Description

The **5CTB-1** meter is designed, tested and manufactured for:

- **M1** mechanical environment, and therefore, it does not present any danger in normal use conditions.
- **E2** electromagnetic environment, corresponding to electrical measuring devices.

The device has an **IP51** degree of protection (according to **EN 60529** standard) and intended to be used as indoor and double isolation meter.

The **5CTB** meter enclosure is made of high impact resistance thermoplastic and double isolation. The display cover is UV resistant.

The enclosure consists of a base, meter cover and terminal cover. The terminal cover is intended to protect the terminals, the wiring and the fixing screws to the panel. The terminal cover has a perforated screw for sealing. The unit is equipped with opening sensors for cover and terminal cover.

The equipment has an information display on the front panel, a verification LED (4000 imp/kWh or kvarh), an optical port according to **UNE EN 62056-21** and an information push button.

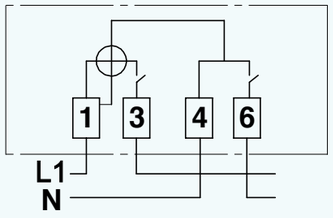
Installation

For a correct installation, it is necessary to carry out a preliminary inspection of the meter, checking that the meter is in perfect mechanical conditions, all its parts are properly fixed and there is no missing screws. Check that the model code and characteristics match those related to the meter order.

This device must be installed by technical personnel authorised by the distributor. It is the technician's responsibility to be familiar with the regulations applicable to the installation, as well as the protection requirements.

The installation technician is responsible for coordinating the rating and characteristics of the overcurrent protection devices, taking into account the maximum current and the UC rating of the equipment.

Each meter has a diagram showing the correct connection method permanently engraved in the terminal cover. The terminals are numbered with engraved digits from left to right (with the meter in the operating position).



It is necessary to check that there are no perforations or cracks in the insulation of the cables, that there are no wires on the outside of the terminal blocks and that all the screws are properly tightened.

All terminals present double screw and admit inside stranded wires up to 20mm of diameter with a cross section from 6 to 35mm2. The maximum torque for tightening all the screws of the equipment (including the terminal cover screws) is defined as **2.5Nm**.

Sart-up

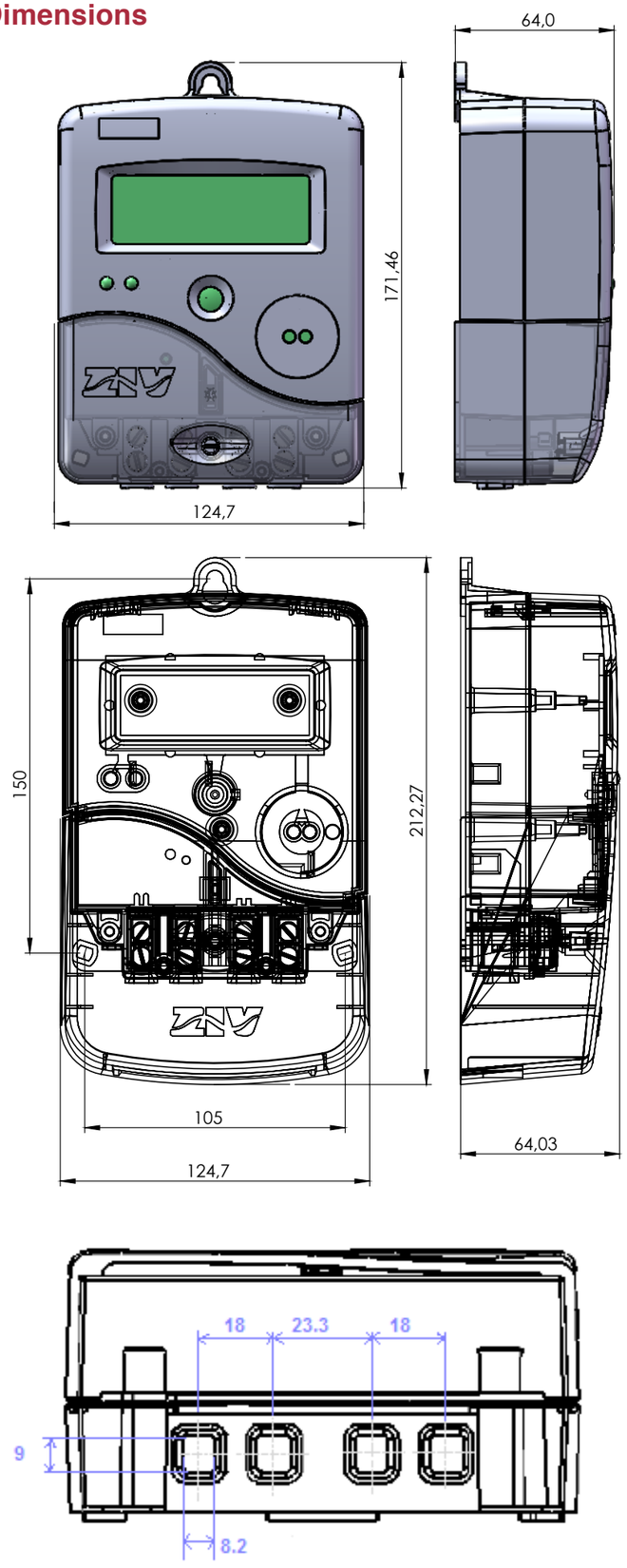
Once the meter has been fixed to the wall or panel and the connections have been made, the following checks will be carried out on the display using the available symbols:

