



EM21 72D "3-phase Energy Meter"

PROG.

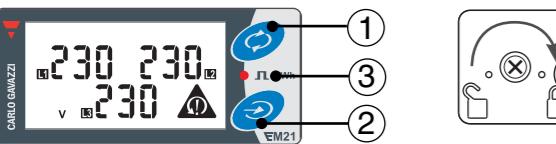
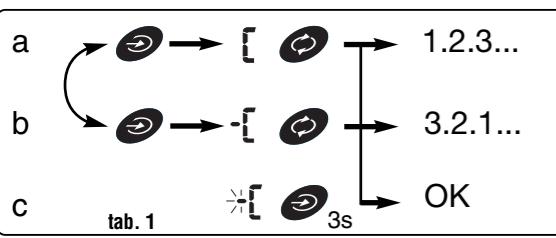


fig. 1



ENGLISH

■ Front panel and value setup (fig. 1)

In the measurement mode: press the key 1 to scroll the measurement pages. press the key 2 to scroll the information pages of the instrument. Holding the button 2 pressed for a long time, you access parameter programming and setting.

In the programming mode: press the key 1, to scroll the menus or increase/decrease the values to be set up. With button 2 you can enter the submenus and change the value change mode from positive to negative or vice versa according to the logic indicated in table 1: a, pressing button 2, the letter C appears in the bottom row, indicating the possibility to change the values increasing them by means of button 1. b, pressing again button 2, -C appears in the bottom row, indicating the possibility to decrease the values by means of button 1. c, To confirm the selected value, hold button 2 pressed until the mark - of letter C disappears. This way, the value is confirmed.

The frontal red LED (3, fig.1) flashes proportionally to the active imported energy consumption.
Wrong phase sequence indicator (4, fig 1), the hazard triangle is displayed in case of wrong phase sequence (L2-L1-L3, L1-L3-L2).

■ PROGRAMMING BLOCK

It is possible to block the access to programming by means of a specific trimmer positioned on the rear of the removable display unit. Turn the trimmer clockwise up to its run end with the help of a suitable screwdriver as shown in figure 2 point 5.

■ BASIC PROGRAMMING AND RESET

To enter the complete programming mode, press the key 2 for at least 3 sec. (fig 1). Entering the programming mode, all the measurements and control functions are inhibited. During this phase the flashing of the LED has not to be considered.

01 PASS?: entering the right password (default value is 0) allows accessing the main menu.

02 CnGPASS: it allows changing the password.

03 APPLIC: it allows selecting the pertinent application. A: active positive energy meter (measuring of active positive energy and some minor parameters). B: active and reactive positive energies meter (measuring of energies active and reactive positive with some minor parameters). C: showing of all the electrical variables available.

04 SYS: it allows selecting the electrical system. 3Pn: 3-phase unbalanced with neutral; 3P: 3-phase unbalanced without neutral; 3P1: 3-phase balanced with or without neutral 2P: 2-phase; 1P: single phase.

05 Ut rAt: VT ratio (1.0 to 6.00k). Example: if the connected VT primary is 5kV and the secondary is 100V, the VT ratio to be set is 50 (that is 5000/100).

06 Ct rAt: CT ratio (1.0 to 60.0k). Example: if the connected CT primary is 3000A and the secondary is 5A, the CT ratio is 600 (that is: 3000/5).

07 PuLSE: selects the pulse weight (kWh per pulse; programmable from 0,001 to 9,99).

08 P. tEST: (SOLO CON "APPLIC" C, vedere menù n. 3), imposta il valore di potenza (kW) simulata a cui corrisponderà una frequenza degli impulsi ad essa proporzionale in base a "PULSE", la funzione è attiva finché si rimane nel menù.

09 tEST: (SOLO CON "APPLIC" C, vedere menù n. 3), attivo su uscita impulsi con selezione ON.

10 Add.: (solo con opzione "IS") indirizzo seriale: da 1 a 247.

11 EnE rES: azzeramento di tutti i contatori totali (SOLO CON "APPLIC" C).

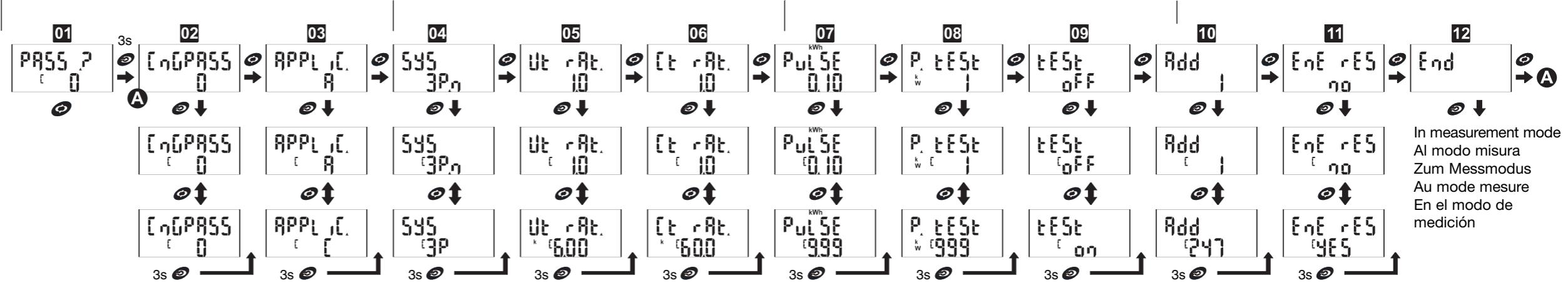
12 End: per tornare al modo misura premere il tasto 2 (vedere figura 1).

09 tEST: activated on the pulse output when ON (for "APPLIC" C only).

10 Add.: serial address: from 1 to 247 (with "IS" option only).

11 EnE rES: reset of all the meters (for "APPLIC" C only).

12 End: it allows exiting the programming mode by pressing the key 2 (see fig 1).



In measurement mode
Al modo misura
Zum Messmodus
Au mode mesure
En el modo de medición

ITALIANO

Pannello frontale ed impostazioni valori (fig. 1)

In modalità misura: tasto 1, scorre le pagine di misura. Tasto 2 scorre le pagine informazioni dello strumento. Tenendo premuto a lungo il tasto 2 si accede alla programmazione e impostazioni parametri.

In modalità programmazione: tasto 1, scorre i menù o incrementa/decremente i valori da impostare. Il tasto 2, entra nei sottomenù e cambia la modalità di incrementazione dei valori da positiva a negativa e viceversa secondo la logica riportata nella tabella 1: a, premendo il tasto 2 compare una lettera C nella riga inferiore indicante la possibilità di agire sui valori incrementandoli mediante il tasto 1. b, premendo ulteriormente il tasto 2 compare -C nella riga inferiore indicante la possibilità di agire sui valori decrementandoli mediante il tasto 1. c, Per confermare il valore selezionato tenere premuto il tasto 2 finché il segno - (se presente) e la lettera C compaiono, il valore sarà così confermato.

II LED rosso frontale (3, fig.1) lampeggia proporzionalmente al consumo di energia attiva totale.

Indicatore di sequenza fase errata (4, fig 1), il triangolo di pericolo viene visualizzato in caso di sequenza fasi errata (L2-L1-L3, L1-L3-L2).

■ BLOCCO DELLA PROGRAMMAZIONE

E' possibile bloccare l'accesso alla programmazione mediante un apposito trimmer posizionato nel retro dell'unità display removibile. Girare in senso orario fino a fondo corsa il trimmer con l'aiuto di un adeguato cacciavite come illustra la fig. 2 punto 5.

■ PROGRAMMAZIONE E RESET

Per accedere alla programmazione completa dello strumento premere il tasto 2 per almeno 3sec. (fig 1). Quando si accede alla programmazione, si inibiscono tutte le funzioni di misura e controllo (il trimmer non deve essere posizionato in lock, fig. 2). In questa fase il lampeggio del LED frontale non deve essere considerato.

01 PASS? : inserendo il valore di password corretto (di default 0) si accede al menù principale.

02 CnGPASS: nuova password, personalizza la password.

03 APPLIC.: seleziona l'applicazione pertinente. A: contatore di energia attiva positiva (misura dell'energia attiva positiva e di alcuni parametri minori). B: contatore di energia attiva e reattiva positiva (misura dell'energia attiva e reattiva positiva e di alcuni parametri minori). C: visualizzazione di tutte le variabili elettriche disponibili.

04 SYS : sistema elettrico: 3Pn: trifase sbilanciato con neutro; 3P: trifase sbilanciato senza neutro; 3P1: trifase bilanciato con o senza neutro; 2P: bifase; 1P monofase.

