

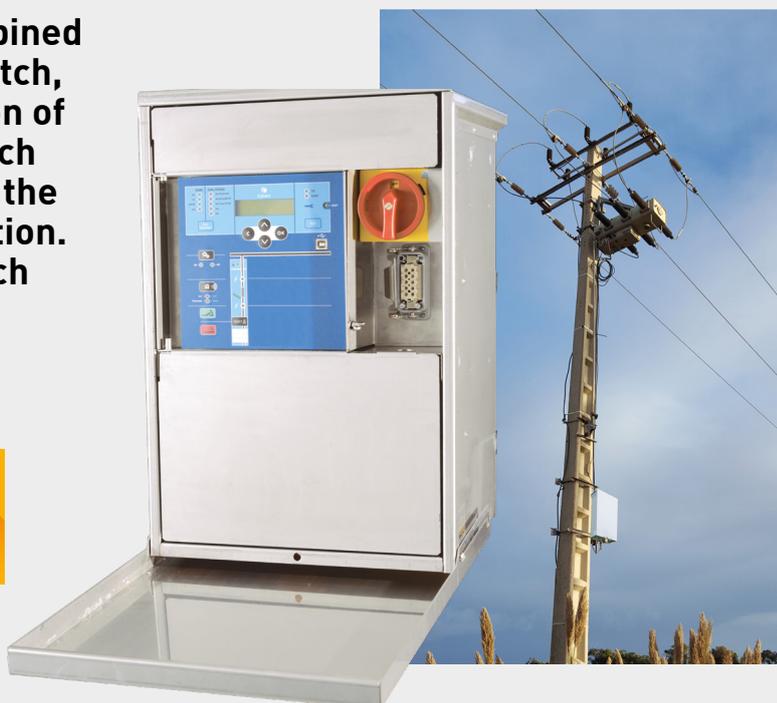


# Overhead MV Network Management

## ICONTROL-T - Remote network control

### OVERHEAD LOAD BREAK SWITCH REMOTE CONTROL INTERFACE

The IControl-T, combined with an overhead switch, ensures disconnection of the MV network branch circuit, regardless of the neutral point connection. It is fitted to the switch mounting pole.



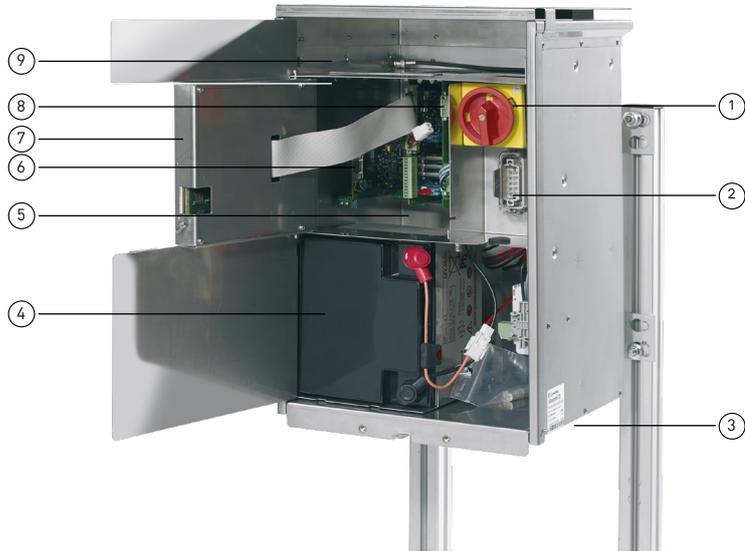
#### > COMPATIBILITY OF THE ICONTROL-T BOX WITH OVERHEAD SWITCHES

| Supported switches   | Supplied LV voltage | Actuator  |
|--|---------------------|---|
|  |                     | Remote control features                                   |
| SF6 overhead line disconnect switch - Remoted controlled - Breaking capacity up to 630A - Rated Voltage up to 36 kV. | From 172 V to 230 V | Orders are carried out by DC motor supply - 12 or 48 V DC |