- Breaker element status.
- Voltage and current presence. Current direction. Equipment quadrant.
- Verification of PLC communications (if applicable).

Maintenance

The equipment does not require any maintenance or cleaning procedures other than periodic inspections/reviews, if required by the utility company's operating standards or applicable regulations.

Dimensions



5CTB-1

Dual Stack PRIME 1.3 & 1.4 Single Phase Smart Meter



Meter Installation and Commissioning Instructions

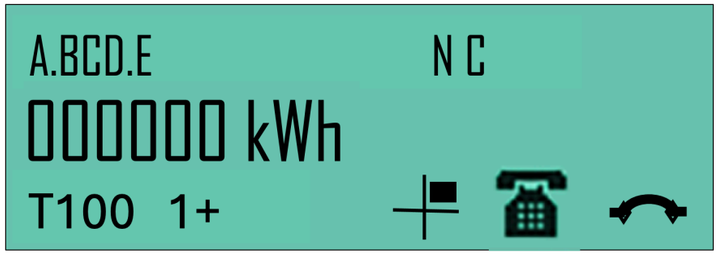
The **5CTB-1** single-phase meters family covers the metrological needs of the residential market, providing automated meter reading (AMR) solutions to the distribution companies based on a modular platform.

Technical Data

Internal Battery (not replaceable)	
Voltage	**3 V**
Useful life	**15 years**
Current Inputs	
Reference value	**5 A**
Minimum current	**0.25 A**
Maximum current	**80 A**
Surge withstand capability	**100 A** (continuously) **2400 A** (for 0.010 s)
Power absorbed by the current circuit	**< 0.2 VA** per phase (at Iref)
Voltage Inputs	
Nominal values (Vn/Un)	**Un = 127 - 230 V**
Frequency	**50 Hz**
Operating limit	**Un ±20%**
Thermal capability	**400 V**
Voltage circuit load (at 230 V)	**<1.2 W**
Measuring Accuracy	
Active energy	**Class B** (EN 50470-3:2022) or **Class 1** (EN IEC 62053-21:2021)
Reactive energy	**Class 2** (IEC 62053-23:2021)
Test constant	**4000 imp/kWh** (kvarh)
Communications Interfaces	
Optical port	**EN 62056-21**
PLC port	**PRIME dual 1.3 & 1.4** **FCC**
Breaking and Reconnection Element	
Breaking and Reconnection Element	**250 VCA**
Nominal load	**90 A**
Switching capacity	**22500 VA**
Operating time	**<30 ms**
Mechanical endurance	**1x10^5**
Dielectric strength	**4KV**
Safety Characteristics (IEC 62052-31:2015)	
Class II	**Double insulation**
Rated impulse voltage	**6 kV**
Utilization category	**UC2**
Protection degree	**IP51**
Operating Conditions	
Specified operating range	from **-25 ºC** to **70 ºC**
Operating and storing limit range	from **-25 ºC** to **85 ºC**
Humidity limit	**95 %** (without condensation)

Customer Information

LCD dot matrix Display (132x42):



The first line displays the OBIS code for the data shown on the second line. The data on the second line includes the corresponding unit, where applicable.

The third line displays additional information using symbols:

T100: current tariff for each of the contracts.