05 Ut rAt. : rapporto TV (da 1,0 a 6.00k). **Esempio:** se il primario del TV connesso è di 5kV e il secondario è di 100V il rapporto di TV corrisponde a 50 (ottenuto eseguendo il calcolo: 5000/100).

06 Ct rAt. : rapporto TA (da 1,0 a 60.0k). **Esempio:** se il primario del TA ha una corrente di 3000A e il secondario di 5A, il rapporto TA corrisponde a 600 (ottenuto eseguendo il calcolo: 3000/5).

07 PuLSE: seleziona il peso dell'impulso (kWh per impulso; programmatore da 0,01 a 9,99).

08 P. tEST: (SOLO CON "APPLIC" C, vedere menù n. 3), imposta il valore di potenza (kW) simulata a cui corrisponderà una frequenza degli impulsi ad essa proporzionale in base a "PULSE", la funzione è attiva finché si rimane nel menù.

09 tEST: (SOLO CON "APPLIC" C, vedere menù n. 3), attivo su uscita impulsi con selezione ON.

10 Add.: (solo con opzione "IS") indirizzo seriale: da 1 a 247.

11 EnE rES: azzeramento di tutti i contatori totali (SOLO CON "APPLIC" C).

12 End : per tornare al modo misura premere il tasto 2 (vedere figura 1).

DEUTSCH

Vorderes Bedienfeld und Werteinstellungen (fig. 1)

Im Messmodus: Taste 1, durchblättert die Meßseiten. Taste 2 durchblättert die Informationsseiten des Geräts. Bei langem Gedrückthalten der Taste 2 loggen Sie sich in die Programmierung und Parametereinstellungen ein.

Im Programmiermodus: Taste 1 durchblättert die Menüs bzw. erhöht/verringert die einzustellenden Werte. Mit Taste 2 gelangt man in die Untermenüs und ändert die Zunahmemodalität der Werte von positiv in negativ und umgekehrt je nach der in Tabelle 1 angegebenen Logik: a, bei Drücken der Taste 2 wird ein Buchstaben C in der unteren Zeile angezeigt, der die Möglichkeit aufzeigt, die Werte mit der Taste 1 zu steigern. b, bei weiterem Drücken der Taste 2 wird -C in der unteren Zeile angezeigt, was die Möglichkeit aufzeigt, die Werte mit der Taste 1 zu verringern. c, Zur Bestätigung des gewählten Werts die Taste 2 so lange gedrückt halten bis das Zeichen – des Buchstabens C erlischt, dadurch wird der Wert bestätigt.

Die vordere rote LED-Leuchte (3, v. fig.1) blinkt, wenn die gemessene Wirkenergie und der Strom positiv (importiert) sind.

Die LED rouge frontale (3, fig.1) clignote proportionnellement à l'énergie active mesurée.

Indicateur de séquence phase erronée (4, fig 1), le triangle de danger est affiché en cas de séquence phases erronée (L2-L1-L3, L1-L3-L2).

■ BLOCAGE DE LA PROGRAMMATION

Il est possible de bloquer l'accès à la programmation au moyen d'un trimmer positionné derrière l'unité d'affichage amovible. Tourner à fond dans le sens des aiguilles d'une montre le trimmer à l'aide d'un tournevis comme illustré la fig. 2 point 5.

■ PROGRAMMIERUNG UND RÜCKSETZEN

Um in den Programmiermodus zu gelangen, muss die Taste 2 für mindestens 3 Sek. gedrückt werden (siehe Abb.1). Im Programmiermodus werden alle Mess- und Kontrollfunktionen inaktiv. Diese Phase hat keinen Bezug zu dem Blinken der LED.

01 PASS? : durch Eingabe des richtigen Passworts (Default-Wert beträgt 0) rufen Sie das Hauptmenü auf.

02 CnGPASS: ermöglicht Passwortänderung.

03 APPLIC.: ermöglicht die Wahl des entsprechenden Applikationsbereichs. A: Wirkenergiezähl (Messen der positive Wirkenergie und einiger weniger Parameter). B: Wirk- und Blindenergiezähl (Messen der positive Wirk- und Blindenergien mit einigen weniger Parametern). C: Anzeige aller verfügbaren elektrischen Messgrößen.

04 SYS : ermöglicht die Wahl des Elektrosystems. 3Pn: 3phasig unsymmetrisch mit Nulleiter, 3P: 3phasig symmetrisch ohne Nulleiter, 3P1: 3phasig symmetrisch mit oder ohne Nulleiter 2P: 2phasig, 1P: eine Phase.

05 Ut rAt. : SpW-Verhältnis (von 1,0 bis 6,00k). **Beispiel:** Wenn der angeschlossene primäre Spannungswandler 5kV beträgt und der sekundäre 100V, beträgt das einzustellende Spannungswandlerverhältnis 50 (obtenido efectuando el calculo: 5000/100).

06 Ct rAt. : StW-Verhältnis (von 1,0 bis 60,0k). **Beispiel:** Wenn der angeschlossene primäre Stromwandler 3000A beträgt und der sekundäre 5A, beträgt das Stromwanderverhältnis 600 (d.h.: 3000/5).

07 PuLSE: wählt das Impulsge wicht (kWh pro Impuls; einstellbar von 0,001 bis 9,99).

08 P. tEST: (NUR MIT "APPLIC" C, siehe Menü n. 3), stellt den simulierten Leistungswert (kW) ein, dem eine Frequenz der zu ihr proportionalen Impulse auf der Grundlage von "PULSE" entspricht, die Funktion ist eingeschaltet solange Sie im Menü bleiben.

09 tEST: (NUR MIT "APPLIC" C Option, siehe Menü n. 3), bei ON ist Impulsausgang eingeschaltet.

10 Add.: (nur mit "IS" Option) ermöglicht die Wahl der seriellen Geräteadressen (von 1 bis 247).

11 EnE rES: ermöglicht das Rücksetzen der Gesamtenergiezähl (NUR MIT "APPLIC" C).

12 End : ermöglicht das Verlassen des Programmiermodus durch Drücken der Taste 2 (siehe Abb. 1).

FRANÇAIS

Panneau frontal et configurations valeurs (fig. 1)

En mode mesure: touche 1, les pages de mesure défilent. Touche 2, les pages d'informations de l'instrument défilent. En maintenant enfoncé longtemps la touche 2, on accède à la programmation et configurations paramètres.

En mode programmation: touche 1, les menus défilent ou les valeurs à configurer augmentent/baissent. La touche 2 entre dans les sous-menus et change le mode d'incrémentation des valeurs de positif à négatif et vice-versa selon la logique reportée dans le tableau 1: a, en appuyant sur la touche 2, la lettre C apparaît sur la ligne inférieure indiquant la possibilité d'actionner sur les valeurs en les augmentant à l'aide de la touche 1. b, en appuyant encore sur la touche 2, C apparaît dans la ligne inférieure indiquant la possibilité d'augmenter les valeurs mediante la tecla 1. b, pulsando de nuevo la tecla 2 aparece una letra C en la línea inferior para indicar la posibilidad de aumentar los valores mediante la tecla 1. b, pulsando de nuevo la tecla 2 aparece -C en la línea inferior para indicar la posibilidad de disminuir los valores mediante la tecla 1. c, Para confirmar el valor seleccionado mantenga pulsada la tecla 2 hasta que el signo – de la C desaparezca, así se habrá confirmado el valor.

El LED rojo frontal (3, fig.1) parpadea proporcionalmente al consumo de energía activa total importada.

Indicador de secuencia fase incorrecta (4, fig 1), el triángulo de peligro se visualiza en caso de secuencia de fase incorrecta (L2-L1-L3, L1-L3-L2).

■ BLOQUEO DE LA PROGRAMACIÓN

Es posible bloquear el acceso a la programación mediante el conmutador situado en la parte trasera del módulo display. Gire en sentido horario el conmutador hasta su tope usando un destornillador adecuado como muestra la fig. 2 punto 5.

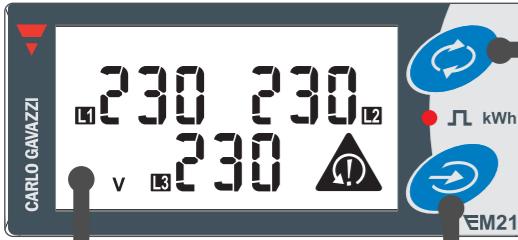
■ PROGRAMACIÓN Y PUESTA A CERO

Para entrar al modo de programación completo hay que pulsar la tecla 2 al menos 3 seg. (ver fig. 1). En el modo de programación completa del instrumento, todas las medidas y las funciones de control están inhibidas. Durante esta fase el parpadeo del LED no debe ser considerado.

