

# TECHNICAL INFORMATION



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# BTPLUG

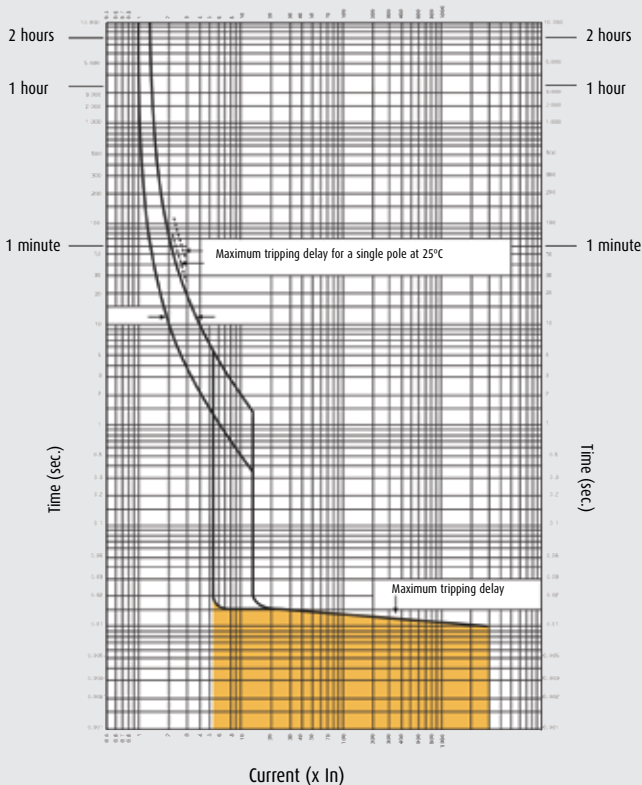
## บิทีพลัก

### BTPLUG THERMAL-MAGNETIC CIRCUIT BREAKER

	1P	2P	3P
Reference standards	IEC 60947-2	IEC 60947-2	IEC 60947-2
Number poles	1	2	3
Max operating voltage $U_{max}$ (V a.c.)		440	
Rating voltage $U_e$ (V a.c.)	240/415	240/415	240/415
Tripping characteristics		5 to 15 $I_n$	
Rating current $I_n$ (A) a 30°C		10,16,20,32,45,63,70,80,100	
Service breaking capacity		25% $I_{cu}$	
Rating insulation voltage $U_i$ (V a.c.)		500	
Rating frequency (Hz)		50/60	
Rating breaking capacity $I_{cn}$ (kA)	5 kA	10 kA	5 kA
Operating temperature (°C)		40	
Maximum number electrical operations		6000	
Maximum number mechanical operations		4000	
Protection degree (terminal area)		IP20	
Protection degree (elsewhere)		IP40	
Vibration resistance		3g-10÷55Hz for 30'	
Constant climate corrosion resistance (degrees centigrade/RH)		23/83 - 40/93 - 55/20	
Variable climate corrosion resistance (°C/RH)		25/95 - 55/95	
Abnormal heat and fire resistance (°C)		650 - 960	
Modular dimension (mm)	h=78,w=18.85,d=85.2	h=78,w=37.7,d=86	h=78,w=56.6,d=86
Fitting on DIN 35 rail		YES (with adapter)	
Maximum cross-section of connectable cable (flexible/rigid) (mm <sup>2</sup> )		TO 10/32 AMP. 6 AWG TO 45/100 AMP. 1/0 AWG	

### TRIPPING CHARACTERISTICS

Tripping characteristics



## Consumer unit for BTPLUG

### ตู้คอนซูมเมอร์ ยูนิท

#### CONSUMER UNIT

##### General

- 1) The range of insulated consumer units has maximum rating of 100 A.
- 2) For your safety, the cover is electrically connected with the consumer unit's body.

##### Cautions

- 1) The equipment must be installed and maintained by competent personal in accordance with the appropriate statutory regulations and accepted practice in the electrical industry.
- 2) Power sources must be electrically isolated, turn off and labeled during installation and maintenance.
- 3) It is the responsibility of the installer to ensure that all electrical connections are tight and that satisfactory earthing has been achieved.
- 4) The total current supplied by the Unit must not exceed the rating of the incoming Main breaker or any additional limitation (as shown on the unit). The total sum of the individual Circuit Breaker ratings may exceed this value where there is appropriate diversity on the installation.
- 5) The connection to each neutral terminal should correspond numerically to its outgoing branch Circuit Breaker circuit.
- 6) A circuit directory is provided on the cover below each circuit to enable each outgoing circuit to be identified.
- 7) Blank insert must be filled to cover any spare Main Circuit Breaker ways.

##### Terminal capacity and tightening torques

Conductor Cu/Al - 60/75°C	Torque
2.1 - 5.3 mm <sup>2</sup> (14-10 AWG)	2.3 N.m
8.4 mm <sup>2</sup> (8 AWG)	2.8 N.m
13.3 - 21.2 mm <sup>2</sup> (6-4 AWG)	3.1 N.m

### ตู้คอนซูมเมอร์ ยูนิท

#### ข้อมูลทั่วไป

- 1) พิกัดกระแสสูงสุดของ ตู้คอนซูมเมอร์ ยูนิท ไม่เกิน 100 แอมแปร์
- 2) เพื่อความปลอดภัยในการใช้งาน ฝาครอบด้านหน้าได้รับการดีไซน์ให้เชื่อมต่อทางไฟฟ้ากับตัวกลางที่มีสายดิน ป้องกันกระแสไฟฟ้ารั่ว

#### ข้อควรระวัง

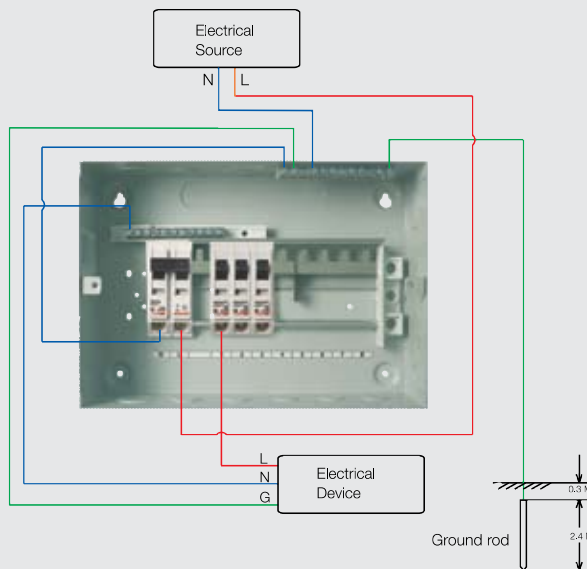
- 1) อุปกรณ์ทางไฟฟ้าต่างๆ ควรได้รับการติดตั้งและบำรุงรักษาโดยช่างไฟที่ผ่านการอบรมหลักสูตรตามมาตรฐานอุตสาหกรรมทางไฟฟ้า
- 2) ต้องตัดกระแสไฟฟ้าออกจากแหล่งจ่ายไฟ และติดป้ายแจ้งให้ผู้อื่นทราบระหว่างการปฏิบัติงาน
- 3) ผู้ติดตั้งจะต้องตรวจสอบความแน่นของสายไฟ และทดสอบว่าสายดินสามารถใช้งานได้จริง
- 4) กระแสไฟฟ้าที่จ่ายออกทั้งหมดรวมกันแล้ว ต้องไม่เกินพิกัดกระแสของเมนเบรกเกอร์หรือข้อจำกัดอย่างอื่น (กรุณาดูรายละเอียดจากด้านข้างของตัวเบรกเกอร์) และผลรวมของกระแส เซอร์กิตเบรกเกอร์ แต่ละตัวอาจจะเกินกว่าที่กำหนดไว้เมื่อมีการติดตั้งที่เหมาะสม
- 5) การต่อเชื่อมสายไฟที่สายกลาง ควรเรียงตามหมายเลขให้ถูกต้องตรงตามสายไฟที่ออกจากเซอร์กิต เบรกเกอร์ แต่ละตัว
- 6) ด้านในตู้คอนซูมเมอร์ ยูนิท มีหมายเลขของเบรกเกอร์ เพื่อให้ง่ายต่อการติดตั้งที่ถูกต้อง

ตารางแสดงการเลือกใช้เมนเบรกเกอร์ ให้สอดคล้องกับมิเตอร์ของการไฟฟ้า นครหลวง และภูมิภาค ที่มีเตอร์ขนาดไม่เกิน 30(100)

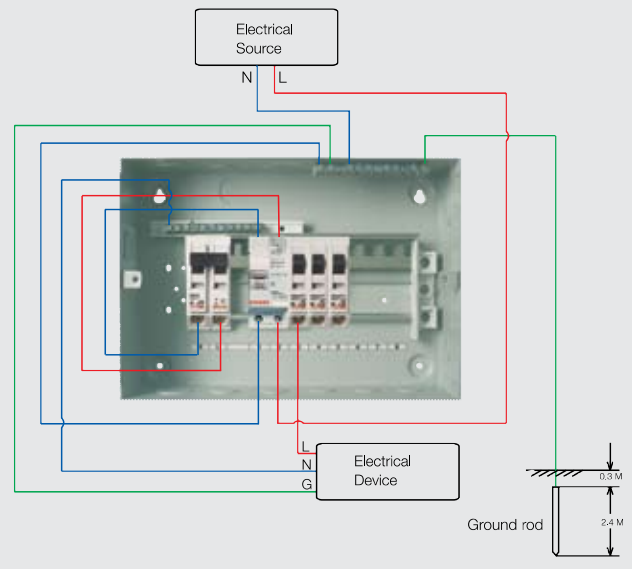
ขนาดเครื่องวัด มิเตอร์ (แอมแปร์)	พิกัดสูงสุดของเบรกเกอร์ เครื่องป้องกันกระแสเกิน (แอมแปร์)	โหลดสูงสุด (แอมแปร์)	รุ่นของเบรกเกอร์ ที่ใช้เป็นเมน (สูงสุด)
5(15)	15, 16	10	BTT2/16
15(45)	45, 50	30	BTT2/45 หรือ BTT2/50
30(100)	100	75	BTT2/100

#### CONNECTIONS FOR CONSUMER UNIT

##### Plug-in connection



##### RCD connection with plug-in circuit



# Consumer unit for BTPLUG

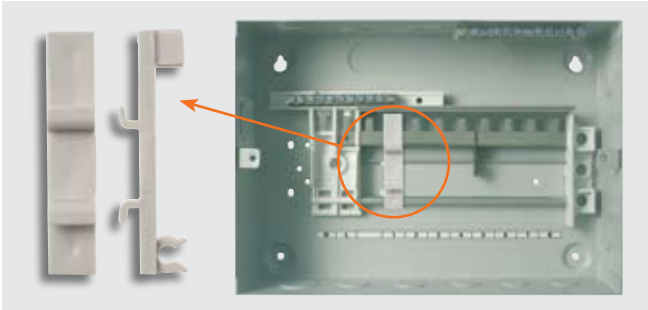
## ตู้คอนซูมเมอร์ ยูนิต

### ACCESSORIES FOR PLUG-IN TYPE CONSUMER UNIT

#### General

Adapter for DIN type can be fitted in any position along the Busbar and Aluminum rail with the exception of the first location adjoining to Main or intermediate Switch or Circuit Breaker. Adapter for cover is to be put on the edge of the Consumer Unit cover in the same position of DIN type Circuit Breaker.

