

# multi 9

Low Voltage Final Distribution Products  
0.5A to 125A

Catalogue  
January

# 06



a brand of  
**Schneider**  
Electric



**Merlin Gerin**

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# Multi 9 system

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## **introduction**

Merlin Gerin's quest for "Mastering Electrical Power" is clearly stated in its commitment to satisfying the electrical industries' vast needs.

## **modular**

"Multi 9" is not just a name, the significance of the 9 is most important for design, each module is 9 mm in width; now even the most complex decisions are simplified.

## **mounting**

All "Multi 9" products fixed a universal DIN rail - no special mounting trays are needed - DIN rail not only accommodates "Multi 9" products but many electrical products needed to complete the system.

Unlike many equivalent products, "Multi 9" can be mounted vertically or horizontally without affecting its performance.

## **connection**

"Multi 9" products have a unique design tunnel terminal, ensuring correct contact surface area without damage to the cable.

## **safety**

The terminal screws are well recessed to avoid any unpleasant and unnecessary accidents.

Positive contact indication confirms the state of the device.

Terminal shields and rotary handles for use where unauthorized people have access, complete the standards.

## **range**

"Multi 9" is the most comprehensive universal circuit protection range on offer 4.5 kA-50 kA, 1 A-125 A.

Multi 9 includes the widest range of control command products for remote control, time programming, measurements,...

## **auxiliaries**

Shunt trips, under voltage releases, all adaptable in the field without any special tools and without interrupting supply.

## **accessories**

The only mcb available in Asia with:

- rotary handle;
- terminal shields;
- connectors;
- enclosures.



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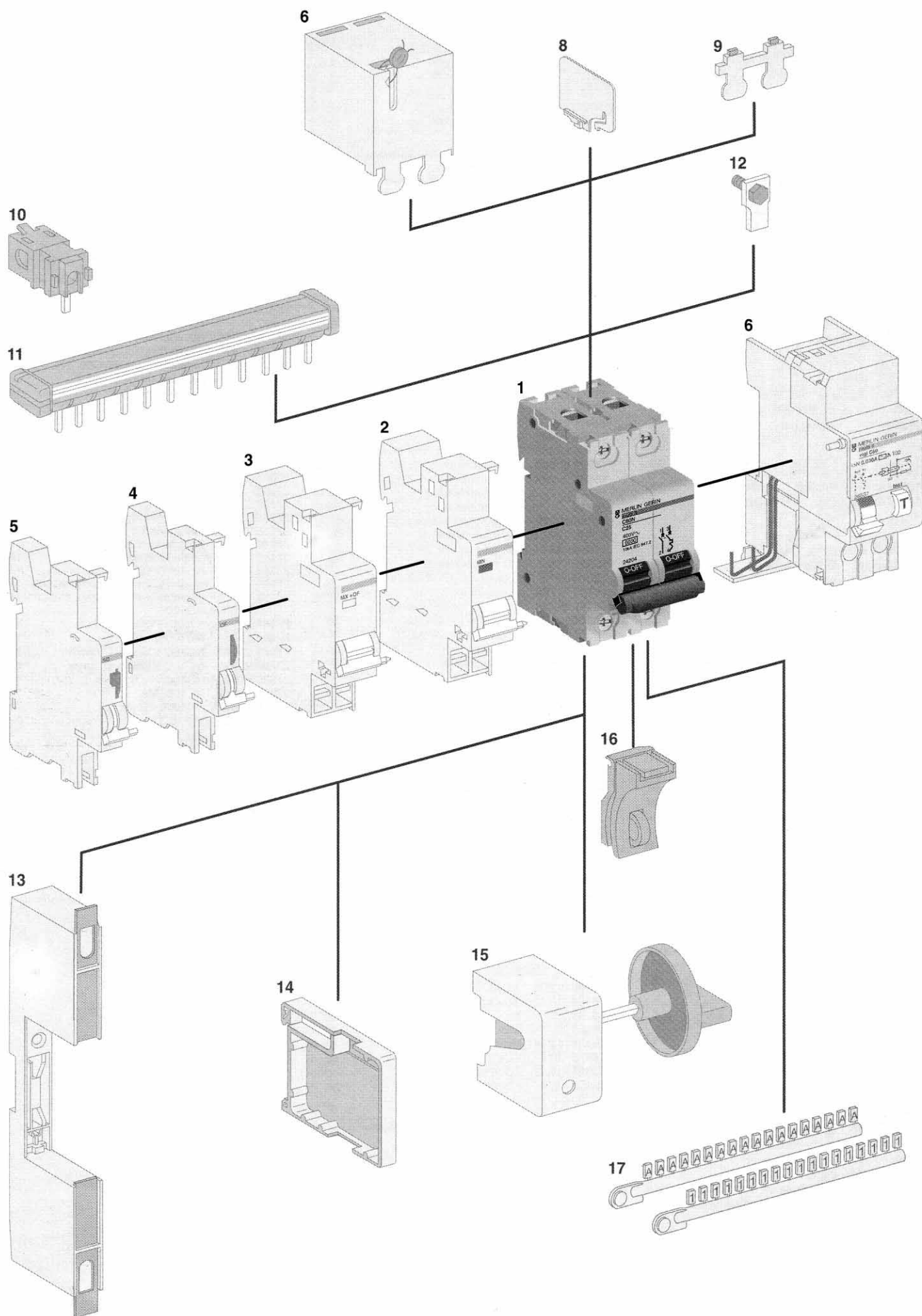
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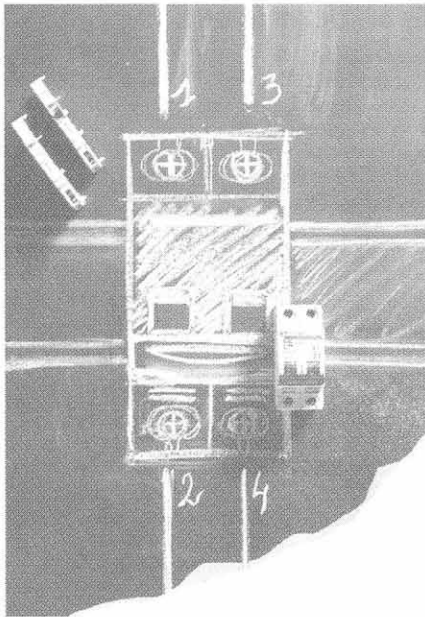
- 1 C60 circuit breaker
- 2 MN undervoltage release
- 3 MX+OF shunt trip release
- 4 OF auxiliary switch
- 5 SD alarm switch
- 6 Vigi C60

- 7 sealable terminal shield
- 8 interpole barrier
- 9 sealable terminal screw shield
- 10 insulated connectors
- 11 comb busbars 100 A - 40 °C
- 12 screw connection

- 13 plug in base double breaking contact
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- 16 padlocking attachment
- 17 terminal identification system (down stream terminals)

# selection table for Multi 9 circuit breakers

## circuit protection



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### selection table

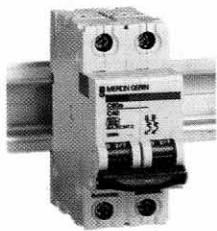
standard	rating (A)	voltage (V)	type	curves	breaking capacity (kA)					
					4.5	6	10	15	25	50
IEC 898	6 to 40	230/400	C60a	B/C						
	1 to 63	230/400	C60N	B/C/D						
	0.5 to 63	230/400	C60H	B/C/D						
IEC 947-2	1 to 40	127/250	C32H - DC							
	10 to 125	240/415	C120N/H	B/C/D						
	10 to 63	240/415	NC100L	C						
	10 to 63	240/415	NC100LH	C						
	1.6 to 63	240/415	NC100LMA							



23849

type	width in mod. of 9 mm	rat. (A)	cat. No. B curve	C curve
1P	2	6	23555	23797
		10	23556	23798
		16	23557	23799
		20	23559	23800
		25	23560	23801
		32	23561	23802
		40	23562	23803

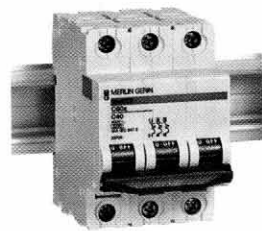
1 protected pole



23863

2P	4	6	23571	23810
		10	23572	23811
		16	23573	23812
		20	23574	23813
		25	23575	23814
		32	23577	23815
		40	23578	23816

2 protected poles



23877

3P	6	6	23586	23823
		10	23587	23824
		16	23589	23825
		20	23590	23826
		25	23591	23827
		32	23592	23828
		40	23593	23829

3 protected poles

## B and C curves

### Application

Control and protection of circuits against overloads and short-circuits.

- in domestic installations;
- in commercial and industrial electrical distribution systems.

### Technical data

- current rating: 6 to 40 A;
- voltage rating: 230-400 V AC;
- breaking capacity:

□ I<sub>cn</sub> ultimate breaking capacity (O-CO cycle):

rat. (A)	type	voltage (V)	breaking capacity (A)
to IEC 898			
6 to 40	1P	230-240	4500
	2, 3P	400-415	4500

□ I<sub>cs</sub> = I<sub>cn</sub> = 4.5 kA,

□ I<sub>cu</sub> ultimate breaking capacity (O-CO cycle):

rat. (A)	type	voltage (V)	breaking capacity (A)
to IEC 947-2			
6 to 40	1P	130	10000
		230-240	5000
		400-415	3000
	2, 3P	230-240	10000
		400-415	5000
		440	3000

- fast closing contacts;
  - number of operating cycles (O-C): 20000;
  - tripping characteristics:
- B curve: the magnetic releases operate between 3 and 5 I<sub>n</sub>;
- C curve: the magnetic releases operate between 5 and 10 I<sub>n</sub>;
- impulse withstand voltage (U<sub>imp</sub>): 6 kV;
  - tropicalization: treatment 2 (relative humidity 95 % at 55 °C);
  - weight (g):

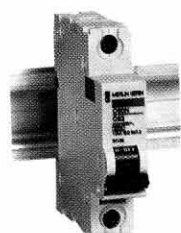
type	1P	2P	3P
	110	220	340

- connections: tunnel terminals for rigid cables up to:

- 25 mm<sup>2</sup> for rating ≤ 25 A,
- 35 mm<sup>2</sup> for rating 32 to 40 A;

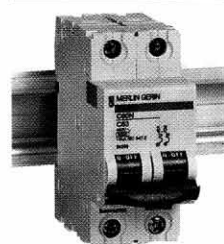
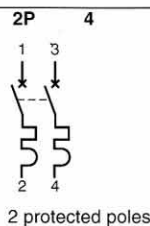
- installation: in all enclosures designed for Multi 9 equipment.





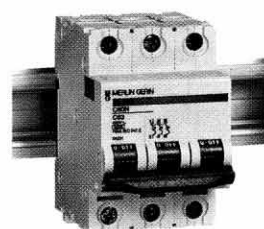
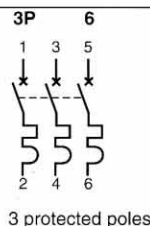
24395

type	width in mod. of 9 mm	rat. (A)	cat. No. B curve	C curve	D curve
1P	2	1	24045	24395	24625
		2	24046	24396	24626
		3	24047	24397	24627
		4	24048	24398	24628
		6	24049	24399	24629
		10	24050	24401	24630
		16	24051	24403	24632
		20	24052	24404	24633
		25	24053	24405	24634
		32	24054	24406	24635
		40	24055	24407	24636
		50	24056	24408	24637
		63	24057	24409	24638



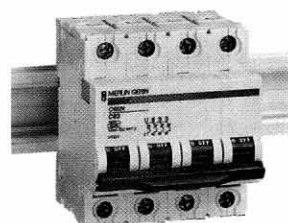
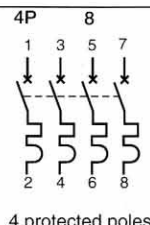
24331

2P	4	1	24071	24196	24653
		2	24072	24332	24654
		3	24073	24333	24655
		4	24074	24334	24656
		6	24075	24335	24657
		10	24076	24336	24658
		16	24077	24337	24660
		20	24078	24338	24661
		25	24079	24339	24662
		32	24080	24340	24663
		40	24081	24341	24664
		50	24082	24342	24665
		63	24083	24343	24666



24344

3P	6	1	24084	24344	24667
		2	24085	24345	24668
		3	24086	24346	24669
		4	24087	24347	24670
		6	24088	24348	24671
		10	24089	24349	24672
		16	24090	24350	24674
		20	24091	24351	24675
		25	24092	24352	24676
		32	24093	24353	24677
		40	24094	24354	24678
		50	24095	24355	24679
		63	24096	24356	24680



24357

4P	8	1	24097	24357	24681
		2	24098	24358	24682
		3	24099	24359	24683
		4	24100	24360	24684
		6	24101	24361	24685
		10	24102	24362	24686
		16	24103	24363	24688
		20	24104	24364	24689
		25	24105	24365	24690
		32	24106	24366	24691
		40	24107	24367	24692
		50	24108	24368	24693
		63	24109	24369	24694



## B, C and D curves

### Application

Control and protection of circuits against overloads and short-circuits.

- in domestic installations;
- in commercial and industrial electrical distribution systems;
- D curve: more particularly adapted for installations with high transient currents (LV/LV transformers, motors,...).

### Technical data

- current rating: 1 to 63 A;
- voltage rating: 230-400 V AC;
- breaking capacity:

□ I<sub>cn</sub> ultimate breaking capacity (O-CO cycle):

rat. (A)	type	voltage (V)	breaking capacity (A)
to IEC 898			
1 to 63	1P	230-240	6000
	2, 3, 4P	400-415	6000

□ I<sub>cs</sub> = I<sub>cn</sub> = 6 kA,

□ I<sub>cu</sub> ultimate breaking capacity (O-CO cycle):

rat. (A)	type	voltage (V)	breaking capacity (A)
to IEC 947-2			
1 to 63	1P	130	20000
		230-240	10000
		400-415	3000
	2, 3, 4P	230-240	20000
		400-415	10000
		440	6000

- fast closing contacts;
- number of operating cycles (O-C): 20000;
- tripping characteristics:

□ B curve: the magnetic releases operate between 3 and 5 I<sub>n</sub>,

□ C curve: the magnetic releases operate between 5 and 10 I<sub>n</sub>;

□ D curve: the magnetic releases operate between 10 and 14 I<sub>n</sub>;

- impulse withstand voltage (U<sub>imp</sub>): 6 kV;
- tropicalization: treatment 2 (relative humidity 95 % at 55 °C);

■ weight (g):

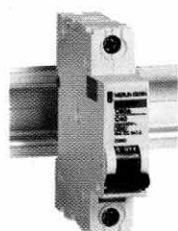
type	1P	2P	3P	4P
	110	220	340	450

■ connections: tunnel terminals for rigid cables up to:

- 25 mm<sup>2</sup> for rating ≤ 25 A,
- 35 mm<sup>2</sup> for rating 32 to 63A;

■ approvals: Marine, see page 81;

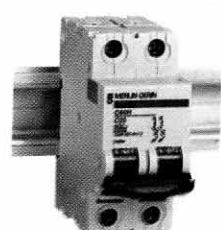
■ installation: in all enclosures designed for Multi 9 equipment.



24900

type	width in mod. of 9 mm	rat. (A)	cat. No. B curve	C curve	D curve
1P	2	0.5	24900	25171	
		0.75	24901		
		1	24968	25152	
		2	24969	25155	
		3	24970	25157	
		4	24971	25158	
		6	24643	24972	25159
		10	24644	24973	25160
		16	24646	24974	25161
		20	24647	24975	25164
		25	24648	24976	25165
		32	24649	24977	25166
		40	24650	24978	25167
		50	24651	24979	25168
		63	24652	24980	25169

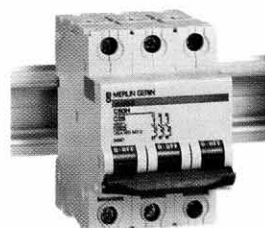
1 protected pole



24902

2P	4	0.5	24902	25172	
		0.75	24903		
		1	24981	25183	
		2	24982	25184	
		3	24983	25185	
		4	24984	25186	
		6	24725	24985	25187
		10	24726	24986	25188
		16	24727	24987	25189
		20	24728	24988	25190
		25	24729	24989	25191
		32	24730	24990	25192
		40	24731	24991	25193
		50	24732	24992	25194
		63	24733	24993	25195

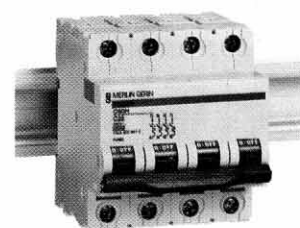
2 protected poles



24906

3P	6	0.5	24906	25173	
		0.75	24907		
		1	24994	25196	
		2	24995	25197	
		3	24996	25198	
		4	24997	25199	
		6	24738	24998	25200
		10	24739	24999	25201
		16	24740	25000	25202
		20	24741	25001	25203
		25	24742	25002	25205
		32	24743	25003	25207
		40	24744	25004	25208
		50	24745	25005	25209
		63	24746	25006	25210

3 protected poles



24908

4P	8	0.5	24908	25174	
		0.75	24909		
		1	25007	25211	
		2	25008	25212	
		3	25009	25213	
		4	25010	25214	
		6	24751	25011	25215
		10	24752	25012	25216
		16	24753	25013	25217
		20	24754	25014	25218
		25	24755	25015	25219
		32	24756	25016	25220
		40	24757	25017	25221
		50	24758	25018	25222
		63	24759	25019	25223

4 protected poles

## B, C and D curves

### Application

Control and protection of circuits against overloads and short-circuits.

- in domestic installations;
- in commercial and industrial electrical distribution systems;
- D curve is more particularly adapted for installations with high transient currents (LV/LV transformer, motors...).

### Technical data

- current rating: 0.5 to 63 A;
- voltage rating: 230-400 V AC;
- breaking capacity:

□ I<sub>cn</sub> ultimate breaking capacity (O-CO cycle):

rat. (A)	type	voltage (V)	breaking capacity (A)
to IEC 898			
1 to 63	1P	230-240	10000
	2, 3, 4P	400-415	10000

□ I<sub>cs</sub> = 75 % of I<sub>cn</sub>,

□ I<sub>cu</sub> ultimate breaking capacity (O-CO cycle):

rat. (A)	type	voltage (V)	breaking capacity (A)
to IEC 947-2			
1 to 63	1P	130	30000
		240	15000
		415	4000
	2, 3, 4P	240	30000
		415	15000
		440	10000

- positive contact indication;
- fast closing contacts;
- number of operating cycles (O-C): 20000;
- tripping characteristics:
- B curve: the magnetic releases operate between 3 and 5 I<sub>n</sub>;
- C curve: the magnetic releases operate between 5 and 10 I<sub>n</sub>;
- D curve: the magnetic releases operate between 10 and 14 I<sub>n</sub>;
- impulse withstand voltage (U<sub>imp</sub>): 6 kV;
- tropicalization: treatment 2 (relative humidity 95 % at 55 °C);
- weight (g):

type	1P	2P	3P	4P
	110	220	340	450

■ connections: tunnel terminals for rigid cables up to:

- 25 mm<sup>2</sup> for rating ≤ 25 A,
- 35 mm<sup>2</sup> for rating 32 to 63A;

■ approvals: Marine, see page 81;

■ installation: in all enclosures designed for Multi 9 equipment.



20535

type	width in mod. of 9 mm	rat. (A)	cat. No. U curve
1P	2	1	20531
		2	20532
		3	20533
		6	20534
		10	20535
		16	20536
		20	20537
		25	20538
		32	20539
		40	20540

### U curve

#### Application

Control and overcurrent protection of DC circuits (safety lighting, automatic control, electrolysis, telephone, etc...).

#### Technical data

■ current rating: from 1 to 40 A;

■ voltage rating:

□ 1P: 127 V DC,

□ 2P: 127-250 V DC;

■ breaking capacity:

rat. (A)	type	voltage (V)	breaking capacity (A)
to IEC 157-1 (O-CO cycle)			
1 to 40	1P	127	10000
	2P	127	20000
		250	10000

■ number of operating cycles (O-C):

10000 at L/R < 0.015 s;

■ tripping characteristics:

□ U curve: the magnetic releases operate between 5.5 and 8.8 In;

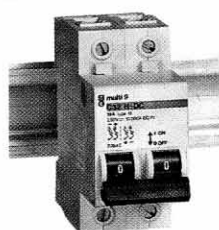
■ tropicalization: treatment 2 (relative humidity 95 % at 55 °C);

■ weight (g):

type	1P	2P
	127	250

■ connections: tunnel terminals for rigid cables up to 25 mm<sup>2</sup>;

□ polarities must be respected.



20545

2P	4	1	20541
		2	20542
		3	20543
		6	20544
		10	20545
		16	20546
		20	20547
		25	20548
		32	20549
		40	20550



protect  
circuit protection

# C120N circuit-breakers

## B, C and D curves

EN 60898/EN 61009: **10000**-  
IEC 60947-2: 10 kA

### function

- protection of cables against overloads and short-circuits in final distribution
- manual control and isolation

- earth leakage protection when combined with a Vigi C120 module without temperature derating: compliance with standard: EN 61009 (refer to pages 90265/2)
- remote tripping, indication, by adding auxiliaries common to the entire C60/C120 range (refer to pages 90142/2).

### description

#### Technical data

- current rating: 63 to 125 A
- voltage rating  $U_e$  max.: 440 V AC
- insulation voltage  $U_i$ : 500 V
- impulse withstand voltage  $U_{imp}$ : 6 kV
- compliance with standard EN 60898: devices accessible by unexperienced persons
- breaking capacity:
  - as in EN 60898

type	voltage (V)	breaking cap. $I_{cn}$ (A)
1, 2, 3, 4P	230...400	10000

- as in IEC 60947.2 ( $I_{cu}$ )

type	voltage (V)	breaking cap. $I_{cu}$ (kA)
1P	130	20
	230...240	10
	400...415	3 (1)
2, 3, 4P	230...240	20
	400...415	10
	440	6

(1) breaking capacity under 1 pole with IT isolated neutral system (case of double fault)

- service breaking capacity  $I_{cs} = 75\% I_{cu}$
- positive break indication
- fast closing ensures simultaneous closing of poles
- electrical durability:
  - 63 A: 10000 cycles (O-C)
  - 80...125 A: 5000 cycles (O-C)
- limitation class: 3
- mechanical durability: 20000 cycles (O-C)
- bistable fixing pawl: simplifies disassembly
- weight (g):

1P	2P	3P	4P
205	410	615	820

- approval: IMQ
- connection:
  - flexible cables: 1.5 to 35 mm<sup>2</sup>
  - rigid cables: 1 to 50 mm<sup>2</sup>
- terminals ensure:
  - degree of protection IP2
  - tightening of wide cross-section cables
  - pull-out withstand of cables
  - automatic guiding of cable into the correct position
- markers:
  - 4 marker clips next to the upstream terminal
  - label holder on handle (2P, 3P, 4P)
- degree of pollution: 3 (for use in an industrial environment)
- degree of protection:
  - open or surface mounted device: IP2
  - in a Pragma or Prisma enclosure: IP4 (IPxxD)

#### B curve

- magnetic trip units operate between 3 and 5  $I_n$
- protection of very long cables
- protection of networks supplied by generators

#### C curve

- magnetic trip units operate between 5 and 10  $I_n$
- protection of standard networks

#### D curve

- magnetic trip units operate between 10 and 14  $I_n$
- protection of circuits that supply high inrush current loads: transformers, motors, etc.

protect  
circuit protection

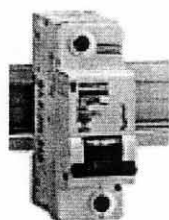
## C120N circuit-breakers

B curve

EN 60898/EN 61009: **10000** -

IEC 60947-2: 10 kA

### catalogue numbers

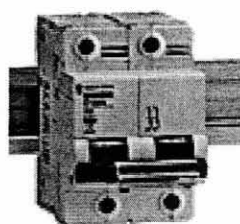


18340

type	rating (A)	catalogue number	width in mod. of 9 mm
<b>B curve C120N</b>			
1P	63	18340	3
1	80	18341	3
$\frac{1}{2}$	100	18342	3
$\frac{1}{4}$	125	18343	3

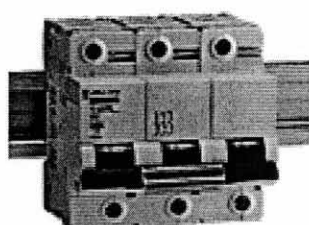


2P	63	18344	6
1 3	80	18345	6
$\frac{1}{2}$ $\frac{1}{2}$	100	18346	6
$\frac{1}{4}$ $\frac{1}{4}$	125	18347	6



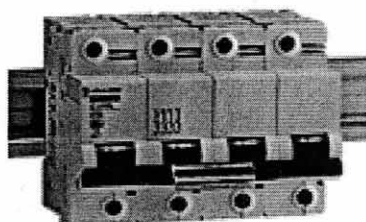
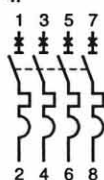
18344

3P	63	18348	9
1 3 5	80	18349	9
$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	100	18350	9
$\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$	125	18351	9



18349

4P	63	18352	12
1 3 5 7	80	18353	12
$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	100	18354	12
$\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$ $\frac{1}{4}$	125	18355	12



18355

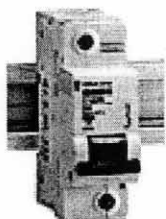
protect  
circuit protection

# C120N circuit-breakers

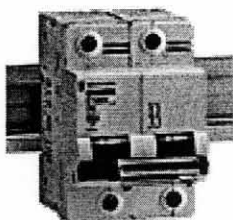
## C curve

EN 60898/EN 61009: **10000** -  
IEC 60947-2: 10 kA

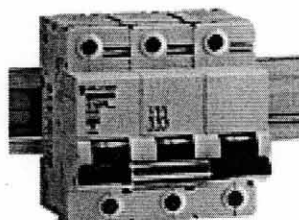
### catalogue numbers



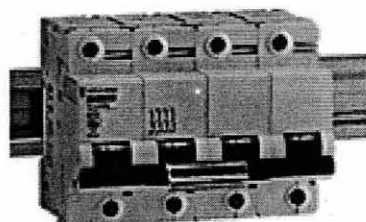
18356



18360



18365



18377

type	rating (A)	catalogue number	width in mod. of 9 mm
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#### C curve C120N

1P	63	18356	3
	80	18357	3
	100	18358	3
	125	18359	3



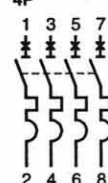
2P	63	18360	6
	80	18361	6
	100	18362	6
	125	18363	6



3P	63	18364	9
	80	18365	9
	100	18367	9
	125	18369	9



4P	63	18371	12
	80	18372	12
	100	18374	12
	125	18376	12



protect  
circuit protection

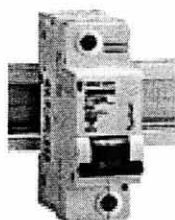
## C120N circuit-breakers

D curve

EN 60898/EN 61009: **10000** -

IEC 60947-2: 10 kA

### catalogue numbers

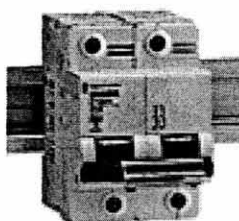
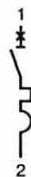


18378

type	rating (A)	catalogue number	width in mod. of 9 mm
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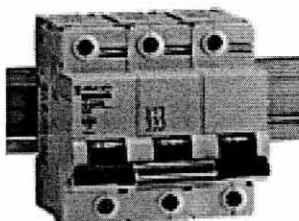
#### D curve C120N

1P	63	18378	3
	80	18379	3
	100	18380	3
	125	18381	3



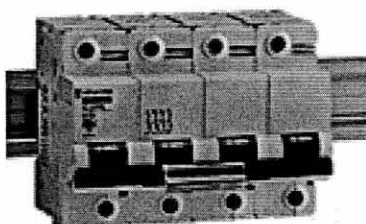
18385

2P	63	18382	6
	80	18383	6
	100	18384	6
	125	18385	6



18389

3P	63	18386	9
	80	18387	9
	100	18388	9
	125	18389	9



18393

4P	63	18390	12
	80	18391	12
	100	18392	12
	125	18393	12



protect  
circuit protection

# C120H circuit-breakers

## B, C and D curves

EN 60898/EN 61009: **15000** -  
IEC 60947-2: 15 kA

### function

- protection of cables against overloads and short-circuits in final distribution
- manual control and isolation

- earth leakage protection when combined with a Vigi C120 module without temperature derating: compliance with standard: EN 61009 (refer to pages 90265/2)
- remote tripping, indication, by adding auxiliaries common to the entire C60/C120 range (refer to pages 90142/2).

### description

#### Technical data

- current rating: 10 to 125 A
- max. voltage rating  $U_e$ : 440 V AC
- insulation voltage  $U_i$ : 500 V
- impulse withstand voltage  $U_{imp}$ : 6 kV
- compliance with standard EN 60898: devices accessible by unexperienced persons
- breaking capacity:

□ as EN 60898

type	voltage (V)	breaking cap. $I_{cn}$ (A)
1, 2, 3, 4P	230...400	15000

□ as IEC 60947-2 ( $I_{cu}$ )

type	voltage (V)	breaking cap. $I_{cu}$ (kA)
1P	130	30
	230...240	15
	400...415	4.5 (1)
2, 3, 4P	230...240	30
	400...415	15
	440	10

(1) breaking capacity under 1 pole with IT isolated neutral system (case of double fault)

- service breaking capacity  
 $I_{cs} = 50\% I_{cu}$
- positive break indication
- fast closing ensures simultaneous closing of poles
- electrical durability:
  - $\leq 63$  A: 10000 cycles (O-C)
  - 80...125 A: 5000 cycles (O-C)
- limitation class: 3
- mechanical durability: 20000 cycles (O-C)
- bistable fixing pawl: simplifies disassembly
- weight (g):

1P	2P	3P	4P
205	410	615	820

- approval: IMQ

- connection:

□ flexible cables: 1.5 to 35 mm<sup>2</sup>

□ rigid cables: 1 to 50 mm<sup>2</sup>

□ terminal ensure:

- degree of protection IP2

- tightening of wide cross-section cables

- pull-out withstand of cables

- automatic guiding of cable into the correct position

- markers:

□ 4 marker clips next to the upstream terminal

□ label holder on handle (2P, 3P, 4P)

■ degree of pollution: 3 (for use in an industrial environment)

- degree of protection:

□ open or surface mounted device: IP2

□ in a Pragma or Prisma enclosure: IP4

(IPxxD)

### B curve

- magnetic trip units operate between 3 and 5  $I_n$

5  $I_n$

- protection of very long cables

- protection of networks supplied by generators

### C curve

- magnetic trip units operate between 5 and 10  $I_n$

10  $I_n$

- protection of standard networks

### D curve

- magnetic trip units operate between 10 and 14  $I_n$

14  $I_n$

- protection of circuits that supply high inrush current loads: transformers, motors, etc...

protect  
circuit protection

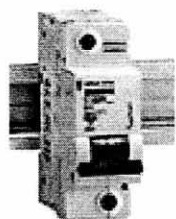
## C120H circuit-breakers

B, C and D curves

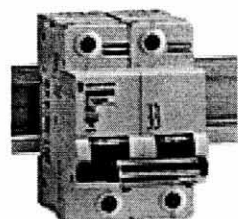
EN 60898/EN 61009: **15000** -

IEC 60947-2 : 15 kA

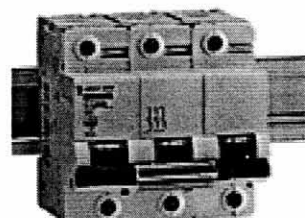
### catalogue numbers



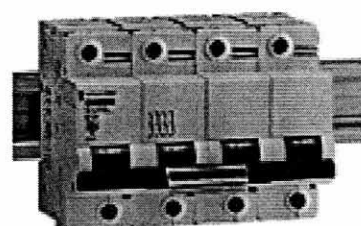
18394



18412



18424



18437

type	rating (A)	catalogue number	width in mod. of 9 mm
<b>B curve C120H</b>			
1P	10	18394	3
	16	18395	3
1	20	18396	3
$\frac{1}{2}$	25	18397	3
	32	18398	3
	40	18399	3
	50	18400	3
	63	18401	3
	80	18402	3
2	100	18403	3
	125	18404	3
2P	10	18405	6
	16	18406	6
1 3	20	18407	6
$\frac{1}{2}$ $\frac{1}{2}$	25	18408	6
	32	18409	6
	40	18410	6
	50	18411	6
	63	18412	6
2 4	80	18413	6
	100	18414	6
	125	18415	6
3P	10	18416	9
	16	18417	9
1 3 5	20	18418	9
$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	25	18419	9
	32	18420	9
	40	18421	9
	50	18422	9
	63	18423	9
2 4 6	80	18424	9
	100	18425	9
	125	18426	9
4P	10	18427	12
	16	18428	12
1 3 5 7	20	18429	12
$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$	25	18430	12
	32	18431	12
	40	18432	12
	50	18433	12
	63	18434	12
2 4 6 8	80	18435	12
	100	18436	12
	125	18437	12

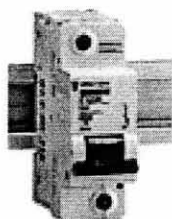
protect  
circuit protection

# C120H circuit-breakers

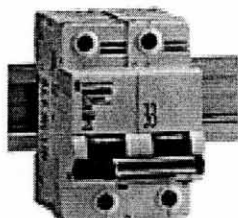
## B,C and D curves

EN 60898/EN 61009: **15000** -  
IEC 60947-2 : 15 kA

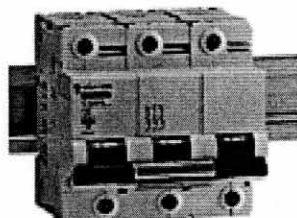
### catalogue numbers



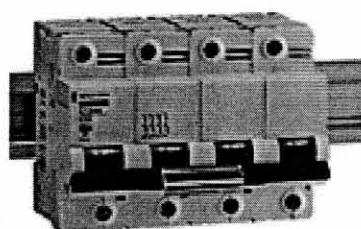
18445



18456



18468



18481

type	rating (A)	catalogue number	width in mod. of 9 mm
<b>C curve C120H</b>			
1P	10	18438	3
	16	18439	3
1	20	18440	3
	25	18441	3
	32	18442	3
	40	18443	3
	50	18444	3
	63	18445	3
	80	18446	3
2	100	18447	3
	125	18448	3
2P	10	18449	6
	16	18450	6
1 3	20	18451	6
	25	18452	6
	32	18453	6
	40	18454	6
	50	18455	6
	63	18456	6
	80	18457	6
2 4	100	18458	6
	125	18459	6
3P	10	18460	9
	16	18461	9
1 3 5	20	18462	9
	25	18463	9
	32	18464	9
	40	18465	9
	50	18466	9
	63	18467	9
	80	18468	9
2 4 6	100	18469	9
	125	18470	9
4P	10	18471	12
	16	18472	12
1 3 5 7	20	18473	12
	25	18474	12
	32	18475	12
	40	18476	12
	50	18477	12
	63	18478	12
	80	18479	12
2 4 6 8	100	18480	12
	125	18481	12

protect  
circuit protection

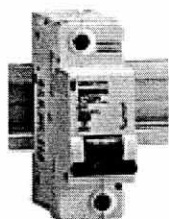
## C120H circuit-breakers

B, C and D curves

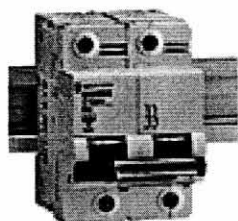
EN 60898/EN 61009: **15000** -

IEC 60947-2 : 15 kA

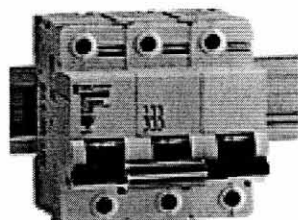
### catalogue numbers



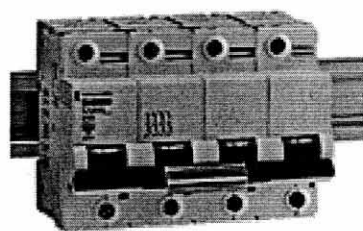
18482



18500



18514



18525

type	rating (A)	catalogue number	width in mod. of 9 mm
<b>D curve C120H</b>			
<b>1P</b> 	10	18482	3
	16	18483	3
	20	18484	3
	25	18485	3
	32	18486	3
	40	18487	3
	50	18488	3
	63	18489	3
	80	18490	3
	100	18491	3
	125	18492	3
<b>2P</b> 	10	18493	6
	16	18494	6
	20	18495	6
	25	18496	6
	32	18497	6
	40	18498	6
	50	18499	6
	63	18500	6
	80	18501	6
	100	18502	6
	125	18503	6
<b>3P</b> 	10	18504	9
	16	18505	9
	20	18506	9
	25	18507	9
	32	18508	9
	40	18509	9
	50	18510	9
	63	18511	9
	80	18512	9
	100	18513	9
	125	18514	9
<b>4P</b> 	10	18515	12
	16	18516	12
	20	18517	12
	25	18518	12
	32	18519	12
	40	18520	12
	50	18521	12
	63	18522	12
	80	18523	12
	100	18524	12
	125	18525	12



# NC100L - IEC 947-2

C curve

25 kA

## circuit protection

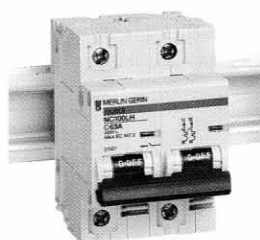
circuit breakers up to 63 A



27628

type	width in mod. of 9 mm	rat. (A)	cat. No. C curve
1P	3	10	27621
		16	27622
		20	27623
		25	27624
		32	27625
		40	27626
		50	27627
		63	27628

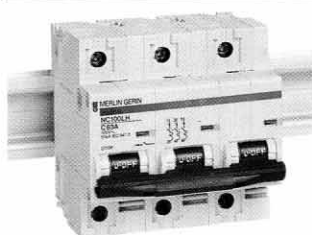
1 protected pole



27639

2P	6	10	27632
		16	27633
		20	27634
		25	27635
		32	27636
		40	27637
		50	27638
		63	27639

2 protected poles



27650

3P	9	10	27643
		16	27644
		20	27645
		25	27646
		32	27647
		40	27648
		50	27649
		63	27650

3 protected poles



27661

4P	12	10	27654
		16	27655
		20	27656
		25	27657
		32	27658
		40	27659
		50	27660
		63	27661

4 protected poles

## C curve

### Application

Control and protection of circuits with high short-circuit current in industrial/commercial distribution system.