1+: presence of voltage (1) and presence of current and direction (+/-).

 : Active energy quadrant.

 : meter registered at the base node.

 : Breaking element (shown in the closed position in the image).

When the internal breaker is open, the power supply is interrupted but there is no isolation from the power grid.

Basic Functionality

- Instantaneous Measurements: voltages, currents, active and reactive power with sign, bidirectional and reactive energy in the 4 quadrants, total and per phase power factor and average active power last integration period.
- 3 bidirectional contracts with a complete tariff system based on an annual structure with up to 12 seasons, up to 12 type of days, 24 possible rate changes in a day with a resolution of 15 minutes which can be configured with different tariffs (up to 6). Possibility to configure up to 30 holidays or special days.
- The meter will store 12 end-of- billing monthly registers.
- Daily billing summaries.
- Load profiles.
- Breaking and Reconnection Element. Manual reconnection system (via display or by operating the IGA).
- RTC with 5 ppm accuracy and configurable automatic seasonal time change..
- Errors, Alarms and Events Recording.
- Power Quality Recording (according to **EN 50160**)
- Fraud Detection.
- Remote firmware update.
- Encryption and authentication.

Screen Tree

STAND -BY / SCROLL (Mode A (only 1.18.0) in the examLPe)

1.18.0 000000

MAIN MENU (LP: long pushing to enter and long pushing on "ATRÁS" to go back to SCROLL MENU)
scroll mode with short pushing (SP)

L1 Contract1 LP → L11 ACTUAL SP *Current values* | L12 Cierre1 [fecha] SP *last billing period* | L13 Cierre2 [fecha] SP *second to last billing period* | L14 Cierre3 [fecha] SP *third to last billing period* | L15 Cierre4 [fecha] SP *4th billing period..* | L16 Cierre5 [fecha] SP *5th billing period* | L17 Cierre6 [fecha] SP *6th billing period* | L18 Cierre7 [fecha] SP *7th billing period* | L19 Cierre8 [fecha] SP *8th billing period* | L110 Cierre9 [fecha] SP *9th billing period* | L111 Cierre10 [fecha] SP *10th billing period* | L112 Cierre11 [fecha] SP *11th billing period* | L113 Cierre12 [fecha] SP *12th billing period* | Atrás
SP *contract 1*

L2 Contract2 LP → L21 ACTUAL SP *Current values* | L22 Cierre1 [fecha] SP *Last billing period* | L23 Cierre2 [fecha] SP *second to last billing period* | L24 Cierre3 [fecha] SP *third to last billing period* | L25 Cierre4 [fecha] SP *4th billing period..* | L26 Cierre5 [fecha] SP *5th billing period* | L27 Cierre6 [fecha] SP *6th billing period* | L28 Cierre7 [fecha] SP *7th billing period* | L29 Cierre8 [fecha] SP *8th billing period* | L210 Cierre9 [fecha] SP *9th billing period* | L211 Cierre10 [fecha] SP *10th billing period* | L212 Cierre11 [fecha] SP *11th billing period* | L213 Cierre12 [fecha] SP *12th billing period* | Atrás
SP *contract 2*

L3 Contract3 LP → L31 ACTUAL SP *Current values* | L32 Cierre1 [fecha] SP *Last billing period* | L33 Cierre2 [fecha] SP *second to last billing period* | L34 Cierre3 [fecha] SP *third to last billing period* | L35 Cierre4 [fecha] SP *4th billing period..* | L36 Cierre5 [fecha] SP *5th billing period* | L37 Cierre6 [fecha] SP *6th billing period* | L38 Cierre7 [fecha] SP *7th billing period* | L39 Cierre8 [fecha] SP *8th billing period* | L310 Cierre9 [fecha] SP *9th billing period* | L311 Cierre10 [fecha] SP *10th billing period* | L312 Cierre11 [fecha] SP *11th billing period* | L313 Cierre12 [fecha] SP *12th billing period* | Atrás
SP *contract 3*

L4 INFO LP → L40 Indicadores SP *Indicators* | L41 Pot Contracts SP *Contract Powers* | L42 Rel transfor SP *transformer ratios* | L43 En curso SP *third to last billing period* | L44 Instantaneos SP *instantaneous values* | L45 Comunicaciones SP *communications* | L46 Identificadores SP *Identifiers* | L47 Constantes SP *Constants* | L48 C horario SP *DST dates* | L49 E Corte SP *disconnector* | L50 Calidad SP *power quality* | L52 Reset SP *Reset* | L53 LED MODE SP *LED without current* | L54 ID10 prim.instal SP installation date | Atrás
SP *information*