อะแดปเตอร์ สำหรับอุปกรณ์ประเภท DIN



#### อะแดปเตอร์ คิท สำหรับอุปกรณ์เสริม DIN TYPE

##### ข้อมูลทั่วไป

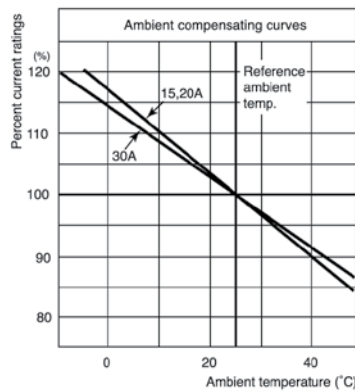
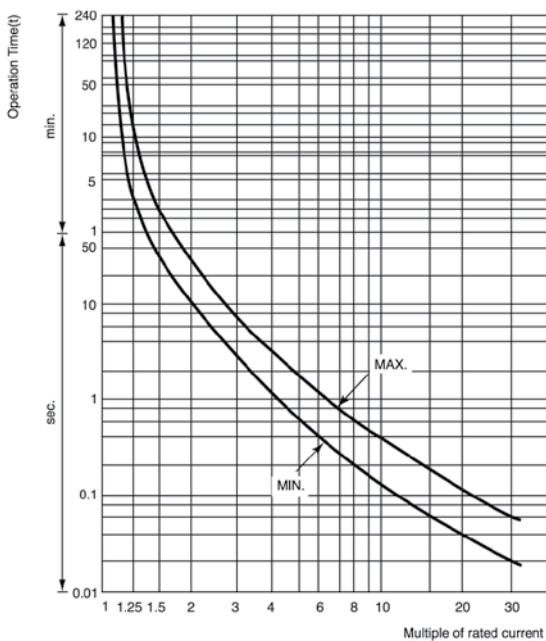
อะแดปเตอร์สำหรับอุปกรณ์ประเภทมาตรฐานเกาเซราง (DIN Standard) สามารถใช้ได้กับทุกตำแหน่งของบัสบาร์ และรางอลูมิเนียม ยกเว้นตำแหน่งแรกที่ติดกับเมนเบรกเกอร์ หรือระหว่างเซอร์กิต เบรกเกอร์ ส่วนอะแดปเตอร์ สำหรับฝาด้านหน้า ใช้วางบนฝาด้านหน้ากับเบรกเกอร์ในตำแหน่งเดียวกันกับการใช้อะแดปเตอร์สำหรับเบรกเกอร์ประเภทมาตรฐานเกาเซราง (DIN Standard)

อะแดปเตอร์ สำหรับฝาด้านหน้า



### BSB1/... SAFETY BREAKER

CATALOG NO.	BSB1/10	BSB1/15	BSB1/20	BSB1/30
Number of poles and elements	2P1E	2P1E	2P1E	2P1E
Rated current (A)	10	15	20	30
Rated Voltage (V)AC	220	220	220	220
Rated short circuit current (kA)	1.5	1.5	1.5	1.5
Weight (Kg)	0.1	0.1	0.1	0.1
Trip Mechanism	Thermal	Thermal	Thermal	Thermal



## EASYTIKER Technical data

### E100B/N/H

Technical characteristics	E100B	E100N	E100H	E100H
Number of poles	3P	3P	2P - 3P	1P
Nominal current I <sub>n</sub> (A)	15-100	15-100	15-100	15-100
Rated insulation voltage U <sub>i</sub> (V)	690	690	690	690
Rated impulse withstand current U <sub>imp</sub> (kV)	6	6	6	6
Rated operating voltage (50/60 Hz) U <sub>e</sub> (V)	600	600	600	600
Ultimate breaking capacity I <sub>cu</sub> (kA) IEC 60947-2	220/240V <sub>a.c.</sub>	25	40	25
	380/415V <sub>a.c.</sub>	10	20	35
	440/460V <sub>a.c.</sub>	10	15	30
	480/550V <sub>a.c.</sub>	7.5	10	20
	600V <sub>a.c.</sub>	5	5	10
Ultimate breaking capacity I <sub>cu</sub> (kA) NEMA AB-1	240V <sub>a.c.</sub>	25	40	25
	480V <sub>a.c.</sub>	7.5	10	20
	600V <sub>a.c.</sub>	5	5	10
Standard breaking capacity I <sub>cs</sub> (% I <sub>cu</sub> )	50	50	50	50
Utilization category	A	A	A	A
Suitable for isolation	YES	YES	YES	YES
Endurance (cycles)	mechanical	25000	25000	25000
	electrical at I <sub>n</sub>	8000	8000	8000
	electrical at 0.5 I <sub>n</sub>	10000	10000	10000

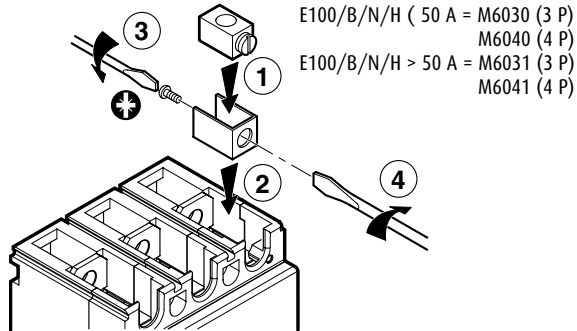
### E250B/N/H

Technical characteristics	E250B	E250N	E250H	
Number of poles	3P	3P	3P	
Nominal current I <sub>n</sub> (A)	125-250	125-250	125-250	
Rated insulation voltage U <sub>i</sub> (V)	690	690	690	
Rated impulse withstand current U <sub>imp</sub> (kV)	6	6	6	
Rated operating voltage (50/60 Hz) U <sub>e</sub> (V)	600	600	600	
Ultimate breaking capacity I <sub>cu</sub> (kA) IEC 60947-2	220/240V <sub>a.c.</sub>	35	50	65
	380/415V <sub>a.c.</sub>	18	25	36
	440/460V <sub>a.c.</sub>	15	25	30
	480/500V <sub>a.c.</sub>	10	15	20
	600V <sub>a.c.</sub>	7.5	10	15
Standard breaking capacity I <sub>cs</sub> (% I <sub>cu</sub> )	50	50	50	
Utilization category	A	A	A	
Suitable for isolation	YES	YES	YES	
Endurance (cycles)	mechanical	25 000	25000	25000
	electrical at I <sub>n</sub>	8000	8000	8000
	electrical at 0.5 I <sub>n</sub>	10000	10000	10000

## Connections and curves

### CONNECTION

#### Cable connection



#### E100B/N/H ( 50A

##### Flexible

2,5 → 16 mm<sup>2</sup>  
#14 → #6 AWG #

or

##### Solid

2,5 → 25 mm<sup>2</sup>  
#14 → #4 AWG #

#### E100B/N/H > 50A

##### Flexible

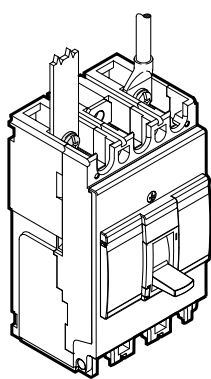
10 → 35 mm<sup>2</sup>  
8 → #2 AWG

##### Solid

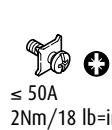
10 → 50 mm<sup>2</sup>  
8 → #1/0 AWG

2,5 to 4 mm<sup>2</sup> (# 14 to #10 AWG) flexible cables connection via crimped end-barrels

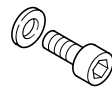
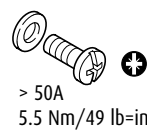
#### Busbar connection



M5x13



M8x12



M8 x 16

8...13 Nm/71...115 lb-in.

\* E100/B/N/H

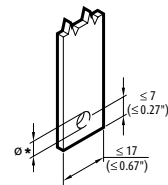
< 50A

> 50A

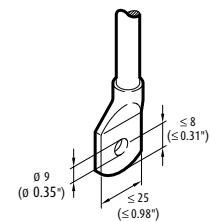
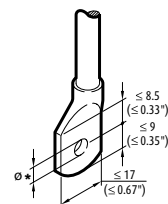
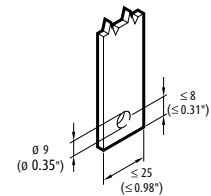
∅ 5,5/0,21"

∅ 8,5/0,33"

E100/B/N/H

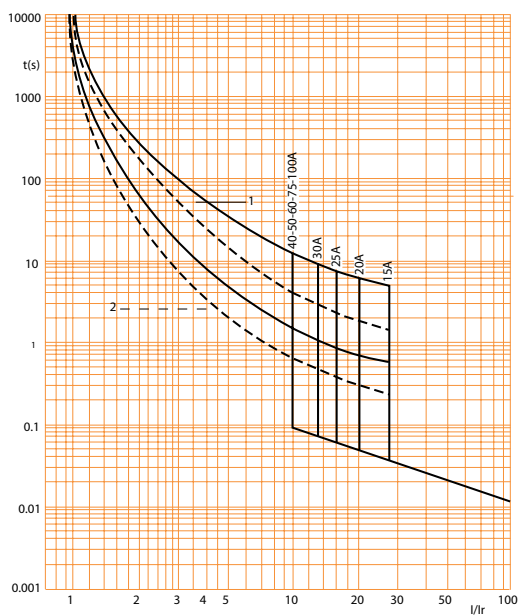


E250B/B/N/H

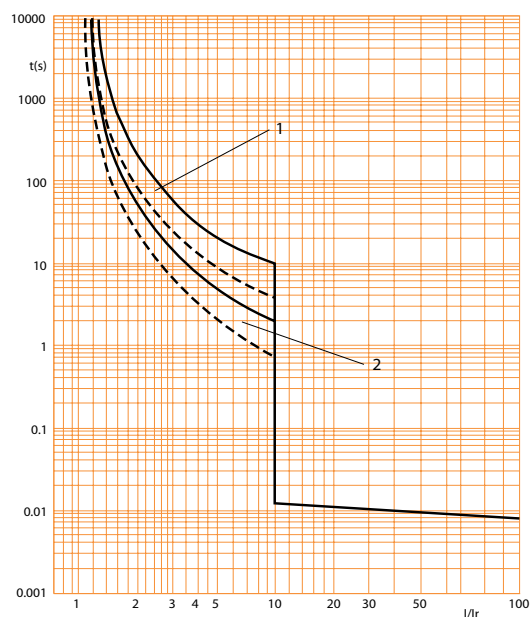


### CHARACTERISTIC CURVES

E100B/N/H In = 15÷100A 1P - 2P - 3P - 4P



E250B/N/H I<sub>max</sub> = 250A In = 125÷250A 3P - 4P



1 - Cold thermal trip zone  
2 - Hot thermal trip zone

# Load center

## โหลดเซ็นเตอร์

### GENERAL CHARACTERISTICS

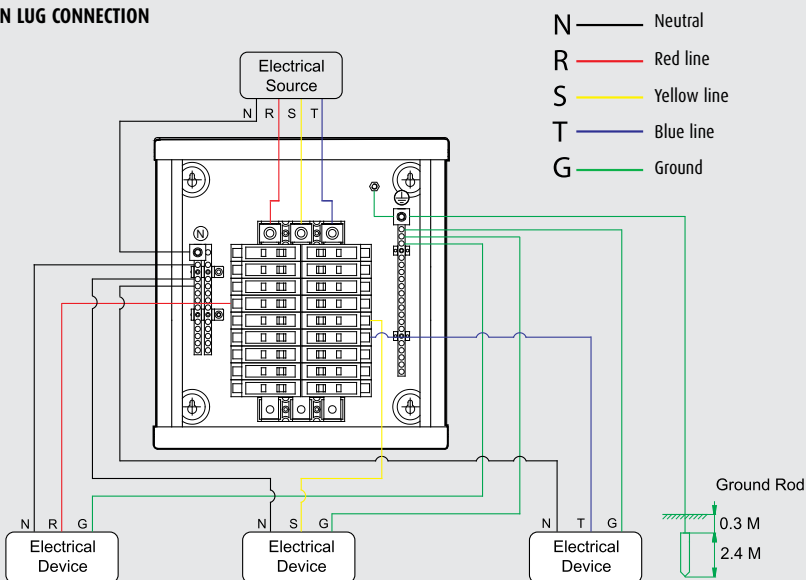
- Material: metal, in a thick spessor to avoid bending and breaking
- Coating: powder and paint coating to be more resistant and insulated
- Resistance to chemical agents
- Door with movable hinges, is reversible.