Specially suitable for the control and protection of DC circuits: 1 pole only is enough to ensure breaking up to 250 V DC.

### Technical data

- current rating: 10 to 63 A;
- voltage rating: 240-415 V AC;

- breaking capacity:

□ Icu ultimate breaking capacity (O-CO cycle):

rat. (A)	type	voltage (V)	breaking capacity (A)
to IEC 947-2			
10 to 63	1P	130	50000
		230-240	25000
		400-415	6000
	2, 3, 4P	230-240	50000
		400-415	25000
		440	20000

□ Ics = 75 % of Icu;

- positive contact indication;
- fast closing contacts;
- number of operating cycles (O-C): 20000;

- tripping characteristics:

□ C curve: the magnetic releases operate between 7 and 10 In;

- impulse withstand voltage (U imp.): 6 kV;

- tropicalization: treatment 2 (relative humidity 95 % at 55 °C);

- weight (g):

type	1P	2P	3P	4P
	180	360	540	720

- connections: tunnel terminals for rigid cables up to 35 mm<sup>2</sup>;

- installation: in all enclosures designed for Multi 9 equipment.

## complementary information:

Auxiliaries: page 26  
Accessories: page 27  
Vigi module: page 33  
Tripping curves: page 63

Dimensions: page 65  
Derating: page 75  
Application guide: page 69

# NC100LH - IEC 947-2

C curve

50 kA

## circuit protection

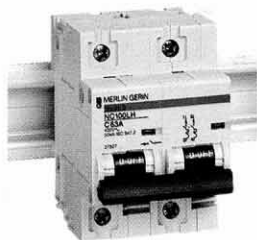
circuit breakers up to 63 A



27516

type	width in mod. of 9 mm	rat. (A)	cat. No. C curve
1P	3	10	27509
		16	27510
		20	27511
		25	27512
		32	27513
		40	27514
		50	27515
		63	27516

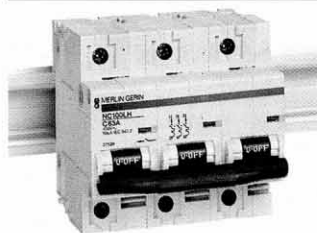
1 protected pole



27527

2P	6	10	27520
		16	27521
		20	27522
		25	27523
		32	27524
		40	27525
		50	27526
		63	27527

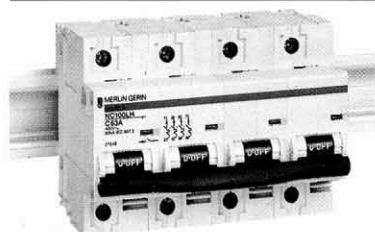
2 protected poles



27538

3P	9	10	27531
		16	27532
		20	27533
		25	27534
		32	27535
		40	27536
		50	27537
		63	27538

3 protected poles



27549

4P	12	10	27542
		16	27543
		20	27544
		25	27545
		32	27546
		40	27547
		50	27548
		63	27549

4 protected poles

## C curve

### Application

Control and protection of circuits in installations with very high short-circuit current.

### Technical data

- current rating: 10 to 63 A;
- voltage rating: 230-400 V AC;
- breaking capacity:

□ Icu ultimate breaking capacity (O-CO cycle):

rat. (A)	type	voltage (V)	breaking capacity (A)
to IEC 947-2			
10 to 63	1P	130	100000
		230	50000
		240	40000
		400	12500
		415	10000
	2, 3, 4P	230	100000
		240	80000
		400	50000
		415	40000
		440	30000

- Ics = 75 % of Icu;
- positive contact indication;
- fast closing contacts;
- number of operating cycles (O-C): 20000;
- tripping characteristics:
- C curve: the magnetic releases operate between 7 and 10 In;
- impulse withstand voltage (U imp.): 6 kV;
- tropicalization: treatment 2 (relative humidity 95 % at 55 °C);
- weight (g):

type	1P	2P	3P	4P
	180	360	540	720

- connections: tunnel terminals for rigid cables up to 35 mm<sup>2</sup>;
- approvals: Marine, see page 87;
- installation: in all enclosures designed for Multi 9 equipment.

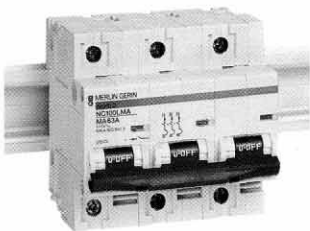
## complementary information:

Auxiliaries: page 26  
Accessories: page 27  
Vigi module: page 33  
Tripping curves: page 63

Dimensions: page 65  
Derating: page 75  
Application guide: page 69

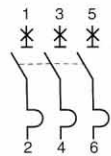
NC100L MA - IEC 947-2  
MA curve  
50 kA

circuit protection  
circuit breakers up to 63 A



27564

type	width in mod. of 9 mm	trip. MA	I magn. (A)	I max. motor	cat. No.
3P	9	1.6	20	1.6	27564
		2.5	30	2.5	27565
		4	50	4	27566
		6.3	75	6.3	27567
		10	120	10	27568
		12.5	150	12.5	27569
		16	190	16	27570
		25	300	25	27571
		40	480	40	27572
		63	750	63	27573



MA curve

Applications

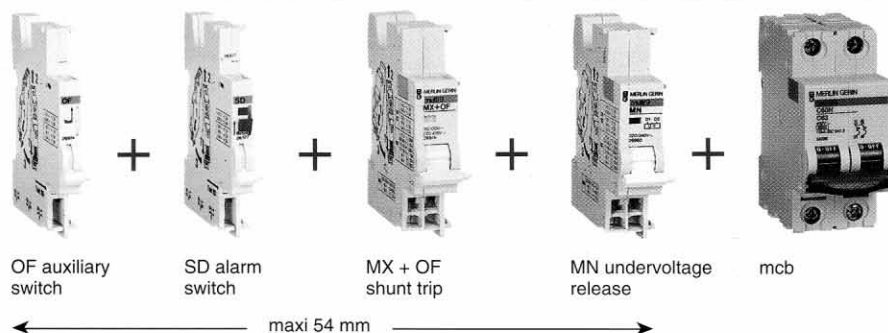
- protection of motor starters against short-circuits.
- for short-circuit protection only.
- overload protection not included.

Technical data

- breaking capacity:
- Icu ultimate breaking capacity (O-CO cycle):

rat. (A)	type	voltage (V)	breaking capacity (A)
to IEC 947-2 1.6 to 63	3P	230	100000
		400	50000
		415	40000
		440	35000

- positive contact indication;
- fast closing contacts;
- number of operating cycles (O-C): 20000;
- tripping characteristics:
  - MA curve: the magnetic releases operate between 10 and 14 In. Magnetic only;
- impulse withstand voltage (U imp.): 6 kV;
- tropicalization: treatment 2 (relative humidity 95 % at 55 °C);
- max. temperature: 65 °C
- weight (g): 540 g;
- connections: tunnel terminals for rigid cables up to 35 mm<sup>2</sup>;
- approvals: Marine, see page 87
- test certificates for IEC 947-4-1,
- "type-2 coordination" with Telemecanique contactors and overload relays are available upon request: see page 89;
- installation: in all enclosures designed for Multi 9 equipment.

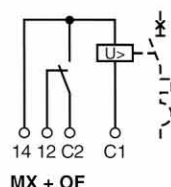


### MX + OF shunt trip release



26946

type	width in mod. of 9 mm	voltage	cat. No.
MX + OF	2	220-415 V AC	26946
		110-130 V DC	26947
		48-130 V AC	26947
		48 V DC	26948

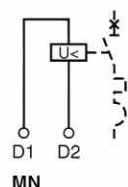


### MN undervoltage release



26960

type	width in mod. of 9 mm	voltage	cat. No.
instantaneous			
MN	2	220-240 V AC	26960
		48 V AC	26961
		48 V DC	26962
time delayed 0.5 s			
MN	4	220-240 V AC	26963

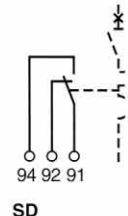


### SD alarm switch



26927

type	width in mod. of 9 mm	cat. No.
SD	1	26927

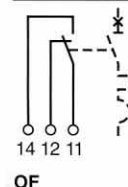


### OF auxiliary switch



26924

type	width in mod. of 9 mm	cat. No.
OF	1	26924



### Applications

C60 auxiliaries enable remote tripping or remote indication of the ON/OFF positions of an mcb.

They are mounted by clipping on the left hand side of the mcb or mcb/rcd. In addition to the above Vigi module can always be assembled on the right hand side of an mcb.

### Remote tripping

#### ■ MX + OF shunt trip release:

- enables the mcb to be tripped from a remote location,
- allows remote indication of the "OFF" or "ON" position of the mcb by using the same voltage as the one feeding the shunt trip (terminals 12 and 14),
- is equipped with a cut-off switch in series with the coil,
- all shunt trip release devices are equipped with a red flag trip indicator;

#### ■ MN undervoltage release

- enables miniature circuit breakers to be tripped either when the voltage drops or by operation of the "OFF" push button of a remote device tripping between 70 and 35 %  $U_n$ , closing  $\geq 85\%$   $U_n$ ,
- prevents the mcb from being switched "ON" again if the undervoltage release supply is not present,

#### ■ MN $\overline{S}$ undervoltage release, time delayed:

- allows micro breaks  $\leq 200$  ms without effects,
- all under voltage releases are equipped with a red flag indicator.

### Consumption of releases

type	voltage (V AC or V DC)		(W or VA)
MX	415 V AC	pickup	120
	220-240 V AC	pickup	50
	110-130 V AC	pickup	200
	110-130 V DC	pickup	10
	48 V AC or V DC	pickup	22
	24 V AC or V DC	pickup	120
MN	220-240 V AC	hold	4.1
	48 V AC	hold	4.3
	48 V DC	hold	2.0
MN $\overline{S}$	220-240 V AC	hold	4.1

### Remote indication

#### ■ SD alarm switch

An indicating device which monitors the tripping of an mcb.

This device offers the following:

- a red flag trip indicator,
- ability to reset without closing the mcb,
- test function;

#### ■ OF auxiliary switch

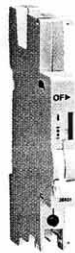
□ a changeover switch which acts as an indicating or control device to monitor the "ON" or "OFF" positions of an mcb;

■ breaking capacity of auxiliary contacts.

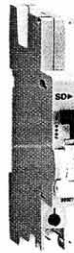
voltage (V AC or V DC)	breaking capacity (A)
415 V AC	3
$\leq 240$ V AC	6
130 V DC	1
$\leq 48$ V DC	2
$\leq 24$ V DC	6

■ connection: screw clamp terminal for 1 cable 2.5 mm<sup>2</sup> (or 2 x 1.5 mm<sup>2</sup>).

# C60, C120, DPN, ID Add-on Electrical Auxiliaries Multi 9 Merlin Gerin



OF



SD



OF + SD/OF



MN



MN



MX + OF



MNx



MSU

Combined with the Merlin Gerin C60, C120, DPN circuit-breakers and ID residual current circuit-breaker

They ensure remote tripping or indication.

**Auxiliary contacts: "OF" and "OF.S"**

Indication of the "open" or "closed" position of the circuit-breaker (OF) or the residual current circuit-breaker (OF.S) with which they are combined.

**Fault indicating switch: "SD"**

Indication of the "fault trip" position of the circuit-breaker or residual current circuit-breaker with which it is combined.

Visualisation of the fault (circuit-breaker) or earth fault indication (ID) on the front face by means of a mechanical indicator.

**Selector switch: "OF + SD/OF"**

■ Upper circuit: OF, lower circuit: OF or SD.

■ OF: remote indication of the "open" or "closed" position of the circuit-breaker or residual current circuit-breaker with which it is associated.

■ SD: remote indication of the "tripped" on fault position of the circuit-breaker or residual current circuit-breaker with which it is associated.

■ Function choice using the selector switch on the right side.

■ The selected function is indicated on the front face.

**Delayed undervoltage release: "MN**

Undervoltage release that controls the opening of the circuit-breaker or residual current circuit-breaker with which it is combined; it allows a 0.5 second time delay on a brownout or voltage drop.

**Instantaneous undervoltage release: "MN"**

When its supply voltage drops (between 70 and 35 %), it controls the tripping and opening of the circuit-breaker or residual current circuit-breaker with which it is combined. Furthermore, it prevents the circuit-breaker or the residual current circuit-breaker from reclosing as long as its supply voltage is not restored.

■ Utilisation:

□ emergency stop using a pushbutton,

□ safety on the circuits supplying several machines by preventing "uncontrolled" restart of all motors.

**Shunt release: "MX + OF"**

When energised, it controls the tripping and opening of the circuit-breaker or residual current circuit-breaker with which it is combined.

Equipped with an O + C contact to indicate the "open" or "closed" position of the circuit-breaker or the residual current circuit-breaker.

**Release for push button: "MNx"**

Completely unaffected by power supply circuit cuts, it is recommended for fail-safe emergency stops. Replaces the "voluntary" MX release equipped with its NO/NC indicator lights.

**Voltage threshold release: "MSU"**

Specially designed to monitor voltage between the neutral and phase(s) conductors, it cuts off the power supply by opening the circuit-breaker in event of overvoltage (case of neutral breaking).

## The range

### Auxiliaries



OF+SD/  
OF



OF



SD



MX + OF  
or MSU



MN, MN   
or MNx



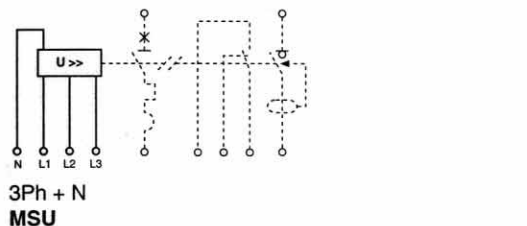
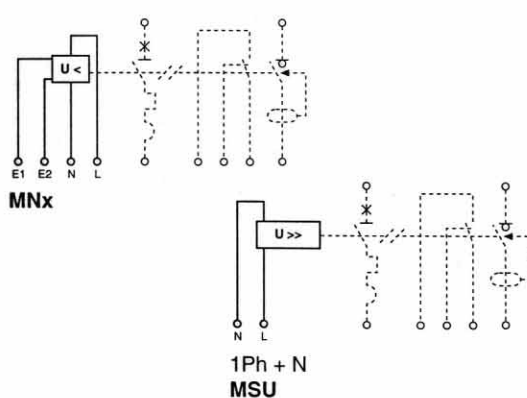
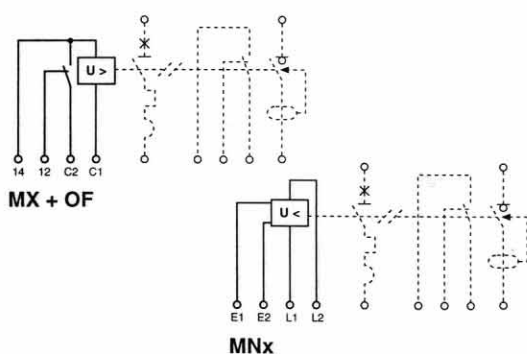
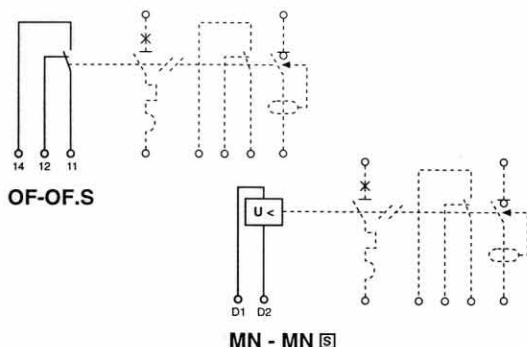
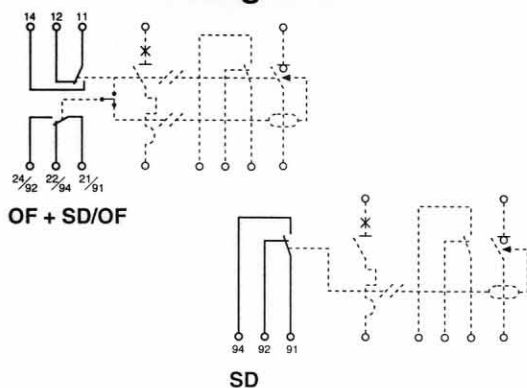
OF.S



ID



## Schematic diagrams



## Implementation

- Designed for installation in modular electrical enclosures and cubicles.
  - Easy connection and reliability ensured by the serrated tunnel terminals with guard.
  - Captive screws with mixed  $\pm$  imprint.
  - Simplified combination with C60, C120, DPN circuit-breakers and ID residual current circuit-breakers using clip-ons.
- The electrical auxiliaries allow remote tripping or indication of the circuit-breakers with or without Vigü module. They are mounted on the left-hand side of the circuit-breaker (max. width: 54 mm).
- Use of the OF.S auxiliary contact is compulsory for adding the MN, MX, SD, OF, MNx, MSU functions to the ID residual current switch.

### Operation simulation

- On the front face of the auxiliary contacts (26924, 26927), a test button allows for the OF and SD functions to be simulated without generating the circuit-breaker or residual current circuit-breaker.

## Technical data

type	voltage (V)	width in mod. (9 mm)	cat. no.
<b>auxiliary contacts</b>			
OF		1	26924
OF.S		1	26923
<b>fault indicating switch</b>			
SD		1	26927
<b>selector switch</b>			
OF + SD/OF		1	26929
<b>undervoltage release</b>			
MN	220 to 240 V AC	2	26960
	48 V AC	2	26961
	48 V DC	2	26962
MN	220 to 240 V AC	4	26963
<b>0.5 s delay</b>			
<b>release for push button</b>			
MNx	230 V AC	4	26969
	400 V AC	4	26971
<b>shunt release</b>			
MX + OF	220 to 415 V AC	2	26946
	110 to 130 V DC		
	48 to 130 V AC	2	26947
	48 V DC		
	24 V AC - DC	2	26948
	12 V AC - DC	2	26949
<b>voltage threshold release</b>			
MSU	230 V AC	4	26979
	400 V AC	4	26980

### Release consumption

type	voltage (V)	(W or VA)
MX	415 V AC	120
	220 to 240 V AC	50
	110 to 130 V AC	200
	110 to 130 V DC	10
	48 V AC - DC	22
	24 V AC - DC	120
	12 V AC - DC	120
MN	220 to 240 V AC	4.1
	48 V AC	4.3
	48 V DC	2.0
MN	220 to 240 V AC	4.1
MNx	230 V AC	50
	400 V AC	120
MSU	230 V AC 1Ph + N	50
	400 V AC 3Ph + N	120

### Breaking capacity of auxiliary contacts

voltage (V)	(A)
415 V AC	3
≤ 240 V AC	6
130 V DC	1
≤ 24 V DC	6

# electrical auxiliaries

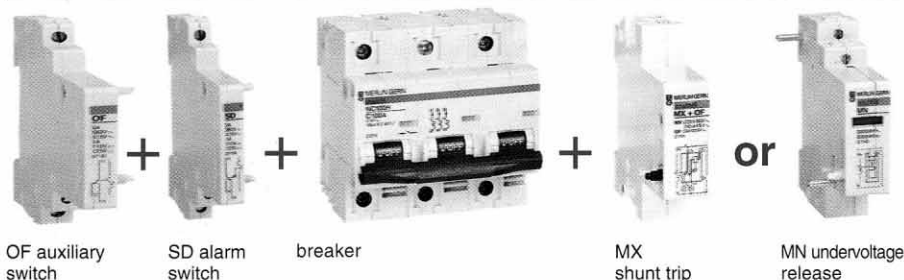
## NC100H, L, LH

## NC125H

## C32H - DC

## circuit protection

### auxiliaries



### Application

Remote tripping (without add-on Vigitrol's).  
By means of a MX shunt trip or MN undervoltage release module fitted to the right hand side of breaker.

#### ■ MX shunt trip release:

Immediately trips the breaker when energized.  
□ fitted with a cut-off contact,  
□ equipped with a contact (terminals 12 and 14) that indicates the "open" or "closed" position of the breaker using the coil voltage;

#### ■ MN undervoltage release

Trips the breaker when the supply voltage drops (between 70 % and 35 %) and prevents reclosing until the supply voltage is restored ( $\geq 85 \% U_n$ ):

- complies with standard IEC 947-2,
- applications:

- emergency off push-button,
- safety feature on circuit supplying several machines preventing uncontrolled restarting of the set of motors;

#### ■ MN S undervoltage release, time delayed

- allows micro breaks  $\leq 200$  ms without effects;

#### ■ OF auxiliary switch

Indicates the "open" (O) or "closed" (F) position of the contacts:

- fitted on the left hand side of breaker;

#### ■ SD alarm switch

Indicates the breaker has tripped:

- fitted on the left hand side of breaker,
- test function.

### Technical data of auxiliaries

#### ■ breaking capacity of contacts (pf = 0.6)

voltage (V AC or DC)	breaking capacity (A)
380-415 V AC	3
220-240 V AC	6
250 V DC	0.4
125 V DC	1
48 V DC	2
24 V DC	6

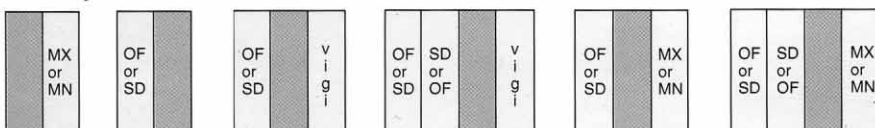
#### ■ consumption of releases

supply voltage (V AC or V DC)	pick-up MX	hold MN
240 V AC	50 VA	4.1 VA
110-130 V DC	50 W	3.5 W
240 V DC	–	4.1 VA

#### ■ connection: screw clamp terminal:

- 1.5 mm<sup>2</sup> for 2 cables,
- 2.5 mm<sup>2</sup> for 1 cable.

### Auxiliary combinations

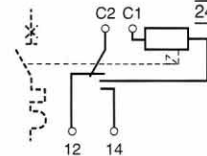


### MX + OF shunt trip module



27136

type	width in mod. of 9 mm	voltage	cat. No.
MX + OF 2		220-380 V AC 240-415 V AC 110-220 V AC 110-125 V DC	27136 27137 27138



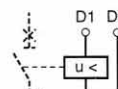
MX + OF

### MN undervoltage release



27140

type	width in mod. of 9 mm	voltage	cat. No.
instantaneous			
MN 2		220-240 V AC-DC	27140
time delayed S			
MN 2		220-240 V AC-DC	27143



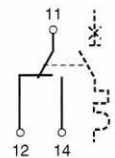
MN

### OF auxiliary switch



27132

type	width in mod. of 9 mm	cat. No.
OF 1		27132



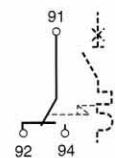
OF

### SD alarm switch



27135

type	width in mod. of 9 mm	cat. No.
SD 1		27135



SD

Dimensions: pages 65

Application guide: page 69

# accessories

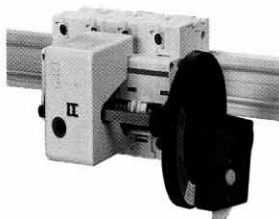
## C60a, N, H

## NC100H, L, LH

## NC125H

# circuit protection

## accessories

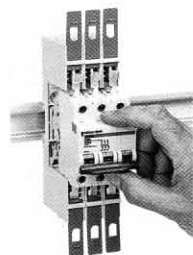


27046 + 27048

type	cat. No.
<b>rotary handle</b>	
circuit-breaker operating subassembly (fixed to circuit breaker)	<b>27046</b>
draw-out extended handle (mounted on door or hinged panel)	<b>27047</b>
fixed handle front or lateral (mounted on fixed panel)	<b>27048</b>

### Applications

- front or lateral control C60 or NC100 two, three and four-pole versions;
- degree of protection: IP54;
- installation:
  - on door or hinged panel for draw-out handle cat. No. 27047,
  - on fixed front or side panel with fixed handle cat. No. 27048;
- **a completed rotary handle is made up of a circuit breaker operating subassembly (27046) and a handle (27047 or 27048).**



26996

type	cat. No.
<b>plug in base – 1 pole</b> (double breaking contact type) (C60 or NC100 ≤ 63 A)	<b>26996</b>
minimum centre spacing of 200 mm between 2 rows	
<b>spacer</b>	<b>27062</b>
spacer to be added to both ends for applications with more than 1 pole e.g. for a 3 pole breaker order : 26996 x 3 + 27062 x 2	

- for no-load isolation of a circuit protected by an mcb, with locking in "disconnected" or "isolated" position by 8 mm diameter padlocks (not supplied).



27145

type	cat. No.
<b>padlocking device</b>	
C60 (bag of 2 pcs)	<b>26970</b>
NC100 (bag of 4 pcs)	<b>27145</b>

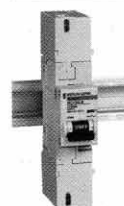
- this device may be used to lock the circuit-breaker in "on" or "off" position (for padlocks dia. max 8 mm, not supplied). The front plate or functional door can be opened with the circuit breaker locked in "off" position.



26981

type	cat. No.
<b>sealable terminal screw shield</b>	
C60 (bag of 2 pcs)	<b>26981</b>
NC100 (bag of 10 pcs)	<b>27152</b>

- enables total isolation of the terminal screws 1P, 2P, 3P and 4P C60/NC100 mcb's.



27151

type	cat. No.
<b>sealable terminal shield</b>	
C60	
1P	<b>26975</b>
2P	<b>26976</b>
3P	<b>26975+26976</b>
4P	<b>26978</b>
NC100	
1P without connectors	<b>27151</b>
1P with connectors 50 mm <sup>2</sup>	<b>27153</b>

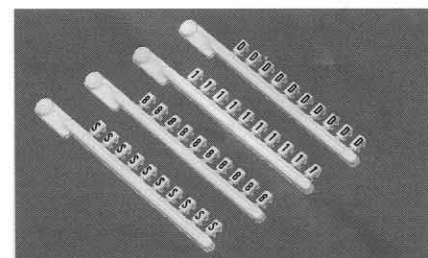
- completely cover terminals;
- enables rear connection.



27062

type	cat. No.
<b>spacer</b>	
W = 9 mm	<b>27062</b>

- clips on DIN rail;
- provides a ventilation gap to prevent overheating;
- provides space for future breakers.



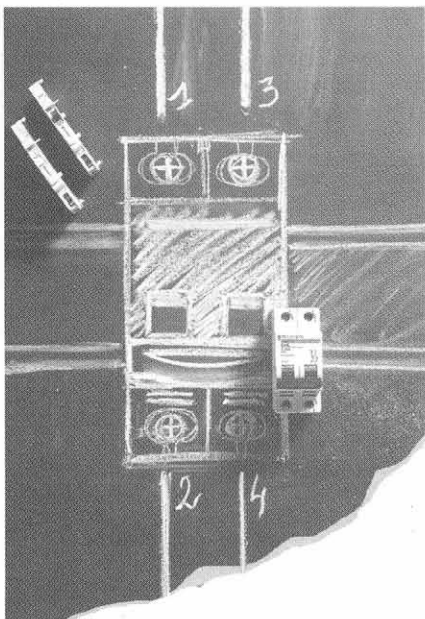
27021-27036-27029-27006

### Identification system

- all C60/NC100 mcb's can accept marking accessories on each of their poles:
  - up to 10 for C60,
  - up to 6 for NC100;
- the following symbols are available: Blank, 1-9, +, -, and A-Z. Please refer to Telemecanique, AB-1 Terminal System.


Dimensions: pages 71





	page
rcd's/elcb's residual current circuit breaker	29
rcd's/elcb's electrical auxiliaries / accessories	30
DPNa Vigi combined mcb/rcd's	31
Vigi module add-on rcd's	
■ Vigi C60 ≤ 25 A	32
■ Vigi C60 ≤ 63 A	32
■ Vigi NC100 ≤ 63 A	33
■ Vigi NC100 ≤ 100 A	33

selection table

sensitivity	type	rating (A)							
		1	25	32	63	80	100	125	
30 mA	RCCB								
	DPNa Vigi								
	Vigi C60 ≤ 25 A								
	Vigi C60 ≤ 63 A								
	Vigi NC100 ≤ 63 A								
	Vigi NC100 ≤ 100 A								
	Vigi NC125 ≤ 125 A								
100 mA	RCCB								
300 mA	RCCB								
	DPNa Vigi								
	Vigi C60 ≤ 25 A								
	Vigi C60 ≤ 63 A								
	Vigi NC100 ≤ 63 A								
	Vigi NC100 ≤ 100 A								
	Vigi NC125 ≤ 125 A								
300 mA 	RCCB								
	Vigi C60 ≤ 25 A								
	Vigi C60 ≤ 63 A								
	Vigi NC100 ≤ 63 A								
	Vigi NC100 ≤ 100 A								
	Vigi NC125 ≤ 125 A								
1 - 3 A	Vigi NC125 ≤ 125 A								

# rccb/elcb up to 100 A

## earth leakage protection residual current circuit breakers

protected against nuisance tripping



16204

type	width in mod. of 9 mm	rat. (A)	sens (mA) 50 Hz	cat. No. AC class
2P	4	40	30	16204(1)
			100	16205(1)
			300	16206(1)
			30	16208(1)
			100	16209(1)
			300	16210(1)
			300 [S]	16246
			30	16212(1)
			100	16213(1)
			300	16214(1)
			30	16216
			100	16217(1)
			300	16218(1)
			300 [S]	16248
4P	8	40	30	16254(1)
			100	16255(1)
			300	16256(1)
		63	30	16258(1)
			100	16259(1)
			300	16260(1)
			300 [S]	16265
		80	30	16261
			300	16263
			300 [S]	16266

### Application

The rccb/elcb's residual current devices provide the functions of isolation switching and earth leakage protection of electrical circuits (no overload and short circuit protection).

They have a residual current operated electromechanical release which operates without any auxiliary source of supply to open a circuit automatically in the case of an earth leakage fault between phase and earth greater than or equal to a threshold of 30, 100 or 300 mA.

■ the 30, 100 and 300 mA units instantaneous or delayed, provide protection against indirect contact and insulation faults (fire risks: 500 mA);

■ the 30 mA units provide complementary protection against direct contact;

■ RCCB/ELCB's time-delayed version [S];

■ 300 mA [S] provides discrimination with downstream 30 mA and 100 mA sensitivity instantaneous residual current devices.