01 PASS? : introduciendo la clave correcta (valor por defecto 0) se accede al menú principal.

02 CnGPASS: permite cambiar la clave.

03 APPLIC.: permite seleccionar la aplicación correspondiente. A: activar el contador de energía positiva (midiendo la energía activa positiva y algunos pará



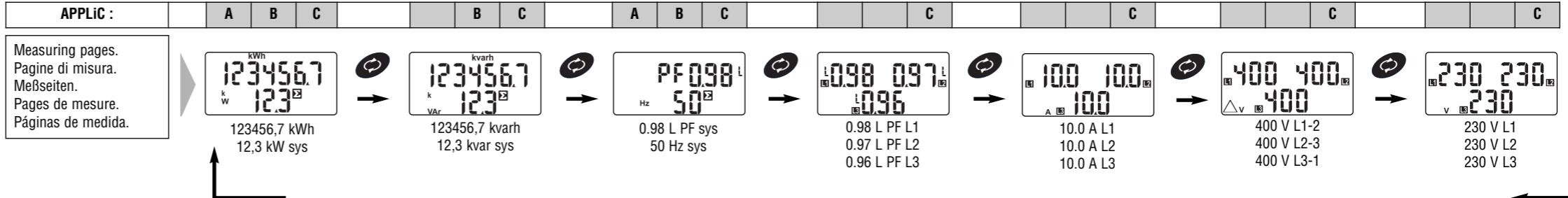
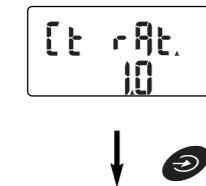
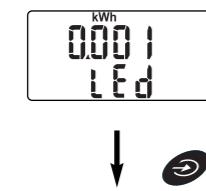
In case of wrong phase sequence.
In caso di sequenza fasi errata.
Bei falscher Phasenfolge.
En cas de séquence phases erronée.
En caso de secuencia de fase incorrecta.



Phase to phase voltage
L1-2, L2-3, L3-1.
Tensioni concatenate
L1-2, L2-3, L3-1.
Spannung Phase-Phase
L1-2, L2-3, L3-1.
Tension phase-phase
L1-2, L2-3, L3-1.
Tensión entre fases
L1-2, L2-3, L3-1.



System values.
Valori di sistema.
Systemwerte.
Valeurs de système.
Valores del sistema.



Available variables only with RS485.
Variabili disponibili solo da RS485.
Vorhandene Variablen nur mit RS485.
Variables disponibles seulement avec RS485.
Variables disponibles sólo con RS485.

V L-N sys, V L-L sys, VA sys, VA L1, VA L2, VA L3, var L1, var L2, var L3, W L1, W L2, W L3.

Year of production (Y. 2008) and firmware release (r.A0).
Anno di produzione (Y. 2008) e versione del firmware (r.A0).
Herstellungsjahr (Y. 2008) und Version der Firmware (r.A0).
Année de production (Y. 2008) et version firmware (r.A0).
Año de fabricación (Y. 2008) y versión del firmware (r.A0).

kWh per pulse (LED).
kWh per impulso (LED).
kWh pro Impuls (LED).
kWh par impulsion (LED).
kWh por pulso (LED).

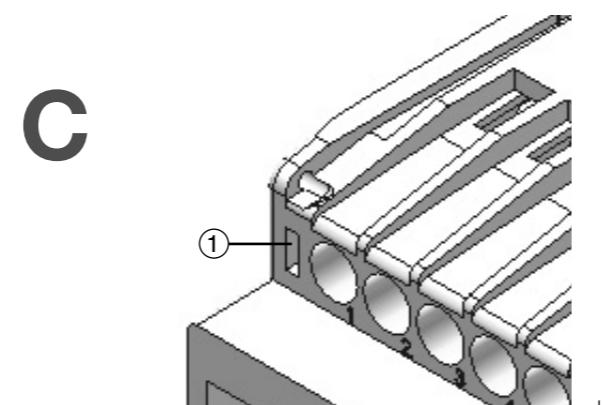
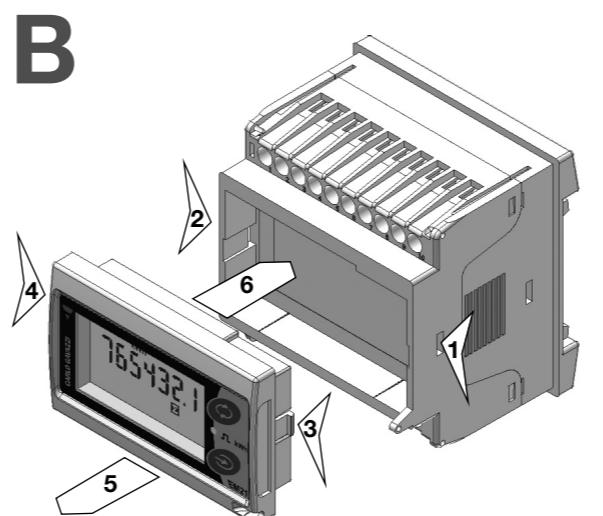
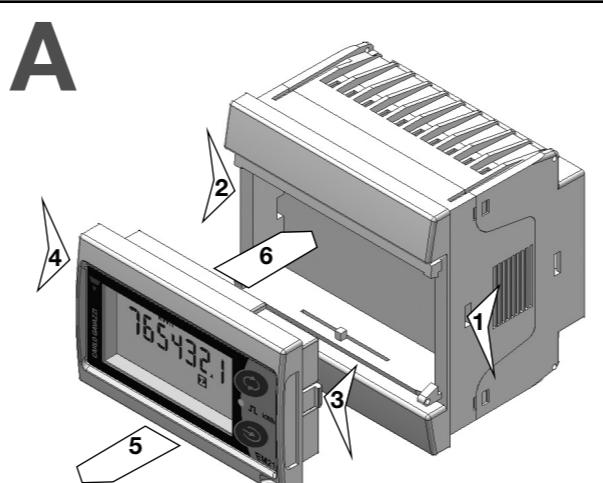
Type of system (SYS 3P.n) and type of connection (4 wires).
Tipo di sistema (SYS 3P.n) e tipo di collegamento (4 fili).
Systemtyp (SYS 3P.n) und AnschlussTyp (4 Adern).
Type de système (SYS 3P.n) et type de branchement (4 câbles).
Tipo de sistema (SYS 3P.n) y tipo de conexión (4 hilos).

Current transformer ratio.
Rapporto di trasformazione amperometrica.
Stromwandler-Verhältnis.
Ratio de transformateur ampèremètre.
Relación del transformador de corriente.

Voltage transformer ratio.
Rapporto di trasformazione voltmetrica.
Spannungswandler-Verhältnis.
Ratio de transformateur de tension.
Relación del transformador de tensión.

Pulse output: kWh per pulse.
Uscita impulsi: kWh per impulso.
Impulsausgang: kWh pro Impuls.
Sortie impulsions: kWh par impulsion.
Salida pulsos: kWh por pulso.

Serial communication address.
Indirizzo di comunicazione seriale.
Serielle Kommunikationsadresse.
Adresse de communication sériel.
Dirección de comunicación serie.



ENGLISH

■ Transforming the instrument from DIN guide fitting to panel fitting and vice versa.

To remove the display unit, by means of a screwdriver of suitable dimensions, operate on slots (1 and 2) on the sides of the instrument, pressing the fastening tabs (3 and 4), then carefully remove (5) the display unit.

To transform the instrument from panel fitting to DIN guide fitting, rotate the measurement base from A to B.

To transform the instrument from DIN guide fitting to panel fitting, rotate the measurement base from B to A.

To insert the display unit, gently push it (6) in its seat, as shown in the images, until you hear the "clicks" of the elastic tabs (3 and 4) which signal the correct fitting in the slots (1 and 2).

■ Green LED, fig. C 1

If the instrument is used as converter, that is without display unit, the green LED shows that the instrument is powered, if the LED flashes, it shows that the instrument is connected to the serial network and is communicating.

N

ITALIANO

■ Trasformare lo strumento da montaggio a guida DIN a montaggio a pannello e viceversa.

Per togliere l'unità display, mediante un cacciavite a taglio di dimensioni adeguate agire sulle asole (1 e 2) ai lati dello strumento premendo le lingue di fissaggio (3 e 4), quindi estrarre (5) con cura l'unità display.

Per trasformare lo strumento da montaggio a pannello a guida DIN, girare su se stessa la base di misura da A a B.

Per trasformare lo strumento da guida DIN a montaggio a pannello, girare su se stessa la base di misura da B a A.

Per inserire l'unità display, spingerla (6) delicatamente nella sede predisposta, come illustrano le immagini a lato, fino a che si avvertono i "click" delle lingue elastiche di fissaggio (3 e 4) a significare il corretto incastro delle stesse nelle asole (1 e 2) di chiusura.