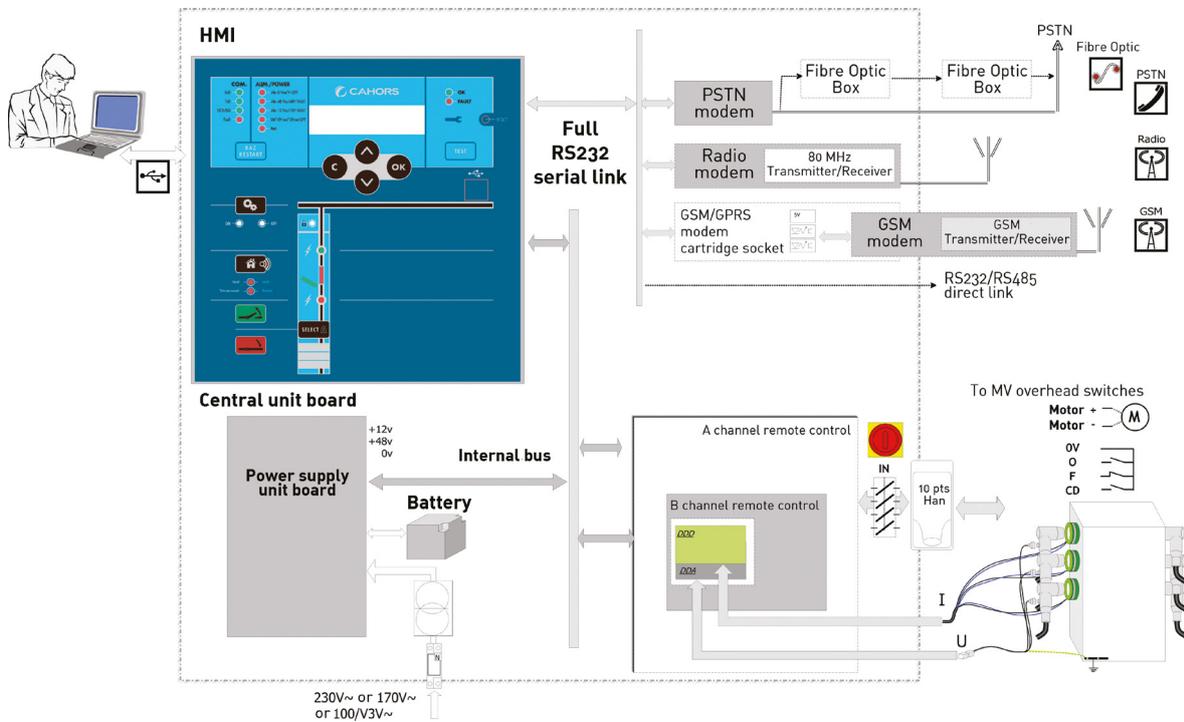
> DESCRIPTION



This box is of modular construction to suit different requirements. It is composed of electronic subassemblies, each performing a particular function.



- 1 - Neutralisation switch
- 2 - Link connectors to MV switches (electrical control)
- 3 - Connection input (cable glands)
- 4 - Battery
- 5 - Power supply unit board
- 6 - Communication modem board
- 7 - Central unit / HMI
- 8 - Remote control / fault detection boards
- 9 - Radio slot





## Operation

### Electrical control

The box electrically controls the opening or closing of MV switches. This can be used to manage different types of independent electrical command :

These commands can be electrically and individually operated as required (Tumbler mechanism).

Orders are carried out by direct motor power supply (12 V or 48 V configurable on site).

### Automated systems

- The alarm-equipped decentralised automated system is used to isolate a faulty section by commanding the switch to open. That command is carried out during the voltage dip in the supply substation isolating switch re-engagement cycle.

### Communication

The box communicates with the network manager's monitoring system (SCADA) using :

- a communication medium: public switched telephone network (PSTN), radio network, GSM/GPRS or other network ;
- a communication protocol (IEC 60870, DNP3, HNZ or other).

## > BENEFITS OF THE RANGE



**Stand (shelf) integrated into box :** to accommodate laptop PC.

**Ergonomic fitting and installation :** due to its small size, this box is easily fitted into small substations, mounted either horizontally or vertically.

**USB link :** box settings can be adjusted with no power source other than the PC. Configuration and setting via an onboard server.

**Compatibility of IControl-T box with diferent overhead switches on the market**



## > ELECTRICAL CHARACTERISTICS

### IControl-T

#### Capacity

Number of channels 1

#### Electrical independent control actuator

Type of control Tumbler, M+/M- (direct motor control)

Control Voltage

M48 V actuator ranging from 43 V to 44.5 V, 15 A inrush current possible (50 ms) then 10 A during the operation.  
12 V actuator ranging from 10.5 V to 14.5 V, 20 A inrush current possible (50 ms) then 6 A during the operation.