### ลักษณะทั่วไป

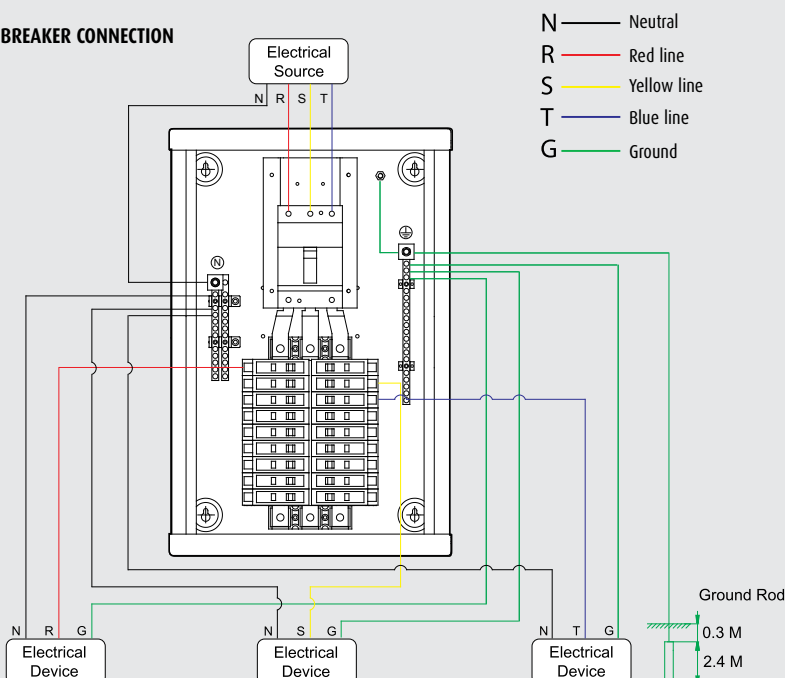
ผลิตจากวัสดุชั้นเยี่ยม โลหะหนา 1.2 มม. แข็งแรงทนทาน  
 ผ่านการพ่นและเคลือบด้วยสีกันฝุ่นกันสนิม (Epoxy powder coating)  
 และกันรอยขีดข่วน  
 ผ่านการเคลือบสารป้องกันสารเคมี  
 เลือกเปิดได้ทั้ง 2 ด้าน (ซ้ายหรือขวา)

### CONNECTIONS

#### MAIN LUG CONNECTION



#### MAIN BREAKER CONNECTION





## BTDIN general characteristics

บีทีดีน



### BTDIN THERMALMAGNETIC CIRCUIT BREAKERS

The Btdin modular circuit breakers for distribution boards ensure overcurrent protection in compliance with IEC 60898. Intended for use in domestic and similar environments, these devices are the ideal solution for overload and short circuit protection as well as for installation's isolation. The range of Btdin equipment comprises of circuit breakers with breaking capacity from 4.5 to 25 kA and current ratings from 0.5 to 125A in the B, C, D characteristic curves. Breakers are labelled 230/400Va.c. according to latest IEC standard voltages recommendation ( $\pm 10\%$  tolerance enables use of breakers with existing 240/415Va.c. systems). Owing to their high performance, these circuit breakers may also be used in industrial applications. Furthermore, the range of thermal-magnetic circuit breakers is complemented with assemblies that incorporate earth-leakage protection. These earth-leakage thermal-magnetic circuit breakers, conforming to IEC 61009-1, are available in the integral one-unit version (circuit breaker already assembled by the manufacturer) or in the combinable version (to be assembled by the installer), which can be carried out by selecting the various 2P, 3P and 4P thermal-magnetic circuit breakers with the diverse earth-leakage modules to set up the desired combinations.



### ONE-UNIT EARTH-LEAKAGE THERMAL-MAGNETIC CIRCUIT BREAKERS (RCBO'S)

The Btdin 45/60 circuit breakers are available in the version with integral earth-leakage protection. These devices have the same performance and characteristics of thermal-magnetic circuit breakers. They are available with 1P+N, 2P and 4P polarities and conform to IEC 61009-1. Earth-leakage thermal-magnetic circuit breakers are available with AC class characteristic, which ensures protection against a.c. earth fault currents, and with A class characteristic, which ensures protection against a.c. earth fault currents with pulsating d.c. components. All earth-leakage circuit breakers are insensitive to nuisance tripping due to transient overvoltages or lightning surges.



## EARTH-LEAKAGE CIRCUIT BREAKERS

### WITHOUT INCORPORATED OVERCURRENT RELEASES (RCCB'S OR ELCB'S)

The range of earth-leakage circuit breakers without incorporated overcurrent releases consists of two-pole and four-pole devices conforming to IEC 61008-1. The new earth-leakage circuit breakers have the same design and size as the thermal-magnetic circuit breakers, and can be combined, through an interface module, with the same electrical accessories (contacts, trips and releases) that can be fitted to thermal-magnetic circuit breakers. They are available with current ratings from 16 to 80A in the A, AC, S (type A) classes and may be used with Tifast combs and Tifast modules cabling systems. All earth-leakage circuit breakers are insensitive to nuisance tripping due to transient overvoltages or lightning surges.

### BTDIN MAIN CHARACTERISTICS

Btdin thermal-magnetic and earth-leakage circuit breakers have a series of features that improve their performance and make their installation easier.

The main features are:

- ergonomic handle that indicates the state of the contacts; the contacts position is signaled by red and green flag indicators on the handle;

- incorporated labeling holder that allows to easily identify the protected circuits without having to use additional identification systems;

- double DIN hook; makes maintenance and removal of the equipment installed on DIN rails easier;

- double terminal. All Btdin circuit breakers, except the 1P+N 1-module thermal-magnetic version, are equipped with a double terminal which allows both the traditional cable connection and the plug-in connection for the coordination with the Tifast combs system;

- suitable for isolation. The thermal-magnetic and earth-leakage thermal-magnetic circuit breakers are suitable for isolating the installation in compliance with IEC 60898;

- common accessories for the entire range. Accessories such as auxiliary contacts, alarm contacts, trips and releases are the same for all circuit breakers.

- Up to three electrical accessories may be fitted to every circuit breaker;

- common design for the entire range, uniform for all the equipment.

## BTDIN

### บิติติน

#### BTDIN Residential Termomagnetic switches

#### BTDIN FE




#### BTDIN 100



Reference standard	IEC 60898	IEC 60898-IEC 60947-2
N° poles	1P - 2P - 3P	2P - 3P
N° modules	1 - 2 - 3	2 - 3
Tripping characteristics	C	C
Max operating voltage U <sub>max</sub> (V a.c.)	440	440
Rating insulation voltage U <sub>i</sub> (V a.c.)	500	500
Rating frequency (Hz)	50 - 60	50 - 60
Rating breaking capacity I <sub>cn</sub> (kA)	6	10 - 15
Operating temperature (°C)	-25÷60	-20÷60
Protection degree (terminal area)	IP20	IP20
Upper/lower supply	Yes	Yes
Maximum number electrical operation	10000	10000
Maximum number mechanical operation	20000	20000
Fitting on DIN 35 rail	Yes	Yes
Maximum cross-section of connectable cable (flexible/rigid) (mm <sup>2</sup> )	25/35	25/35

#### BTDIN Btdin earth-leakage circuit breaker without overcurrent releases



Type	A 	
Reference standards	IEC 61008-1	
<b>No. poles</b>	<b>2P</b>	<b>4P</b>
No. modules	2	4
Rating current I <sub>n</sub> (A) a 30°C	16	25
	25	40
	40	63
	63	80
	80	
Differential rated current I <sub>Δn</sub> (A)	0,01	0,03
	0,3	0,5
Rating voltage U <sub>e</sub> (V a.c.)	230/400	400
Max operating voltage U <sub>max</sub> (V a.c.)	440	
Rating insulation voltage U <sub>i</sub> (V a.c.)	500	
Minimum test button voltage U <sub>min</sub> (V a.c.)	100	170
Rating frequency (Hz)	50-60	
Differential breaking capacity I <sub>Δm</sub> (kA)	1,5	
Operating temperature (°C)	-25÷60	
Maximum number electrical operations	10000	
Maximum number mechanical operations	20000	
Protection degree (terminal block area)	IP20	
Protection degree (elsewhere)	IP40	
Maximum cross-section of connectable cable (flexible/rigid) (mm <sup>2</sup> )	25/35	

## CONSTRUCTIVE CHARACTERISTICS OF BT DIN

### 1. Magnetic coil

Guarantee the trip of the breaker in case of short-circuit, intervening within the following ranks.

- from 5 to 10 times of the nominal curve (curve type C)
- from 10 to 20 times of the nominal curve (curve type D)

### 2. Bimetal

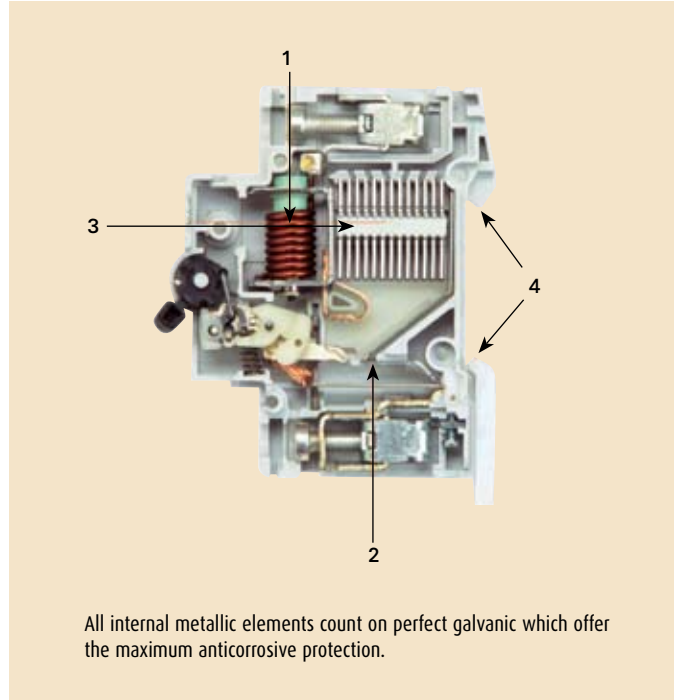
Guarantee the trip of the breaker in case of current overload.

### 3. Breaking chamber

Contain effectively an electric arch which is generated by the contacts when they open or when the tripping mechanism intervene in presence of an overload or short-circuit.

### 4. Fitting in rail Din 35

- Modular dimensions
- Simultaneous tripping mechanism in all poles.
- Independent shoot of the mechanism of connection.
- Guaranteed usable life until 20,000 mechanical operations and 10,000 electrical operations.
- Temperature of employment 25 - 55 °C
- resistance to the temperature increment according to standard IEC 60898 (glow wire test at 960 and at 650 °C)
- Resistance to the corrosion.
- Resistance to the mechanical impact in any direction  
20 g - 18 hits - during 10 m.  
40 g - 18 hits - during 5 m.
- Resistance to vibrations according to standard IEC 68 - 8 - 35 and the norm of CEI 50 - 6: 3 g - 10 at 55 Hz. during 10 min.
- Isolation tension 500 V.