■ LED verde, fig. C 1

Nel caso lo strumento sia utilizzato come convertitore, quindi senza unità display, il LED verde indica la presenza dell'alimentazione, se il LED è lampeggiante esso indica che lo strumento è collegato alla rete seriale e sta comunicando.

DEUTSCH

■ Umwandlung der Gerätemontage von DIN Schiene in Tafel und umgekehrt.

Zur Herausnahme der Anzeigeeinheit, mit einem entsprechend großen Schlitzschraubenzieher durch die Ösen (1 und 2) an den Seiten des Geräts auf die Befestigungszungen (3 und 4) drücken und dann die Anzeigeeinheit vorsichtig herausziehen (5).

Zur Umwandlung der Gerätemontage von Tafel in DIN Schiene, die Messbasis um sich selbst von A auf B drehen.

Zum Einsetzen der Anzeigeeinheit, diese (6) vorsichtig in das vorgesehene Gehäuse schieben bis das "Klicken" der elastischen Befestigungszungen (3 und 4) zu hören ist, welches ihr korrektes Einrasten in den Verschlüssen (1 und 2) bedeutet.

■ Grüne LED-Leuchte, Abb. C 1

Wenn das Gerät als Wandler verwendet wird, also ohne Anzeigeeinheit, zeigt die grüne LED-Leuchte die vorhandene Speisung an, bei ihrem Blinken zeigt die LED-Leuchte auch an,

dass das Gerät an ein serielles Netz angeschlossen ist und gerade kommuniziert.

FRANÇAIS

■ Transformer l'instrument de montage en guide DIN en montage à panneau et vice-versa.

Pour enlever l'unité d'affichage, à l'aide d'un tournevis à coupe de dimensions adéquates, actionner les fentes (1 et 2) aux côtés de l'instrument en appuyant sur les languettes de fixation (3 et 4) puis extraire (5) avec soin l'unité display.

Pour transformer l'instrument de montage en panneau à guide DIN, tourner sur elle-même la base de mesure de A à B.

Pour transformer l'instrument de guide DIN à montage en panneau, tourner sur elle-même la base de mesure de B à A.

Pour insérer l'unité d'affichage, la pousser (6) délicatement dans le siège prédisposé comme les images sur le côté l'illustrent jusqu'à ce qu'on avertisse les "clics" des languettes élastiques de fixation (3 et 4) ce qui signifie l'encastrement correct de celles-ci dans les fentes (1 et 2) de fermeture.

■ LED vert, fig. C 1

Dans le cas où l'instrument est utilisé en tant que convertisseur et donc sans unité display, le LED vert indique la présence de l'alimentation si le LED clignote, cela indique aussi que l'instrument est branché au réseau série et qu'il communique.

ESPAÑOL

■ Transformar el montaje a carril DIN en montaje a panel y viceversa.

Para retirar la unidad display, mediante un destornillador adecuado, accionar en las ranuras (1 y 2) a los lados del equipo presionando las lengüetas de fijación (3 y 4) y extrayendo (5) con cuidado el módulo display.

Para transformar el montaje en panel a montaje en carril DIN, gire sobre sí misma la base de A a B.

Para transformar el montaje a carril DIN en montaje a panel, gire sobre sí misma la base de B a A.

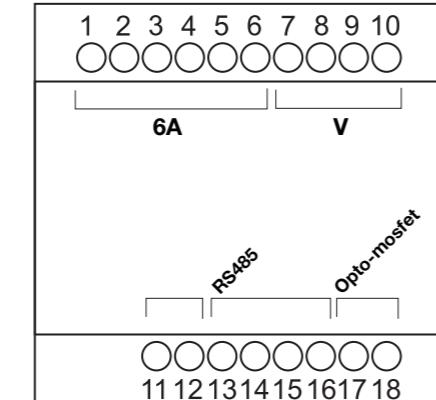
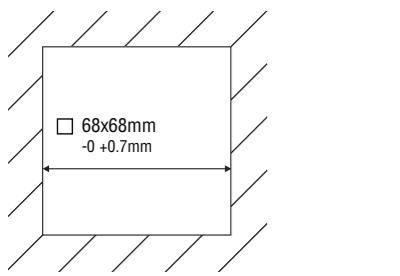
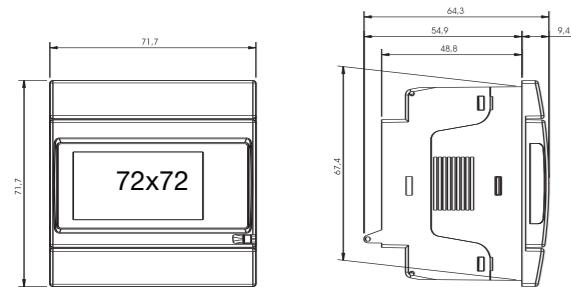
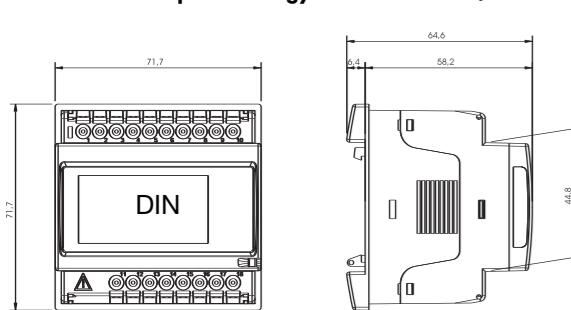
Para introducir el módulo display, empújelo (6) delicadamente en el hueco correspondiente, como ilustran las imágenes que aparecen a la izquierda, hasta que oiga los "clic" de las lengüetas de fijación (3 y 4) que indican que se han introducido correctamente en los orificios (1 y 2) de cierre.

■ LED verde, fig. C 1

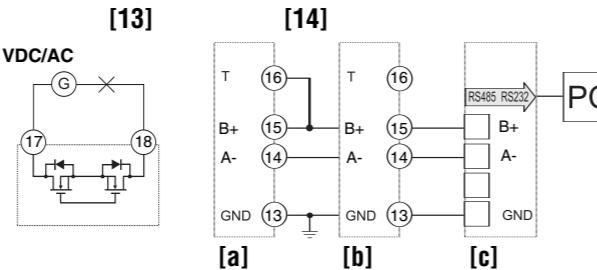
En caso de que el equipo se use como convertidor, por lo tanto sin display, el LED verde indica que el equipo está alimentado, si el LED parpadea indica también que el equipo está conectado a la red en serie y que está comunicando.



EM21 72D "3-phase Energy Meter"



F=315mA



ENGLISH

6A System type selection 3P.n

[1]- 3-ph, 4-wire, unbalanced load, 3-CT connection.

[2]- 3-ph, 4-wire, unbalanced load, 3-CT and 3-VT/PT connections

6A System type selection 3P

[3]- 3-ph, 3-wire, unbalanced load, 3-CT connection.

[4]- 3-ph, 3-wire, unbalanced load, 3-CT and 2-VT/PT connections

[5]- 3-ph, 3-wire, unbalanced load, 2-CT connections (ARON).

[6]- 3-ph, 3-wire, unbalanced load, 2-VT/PT and 2-CT connections (ARON)

6A System type selection 3P.1

[7]- 3-ph, 3-wire, balanced load, 1-CT connection (if the neutral is available the voltage connection can be realized to only 2-wire VL1 and N).

[8]- 3-ph, 3-wire, balanced load, 1-CT and 2-VT/PT connection.

6A System type selection 2P

[9]- 2-ph, 3-wire, 2-CT connection.

[10]- 2-ph, 3-wire, 2-CT and 2-VT/PT connections

6A System type selection 1P

[11]- 1-ph, 2-wire, 1-CT connection.

[12]- 1-ph, 2-wire, 1-CT and 1-VT/PT connection

Static output and serial port

[13]- Opto-mosfet static output

[14]- RS485 connection 2 wires [a]- last instrument,

[b]- instrument 1...n, [c]- RS485/RS232 transducer.

ITALIANO

6A, selezione sistema tipo 3P.n

[1]- 3 fasi, 4 fili, carico squilibrato, connessione da 3 TA.

[2]- 3 fasi, 4 fili, carico squilibrato, connessione da 3 TA e 3 TV

6A, selezione sistema tipo 3P

[3]- 3 fasi, 3 fili, carico squilibrato, connessione da 3 TA.

[4]- 3 fasi, 3 fili, carico squilibrato, connessione da 3 TA e 2 TV

[5]- 3 fasi, 3 fili, carico squilibrato, connessione da 2 TA (ARON).

