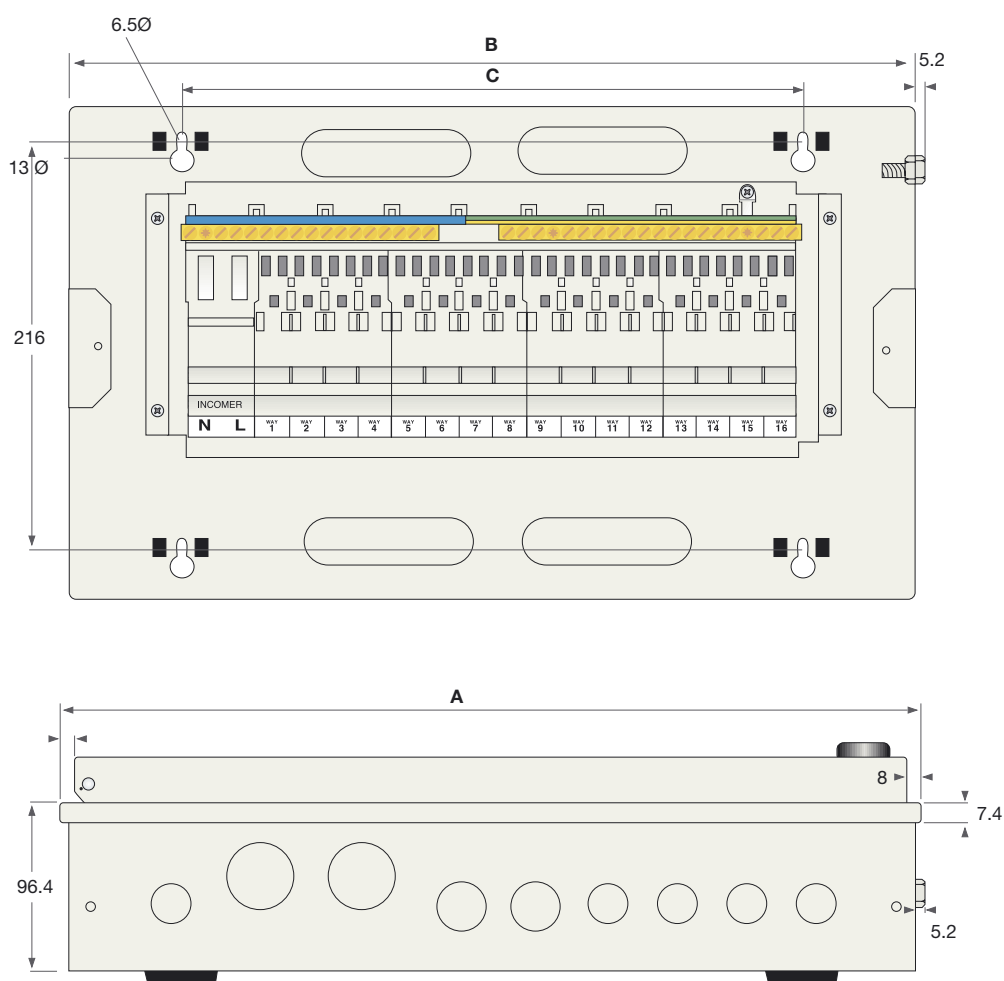
Dimensions (mm)

LoadCentre KQII distribution boards

A type distribution board

Reference number	Dimensions					Depth
	A	B	C	D	E	
KQ125A6	266	260	140	270	264	
KQ125A8	321	315	195	270	264	
KQ125A12	376	370	250	270	264	
KQ125A16	456	450	330	270	264	
KQ125A24*	376	370	250	500	494	
KQ125A4SL6	376	370	250	270	264	
KQ125A5SL5	376	370	250	270	264	
KQ125A4SL8	456	450	330	270	264	
KQ125A6SL6	456	450	330	270	264	
KQAE16	456	450	330	270	264	
KQA12S12*	470	-	380	484	-	139