## BT DIN'S COMPLIANCE WITH STANDARDS

Btdin equipment is manufactured in compliance with specific standards:

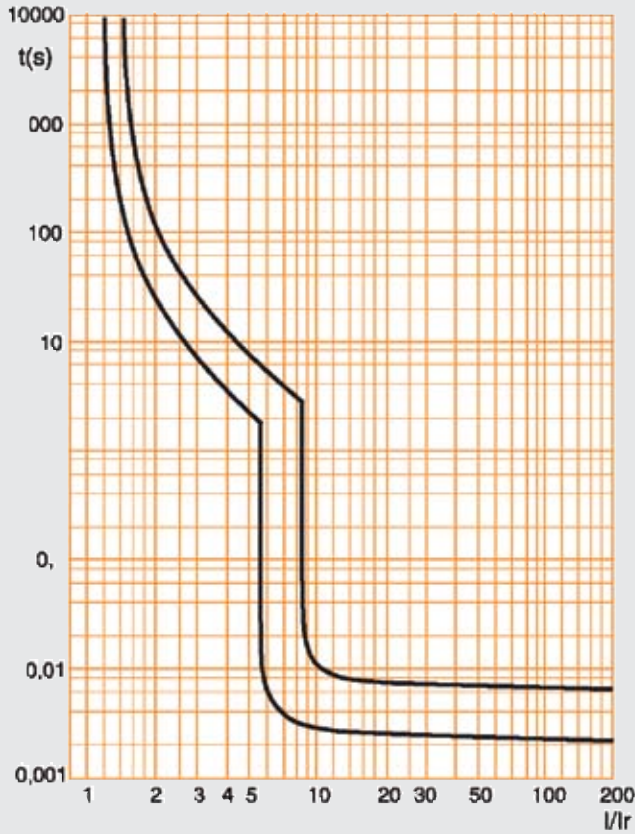
Thermal-magnetic circuit breakers	IEC 60898
Simple earth-leakage circuit breakers	IEC 61008-1

Furthermore, they comply with the specific standards of the main countries.

CEI	IEC	IEC	VDE	BS	UTE	UNE
EN 60898	60898	60947-2	0641	EN60898	61-410	EN60898

# Curve of thermo-magnetic intervention

CHARACTERISTIC CURVE OF THERMO-MAGNETIC INTERVENTION



Characteristic of intervention given starting from cool to temperature of referente

$I$  = Effective current

$I_r$  = Nominal current of the switch

Temperature of reference 30°C

## Differential Protection

### การป้องกันกระแสไฟฟ้าเข้าร่างกาย

#### GENERAL CHARACTERISTICS

At home or in office we use an electrical installation and different equipments, for examples, the electro domestics devices, lamps, motors, etc. Their use is so daily and frequently that hardly ever we think about the risk that the electricity imply and the possibility of fault in the isolation of those devices (direct or indirect contact)

The fault of isolation of equipment can be originated by multiples causes for example a long-time use or a damage of isolated material of the equipment, which originate a leak of current that can circulate through the human body provoking serious harm and including the dead by electrocution.

The differential switch is a protection device whose function is to direct any current leak, caused by the fault of isolation between an energized conductor and ground, automatically interrupting the alimentation immediately, assuring the security of personal.

#### ลักษณะทั่วไป

อุปกรณ์ไฟฟ้าทั่วไปที่ใช้ในชีวิตประจำวัน ทั้งที่บ้านและสำนักงาน มีโอกาสที่จะเกิดกระแสไฟฟ้ารั่ว อุปกรณ์ไฟฟ้าจะช่วยทำการป้องกันโดยการตรวจจับกระแสไฟฟ้าที่รั่วแล้วทำการตัดกระแสไฟฟ้าเพื่อป้องกันกระแสไฟฟ้าลัดวงจร และไฟฟ้าดูดที่อาจทำอันตรายถึงแก่ชีวิตได้

#### THE EFFECTS OF ELECTRICAL CURRENT IN HUMAN BODY

It is called the direct contact when the person directly touch the metallic part normally under-tension : an energized cable with deteriorate isolation, terminals of connection or electrical equipment.

It produces an indirect contact when a person touch the metallic parts that normally has no tension but in case of an isolation fault that sometimes it could be under tension, for example; a metallic coverage of an electro domestic, of an electrical tool, etc.

In both cases, the human body or part of it forms a part in electrical circuit and act like a resistance, in which the current known as leak current circulate, that can cause not only serious injure to the organism but also death.

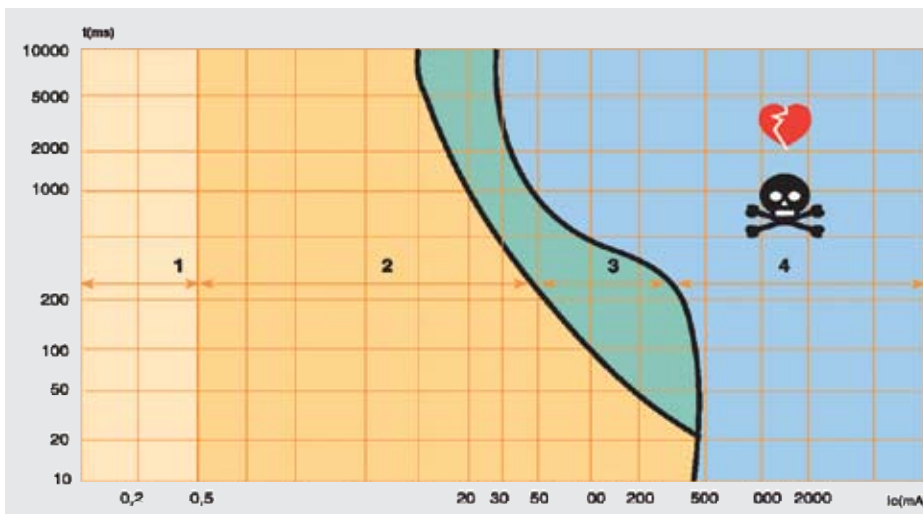
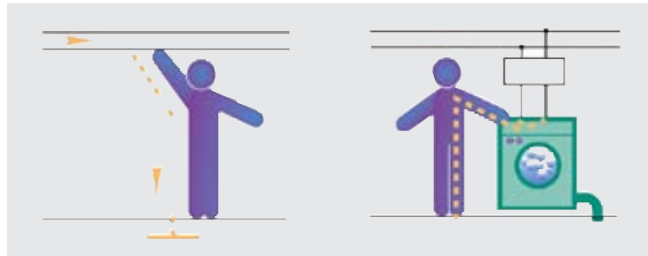
The magnitude of the physiological that provoke the electrical current directly depend on the amount of the current and the time that it is circulating through the human body. Depending on these two factors, the physiological effect that could be from light tickling till muscular contractions, respiratory stoppage, fibrillation ventricular, severe burnt, and including cardiac stoppage, that is shown in the following table:

#### ผลกระทบของไฟฟ้ารั่วต่อมนุษย์

การรั่วของกระแสไฟฟ้าสามารถเกิดขึ้นได้ใน 2 ลักษณะ

- 1) บุคคลสัมผัสโดยตรงกับอุปกรณ์ไฟฟ้าในส่วนที่เป็นโลหะ
- 2) สัมผัสโดยทางอ้อม เช่น วัสดุที่ห่อหุ้มที่เป็นโลหะ

ทั้ง 2 กรณีร่างกายของเราเป็นตัวนำไฟฟ้าลงสู่ดิน ซึ่งทำให้เกิดอันตรายถึงแก่ชีวิตได้ขึ้นอยู่กับลักษณะและปริมาณของกระแสไฟฟ้า



1. Generally non reaction
2. Generally non danger physical effect
3. Probability of muscular contraction and respiratory problem, respiratory stoppage(reversible)
4. Besides those zone 3 effect, fibrillation ventricular (unreversible)

Other important aspect to consider, that the fault of isolation in an conductor could also create a fire or explosion, the same that can be avoided in case of the leak current is rapidly detected and interrupted by differential protection.

# Pure differential switch (RCD) - Ground Fault

## อุปกรณ์ป้องกันไฟดูดและไฟรั่วลงดิน

### GENERAL CHARACTERISTICS

Pure differential switch is a device of protection against a leak current to ground provoked by equipments or installations with deteriorated isolation or by direct contact. With nominal values of differential current from 0.01 to 0.5 A and its characteristics of being insensible as much for the transitory of the network as for the disturbance of atmospheric origin, allow its application in any sector, both in commercial or residential. The "Test" button in the frontal part permit a periodically verification for its correct functioning.

### Applications

At home, office, school, commerce

- Residential area in the open-air, garage, bath, Jacuzzis, and in places near swimming pool.
- In exposed place like construction work, fairground, etc.
- Protection of equipments and installation from the fault of the isolation in conductors.

### ลักษณะทั่วไป

เป็นอุปกรณ์ที่ได้รับการออกแบบมาเพื่อป้องกันกระแสไฟฟ้ารั่ว อันเนื่องมาจากอุปกรณ์เครื่องมือที่ติดตั้งอย่างไม่เหมาะสม ซึ่งอาจทำให้เกิดอันตรายจากการสัมผัสโดยตรงได้ โดยการตรวจจับค่ากระแสไฟฟ้ารั่ว แม้เป็นการรั่วที่เล็กน้อยระหว่าง 0.01-0.5 แอมป์ และมีปุ่มทดสอบ เพื่อทำการทดสอบอุปกรณ์ว่ายังใช้งานได้ตามปกติหรือไม่

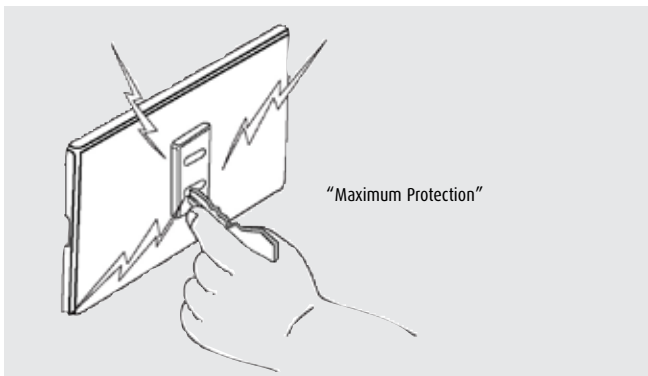
### ลักษณะการใช้งาน

สามารถใช้งานได้ทั้งที่บ้าน สำนักงาน โรงเรียน และอาคารพาณิชย์ ซึ่งเป็นอุปกรณ์ที่เหมาะสมกับสถานที่ที่ต้องการการควบคุมวงจรที่มีโอกาสเกิดไฟรั่ว เช่น อ่างอาบน้ำ สระว่ายน้ำ และเตารับไฟฟ้านอกอาคาร เป็นต้น

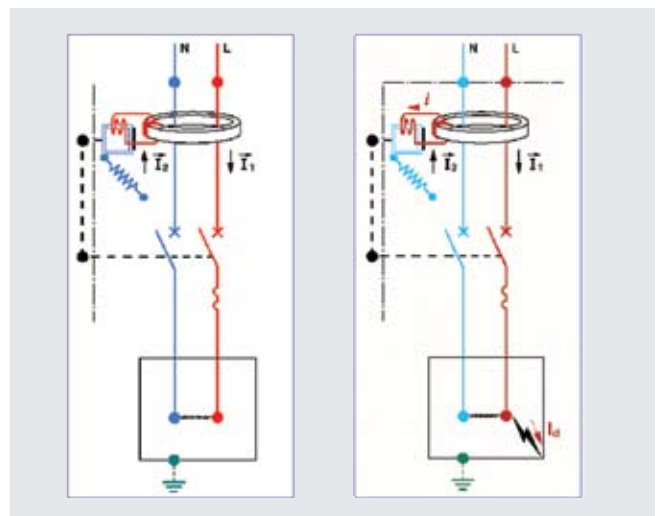
### TECHNICAL CHARACTERISTICS

Reference standard	CEI EN 61008-8	CEI EN 61008-1
N° Poles	2P	4P
N° modules	2	4
Tripping characteristic	AC	AC
Rating current $I_n$ (amp) at 30 °C	16 -25-40-63	25-40-63
Rating differential current $I_{\Delta n}$ (amp)	0.01-0.03-0.3-0.5	0.03-0.3-0.5
Maximum operating voltage $U_{max}$ (V a.c.)	440	440
Rating isolation voltage $U_i$ (V a.c.)	500	500
Minimum test voltage (V a.c.)	100	170
Rating frequency (Hz)	50-60	50-60
Interruptive capacity $I_{\Delta n}$ (kA)	1.5	1.5
Operating temperature (°C)	-25 to 60	-25 to 60
Protection degree (terminal area)	IP20	IP20
Maximum number of electrical operation	10000	10000
Maximum number of mechanical operation	20000	20000
Section of maximum conductor allowance	35 mm <sup>2</sup> (2AWG)	35 mm <sup>2</sup> (2AWG)