[6]- 3 fasi, 3 fili, carico squilibrato, connessione da 2 TV e 2 TA (ARON)

6A, selezione sistema tipo 3P.1

[7]- 3 fasi, 3 fili, carico equilibrato, connessione da 1 TA (se il neutro è disponibile il collegamento voltmetrico può essere realizzato a soli 2 fili VL1 e N).

[8]- 3 fasi, 3 fili, carico equilibrato, connessione da 1 TA e 2TV.

6A, selezione sistema tipo 2P

[9]- 2 fasi, 3 fili, connessione da 2 TA.

[10]- 2 fasi, 3 fili, connessione da 2 TA e 2 TV

6A, selezione sistema tipo 1P

[11]- 1 fase, 2 fili, connessione da 1 TA.

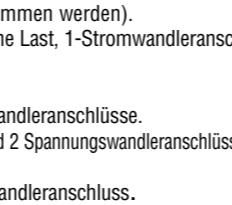
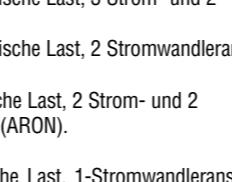
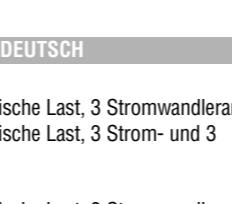
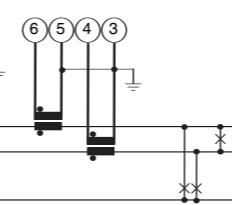
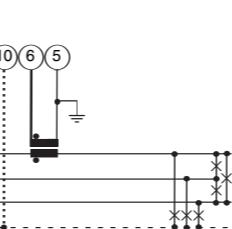
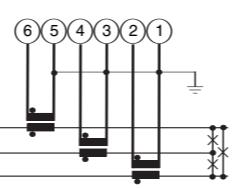
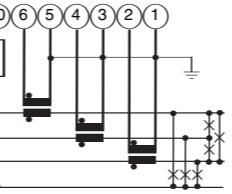
[12]- 1 fase, 2 fili, connessione da 1 TA e 1 TV

Uscita statica e porta seriale

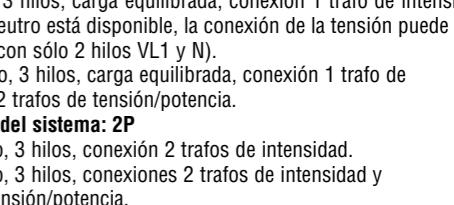
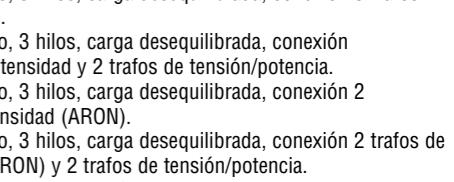
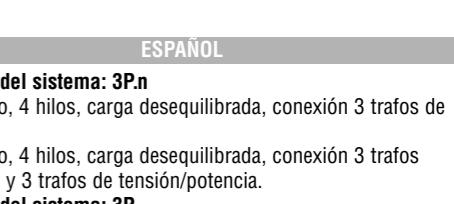
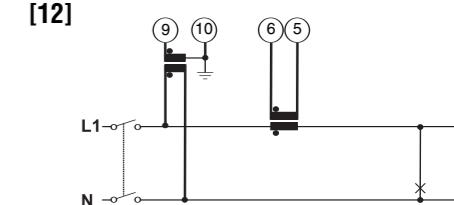
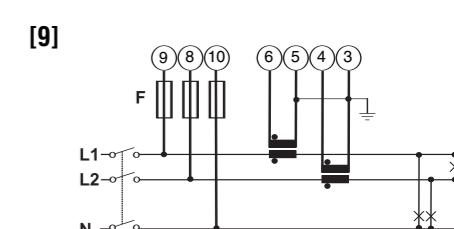
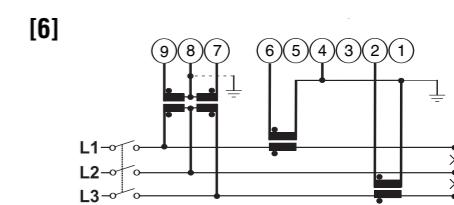
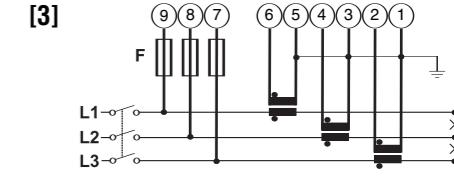
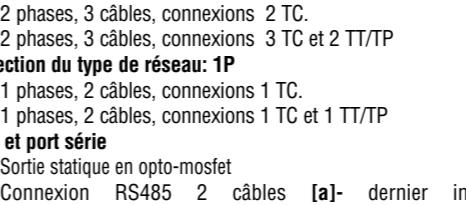
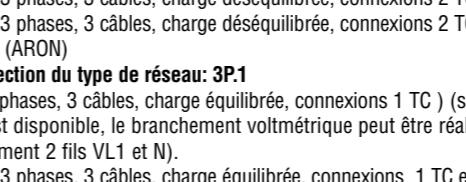
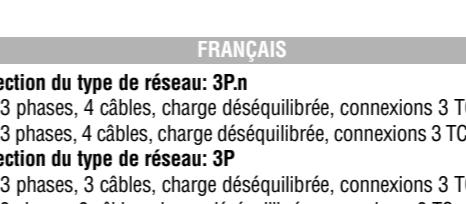
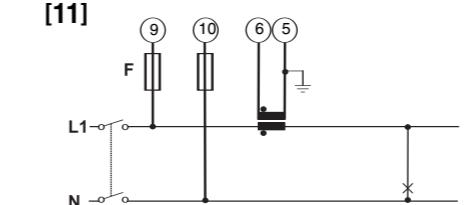
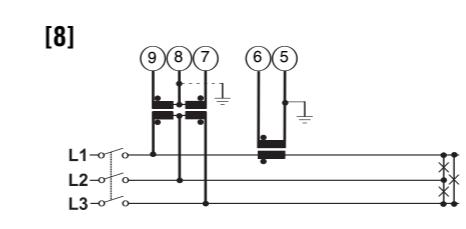
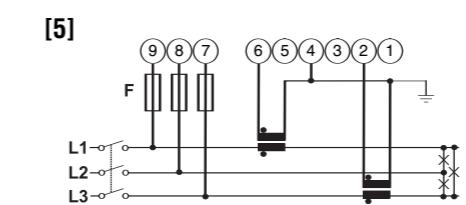
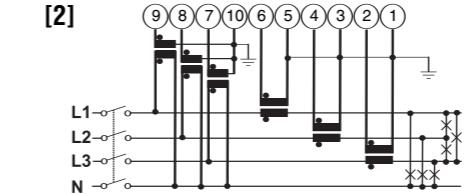
[13]- Uscita statica a opto-mosfet

[14]- RS485 connessione a 2 fili [a]- ultimo strumento,

[b]- strumento 1...n, [c]- convertitore RS485/RS232.



Uscite statiche e serie
[13]- Statischer Ausgang mit Opto-Mosfet
[14]- RS485-Anschlüsse, 2-Adrig [a]- letzte Gerät, [b]- Gerät 1...n, [c]- RS485/RS232 Umformer.



DEUTSCH

6A Systemwahl: 3P.n

[1]- 3 phasen, 4 Kabel, belastung desbalanciert, Anschlüsse 3 TA.

[2]- 3 phasen, 4 Kabel, belastung desbalanciert, Anschlüsse 3 TC und 3TT/TP Spannungswandleranschlüsse

6A Systemwahl: 3P

[3]- 3 phasen, 3 Kabel, belastung desbalanciert, Anschlüsse 3 TA.

[4]- 3 phasen, 3 Kabel, belastung desbalanciert, Anschlüsse 3 TA und 2 TT/TP Spannungswandleranschlüsse

[5]- 3 phasen, 3 Kabel, belastung desbalanciert, Anschlüsse 2 TC (ARON).

[6]- 3 phasen, 3 Kabel, belastung desbalanciert, Anschlüsse 2 TC und 2 TT/TP (ARON)

6A Systemwahl: 3P.1

[7]- 3 phasen, 3 Kabel, belastung ausgewogen, Anschlüsse 1 TA (wenn der Nullleiter verfügbar ist, kann der Voltmeteranschluss mit nur 2 Adern VL1 und N vorgenommen werden).

[8]- 3 phasen, 3 Kabel, belastung ausgewogen, Anschlüsse 1 TA und 2TV Spannungswandleranschlüsse (ARON).

6A Systemwahl: 3P.1

[7]- 3 phasen, 3 Kabel, symmetrische Last, 1-Stromwandleranschluss (wenn der Nullleiter verfügbar ist, kann der Voltmeteranschluss mit nur 2 Adern VL1 und N vorgenommen werden).