### Technical data

■ unwanted tripping:

All RCCB/ELCB's incorporate a filtering device preventing the risks of unwanted tripping due to transient voltages (lightning, line disturbances on other equipment...) and transient currents (from high capacitive circuits...);

■ isolation and switching;

■ positive contact indication:

in accordance with 16th edition of the IEE Wiring Regulations;

■ trip indication on the front face by red flag;

■ current ratings: 40 A to 100 A;

■ voltage ratings:

□ 2 poles: 240 V

– minimum voltage: 102 V AC;

– maximum voltage: 264 V AC;

□ 4 poles: 415 V

– minimum voltage (ph/N): 102 V AC;

– maximum voltage (ph/N): 264 V AC;

■ sensitivities: non-adjustable;

■ operating temperature: – 5 to + 60 °C;

■ connection: tunnel terminal for cables up to 35 mm<sup>2</sup>;

■ auxiliaries: these RCCB/ELCB's will accept a full range of auxiliaries;

■ number of operating cycles: (on load) 20000 cycles (O-C);

■ tropicalization: treatment 2 (relative humidity 95 % at 55 °C);

■ weight (g):

type	2P	4P
	230	450

■ approvals-compliance with standards;

■ all RCCB/ELCB's comply with IEC 1008;

■ all RCCB/ELCB's comply with BS 4293.

(1) Approved by PUB.

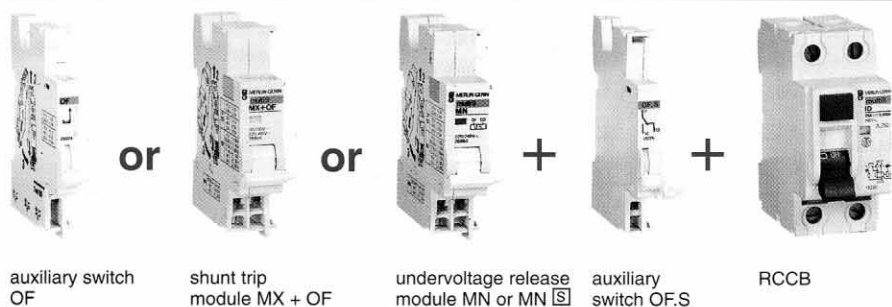
complementary information:

Auxiliaries: page 30  
Dimensions: page 66

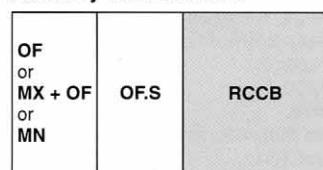
# electrical auxiliaries accessories

## rccb/elcb

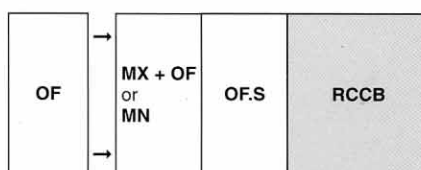
**earth leakage protection**  
electrical auxiliaries / accessories



### Auxiliary combinations

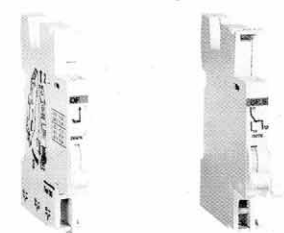


OF.S is necessary before mounting other auxiliaries.



OF on left side of MN or MX  
MN or MX never on left side of OF.

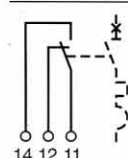
### OF.S/OF auxiliary switches



26923

26924

type	width in mod. of 9 mm	cat. No.
OF.S	1	26923
OF	1	26924



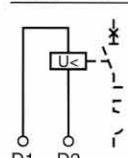
OF

### MN undervoltage release



26960

type	width in mod. of 9 mm	voltage	cat. No.
MN	2	220-240 V AC	26960
MN S	4	220-240 V AC	26963



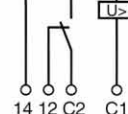
MN

### MX + OF shunt trip release



26946

type	width in mod. of 9 mm	voltage	cat. No.
MX + OF	2	220-415 V AC 110-130 V DC	26946
		48-130 V AC 48 V DC	26947
		24 V AC and DC	26948



MN + OF

type	cat. No.
padlocking device (bag of 2 pcs)	26970
sealable terminal screw shield (bag of 2 pcs)	26981
sealable terminal shield	
2P	26976
4P	26978

### Applications

The electrical auxiliaries provide rccb/ELCB remote tripping or remote indication functions.

They are mounted on the left side of the device.

An OFS auxiliary switch is always required for the addition of MN, MX and OF functions.

### Remote RCCB/ELCB position reset

■ OF.S/OF auxiliary switch is related to the RCCB/ELCB "ON" or "OFF" position.

This function can be provided by an OF.S auxiliary switch mounted on the left side of the device or by another OF switch (OF.S is necessary before mounting an OF);

### ■ RCCB/ELCB remote tripping

RCCB/ELCB may be tripped remotely by an MX or MN release mounted on the left side of an OF.S switch;

### ■ MX shunt trip release

When energized, immediately trips and opens the device on which it is mounted:

- fitted with a cut-off contact,
- equipped with a contact that indicates the "open" or "closed" position of the RCCB/ELCB using the coil voltage;

### ■ MN undervoltage release module

Trips the RCCB/ELCB when the supply voltage drops (between 70 % and 35 %) and prevents reclosing until the supply voltage is restored ( $\geq 85 \% U_m$ ):

- complies with standard IEC 947-2,
- applications:

- emergency off pushbutton,
- safety feature on circuit supplying several receptors preventing "uncontrolled" restarting of the set of motors;

### ■ MN S undervoltage release time

delayed allows micro breaks  $\leq 200$  ms without effects.

### Technical data of auxiliaries

#### ■ breaking capacity of auxiliary contacts.

voltage (V AC or DC)	breaking capacity (A)
415 V AC	3
240 V AC	6
130 V DC	1
48 V DC	2
$\leq 24$ V DC	6

#### Release unit consumption

type	voltage (V AC or V DC)	pick-up (W or VA)
MX	415 V AC	120
	220-240 V AC	50
	110-130 V AC	200
	110-130 V DC	10
	48 V AC or V DC	22
MN/MN S	24 V AC or V DC	120
	220-240 V AC	4.1(hold)

#### ■ connection: terminal pads for:

- two 1.5 mm<sup>2</sup> cables or,
- one 2.5 mm<sup>2</sup> cable.

### accessories

(see page 18)

- identification system.

Dimensions: pages 72

Application guide: page 79

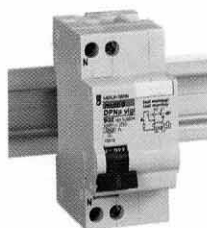
# DPNa Vigì combined mcb/rcd (rcbo's)

IEC 898 - IEC 1009 **4500 A**  
instantaneous 30 and 300 mA

## earth leakage protection

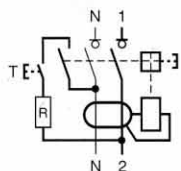
DPNa Vigì AC class 

protected against nuisance tripping




19401

type	width in mod. of 9 mm	sens (mA)	rat. (A)	cat. No. C curve
1P + N	4	30	6	19401
			10	19403
			16	19405
			20	19406
			25	19407
		300	32	19408
			6	19430
			10	19431
			16	19432
			20	19433
			25	19434
			32	19435



## Application

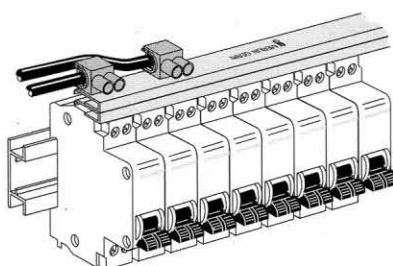
The all-in-one DPNa Vigì residual current devices provides complete protection of terminal circuits (overcurrent and insulation faults). Protection of people against indirect contacts (30 or 300 mA). Protection of installations against the risk of fire (300 mA). Complementary protection of people against direct contacts (30 mA). The 30 mA version is selective with the selective  300 mA RCCB or Vigì residual current devices installed upstream. It is immunized against nuisance tripping due to transient overvoltage (lightning, mains switchgear operation...).

## Technical data

- current ratings: 6 A to 32 A at 30 °C;
- voltage rating: 240 V AC;
- breaking capacity:
  - IEC 898: 4500 A;
- tripping curve:
  - C curve: the magnetic releases operate between 5 and 10 In;
- earth leakage fault display on front face;
- number of operating cycles (O-C):
  - mechanical: 20000;
  - electrical:
    - ≤ 16 A: 20000;
    - 20 to 32 A: 10000;
- fast closing;
- disconnection with positive contact indication;
- connection: tunnel terminals for cable up to 16 mm<sup>2</sup>; (in accordance with EN 50027);
- tropicalisation: treatment 2 (relative humidity 95 % at 55 °C);
- approval: KEMA KEUR;
- weight: 190 g.



type	number of feeders	cat. No.
<b>comb busbar</b>		
Bar'clìc	13	14876
insulated connector (set of 4)		14875



## accessories

### Comb busbars

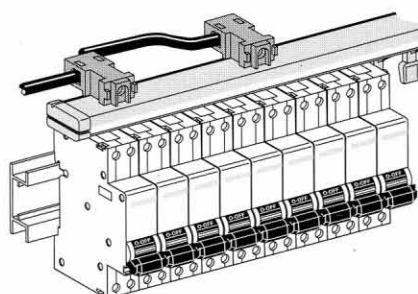
Combs can be used for quick power supply to several devices.

### Bar'clìc 63 A

- permissible current at 40 °C;
- insulated connectors for one cable 35 mm<sup>2</sup> or 2 cables 16 mm<sup>2</sup>.



type	number of feeders	cat. No.
<b>comb busbar 100 A</b>		
1P + N	13	14880
1P + N (set of 2)	26	14890
insulated connector 25 mm <sup>2</sup> (set of 4)		14885



### Comb busbar 100 A

- permissible current at 40 °C:
  - 100 A with one connector,
  - 125 A with two connection points.

Dimensions: pages 66



protected against nuisance tripping

### Application

The range of Vigi C60 residual current devices simply clip on to the right hand side of any C60 mcb, **without adaptors**, to provide a high level of protection against earth leakage faults in addition to the overload and over current protection given by the mcb alone.

The Vigi rcd has a residual current - operated electro mechanical release which operates without any auxiliary source of supply to open a circuit automatically in the case of an earth leakage fault between phase and earth greater than or equal to 30 or 300 mA (red indicator on the toggle).

■ the Vigi C60 can be field adapted to operate in one of two modes:

□ automatic reset, Vigi is reset by mcb toggle,

□ hand reset, Vigi is reset separately;

■ the 30 and 300 mA units provide protection against indirect contact;

■ the 30 mA units provide complementary protection against direct contact;

■ time delayed version [S] provides discrimination with downstream instantaneous residual current devices.

300 mA [S] provides discrimination with 30 mA sensitivity instantaneous residual current devices.

### Technical data

■ voltage: 240/415 V; +10 -20 %;

■ sensitivities (non-adjustable);

■ unwanted tripping.

All Vigi modules are equipped with a filtering device preventing the risks of unwanted tripping due to transient voltages (lightning, line disturbances on other equipment...) and transient currents (from high capacitive circuits...);

■ connections : tunnel terminals for cables up to:

□ 25 mm<sup>2</sup> for rating ≤ 25 A,

□ 35 mm<sup>2</sup> for rating ≤ 63 A;

■ width of the mcb fitted with the Vigi modules (in modules of 9 mm).

type	2P	3P	4P
<b>C60</b>			
≤ 25 A	7	12	14
≤ 63 A	8	13	15

■ weight (g): Vigi module only

type	2P	3P	4P
<b>C60</b>			
< 25 A	120	180	180
< 63 A	150	210	210

■ operating temperature: -5 to +60 °C;

■ selective version [S]

Provides the vertical discrimination with downstream instantaneous residual devices:

□ 300 mA [S] with 10 to 30 mA;

■ approvals:

□ all rcd's comply with IEC 1009.

### Accessory

■ enable total isolation of the terminal screws.



C60 rcd

=

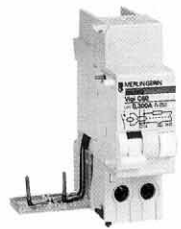


C60 mcb

+

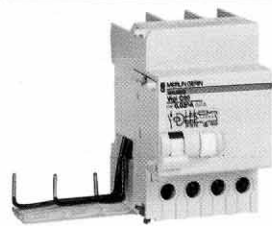
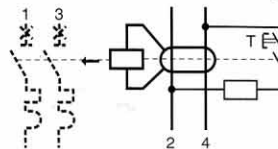


Vigi C60



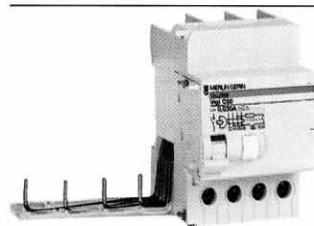
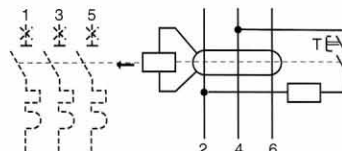
26581

type	width in mod. of 9 mm	rat. (A)	sens (mA)	cat. No.
2P	3	≤ 25	30	26581
			300	26583
	4	≤ 63	30	26611
			300	26613
			300 [S]	26616



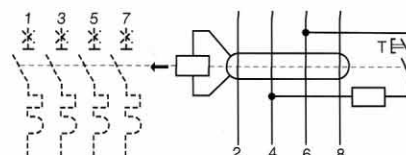
26588

3P	6	≤ 25	30	26588
			300	26590
	7	≤ 63	30	26620
			300	26622
			300 [S]	26631



26595

4P	6	≤ 25	30	26595
			300	26597
	7	≤ 63	30	26643
			300	26645
			300 [S]	26648



26932

type	cat. No.
screw shield terminal (bag of 20 pcs)	26982

complementary information:


Dimensions: page 65

Application guide: page 69

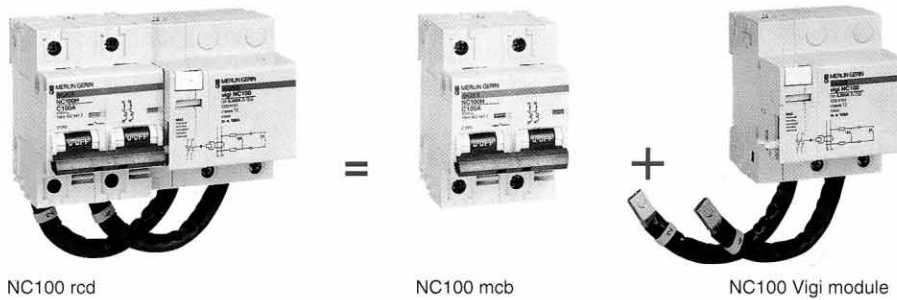
# Vigi module NC100 - IEC 1009

## earth leakage protection

Vigi module up to 100 A

AC class 

protected against nuisance tripping



NC100 rcd

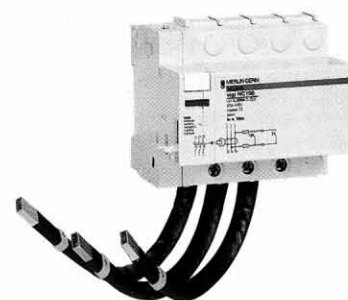
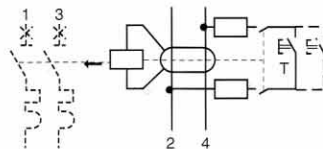
NC100 mcb

NC100 Vigi module



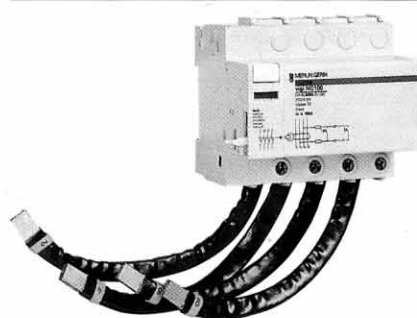
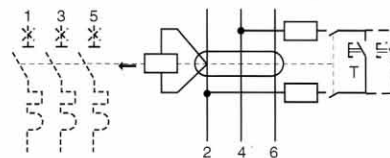
27789

type	width in mod. of 9 mm	rat. (A)	sens (mA)	cat. No.
2P	5	≤ 63	30	27789
			300	27791
	7	≤ 100	30	27818
			300	27820
			300 [S]	27823



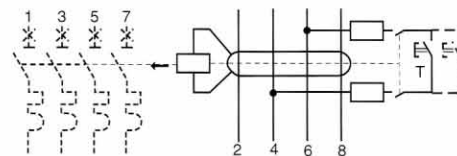
27797

3P	7	≤ 63	30	27797
			300	27799
	10	≤ 100	30	27826
			300	27828
			300 [S]	27831



27805

4P	8	≤ 63	30	27805
			300	27807
	10	≤ 100	30 [S]	27810
			300	27835
			300	27837
			300 [S]	27840



27161

type	width in mod. of 9 mm	cat. No.
MOD	1	27161

How to assemble your Vigi module ?  
Vigi earth leakage modules are unique add-on units, simple extensions which can be added on to the right hand side of the breaker providing an additional earth leakage protection.

### Application

To provide a high level of protection against earth leakage faults in addition to the overload and short-circuit protection by the breaker alone:

- the 30 and 300 mA units provide protection against indirect contact;
- the 30 mA units provide complementary protection against direct contact;
- all sensitivities protect the electrical installation against insulation faults (fire risk: 500 mA) and ensure, in the case of a selective Vigi module [S], a time discrimination with downstream instantaneous rcd's, as follows: 300 mA with 30 mA.

### Technical data

- the Vigi earth leakage module with residual current electromechanical release operates without any auxiliary source of supply;
  - all the NC100 Vigi modules are equipped with a filtering device preventing the risk of nuisance tripping due to transient voltages (lightning, line disturbances on other equipment...) and transient currents (from high capacitive circuits...);
  - two non-adjustable sensitivities: 30 or 300 mA;
  - remote tripping integrated in the Vigi module: connected by fast-on 2.85 mm supplied;
  - connections: tunnel terminals for cables up to 35 mm<sup>2</sup>;
  - width of the mcb fitted with the Vigi module (in modules of 9 mm)
- | type         | 2P         | 3P          | 4P           |
|--------------|------------|-------------|--------------|
| <b>NC100</b> |            |             |              |
| ≤ 63 A       | 11 (6 + 5) | 16 (9 + 7)  | 20 (12 + 8)  |
| ≤ 100 A      | 13 (6 + 7) | 19 (9 + 10) | 22 (12 + 10) |
- weight (g): Vigi module only
- | type         | 2P  | 3P  | 4P  |
|--------------|-----|-----|-----|
| <b>NC100</b> |     |     |     |
| ≤ 63 A       | 240 | 300 | 400 |
| ≤ 100 A      | 420 | 560 | 720 |
- approvals:
  - all rcd's comply with IEC 1009.

### Remote tripping module (MOD):

- enable breakers fitted with Vigi earth leakage modules to be tripped from a remote location.

The MOD is connected to the Vigi module NC100 ≤ 63 A by means of a plug-in connector (supplied).

There is no mechanical connection between the MOD and the Vigi module.

- the function MOD is already integrated in Vigi module NC100 ≤ 100 A.

complementary information:

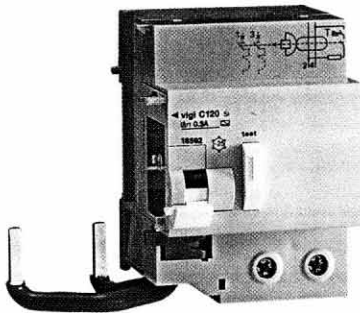
Dimensions: page 65

Application guide: page 69

# "si" type Vigi C120 Module

## 30 to 1000 mA

### Multi 9 Merlin Gerin



"si" Vigi C120: 18592


Combined with the C120 circuit-breaker, the Vigi C120 module completes the range of miniature circuit-breakers and residual current circuit-breakers and provides:

- Protection for persons against indirect contact (300, 500 mA).
- Additional protection for persons against direct contact (30 mA).
- Protection for electrical installations against fire risks and insulation faults (1000 mA).

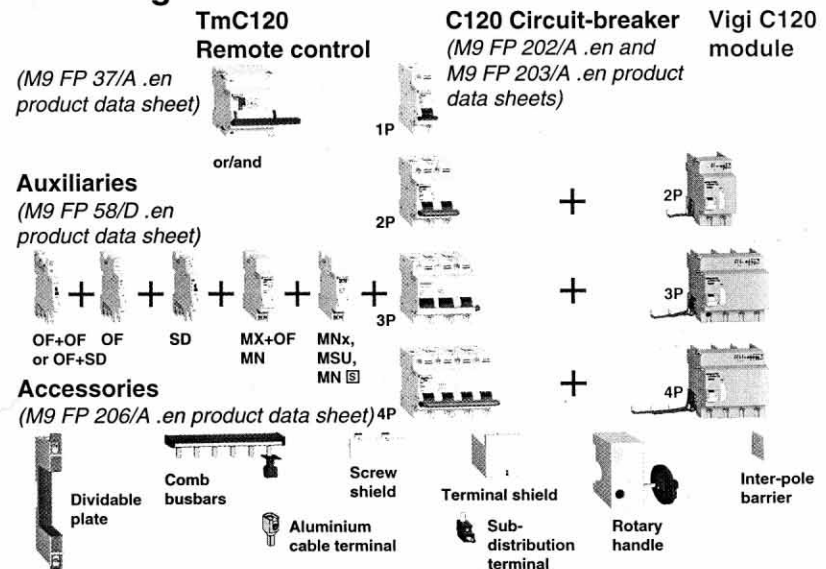
### Operation

- Automatic opening upon insulation fault, fixed residual sensitivities: 30, 300, 500, 1000 mA.
- Can be adapted to C120 circuit breakers from 10 to 125 A: 2P, 3P, 4P.
- The Vigi module is electromechanical. It operates without an auxiliary supply source and incorporates the residual current relay and toroid in a case.
- Visualisation of the earth fault by the position of the reset handle (visible red mechanical indicator).
- Upon earth fault, 2 reset modes are possible:
  - resetting the C120 and Vigi module assembly in a single operation,
  - resetting the C120 and Vigi module separately: the Vigi module is reset before the circuit-breaker.
- The "si" Vigi C120 module ensures reinforced continuity of supply in highly disrupted installations (harmonic generating loads, lightning strokes, transient operating currents).

### Advantages

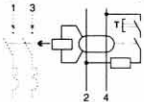
- Compliance with standards: EN 61009 and IEC 60947-2 appendix B.
- Residual breaking capacity ( $I_{\Delta m}$ ) equal to the breaking capacity of circuit-breaker ( $I_{cu}$ ).
- Protection against nuisance tripping due to transient overvoltages or provoked by transient leakage currents (lightning stroke, switchgear switching on the network, capacitive loads, etc.).
- Instantaneous or selective trip unit allows vertical discrimination to be realised.
- Reinforced discrimination: guarantees continuity of supply.
- Remote tripping possible using MX, MNx, MSU, MN or MN  auxiliary trip units on the circuit-breaker.
- Remote indication possible using OF, SD on the circuit-breaker.
- Data of combined circuit-breaker remain unchanged.
- Accessories: terminal shield, aluminium cable terminal, sub-distribution terminal, screw connection, etc.

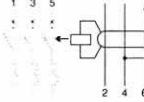
### The range

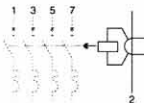


## Choice table

### "si" Vigi C120 modules

type	voltage (V AC)	sensitivity (mA)	width in mod. of 9 mm	cat. no.
2P 	230 to 415	30	7	18591
		300	7	18592
		300 [S]	7	18556
		500	7	18593
		1000 [S]	7	18557

3P 	230 to 415	30	10	18594
		300	10	18595
		300 [S]	10	18558
		500	10	18596
		1000 [S]	10	18559

4P 	230 to 415	30	10	18597
		300	10	18598
		300 [S]	10	18560
		500	10	18599
		1000 [S]	10	18561

[S]: selective

## Environment

- Degree of pollution 3.
- Tropicalisation: treatment 2 (relative humidity 95 % at 55°C).
- Degree of protection:
  - of case: IP 40D,
  - of terminals: IP 20B.
- Operating temperature: -25°C to +60°C.
- Storage temperature: -40°C to +70°C.

## Implementation

- Designed for installation in modular enclosures and cubicles.
- Easy assembly and disassembly:
  - on symmetrical rail with a bistable lock,
  - with a wire cover (supplied),
  - C120 + Vigi combination using clips.
- Vigi C120 modules are equipped with a locating device and rigid connections to prevent the risk of installation errors on circuit-breakers (number of poles and order of phases).

## Technical data

### Electrical data

- Voltage rating: (refer to choice table) +10 %, -20 %.
- Frequency: 50/60 Hz.
- Residual current sensitivity (I<sub>Δn</sub>): 30 to 1000 mA instantaneous or selective [S].
- 8/20 μs impulse withstand:
  - instantaneous: 3 kA,
  - [S]: 5 kA.
- Minimum operating threshold for test button:
  - 230 to 415 V AC: 176 V AC.
- Total vertical discrimination:

downstream device	type	Vigi C120 module type [S]
		300 mA 1000 mA
		500 mA

DPN Vigi	30 mA	■	■
ID	300 mA		■

### Mechanical data

- Connection by:
  - tunnel terminals (tightened using a screwdriver) for copper cable:
    - flexible from 1.5 to 35 mm<sup>2</sup>
    - rigid from 1.5 to 50 mm<sup>2</sup>,
  - aluminium cable terminal: from 16 to 50 mm<sup>2</sup> (optional),
  - insulated sub-distribution terminals, 3 copper cables:
    - flexible from 1.5 to 10 mm<sup>2</sup>
    - rigid from 1.5 to 16 mm<sup>2</sup>.
- Dimensions (mm):
  - height: 87,
  - depth: 70,
  - width with circuit-breaker (in number of mod. of 9 mm):

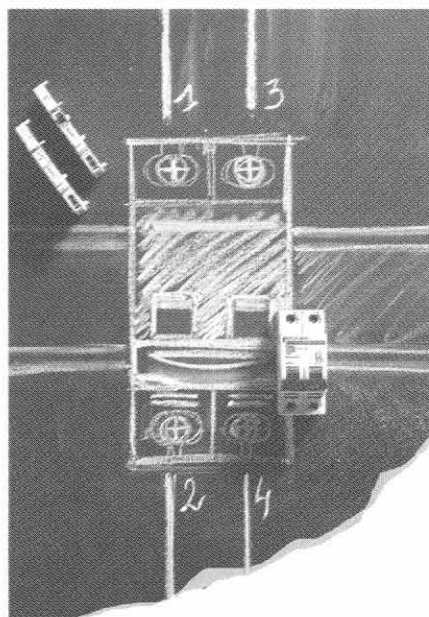
type	width
2P	13 (6 + 7)
3P	19 (9 + 10)
4P	22 (12 + 10)

### Weight (g):

- 2P: 325,
- 3P: 500,
- 4P: 580.



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1

2

3

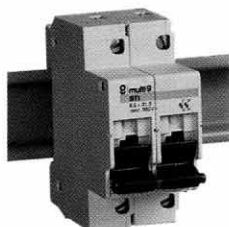
4

5

6

# STI isolatable fuse-carrier with withdrawable aM, gl or gG fuse-links

**command control**  
complementary protection



15650

type	width in mod. of 9 mm	size of fuses (mm)	volt. (V)	cat. No.
1P	2	8.5 x 31.5	400	15635
		10.3 x 38	500	15636
2P	4	8.5 x 31.5	400	15650
		10.3 x 38	500	15651
3P	6	8.5 x 31.5	400	15655
		10.3 x 38	500	15656

## STI isolatable fuse-carrier

### Functions and applications:

Protection against overloads and short-circuits for industrial and service sector applications.

### General technical data

For the 2P, 3P versions, the isolation of all poles is ensured during factory assembly.

■ for gl, aM or gG type fuse-links, with or without blown fuse indicators;

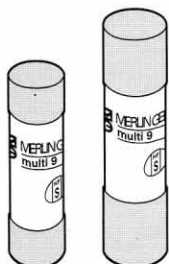
### Fuse dimensions

rat. (A)	dimensions (mm)	aM fuse	gl or gG fuse
0.5 to 20	8.5 x 31.5		■
1 to 20	10.3 x 38	■	
25 to 32	10.3 x 38		■

■ the full withdrawal of the fuse-carrier allows easy fuse-link replacement under de-energized conditions;

■ connection: tunnel terminals for cable up to 10 mm<sup>2</sup>;

■ compliance with standards IEC 269-2.



size (ø x L) (mm)	rat. (A)	cat. No. box of 10 fuse-links	aM	gl or gG
8.5 x 31.5	2	15733	15767	
	4	15734	15768	
	6	15735	15769	
	10	15737		
	2	15742	15775	
10.3 x 38	4	15743	15776	
	6	15744	15777	
	10	15746	15779	
	25	15750		

## category aM, gl or gG fuse-links

### Technical data

■ fuse-link without striker pin;

■ breaking capacity:

size (ø x L) (mm)	rat. (A)	rated voltage (V AC)	breaking capacity (kA)	aM	gG
8.5 x 31.5	all	400	20	20	
10.3 x 38	≤10	500	80	80	
	25	660	80	80	

■ compliance with standards IEC 269 1/2;

■ approval: bureau Veritas and Lloyd's.

type	cat. No.
<b>coupling busbars</b> (bag of 20)	
for 2 STI	15670
for 3 STI	15671

## accessories

■ comb busbars: see page 54,

■ insulated connectors: see page 54.

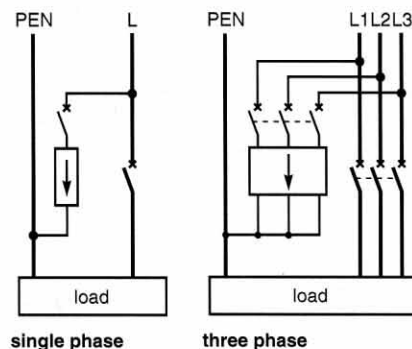
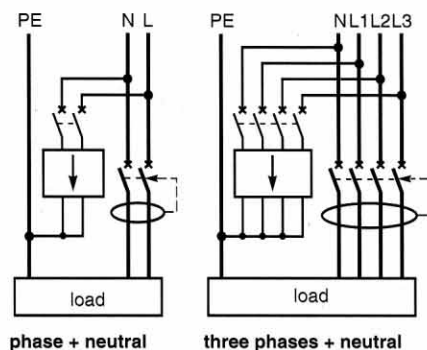


16100



16102

type	width in mod. of 9 mm	cat. No.
<b>LTD</b>		
1P	2	16100
1P + N	4	16101
3P	6	16102
3P + N	8	16103
<b>LTM</b>		
1P	2	16104
1P + N	4	16105
3P	6	16106
3P + N	8	16107



## LT surge arrester

### Application

TN neutral system:

The surge arrester will offer protection against any overvoltages in the following instances:

- consumer electronics: TV, microwave oven, refrigerators, personal computers, alarm systems, Hi-Fi equipment and clock radios etc;
- industrial electronics: PLC, motor control, all machinery, pumps etc.

### Technical data:

- rated operational voltage: 280 V (40/60 Hz);
- short circuit withstand capacity:
  - for LTD: 6.5 kA (8/20  $\mu$ s),
  - for LTM 40 kA (8/20  $\mu$ s);
- residual voltage:
  - for LTD:  $\pm$  950 V at 5 kA,
  - for LTM: 1.1 kV at 20 kA;
- response time: 25 ns;
- operating temperature range: -40 to +85°C (full load);
- LED function indicator:
  - LED on: functional,
  - LED off: replace;
- connection: tunnel terminals up to 25 mm<sup>2</sup>.

### Installation

- domestic market:
  - LTM is more suitable in every domestic switchboard if no surge protection up stream;
- commercial and industrial market:
  - LTM (for main switchboard) is more suitable for main switchboard,
  - LTD (for distribution switchboard) is more suitable for secondary or distribution switchboard,
  - cascading is important to achieve the best surge protection.

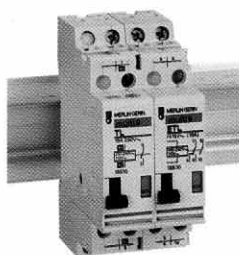
# TL-TLI impulse relays - ETL extensions

## TLs-TLc impulse relays with auxiliary

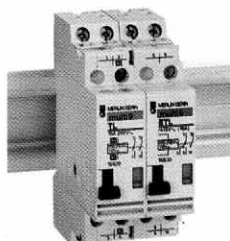
### ATLt time delay relay auxiliary

## command control

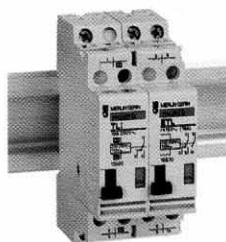
remote control



15510 + 15530



15520 + 15530



15500 + 15530

type	width in mod. of 9 mm	rat. (A)	coil voltage U <sub>c</sub>		cat. No.
			(V AC)	(V DC)	
<b>TL impulse relay - 16 A</b>					
1P	2	16	230/240	110	15510
			130	48	15511
			48	24	15512
			24	12	15513
2P	2	16	230/240	110	15515+15505
			130	48	15521+15531
			48	24	15522+15532
			24	12	15523+15533

<b>TLI impulse changeover relay 16 A</b>					
1P	2	16	230/240	110	15500
			48	24	15502
			24	12	15503

### Combinations of TL/TLI with ETL

TL or TLI	ETL	TL or TLI	ETL	ETL	TL or TLI	ETL	ETL	ETL
-----------------	-----	-----------------	-----	-----	-----------------	-----	-----	-----

## TL impulse relay

Remote control of circuits via impulse orders.

## TLI changeover relay

Remote control of circuits via impulse orders

■ changeover switch.

## ETL extension for TL, TLI

In association with TL or TLI enable remote control of 2P, 3P and 4P circuits.

## TLs impulse relay with auxiliary switch

Remote control of circuits via impulse orders

■ auxiliary switch built-in 6 A 240 V AC p.f. = 1;

■ remotely indicate the ON/OFF position of the contact;

■ centralized control of one or more impulse relays via latched ON-OFF orders.

Add-on possibilities: ETL, ATLt.

## TLc impulse relay

Centralized control of a set of impulse relays while keeping the availability of local control.

Add-on possibilities: ETL, ATLt.

## ATLt time delay relay auxiliary

Added to the left of TL, TLI, TLc and TLs impulse relays, the ATLt limits the operation of the impulse relay via a time delay that can be adjusted from 1 second to 10 hours.

A new impulse order received during the delay opens the relay and stops the time delay function.