* 2 row unit

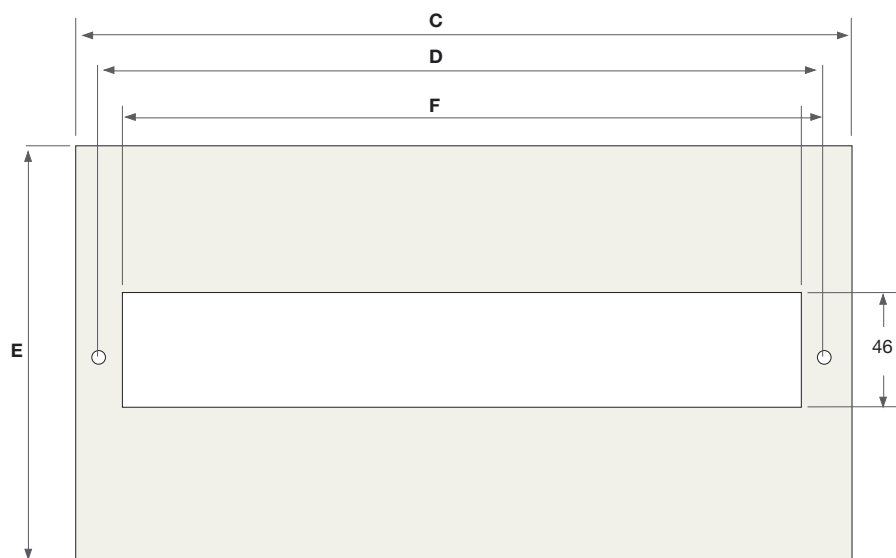
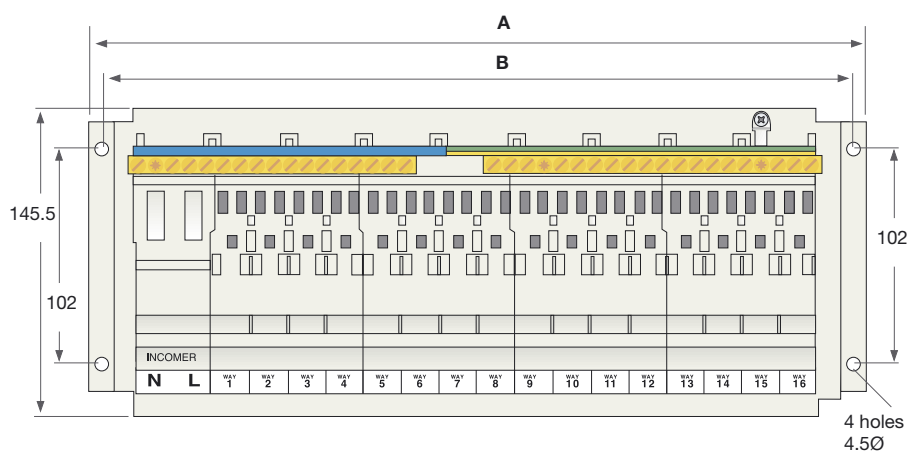


Dimensions (mm)

LoadCentre KQII distribution boards

A type interior and cover

Reference number	Dimensions					
	A	B	C	D	E	F
KQ125INTAC6	190.8	178.1	-	-	188	145
KQ125INTAC8	226.8	214.1	-	-	188	181
KQ125INTAC12	298.8	286.1	-	-	188	253
KQ125INTAC16	370.8	358.1	-	-	188	325
KQ125INTCD6	-	-	193.2	158.9	270	145
KQ125INTCD8	-	-	229.2	194.9	270	181
KQ125INTCD12	-	-	301.2	266.9	270	253
KQ125INTCD16	-	-	373.2	338.9	270	325



All "INTC" Internal covers are 20.6mm deep

Dimensions (mm)

LoadCentre KQII distribution boards

B type distribution board - 125A

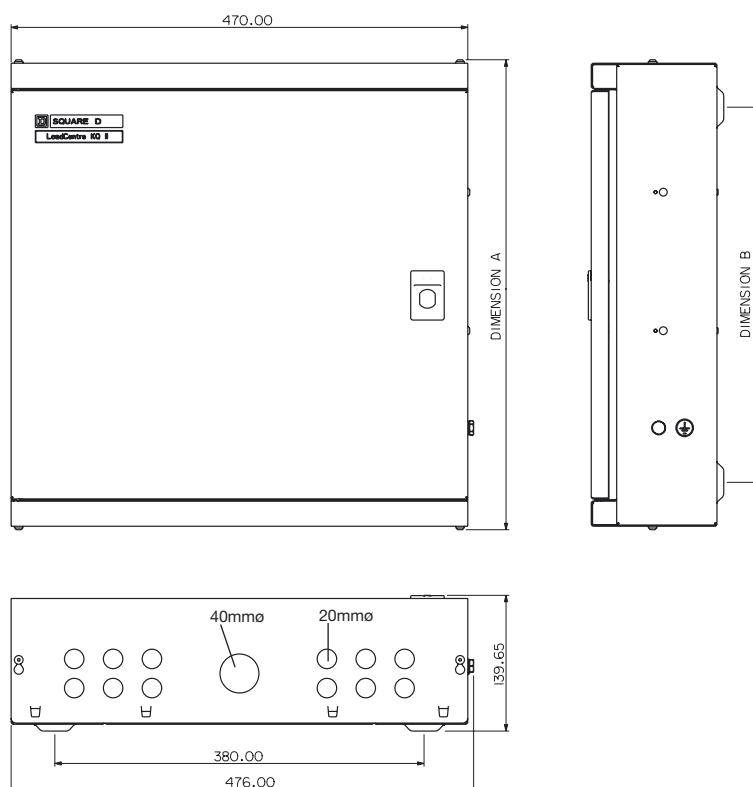
Reference number	Dimensions	
	A	B
KQ12B125	484	386
KQ18B125	484	386
KQ24B125	538	440
KQ36B125	700	602
KQ48B125	808	710
KQ54B125	808	710
KQ72B125	970	872