[8]- 3 phasen, 3 Kabel, symmetrische Last, 1-Stromwandleranschluss und 2 Spannungswandleranschlüsse

6A Systemwahl: 2P

[9]- 2 phasen, 3 Kabel, Anschlüsse 2 TC.

[10]- 2 phasen, 3 Kabel, Anschlüsse 3 TC und 2 TT/TP

6A Selection du type de réseau: 1P

[11]- 1 phases, 2 câbles, charge équilibrée, connexions 1 TC.

[12]- 1 phases, 2 câbles, connexions 1 TC et 1 TT/TP

Sorties et port série

[13]- Sortie statique en opto-mosfet

[14]- Connexion RS485 2 câbles [a]- dernier instrument,

[b]- instrument 1...n, [c]- Transducteur RS485/RS232.

FRANÇAIS

6A Sélection du type de réseau: 3P.n

[1]- 3 phases, 4 câbles, charge déséquilibrée, connexions 3 TC.

[2]- 3 phases, 4 câbles, charge déséquilibrée, connexions 3 TC et 3TT/TP

6A Sélection du type de réseau: 3P

[3]- 3 phases, 3 câbles, charge déséquilibrée, connexions 3 TC.

[4]- 3 phases, 3 câbles, charge déséquilibrée, connexions 3 TC et 2 TT/TP

[5]- 3 phases, 3 câbles, charge déséquilibrée, connexions 2 TC (ARON).

[6]- 3 phases, 3 câbles, charge déséquilibrée, connexions 2 TC et 2 TT/TP (ARON)

6A Sélection du type de réseau: 3P.1

[7]-3 phases, 3 câbles, charge équilibrée, connexions 1 TC) (si le neutre est disponible, le branchement voltmétrique peut être réalisé à seulement 2 fils VL1 et N).

[8]- 3 phases, 3 câbles, charge équilibrée, connexions 1 TC et 2 TT/TP

6A Sélection du type de réseau: 2P

[9]- 2 phases, 3 câbles, connexions 2 TC.

[10]- 2 phases, 3 câbles, connexions 3 TC et 2 TT/TP

6A Sélection du type de réseau: 1P

[11]- 1 phases, 2 câbles, connexions 1 TC.

[12]- 1 phases, 2 câbles, connexions 1 TC et 1 TT/TP

Sorties et port série

[13]- Sortie statique en opto-mosfet

[14]- Connexion RS485 2 câbles [a]- dernier instrument,

[b]- instrument 1...n, [c]- Transducteur RS485/RS232.

ESPAÑOL

6A, selección del sistema: 3P.n

[1]- Trifásico, 4 hilos, carga desequilibrada, conexión 3 trafos de intensidad.

[2]- Trifásico, 4 hilos, carga desequilibrada, conexión 3 trafos de intensidad y 3 trafos de tensión/potencia.

6A, selección del sistema: 3P

[3]- Trifásico, 3 hilos, carga desequilibrada, conexión 3 trafos de intensidad.

[4]- Trifásico, 3 hilos, carga desequilibrada, conexión 3 trafos de intensidad y 2 trafos de tensión/potencia.

[5]- Trifásico, 3 hilos, carga desequilibrada, conexión 2 trafos de intensidad (ARON).

[6]- Trifásico, 3 hilos, carga desequilibrada, conexión 2 trafos de intensidad (ARON) y 2 trafos de tensión/potencia.

6A, selección del sistema: 3P.1

[7]-Trifásico, 3 hilos, carga equilibrada, conexión 1 trofeo de intensidad.

(Si el neutro está disponible, la conexión de la tensión puede realizarse con sólo 2 hilos VL1 y N).

[8]- Trifásico, 3 hilos, carga equilibrada, conexión 1 trofeo de intensidad y 2 trafos de tensión/potencia.

[9]- Bifásico, 3 hilos, conexión 2 trafos de intensidad.

[10]- Bifásico, 3 hilos, conexiones 2 trafos de intensidad y 2 trafos de tensión/potencia.

6A, selección del sistema: 1P

[11]- Monofásico, 2 hilos, conexión 1 trofeo de intensidad.

[12]- Monofásico, 2 hilos, conexión 1 trofeo de intensidad y

SAFETY PRECAUTIONS

Read carefully the instruction manual. If the instrument is used in a manner not specified by the producer, the protection provided by the instrument may be impaired.
Maintenance: make sure that the connections are correctly carried out in order to avoid any malfunctioning or damage to the instrument. To keep the instrument clean, use a slightly damp cloth; do not use any abrasives or solvents. We recommend to disconnect the instrument before cleaning it.

TECHNICAL SPECIFICATIONS

Rated inputs: System type: 3. Current type: not isolated (shunt inputs). Note: the external current transformers can be connected to earth individually. Current range (by CT): AV5 and AV6: 5(6)A. The "1(6)A" range is available but not in compliance with the MID. Voltage (direct or by VT/PT) AV5: 400VLL; AV6: 120/230VLL. **Accuracy** (Display + RS485) (@25°C ±5°C, R.H. ≤60%, 48 to 62 Hz). AV5 model In: 5A, Imax: 6A; Un: 160 to 260VNL (277 to 450VLL). AV6 model In: 5A, Imax: 6A; Un: 40 to 144VNL (70 to 250VLL). Current AV5, AV6 models: from 0.002In to 0.2In. ±(0.5% RDG +3DGT). From 0.2In to Imax: ±(0.5% RDG +1DGT). Phase-neutral voltage in the range Un: ±(0.5% RDG +1DGT). Phase-phase voltage in the range Un: ±(1% RDG +1DGT). Frequency Range: 45 to 62Hz; resolution: ±1Hz. Active power ±(1%RDG +2DGT). Power Factor ±[0.001+1%(1.000 - "PF RDG")]. Reactive power ±(2%RDG +2DGT). Energies kWh: class B according to EN50470-1-3 and class 1 according to EN62053-21; kvarh: class 2 according to EN62053-23. In: 5A, Imax: 6A; 0.1 In: 0.5A. Start up current: 10mA. **Energy additional errors:** Influence quantities according to EN62053-21, EN50470-1-3, EN62053-23. **Temperature drift:** ≤20ppm/°C. **Sampling rate:** 1600 samples/s @ 50Hz, 1900 samples/s @ 60Hz. **Display refresh time:** 1 second. **Display:** 2 lines 1st line: 7-DGT, 2nd line: 3-DGT or 1st line: 3-DGT + 3-DGT, 2nd line: 3-DGT. Type LCD, h 7mm. Instantaneous variables read-out 3-DGT. Energies: imported, Total: 6+1DGT (or 7 DGT). Overload status EEE indication when the value being measured is exceeding the "Continuous inputs overload" (maximum measurement capacity). Max. and Min. indication: Max. instantaneous variables: 999; energies: 999 999.9 or 9 999 999 (positive only). The negative energy is neither metered nor subtracted. Min. instantaneous variables: 0; energies 0.0. **LEDs:** Red LED (Energy consumption) 0.001 kWh by pulse if CT ratio x VT ratio is <7; 0.01 kWh by pulse if CT ratio x VT ratio is ≥ 7.0 < 70.0; 0.1 kWh by pulse if CT ratio x VT ratio is ≥ 70.0 < 700.0; 1 kWh by pulse if CT ratio x VT ratio is ≥ 700.0; Max frequency: 16Hz, according to EN50470-3. Green LED (on the terminal blocks side) for power on (steady) and communication status: RX-TX (in case of RS485 option only) blinking. **Measurements:** Method TRMS measurements of distorted wave forms. Coupling type: by means of external CT's. **Crest factor In** 5A ≤3 (15A max. peak). **Current Overloads:** continuous 6A, @ 50Hz. For 500ms 120A, @ 50Hz. **Voltage Overloads:** continuous 1.2 Un. For 500ms 2 Un. **Current input impedance** 5(6)A < 0.3VA. **Voltage input impedance:** self-power supply power consumption: <2VA. **Frequency:** 45 to 65 Hz. **Key-pad:** two push buttons for variable selection and programming of the instrument working parameters. **Pulse output Number of outputs 1.** Type programmable from 0.01 to 9.99 Wh per pulses. Output connectable to the energy meters (kWh). Pulse duration ≥100ms < 120ms (ON), ≥120ms (OFF), according to EN62052-31. Output Static: opto-mosfet. Load V_{ON} 2.5 VAC/DC max. 70 mA, V_{OFF} 260 VAC/DC max. Insulation by means of optocouplers, 4000 VRMS output to measuring inputs. **RS485 type Multidrop, bidirectional (static and dynamic variables).** Connections 2-wire. Max. distance 1000m, termination directly on the instrument. Addresses 247, selectable by means of the front keypad. Protocol MODBUS/JBUS (RTU). Data Dynamic (reading only) single phase and system values. Static (reading and writing). All the configuration parameters. Data format 1 start bit, 8 data bit, no parity, 1 stop bit. Baud-rate 9600 bits/s. Driver input capability 1/5 unit load. Maximum 160 transceivers on the same bus. Insulation by means of optocouplers, 4000 VRMS output to measuring input. **Transformer ratio:** VT (PT) 1.0 to 99.9 / 100 to 999 / 1.00k to 6.00k CT 1.0 to 99.9 / 100 to 999 / 10.0k to 60.0k. The maximum power being measured cannot exceed 210 MW calculated as maximum input voltage and current. The maximum VT by CT ratio is 48.600. For MID compliant applications the maximum power being measured is 25 MW. **Operating temperature** -25°C to +55°C (-13°F to 131°F) (R.H. from 0 to 90% non-condensing @ 40°C) according to EN62053-21 and EN62053-23. **Storage temperature** -30°C to +70°C (-22°F to 158°F) (R.H. <90% non-condensing @ 40°C) according to EN62053-21 and EN62053-23. **Installation category** Cat. III (IEC60664, EN60664). **Insulation (for 1 minute)** 4000 VRMS between measuring inputs and digital output. **Dielectric strength** 4000 VRMS for 1 minute. **Noise rejection** CMRR 100 dB, 48 to 62 Hz. EMC According to EN62052-11. Electrostatic discharges 15kV air discharge; Immunity to irradiated test with current: 10V/m from 80 to 2000MHz; Electromagnetic fields test without any current: 30V/m from 80 to 2000MHz; Burst on current and voltage measuring inputs circuit: 4kV. Immunity to conducted disturbances 10V/m from 150kHz to 80MHz. Surge on current and voltage measuring inputs circuit: 6kV; Radio frequency suppression according to CISPR 22. **Standard compliance:** safety IEC60664, IEC61010-1 EN60664, EN61010-1 EN62052-11. Metrolgia EN62053-21, EN62053-23, MID "annex MI-003". Pulse output DIN43864, IEC62053-31. Approvals: CE. **Connections:** Screw-type. Cable cross-section area: 2,4 x 3,5 mm. Min./Max. screws tightening torque: 0,4 Nm / 0,8 Nm. **Housing:** dimensions (WxHxD) 72 x 72 x 65 mm. Material Noryl PA66, self-extinguishing: UL 94 V-0. Mounting: panel and DIN-rail. **Protection degree:** front IP50. Screw terminals: IP20. **Weight:** approx. 400 g (packing included). **Self power supply** 18 to 260VAC (48-62Hz) (VL1-N). **Power consumption:** ≤20VA/1W.