Info fab LP → KRL SP *check.sum KRL* | LR SP *check.sum LR* | NLR SP *check.sum nlr* | MDM SP *check.sum modem* | BACK WITH LP
SP *manufacturer information*

L7 Acciones (*) LP → L70 Modo test SP *Test mode (LP to go back)* | L71 Cierre manual SP *manual End of Billing period* | L72 Reset claves SP *Key Reset* | L73 Reset datos SP | L74 Reset param SP | L75 Reset LPC SP | L76 Led metro SP | Atrás
SP *Actions*

ATRAS
back

LP to execute | *LP to execute*

(*) ONLY ACCESIBLE TO UTILITY

DETAILED INFORMATION FOR EACH MENU (Long Pushing to exit from each one)

CONTRACT INFO / CURRENT VALUES
c=contract
n =current rate and total (T0)
c.18.n 000000
SP *EA+*
c.58.n 000000
SP *ER1*
c.16.n 000000
SP *Maximum (in c3, max esp c.26.n)*

CONTRACT INFO / End Of Billing
c=contract
c.18.1.01 000000
SP *EA+ rate 1*
c.18.2.01 000000
SP *EA+ rate 2*
c.18.3.01 000000
SP *EA+ rate 3*
c.18.4.01 000000
SP *EA+ rate 4*
c.18.5.01 000000
SP *EA+ rate 5*
c.18.6.01 000000
SP *EA+ rate 6*
c.18.0.01 000000
SP *EA+ Total*
c.58.1.01 000000
SP *ER1 rate 1*
c.58.2.01 000000
SP *ER1 rate 2*
c.58.3.01 000000
SP *ER1 rate 3*
c.58.4.01 000000
SP *ER1 rate 4*
c.58.5.01 000000
SP *ER1 rate 5*
c.58.6.01 000000
SP *ER1 rate 6*
c.58.0.01 000000
SP *ER1 total*
c.16.1.01 00000.00
SP *maximum rate1*
c.16.2.01 00000.00
SP *maximeter rate 2*
c.16.3.01 00000.00
SP *maximum rate3*
c.16.4.01 00000.00
SP *maximum rate4*
c.16.5.01 00000.00
SP *maximum rate5*
c.16.6.01 00000.00
SP *maximum rate6*
c.16.0.01 00000.00
maximum rate6
Note: in c3 max esp c.26.x.01

L40 INDICADORES
0.13.38 0
SP *current Quadrant*
0.12.38 0
SP *Voltage presence*
0.11.38 0
SP *current direction*
0.18.128 000
SP *current rate per contract*
0.96.5 0
SP *Alarms*
0.09.2 00-00-0000
SP *date*
0.09.1 00:00:00
SP *hour*

L41 POT.ContractS
1.135.1 0000.00
SP *Contract power Contract 1 rate 1*
1.135.2 0000.00
SP *Contract power Contract 1 rate 2*
1.135.3 0000.00
SP *Contract power Contract 1 rate 3*
1.135.4 0000.00
SP *Contract power Contract 1 rate 4*
1.135.5 0000.00
SP *Contract power Contract 1 rate 5*
1.135.6 0000.00
SP *Contract power Contract 1 rate 6*
34.21 0000.00
SP *Contract power Contract 2 rate 1*
34.22 0000.00
SP *Contract power Contract 2 rate 2*
34.23 0000.00
SP *Contract power Contract 2 rate 3*
34.24 0000.00
SP *Contract power Contract 2 rate 4*
34.25 0000.00
SP *Contract power Contract 2 rate 5*
34.26 0000.00
Contract power Contract 2 rate 6

L42 REL. TRANFOR.
0.04.2 80
SP *Current transformer ratio. Primary value*
0.04.5 80
SP *Current transformer ratio. Secondary value*
0.04.3 230
SP *Voltage transformer ratio. Primary value*
0.04.3 230
SP *Voltage transformer ratio. Secondary value*