Duration of control

Configurable between 1 sec and 15 secs

## Control-T

### Power supply unit

#### Supply voltage

- by auxiliary transformer 20 kV / 400 V
- by auxiliary transformer 20 kV / 100 V

230 V or 173 V (+/-15%), 50 Hz  
57,7 V or 43 V (+/-15%), 50 Hz

#### Consumption

86 VA - batteries on charge  
38 VA - charged batteries

#### Battery :

- Type
- Number
- Capacity
- Autonomy
- Monitoring

Sealed lead  
1  
12 V - 38 Ah  
> 50 hours (or > to 150 O/F cycles)  
Charge offset based on temperature and limited to 3.8 A  
Deep cycle discharge monitoring  
Periodic tests

#### Duration of charging

< 24 hours

#### Service life

> 5 years

### Communication

#### Media :

- Public Switched telephone network (PSTN)
- Private Radio network
- GSM
- GPRS

V21/300, V22/1200, V22Bis/2400 and V32/9600 bauds  
FSK V23/600 bauds and V23/1200 bauds ; FFSK/1200 and  
FFSK/2400 bauds V32/9600 bauds

#### Protocols

MODBUS-RTU  
CEI 870-5-101  
CEI 870-5-104  
DNP3  
HNZ (Enedis specification)

### Fault indication

#### Number of channels monitored

1

#### Sensitivity adjustment :

- Polyphase fault
- Dual single-phase fault
- Single-phase earth fault :
  - Amperemetric
  - Directional

Configurable from 200 to 1600 A  
Configurable from 200 to 1600 A  
Configurable from 5 to 240 A  
Residual current transient > 30 A peak

#### Time adjustment :

- Fault duration
- Duration of delay for validation
- Permanent fault recognition time

Configurable from 0,02 to 1 sec  
Configurable from 0.3 to 3 sec  
Configurable : 1, 10, 40 or 70 sec

### Measurement sensor inputs

#### Current sensors

- Input dynamic
- Types of sensor supported

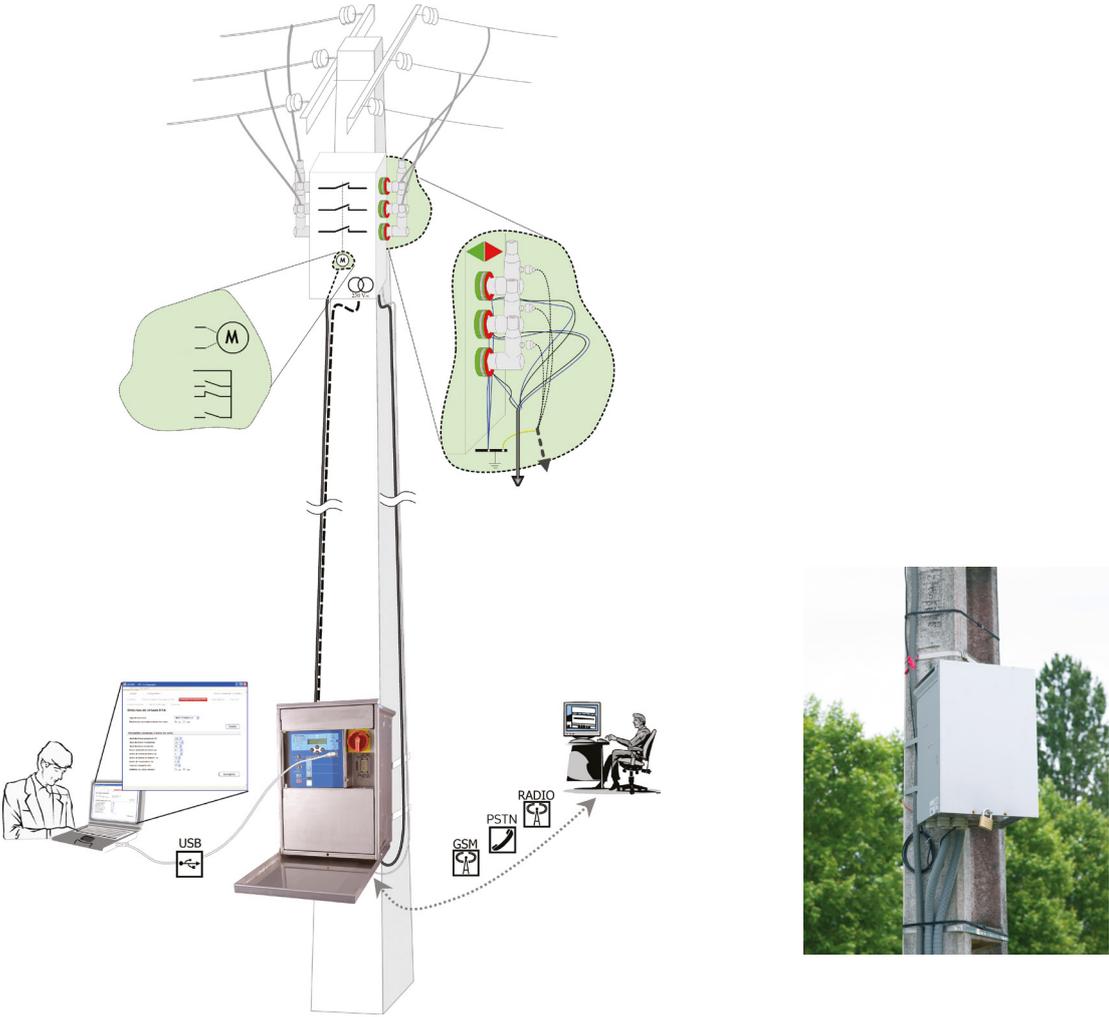
Nominal : 1 A rms  
Max : 3 A rms  
Current transformer (500/1 A)

