

# Electrical safety Guide



## Substation Equipment



**CATU**<sup>TM</sup>



Welcome to the world  
of **electrical safety**



PERSONNEL PROTECTIVE EQUIPMENT

WARNING SIGNS

VOLTAGE DETECTORS AND  
COMPARATORS

SHORT CIRCUITING AND  
EARTHING SYSTEMS

INSULATED TOOLS

HOT LINE TOOLS

10/20 avenue Jean-Jaurès 92220 BAGNEUX FRANCE  
Phone : +33 1 42 31 46 00 Fax : +33 1 42 31 46 34 or 36

[www.catuelec.com](http://www.catuelec.com)



# **ELECTRICAL SAFETY GUIDE**

## **Substation equipment**



## **Guide content**

**I - Warning signs**

**II - Intervention equipment**

**III- Voltage detectors and  
short-circuiting & earthing systems**

**IV - Additional equipment**



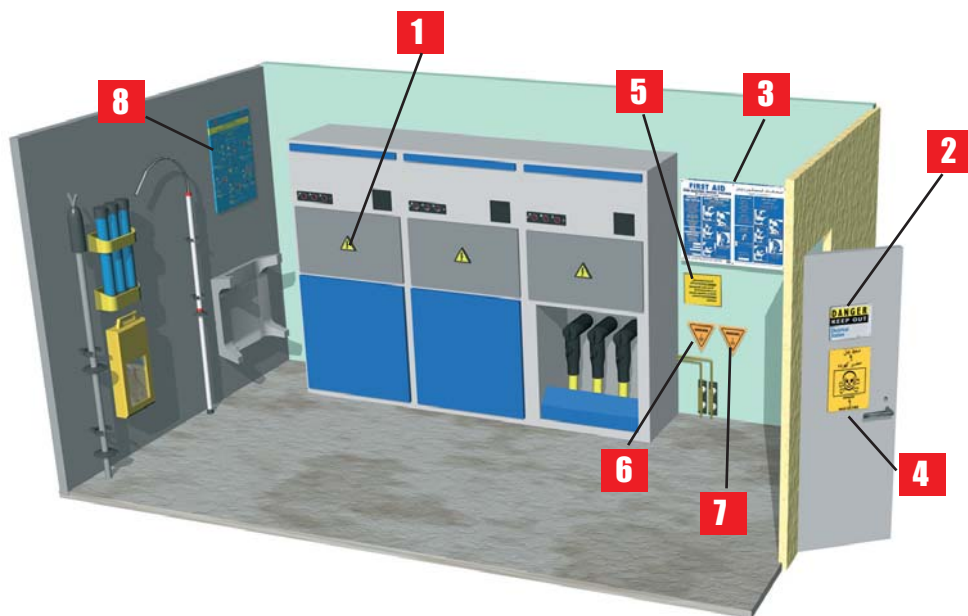
# ELECTRICAL SAFETY GUIDE

Warning signs and  
intervention equipment

Voltage detectors and  
short-circuiting systems

Additional  
equipment

## I - Warning signs and accessories



### Usual substation warning signs

Reference	Type	Dimensions (mm)	Characteristics
1 AM-49/1	Aluminium	100 side	Black and yellow fixing 3 holes ø4.5mm
1 AT-49/1	Self-adhesive	100 side	Black and yellow high quality plastic
2 AM-61-GB/RM	Aluminium	150x200	Black and yellow on plain aluminium fixing 4 holes ø4.5mm
3 AM-20-GB	Aluminium	350x250	Blue letters on plain aluminium fixing 4 holes ø4.5mm
3 AM-20-RM	Aluminium	350x500	Blue letters on plain aluminium fixing 6 holes ø4.5mm
4 AM-7002	Aluminium	200x300	Black and yellow fixing 4 holes ø4.5mm
5 AM-215-RM	Aluminium	350x250	Black and yellow fixing 4 holes ø4.5mm
6 AM-344-GB	Aluminium	100side	Black and yellow fixing 3 holes ø4.5mm
7 AM-345-GB	Aluminium	100side	Black and yellow fixing 3 holes ø4.5mm
8 AP-510-GB	PVC	420x297	Golden Rules fixing 4 holes ø4.5mm
AM-282/2-RM	Aluminium	200x60	Blue letters on yellow fixing 2 holes ø4.5mm