B type distribution board - 250A

Reference number	Dimensions	
	A	B
KQ12B250	754	386
KQ18B250	754	386
KQ24B250	808	440
KQ36B250	970	602
KQ48B250	1078	710
KQ54B250	1078	710
KQ72B250	1240	872

Split metering distribution boards

Reference number	Dimensions	
	A	B
All References	1270	982



Dimensions (mm)

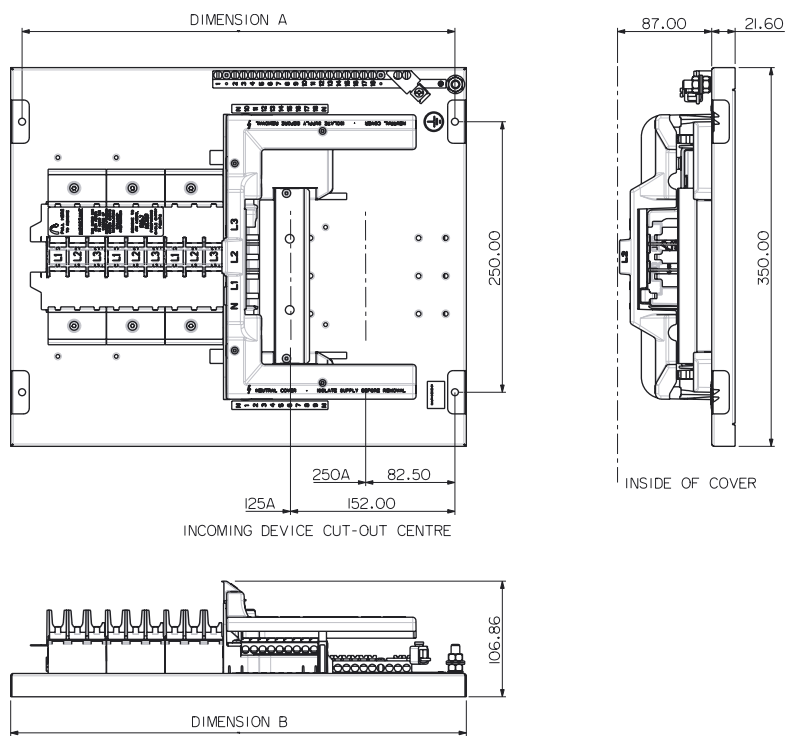
LoadCentre KQII distribution boards

B type interior - 125A

Reference number	Dimensions	
	A	B
KQ12B125INT	325	346
KQ18B125INT	400	421
KQ24B125INT	450	471
KQ36B125INT	550	571
KQ48B125INT	650	671
KQ54B125INT	725	746
KQ72B125INT	875	896

B type interior - 250A

Reference number	Dimensions	
	A	B
KQ12B250INT	325	386
KQ18B250INT	400	421
KQ24B250INT	450	471
KQ36B250INT	550	571
KQ48B250INT	650	671
KQ54B250INT	725	746
KQ72B250INT	875	896



Dimensions (mm)

I-Line MCCB panelboards Size 1

Connections

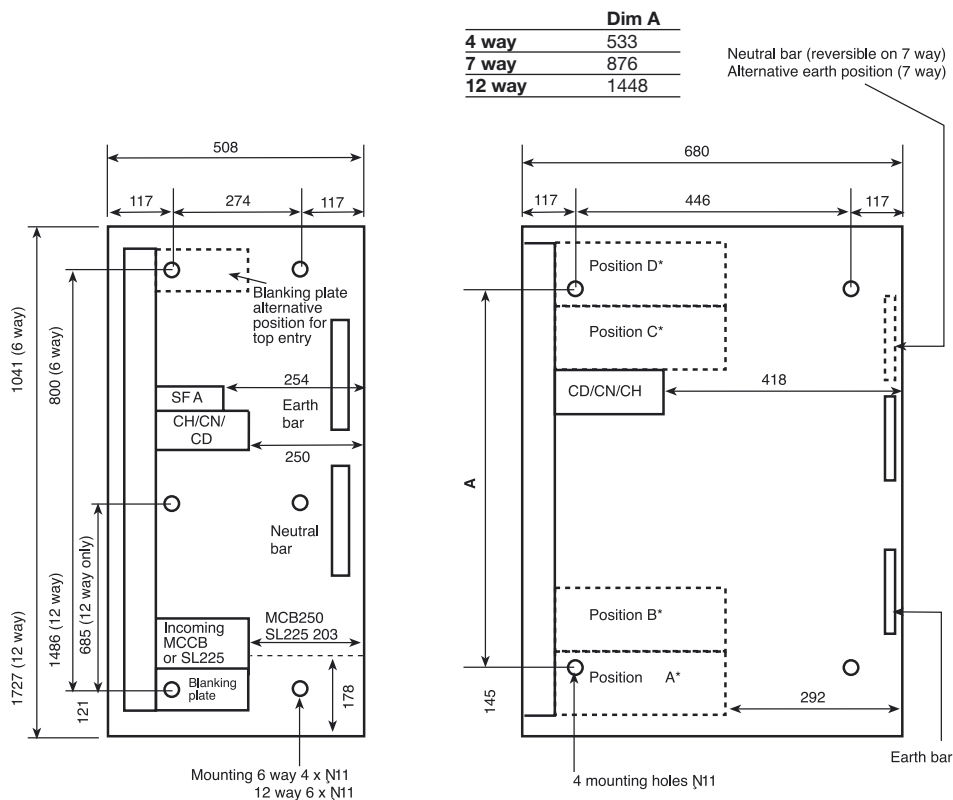
1, 2 pole	16-32A	2.5-25mm ²
	40-100A	2.5-50mm ²
3 pole	16-100A	M6 bolt
	125-250A	M8 bolt
	400A	50-300mm ²
Switch disconnector	400A	M12 bolt