L43 EN CURSO
0.18.0 000000
SP *Tot. A+*
0.28.0 000000
SP *Tot. A-*
0.58.0 000000
SP *Tot. R1*
0.68.0 000000
SP *Tot. R2*
0.78.0 000000
SP *Tot. R3*
0.88.0 000000
SP *Tot. R4*
0.14.0 000000
SP *import demand in the current period*
0.24.0 000000
SP *export demand in the current period*
0.15.0 000000
SP *import power*
0.25.0 000000
export power

L44 INSTANTANEOS
0.327.0 00000.0
SP *Voltage L1*
0.527.0 00000.0
SP *Voltage L2 (ONLY 3-PHASE METER)*
0.727.0 00000.0
SP *voltage L3 (ONLY 3-PHASE METER)*
0.317.0 0000.00
SP *Current L1*
0.517.0 0000.0
SP *Current L2 (ONLY 3-PHASE METER)*
0.717.0 0000.0
Current L3 (ONLY 3-PHASE METER)
0.337.0 0000.0
power factor L1
0.537.0 0000.00
Power factor L2 (only 3-phase meter)
0.737.0 0000.00
power factor L3 (only 3-phase meter)
0.17.0 00000.00
SP *Instantaneous Active Power*
0.37.0 00000.00
SP *Instantaneous Reactive Power*
0.137.0 0000.00
SP *total power factor*

L45 COMUNICACIONES
0.00.5 1.4 auto
PLC configuration

L46 IDENTIFICADORES
0.00.0 00-00-00-00-00-00
SP *MAC address*
0.00.1 0
SP *Multicast group*
0.00.10 ZIV0000000000
SP *serial number*
0.02.0 V02000
SP *DLMS version*
0.00.11 DLSM0200
SP *protocol version*
0.08.4 3600
SP *LP2 integration period*
0.00.12 V20.0.0.0
SP *PLC version*

L47 CONSTANTES
No Info

L48 CAMBIO HORARIO
0.00.8 00.00.00 00:00
SP *DST date: winter -> summer*
0.00.9 00.00.00 00:00
SP *DST date: summer -> winter*

L49 ELEMENTO CORTE
0.96.5.5 0
SP *disconnector position*
0.9434.36 0000
SP *Average power during opening cycle*

L50 CALIDAD
0.32.33.0 000
SP *sags total duration*
0.32.32.0 000
SP *number of sags*
0.32.37.0 000
SP *swells total duration*
0.32.36.0 000
number of swells

L52 RESET
No Info
(only in L7 (local action required))

L53 LED MODE
0 x
SP *Active Energy (-OFF no load*
1
SP *Reactive Energy (-OFF no load*
2
SP *Active Energy (-ON if no load*
3
SP *Reactive Energy (-ON if no load (la X: se marca en el modo activo)*

L54 ID10 prim.instal
0.961.9
fecha primera instalación

Detalle L70 Modo Test
0.09.2 00-00-0000
SP *Date*
0.09.1 00:00:00
SP *Time*
0.18.0 00000000
SP *EA+ Total*
0.28.0 00000000
SP *EA- Total*
0.58.0 00000000
SP *ER1 Total*
0.68.0 00000000
SP *ER2 Total*
0.78.0 00000000
SP *ER3 Total*
0.88.0 00000000
SP *ER4 Total*
KRL
SP *CRC Kernel*
LR
SP *CRC LR*
NLR
SP *CRC NLR*
MDM
SP *CRC Módem*
0.02.0 V00000
SP *meter version (DLMS)*
0.961.6 V00000
SP *versión DLMS (comm*
0.00.12 V20.0.0.0
SP *PLC version (PRIME)*
0.961.8 V20.0.0.0
former PLC version

L7x Reset
L7x Reset xxx
LP *type or reset*
L7xx Reset disp
reset ready

L76 Metrology Led
L761 Activa X
SP *Active led*
L762 Reactiva
Reactive led
LP to select the mode ("x" in the active mode)

The improper manipulation of the equipment may present risks of serious personal and material damage. Therefore, this type of equipment must be exclusively manipulated by qualified staff and familiar with the corresponding safety rules. Only qualified personnel should carry out the handling of the meter.

Environmental Information

This equipment contains a lithium battery and electronic parts. Once the meter has reached the end of its useful life, it must be disposed of by an Authorized Waste Management Service.

ZIV Automation
Parque Tecnológico de Bizkaia, 210 - 48170 Zamudio, Spain. Tel.: +34 944 522 003 Fax.: +34 944 522 140
ziv@zivautomation.com · www.zivautomation.com - Please visit our website for local information in your area