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AM-20-RM



AM-20-GB



AM-49/1



AM-344-GB



AM-345-GB



AM-61-GB



AM-61-RM



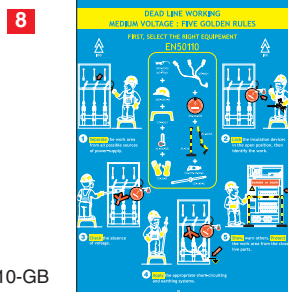
AM-7002



AM-282/2-RM



AM-215-RM



AP-510-GB

## Accessories



### Padlocks with warning signs

Brass ring bow 50 or 70 mm.  
Diameter of the ring bow 6 mm.  
\* Add n° of key: 111 or 222

Ref. AL-230-(\*)-EX Brass ring bow 50

Ref. AL-230-S-(\*)-EX Brass ring bow 70

### Warning sign for locking apparatus



Ref. AP-467-GB



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## II -Intervention equipment

### Intervention kits

CI-23



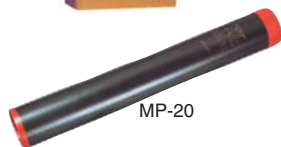
CG-30



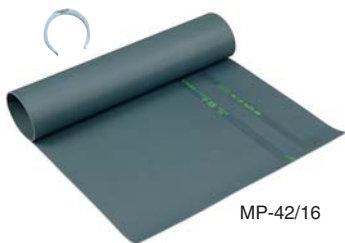
CG-35/1



CS-45



MP-20



MP-42/16



CT-7-25/1



CI-06-D

Reference	Designation	Characteristics	Dimensions
<b>CG-30-C</b>	Insulated rubber gloves class 3 CEI 60903	26 500 V max	Size C (10)
<b>CG-35/1</b>	Rubber gloves storage box with window		60 x 210 x 460 mm
<b>CI-23</b>	Fuse holder	Ø max 85 mm	90 x 240 x 260 mm
<b>CS-45</b>	Rescue stick	45 000 V max	Longueur : 1,65 m
<b>CI-06-D</b>	Wall mounted supports	delivered with CS-45	
<b>CT-7-25/1*</b>	Insulating platform	24 000 V max	500 x 500 x 220 mm
<b>MP-42/16**</b>	1 insulating mat CEI-61111 3 mm thickness	≤ 33 kV	0,6 x 1 m

**Ref. KIT-01\***

Intervention kit with insulating platform

**Ref. KIT-10\*\***

Intervention kit with insulating mat  
delivered with a protective P.V.C. container (ref. MP-20)

\* Only in KIT-01

\*\*Only in KIT-10



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## Helmet with built-in face shield

Panoramic face shield in non-scratch and anti-mist polycarbonate.  
Chinstrap (with Velcro fastening) Head fit adjustment by milled wheel. **EN 166 / EN 170**



**Ref. MO-185-BL** White - Weight : 0.720 kg

## Manœuvring insulating stick

Composite fiberglass/polyester

operating voltage	length overall	weight
45 kV	1.45 m	0.75 kg



**Ref. CM-45**

## Insulated rubber gloves

Insulating rubber gloves conform to international **IEC-60903** standard.

Our gloves are made of latex especially treated to obtain high dielectric characteristics; they are individually tested and delivered in sealed plastic bags.

Reference	Class	Voltage (V)	Thickness (mm)
<b>Ref. CG-30-*</b>	3	26 500	2.9
<b>Ref. CG-40-*</b>	4	36 000	3.6



\* References to be completed by size C or D  
Correspondence with standard sizes: C = 10, D = 11

## Insulating platforms

Moulded insulating material, one-piece. Top 50 x 50 cm.