Earth and neutral bars

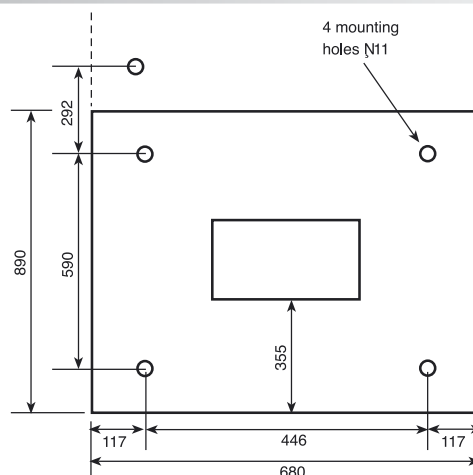
Earth bonding connection	M6 bolt
Earth bar connection holes	14x6.5ø, 2x8.5ø, 3x10.5ø, 3x3.9ø
Main neutral connection	M8 bolt
Neutral bar connection holes	10x6.5ø, 2x8.5ø, 3x3.9ø

Size 1 250A Depth: 184

Size 1 400A Depth: 258



MFS400



I-Line MCCB panelboards Size 2

MCCB connections

1, 2 pole	16 - 32A	2.5 - 25mm ²
	40 - 100A	2.5 - 50mm ²
3 pole	16 - 100A	M6 bolt
	125 - 250A	M8 bolt
SLA	250 - 400A	50 - 300mm ² (1)
SMA	300 - 630A	3 x 95 - 240mm ² (2)
Main lugs (ML)		240 - 500mm ²