NORME DI SICUREZZA

Leggere attentamente il manuale istruzioni. Qualora l'apparecchio venisse adoperato in un modo non specificato dal costruttore, la protezione prevista dall'apparecchio potrebbe essere compromessa. **Manutenzione:** assicurarsi che i collegamenti siano effettuati correttamente al fine di evitare qualsiasi malfunzionamento o danneggiamento dello strumento. Per mantenere pulito lo strumento usare un panno leggermente inumidito; non usare abrasivi o solventi. Si consiglia di scolare lo strumento prima di pulirlo.

CARATTERISTICHE TECNICHE

Ingressi di misura. Sistema: 3-fase. Tipo corrente: non isolato (ingressi shunt). Nota: i trasformatori di corrente esterni possono essere collegati a terra individualmente. Portata corrente (mediante TA): AV5 e AV6: 5(6)A. La portata "1(6)A" è disponibile ma non in conformità alla direttiva MID. Tensione (diretta o mediante TA/TV): AV5: 400VLL; AV6: 120/230VLL. **Precisione** (Display + RS485) (@25°C ±5°C, R.H. ≤60%, 48 to 62 Hz). AV5 model In: 5A, Imax: 6A; Un: 40 to 144VNL (70 to 250VLL). Current AV5, AV6 models: from 0.002In to 0.2In. ±(0.5% RDG +3DGT). From 0.2In to Imax: ±(0.5% RDG +1DGT). Phase-neutral voltage in the range Un: ±(0.5% RDG +1DGT). Phase-phase voltage in the range Un: ±(1% RDG +1DGT). Frequency Range: 45 to 62Hz; resolution: ±1Hz. Active power ±(1%RDG +2DGT). Reactive power ±(2%RDG +2DGT). Energies kWh: class B according to EN50470-1-3 and class 1 according to EN62053-21; kvarh: class 2 according to EN62053-23. In: 5A, Imax: 6A; 0.1 In: 0.5A. Start up current: 10mA. **Errori addizionali:** Influence quantities according to EN62053-21, EN50470-1-3, EN62053-23. **Temperatura drift:** ≤20ppm/°C. **Sampling rate:** 1600 samples/s @ 50Hz, 1900 samples/s @ 60Hz. **Frequenza di campionamento:** 1600 campioni/s @ 50Hz, 1900 campioni/s @ 60Hz. **Tempo di aggiornamento display:** 1 secondo. **Display:** 2 linee 1st linea: 7-DGT, 2nd linea: 3-DGT or 1st linea: 3-DGT + 3-DGT, 2nd linea: 3-DGT. Type LCD, h 7mm. Instantaneous variables read-out 3-DGT. Energies: imported, Total: 6+1DGT (or 7 DGT). Overload status EEE indication when the value being measured is exceeding the "Continuous inputs overload" (maximum measurement capacity). Max. and Min. indication: Max. instantaneous variables: 999; energies: 999 999.9 or 9 999 999 (positive only). The negative energy is neither metered nor subtracted. Min. instantaneous variables: 0; energies 0.0. **LEDs:** Red LED (Energy consumption) 0.001 kWh by pulse if CT ratio x VT ratio is <7; 0.01 kWh by pulse if CT ratio x VT ratio is ≥ 7.0 < 70.0; 0.1 kWh by pulse if CT ratio x VT ratio is ≥ 70.0 < 700.0; 1 kWh by pulse if CT ratio x VT ratio is ≥ 700.0; Max frequency: 16Hz, according to EN50470-3. Green LED (on the terminal blocks side) for power on (steady) and communication status: RX-TX (in case of RS485 option only) blinking. **Measurements:** Method TRMS measurements of distorted wave forms. Coupling type: by means of external CT's. **Crest factor In** 5A ≤3 (15A max. peak). **Current Overloads:** continuous 6A, @ 50Hz. For 500ms 120A, @ 50Hz. **Voltage Overloads:** continuous 1.2 Un. For 500ms 2 Un. **Current input impedance** 5(6)A < 0.3VA. **Voltage input impedance:** self-power supply power consumption: <2VA. **Frequency:** 45 to 65 Hz. **Key-pad:** two push buttons for variable selection and programming of the instrument working parameters. **Pulse output Number of outputs 1.** Type programmable from 0.01 to 9.99 Wh per pulses. Output connectable to the energy meters (kWh). Pulse duration ≥100ms < 120ms (ON), ≥120ms (OFF), according to EN62052-31. Output Static: opto-mosfet. Load V_{ON} 2.5 VAC/DC max. 70 mA, V_{OFF} 260 VAC/DC max. Insulation by means of optocouplers, 4000 VRMS output to measuring inputs. **RS485 type Multidrop, bidirectional (static and dynamic variables).** Connections 2-wire. Max. distance 1000m, termination directly on the instrument. Addresses 247, selectable by means of the front keypad. Protocol MODBUS/JBUS (RTU). Data Dynamic (reading only) single phase and system values. Static (reading and writing). All the configuration parameters. Data format 1 start bit, 8 data bit, no parity, 1 stop bit. Baud-rate 9600 bits/s. Driver input capability 1/5 unit load. Maximum 160 transceivers on the same bus. Insulation by means of optocouplers, 4000 VRMS output to measuring input. **Transformer ratio:** VT (PT) 1.0 to 99.9 / 100 to 999 / 1.00k to 6.00k CT 1.0 to 99.9 / 100 to 999 / 10.0k to 60.0k. The maximum power being measured cannot exceed 210 MW calculated as maximum input voltage and current. The maximum VT by CT ratio is 48.600. For MID compliant applications the maximum power being measured is 25 MW. **Operating temperature** -25°C to +55°C (-13°F to 131°F) (R.H. from 0 to 90% non-condensing @ 40°C) according to EN62053-21 and EN62053-23. **Storage temperature** -30°C to +70°C (-22°F to 158°F) (R.H. <90% non-condensing @ 40°C) according to EN62053-21 and EN62053-23. **Installation category** Cat. III (IEC60664, EN60664). **Insulation (for 1 minute)** 4000 VRMS between measuring inputs and digital output. **Dielectric strength** 4000 VRMS for 1 minute. **Noise rejection** CMRR 100 dB, 48 to 62 Hz. EMC According to EN62052-11. Electrostatic discharges 15kV air discharge; Immunity to irradiated test with current: 10V/m from 80 to 2000MHz; Electromagnetic fields test without any current: 30V/m from 80 to 2000MHz; Burst on current and voltage measuring inputs circuit: 4kV. Immunity to conducted disturbances 10V/m from 150kHz to 80MHz. Surge on current and voltage measuring inputs circuit: 6kV; Radio frequency suppression according to CISPR 22. **Standard compliance:** safety IEC60664, IEC61010-1 EN60664, EN61010-1 EN62052-11. Metrolgia EN62053-21, EN62053-23, MID "annex MI-003". Pulse output DIN43864, IEC62053-31. Approvals: CE. **Connections:** Screw-type. Cable cross-section area: 2,4 x 3,5 mm. Min./Max. screws tightening torque: 0,4 Nm / 0,8 Nm. **Housing:** dimensions (WxHxD) 72 x 72 x 65 mm. Material Noryl PA66, self-extinguishing: UL 94 V-0. Mounting: panel and DIN-rail. **Protection degree:** front IP50. Screw terminals: IP20. **Weight:** approx. 400 g (packing included). **Self power supply** 18 to 260VAC (48-62Hz) (VL1-N). **Power consumption:** ≤20VA/1W.