ความปลอดภัยสูงสุด



วงจรภายในของอุปกรณ์ป้องกันไฟรั่วลงดิน



## Fuse cartridge for installation in rail Din

### กล่องฐานฟิวส์

#### SECTIONAL FUSE CARTRIDGE

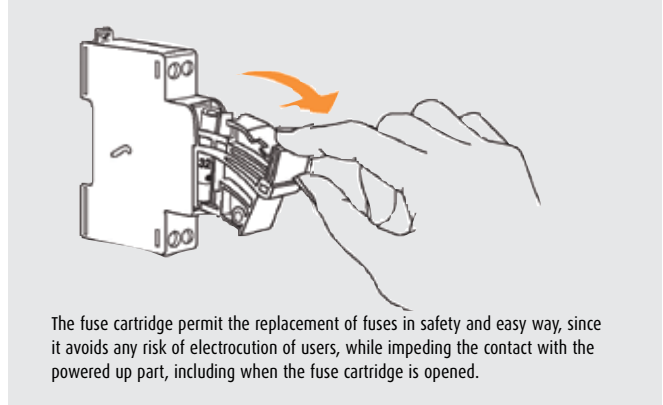
The design of the fuse cartridge Btdin, make possible an immediate access from the front of the cabinet or board where it is installed, permitting the replacement of the fuse without the need of realize risky manoeuvring within the cabinet.

The sectional fuse cartridge is manufactured in auto-extinguishable resin that avoid flame propagation.

All fuse cartridge of entire module is able to be connect to a Tifast comb.

#### Applications

- Measurement circuit
- Control circuit
- Electronic equipment: electronic card, PLC's sensors, Computer, etc.



The fuse cartridge permit the replacement of fuses in safety and easy way, since it avoids any risk of electrocution of users, while impeding the contact with the powered up part, including when the fuse cartridge is opened.

#### TECHNICAL CHARACTERISTICS

Reference standard	CEI EN 60947-3	IEC 269-3-1	
N° Poles	1P	2P	3P
N° modules	1	2	3
Rating operating voltage Vn (V a.c.) Type T	400	400	400
Rating isolation voltage Ui (V a.c.)	500	500	500
Impulse nominal tension Vim <sub>p</sub> (kV)	6	6	6
Rating current In (amp) Type T	20	20	20
Short-circuit current Type Tlcc conditioning (kAmp)	20	20	20
Operating temperature (°C)	-10 to +40	-10 to +40	-10 to +40
Dissipating power per pole (W)	4	4	4
Protection degree (terminal area)	IP2	IP2	IP2
Maximum number of mechanical operation	2000	2000	2000
Section of maximum conductor allowance	35 mm <sup>2</sup> (2AWG)	35 mm <sup>2</sup> (2AWG)	35 mm <sup>2</sup> (2AWG)



## Twilight switch

อุปกรณ์ตั้งเวลาควบคุมแสงสว่าง

### TWILIGHT SWITCHES

#### APPLICATION

Set programs to switch on lighting (time setting)  
Light of bill boards

#### VERSIONS AVAILABLE

- Simple with a separate photo detector
- Can be programmed daily and weekly with reserve load at a separate photo detector

#### PROGRAMMING OF ITEM F11/8P

- Actual time set up
- Date set up
- Summer/winter time set up
- Memory set
- Program switches (from 20 to 56)
- Cancellation program
- Correction program
- Temporary operating switch
- Permanent operating switch

#### TECHNICAL CHARACTERISTICS

N° of module	2
Rating voltage Vn (Va.c.)	230
Type of contact	1NO/NC (10A) (art. F11/8P) 1NO (5A) (item F11/1P)
Rating frequency (Hz)	50÷60
Back up charge (ore)	100 (item F11/8P)
Minimum set up (min)	1
Type of photo switch	IP55
Temperature (°C)	-10÷40
Threshold of adjustable light (lux)	0.5÷2000 (item F11/1P) 2÷2000 (item F11/8P)
N° of program	8 (item F11/8P) 1 (item F11/1P)
Minimum communication (min)	1
Maximum flexible/rigid wire connectable collegabile (mm <sup>2</sup> )	6

#### CHARACTERISTICS

- Regulation of the threshold of lumination
- Manual program (only F11/8P)
- Manual and automatic function (only F11/8P)
- Operated with incandescent, fluorescent, alogen lamps
- Circuit control independently from input

## Timers and electronic timers

### อุปกรณ์ตั้งเวลาควคุมแสงสว่าง

#### TIMER FOR STEP-WELL LIGHT WITH SWITCH OFF DEVICE

##### APPLICATION

Timer for step-well light, storage room or public space

##### VERSION

- Simply pre-set up turn off
- Simply timers for step-well light
- Timer plus pre-set up turn-off

##### CHARACTERISTICS

- Electronic devices
- Timers programmed from 30 sec. to 12 minutes (depend on version)
- Automatic or manual operation by mean of a front switch AUTO-MAN auto position: the switch is delayed; MAN position: the light is switched until it is manually switched off)
- Maximum time to turn on the light independently from timer: one hour
- The switch off device causes the light intensity to drop slowly, so that the user knows that the light will be soon switched off. This time is summed to the time pre-set in the timer

##### TECHNICAL CHARACTERISTICS

N° of module	1÷2
Nominal voltage di impulso Uimp (kV)	4
Nominal voltage Vn (Va.c.)	230
Tensione nominale di isolamento Ui (Va.c.)	250
Nominal current at output contact (A) (230Va.c. cos $\phi$ =1)	16 (5 for item F25P)
Type of contact	1NO
Nominal frequency (Hz)	50÷60
Time set up	30s÷12min (30s ÷ 10 min item F25/230)
Preavviso di spegnimento (s)	40 (item F25P) 20 (item F25/230P)
Operating temperature (°C)	-10÷40
Maximum n° of turnover	30.000
Protection level (morsetti/altre zone)	IP20
Maximum cable section (flexible/rigid) connected (mm $^2$ )	6 (2x2.5 item F25P)

#### ELECTRONIC TIMER

##### APPLICATION

Timer for common areas lighting, gate opening/closing, switch on/off display, the, the heat and air-condition installaiton system

##### VERSION

**Function C (Cycle):** allows to activate and disactivate by circle round

**Function E (delayed start):** tension of delay load and timer begin the same moment in which it comes fed the timer.

**Function T (command):** timer depends on closing the contact bistabile or a button connected at timers

**Function D (the delay in switch can be retriggered by a pulse command an indefinite number of times):**

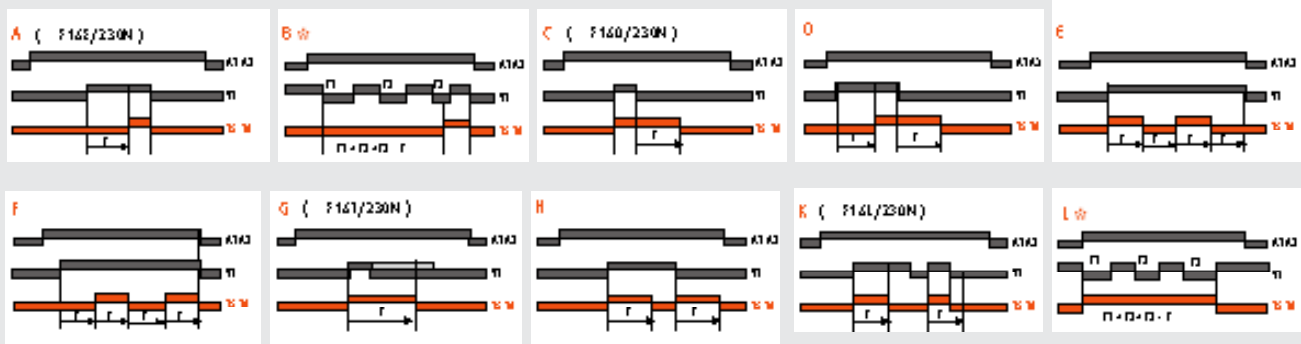
similar operating system to function T with some difference that the load is switched on on the falling edge of the trigger. The timer is reset to zero at each trigger of the controlling switch.

**Multifunction:** 10 programmer of timers

##### TECHNICAL CHARACTERISTICS

N° of module	1
Norminal voltage Vn (Va.c./d.c.)	12÷230
Voltage operating	85÷115%Vn
Tensione nominale di isolamento Ui (Va.c.)	250
Power of open (VA)	1250 (30W)
Interruption current (A)	0.01÷8
Contact	1NO (5A)
Norminal frequency (Hz)	50÷60
Regolazione temporizzazione	0.1s÷100 hrs.
Fattore di marcia	100%
Maximum absorb power (W)	0.5 (12Vd.c.) - 1.4 (230Va.c.)
Repetition precision	±0.2%
Maximum n° of turnover	10.000.000
Maximum riaming time	200
Minimum pulse time (ms)	50
Maximum cable section (flexible/rigid) connection (mm $^2$ )	2.5

#### F16M/230N (multifunction timer with 10 pregrams available)



\* Opening (function L) or closure (function B) of output contact 15-18, it controls when interrupt time T1+T2+...Tn) of command circuit Y1 is major or same with T set-up timer. To concur the next ricolosure of output contact is necessary tot take out input of timer (A1-A2).

# Analog and digital timer

## อุปกรณ์ตั้งเวลา

### ANALOG TIMER

#### APPLICATION

Programmazione orari di attivazione illuminazione  
 Heating/air-condition system  
 Irrigation activated system  
 Turn-on program by light

#### VERSION

- Vertical day panel with back-up charge (item F66GR/1)
- Vertical day panel without back-up charge (item F66G/1)
- Horizontal day panel with back-up charge (item F66GR/3)
- Horizontal day panel without back-up charge (item F66G/3)
- Horizontal week panel with back-up charge (item F66SR/3)

#### CHARACTERISTICS

- Electromecanic timer switches
- Program with unloosable clip
- Manual/automatic function
- Normal opened output contact

#### TECHNICAL CHARACTERISTICS

N° of module	1÷3
Nominal voltage Vn (Va.c.)	230
Type of contact (16A)	1NO (F66.../1) 1NO/NC (F66.../3)
Nominal frequency (Hz)	50÷60 (50Hz per art. F66G/1 e F66G/3)
Back up charge (hour)	100
Minimum set up time (min)	15 (2 ore - F66SR/3)
Precision (min)	±5 (±30 - F66SR/3)
Maximum flexible/rigid wire connectable (mm <sup>2</sup> )	2.5

## DIGITAL TIMER

### VERSION

- Delay charge back up
  - Both day and week timers have a back up charge and input to connect external switches with priority
  - Timer will be started once the entrance of command (input)
  - This external signal is connected in logic "OK" with the internal signal (item F67WF/21)
  - Daily and weekly charge back-up
- Characteristics
- Digital electronic timer switch
  - Menu program
  - Manual/automatic function

### TECHNICAL CHARACTERISTICS

N° of module	1-2-6
Nominal voltage Vn (Va.c.)	230
Type of contact (16A)	1NO/NC 2NO/NC (F67W/22) 4NO/NC (F67SR/64)
Nominal frequency (Hz)	50÷60
Back up charge (ore)	100 (art. F67SR/...) 20 (art. F67D/21) 6 anni (art. F67W...)
Minimum set up time (min)	1 (1s art. F67SR/64)
Precision (min)	±2.5
Operating temperature (°C)	-10÷40
Memory type	Eeprom (riserva di carica per art. F67SR/...)
N° of program	8 (art. F67SR/11) 20 (art. F67D/21) 56 (art. F67SR/64 - F67W/...)
Precision (min)	±5 (±30 - F66SR/3)
Maximum flexible/rigid wire connectable (mm²)	4