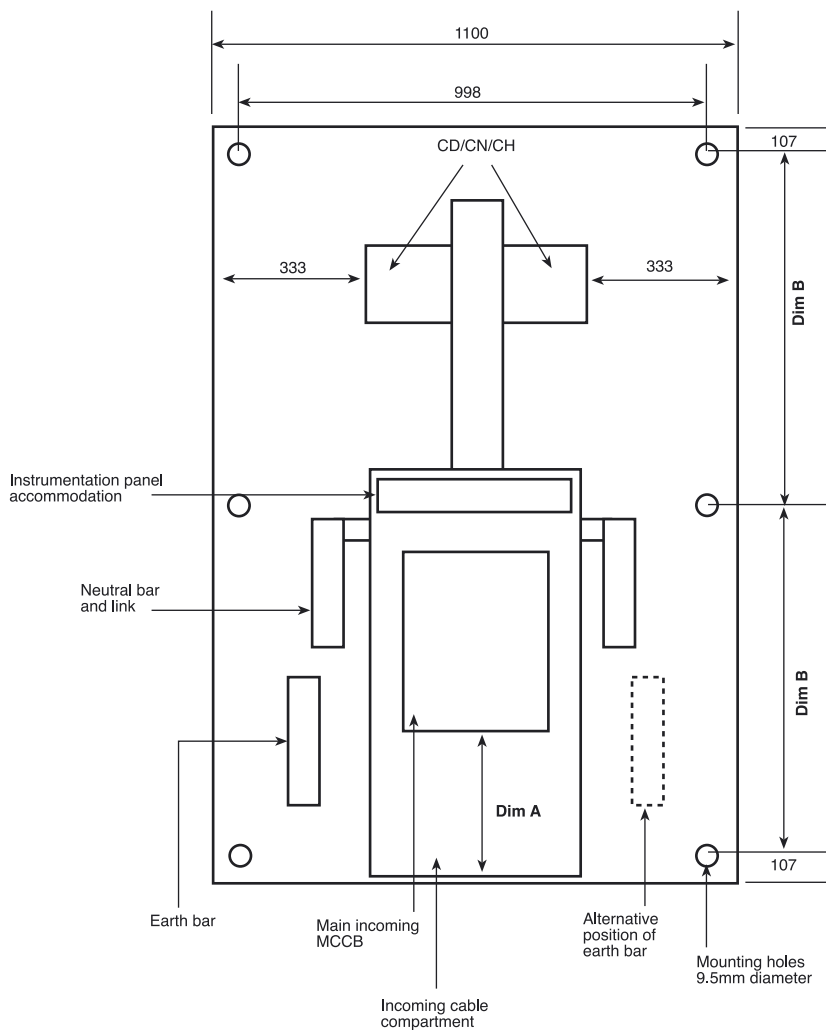
(1) Requires 3/8" hexagon key

(2) Requires 1/4" hexagon key

Earth and neutral bars

Earth bonding connection	M10 bolt
Earth bar connection holes	
6 way & 10 way boards	10 x 7.1ø, 3 x 3.7ø
14 way & 18 way boards	20 x 7.1ø, 1 x 11.5ø, 6 x 3.7ø
Main neutral connection	M12 bolt
Neutral bar connection holes	14 x 8ø, 10 x 6ø, 8 x 3.9ø

Size 2 630A Depth: 258



Module ways	Fixing centres Dim B	Height		Dim A
6	566	1350	SLA	330
10	681	1579	SMA	295
14	795	1807	Lugs	568
18	909	2036		

Dimensions (mm)

I-Line MCCB panelboards Size 3

MCCB connections

1, 2 pole	16 - 32A	2.5 - 25mm ²
	40 - 100A	2.5 - 50mm ²
3 pole	16 - 100A	M6 bolt
	125 - 250A	M8 bolt
SLA	250 - 400A	50 - 300mm ² (1)
SMA	300 - 630A	3 x 95 - 240mm ² (2)
Main lugs (ML)		240 - 500mm ²

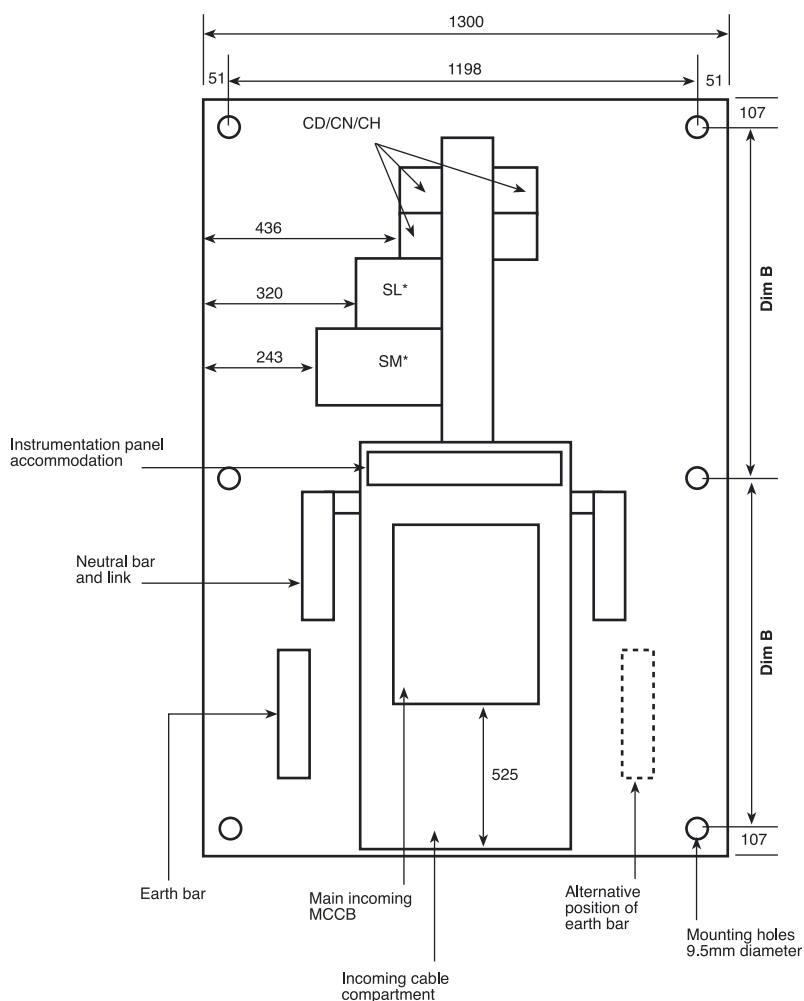
(1) Requires 3/8" hexagon key

(2) Requires 1/4" hexagon key

Earth and neutral bars

Earth bonding connection	M10 bolt
Earth bar connection holes	
6 way & 10 way boards	10 x 7.1ø, 3 x 3.7ø
14 way & 18 way boards	20 x 7.1ø, 1 x 11.5ø, 6 x 3.7ø
Main neutral connection	M12 bolt
Neutral bar connection holes	14 x 8ø, 10 x 6ø, 8 x 3.9ø