### Common technical data

■ power circuit:

□ current rating:

– In 16 A p.f. = 0.6;

– In 32 A p.f. = 0.6;

□ voltage:

– 1P: 250 V,

– 2P, 3P and 4P: 415 V;

■ control circuit:

□ voltage:

– U<sub>c</sub> at 50 Hz ± 6 % – 15 %,

– U<sub>c</sub> at 60 Hz ± 6 %,

– U<sub>c</sub> DC current + 6 – 10 %;

□ pick-up consumption:

type	1P	2P	2 x 1P	3 x 1P
<b>TL/TLI</b>				
16 A	19 VA	19 VA		
32 A	19 VA			
<b>TL/TLI + ETL</b>				
16 A	38 VA	38 VA	–	–
32 A	38 VA	–	57 VA	76 VA

□ impulse duration: 50 ms;

■ direct manual control on front face:

□ power: by ON-OFF toggle,

□ coil isolation via switch,

□ electrical endurance: 200000 AC22 cycles (p.f. = 0.6), 400000 AC21 cycles (p.f. = 1);

■ maximum switching frequency:

5 operations/minute;

■ indication: mechanical indication in front (position of toggle);

■ connection: tunnel terminals for 0.5 to 6 mm<sup>2</sup> cable (± screw for PZ 1 screwdriver);

■ operating temperature: – 20 to + 50 °C;

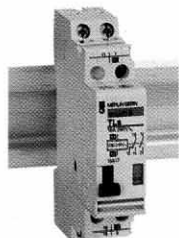
■ tropicalization: treatment 2 (95 % relative humidity at 55 °C);

■ markings: the devices can be fitted with clip-on markers (see page...);

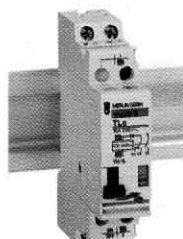
■ switching noise level ≤ 60 dBA (at 1 meter).

■ compliance with standards: NF C 61110 and NF C 61112, IEC 669-1 and IEC 669-2;

■ approvals: NF USE, CEBEC, KEMA, ASE, OVE, N, S, D, FI.



TLs



TLc



ATLt

type	width in mod. of 9 mm	rat. (A)	coil voltage U <sub>c</sub>		cat. No.
			(V AC)	(V DC)	
<b>TLs</b>					
2	16	230/240	110		15517
<b>TLc</b>					
2	16	230/240	110		15518
<b>ATLt</b>					
2		24/-240	24/110		15411

### Combinations with TLs/TLc/ATLt

ATLt	TLs	ETL	ATLt	TLc	ETL	ATLt	TL or TLI
------	-----	-----	------	-----	-----	------	-----------------

max.: 3 ETL

max.: 3 ETL

complementary information:

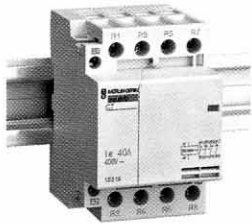
Dimensions: page 68

Application guide: page 69



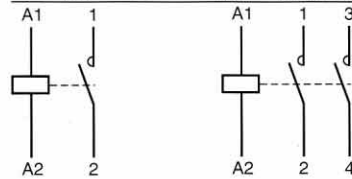


15958



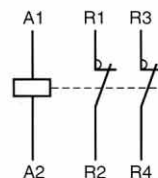
15962

type		width in mod. of 9 mm	current rating (A)	control voltage (V AC)	cat. no.
1P	1O	2	25	230/240	15958
2P	1O+1C	2	16	230/240	15956
	2O	2	16	230/240	15957
	2O	2	25	230/240	15959
	2O	2	25	24	16020
	2C	2	25	230/240	15960
	2O	4	40	230/240	15966
	2O	4	63	230/240	15971
	2O	4	63	24	16024
	2O	6	100	230/240	15977



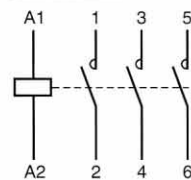
15958

15957



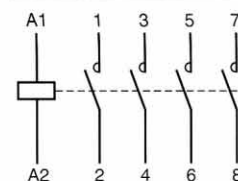
15959

type		width in mod. of 9 mm	current rating (A)	control voltage (V AC)	cat. no.
3P	3O	4	25	230/240	15961
	3O	6	40	230/240	15967
	3O	6	63	230/240	15972

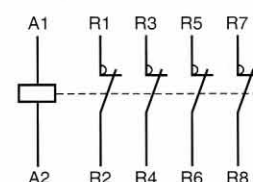


15961

type		width in mod. of 9 mm	current rating (A)	control voltage (V AC)	cat. no.
4P	4O	4	25	230/240	15962
	4O	4	25	24	16022
	4C	4	25	230/240	15963
	4C	4	25	24	16023
	2C+2O	4	25	230/240	15964
	4O	6	40	230/240	15968
	4C	6	40	230/240	15969
	4O	6	63	230/240	15973
	4O	6	63	24	16025
	4C	6	63	230/240	15974
	4C	6	63	24	16026
	2C+2O	6	63	230/240	15975
	4O	12	100	230/240	15978



15962



15963

### Functions:

Modular CT contactors are used to control single-phase, three-phase and four-phase circuits up to 100 A.

### Technical data:

- power circuit:
  - current ratings at 40 °C: 16 to 100 A (category AC7a),
  - rated voltage:
    - 250 V 1-pole and 2-pole,
    - 400 V 3-pole and 4-pole;
  - frequency: 50 Hz;
- control circuit:
  - rated voltage:
    - 24 V: – 10 % + 10 %,
    - 230/240 V: – 15 % + 6 %,
  - coil frequency: 50 Hz,
- operating temperature:
  - 5 °C to 50 °C, up to 60 °C with no derating for one CT between two spacers;
- tropicalization: treatment 2 (relative humidity: 95 % at 55 °C).
- compliance with standards:
  - EN 61.095, IEC 1095;
- approved by: VDE, KEMA KEUR, SEMKO, DEMKO, NEMKO, SETI, ÖVE, CEBEC, IMQ.
- noiseless operation (< 20 dB) for the entire range;
- connection:
  - by tunnel terminals,
  - control circuit,
    - with flexible cables:
      - 2 x 2.5 mm<sup>2</sup>,
    - with rigid cables:
      - 2 x 1.5 mm<sup>2</sup>,
  - power circuit:
    - with flexible cables:
      - 2 x 2.5 mm<sup>2</sup> for 16 and 25 A,
      - 2 x 10 mm<sup>2</sup> for 40 and 63 A,
      - 2 x 35 mm<sup>2</sup> for 100 A,
    - with rigid cables:
      - 6 mm<sup>2</sup> for 16 and 25 A,
      - 25 mm<sup>2</sup> for 40 A and 63 A,
      - 50 mm<sup>2</sup> for 100 A.

■ power ON indicator on the front of each device (red indicator: coil energized);

### identification:

the contactors can be fitted with clip-on markers;

### pick-up and hold power:

type	rating (A)	consumption (VA)		W
		pick-up	hold	
1P and 2P	16/25	15	3.8	1.3
3P and 4P	25	34	4.6	1.6
2P	40/63	34	4.6	1.6
3P and 4P	40/63	53	6.5	2.1
2P	100	53	6.5	2.1
4P	100	106	13	4.2

Auxiliaries: page 43

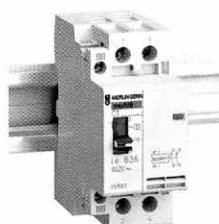
Dimensions: page 67

Derating: page 75

Application guide: page 69

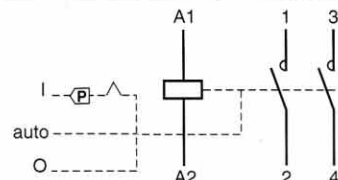


15981



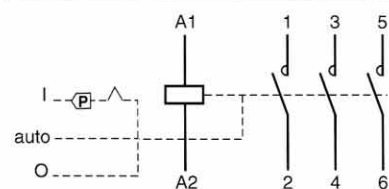
15987

type		width in mod. of 9 mm	current rating (A)	control voltage (V AC)	cat. no.
2P	2O	2	25	230/240	15981
	2O	4	40	230/240	15984
	2O	4	63	230/240	15987



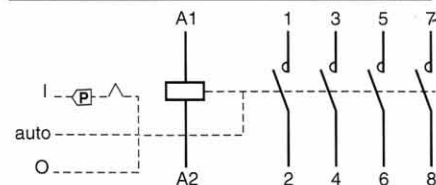
15981

type		width in mod. of 9 mm	current rating (A)	control voltage (V AC)	cat. no.
3P	3C	4	25	230/240	15982



15982

type		width in mod. of 9 mm	current rating (A)	control voltage (V AC)	cat. no.
4P	4C	4	25	230/240	15983
	4C	6	40	230/240	15986
	4C	6	63	230/240	15988



15983

## manually operated CT contactors

### Functions:

Modular manually operated CT contactors are used to control single-phase, three-phase and four-phase circuits up to 63 A. Manually operated CTs have a manual 3-position selector switch:

- ☐ automatic operation,
- ☐ override or permanent ON,
- ☐ OFF.

### Technical data:

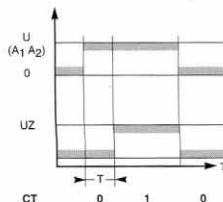
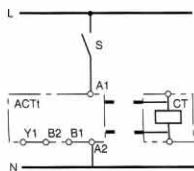
- power circuit:
  - ☐ current ratings at 40 °C: 25 to 63 A (category AC7a);
  - ☐ rated voltage:
    - 250 V 1-pole and 2-pole,
    - 400 V 3-pole and 4-pole;
  - ☐ frequency: 50 Hz;
- control circuit:
  - ☐ rated voltage:
    - 24 V: – 10 % + 10 %,
    - 230/240 V: – 15 % + 6 %,
  - ☐ coil frequency: 50 Hz;
- operating temperature:
  - 5 °C to 50 °C, up to 60 °C with no derating for one CT between two spacers;
- tropicalization: traitement 2 (relative humidity: 95 % at 55 °C);
- compliance with standards: EN 61.095, IEC 1095;
- approved by: VDE, KEMA KEUR, DEMKO, DEMKO, NEMKO, SETI, ÖVE, CEBEC, IMQ;
- connection:
  - ☐ by tunnel terminals,
  - ☐ control circuit:
    - with flexible cables: 2 x 2.5 mm<sup>2</sup>,
    - with rigid cables: 2 x 1.5 mm<sup>2</sup>,
  - ☐ power circuit:
    - with flexible cables: 2 x 2.5 mm<sup>2</sup> for 16 and 25 A, 2 x 10 mm<sup>2</sup> for 40 and 63 A, 2 x 35 mm<sup>2</sup> for 100 A,
    - with rigid cables: 6 mm<sup>2</sup> for 16 and 25 A, 25 mm<sup>2</sup> for 40 and 63 A, 50 mm<sup>2</sup> for 100 A,
- power ON indicator or override ON indicator on the front of each device (red indicator);
- pick-up and hold power:

type	rating (A)	consumption (VA)		W
		pick-up	hold	
1P and 2P	16/25	15	3.8	1.3
3P and 4P	25	34	4.6	1.6
2P	40/63	34	4.6	1.6
3P and 4P	40/63	53	6.5	2.1



15917

type	width in mod. of 9 mm	voltage (V AC)	cat. no.
ACTt 2		24/240	15917



## ACTt auxiliary

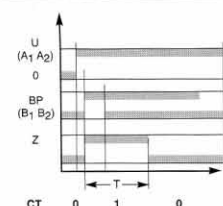
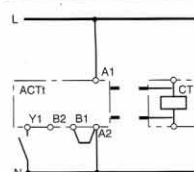
### Functions

This auxiliary is used to time delay contactor control.

4 time delays are possible according to the wiring:

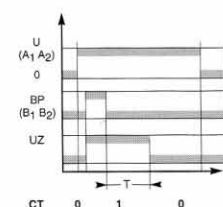
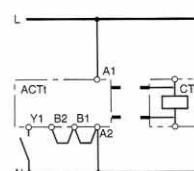
#### Type A time delay: delay after closing

- used to delay energizing of a load;
- a single time delay cycle starts when the power is switched on;
- the load is energized at the end of the time delay T.



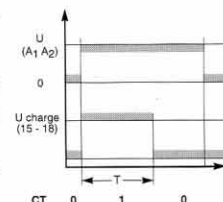
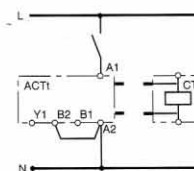
#### Type B time delay: time delay

- used to energize a load upon the closing of an auxiliary contact (push button);
- a single time delay cycle starts when the control contact closes;
- at the end of the time delay T, the load is de-energized.



#### Type C time delay: delay after opening

- used to energize a load after the closing of an auxiliary contact (push button);
- a single time delay cycle starts only when the push button is released;
- at the end of the time delay T, the load is de-energized.

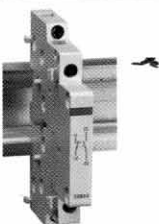


#### Type H time delay: timed after energizing

- used to energize a load for a given time;
- a single time delay cycle starts when the power is switched on;
- at the end of the time delay T, the load is de-energized.

### Technical data

- clipped onto the left-hand side of CTs;
- time delay range: 1 s to 10 h;
- control circuit power supply voltage: 24 to 240 V AC;
- operating frequency: 50 Hz;
- consumption: 5 VA;
- operating temperature: -5 °C to +60 °C;
- static output:
  - 200 mA permanent,
  - 3 A for 50 ms;
- tunnel terminal connection for cables up to 1.5 mm<sup>2</sup>;
- accuracy: ± 0.5 %.



15914

type	width in mod. of 9 mm	current rating (A)	cat. no.
ACT o+f 1O+1C	1	2	15914

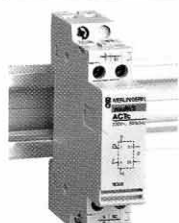
## ACT o+f auxiliary contact

### Function:

This auxiliary is used for indication or control linked to the "open" or "closed" position of the contactor power contacts.

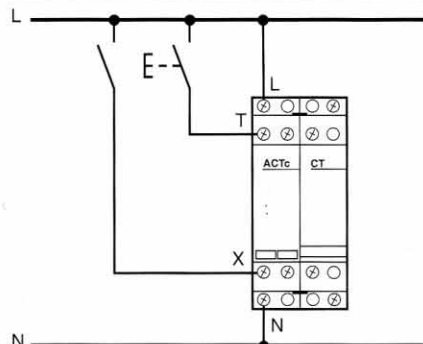
### Technical data:

- 1O + 1C contact;
- voltage: 24-240 V DC/AC - 50 Hz;
- current rating:
  - min. 10 mA with 24 V DC/AC - p.f. = 1,
  - max. 2 A with 240 V DC/AC - p.f. = 1;
- connection by tunnel terminals for flexible cables 2 x 2.5 mm<sup>2</sup>;
- mounted on right-hand side of contactor.



18308

type	width in mod. of 9 mm	voltage	cat. no.
ACTc	2	230/240 V AC	18308
	2	24-48 V AC and DC	18309



## ACTc auxiliary

### Function

This auxiliary is added to contactors to control them by 2 types of orders:

- impulses for local control (input T);
- latched orders for centralized control (input X).

The last order received has priority.

### Common technical data

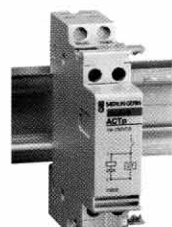
- clipped onto left-hand side;
- min. impulse: 250 ms;
- consumption: 3 VA;
- mains failures:
  - < 1 s: initial status maintained,
  - ≥ 5 s: reset to 0,
  - reactivated by manual action on X or T;
- connection: tunnel terminals for cables up to 6 mm<sup>2</sup>.

### ACTc auxiliary 230 V AC

- voltage: 230 V ± 10 %;
- frequency: 50-60 Hz;
- maximum consumption of all contactors controlled by ACTc:
  - 400 VA pick-up,
  - 100 VA hold.

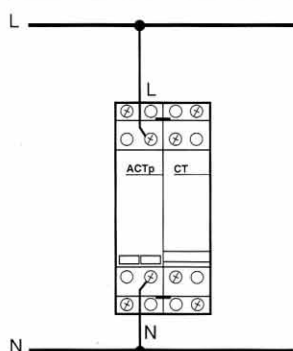
### ACTc auxiliary 24-48 V AC or DC

- voltage: 24 to 48 V ± 10 %;
- frequency: 0 to 60 Hz;
- maximum consumption of all contactors controlled by ACTc:
  - pick-up:
    - 96 VA with 48 V,
    - 48 VA with 24 V;
  - hold:
    - 24 VA with 48 V,
    - 12 VA with 24V.



15920

type	width in mod. of 9 mm	voltage (V CA)	cat. no.
ACTp	2	230/240	15920
	2	24	15919



## ACTp auxiliary

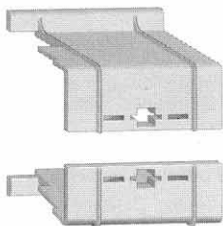
### Function

This auxiliary acts as an interference filter:

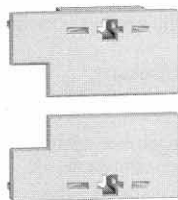
- limits overvoltage in the control circuit.

### Technical data

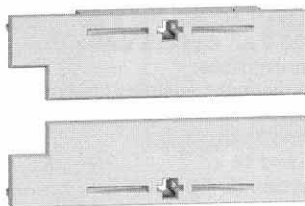
- clipped onto the left-hand side of CTs;
- voltage: 230 V AC or 24 V AC;
- consumption: 3 VA;
- connection: tunnel terminals for cables up to 4 mm<sup>2</sup>.



15921



15922



15923

type	width in mod. of 9 mm	current rating (A)	cat. no.
3P and 4P	4	25	15921
2P	4	40/63	15922
3P and 4P	6	40/63	15923
spacer	1		27062

accessories

**Screw shields:**  
■ designed to cover terminal screws,  
may be used for sealing;  
■ clipped on.  
**Spacer.**



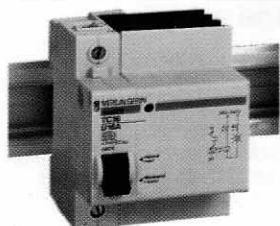
# TC16, TC16P

## high frequency of switching operations

up to 16 A

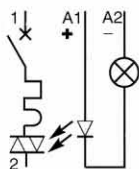
3000 A - 4500 A

**command control**  
remote control



18925

type	width in mod. of 9 mm	rat. (A)	cat. No. C curve
1P	5	6	18925
	7	10	18927
		16	18928



### TC16 combined mcb solid state contactor

#### Application

The TC16 is a 1P device for control, protection and remote switching of power circuits.

#### Description

The TC16 comprises a solid state contactor integrated with and protected by a miniature circuit breaker. The combination is self contained and self protected.

The solid state relay features:

- silent remote control switching of loads without causing electrical interference;
- high frequency of switching operations (10/second) with unlimited electrical endurance;
- "circuit closed" indication by front LED.

#### Miniature circuit breaker technical data

- current rating: 6, 10, 16 A at 20 °C;
- voltage rating: 230/240 V AC;
- breaking capacity:
  - to IEC 947-2: 4500 A;
- number of manual operating cycles (O-C): 20000;
- tripping characteristics:
  - C type curve: the magnetic releases operate between: 5 and 10 I<sub>n</sub>;
- tropicalization: treatment 2 (relative humidity 95 % at 55 °C).

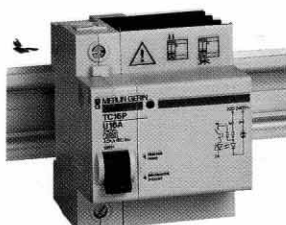
#### Solid state relay technical data

- current rating (control circuit): 15 mA;
- voltage rating (control circuit): 230/240 V AC 50/60 Hz ± 10 Hz;
- load: 5 W minimum (20 mA at 240 V AC);
- number of operating cycles with solid state relay: unlimited;
- frequency of switching: 10 operations/second (maximum);
- operating time: ≤ 20 ms;
- heat loss: 1 Watt/Amp dissipated by built-in heat dissipator;
- weight (g):

type	1P
6 A	190
10 and 16 A	250

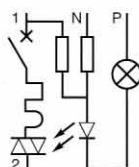
#### ■ connection:

- power: tunnel terminals (up to 25 mm<sup>2</sup>),
- control: fast-on connector (up to 2,5 mm<sup>2</sup>) (supplied);
- auxiliaries: accept auxiliary switch (OF) and alarm switch (SD).



18910

type	width in mod. of 9 mm	rat. (A)	cat. No. C curve
1P	7	10	18910
		16	18911



### TC16P combined mcb solid state remote control switch

#### Application

Is remote controlled by impulse order. It is suited for all types of lighting systems i.e.: incandescent, fluorescent (compensated), fluorescent (non-compensated), instantaneous electronic systems, halogen. It is designed for up to 20 push-buttons with indicator lights.

#### Technical data

- minimum control pulse duration: 100 ms;
- minimum interval between 2 pulses: 1 sec;
- control current: in 20 through 100 mA range;
- length of control cables: 500 m maxi.

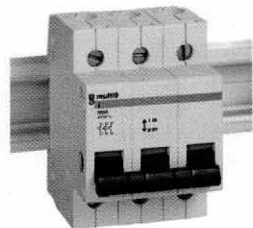
**Other technical data: same as for TC16.**

complementary information:





Dimensions: page 68  
Application guide: page 69

# I isolating switch 20 to 100 A CM changeover switch BP push-button V signal lamp

**command control**  
control indication



15092

type	width in mod. of 9 mm	rat. (A)	voltage (V AC)	cat. No.
1P 	2	20	250	15005
		32	250	15009
		63	250	15013
		100	250	15090
2P 	2	20	415	15006
		32	415	15010
	4	63	415	15014
		100	415	15091
3P 	4	32	415	15011
		63	415	15015
	6	100	415	15092
4P 	4	32	415	15012
		63	415	15016
	8	100	415	15093

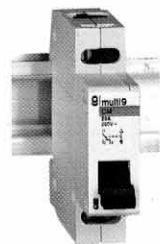
## I isolating switch

### Functions and applications



On-load opening and closing of a circuit.

### Technical data

- positive contact indication;
- compliance: IEC 947-3
- approvals: USE;
- DC use: 48 V (110 V two serial poles);
- mechanical endurance:  
I = 20-30 A: 300000 cycles,  
I = 63 A: 200000 cycles,  
I = 100 A: 100000 cycles;
- electrical endurance:  
AC22 p.f. = 0.6  
I = 20-30 A: 30000 cycles,  
I = 63 A: 20000 cycles,  
I = 100 A: 10000 cycles;
- rated short-time withstand: 20 x I<sub>n</sub>: 1 sec;
- tropicalization: treatment 2  
(95 % relative humidity at 55 °C);
- connections: tunnel terminals for cables up to:  
□ 10 mm<sup>2</sup> for 20 and 32 A,  
□ 50 mm<sup>2</sup> for 63 and 100 A.



15102

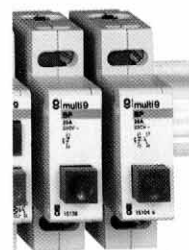
type	width in mod. of 9 mm	rat. (A)	voltage (V AC)	cat. No.
1P 	2	20	250	15102
2P 	4	20	250	15103
				15129
				15130

## CM changeover switch




- voltage rating: 250 V AC;
- current rating: 20 A.

### Technical data

- electrical endurance:  
30000 cycles (O.C)  
p.f.: 0.6;
- tropicalization: treatment 2;
- connection: tunnel terminals for cables up to 10 mm<sup>2</sup>.



15137-15104

type	width in mod. of 9 mm	cat. No.
<b>BP without signal lamp</b>		
1 N.O. + 1 N.C. 	2	15104
1 N.O. 	2	15136
1 N.C. 	2	15137

## BP push-button






- voltage rating: 250 V AC;
- current rating: 20 A.

### Technical data

- electrical endurance:  
30000 cycles (O.C)  
p.f.: 0.6;
- removable neon indication lamp: 250 V;
- ignition voltage: 60 V;
- tropicalization: treatment 2;
- connection: tunnel terminals for cables up to 10 mm<sup>2</sup>.



15107 + 15108 + 15109 + 15106 + 15110

type	width in mod. of 9 mm	cat. No.
clear 	2	15106
red 	2	15107
green 	2	15108
yellow 	2	15109
blue 	2	15110

## V signal lamp

### Technical data

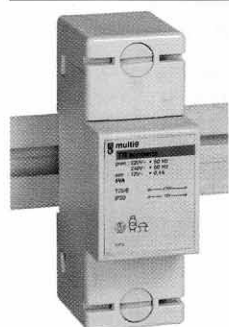
- signal lamp supplied with lens and neon bulb 220/240 V, base type E10;
- neon signal lamp removable: 250 V;
- ignition voltage: 60 V;
- maximal power of the bulbs ≤ 1.2 W;
- connection: tunnel terminals for cables up to 10 mm<sup>2</sup>.

complementary information:

Dimensions: page 68  
Application guide: page 69

# TR transformers SO bell/RO buzzer

**command control**  
control indication



15214

power (VA)	width in mod. of 9 mm	secondary volt. (V AC)	cat. No.
<b>bell transformer</b>			
4	4	8	15214
5	4	8-12	15213
8	4	8	15216
8	4	8-12	15217
16	10	8-12-24	15212
<b>safety transformer</b>			
16	10	12-24	15218
25	10	12-24	15219
40	10	12-24	15220
63	10	12-24	15222
<b>terminal covers</b> (1 pair)			
	4		15226
	10		15227

**Note:** the transformers have a higher no-load voltage. The above mentioned voltages correspond to the voltages at rated load.

## bell transformer safety transformer

### Application

- provides an extra low voltage up to 24 V;
- safe electrical separation between primary and secondary circuits;
- double insulation according to NF C 15-100.

### Technical data



- primary voltage:
  - 50 Hz: 230 V,
  - 60 Hz: 240 V;
- compliance with standards: NF EN 60742;
- approval: NF USE NEMKO, SEMKO;
- connection: tunnel terminals for cables up to 4 mm<sup>2</sup>.

### Installation

In all enclosures designed for Multi 9 equipment.



15320

type	width in mod. of 9 mm	voltage (V AC) 50-60 Hz	cat. No.
bell 	2	220-240	15320
		8-12	15321
buzzer 	2	220-240	15322
		8-12	15323

## SO bell/RO buzzer

### Application

Audible signalling for use in domestic and commercial installations.

- voltage (50-60 Hz):
  - 220-240 V: +6 %, -15 %,
  - 8/12 V: +10 %, -15 %;
- power: 70 dBA (distance of 60 cm);
- consumption:
  - 3.6 VA: 8/12 V,
  - 5 VA: 220-240 V;
- connection: tunnel terminals for cables up to 4 mm<sup>2</sup>.

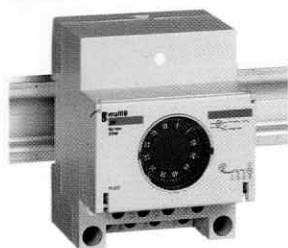
### Installation

In all enclosures designed for Multi 9 equipment.

# IH mechanical time switch

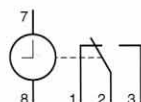
## 60 min / 24 h / 7 days - 24 h + 7 days

**command control**  
time programming regulation



15338

nb of channels	width in mod. of 9 mm	spring reserve	interval between 2 rider	cat. no.
1	8	0	2 min	15338



15338



## IH

### Application

Switches ON and OFF automatically according to a predetermined programme by means of riders fixed on the dial. Use in domestic, commercial and industrial installations.

### How to choose a time switch?

If the sequences are repeated:

- every hour: choose a "60 min";
- every day: choose a "24 h";
- every week: choose a "7 days";
- every day, with cancellation on one or several days in the week: choose a "24 h + 7 days".

### Technical data

- voltage:
  - 230-240 V AC/50 Hz for types without spring reserve,
  - 230-240 or 110 V AC/45 to 60 Hz for other types;
- consumption: 2 VA;
- operating temperature: -10 °C to +50 °C;
- sealing of the transparent cover possible;
- time basis: accuracy (1 second per day, not cumulative) is given by a quartz time base for the types with 150 hours reserve;
- current ratings (of the contacts);
- voltage rating: 250 V AC.

In (A)	p.f. = 1	p.f. = 0.3	cat. No.
10	2		15366/15337/15338/15365
16	2		15367/15364/16364

**Note:** when supply discharge lamps, the orders from the time switch must pass through suitably rated CT contactors.

- connections: tunnel terminals for cables up to 6 mm<sup>2</sup>.

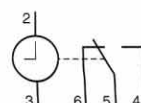
### Installation

In all enclosures designed for Multi 9 equipment or separate surface/panel mounting with terminal shields 15339.

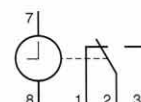
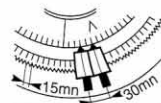


15337

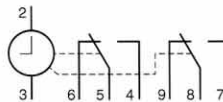
IH 24 h				
1	6	0	30 min	16364
1	8	150 h	30 min	15365
		150 h	30 min	15337



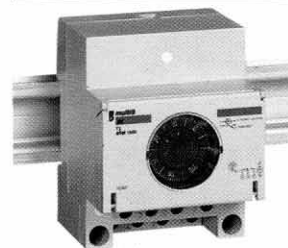
16364



15365

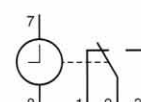


15337

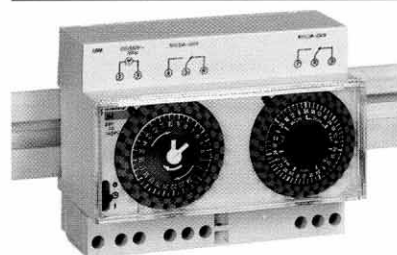


15367

IH 7 days				
1	8	150 h	4 h	15367

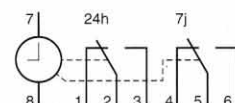


15367

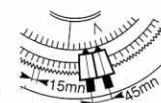


15366

IH 24 h + 7 days				
1 + 1	8	150 h	45 min (1)	15366
			12 h (2)	



15366



- (1) Minimum time setting between two riders side by side 45 min.
- (2) Non removable riders on the dial: automatic switching at midday and midnight.



# IH mechanical time switch accessories

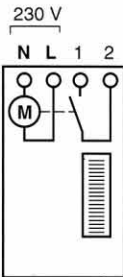
24 h - 18 mm

*command control*  
time programming regulation



15335

type	width in mod. of 9 mm	autonomy (hours)	interval between 2 notches on dial	cat. No.
24h	2	0	15 mn	15335
24h	2	100	15 mn	15336



## IH time switch

### Function

Switching ON and OFF of a circuit by means of riders on the programming dial (96 segments).

### Technical data

- contact current rating:
  - 16 A -  $\cos \varphi = 1$  - 250 V AC,
  - 4 A -  $\cos \varphi = 0.6$  - 250 V AC;
- voltage: 230 V +6 to -10 %;
- frequency: 45-60 Hz;
- consumption: 2.5 VA;
- operating temperature: -10 °C to +50 °C;
- connection: tunnel terminals for cables up to 6 mm<sup>2</sup>;
- accuracy: quartz time base;  $\pm 1$  s per day at 20 °C (not cumulative);
- sealable pivoting cover;
- permanent operation switch.

## riders



type	cat. No.
<b>additional riders</b>	
bag of 20 riders: 5 red, 5 green, 5 white, 5 yellow	15341

## accessories

The time switches are supplied with riders coloured to allow programming of the switch.

time switch cat. No.	quantity of riders supplied
15337	4 red + 4 green + 2 white
15338	3 green + 3 red
15365	3 green + 3 red
15366	6 yellow + 14 not removable
15367	7 red + 7 green
16364	48

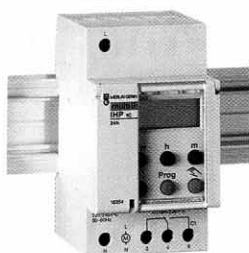


# IHP digital time switch

24 h

24 h + 7 days

365 days

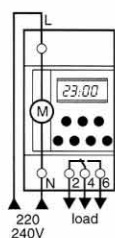


16354

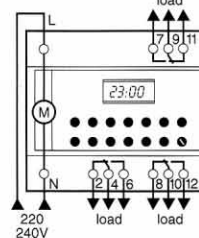
nb of channels	rat. (A)	width in mod. of 9 mm	memory settings	auto-nomy (years)	cat. No.
----------------	----------	-----------------------	-----------------	-------------------	----------

## 24 hours type

1	16	5	12	6	16354
---	----	---	----	---	-------



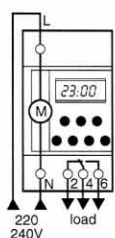
16354



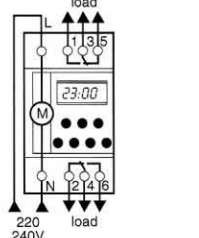
15350

## 24 hours + 7 days type

1	16	5	12	6	15356
1	16	5	42	6	15354
2	10	5	24	6	15353



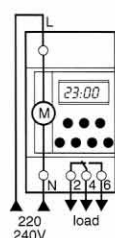
16354 / 15354-56



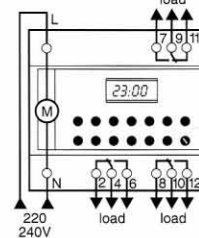
15353

## 24 hours + 7 days type (with impulse function)

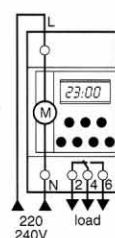
1	16	7	140	6	15342
2	10	7	140	6	15343
3	10	10	140	6	15350
4	10	10	128	6	15351



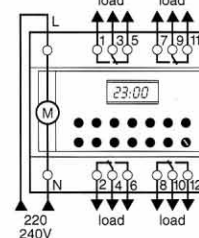
15342



15350



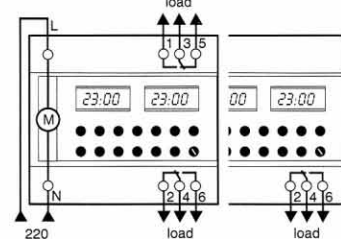
15343



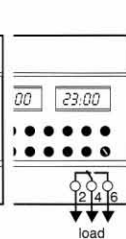
15351

## 365 days type

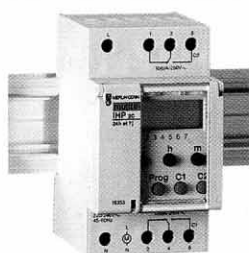
1	10	10	116	6	16355
2	10	10	116	6	16356



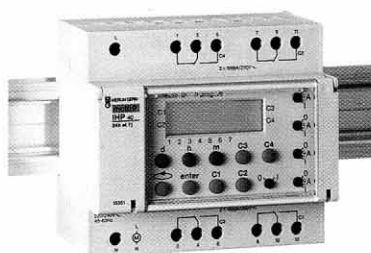
16356



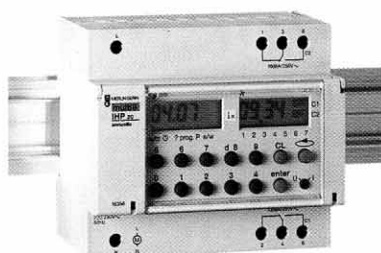
16355



15353



15351



16356

## command control

time programming regulation

## IHP

### Application:

Switches ON and OFF following a predetermined program on 1 to 4 channels.