#### Voltage sensors

- Input dynamic
- Type of sensor supported

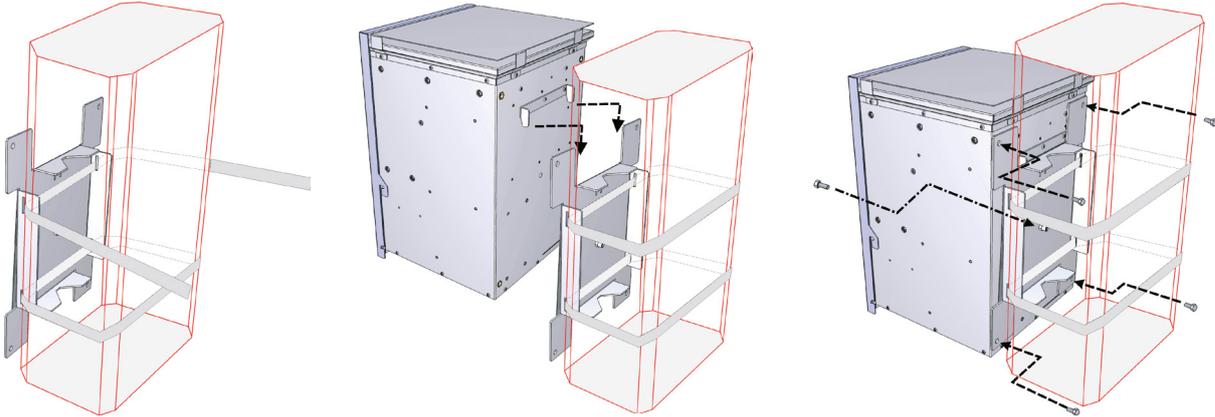
Between 1,9 V and 60 V rms  
Capacitive divider (between 20pF and 32pF)  
Voltage transformer  
PPACS (between 0.6pF and 9pF)