Size 3 800A Depth: 258



Module ways	Fixing centres B	Height
6	681	1579
10	795	1807
14	909	2036
18	1024	2265

Dimensions (mm)

I-Line MCCB panelboards Size 4

MCCB connections

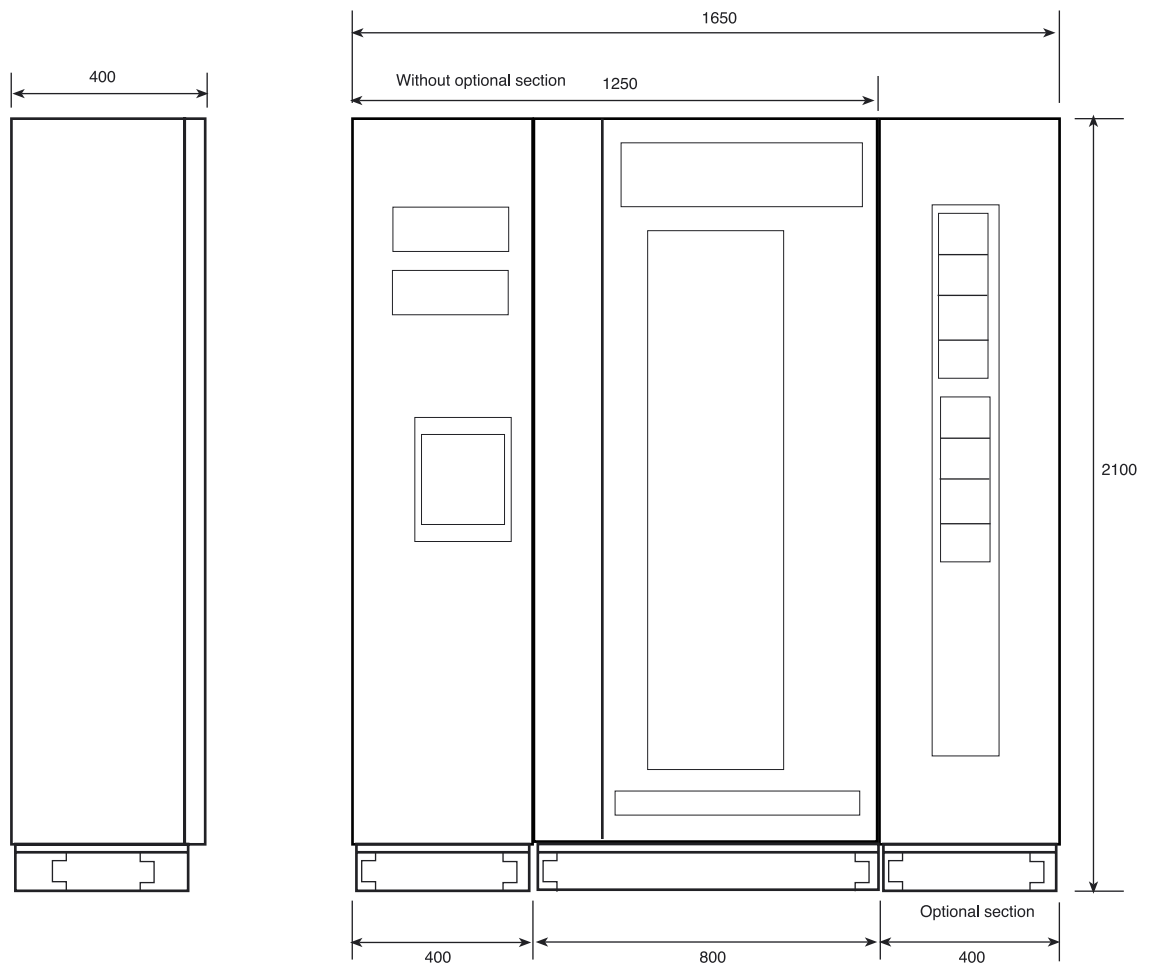
1, 2 pole	16 - 32A	2.5 - 25mm ²
	40 - 100A	2.5 - 50mm ²
3 pole	16 - 100A	M6 bolt
	125 - 250A	M8 bolt
SLA	Main lugs	50 - 300mm ² (1)
SMA	Main lugs	3 x 95 - 240mm ² (2)
SNA	Main lugs	4 x 95 - 240mm ² (2)

(1) Requires 3/8" hexagon key
(2) Requires 1/4" hexagon key

Earth and neutral bars

Neutral and earth bars fitted as standard. Each has a 14mm hole for incoming and provision for crimp lug connections for outgoing circuits.