### APPLICATION

Programmazione orari di attivazione illuminazione  
Gestione impianti di riscaldamento/condizionamento  
Irrigation switch ON/OFF  
Programmazione accensione insegne luminose

### TYPE OF PROGRAM

#### Program of item F67W/21, F67W/22, F67WF/21, e F67D/21

- Actual time set up
- Date set up
- Summer/winter time set up
- Memory reset
- Switch program (from 20 to 56)
- Cancellation program
- Correction program
- Temporary switch ON/OFF
- Permanent switch ON/OFF

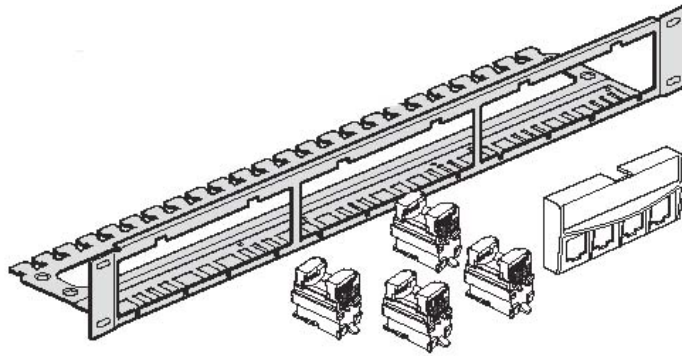
#### Program of item F67SR/11 e F67SR/64

- Actual time set up
- Date set up
- Summer/winter time set up
- Memory reset
- Repeating program for everyday
- Repeating program from Monday to Friday
- Single program for every
- Switch program (from 8 to 56)
- Cancellation program
- Correction program
- Temporary switch ON/OFF
- Turn ON/OFF switch by setting n° of days
- Program for Sunday

## BTNET

### C9024/5TA

19" Unshielded preload patch panel cat. 5E - 24 ports



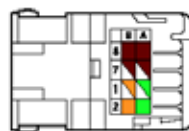
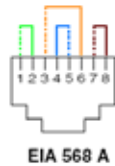
#### General characteristics C9024/5TA

- Patch panel 1U RACK
- 6 Modules with 4-port modular with individually replaceable jacks RJ45
- 24 modular jack RJ45 UTP cat. 5E toolless for AWG24 – AWG22 conductors
- Type of connections: T568A o T568B
- Installation accessories: not required
- With all accessories for installation on 19" rack mountable

#### Materials

• Panel	Painted plate: RAL 7035
• Jack housing	Polycarbonate
• Contacts	Gold/nickel
• Metal parts	Bronze

Type of connections



# COPPER CABLING SOLUTION

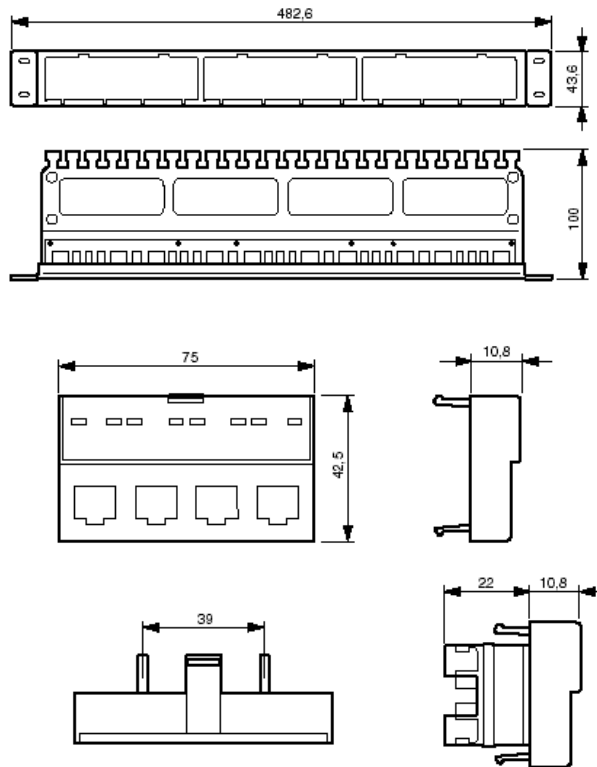
## C9024/5TA

### Performance

Frequency (MHz)	1	4	8	10	16	20	25	31.25	62.5	100
Insertion Loss (dB) Max *	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.4
Return Loss (dB) Min*	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	24.1	20.0
NEXT (dB) Min *	65.0	65.0	64.9	63.0	58.9	57.0	55.0	53.1	47.1	43.0
FEXT (dB) Min *	65.0	63.1	57.0	55.1	51.0	49.1	47.1	45.2	39.2	35.1

\* Min and Max values are in according to TIA/EIA 568-B.2

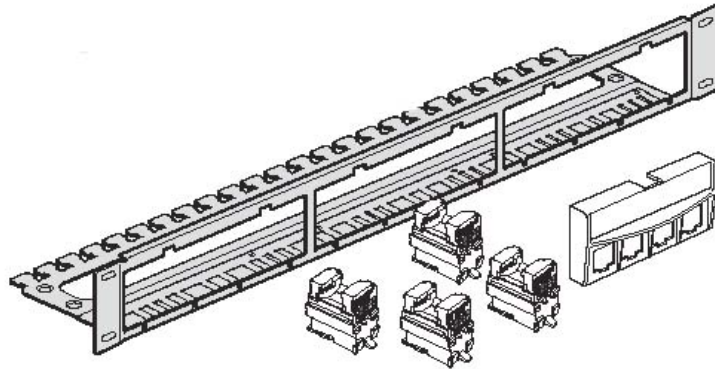
### Panel dimensions



# BTNET

## C9024/6TA

19" Unshielded preload patch panel cat. 6 - 24 ports



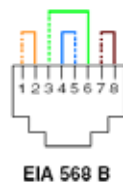
### General characteristics C9024/6TA

- Patch panel 1U RACK
- 6 Modules with 4-port modular with individually replaceable jacks RJ45
- 24 modular jack RJ45 UTP cat.6 toolless for AWG24 – AWG22 conductors
- Type of connections: T568A o T568B
- Installation accessories: not required
- With all accessories for installation on 19" rack mountable

### Materials

• Panel	Painted plate: RAL 7035
• Jack housing	Polycarbonate
• Contacts	Gold/nickel
• Metal parts	Bronze

Type of connections



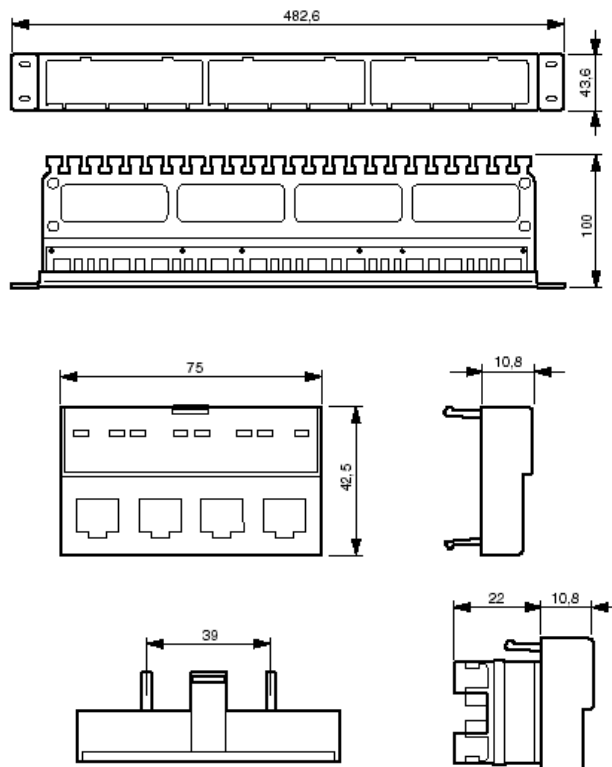
# COPPER CABLING SOLUTION

## C9024/6TA

Performance												
Frequency (MHz)	1	4	8	10	16	20	25	31.25	62.5	100	200	250
Insertion Loss (dB) Max *	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.11	0.16	0.20	0.28	0.32
Return Loss (dB) Min*	30	30	30	30	30	30	30	30	28	24	18	16
NEXT (dB) Min *	75.0	75.0	75.0	74.0	69.9	68.0	66.0	64.1	58.1	54.0	48.0	46.0
FEXT (dB) Min *	75.0	71.1	65.0	63.1	59.0	57.1	55.1	53.2	47.2	43.1	37.1	35.1

\* Min and Max values are in according to TIA/EIA 568-B.2

### Panel dimensions





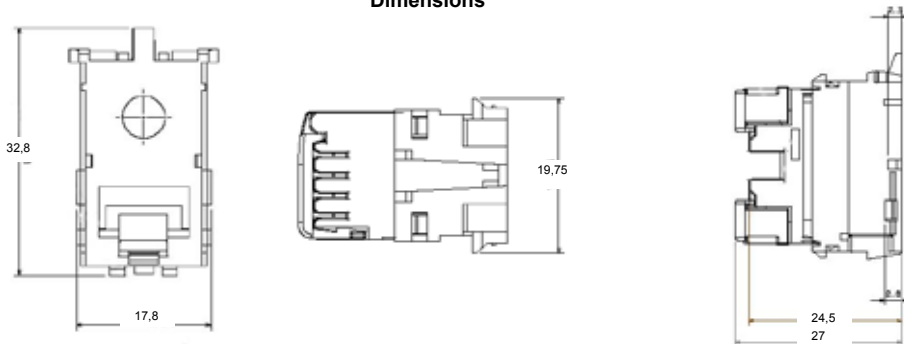
# BTNET

## C9079/5E

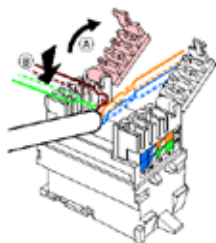
RJ45 Cat. 5E Unshielded toolless IDC modular jacks

Item	Description
<b>C9079/5E</b>	Toolless IDC Modular Jack RJ45 UTP cat. 5E for modular panels and self-bearing cover plates
<b>L4279/5E</b>	Toolless IDC Modular Jack RJ45 UTP cat. 5E Series LIVING INTERNATIONAL
<b>N4279/5E</b>	Toolless IDC Modular Jack RJ45 UTP cat. 5E Series LIGHT
<b>NT4279/5E</b>	Toolless IDC Modular Jack RJ45 UTP cat. 5E Series LIGHT TECH
<b>5979/5E</b>	Toolless IDC Modular Jack RJ45 UTP cat. 5E Series MAGIC
<b>AM5979/5E</b>	Toolless IDC Modular Jack RJ45 UTP cat. 5E Series MATIX
<b>A5979/5E</b>	Toolless IDC Modular Jack RJ45 UTP cat. 5E Series MATIX Ivory

### Dimensions



### Cabling



### Type of connection



# COPPER CABLING SOLUTION

Materials	
• Modul insulation	Polycarbonate
• Contacts	Gold/ nickel
• Metal parts	Bronze

Specification	
• Possibility of connections and disconnections	
• Endurance	2500 operations (plugging in/ unplugging)
• Operating temperature	-40 <sup>∞</sup> - +70 <sup>∞</sup> C
• Terminals	T568A T568B
• Conductors permitted	UTP cable AWG24 -AWG22
• Impact tool	Not required

Performance												
Frequency (MHz)	1	4	8	10	16	20	25	31.25	62.5	100	200	250
<b>Insertion Loss (dB) Max *</b>	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.11	0.16	0.20	0.28	0.32
<b>Return Loss (dB) Min*</b>	30	30	30	30	30	30	30	30	28	24	18	16
<b>NEXT (dB) Min *</b>	75.0	75.0	75.0	74.0	69.9	68.0	66.0	64.1	58.1	54.0	48.0	46.0
<b>FEXT (dB) Min *</b>	75.0	71.1	65.0	63.1	59.0	57.1	55.1	53.2	47.2	43.1	37.1	35.1

\* Min and Max values are in according to requirements of TIA/EIA 568-B.2

Standard
TIA/EIA 568-B.2
EN 50173
ISO/IEC 11801
NCF 20 730
Applications
Gigabit Ethernet (1000 Base ñTX), 10 e 100 Base ñ TX, token ring, 155 Mbps ATM, 100 Mbps TP-PMD, ISDN.