### Technical data:

- voltage: 230-240 V A;
- frequency: 50-60 Hz;
- breaking capacity of contacts under 240 V AC:
  - 10 or 16 A p.f.: 1;
  - 6 or 10 A p.f.: 0.6;
- consumption:
  - 3.5 VA: 16355, 16356,
  - 7 VA: 15342, 15343, 15353, 15354, 15356, 16354,
  - 14 VA: 15350, 15351;
- operating temperature: -10° to +50 °C;
- connection: tunnel terminals for cables up to 6 mm<sup>2</sup>;
- programming:
  - minimum time between 2 time settings: 1 mn,
  - holiday override control to switch the unit OFF, stopping the program for an adjustable period of 1 to 45 days;
- autonomy: 6 years with lithium battery;
- instruction leaflet: stored behind the moving cover.

### Other characteristics:

- permanent display:
  - hours and minutes,
  - day of the week,
  - contact status;
- change from summer to winter: without modifying program;
- easy program checking;
- on each channel:
  - override function (ON or OFF),
  - advanced switching,
  - setting deletion to remove or modify a sequence.

### Specific data:

- 24 hours/7 days type:
  - block programming for repetitive time tables,
  - override function:
    - temporary or permanent,
    - by programming (up to 21 days in advance), e.g. for holidays;
- 24 hours/7 days type (with impulse function):
  - impulse program adjustable from 1 to 59 seconds;
- 365 days type:
  - automatic switchover between summer time and winter time,
  - priority programming.

Dimensions: page 68

Application guide: page 69

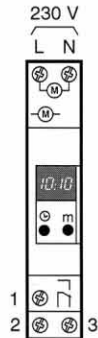
# IHP digital time switch

24 h - 18 mm

**command control**  
time programming regulation



type	width in mod. of 9 mm	autonomy (hours)	interval between 2 notches on dial	cat. No.
24h	2	100	1 mn	15330



## IHP (18 mm)

### Function

Switches a circuit on and off according to a user-set program stored in memory.

### Technical data

- voltage: 230 V AC  $\pm 10\%$ ;
- contact rating:
  - 10 A with 250 V AC, p.f. = 1,
  - 4 A with 250 V AC, p.f. = 0.6;
- frequency: 50/60 Hz;
- consumption: 2.5 VA;
- power reserve: 100 h;
- operating temperature:  $-10\text{ }^{\circ}\text{C}$  to  $+55\text{ }^{\circ}\text{C}$ ;
- accuracy: quartz time base;  
 $\pm 1\text{ s}$  per day at  $20\text{ }^{\circ}\text{C}$ , not cumulative;
- permanent display:
  - time in hours and minutes,
  - day of the week,
  - state of changeover switching of contacts (channels);
- lead-sealable pivoting cover;
- tunnel terminal connections for cables up to  $6\text{ mm}^2$ .

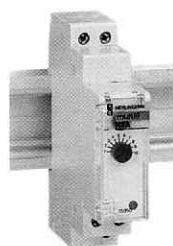
### Programming

- daily: 7 days the same  
(12 operations 6 ON - 6 OFF);
- weekly: block programming 8 operations  
(4 ON - 4 OFF);
- interval between operations: 1 minute;
- change from summer to winter time:  
without modifying programs;
- easy checking of programs entered:
  - permanent ON or OFF,
  - operation anticipation,
  - cancellation of an operation to modify or cancel a sequence;
- holiday override.

# RTA/RTB/RTC/RTH/RTL/RTMF

## time delay relay

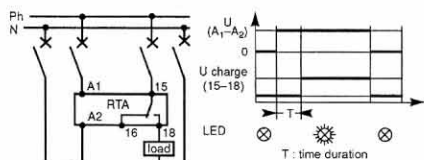
**command control**  
time delay regulation



16050

type	width in mod. of 9 mm	time delay	cat. No.
------	-----------------------	------------	----------

RTA	2	0.1 s to 10 h	16050
-----	---	---------------	-------



### Function and use

■ **RTA delay on make:** allows a delay in the energization of a load (coil of a contactor or relay). The time delay cycle begins on the energization of the RTA and the load is switched on at the end of the time period;

■ **RTB single shot:** energizes a load at the closing of an auxiliary push-button. The time delay starts at the closing of the command push-button;

■ **RTC delay on break:** energizes a load as soon as a contact or a BP is closed. Mini impulse duration:  $\geq 200$  ms.

At the end on the time delay, the load is de-energized.

The time delay cycle begins when the BP is released or a contact opens;

■ **RTH interval timer:** timing of load from the energization (coil of a contactor or relay). The time delay cycle begins on the energization of the RTH by the switching on of the load. At the end of the time delay, the load is de-energized;

■ **RTL repeat cycle timer:** repetitive cycle which alternatively energizes and de-energizes a load.

From the energization of the RTL, the load is switched on;

■ **RTMF multi function timer:** one relay providing functions A, B, C and H via a selector switch located in front.

### Technical data

■ voltage:

□ RT: 24V DC and V AC  
110 to 240 V AC

□ RTMF: 12 V DC  
24 to 240 V AC or DC

■ frequency: 50-60 Hz;

■ consumption: 5 VA;

■ operating temperature:  $-20^{\circ}$  to  $+55^{\circ}\text{C}$ ;

■ output contact: 1 contact N.O. 5A (AC1)

■ micro-break withstand:

micro-breaks  $\leq 20$  ms: no effect;

■ weight: 130 g;

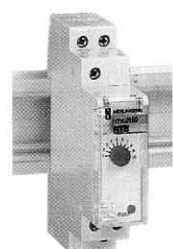
■ accuracy of setting:  $\pm 5\%$ ;

■ reliability:  $\pm 0.5\%$  constant parameter;

■ connection: tunnel terminals for cables up to 2.5 mm<sup>2</sup>;

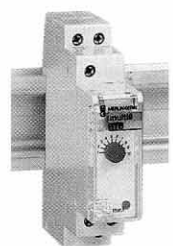
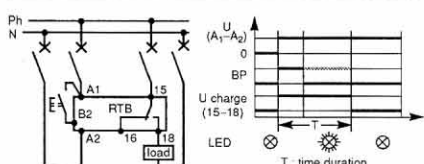
■ electrical endurance:

power consumption (VA)	cycles (in million)
10	10
50	4
100	2
400	1
600	0.5
1000	0.2



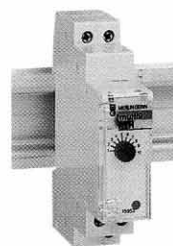
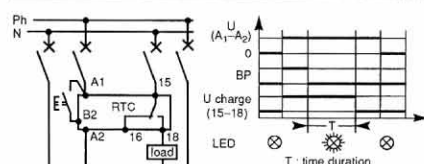
16051

RTB	2	0.1 s to 10 h	16051
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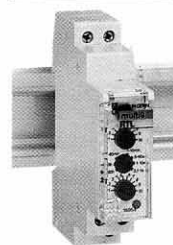
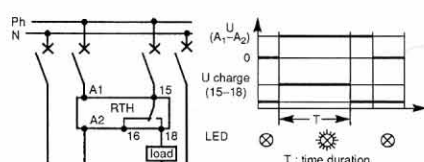
16052

RTC	2	0.1 s to 10 h	16052
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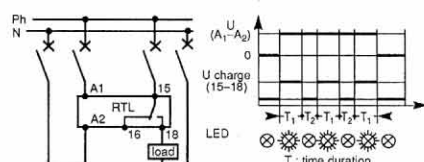
16053

RTH	2	0.1 s to 10 h	16053
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16054

RTL	2	0.1 s to 10 h	16054
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16055

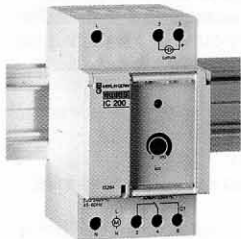
RTMF	2	0.1 s to 10 h	16055
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Dimensions: page 68

Application guide: page 69

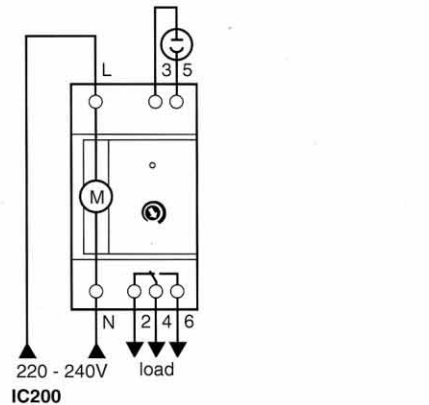
# light sensitive switches IC200/IC2000/IC2000P

**command control**  
time delay regulation



15284

type	width in mod of 9 mm	cat. No.
IC200	5	15284



## Function and use

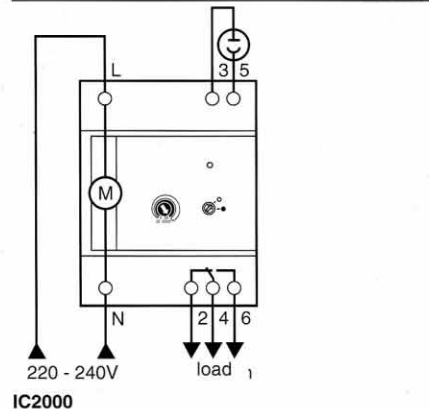
Opens or closes a contact when the photo-cell detects that an adjustable brightness threshold has been reached.

## IC200

### Technical data

- brightness threshold: adjustable from 2 to 200 lux;
- photo-cell: "panel front face" type (IP65) supplied;
- time delay before switch ON and switch OFF  $\geq 40$  s;
- luminosity monitoring light goes on when threshold is reached;
- connection: tunnel terminals for cables up to 6 mm<sup>2</sup>;
- contact ratings:
  - 10 A: p.f. = 1;
  - 6 A: p.f. = 0.6;
- consumption: 3 VA;
- operating temperature: -10 to +50 °C.

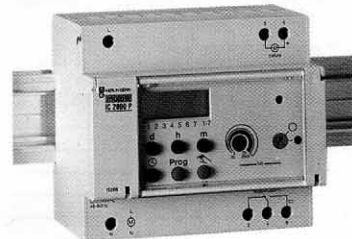
type	width in mod of 9 mm	cat. No.
IC2000	7	15368



## IC2000

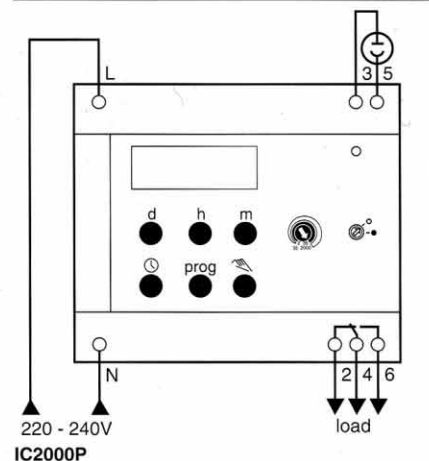
### Technical data

- brightness threshold: 2 adjustable thresholds: 2 to 35 lux or 35 to 2000 lux;
- photo-cell (IP54): supplied with mounting bracket;
- luminosity: monitoring light goes on when threshold is reached;
- time delay: before switch ON and switch OFF  $\geq 80$  s;
- other technical data: same as IC200.



15286

type	width in mod of 9 mm	cat. No.
IC2000P	10	15286



## IC2000P

Combination of an IC2000 type light sensitive switch and a single-channel programmable time switch (cat. No. 15354).

### Technical data

- light detection part: same as IC2000;
- time switch part: same as IHP (cat. No 15354);
- autonomy: 100 hours;
- continuous liquid crystal display of:
  - time (hours and minutes),
  - day of the week,
  - switching status;
- minimum programming interval: 1 minute;
- memory: 42 settings;
- program: 24 hours and 7 days;
- "summer-winter" time changes: a single operation without modifying the program;
- easy program control:
  - forced "on" or "off" overrides,
  - advanced switching,
  - setting deletion to modify or remove a sequence;
- holiday override: 1 to 45 days;
- operating temperature: -10 to +50 °C.

complementary information:

Dimensions: page 68  
Application guide: page 69



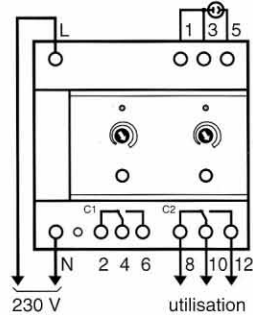
# light sensitive switches IC7502 accessories

command control  
time delay regulation



15282

type	width in mod. of 9 mm	cat. No.
IC7502	10	15282



## IC7502

**Function**  
Switches lighting on and off in two independents circuits when the luminosity threshold detected by the cell reaches the selected settings.

- luminosity sensitivity adjustable for each channel;
- 2 settings: from 2 to 150 lux and 150 to 7500 lux;
- "wall" type sealed (IP54) photo-cell with mounting accessories supplied;
- time delay before switch ON and switch OFF  $\geq 40$  s.

### Technical data

- voltage: 230 V AC  $\pm 10\%$ ;
- frequency: 50 Hz;
- luminosity monitoring light goes on when the luminosity threshold drops below the setting (without time delay);
- contact current rating:
  - 10 A, p.f. = 1
  - 6 A, p.f. = 0.6;
- operating temperature:  $-10^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ ;
- simplified instructions in the "instruction-holder" under the sealable pivoting flap;
- tunnel terminal connections for cables up to 6 mm<sup>2</sup>;
- cell connection by 2 x 0.25 mm<sup>2</sup> cables (max. length: 100 m);



15281 - 15268

type	cat. No.
"panel front face"	15281
"wall"	15268

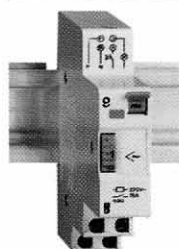
## accessories

Spare photo-cells.



# MIN timer CDM movement detection control switch

**command control**  
time delay regulation



15363

type	width in mod. of 9 mm	voltage (V AC) +10 %, -15 %	cat. No.
MIN	2	220/240	15363

## MIN timer

The switch "opens" after a predetermined time from actuation.

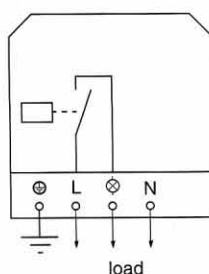
### Technical data

- breaking capacity of the contact:
  - 16 A at p.f. = 1,
  - for fluorescent and incandescent lighting, maxi power: 2000 W;
- frequency: 50 Hz;
- time delay: 1 to 7 minutes:
  - adjustable by means of an embossed dial in steps of 15 seconds,
  - recycling: after a 20 seconds operation any operation of push-button again gives the duration of the time-delay;
- 2 operating positions: permanent lighting, time-delayed lighting;
- timer suitable for continuous use without damage;
- consumption:
  - pick-up: 200 VA,
  - hold: 1.1 VA;
- operating temperature: -10 to +50 °C;
- connections: tunnel terminals for cables up to 6 mm<sup>2</sup>.



16990

type	voltage (V AC)	frequency (Hz)	cat. No.
CDM	220/240	50-60	16990



## CDM movement detection control switch

### Function and use

A movement detection control switch senses the variations in infrared heat radiation (movement of a person, etc.) for automatic control of lighting.

### Technical data

- detection of passage of an infrared heat source:
  - detection sector: 0°...180°: detection angle set by dividing up the cover
  - range: 0...12 m according to gradient setting
- detection of darkness by cell with adjustable threshold: 3...80 lux
- contact held down at end of movement: 4 s...15 min
- output contact:
  - incandescent lamps up to 1000 W
  - halogen lamps up to 500 W
  - fluocompact and fluorescent lamps: relays must be used
- supply voltage: 230 V AC - 10 % + 6 %
- frequency: 50...60Hz
- degree of protection: IP 54
- connection: screw terminals up to 2.5 mm<sup>2</sup>
- consumption: 1.1 VA
- utilisation temperature: -25...+50 °C
- approvals: VDE — SEMKO — KEMA - KEUR

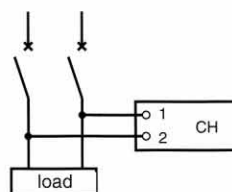
# CH hours counter CE/CEr kilowatt hour meters current transformer

**command control**  
measurement



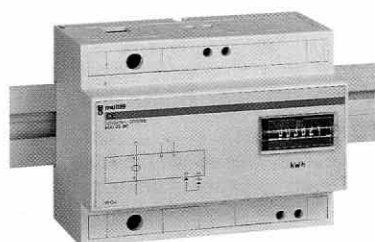
15440

type	width in mod. of 9 mm	voltage (V AC) (+6 % -15 %)	freq. (Hz)	cat. No.
CH	4	220/240	50	15440



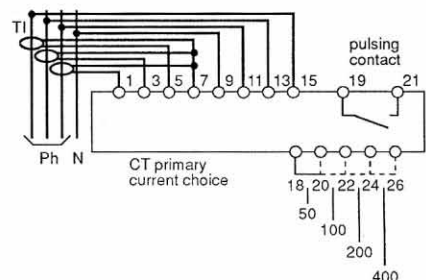
## CH hours counter

- to measure the total operating time of any circuit/load;
- connection on the load side of a protection device;
- counting limit: 99999.99 hours;
- connection: by tunnel terminals for cables up to 2.5 mm<sup>2</sup>.



15464

type	width in mod. of 9 mm	rat. (A)	voltage (Hz)	cat. No.
CE 1P	12	25 or 90	220/240	15464
CE 3P	12	50 to 400	380/415	15465
CEr 1P	12	25 or 90	220/240	15466
CEr 3P	12	50 to 400	380/415	15467
CEr 3P	12	50 to 400	220/240	15468



## CE/CEr kilowatt hour meter

### Application

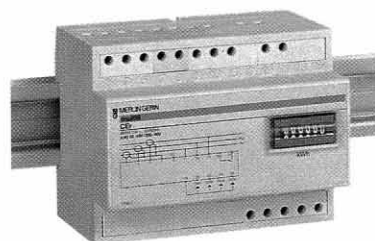
Measurement and indication of electrical power measured in kWh.

These units are ideally suited to the requirements of energy monitoring in both commercial and industrial applications.

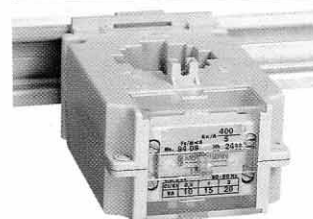
- single phase or three phase kilowatt hour meter CE (CEr with remote metering).

### Technical data

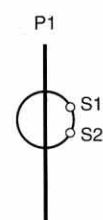
- voltage tolerancy: -15 % +6 % ;
- current rating (user selectable):
  - single phase: 25, 90 A,
  - three phase: 50, 100, 200, 400 A;
- frequency: 45-65 Hz;
- output contact: 5 A/240 V p.f. = 1;
- operating temperature: -25 °C to +60 °C;
- pulsing contact: 200 ms pulse every kWh;
- weight: 350 g;
- connection:
  - SP version:
    - power: 35 mm<sup>2</sup>,
    - other circuits: 2.5 mm<sup>2</sup>,
  - TP version: 2.5 mm<sup>2</sup> for all terminals.



15467



ratio	power (VA)	accuracy class	cat. No.
50/5	1	3	15565
75/5	2.5	3	15566
100/5	2.5	1	15567
150/5	5	1	15568
200/5	5	1	15569
250/5	5	1	15570
300/5	5	1	15571
400/5	5	1	15572
500/5	7.5	1	15573
600/5	7.5	1	15574
800/5	15	1	15575
1000/5	15	1	15576



## current transformer

Max. cross section:

- bar 30 x 10 mm;
- cable Ø 23 mm.

### Primary circuit

Max. cross section:

- ratio for 50/5 to 200/5;
- bar 15 x 10 mm;
- cable Ø 16 mm;
- ratio for 250/5 to 600/5;
- bar 30 x 10 mm;
- cable Ø 32.5 mm;
- ratio for 800/5 to 1000/5;
- bar 40 x 10 mm;
- cable Ø 32.5 mm.

### Secondary circuit

Connection: by tunnel terminal for 2 cables 2.5 mm<sup>2</sup> (maximum 8 m long).

complementary information:

Dimensions: page 68

Application guide: page 69

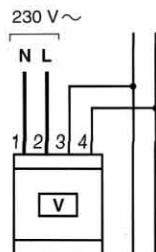
# VLT digital voltmeter CMV voltmeter selector switch FREQ frequency meter AMP digital ammeter

**command control**  
measurement



15200

type	width in mod. of 9 mm	scale (V) 50-60 Hz	cat. No.
VLT	4	0-100	15200
		0-600	15201



## VLT digital voltmeter

### Function

Measures the voltage difference in a circuit in volts.

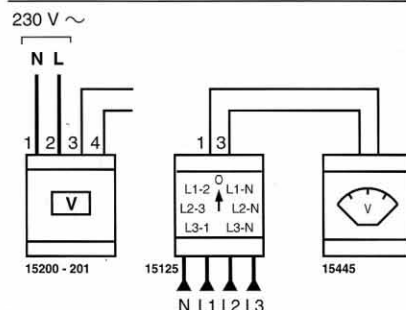
### Technical data

- compliance with standards:
  - IEC 51, IEC 278 and IEC 348,
  - VDE 0410;
- LED redout: 3 digits height: 8 mm;
- accuracy: 1 % full scale  $\pm 1$  digit;
- power supply: 230 V  $\pm 6 - 15$  %; 50-60 Hz;
- power consumption: 0.3 VA;
- connection: tunnel terminals for 2 cables 2.5 mm<sup>2</sup>.



15125

type	width in mod. of 9 mm	rat. (A)	voltage (V)	cat. No.
CMV	6	10	415	15125



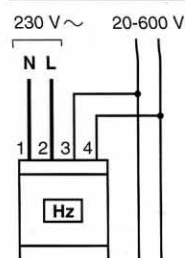
## CMV voltmeter selector switch

The voltmeter selector switch provides 3 voltage readings between phases and 3 readings between phase and neutral.



15208

type	width in mod. of 9 mm	scale (Hz)	cat. No.
FREQ	4	20-100	15208



## FREQ frequency meter

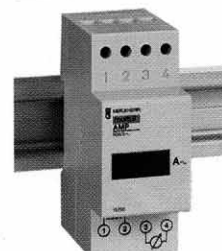
### Function:

Measure the frequency in a 20 to 600 V circuit in Hertz.

- accuracy:
  - 0.5 % middle scale,
  - 1 % full scale;

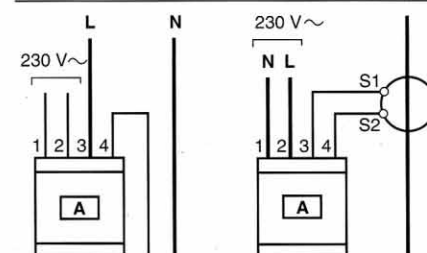
### Other technical data

Same as VLT digital version.



15202

type	width in mod. of 9 mm	scale (A) 50-60 Hz	cat. No.
AMP	4	0-10 direct	15202
		0-50 with TI	15203
		0-100 with TI	15204
		0-150 with TI	15205
		0-500 with TI	15206
		0-1.00 kA with TI	15207



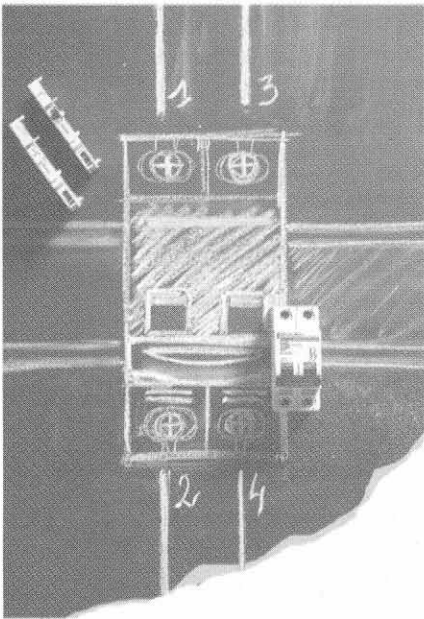
## AMP digital ammeter

### Function

Measures the electrical current intensity (AC current) in a circuit in amperes.

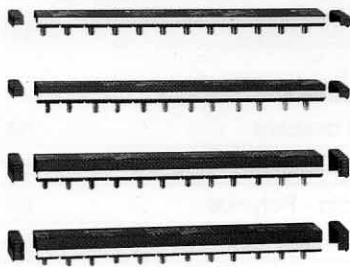
### Technical data

- display: 3-digit red LED display unit height: 8 mm;
- accuracy: 1 %  $\pm 1$  digit;
- complies with the following standards:
  - IEC 51, IEC 278 and IEC 348,
  - VDE 0410;
- auxiliary power supply: 230 V;  $-15$  % to  $+6$  %; 50 to 60 Hz;
- power consumption: 0.3 VA;
- operating temperature:  $-20$  °C to  $+60$  °C;
- connection: tunnel terminals for two 2.5 mm<sup>2</sup> cables.



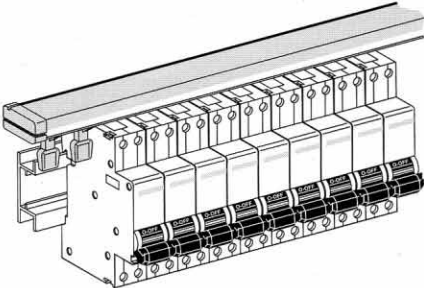
	page
<b>connections</b>	
■ comb busbars	60

- 1
- 2
- 3
- 4
- 5
- 6



14884

type	No. mod.	cat. No.
<b>comb busbars for C60/N/H/STI</b>		
1P	24	14881
	96 (set of 2 combs 48 mod.)	14891
	108	14801
2P	24	14882
	96 (set of 2 combs 48 mod.)	14892
	108	14802
3P	24	14883
	96 (set of 2 combs 48 mod.)	14893
	108	14803
4P	24	14884
	96 (set of 2 combs 48 mod.)	14894
	108	14804
<b>accessories</b>		
set of 40 end caps		
	for 1P and 2P combs	14886
	for 3P and 4P combs	14887
set of 40 tooth-caps		
	for 1P, 2P, 3P and 4P combs	14888



The tooth-caps are designed to insulate bare teeth.

## accessories

### 1P, 2P, 3P, 4P comb busbars

- self-extinguishing insulating material, colour RAL 7016;
- cutting locations marked on the copper and on the insulation;
- outgoing circuit labels on front face;
- comes with 2 end caps to increase the insulation at each end of the comb (immediate proximity of a metal frame or another busbar).

### Electrical characteristics

- operating current at 40° C:
  - 100 A with 1 supply point,
  - 120 A with 2 supply points;
- rated insulation voltage : 500 V (as per IEC 664);
- short-circuit withstand capacity compatible with the breaking capacities of Multi 9 circuit breakers;
- electrodynamic withstand: 10 kA rms/380 V for 30 ms.

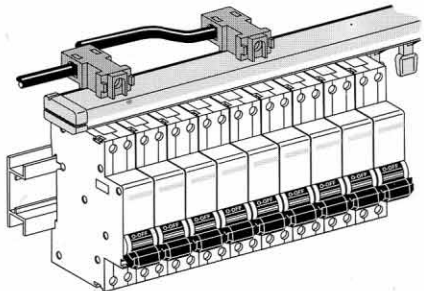
### Connection

- Supplied via semi-rigid cables:
- up to 6 mm<sup>2</sup>: directly in the tunnels of one of the devices;
  - up to 25 mm<sup>2</sup>: using connector cat. No. 14885 (see below).



14885

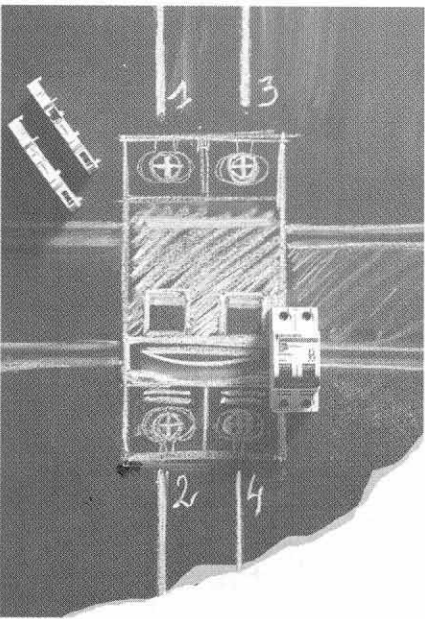
type	No. mod.	cat. No.
<b>insulated connectors</b>		
(bag of 4)		14885



## Connectors

- for semi-rigid cable up to 25 mm<sup>2</sup>;
- supply on both ends.





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dimensions	65

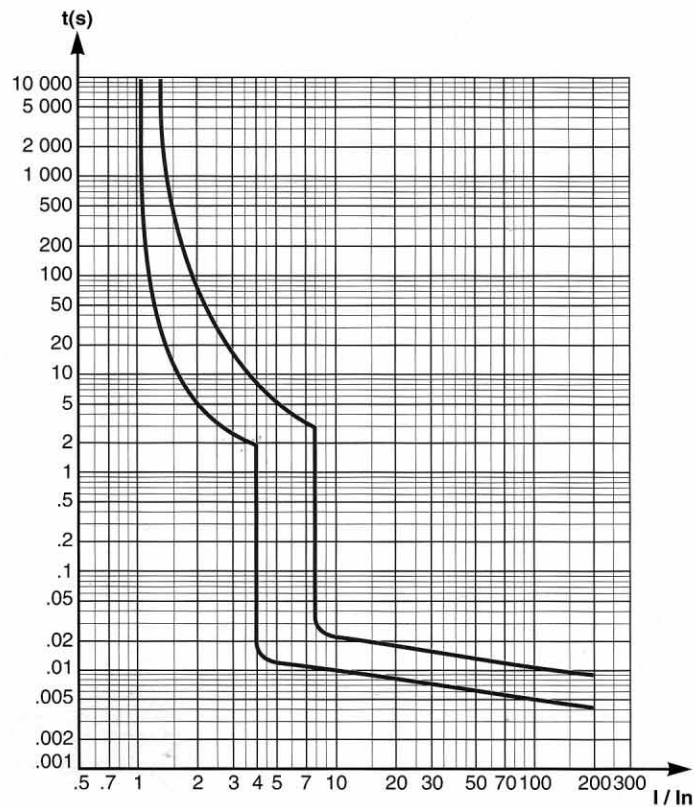
- 1
- 2
- 3
- 4
- 5
- 6

# C32H-DC - C60a, N, H XC40 - TC16

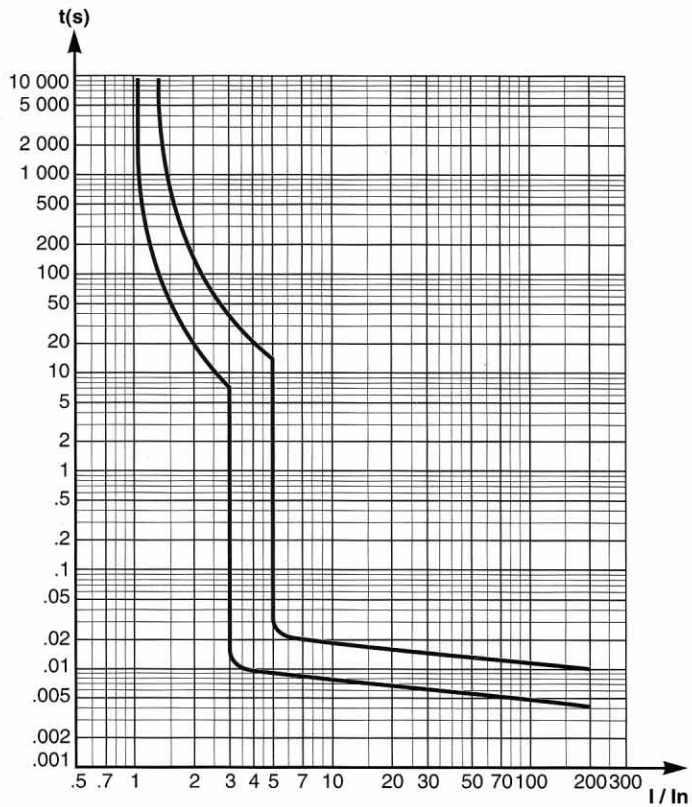
**technical data**  
tripping curves  
U, B, C, D and curves