SICHERHEITSBESTIMMUNGEN

Die Betriebsanleitung aufmerksam lesen. Sollte das Gerät nicht gemäss der Herstellerangaben verwendet werden, könnte der vom Gerät vorgesehene Schutz beeinträchtigt werden. **Wartung:** Beachten Sie den korrekten Anschluss aller Anschlussterminale um eine Beschädigung des Instruments zu vermeiden. Das Gerät mit einem feuchten Tuch reinigen; keine Scheuer- oder Lösemittel verwenden. Das Gerät vor der Reinigung ausschalten.

TECHNISCHE DATEN

Messeingänge. Systemtyp: 3. Strommessung: nicht isoliert (Nebenschlusseingänge). Anm.: die externen Stromwandler können einzeln geerdet werden. Strombereich (Stromwandler) AV5 und AV6: 5(6)A. Der "1(6)A" Bereich ist verfügbar, aber nicht MID konform. Spannung (direkt oder Spannungswandler) AV5: 400VLL; AV6: 120/230VLL. **Genaugkeit** (Anzeige + RS485) Nennstrom: siehe unten, Nennspannung: siehe unten bei 25°C ±5°C, R.F. ≤60%, 48 bis 62 Hz. Modell AV5 Nennstrom: 5A, Imax: 6A; Nennspannung: 160 bis 260VNL (277 bis 450VLL). Modell AV6 Nennstrom: 5A, Imax: 6A; Nennspannung: 160 bis 260VNL (277 bis 450VLL). Modell AV6 Nennstrom: 5A, Imax: 6A; Nennspannung: 40 bis 144VNL (70 bis 250VLL). Modell AV6 Nennstrom: 5A, Imax: 6A; Nennspannung: 40 bis 144VNL (70 bis 250VLL). Strom: AV5, AV6 Modelle: Von 0.002Nennstrom bis 0.2Nennstrom: 0.2In a Imax: ±(0.5% RDG +3DGT). Tensione fase-neutro nel campo Un: ±(0.5% RDG +1DGT). Tensione fase-fase nel campo Un: ±(1% RDG +1DGT). Frequenza campo: da 45 a 62Hz, risoluzione: ±1Hz. Potenza attiva ±(1%RDG +2DGT). Fattore di potenza ±[0.001+1%(1.000 - "PF RDG")]. Potenza reattiva ±(2%RDG +2DGT). Energies kWh: classe B according to EN50470-1-3 and class 1 according to EN62053-21; kvarh: classe 2 according to EN62053-23. In: 5A, Imax: 6A; 0.1 In: 0.5A. Start up current: 10mA. **Errori addizionali:** Influence quantities according to EN62053-21, EN50470-1-3, EN62053-23. **Temperatura drift:** ≤20ppm/°C. **Sampling rate:** 1600 samples/s @ 50Hz, 1900 samples/s @ 60Hz. **Frequenza di campionamento:** 1600 campioni/s @ 50Hz, 1900 campioni/s @ 60Hz. **Tempo di aggiornamento display:** 1 secondo. **Display:** 2 linee 1st linea: 7-DGT, 2nd linea: 3-DGT or 1st linea: 3-DGT + 3-DGT, 2nd linea: 3-DGT. Type LCD, h 7mm. Instantaneous variables read-out 3-DGT. Energies: imported, Total: 6+1DGT (or 7 DGT). Overload status EEE indication when the value being measured is exceeding the "Continuous inputs overload" (maximum measurement capacity). Max. and Min. indication: Max. instantaneous variables: 999; energies: 999 999.9 or 9 999 999 (positive only). The negative energy is neither metered nor subtracted. Min. instantaneous variables: 0; energies 0.0. **LED:** Red LED (Energy consumption) 0.001 kWh by pulse if CT ratio x VT ratio is <7; 0.01 kWh by pulse if CT ratio x VT ratio is ≥ 7.0 < 70.0; 0.1 kWh by pulse if CT ratio x VT ratio is ≥ 70.0 < 700.0; 1 kWh by pulse if CT ratio x VT ratio is ≥ 700.0; Max frequency: 16Hz, according to EN50470-3. Green LED (on the terminal blocks side) for power on (steady) and communication status: RX-TX (in case of RS485 option only) blinking. **Measurements:** Method TRMS measurements of distorted wave forms. Coupling type: by means of external CT's. **Crest factor In** 5A ≤3 (15A max. peak). **Current Overloads:** continuous 6A, @ 50Hz. For 500ms 120A, @ 50Hz. **Voltage Overloads:** continuous 1.2 Un. For 500ms 2 Un. **Current input impedance** 5(6)A < 0.3VA. **Voltage input impedance:** self-power supply power consumption: <2VA. **Frequency:** 45 to 65 Hz. **Key-pad:** two push buttons for variable selection and programming of the instrument working parameters. **Pulse output Number of outputs 1.** Type programmable from 0.01 to 9.99 Wh per pulses. Output connectable to the energy meters (kWh). Pulse duration ≥100ms < 120ms (ON), ≥120ms (OFF), according to EN62052-31. Output Static: opto-mosfet. Load V_{ON} 2.5 VAC/DC max. 70 mA, V_{OFF} 260 VAC/DC max. Insulation by means of optocouplers, 4000 VRMS output to measuring inputs. **RS485 type Multidrop, bidirectional (static and dynamic variables).** Connections 2-wire. Max. distance 1000m, termination directly on the instrument. Addresses 247, selectable by means of the front keypad. Protocol MODBUS/JBUS (RTU). Data Dynamic (reading only) single phase and system values. Static (reading and writing). All the configuration parameters. Data format 1 start bit, 8 data bit, no parity, 1 stop bit. Baud-rate 9600 bits/s. Driver input capability 1/5 unit load. Maximum 160 transceivers on the same bus. Insulation by means of optocouplers, 4000 VRMS output to measuring input. **Transformer ratio:** VT (PT) 1.0 to 99.9 / 100 to 999 / 1.00k to 6.00k CT 1.0 to 99.9 / 100 to 999 / 10.0k to 60.0k. The maximum power being measured cannot exceed 210 MW calculated as maximum input voltage and current. The maximum VT by CT ratio is 48.600. For MID compliant applications the maximum power being measured is 25 MW. **Operating temperature** -25°C to +55°C (-13°F to 131°F) (R.H. from 0 to 90% non-condensing @ 40°C) according to EN62053-21 and EN62053-23. **Storage temperature** -30°C to +70°C (-22°F to 158°F) (R.H. <90% non-condensing @ 40°C) according to EN62053-21 and EN62053-23. **Installation category** Cat. III (IEC60664, EN60664). **Insulation (for 1 minute)** 4000 VRMS between measuring inputs and digital output. **Dielectric strength** 4000 VRMS for 1 minute. **Noise rejection** CMRR 100 dB, 48 to 62 Hz. EMC According to EN62052-11. Electrostatic discharges 15kV air discharge; Immunity to irradiated test with current: 10V/m from 80 to 2000MHz; Electromagnetic fields test without any current: 30V/m from 80 to 2000MHz; Burst on current and voltage measuring inputs circuit: 4kV. Immunity to conducted disturbances 10V/m from 150kHz to 80MHz. Surge on current and voltage measuring inputs circuit: 6kV; Radio frequency suppression according to CISPR 22. **Standard compliance:** safety IEC60664, IEC61010-1 EN60664, IEC