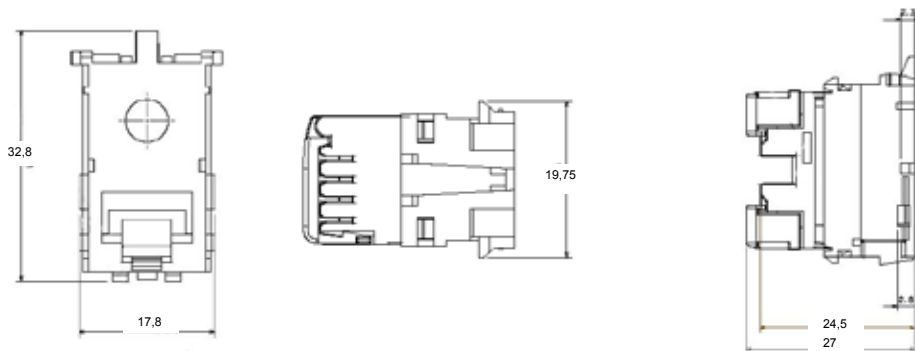
## BTNET

### C9079/6

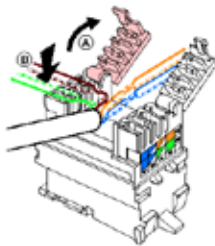
RJ45 Cat. 6 Unshielded toolless IDC modular jacks

Item	Description
C9079/6	Toolless IDC Modular Jack RJ45 UTP cat. 6 for modular panels and self-bearing cover plates
L4279/6	Toolless IDC Modular Jack RJ45 UTP cat. 6 Series LIVING INTERNATIONAL
N4279/6	Toolless IDC Modular Jack RJ45 UTP cat. 6 Series LIGHT
NT4279/6	Toolless IDC Modular Jack RJ45 UTP cat. 6 Series LIGHT TECH
5979/6	Toolless IDC Modular Jack RJ45 UTP cat. 6 Series MAGIC
AM5979/6	Toolless IDC Modular Jack RJ45 UTP cat. 6 Series MATIX
A5979/6	Toolless IDC Modular Jack RJ45 UTP cat. 6 Series MATIX Ivory
HC4279/6	Toolless IDC Modular Jack RJ45 UTP cat. 6 Series AXOLUTE
HS4279/6	Toolless IDC Modular Jack RJ45 UTP cat. 6 Series AXOLUTE

### Dimensions



### Cabling



### Type of connection



# COPPER CABLING SOLUTION

**C9079/6**

Materials	
• Modul insulation	Polycarbonate
• Contacts	Gold/ nickel
• Metal parts	Bronze

Specification	
• Possibility of connections and disconnections	
• Endurance	2500 operations (plugging in/ unplugging)
• Operating temperature	-40° - +70°C
• Terminals	T568A T568B
• Conductors permitted	UTP cable AWG24 -AWG22
• Impact tool	Not required

Performance										
Frequency (MHz)	1	4	8	10	16	20	25	31.25	62.5	100
Insertion Loss (dB) Max *	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.4
Return Loss (dB) Min*	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	24.1	20.0
NEXT (dB) Min *	65.0	65.0	64.9	63.0	58.9	57.0	55.0	53.1	47.1	43.0
FEXT (dB) Min *	65.0	63.1	57.0	55.1	51.0	49.1	47.1	45.2	39.2	35.1

\* Min and Max values are in according to requirements of TIA/EIA 568-B.2

Standard
TIA/EIA 568-B.2
EN 50173
ISO/IEC 11801
NCF 20 730
Applications
Gigabit Ethernet (1000 Base $\bar{n}$ TX), 10 e 100 Base $\bar{n}$ TX, token ring, 155 Mbps ATM, 100 Mbps TP-PMD, ISDN.

# BTNET

## C9881U/5E

PVC Cable for data/voice transmission Cat. 5E - UTP

Item	Description
C9881U/5E	Unshielded PVC Cable category 5 Enhanced-UTP

Colour code
Pair 1. White - Blue/Blue
Pair 2. White - Orange/Orange
Pair 3. White - Green/Green
Pair 4. White - Brown/Brown



Construction and Dimensions	
• Construction	Unshielded 4 twisted pairs
• Conductor	Solid bare copper
• Conductor diameter (mm)	AWG24 (0.51)
• Conductor insulation material	Polythylene (PE)
• Diameter over insulation (mm)	0.90 + - 0.05
• Jacket material	PVC (Flame retardant)
• Outer diameter (mm)	5.0 + - 0.3

Electrical characteristics (a 20 C)	
• Impedance 1 · 100 MHz	100 + - 15 Ohm
• Nominal mutual capacitance at 1 kHz	50 nF/km
• Maximum conductor DCR	94 Ohm/km
• NVP · Nominal Velocity of Propagation (%)	70
• SKEW (100MHz)	< =15 ns/100m
General characteristics	
• Weight (approx)	28 kg/km
• Temperature range · operation	- 20 C --+ 60 C
• Temperature range · installation	+ 0 C --+50 C
• Minimum bending radius · operation	20 mm
• Minimum bending radius · installation	40 mm
• Flamer retardancy	300 kJ/m
• Maximum pulling tension	80 N
• Maximum operating voltage	48 V rms
• Maximum continuous current per conductor (25 C)	1.4 A

# COPPER CABLING SOLUTION

## C9881U/5E

Frequency (MHz)		1	4	10	16	20	31.25	62.5	100
<b>Attenuation (dB/100m)</b>	Max	4.0	4.0	6.3	8.0	9.0	11.4	16.5	21.3
	Typical*	1.9	3.9	6.2	7.9	8.9	11.2	16.0	19.8
<b>Next (dB)</b>	Min.	60.0	56.3	50.3	47.3	45.8	42.9	38.4	35.3
	Typical*	73	64	58	55	54	51	47	44
<b>PS-NEXT (dB)</b>	Min.	57.0	53.3	47.3	44.3	42.8	39.9	35.4	32.3
	Typical*	71	62	56	53	52	49	45	42
<b>PS-ELFEXT (dB)</b>	Min.	60.8	48.7	40.8	36.7	34.7	30.9	24.8	20.8
	Typical*	71	59	51	46	43	39	33	28
<b>ACR (dB/100m)</b>	Min.	56	52	44	39	37	31	22	14
	Typical*	71	61	52	48	45	40	31	24
<b>PS-ACR (dB/100m)</b>	Min.	53	49	41	36	34	28	19	11
	Typical*	69	59	50	46	43	38	29	22
<b>RL (dB)</b>	Min.	20.0	23.0	25.0	25.0	25.0	23.6	21.5	20.1
	Typical*	31	33	42	41	41	36	34	32

\*Typical values aren't guarantee. Min and Max values are guarantee in according to cable

requirements of ISO/IEC 11801 category 5 enhanced.

<b>Standards</b>
TIA/EIA 568-B.2
ISO/IEC 11801
EN 50173
IEC 60332-1-1
<b>Jacket colour</b>
Grey RAL7035
<b>Packaging</b>
Carton box. Delivery length 305m
<b>Marking</b>
BTNET-BTICNO UTP CAT5E 4PR AWG24 ISO/IEC11801 EN50173 EC VERIFIED 100 OHM

## BTNET

### C9881U/6

PVC Cable for data/voice transmission Cat. 6 - UTP

Item	Description
C9881U/6	Unshielded PVC Cable with across separator category 6 › UTP non bonded

Colour code
Pair 1. White - Blue/Blue
Pair 2. White - Orange/Orange
Pair 3. White - Green/Green
Pair 4. White - Brown/Brown



Construction and Dimensions	
• Construction	Unshielded 4 twisted pairs
• Conductor	Solid bare copper
• Conductor diameter (mm)	AWG23 (0.57 mm)
• Conductor insulation material	Polyolefine
• Diameter over insulation (mm)	1.01
• Jacket material	PVC
• Outer diameter (mm)	6.20

Electrical characteristics (a 20 C)	
• Impedance 1 › 100 MHz	100 + - 15 Ohm
• Impedance 100-250 MHz	100 + - 22 Ohm
• Nominal mutual capacitance at 1 kHz	50 nF/km
• Maximum conductor DCR	70 Ohm/km
• NVP › Nominal Velocity of Propagation (%)	70
• SKEW (100MHz)	≤15 ns/100m

General characteristics	
• Weight (approx)	43.9 kg/km
• Temperature range › operation	-20 C - + 60 C
• Temperature range › installation	+ 0 C - +50 C
• Minimum bending radius › operation	25 mm
• Minimum bending radius › installation	50 mm
• Flamer retardancy	490 kJ/m
• Maximum pulling tension	80 N
• Maximum operating voltage	48 V rms
• Maximum continuous current per conductor (25 C)	1.4 A

# COPPER CABLING SOLUTION

## C9881U/6

Frequency (MHz)		1	4	10	16	20	31.25	62.5	100	200	250
<b>Attenuation (dB/100m)</b>	Max	-	4.0	6.0	7.6	8.5	10.8	15.5	19.9	29.2	33
	Valore Tipico*	1.7	3.5	5.6	7.1	8.0	10.1	14.4	18.6	27.0	30.7
<b>Next (dB)</b>	Min.	-	66	60	57	56	53	48	45	41	39
	Valore Tipico*	76	73	66	64	63	56	55	52	48	45
<b>PS-NEXT (dB)</b>	Min.	-	63	57	54	53	50	45	42	38	36
	Valore Tipico*	74	71	64	62	61	54	53	50	46	43
<b>PS-ELFEXT (dB)</b>	Min.	-	53	45	41	39	35	29	25	19	17
	Valore Tipico*	70	64	57	51	49	45	39	35	29	27
<b>ACR (dB/100m)</b>	Min.	-	62.0	54.0	49.4	47.5	42.2	32.5	25.1	11.8	6.0
	Valore Tipico*	74	70	60	57	55	46	41	33	21	14
<b>PS-ACR (dB/100m)</b>	Min.	-	59.0	51.0	46.6	44.5	39.2	29.5	22.1	8.8	3.0
	Valore Tipico*	72	68	58	55	53	44	39	31	19	12
<b>RL (dB)</b>	Min.	-	23.0	25.0	25.0	25.0	23.6	21.5	20.1	18.0	17.3
	Valore Tipico*	33	36	44	42	40	38	36	31	25	24

\* Typical values aren't guarantee. Min and Max values are guarantee in according to cable requirements of ISO/IEC 11801

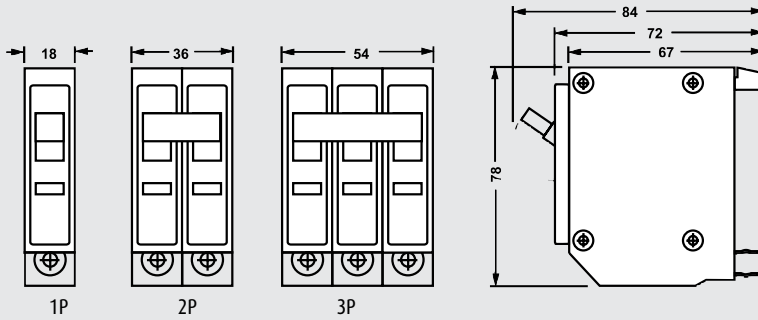
<b>Standards</b>
TIA/EIA 568-B.2
ISO/IEC 11801
EN 50173
IEC 60332-1-1
<b>Jacket colour</b>
Blue RAL5015
<b>Packaging</b>
305 m reels
<b>Marking</b>
BTNET-BTICINO UTP CAT6 4PR AWG23 PVC ISO/IEC 11801 EN50173 EC VERIFIED 100 OHM