IEC 898

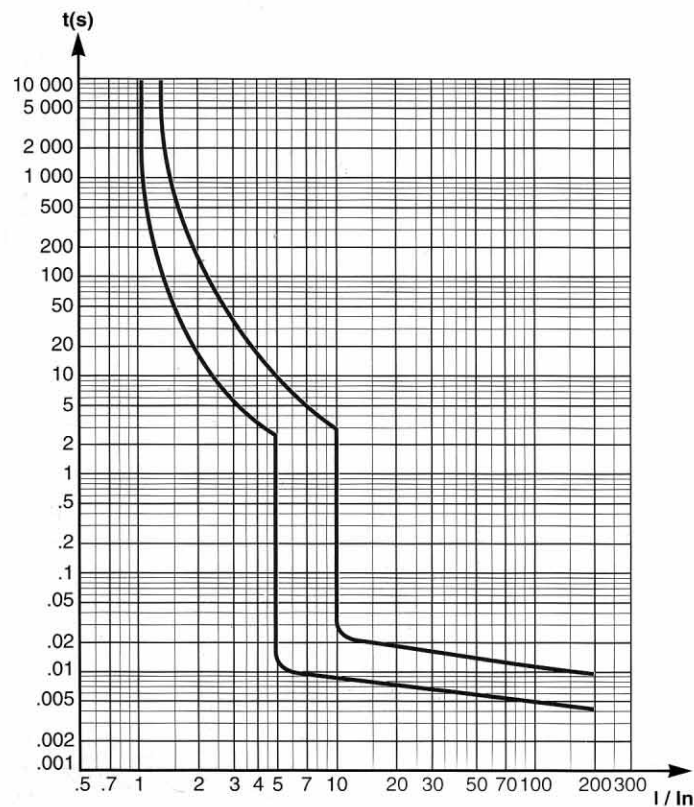
C32H-DC / U curve



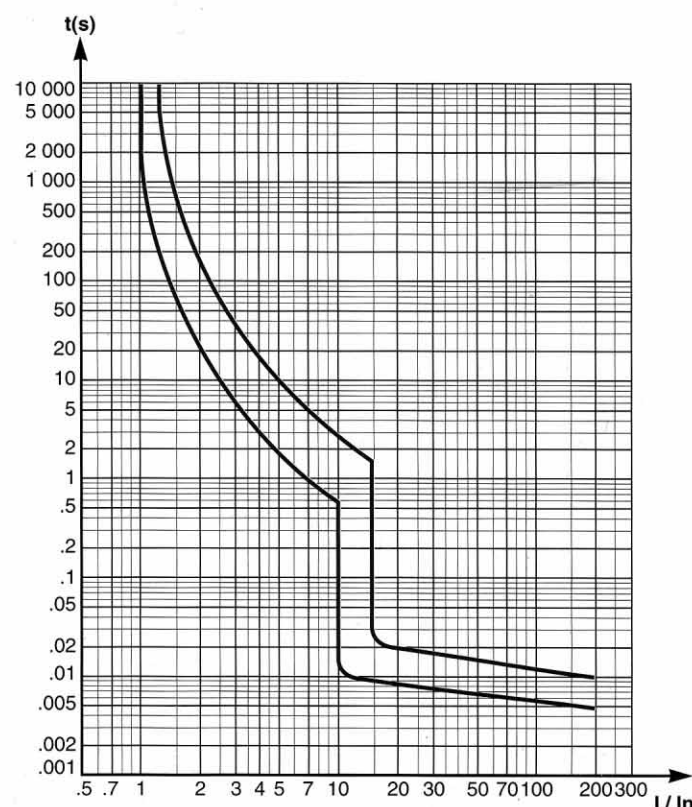
C60a, N, H - XC40 / B curve



C60a, N, H - XC40 - TC16 / C curve



C60N, H / D curve



# NC100H/L/LH

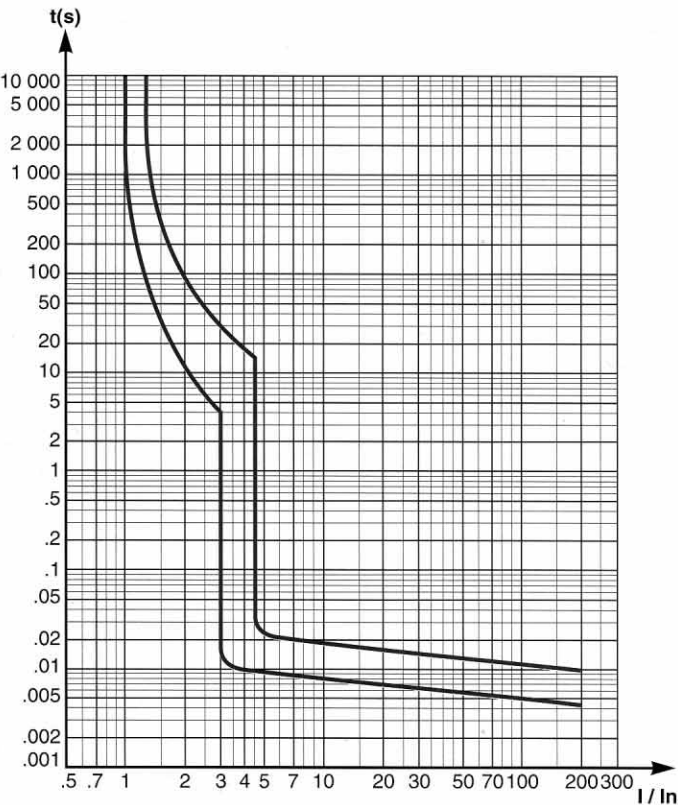
## NC 125H

## NC 100L/MA

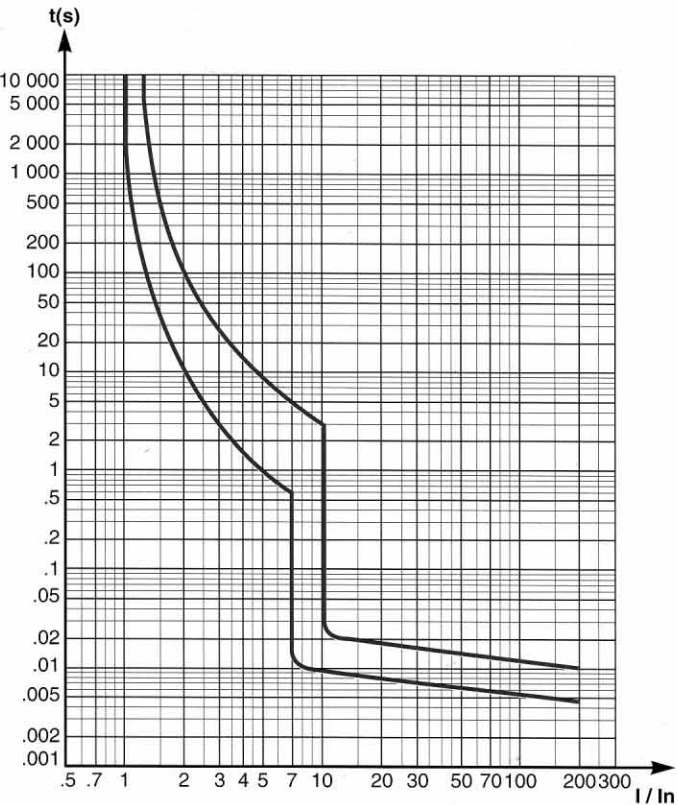
*technical data*  
tripping curves  
B, C, D and MA curves

IEC 947-2

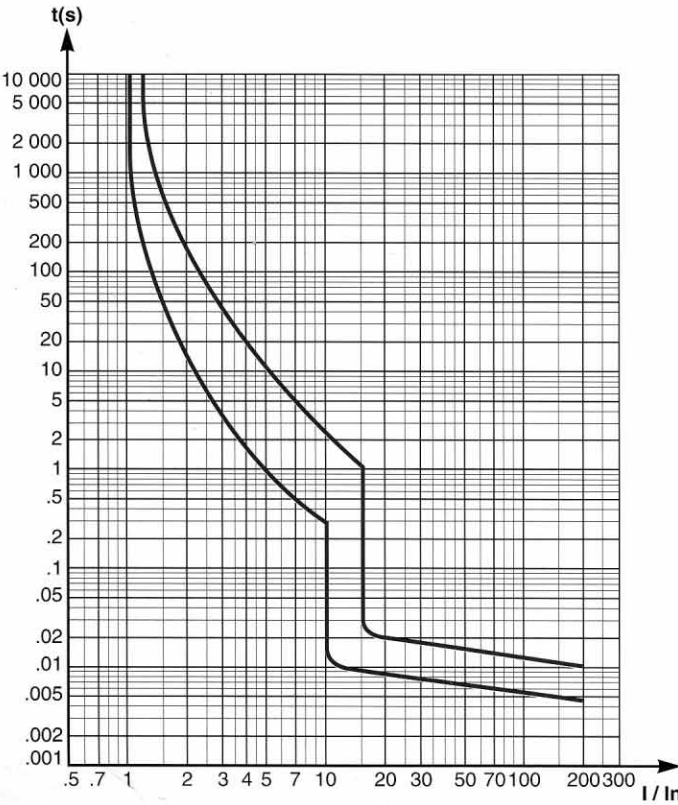
NC100H / B curve



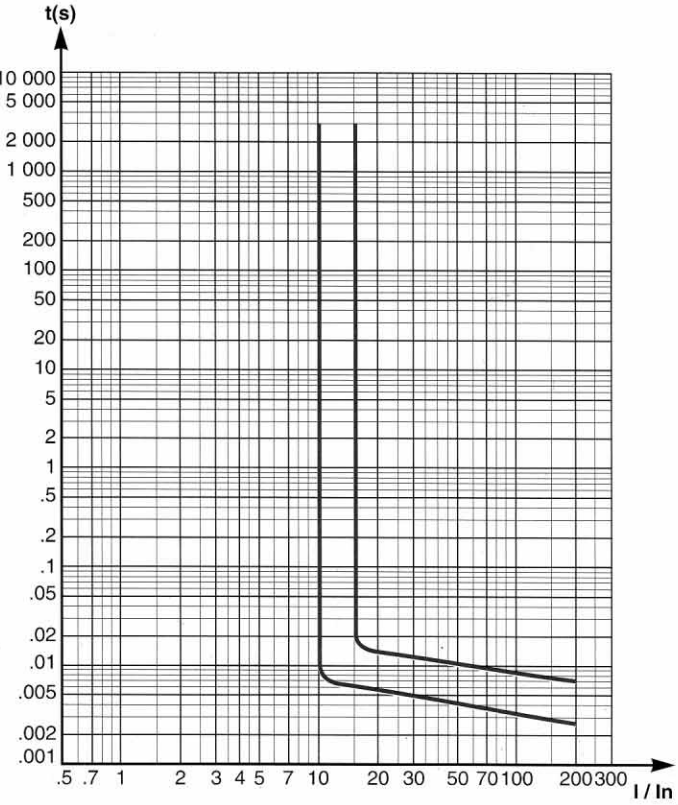
NC100H, L, LH / C curve



NC100H / D curve



NC100L / MA curve



## tripping curves

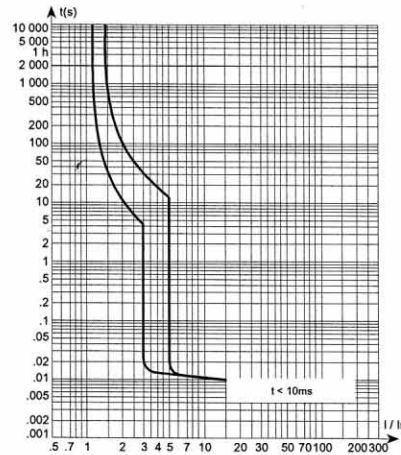
### C120N, H circuit-breaker

**B, C and D curves,  
as in standard EN 60898**

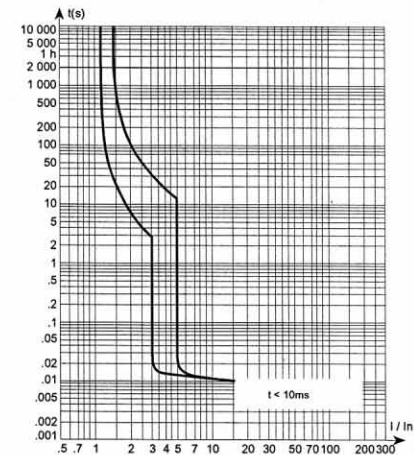
The operating range of the magnetic release  
is as follows:

- for B curve: between  $3 I_n$  and  $5 I_n$
  - for C curve: between  $5 I_n$  and  $10 I_n$
  - for D curve: between  $10 I_n$  and  $14 I_n$
- The curves show the cold thermal tripping  
limits when poles are charged and the  
electromagnetic tripping limits with 2  
charged poles.

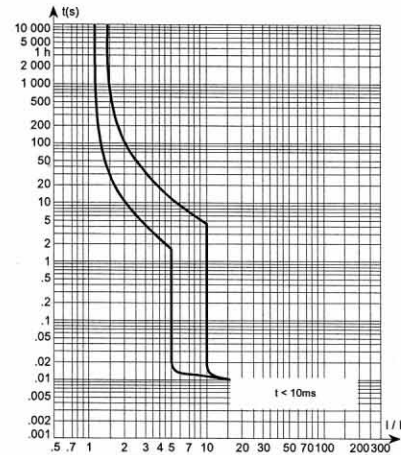
**C120N B curve**



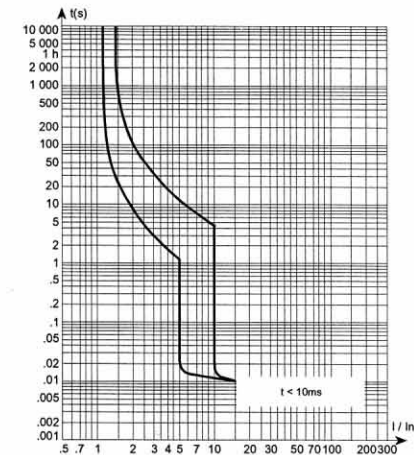
**C120H B curve**



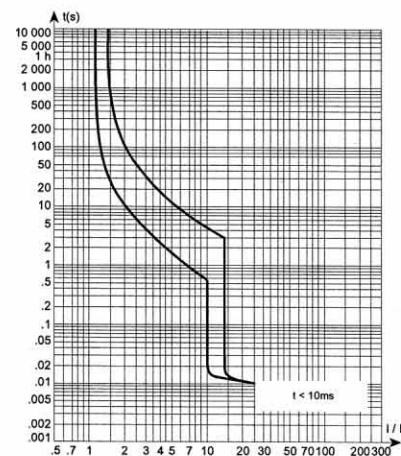
**C120N C curve**



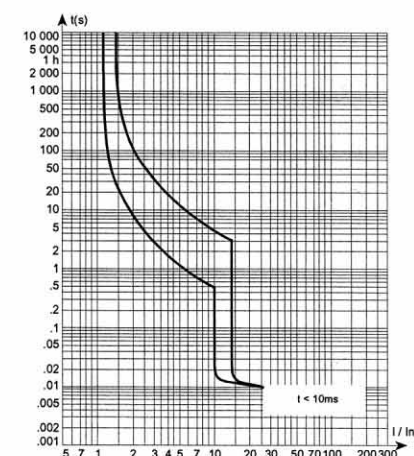
**C120H C curve**



**C120N D curve**



**C120H D curve**



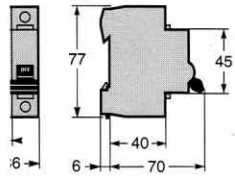


# C32H-DC/C60N, H, L NC100H, L, LH/NC125H

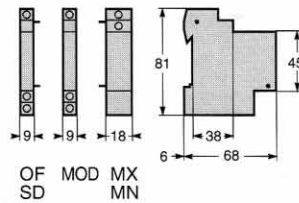
*technical data*  
dimensions

## C32H-DC

### Circuit breakers

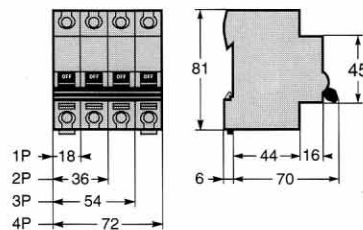


### Auxiliaries

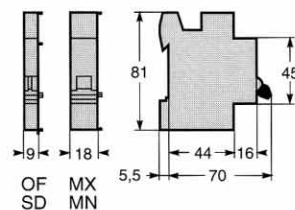


## C60N, H

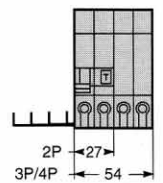
### Circuit breakers



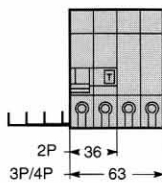
### Auxiliaries



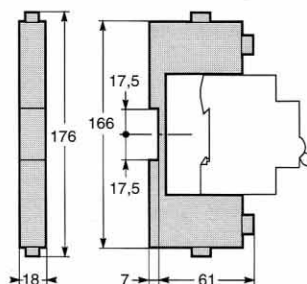
### Vigi module C60 ≤ 25 A



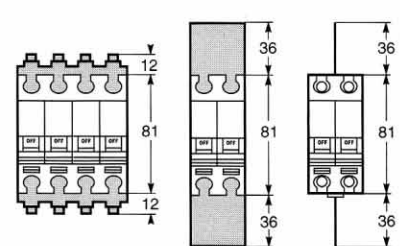
### Vigi module C60 ≤ 63 A



### Accessories plug-in base

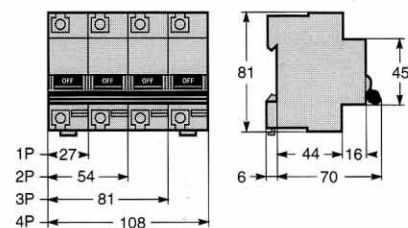


### Terminal screw shield

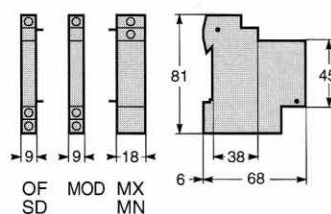


## NC100H, L, LH and NC125H

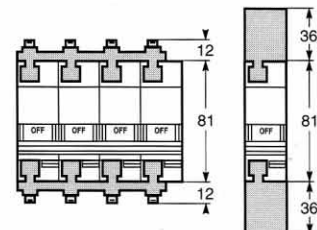
### Circuit breaker



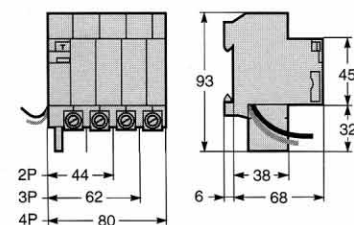
### Auxiliaries



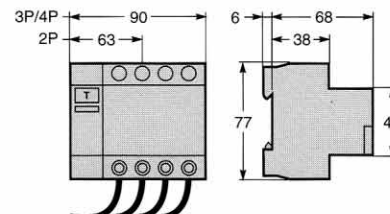
### Terminal screw shield



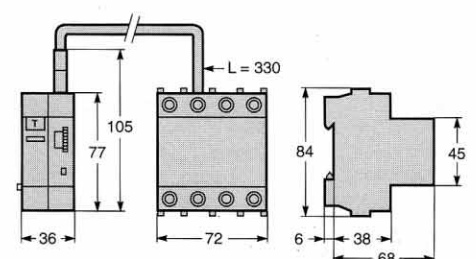
### Vigi module NC100 ≤ 63 A



### Vigi module NC100 ≤ 100 A



### Vigi module NC100/NC125 with separate toroid



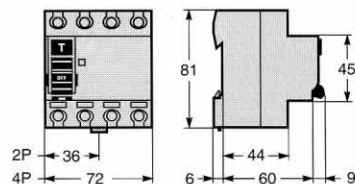


# ID/RCCB/Reflex current transformer/CDM circuit breakers

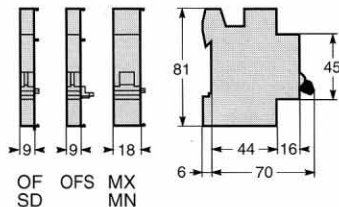
**technical data**  
dimensions

## ID/RCCB

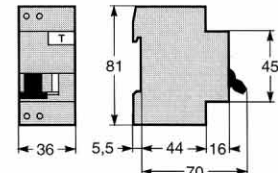
### Circuit breakers



### Auxiliaries

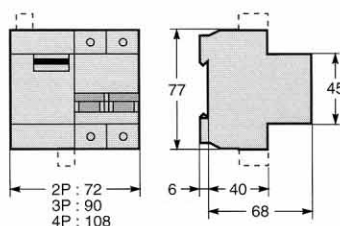


## DPNa Vigi

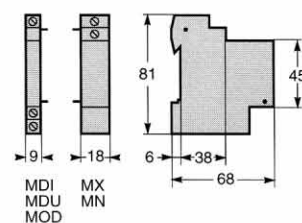
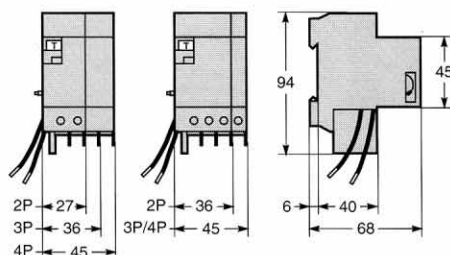


## Reflex

### Circuit breakers

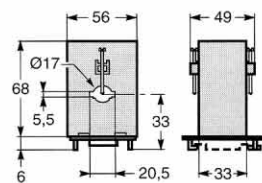


### Auxiliaries

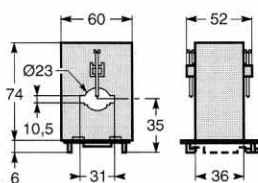


## current transformer

cat. No. 15565 to 15569



cat. No. 15570 to 15574

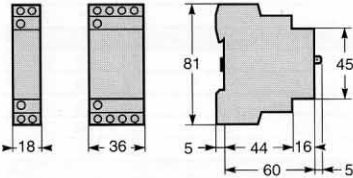


### Symmetrical rail mounting (screw fixing $\varnothing 5$ )



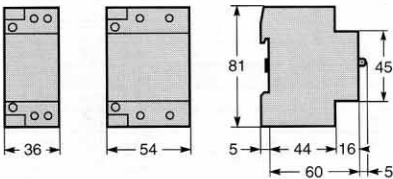
contactors 16/25 A

2 and 4 modules wide

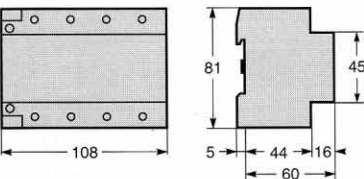


contactors 40/63/100 A

4 and 6 modules wide

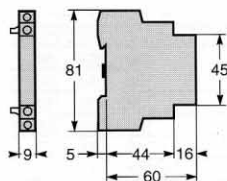


12 modules wide



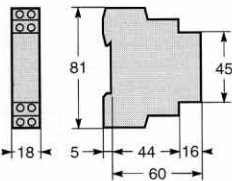
auxiliary contacts

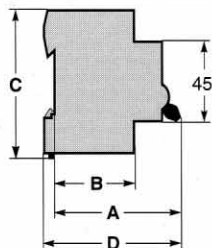
ACT o+f



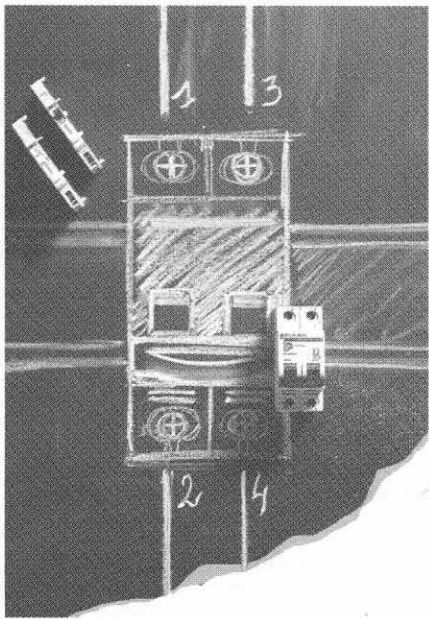
control auxiliaries

ACTt, ACTc, ACTp





device	width in mod. of 9 mm	A	width 1P	1P + N/2P	3P	4P	B	C	D
Bell and buzzer SO and RO	2	58	18				38	78	63
Changeover switch CM	2-4	68	18	36			40	77	75
Changeover relay RII	2	64	18				44	81	70
Contactor CT/CTR/CT-HC									
2 modules	2	54					38	85	61
4 modules	4	54					38	85	61
6 modules	6	54					38	85	61
Fuse-carrier STI	2-4-6-8	68	18	18-36	54		37	78	73
Hours counter CH	4	65	36				37	82	70
Impulse relay									
changeover 16 A TLI	2	64	18				44	81	70
TLI/TLs/TLc	2-2	64	18	18			44	81	70
extension ETL	2	64	18				44	81	70
Indication lamp V	2	68	18				40	77	75
Isolating switch I									
100A	2-4-6-8	68	18	36	54	72	37	80.5	75
20/32 A	2-2-4-4	68	18	18	36	36	40	77	75
63 A	2-4-6-8	68	18	36	54	72	40	77	75
Kilowatt hour meter CE/CEr	12	60	106				44	80	66
Light sensitive switch									
IC200	5	59	45				44	81	65
IC2000	7	59	63				44	81	65
IC2000P	10	59	90				44	81	65
IC7502	7	59	63				44	81	65
LT surge arrester LT	2	62	18	36		72	40	77	68
Push button BP	2	68	18				40	77	75
Solide state relay TC16/TC16P									
6A	5	70	63				40	77	72
10-16A	7	70	63				40	77	72
Thermostats TH3/TH6	8	60	72				30	77	66
Time delay relay RTA/RTB/RTC/RTH	2	66	18				44	81	72
RTL/RTMF									
Time switch									
IH 2 channels 12 mod.	12	68	107				38	82	66
IH 1 channel 6 mod.	6	68	54				38	82	66
IH 1 channel 8 mod.	8	68	72				38	90	74
IH 2 mod. (18 mm)	2	66	18				44	90	66
IHP 5 mod.	5	59	45				44	81	65
IHP 7 mod.	7	59	63				44	81	65
IHP 10 mod.	10	59	90				44	81	65
IHP 2 mod. (18 mm)	2	66	18				44	90	66
Timer MIN	2	65	18				37	87	70
Transformer TR									
4, 5, 8, 16 VA	4	70	36				40	80	74
25, 40, 63 VA	10	70	90				40	80	74
Vigirex RH	8	68	72				30	78	73



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BP push-button	85
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## selecting the circuit breaker

The selection of the type of circuit breaker most suitable for protection of a DC installation depends mainly on the following criteria:

- the rated current, which determines the rating of the equipment;
- the type of system (1, 2 or 3) (see below);
- the rated voltage, which determines the number of poles to be involved in breaking;
- the maximum short-circuit current at the point of installation, which determines the breaking capacity.

## Breaking capacity of Multi 9 circuit breakers on DC (in brackets, the number of poles involved in breaking)

type of circuit breaker	rating (A)	DC breaking capacity (kA)-L/R < 0.015 s					magnetic up-rating coef.
		voltage ≤ 60 V	125 V	125 V	250 V	500 V	
DPN A	10 to 38	15 (1P)					1.5
C32H-DC	1 to 40		10 (1P)	20 (2P)	10 (2P)		special DC
C60a	6 to 40	10 (1P)	10 (2P)	20 (3P)	25 (4P)		1.38
C60N	6 to 63	15 (1P)	20 (2P)	30 (3P)	40 (4P)		1.38
C60H	1 to 63	20 (1P)	25 (2P)	40 (3P)	50 (4P)		1.38
NC100/125H	10 to 125	20 (1P)	30 (2P)	40 (3P)	20 (4P)		1.42
NC100L	10 to 63				25 (1P)	25 (3P)	1.42
NC100LH	10 to 63				50 (1P)	50 (3P)	1.42

## Calculation of the short-circuit current (I<sub>sc</sub>) at the terminals of a battery

When a short-circuit occurs at its terminals, a battery discharges a current given by Ohm's law:

$$I_{sc} = \frac{V_b}{R_i}$$

where  $V_b$  = the maximum discharge voltage (battery 100 % charged)  
and  $R_i$  = the internal resistance equivalent to the sum of the cell resistances (figure generally given by the manufacturer in terms of Ampere/hour capacity of the battery).

## Example

What is the short-circuit current at the terminals of a standing battery with the following characteristics:

- capacity: 500 Ah;
- max. discharge voltage: 240 V (110 cells of 2.2 V);
- discharge current: 300 A;
- autonomy: 1/2 hour;
- internal resistance: 0.5 mΩ per cell,

240 Vcc  
300 A  
500 Ah  
 $R_i = 0.5 \text{ m}\Omega/\text{élément}$



$$R_i = 110 \times 0.5 \times 10^{-3}$$

$$I_{sc} = \frac{240}{55 \times 10^{-3}} = 4.4 \text{ kA}$$

As the above calculation shows, the short-circuit current is relatively weak.

## Note:

If the internal resistance is not known, the following approximate formula can be used:  $I_{sc} = kC$ , where  $C$  is the capacity of the battery expressed in Ampere-hours, and  $k$  is a coefficient close to 10 but in any case always lower than 20.

## Arrangement of breaking poles according to the type of system

	system 1 the source has one polarity earthed	system 2 the source has a middle point earthed	system 3 the source is isolated from earth	
circuit diagrams and different kinds of fault				
analysis of each fault	fault A	maximum $I_{sc}$ : only the positive polarity is involved	$I_{sc}$ close to max $I_{sc}$ : only the positive polarity is involved, at half voltage $U/2$	no consequences
	fault B	maximum $I_{sc}$ : both polarities involved	maximum $I_{sc}$ : both polarities involved	maximum $I_{sc}$ : both polarities involved
	fault C	no consequences	as per fault A, but the negative polarity is involved	no consequences
the worst case	fault A	faults A and C	fault B	
arrangement of breaking poles	<p>all the poles needed for breaking are placed in series on the positive polarity (1) (2)</p> <p><b>Example:</b> ■ <math>U = 250\text{ V}</math> ■ current <math>I = 47\text{ A}</math> If a NC100L is used, one pole is enough to break <math>250\text{ V}</math>. A single pole unit is therefore needed.</p>	<p>number of poles necessary to break max <math>I_{sc}</math> at voltage <math>U/2</math> should be placed on each polarity</p> <p><b>Example:</b> ■ <math>U = 250\text{ V}</math> ■ current <math>I = 100\text{ A}</math>, <math>I_{sc} = 15\text{ kA}</math> Each pole will be subjected to a max voltage <math>U/2 = 125\text{ V}</math>. With a NC100H (breaking cap. = <math>20\text{ kA}</math>) 2 poles are involved in breaking a voltage of <math>125\text{ V}</math>. A four pole NC100H is needed, with 2 poles in series in each polarity.</p>	<p>number of poles necessary for breaking should be split between the two polarities</p> <p><b>Example:</b> ■ <math>U = 125\text{ V}</math> ■ current <math>I = 80\text{ A}</math> If a NC100H is used (breaking cap. = <math>20\text{ kA}</math>). 2 poles are involved to break <math>U = 125\text{ V}</math> A two pole unit is needed, with one pole on each polarity.</p>	

(1) Or negative if the positive polarity is earthed.  
(2) An extra pole will be needed on the earthed polarity to provide isolation.



## marine classification organizations

The low voltage circuit breakers manufactured by Merlin Gerin for merchant marine and offshore are recognized by the following authorities:

- **LRS:** Lloyd's Register of Shipping;
- **DNV:** Det Norske Veritas;
- **GL:** Germanischer Lloyd;
- **BV:** Bureau Veritas;
- **MRS:** Maritime Register of Shipping (CIS);
- **ABS:** American Bureau of Shipping;
- **RINA:** Registro Italiano Navale;
- **KRS:** Korean Register of Shipping.

The types of circuit breakers which are now approved or approval pending, are given in the following table.

The circuit breakers performance levels approved by the shipping authorities in 1992 are shown in the table here below.

Multi 9 mcb	C60		NC100	
	N	H	LH	LMA
<b>LRS</b>	■	■	■	■
<b>DNV</b>	■	■	■	■
<b>GL</b>	■	■	■	■
<b>BV</b>	■	■	■	■
<b>MRS</b>	■	■	■	■
<b>ABS</b>	■	■	■	■
<b>RINA</b>	■	■	■	■
<b>KRS</b>	□	□	□	□

- **approved:**
- approval pending.

## Multi 9 circuit breakers standard range

authority	type		C60N C curve	C60H C and D curves		NC100LH-LMA (1)/NC125H C and MA curves	
<b>LRS</b>	<b>rated current (A)</b>		63 at 30 °C	63 at 30 °C		40 at 45 °C	
<b>DNV</b>	<b>rated voltage (V)</b>		440	440		440	
<b>GL</b>	AC 50/60 Hz		250	250		500	
<b>MRS</b>	DC		1	2-3-4		1	2-3-4
<b>BV</b>	<b>number of poles</b>		1	2-3-4		1	2-3-4
<b>ABS</b>	<b>breaking capacity</b>		230 V	20/15		50/38	100/75
<b>RINA</b>	AC (kA rms)		240 V	15/7.5		50/38	50/38
	IEC 947-2		400 V	30/15		50/38	50/38
			415 V	10/7		30/23	30/23
			440 V	5/4.5		30/23	30/23
	<b>breaking capacity</b>		24 to 60 V	20			
	DC (kA) (1)		125 V	25(2p)			
	LR ≤ 0.015 s		250 V	50(4p)		50	
			500 V				50(3p)

(1) NC100LMA 3 poles only.

### auxiliary contact (OFS or OF)

to indicate the "open" or "closed" position of a circuit breaker

#### Assembly

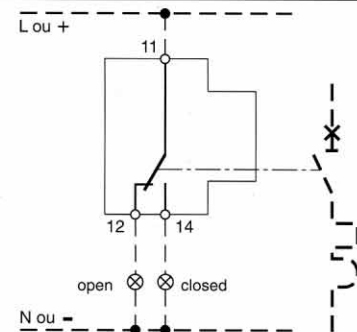
Fits on the left side of the circuit breaker.

#### Connection

As diagram opposite.

#### Applications

Audible or visual indication of the open or closed state of a circuit. The indication can be given on the front of a cubicle or enclosure or grouped on a control desk. Can be used in conjunction with an alarm switch.



### alarm switch (SD)

to indicate circuit breaker opening on a fault (tripped)

#### Assembly

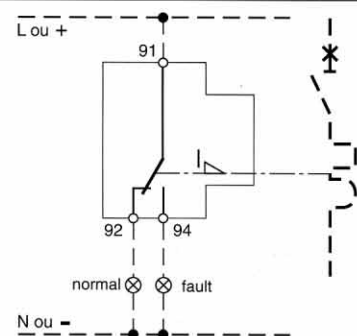
Fits on the left side of the circuit breaker.

#### Connection

As diagram opposite.

#### Applications

Audible or visual signalling of a fault on an electrical circuit air conditioned rooms, passenger and goods lifts, ventilation etc. May be used in conjunction with an auxiliary ON/OFF switch.



### shunt trip unit (MX + OF)

for remote tripping

#### Assembly

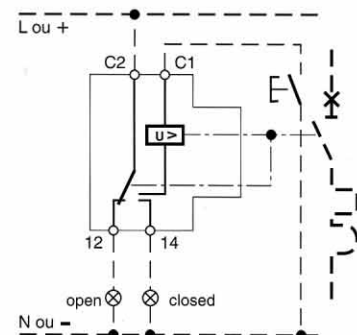
Fits on the side of the circuit breaker.

#### Connection

As diagram opposite.

#### Applications

Remote opening of electrical circuits.



### under-voltage release unit (MN or MN S)

to ensure automatic tripping in case of under-voltage and for remote tripping by EMERGENCY STOP push button

#### Assembly

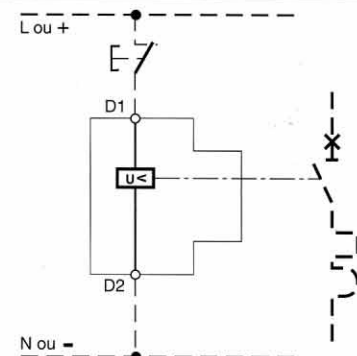
Fits on the right side of the circuit breaker.

#### Connection

As diagram opposite.

#### Applications

Automatic tripping of a circuit breaker whenever the voltage drops sufficiently below its nominal rated voltage (to BS3871: Part 1). Remote tripping of a circuit breaker by "emergency stop" or other N.C. push button.