Size 4 1600A panelboard, base board



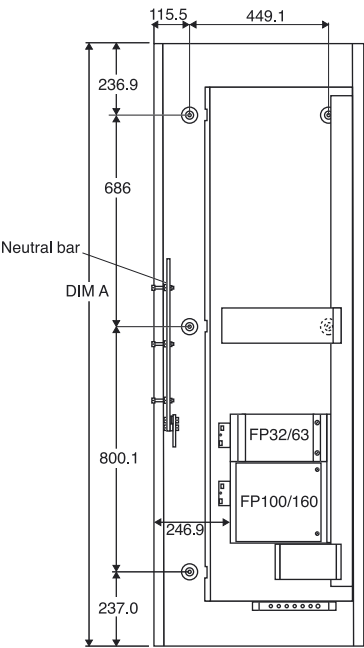
Size 4 2000A panelboard

As above except incoming section width	650mm
Overall width without optional cabling section	1506mm
Overall width with cabling section	1906mm

Dimensions (mm)

I-Line fuse switch panelboards Size 1

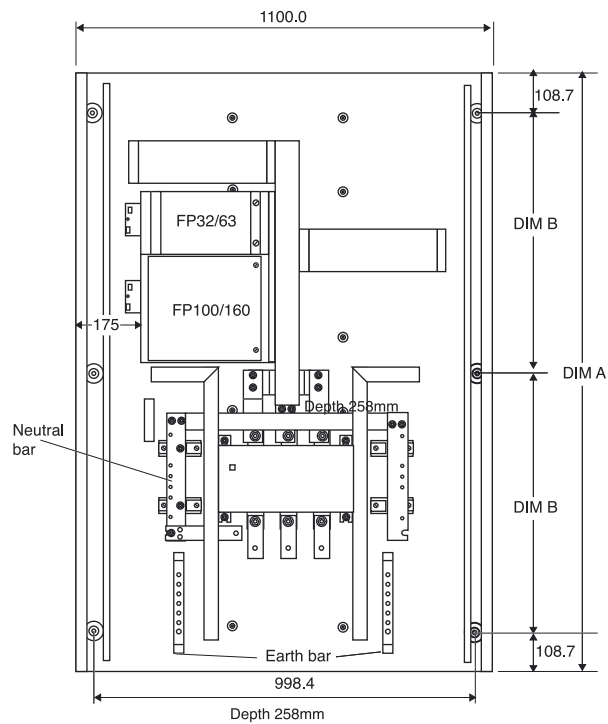
Reference number	Dimensions		Dim A	Weight (Kg)	Incoming cable space
	W	D			
FP40061	680	258	1960	95	336



Dimensions (mm)

I-Line fuse switch panelboards Size 2

Reference number	Incoming cable space	Dimensions		Weight (Kg)
		Dim A	Dim B	
FPS63062	415	1579	681	146
FPS630102	415	1960	871	165
FPS630142	415	2341	1062	184
FPF63062	415	1579	681	146
FPF630102	415	1960	871	165
FPF630142	415	2341	1062	184
FPL63062	545	1579	681	132
FPL630102	545	1960	871	151
FPL630142	545	2341	1062	170

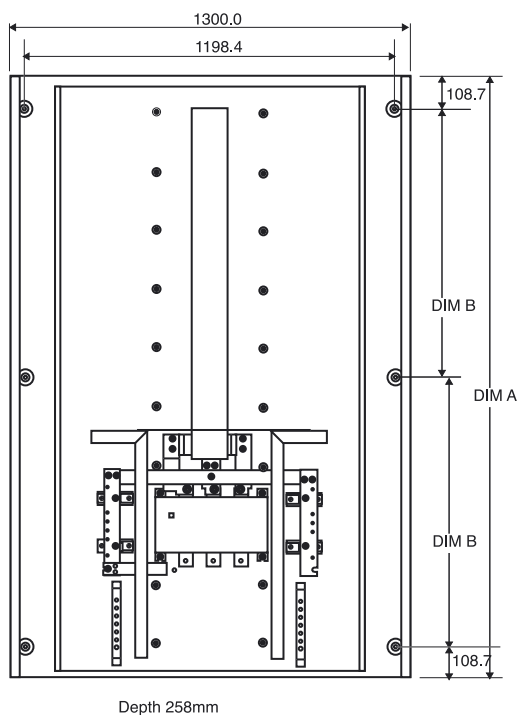


Dimensions (mm)

I-Line fuse switch panelboards Size 3

Reference number	Incoming cable space	Dimensions		Weight (Kg)
		Dim A	Dim B	
FPS80063	365	1579	681	168
FPS800103	365	1960	871	192
FPS800143	365	2341	1062	216
FPF80063	365	1579	681	168
FPF800103	365	1960	871	192
FPF800143	365	2341	1062	216
FPL80043	595	1579	681	153
FPL800103	595	1960	871	177
FPL800143	595	2341	1062	201