Reference	Rated insulation (V)	Height (mm)	Weight (kg)
<b>CT-7-25/1</b>	24 000	220	3.7
<b>CT-7-40/1</b>	40 000	260	3.8





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## III - Volage detectors and short-circuiting systems

### M.V. substations with bare conductors or fixed points

#### IEC electronic voltage detectors for indoor and outdoor use IEC 61243-1

Compact and light it offers:

- a wide band: **10/36 kV**
- a universal application (50/60 Hz)

Characteristics:

- Detectors have unitary adjustment and are checked by routine test
- Dielectrically tested on substation bars (bridging test)
- Precise and stable operating threshold
- Reduced sensitivity to induced voltages
- Reduced sensitivity to interference field
- High environmental resistance (impacts, vibrations, moisture)

Use from **50 to 60 Hz**

Temperature conditions: class N (IEC-61243-1 standard).

Storage and operation: -25/+55 °C

Robust housing.

Power supply: 1 x 9 V alkaline battery type 6LR61

Weight: 1.1 kg size: 340 x 275 x 83 mm

Recommended stick: CE-4-21\*



CC-875

CE-4-21

**Ref. CC-875-10/36-\***

Delivered in case, specify type of mounting  
when ordering: C or K

\* When ordering, please specify type of mounting : C or K

#### Led's Voltages detectors for indoor use

Built-in device for checking operation of the led's indicator via a piezo-electric generator.

High-brightness led's indicator.

Sturdy thermo-plastic moulded case providing. Pivoting contact electrode enabling wire contact at any angle.

**Ref. CL-4-41-M**

Operating voltage : 5/40 kV fix length

**Ref. CL-4-41-2**

Operating voltage : 5/40 kV telescopic length

**Ref. CL-2-10/30-2**

Operating voltage : 10/30 kV telescopic length  
compact serie



CL-4 serie

For other voltage please consult us.





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## Single pole phase comparators for indoor and outdoor use

Frequence and voltage phase memory.  
Integrated TEST push-button.  
Powered by a LF 22 9 V battery.  
Delivered in carrying case.

IEC-61481



\* Please specify type C or K when ordering.

Reference	Voltage (kV)	Length of antenna (m)
CL-7-06/18*	6-18	0.85
CL-7-10/30*	10-30	0.85
CL-7-10/30-1*	10-30	1.15
CL-7-12/36*	12-36	1.20

## Two pole phase comparators for indoor use

Detect differences in voltage between any two points of an installation indicated by LED's. It also enables assessment of the order of magnitude of the residual voltage induced by nearby live lines or circuits, and thus differentiates it from the one provided directly from a high voltage source.  
Range of voltage: 2/36 kV



**Ref. CL-8/36**

CL-8-36 tester in metal case  
150 x 195 x 650 mm - Weight: 7.5 kg

## Short circuiting and earthing systems

IEC-61230/EN-61230 These equipment are intended for connection on:  
**bare conductors**



Reference	Icc (kA/1s)	Conductors (mm)	Composition	Connection set	Stick**
MT-5805	20	● Ø 5-35 ┃ 16-40 ┃ 5-40	3 clamps MT-815-C 1 MT-840/1	3 cables 95 mm <sup>2</sup> 1 earth cable 35 mm <sup>2</sup>	CE-4-21-C
MT-8408	14.5	● Ø 18-33	3 clamps MT-815-C 1 MT-840/1	3 cables 70 mm <sup>2</sup> 1 earth cable 35 mm <sup>2</sup>	CE-4-21-C
MT-9801	10	● Ø 5-16 ┃ 0-16 ┃ 40 x 16 ● Ø 5-28	3 clamps MT-817-C 3 clamps MT-814/2-C 1 MT-840/1	3 cables 50 mm <sup>2</sup> 1 earth cable 25 mm <sup>2</sup>	CE-4-21-C