# type 2 co-ordination chart

## Multi 9 mcb and Telemecanique contactors

**application guide**  
motor protection

<b>circuit breaker</b>	Merlin Gerin
<b>contactors</b>	Telemecanique
<b>norme</b>	IEC 947-4-1
<b>starting class (1)</b>	normal (trip class 10)

motor rating P (kW)			circuit breaker (4)			contactor type	overload relay (2)	
	I (A) 380 V	I <sub>e</sub> (A) max (3)	type	I <sub>rth</sub> (A)	I <sub>rm</sub> (A)		type	I <sub>rth</sub>
0.37	1.1	1.6	NC100L MA	1.6	20	LC1-D09	LR2 D15 06	1/1.6
0.55	1.4	1.6	NC100L MA	1.6	20	LC1-D09	LR2 D15 06	1/1.6
0.75	1.7	2.5	NC100L MA	2.5	32	LC1-D09	LR2 D15 07	1.6/2.5
1.1	2.4	2.5	NC100L MA	2.5	32	LC1-D09	LR2 D15 07	1.6/2.5
1.5	3.1	4	NC100L MA	4	50	LC1-D25	LR2 D15 08	2.5/4
2.2	4.5	6	NC100L MA	6.3	80	LC1-D25	LR2 D15 10	4/6
3	5.8	6	NC100L MA	6.3	80	LC1-D25	LR2 D15 10	4/6
4	8	10	NC100L MA	10	125	LC1-D25	LR2 D15 14	7/10
5.5	10.5	12.5	NC100L MA	12.5	160	LC1-D25	LR2 D15 16	9/13
7.5	13.7	16	NC100L MA	16	200	LC1-D25	LR2 D15 21	12/18
10	19	25	NC100L MA	25	320	LC1-D25	LR2 D15 22	17/25
11	20	25	NC100L MA	25	320	LC1-D25	LR2 D15 22	17/25
15	26.5	32	NC100L MA	40	500	LC1-D40	LR2 D35 53	23/32
18.5	33	40	NC100L MA	40	500	LC1-D40	LR2 D35 55	30/40
22	39	40	NC100L MA	40	500	LC1-D50	LR2 D35 55	30/40
30	52	63	NC100L MA	63	800	LC1-D65	LR2 D35 59	48/65

■ rated voltage - 415 V;

■ rated conditional short-circuit current - 50 kA

(1) Chart based on tests to IEC 947-4-1.

(2) "Trip Class 10" refers to the maximum trip time in seconds, at 7.2 x overload setting.

(3) I<sub>e</sub> is the rated operational current on the combination of the circuit breaker, contactor and overload release 55 °C Ambient.

(4) I<sub>rm</sub> is the magnetic trip current which must be greater than the motor inrush current (12.5 x motor rating).

A residual current device (rcd) is a measurement device connected to a toroid sensor surrounding the active conductors of a circuit; its function is to detect a difference in current, i.e. a residual current caused by an insulation fault between an active conductor and the frames or earth, and to automatically interrupt the supply within a delay that is compatible with people safety.

## Applications

### I $\Delta$ n: 30 mA

- protection against direct contact on TN multiple earthed neutral systems (break in protective conductor, etc.);
- for all very exposed conditions (construction sites, amusement parks, swimming pools, etc.).

### I $\Delta$ n: 300 mA

- premises with fire risk;
- protection against indirect contact on TN (multiple earthed neutral systems).

### I $\Delta$ n: 300 mA $\square$ selective

- allows vertical discrimination with downstream residual current devices having sensitivities 30 mA and 100 mA.

## Installation recommendations

When a residual current fault occurs (direct or indirect contact) on an installation, only the faulty circuit should be isolated by the protective devices in order to ensure continuity of service on the other circuits. This may be achieved by providing vertical discrimination at several levels.

## Combination table for rcd's providing full discrimination

downstream	upstream
instantaneous tripping	selective tripping $\square$
30 mA	100 mA
100 mA	300 mA

## Protection against nuisance tripping

The main causes of nuisance tripping of an rcd are:

- overvoltages due to atmospheric phenomena (lightning strike on network);
- switching surges caused by the operation of upstream MV or LV devices;
- energization of a highly capacitive circuit downstream of the rcd's.

All Multi 9 rcd's are protected against nuisance tripping (indicated by the symbol  $\Delta$  on the front of the device).

## Example:

### ■ vertical discrimination at 2 levels

When a residual current fault occurs in the installation illustrated in fig. 1, discrimination exists between the 300 mA selective rccb and the 30 mA instantaneous rcds located downstream.

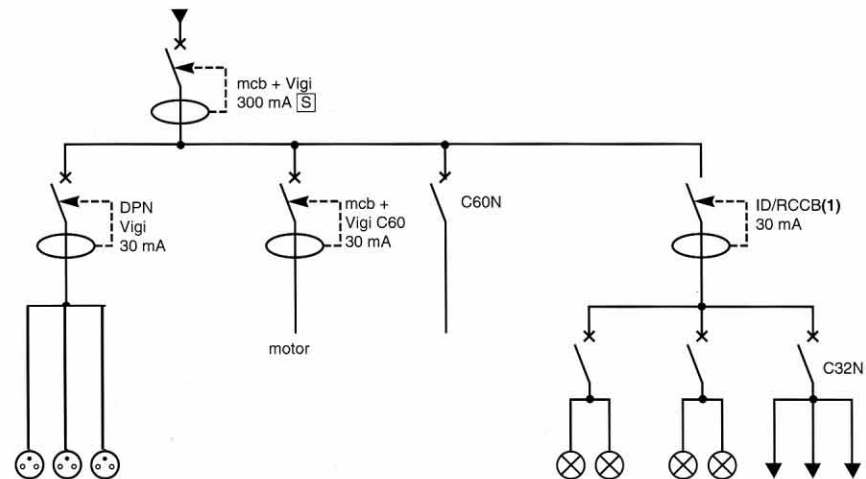


fig. 1: An example of installation with vertical discrimination at 2 levels.

(1) Short circuit withstand must be checked (see table page 87)



# influence of the ambient temperature and of group installation in enclosure

application guide  
derating

## Multi 9 circuit breakers

DPN a										
rat. (A)	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C	55 °C	60 °C	
1	1.04	1.02	1	0.98	0.96	0.93	0.91	0.89	0.86	
2	2.08	2.04	2	1.96	1.91	1.87	1.82	1.77	1.72	
3	3.16	3.08	3	2.92	2.83	2.75	2.66	2.57	2.47	
6	6.26	6.13	6	5.87	5.73	5.60	5.45	5.31	5.16	
10	10.52	10.26	10	9.73	9.45	9.17	8.87	8.57	8.25	
16	16.74	16.37	16	15.62	15.23	14.82	14.41	13.99	13.55	
20	20.91	20.46	20	19.53	19.05	18.56	18.05	17.53	17	
25	26.08	25.55	25	24.44	23.87	23.28	22.68	22.06	21.43	
32	33.59	32.81	32	31.17	30.32	29.45	28.55	27.62	26.66	
40	41.97	41.00	40	38.98	37.93	36.85	35.73	34.58	33.39	

C32H-DC: U curve										
rat. (A)	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C	55 °C	60 °C	
1	1.1	1.1	1	1	1	0.95	0.9	0.9	0.9	
2	2.2	2.2	2.1	2.1	2	1.95	1.9	1.8	1.7	
3	3.3	3.3	3.2	3.1	3	2.9	2.8	2.7	2.6	
6	6.6	6.5	6.3	6.1	6	5.8	5.7	5.5	5.3	
10	11	10.7	10.5	10.3	10	9.7	9.5	9	8.5	
16	17.6	17.4	17	16.5	16	15.4	15	14.4	13.9	
20	22	21.5	21	20.5	20	19.5	19	18.5	18	
25	27.5	27	26	25.5	25	24	23.5	23	22	
32	35.5	35	34	33	32	31	30	29	28	
40	44.5	43.5	42.5	41	40	38.5	37	36	34	

C60a/N/H: B and C curves										
rat. (A)	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C	55 °C	60 °C	
1	1.05	1.02	1.00	0.98	0.95	0.93	0.90	0.88	0.85	
2	2.08	2.04	2.00	1.96	1.92	1.88	1.84	1.80	1.74	
3	3.18	3.09	3.00	2.91	2.82	2.70	2.61	2.49	2.37	
4	4.24	4.12	4.00	3.88	3.76	3.64	3.52	3.36	3.24	
6	6.24	6.12	6.00	5.88	5.76	5.64	5.52	5.40	5.30	
10	10.6	10.3	10.0	9.70	9.30	9.00	8.60	8.20	7.80	
16	16.8	16.5	16.0	15.5	15.2	14.7	14.2	13.8	13.3	
20	21.0	20.6	20.0	19.4	19.0	18.4	17.8	17.4	16.8	
25	26.2	25.7	25.0	24.2	23.7	23.0	22.2	21.5	20.7	
32	33.5	32.9	32.0	31.4	30.4	29.8	28.4	28.2	27.5	
40	42.0	41.2	40.0	38.8	38.0	36.8	35.6	34.4	33.2	
50	52.5	51.5	50.0	48.5	47.4	45.5	44.0	42.5	40.5	
63	66.2	64.9	63.0	61.1	58.0	56.7	54.2	51.7	49.2	

C60N/H: D curve										
rat. (A)	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C	55 °C	60 °C	
1	1.10	1.08	1.05	1.03	1.00	0.97	0.95	0.92	0.89	
2	2.18	2.14	2.08	2.04	2.00	1.96	1.90	1.86	1.80	
3	3.42	3.30	3.21	3.12	3.00	2.88	2.77	2.64	2.52	
4	4.52	4.40	4.24	4.12	4.00	3.88	3.72	3.56	3.44	
6	6.48	6.36	6.24	6.12	6.00	5.88	5.76	5.58	5.46	
10	11.4	11.1	10.7	10.4	10.0	9.60	9.20	8.80	8.40	
16	17.9	17.4	16.9	16.4	16.0	15.5	15.0	14.4	13.9	
20	22.2	21.6	21.2	20.6	20.0	19.4	18.8	18.2	17.6	
25	27.7	27.0	26.5	25.7	25.0	24.2	23.5	22.7	21.7	
32	35.2	34.2	33.6	32.9	32.0	31.0	30.4	29.4	28.4	
40	44.4	43.6	42.4	41.2	40.0	38.8	37.6	36.4	34.8	
50	56.0	54.5	53.0	51.5	50.0	48.5	46.5	45.0	43.0	
63	71.8	69.9	67.4	65.5	63.0	60.4	57.9	55.4	52.9	

NC100, NC125H										
rat. (A)	20 °C	25 °C	30 °C	35 °C	40 °C	45 °C	50 °C	55 °C	60 °C	
10	11.0	10.7	10.5	10.3	10.0	9.50	9.00	8.70	8.50	
16	17.0	16.5	16.0	16.0	16.0	15.5	15.0	14.5	14.0	
20	22.5	22.0	21.0	20.5	20.0	19.0	18.5	18.0	17.0	
25	27.0	26.5	26.0	25.5	25.0	24.0	23.0	22.5	22.0	
32	36.0	35.0	34.0	33.0	32.0	31.0	29.5	28.0	27.0	
40	45.5	44.0	43.0	41.5	40.0	38.5	37.0	35.0	33.5	
50	57.5	56.0	54.0	52.0	50.0	48.0	45.5	43.5	41.0	
63	72.5	70.5	68.0	65.5	63.0	60.5	57.5	54.5	51.5	
80	92.0	89.0	86.0	83.0	80.0	76.5	73.5	69.5	66.0	
100	115.0	111.5	108.0	104.0	100.0	96.0	91.5	87.0	82.5	
125	140	138	135	130	125	120	113	108	102	

RCCB/ELCB					
rat. (A)	25 °C	30 °C	40 °C	50 °C	60 °C
25	32	30	25	23	20
40	46	44	40	36	32
63	75	70	63	56	50
80	95	90	80	72	65

XC40							
rat. (A)	20 °C	25 °C	30 °C	40 °C	50 °C	60 °C	70 °C
10	1.05	1.03	1.00	0.95	0.89	0.83	0.76
16	1.04	1.02	1.00	0.95	0.91	0.86	0.80
20	1.04	1.02	1.00	0.95	0.91	0.86	0.80
25	1.04	1.02	1.00	0.95	0.91	0.86	0.80
32	1.05	1.02	1.00	0.95	0.90	0.84	0.78
40	1.05	1.03	1.00	0.94	0.88	0.82	0.75

TC16/TC16P							
rat. (A)	20 °C	25 °C	30 °C	40 °C	50 °C	60 °C	70 °C
10	1.05	1.03	1.00	0.95	0.89	0.83	0.77
16	1.04	1.02	1.00	0.95	0.90	0.85	0.80
20	1.04	1.02	1.00	0.96	0.91	0.86	0.81

contactor type				
	rat. (A)	40 °C	50 °C	60 °C
2P	16	16	14	12
1P, 2P, 3P, 4P	20	20	18	16
2P, 3P, 4P	40	40	36	32
3P, 4P	63	63	57	50



# rccb/elcb

## coordination with mcb or fuses

application guide  
coordination

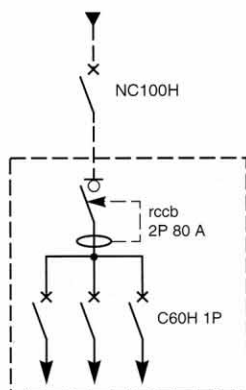
One of the criteria in selecting "a rccb/elcb" is proper coordination with the short-circuit protective devices installed upstream.

The rccb has limited short-circuit withstand capacity and must be protected against downstream short-circuits (electrodynamic protection).

**Caution:**  
The rccb must also be protected against overloads (thermal protection).  
See permissible continuous currents here below.

### electrodynamic protection

**Note:** When the rccb and the downstream circuit breakers are installed in the same switchboard as closed as practical, the downstream circuit breakers are deemed to be sufficient to provide the rccb Isc withstand capacity as in the switchboard presented below.



**Example:** 2P rccb with downstream C60H  
Isc withstand capacity: 10 kA.

### association of rccb with circuit breakers in the same enclosure - Isc max. kA rms

upstream circuit breaker		C60a	C60N	C60H	NC100H NC125H	NC100L	NC100LH
<b>downstream</b>							
<b>rccb</b>	<b>2P</b>						
	40 A	4.5	6	10	7	15	15
	63 A	4.5	6	10	7	15	15
	100 A/125 A	4.5	6	10	7	15	15
<b>4P</b>	40 A	4.5	6	10	7	15	15
	63 A	4.5	6	10	7	15	15
	100 A/125 A	4.5	6	10	5	7	10

### association of RCCB's with fuses - Isc max. kA rms

upstream gL or G1 100 A(1)		16 A	25 A	32 A	40 A	50 A	63 A	80 A
(not aM) fuses								
<b>downstream</b>								
<b>rccb</b>	<b>2P</b>							
	40 A	100	100	100	80	50	30	20
	63 A	100	100	100	80	50	30	20
	100 A/125 A	100	100	100	80	50	30	20
<b>4P</b>	40 A	100	100	100	80	50	30	20
	63 A	100	100	100	80	50	30	20
	100 A/125 A	100	100	80	50	30	10	3

(1) One 100 A fuse combined with several downstream rccb's (rccb thermal protection not ensured).

**Note:** For selective version  please consult us.

### permissible continuous current

The thermal protection device (overload protection) placed upstream of the rccb must take into account the values indicated opposite.

rating (A)	40°C	50°C	60°C
25	32.0	29.0	25.0
40	46.0	42.0	37.0
63	75.0	68.0	60.0
80	80.0	72.0	64.0
100	117.0	105.0	94.0

# TL/TLs/TLc 16 A and TL 32 A lighting circuits and control of heating

*application guide*  
TL impulse relay

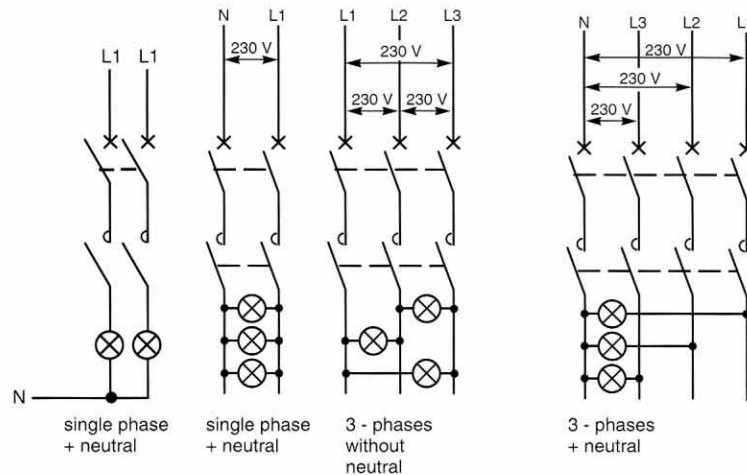
## utilization guide

The table below indicates the maximum power rating or number of lamps that can be installed on a 230 V single-phase circuit.

- for 230/400 V 3-phase + neutral circuits, multiply these values by 3;
- for 230 V 3-phase circuits without a neutral, multiply these values by 1.7.

### Installation

- for side-by-side impulse relays operating simultaneously, install a spacer cat. No. 27062 every 8 modules.



## lighting

						max. power (W)	
						TL 16 A	TL 32 A
<b>incandescent lighting</b>							
<b>tungsten filament (230 V)</b>							
<b>power</b>		<b>40 W</b>	<b>60 W</b>	<b>75 W</b>	<b>100 W</b>	<b>200 W</b>	
		40	25	20	16	8	1600
		106	66	53	42	21	4260
<b>with halogen (230 V)</b>							
<b>power</b>		<b>300 W</b>	<b>500 W</b>	<b>1000 W</b>	<b>1500 W</b>		
		5	3	1	1	1500	
		13	8	4	2		4000
<b>VLT halogen lighting (12 or 24 V with transformer)</b>							
<b>power</b>		<b>20 W</b>	<b>50 W</b>	<b>75 W</b>	<b>100 W</b>		
		70	28	19	14	1400	
		180	74	50	37		3700
<b>fluorescent lighting</b>							
<b>single with starter (no compensated)</b>							
<b>power</b>		<b>18 W</b>	<b>36 W</b>	<b>58 W</b>			
		70	35	21	1300		
		186	93	55			3400
<b>single with starter (compensated //)</b>							
<b>power</b>		<b>18 W</b>	<b>36 W</b>	<b>58 W</b>			
		50	25	16	930		
		133	66	42			2400
<b>double with series (compensated starter)</b>							
<b>power</b>		<b>2 x 18 W</b>	<b>2 x 36 W</b>	<b>2 x 58 W</b>			
		56	28	17	2000		
		148	74	45			5300
<b>single HF Ballast</b>							
<b>power</b>		<b>16 W</b>	<b>32 W</b>	<b>50 W</b>			
		80	40	26	1300		
		212	106	69			3400
<b>double HF Ballast</b>							
<b>power</b>		<b>2 x 16 W</b>	<b>2 x 32 W</b>	<b>2 x 50 W</b>			
		40	20	13	1300		
		106	53	34			3400
<b>discharge lamps</b>							
<b>low pressure sodium vapour</b>							
<b>power</b>		<b>55 W</b>	<b>90 W</b>	<b>135 W</b>	<b>180 W</b>		
		24	15	10	7	1300	
		63	40	26	18		3400
<b>high pressure sodium vapour or metal iodide</b>							
<b>power</b>		<b>250 W</b>	<b>400 W</b>	<b>1000 W</b>			
		5	3	1	1300		
		13	8	3			3400

## heating

heating (AC1)	3600	7200

# TL/TLI

## ETL extension

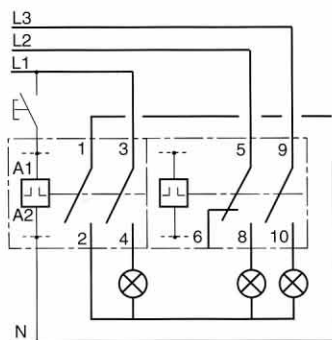
### TLs with indication switch

*application guide*  
TL impulse relay

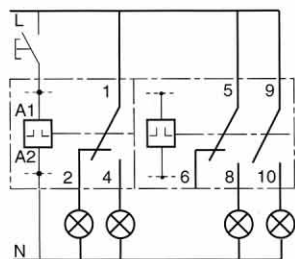
#### operation

An impulse relay is used to control a circuit from several pushbuttons or lighted pushbuttons. Remote indication is possible by using a TLs.

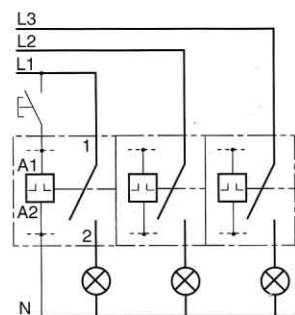
#### connection diagrams



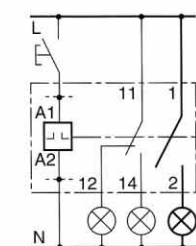
**Fig. 1:** TL 16 A with ETL  
3 phases + neutral



**Fig. 2:** TLI 16 A with ETL



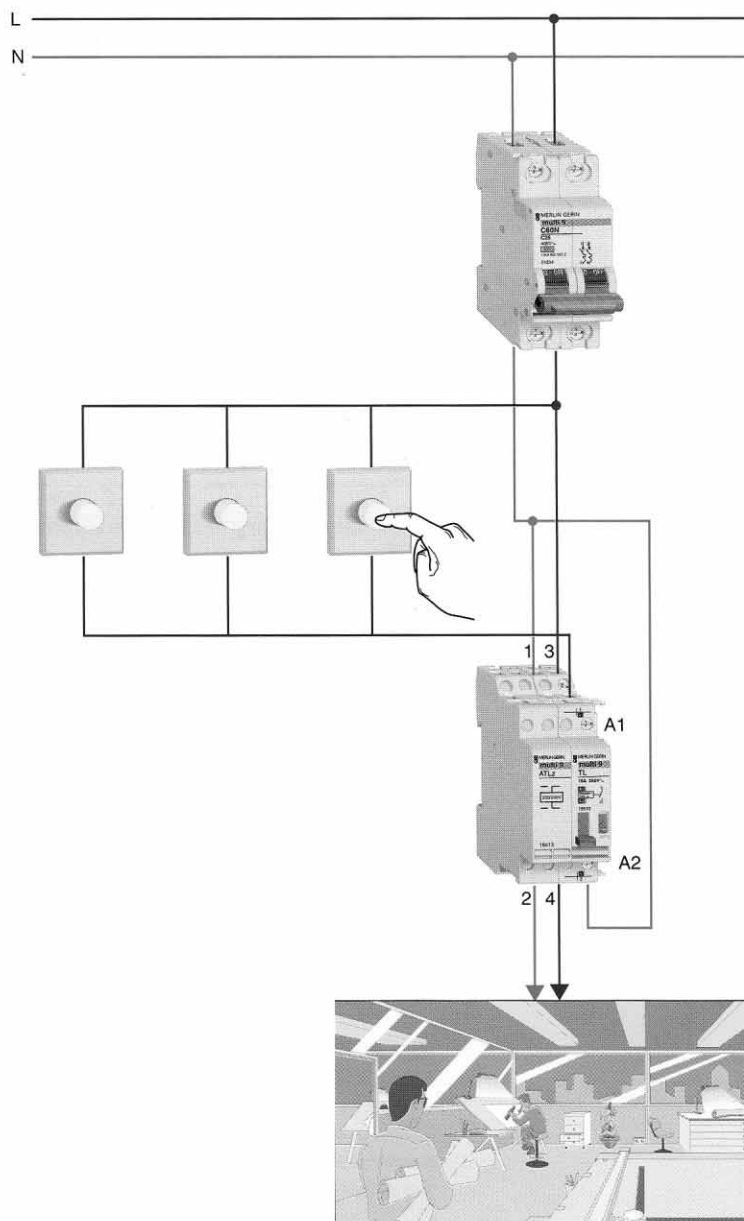
**Fig. 3:** TL 32 A 3-pole



**Fig. 4:** TLs

#### example

Lighting control from different entrances for an office.



## operation

Central control using an ON or OFF impulse order on a pilot line is used to open or close several circuits at the same time.

Local impulse orders are maintained.

## connection diagrams

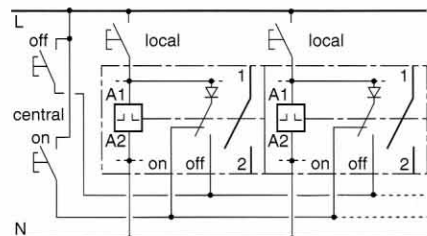
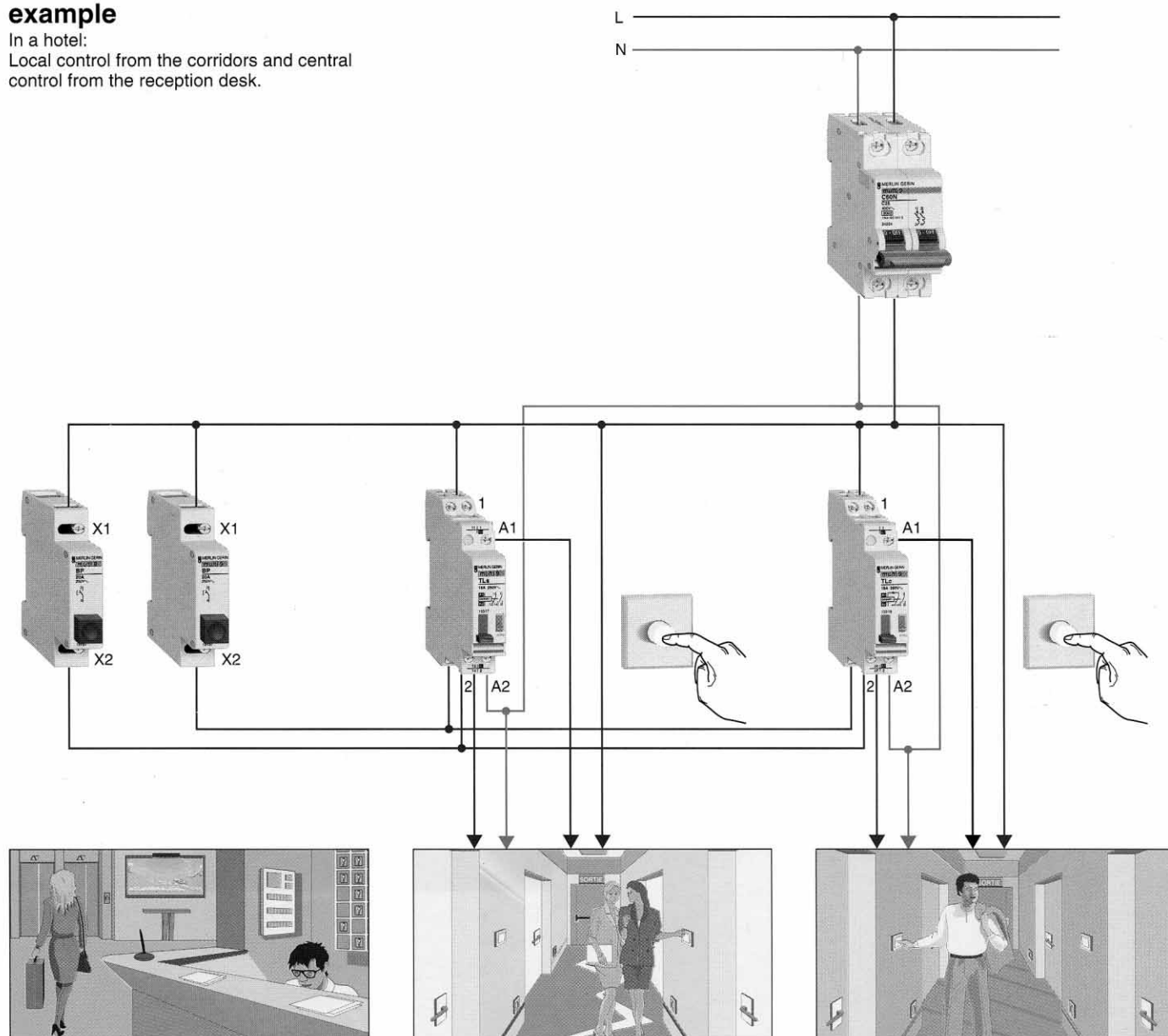


Fig. 1: TLc

## example

In a hotel:  
Local control from the corridors and central control from the reception desk.



# TL/TLs with time delay

*application guide*  
TL impulse relay

## operation

An impulse sent via the push-button closes the impulse relay. The ATLt releases the impulse relay after a time delay that can be adjusted from 1 second to 10 hours. A new impulse received during the delay opens the relay and stops the time delay function.

Remote indication may be achieved by using a TLs impulse relay with auxiliary switch built-in.

## connection diagrams

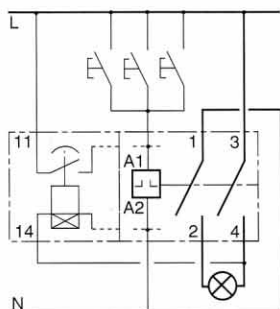


Fig. 1: ATLt + TL

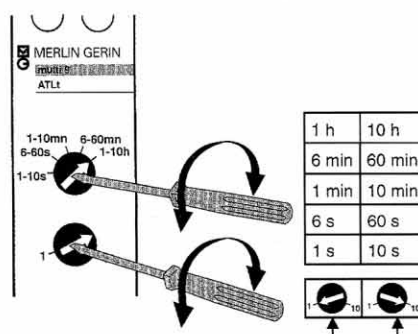
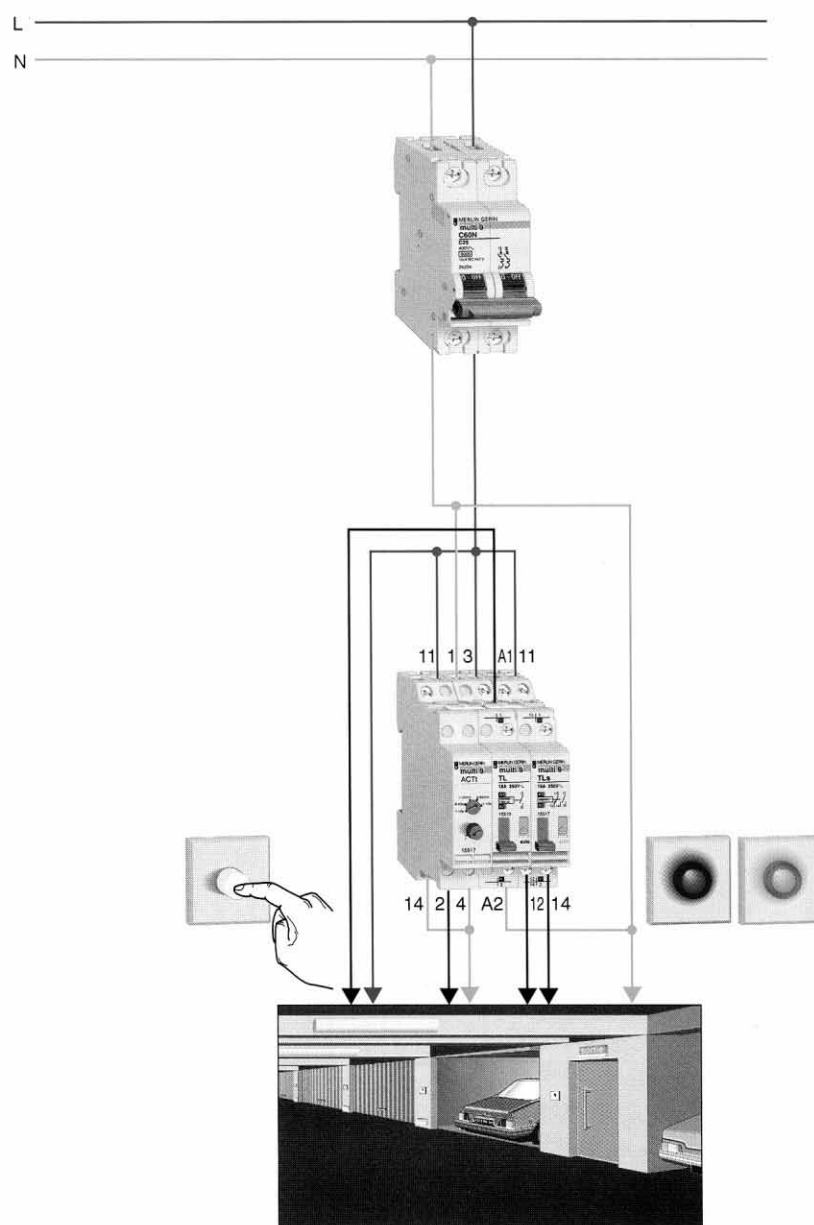


Fig. 2: ATLt time delay adjustment

## example

Lighting installation in an underground carpark.





## CT contactor

### lighting circuits

Choice of contactor and maximum number of load devices controlled as a function of the unit power (W) of the load devices and the service voltage.

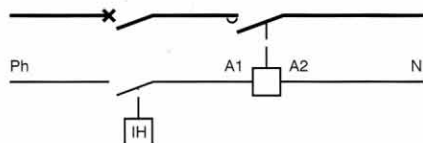
- incandescent lamps;
- fluorescent lamps;
- fluorescent lamps with starter (individual mounting);
- mercury or metal iodide lamps;
- sodium vapour lamps.

The chart below indicates the maximum power rating or number of lamps that can be installed in a 230 V single phase circuit.