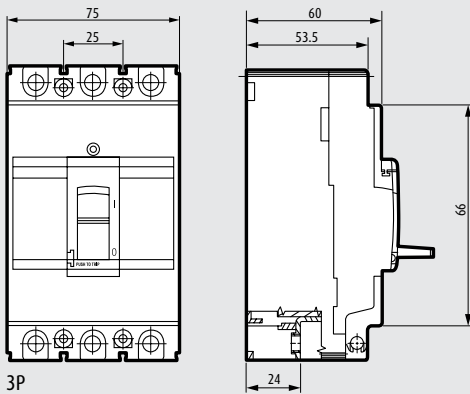
# Dimensions

ขนาดชิ้นส่วนและอุปกรณ์

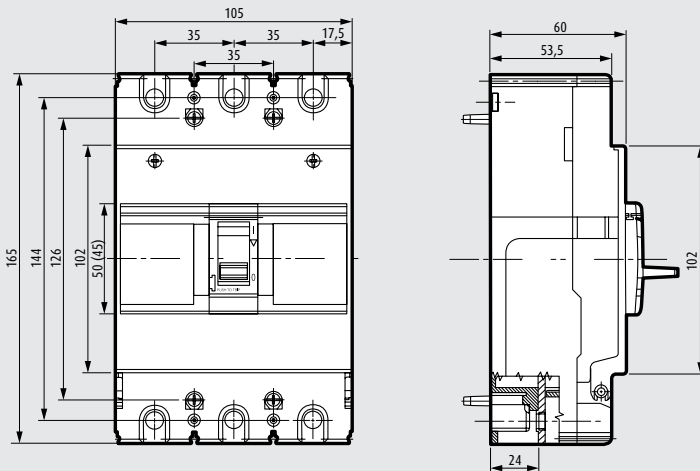
## BTPLUG



## EASYTIKER E100B

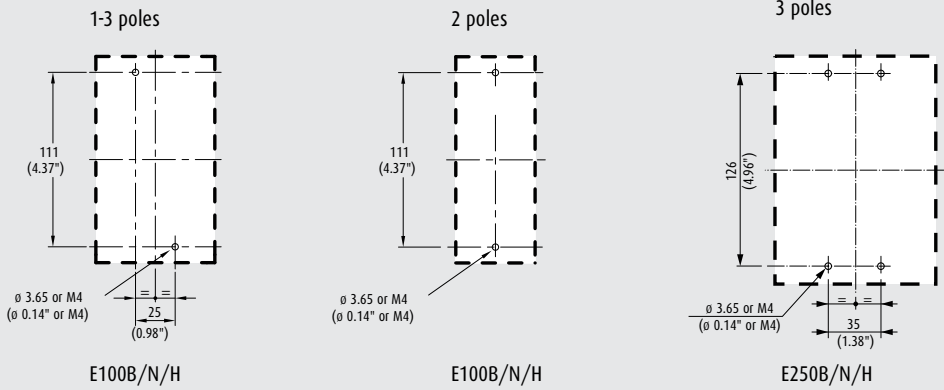


## EASYTIKER E250B

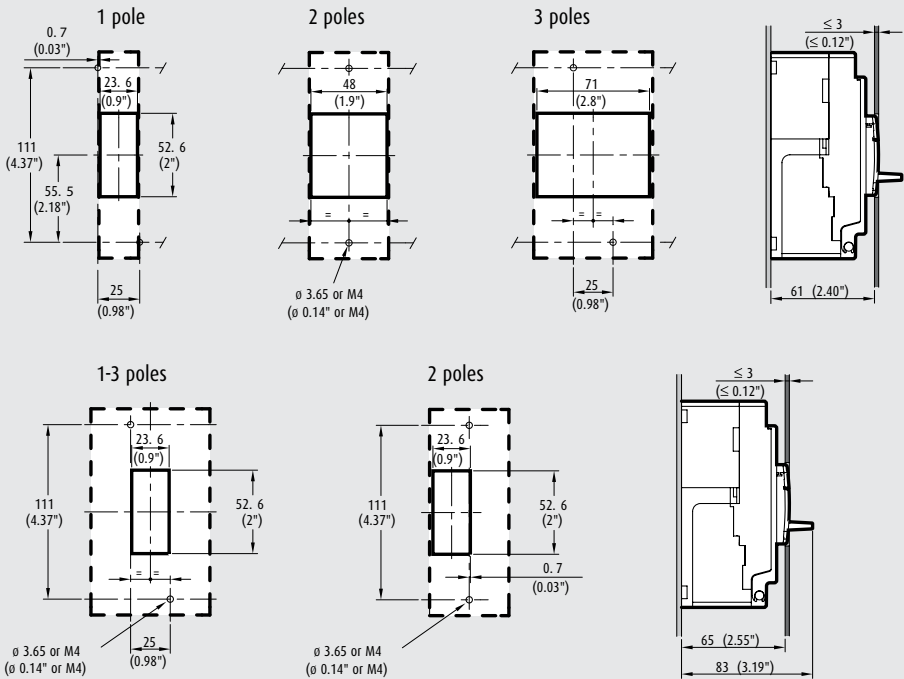


# PROTECTION DEVICES

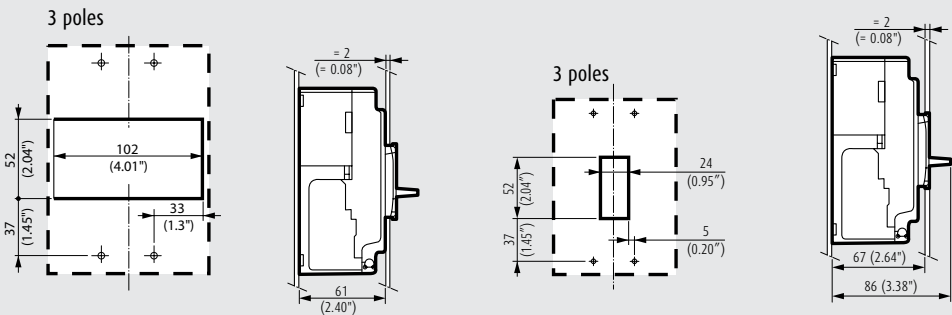
## FIXING ON PLATE



## DOOR CUT-OUT E100



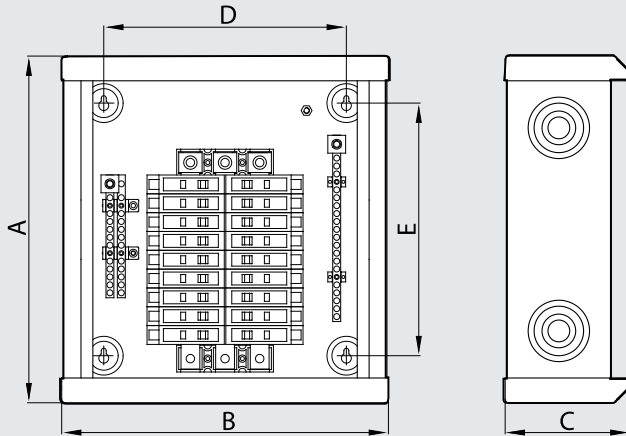
## DOOR CUT-OUT E250



## Dimensions

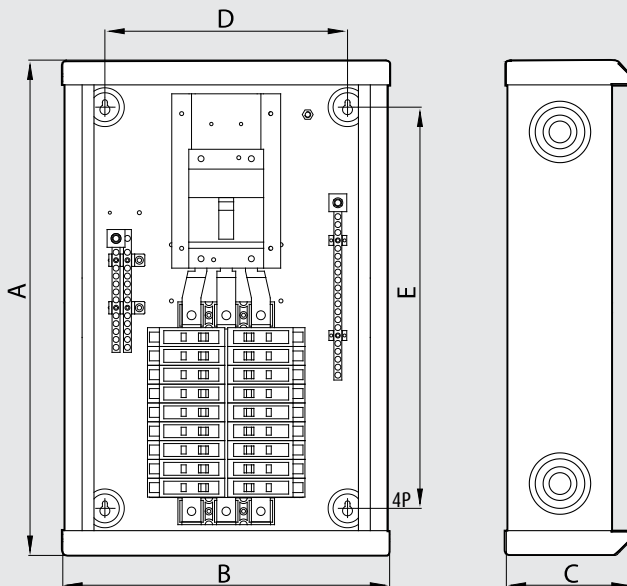
### ขนาดชิ้นส่วนและอุปกรณ์

#### LOAD CENTER



#### MAIN LUG TYPE STANDARD DIMENSION (mm.)

Product code	A	B	C	D	E
<b>BTL/12ML125..125G</b>	350	330	126	245	255
<b>BTL/18ML125..125G</b>	350	330	126	245	255
<b>BTL/24ML125..125G</b>	500	330	126	245	405
<b>BTL/30ML125..125G</b>	500	330	126	245	405
<b>BTL/24ML250..250G</b>	500	330	126	245	405
<b>BTL/30ML250..250G</b>	500	330	126	245	405

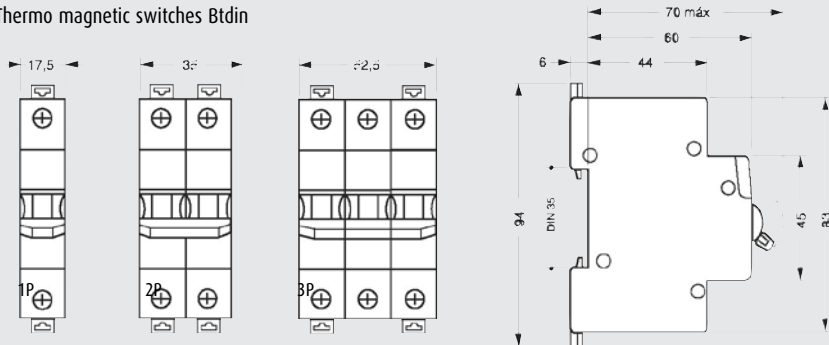


#### MAIN BREAKER TYPE STANDARD DIMENSION (mm.)

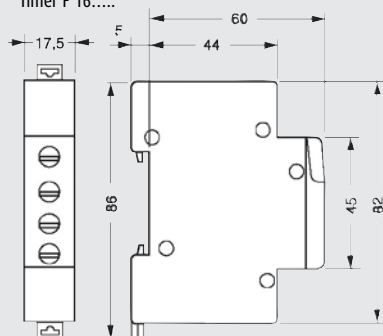
Product code	A	B	C	D	E
<b>BTL/12MB125..125G</b>	500	330	126	245	405
<b>BTL/18MB125..125G</b>	500	330	126	245	405
<b>BTL/24MB125..125G</b>	660	330	126	245	565
<b>BTL/30MB125..125G</b>	660	330	126	245	565
<b>BTL/36MB250..250G</b>	915	330	126	245	820
<b>BTL/42MB250..250G</b>	915	330	126	245	820

## BTDIN

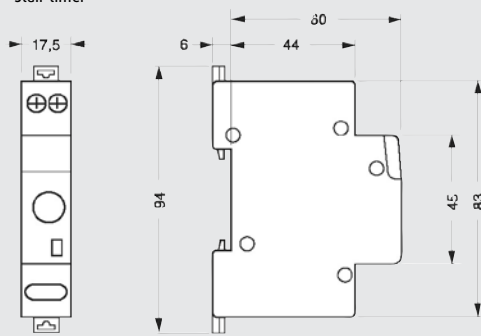
### Thermo magnetic switches Btdin



### Timer F 16.....



### Stair timer



F25/230

### Pure differential G72...