\*\* stick to be ordered separately  
For other configurations please consult us



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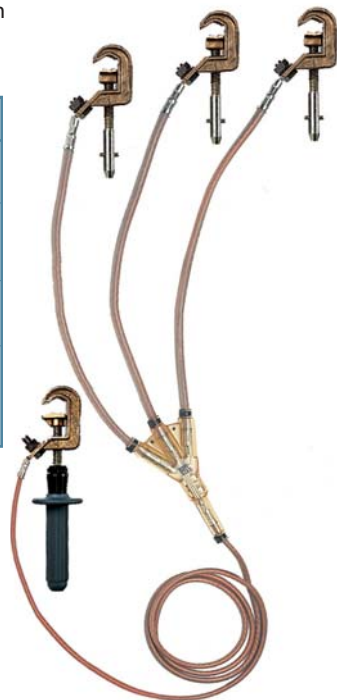
Additional  
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IEC-61230/EN-61230 These equipment are intended for connection on: **permanent fixed points**

Reference	MT-1910	MT-1920
Icc (kA/1s)	20	30
Installation on fixed points	Ø 20 mm MT-2951 range	Ø 25 mm MT-3951 range
Composition	3 clamps MT-1911-E 1 MT-1911	3 clamps MT-1921-E 1 MT-1921
Connection set	3 cables 95 mm <sup>2</sup> 1 earth cable 35 mm <sup>2</sup>	3 cables 150 mm <sup>2</sup> 1 earth cable 50 mm <sup>2</sup>



Stick to be ordered separately: CF-5-40-E



## M.V. substations with separables connectors

### Voltage tester

Check the absence of voltage on the capacitive terminals of plug-in M.V. bushings.

Sensor in the form of a bent finger enabling removal and reinstallation of the terminal insulating cover.

Signal via beeping and bright red flashing of electro-luminescent diodes.

Built-in function test via the "TEST" button which covers the entire device.

Permanent stand-by state.

Power supply: four 1.5 V, R-6 batteries.

Mounting on insulating stick via a universal end.

Specific insulating stick: CC-45-K : L = 1.25 m - 0.6 kg



CC-151-K

**Ref. CC-151-K**

delivered with pouch

**Ref. CC-45-K**

special 45 kV insulating stick  
L: 1.25 m - Weight: 0.60 kg



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## Wall mounted saving kit

### It includes:

- 1 rescue telescopic stick
- 1 voltage detector with flexible contact antenna (with autotest)
- 1 cable cutter with insulated handles Forged steel blades maximum opening: 30 mm
- 1 insulating platform 36 kV
- Insulating gloves
- Insulating boots
- Safety instructions on the plastic board
- 1 talcum powder can.



Ref. CZ-55MR

Delivered with instruction  
in English/Arabic

## Permanent luminous indicator

Permanently installed on bus bars, luminous indicator signals the presence of voltage at a glance.  
Single-pole 5 to 75 kV indicators.  
Signaling the presence of voltage by 7 electroluminescent diodes. For indoor use.



Ref. CL-40010

For round 5 to 20 mm  $\varnothing$  wires  
and 1 to 20 mm flat bars

## Extinguisher

Carbon dioxide for B and C type fire for use until 35 kV.  
Designed for electrical fires  
Weight: 14.6 kg



Ref. CD-306

Homologation 70 B  
Capacity: 7.4 liters

## Safety lamp

Delivered with a wall mounted support  
Bulb: 6 W/12 W  
Operates: 1 hour (12 W),  
2 hours (6 W)  
Rechargeable on 230 V  
50/60 Hz  
3 positions switch: Off,  
6 W, 12 W.



Ref. CD-124

100 x 190 x 220 mm -  
weight: 1.9 kg

## Safety Lamp

- Adjustable flood beam
- Power beam: 5.5 W
- Operates: 3 hours



Ref. CD-122

Weight: 1.2 kg



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