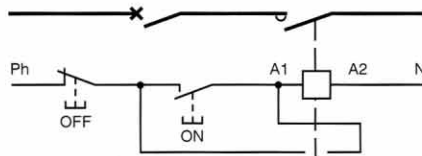
in Watts	contactors				
	CT 16 A	CT 25 A	CT 40 A	CT 63 A	CT 100 A
<b>incandescent lighting</b> (with or without halogen gas)					
40	38	57	115	172	250
60	30	45	85	125	187
75	25	38	70	100	150
100	19	28	50	73	110
150	12	18	35	50	75
200	10	14	26	37	55
300	7	10	18	25	37
500	4	6	10	15	22
1000	2	3	6	8	12
<b>12 V halogen</b> (with electromagnetic ELV transformer)					
20	15	23	42	63	94
50	10	15	27	42	63
75	8	12	23	35	52
100	6	9	18	27	40
150	4	6	13	19	28
<b>26 mm fluorescent tube</b> (single compensated parallel)					
15	15	20	40	60	90
18	15	20	40	60	90
20	15	20	40	60	90
36	15	20	40	60	90
40	15	20	40	60	90
58	10	15	30	43	64
65	10	15	30	43	64
115	5	7	14	20	30
140	5	7	14	20	30
<b>26 mm fluorescent tube</b> (single non-compensated)					
15	22	30	70	100	150
18	22	30	70	100	150
20	22	30	70	100	150
36	20	28	60	90	135
40	20	28	60	90	135
58	13	17	35	56	84
65	13	17	35	56	84
115	7	10	20	32	48
140	7	10	20	32	48
<b>26 mm fluorescent tube</b> (double compensated series)					
2 x 18	30	46	80	123	180
2 x 20	30	46	80	123	180
2 x 36	17	25	43	67	100
2 x 40	17	25	43	67	100
2 x 58	10	16	27	42	63
2 x 65	10	16	27	42	63
2 x 118	6	10	16	25	37
2 x 140	6	10	16	25	37
<b>26 mm fluorescent tube</b> (four compensated series)					
4 x 18	15	23	46	69	100
<b>electronic ballast</b> (one 26 mm tube)					
18	74	111	222	333	500
36	38	58	117	176	260
58	25	37	74	111	160
<b>electronic ballast</b> (two 26 mm tubes)					
2 x 18	36	55	111	166	250
2 x 36	20	30	60	90	135
5 x 58	12	19	38	57	85
<b>compact electronic lamp</b> (low power consumption)					
7	133	200	400	600	900
11	80	120	240	360	540
15	58	88	176	264	396
20	44	66	132	200	300
23	38	57	114	171	256

## wiring diagram

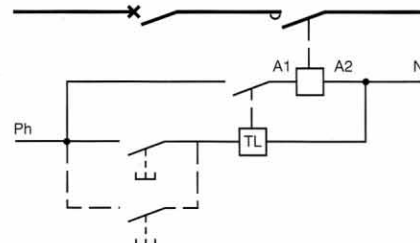
control by latched order  
(switch, time switch, etc)



ON/OFF push-button control



control by push-button and remote  
control switch



## heating application (category AC7a and AC1)

	nb operations per day	contactors			
		CT 25 A	CT 40 A	CT 63 A	CT 100 A
heating. maximum power rating in kW (230 V) / 1P	25	5.4	8.6	14	21.6
	50	5.4	8.6	14	21.6
	75	4.6	7.4	12	18
	100	4	6	9.5	14
	250	2.5	3.8	6	9
	500	1.7	2.7	4.5	6.8
small motors. maximum power rating in kW (400 V) / 3P	25	16	26	41	63
	50	16	26	41	63
	75	14	22	35	52
	100	11	17	26	40
	250	5	8	13	19
	500	3.5	6	9	14

## small motors application (category AC7b)

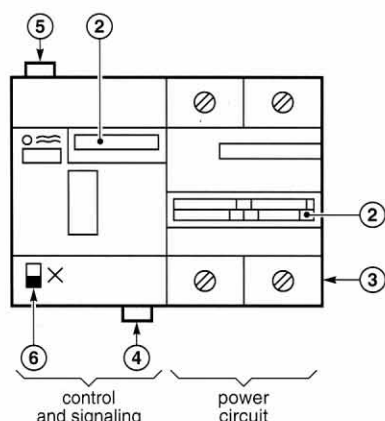
nb operations per day	contactors			
	CT 25 A	CT 40 A	CT 63 A	CT 100 A
small motors. maximum power rating in kW AC7b				
1-phase motor with capacitor (230 V)	1.4	2.5	4	
3-phase motor (3 x 400 V)	4	7.5	15	

# Reflex remote controlled circuit breaker XC40

## Design

The XC40 is an individually enclosed remote controlled circuit breaker with integral control, signalling and power circuits components. Its special feature is that it can receive two simultaneous types of remote control order: one input (T) is designed to receive impulses, another input (X) latched orders. In addition, this unit has two break positions (bistable).

## Description



■ **local operating handle:** enables the circuit breaker to be opened and closed manually, whatever the remote control orders received by the unit. It indicates the position of power circuit contacts, and moves to the "open" position (ON/OFF) when the circuit breaker has tripped, when it gives a positive indication that the contacts are open;

■ **reset handle:** it is the bottom "tripped" position when breaking has occurred due to: an overcurrent; or after breaking commanded by the shunt trip release (MX) or undervoltage release (MN). It enables visual indication of the tripped position of the circuit breaker ...

**and automatically locks the remote control function until manually reset.**

■ **access port:** (protected by a plug) for the mechanical connection of electrical auxiliaries, VIGI unit and MX/MN releases, which can be fitted on this side of the unit (as on a NC100);

■ **plug-in connectors:** two in number, they enable the built-in auxiliary circuit breaker opening and closing signalling contacts (OF) and tripping on a fault contacts (SD) to be connected (terminals: 11, 12, 14, 15, 16, 18);

■ **plug-in connector:** for connection of the remote control input signals to terminals P, N, T, X;

■ **control mode selector:** enables the type of order received on input X to be modified (fig. 1):

- selector position "a" for latched orders,
- position "b" for impulse control. 2 special cases of use,
- control by illuminated push-button (consult us),
- if terminal X is not wired up : the selector must be on "b".

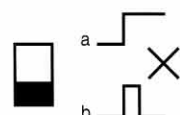


Fig. 1: Control mode selector

## Example of use (fig. 2)

XC40 remote controlled circuit breakers switch lighting on and off automatically in response to centralized control from an IHP time switch programmed for the normal hours the building is occupied. Early-starters or late-leavers can override the program by switching lights on or off using local switches controlling their sector (the XC40 gives priority to the last order given).

XC40 circuit breakers combine, in a single unit, the following functions:

- protection of circuits against overloads and overcurrents;
- remote control by latched order;
- remote control by impulse.

## Maximum controlled power at 415 V:

- $\cos > 0.9$ : 25 kW;
- incandescent light: 9 kW;
- compensated fluorescent light: 12 kW;
- non-compensated fluorescent light: 9 kW;
- motor: 7.5 kW.

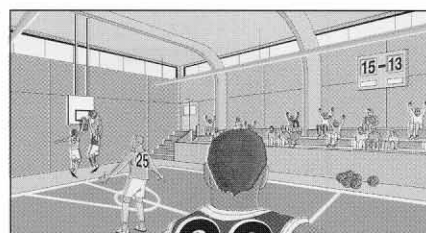
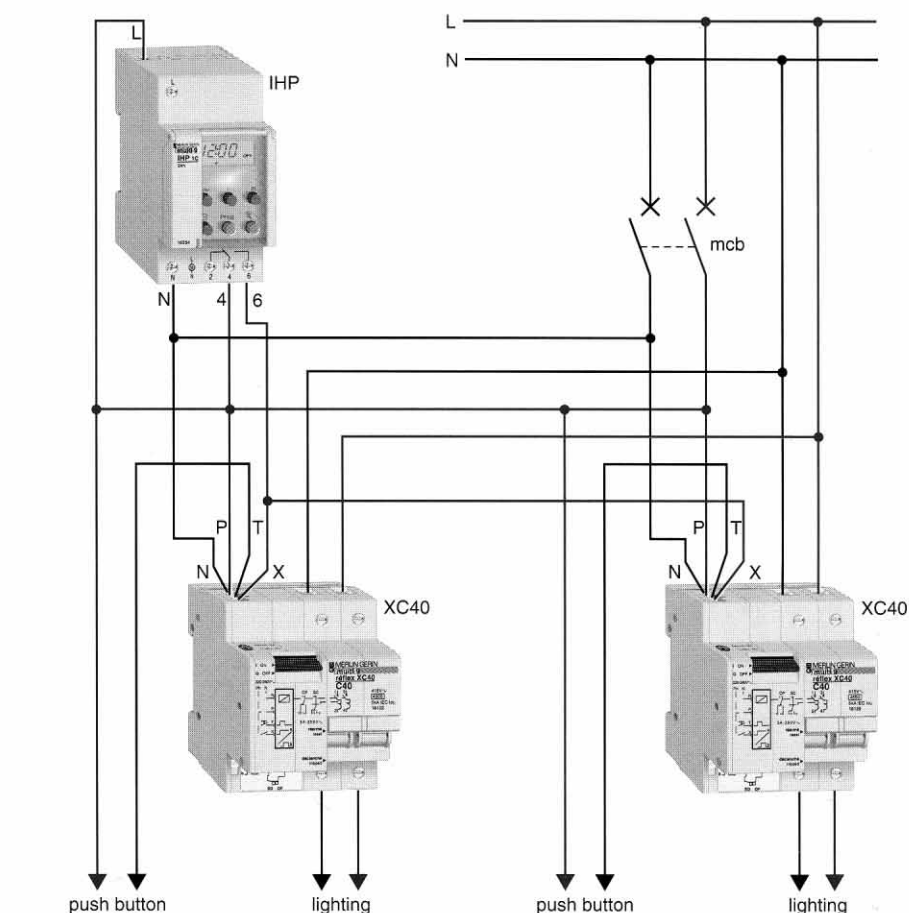


Fig. 2



## Refresh function

The status of the power circuit can be reset to that of latched order by a brief interruption of the power supply (P or N) to the remote signal input terminals (fig. 3).

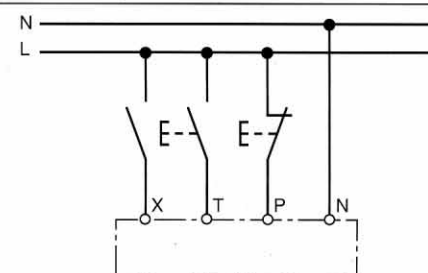


Fig. 3

# TC16/TC16P combined mcb with solid state contactor

application guide

## Design

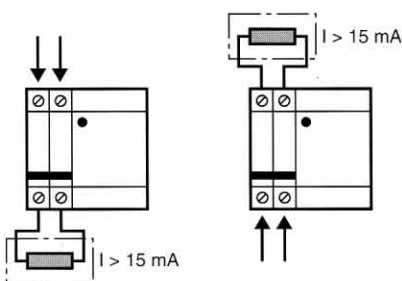
The TC16 is a solid state relay combining control and power circuits in a single unit. Electrical auxiliaries including the OF auxiliary switch or the SD alarm switch may be added to the left hand-side.

Special feature include:

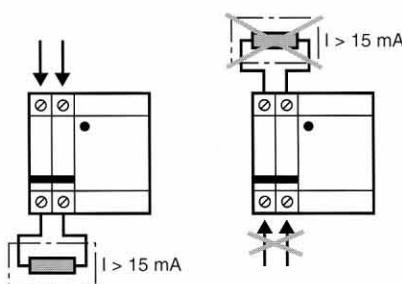
- unlimited number of operating cycles;
- up to 600 operations per minute;
- noiseless operation;
- protected against overvoltages;
- self protected against temperature rise, overloads and short-circuits by its associated circuit breaker.

## Operating conditions

### TC16

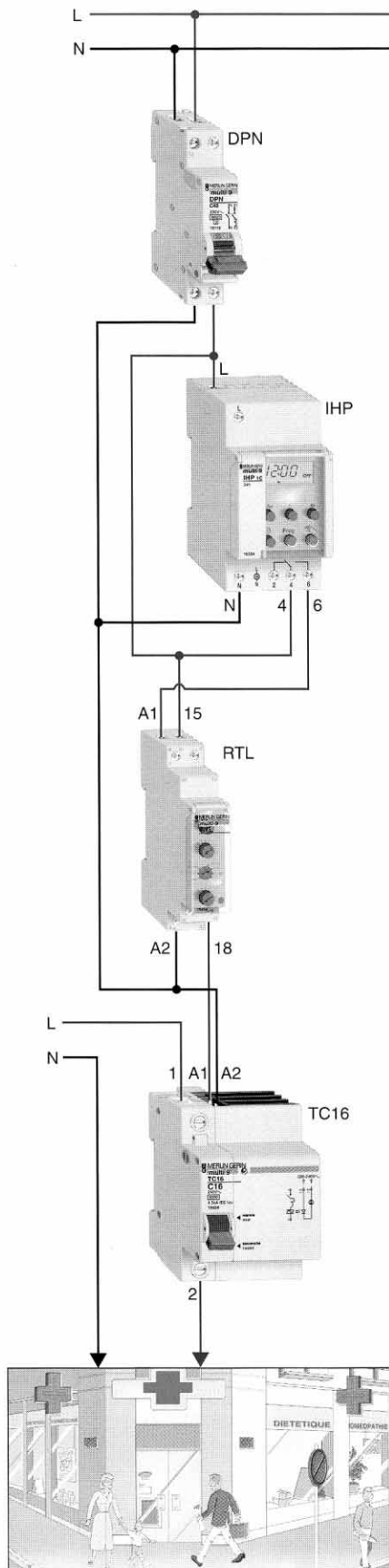


### TC16P



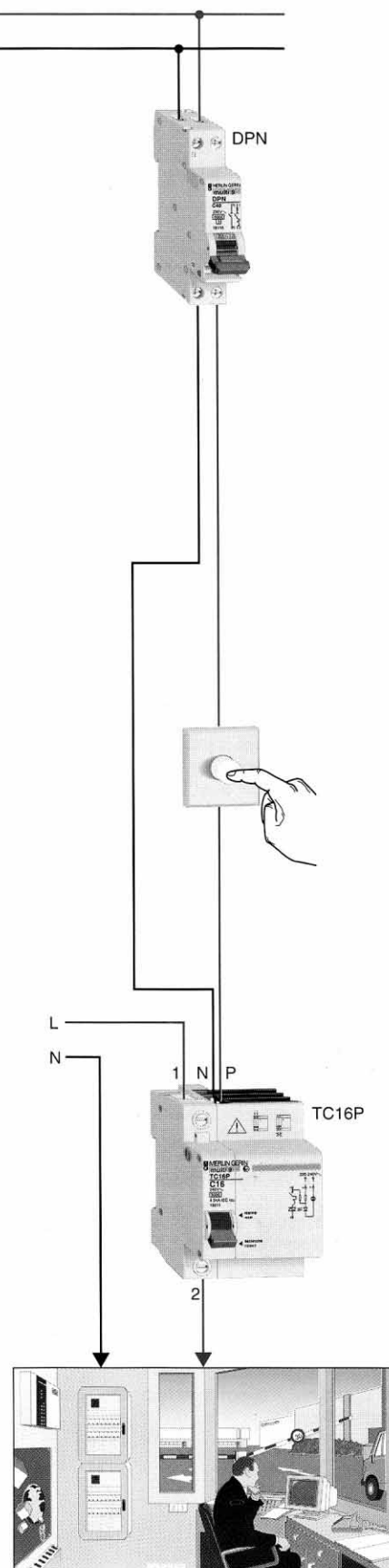
## Example 1:

Shopping window with TC16.



## Example 2:

TC16P controls the gate at the main entrance in a factory.





## CM changeover switch

### Two versions:

- switch with two positions.  
Connection, see fig. 1.
- switch with three positions one of which is the "off" position.  
Connection, see fig. 2.

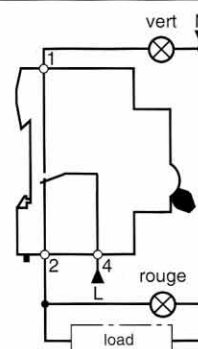


Fig. 1

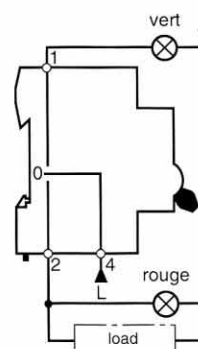


Fig. 2

## BP push-button

### Setting (fig. 1)

- 1 opening contact + 1 closing contact:
- opening contact connected between 1 and 2 (off),
- closing contact connected between 3 and 4 (on). see fig. 3.

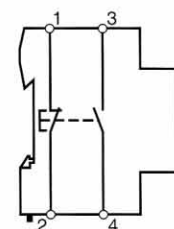


Fig. 3



# IHP programmable time switch

24-hr/7 days type cat. No. 15354

1 channel (42-setting memory capacity)

## application guide

### instructions

#### Before programming:

- switch on the IHP to recharge the batteries (supplied non - charged);
- clear the program and date / time memory by pressing the following buttons simultaneously for several seconds



- press and hold the **(l)** button and simultaneously press the following buttons either continuously (for continuous advance) or intermittently (for step - by - step advance)

- **(d)** for the day setting
- **(h)** for the hour setting
- **(m)** for the minute setting

- to reset for summer or winter time changes:

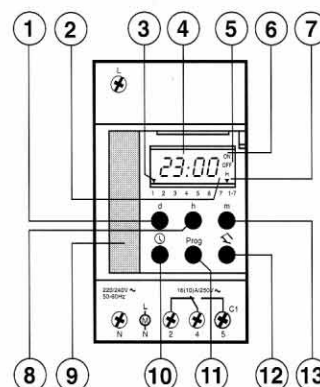
press simultaneously

**(d)** and **(h)** = + 1 hour  
(for change to summer time)

**(d)** and **(m)** = - 1 hour  
(for change to winter time)

#### Legend

- 1 - Day button.
- 2 - (ON - OFF) memory step number.
- 3 - Day indicator: 1 = Monday, 2 = Tuesday, etc.
- 4 - Time display.
- 5 - IHP status display: ON or OFF.
- 6 - Permanent operating mode indication (●).
- 7 - 7 day programming indicator (1 → 7).
- 8 - Hours button / holiday program.
- 9 - Instruction leaflet.
- 10 - Time display.
- 11 - Timetable scroll and memory entry button.
- 12 - Advanced switching and block programming button.
- 13 - Minutes button.



### programming

- indicate your desired ON and OFF time settings on the following table.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
1 ON							
1 OFF							
2 ON							
2 OFF							
3 ON							
3 OFF							

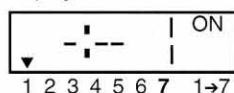
#### Caution:

The IHP automatically returns from "programming" mode to "time display" mode if no button is pressed for one minute.

**Note:** For a program with less than 6 time settings per day, or less than 7 days, simply press **(Prog)** without entering a time value to scroll through the unused settings.

### setting your times

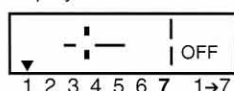
- press **(Prog)** to obtain the following display



the device is now ready for the first ON setting of Monday 1.

- enter the desired time by pressing **(h)** and **(m)**,

- press **(Prog)** to store the setting in memory. You will obtain the following display:

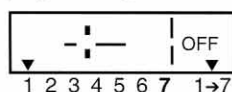


the device is now ready for the first OFF setting of Monday 1.

- enter the desired time by pressing **(h)** and **(m)**

- press **(Prog)** to store the setting in memory. Proceed in the same manner for the other ON and OFF settings for Monday and for the other days.

- block programming: if one or more time settings are found at the same time every day of the week, press the **(s)** key just after entering the time (the 7-day programming indicator is displayed).



- press **(Prog)**.

#### Checking and modifying the program

- scroll through the programmed ON and OFF time settings using the **(Prog)** button.

#### Reprogramming a given box

- press **(h)** then **(m)** then **(Prog)**;
- to clear the selected setting, press **(h)** and **(m)** together.

#### Advanced switching

- advanced switching may be obtained by:
  - pressing **(s)** (the program continues to run normally until the next time setting).

#### Overriding the program

- forced "ON" operation may be obtained by pressing once at the same time **(s)** and **(m)**



- permanent "OFF" operation may be obtained by pressing once again at the same time **(s)** and **(m)**

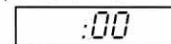


- return to the programmed operating mode may be obtained by pressing a third time simultaneously **(s)** and **(m)**; The point **(s)** should disappear.

#### Programming a holiday override

Holiday override OFF control, stopping the program for an adjustable period of 1 to 45 days.

- press **(h)**

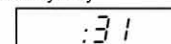


- keep **(h)** pressed during the following steps,

- set the holiday duration in days by

pressing **(s)** the required number of times,

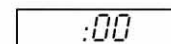
e. g. 31 times for:



- the override will start at midnight of the first day,



- you can cancel your holiday override by programming:



- the manual override control has priority over the holiday override settings.

# IHP programmable time switch

application guide

24-hr/7 days type cat. No. 15354

1 channel (42-setting memory capacity)

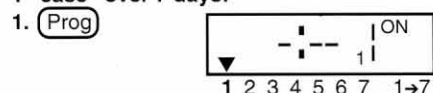
## setting your times

For repetitive timetables over a number of days.

■ example:

		Monday 1 2 3 4 5 6 7	Tuesday 1 2 3 4 5 6 7	Wednesday 1 2 3 4 5 6 7	Thursday 1 2 3 4 5 6 7	Friday 1 2 3 4 5 6 7	Saturday 1 2 3 4 5 6 7	Sunday 1 2 3 4 5 6 7
A	ON	6h00	6h00	6h00	6h00	6h00	6h00	6h00
	OFF	8h00	8h00	8h00	8h00	8h00	8h00	8h00
B	ON	6h00	6h00	6h00	6h00	6h00	6h00	6h00
	OFF	8h00	8h00	8h00	8h00	8h00	8h00	6h00

### 1<sup>st</sup> case - over 7 days:



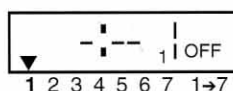
2. enter the desired time by pressing

(h) then (m)

3. then



4. then (Prog)



5. Enter the desired time by pressing

(h) then (m)

6. then



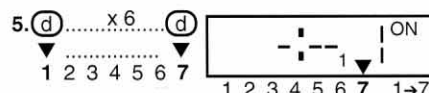
7. (Prog) then



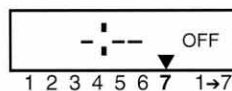
### 2<sup>nd</sup> case - Programming with OFF priority.

When an ON order and an OFF order are programmed the same time on the same day priority will be given to the OFF order. This procedure is particularly suited to programmes over 5 or 6 days (to be used in combination with block programming).

Steps 1 to 4: idem 1<sup>st</sup> case



6. then (Prog)



to modify the Sunday OFF setting to match the ON setting.

7. enter the desired time by pressing

(h) then (m)



8. (Prog) then

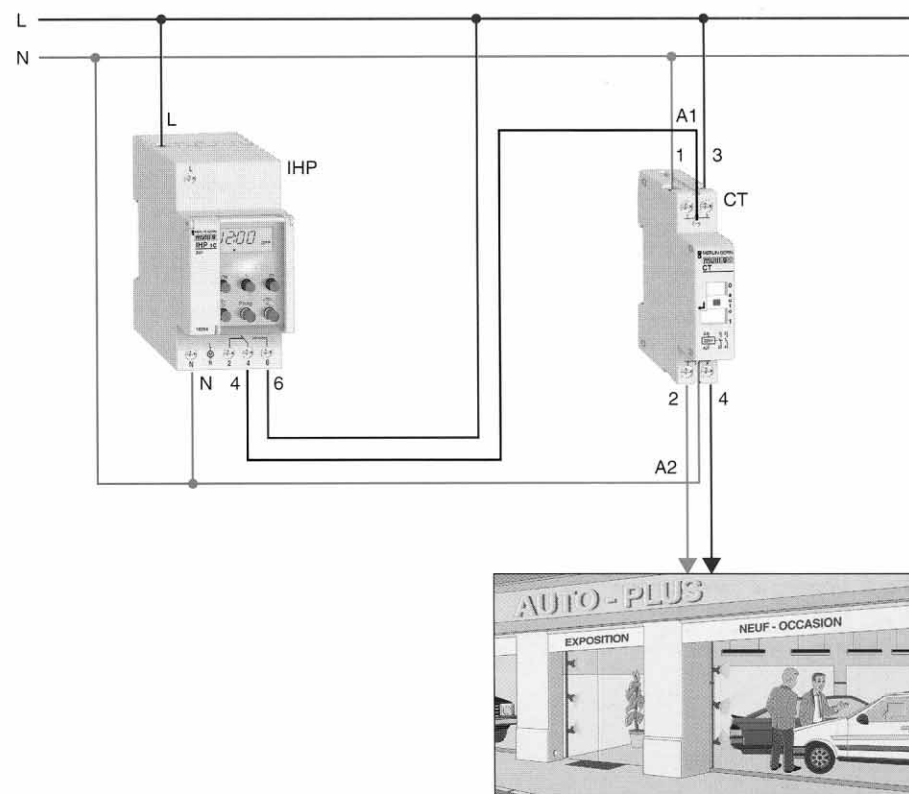


### Note:

This method increases programming possibilities to 42 steps for 7 days = 294 switching orders per week.

## example

Shop window lighting Tuesday to Saturday from 9h to 21h.



### recommendations for use

The light sensitive switches may be controlled directly up to the following power levels:

type of load	max. power (W)
incandescent lamp	1000
metal halide lamps 220 V	1000
fluorescent lamps:	
uncompensated, series compensated	800
parallel compensated	200
dual connected	800

high-pressure vapour discharge lamps: controlled via contactor

**Note:** loads with higher power levels must always be controlled via a contactor.

### brightness - levels

	IC200	IC2000/ IC2000P
		pos. 13 on -●
moonlight	2 lux	2 lux
rain, thunderstorm	20 lux	20 lux
dark clouds	35 lux	35 lux
		pos. 13 on -○
clouds	200 lux	200 lux
slight overcast	1000 lux	
sunlight	2000 lux	

### installation recommendations

#### ■ for the photocell:

- "panel front face" type: see fig. 2,
- "wall" type: see fig. 3,
- vertically fixed with two 4 mm dia. screws.

#### ■ for the IC unit:

- to avoid disturbed operation, do not install near magnetic fields,
- if possible, fit the device in the coolest part of the enclosure,
- on highly disturbed networks, use a separate power supply (if necessary with a filter).

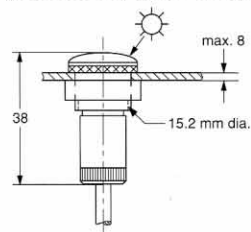


Fig. 2: Mounting of "panel front face" type photocell cat. No. 15281.

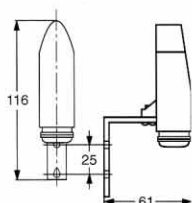


Fig. 3: Fixing of "wall" type photocell cat. No. 15268.

### connection

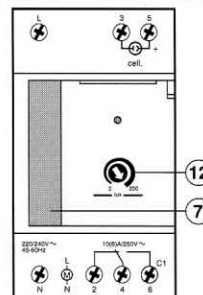
- do not run the photocell wires (100 m maximum) together with the power cables.

### IC200 adjustment

Luminosity threshold from 2 to 200 lux:

- turn potentiometer 12 between "2" and "200" until the desired adjustment is reached;
- the LED instantly lights up when the displayed threshold is reached.

**Note:** The switch is time delayed before switch ON and switch OFF. (approx. 40 sec.).

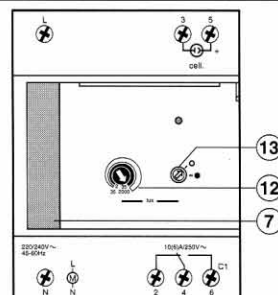


### IC 2000 adjustment

- luminosity threshold from 2 to 35 lux:
  - move selector switch 13 to position -●,
  - turn potentiometer 12 between "2" and "35" until the desired adjustment is reached.
- luminosity threshold from 35 to 2000 lux:
  - move selector switch 13 to position -○,
  - turn potentiometer 12 between "35" and "2000" until the desired adjustment is reached.

**Note:**

- the LED instantly lights up when the displayed threshold is reached;
- the switch is time delayed before switch ON and switch OFF (approx. 80 sec.).



### IC 2000P adjustment

- luminosity threshold: same as IC2000.
- programming: same as IHP cat. No. 15354.

The load is ON when the brightness decreases below the threshold setting.

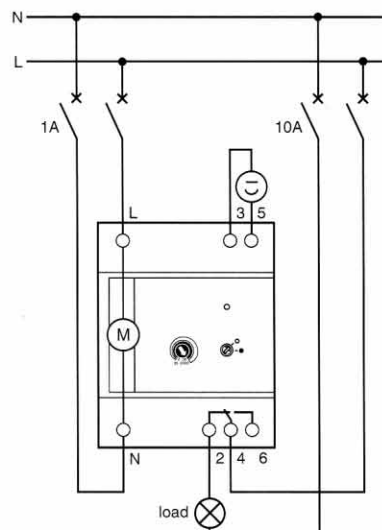
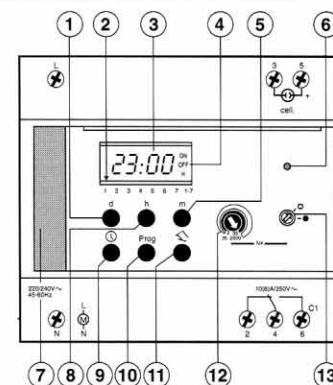


Fig. 4: Wiring diagram with contactor.



#### Front face of IC 2000P:

- 1 - Day button.
- 2 - Day indicator: 1 = Monday, 2 = Tuesday, etc.
- 3 - Time display.
- 4 - IC 2000P status display: ON - OFF  
I: permanent ON or OFF.
- 5 - Minutes button.
- 6 - Red light indicates operation without delay.
- 7 - Instruction leaflet.
- 8 - Hours button.
- 9 - Time / day setting or time / day display button.
- 10 - Timetable scroll and memory entry button.
- 11 - Advanced switching and block programming.
- 12 - Luminosity threshold setting.
- 13 - Adjustment range  
-● : 2 to 35 lux  
-○ : 35 to 2000 lux.

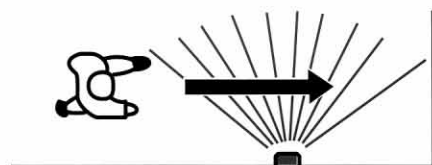


fig. 1

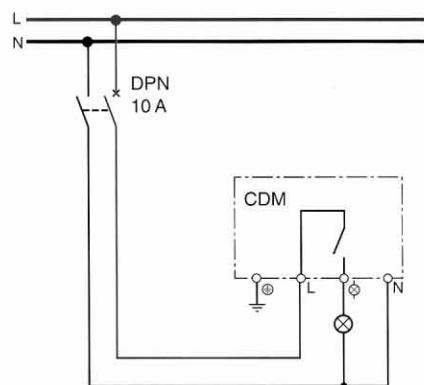


fig. 2

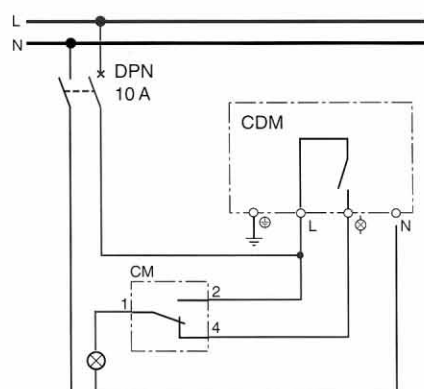


fig. 3

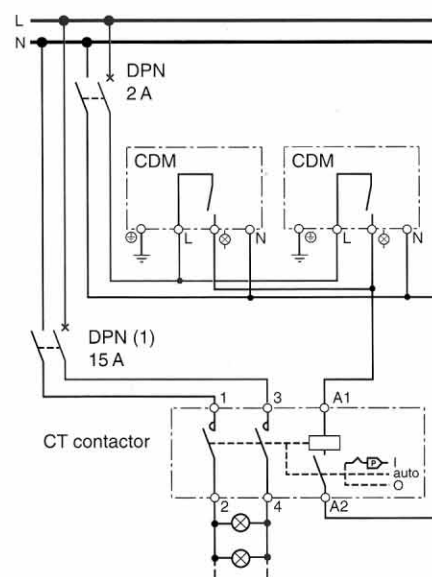


fig. 4

### use

The CDM is designed for automatic control of load operation (lighting) on detection of a presence.

It allows:

- in a home:

increased convenience of access at night as well as safety by dissuading intruders

- in a shop:

energy savings, by making animated window displays operate only on the approach of passers-by

- in a factory:

prevention of accidents by automatic lighting of dangerous areas.

### installation

For this device to operate in optimum conditions, the CDM must be installed at a height of 2.50m; passage must be perpendicular to the device's monitoring range (fig. 1).

### connection

- diagram (fig. 2): the CDM monitors and controls lighting of a sector

- diagram (fig. 3): use of a CM allows "ON" override or automatic operation of lighting of a sector

- diagram (fig. 4): several CDM connected in parallel can monitor and control an entire installation via a CT contactor.

Use of a CT contactor with manual control offers "ON" override control.

### operation

The optical lens fitted on the CDM (with its 12 m range) senses "invisible" infrared heat radiation emitted by people and other heat sources.

The CDM emits no radiation. It functions day and night according to the setting of its brightness detection threshold.

### system energisation

As soon as the CDM detects a person or a presence in the monitoring range, the output contact closes and the installation is energised.

### system de-energisation

When the person leaves the monitoring range of the CDM, the system is de-energised after a time delay adjustable from 4 seconds to 15 minutes.

Note:

- the time delay stops if the CDM detects another presence (movement of a person, variation in infrared heat radiation) while the time delay is in operation; lighting is maintained.

- the time delay starts again as soon as the person has left the CDM's monitoring range.

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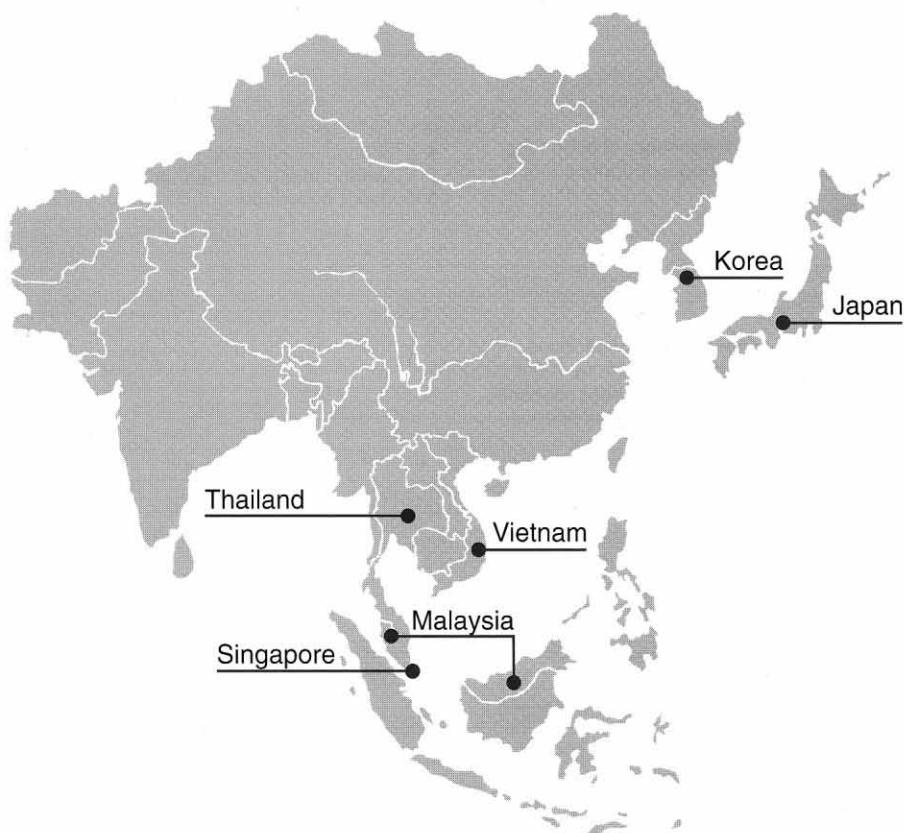
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