### Type connection to overhead switch in SF6

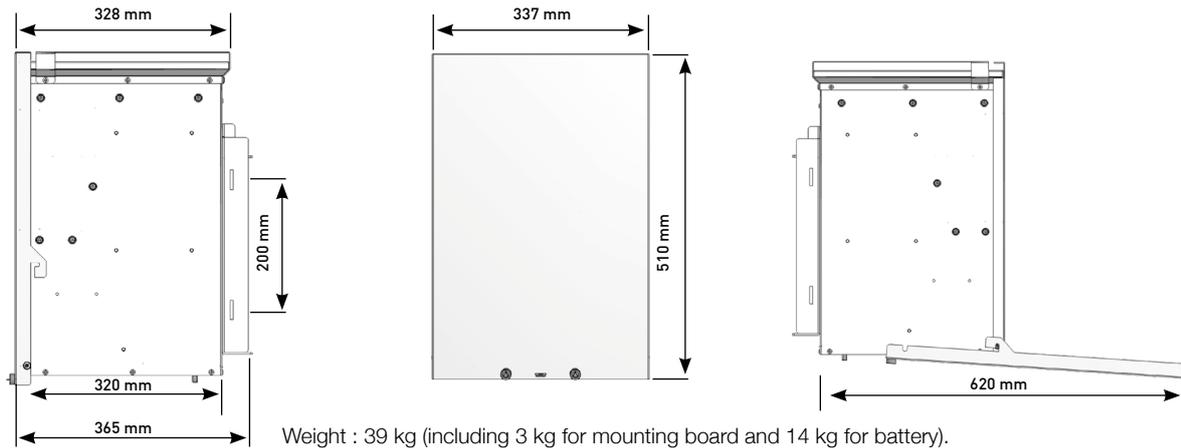


**IControl-T boxes are suitable for all mounting types : wooden, concrete or metal poles.**

The interface is attached to the overhead switch support post using a removable board secured to the support using a metallic mount (maximum width 25 mm). The board can be attached flat against or at an angle to a rectangular pole and can also be mounted onto a round pole.

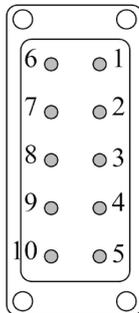


## > SIZES CHARACTERISTICS



## > CONNECTOR

### 2 different pin configurations depending on switch type



| Pin no | Configuration 1             |               | Configuration 2             |               |
|--------|-----------------------------|---------------|-----------------------------|---------------|
|        | Function                    | Abbreviations | Function                    | Abbreviations |
| 1      | Motor -                     | M-            | Motor +                     | M+            |
| 2      | Motor -                     | M-            | 0V Motor                    | M-            |
| 3      | MV switch open              | O             | Commun (0V)                 | 0V            |
| 4      | Common(0V)                  | 0V            | MV switched Closed          | F             |
| 5      | MV switched Closed          | F             | MV switch open              | O             |
| 6      | Motor +                     | M+            | Control position disengaged | CD            |
| 7      | Motor +                     | M+            | Phase current A             | IphA          |
| 8      | Control position disengaged | CD            | Phase current B             | IphB          |
| 9      | Not used (set to 0 V)       |               | Phase current C             | IphC          |
| 10     | Not used (set to 0 V)       |               | Current common              | Icom          |

## > ENVIRONMENTAL USE CONDITIONS

| IControl-T                                 |   |
|--|---|
| Protection rating                          |   |
| IP   | IP 35   |
| IK   | IK 10   |
| Climatic conditions                        |   |
| - Operating temperature                    | - 25°C to + 55°C  |
| - Storage temperature                      | - 25°C to + 70°C  |
| - Average relative humidity over 24 hrs    | < 95%   |
| Dielectric strength                        |   |
| - Main supply inputs                       | Isolation 50 Hz / 1 mn : 10 kV / Shock wave 1,2 / 50 µs : 20 kV |
| - PSTN                                     | Isolation 50 Hz / 1 mn : 10 kV / Shock wave 1,2 / 50 µs : 20 kV |
| - Other inputs (Current cores, PPACS, ...) | Isolation 50 Hz / 1 mn : 2 kV / Shock wave 1,2 / 50 µs : 5 kV   |

## > STANDARDS/ SPECIFICATIONS

- **HN 64-S-44** : Interfacing unit for the remote control of 400A switches (ITI / PASA).
- **HN 64-S-46** : Remote controlled type 3 overhead switches.
- **HN 45-S-53** : Remote Controlled Substations with non permanent link.
- **HN 64-S-43** : Electrical independent-operating mechanism for 24 Kv - 400 A switch.
- **HNZ 66-S-11** : Procedure for the transmission of industrial data.
- **HNZ 66-S-13** : Procedure for the transmission of industrial data. Specifications for exchange PLC in simplified master-master mode.
- **CEI 60870-5** : Remote control systems and equipment.
  - Part 5 : Transmission protocol.
  - Part 5-101 : Transmission protocol. Standard to accompany basic remote control tasks.
  - Part 5-104 : Transmission protocol. Access to networks using transport profiles standardised for IEC 60870-5-101.