Main incoming terminal for all units: M12 bolt, 38mm pad width

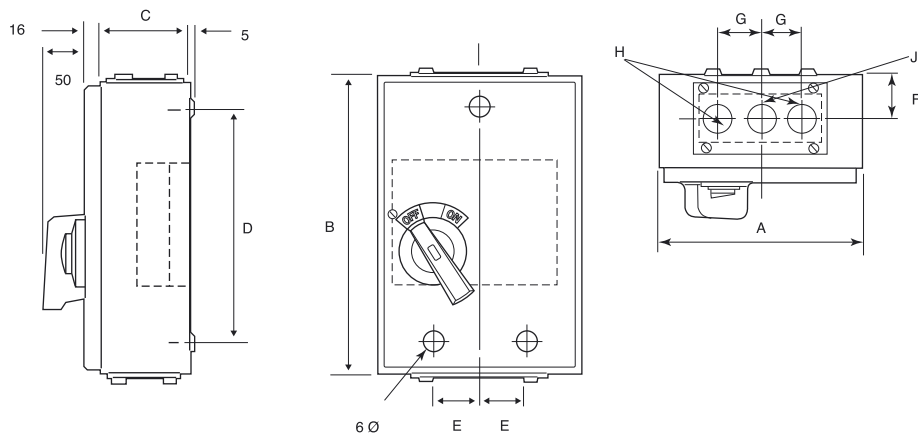


Dimensions (mm)

Twinbreak

Switch disconnecter fuse

Rating (A)	A	B	C	D	E	F	G	H	J	Terminal capacity (mm ²)	Terminal pad width (mm)	Packed weight (kg)
20	210	240	105	160	50	51	44	20	25	10	-	6
32	210	240	105	160	50	51	44	20	25	10	-	6
63	235	350	105	270	55	51	50	32	32	25	-	8
100	260	400	120	320	65	51	60	40	40	50	-	8
125	292	521	121	421	94.5	51	60	40	40	M8 stud	25	10.5
160	292	521	121	421	94.5	51	60	40	40	M8 stud	25	10.5



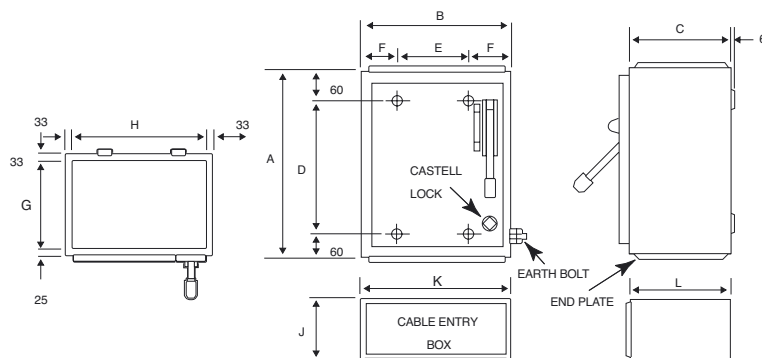
Dimensions (mm)

Quadbreak

Fuse switch disconnector

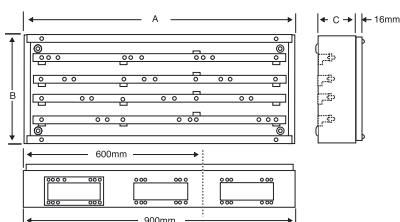
Current rating	Reference number	Switch enclosures (mm)								Packed weight (kg)	Reference number	Cable entry box (mm)		
		A	B	C	D	E	F	G	H			J	K	L
63A	SQB0632K	380	292	200	260	130	81	142	226	14.5	SQBX100	100	292	200
	SQB0633K													
	SQB0632L													
	SQB0633L													
100A	SQB1002K	380	292	200	260	130	81	142	226	15.6	SQBX100	100	292	200
	SQB1003K													
	SQB1002L													
	SQB1003L													
160A	SQB1602K	380	292	200	260	130	81	142	226	15.6	SQBX160	150	292	200
	SQB1603K													
	SQB1602L													
	SQB1603L													
200A/ 250A	SQB2003K	380	340	200	260	180	81	142	274	19.5	SQBX250	180	340	200
	SQB2502K													
	SQB2503K													
	SQB2502L													
315A/ 400A	SQB3153K	455	489	270	335	289	100	212	423	36.2	SQBX500	300	489	270
	SQB4003K													
	SQB4003L													
	SQB5003K													
500A	SQB5003L	455	489	270	335	289	100	212	423	36.2	SQBX630	400	489	270
	SQB6303K													
	SQB6303L													
630A 800A	SQB8003L	455	489	270	335	289	100	212	423	36.2	SQBX630	400	489	270
	SQB8003L													

800A unit is provided with cable extension pads which are external to the above dimensions. Cable entry box SQBX630 must be used except where fitted to a Quadbreak busbar chamber.



Busbar chambers

Reference number	A	B	C	Packed weight (kg)
SBC106	600	350	120	9.6
SBC109	900	350	120	14.25



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