M1PRO 80

DEUTSCH

Wechselstromzähler
Direktanschluß 80 A

Stand 27-01-2021

IST300-01

Bedienungsanleitung

- Diese Wechselstromzähler können die wichtigsten Parameter an Ort und Stelle sowie über Kommunikations-Anschluß zeigen.
- Diese Familie wird in 3 Ausführungen-dargestellt.

(*) Zertifizierung Parameter: 0.25-5 (80) A, Klasse B, 230 VAC 50 Hz, -25 °C ... +55 °C, 4 Quadranten in 2 Tarife.

- Wirkenergie Klasse B (gemäß EN-50470) und Blindenergie Klasse 2 (nach IEC 62053-23)
- Direkt (bis 80 A)
- LCD-Display und 3 Drucktasten (um Energien, V, I, PF, F, P, Q und zu lesen und weitere Parameter einzugeben)
- LCD Display mit 8 Digit
- Selbstzugeführt (durch die Eingangsspannung)
- 2 TE Breite (36 mm)
- 2 Tarife durch eine 230 VAC Digitaleingang
- In Abhängigkeit der Ausführungen:
  - 2 Standard-Niederspannungs S0 Impulsausgänge oder
  - Modbus RTU oder
  - M-Bus Anschluß (1 Standardlast)

⚠ STROMSCHLAG-,VERBRENNUNGS- UND EXPLOSIONSGEFAHR

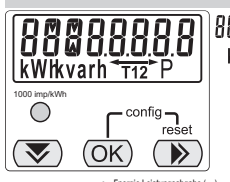
Das Gerät darf NUR von einem Elektriker installiert und gewartet werden. Vor Installations- und Wartungsarbeiten sicherstellen, dass das Gerät nicht mit Strom versorgt wird.

Bestellinformationen

Kode	Typ	Beschreibung
888-105	**M1PRO 80 MID**	2 x S0 Impulsausgänge - 2 Tarife, **MID geeicht**
	M1PRO 80 M-Bus MID	eingebaute Kommunikation **M-Bus** - 2 Tarife, **MID geeicht**
	M1PRO 80 Modbus MID	eingebaute Kommunikation **Modbus** - 2 Tarife, **MID geeicht**

(*) Für den Schweizer Markt wird nur aktive Energie angezeigt

Display



- Energie-Wert
- kWh / kvarh Anzeige
- Aktiver / Tarif
- Energie-Wert **"Partial"**
- LED Genauigkeitskontroll-Anzeige

- Energie Leistungsabgabe (←)
- Energie Leistungsbezug (→)

Beschreibung der Tasten

- **Ablauftaste:** mit dieser Taste werden die verschiedenen Seiten gezeigt und sind parametrierbar. Der Befehl wird nur durch kurzzeitiges Drücken angenommen (kürzer als 1,5 Sek.)
- **OK Taste:** wird eine Menufunktion aufgerufen, ev. geändert und mit kurzeitigen Drücken bestätigt (kürzer als 1,5 Sek.)
- **ESC-Taste:** hiermit kann man einen bestehenden Parameter ändern oder löschen oder auf die Hauptanzeige zurückgehen.
- Mit einem längeren Drücken der **"ESC-Taste"** (mehr als >1,5 Sek.) werden die Partial-Energieregister gezeigt.
- Mit gemeinsamen Drücken dieser Tasten (für 1,5 Sek.) werden die Hauptmenu-Parameter gezeigt.

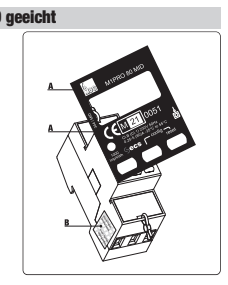
Symbole

- 1 Meßelemente
- Doppelisolierung

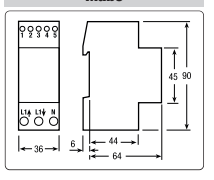
MID geeicht

A) Platz für Gerätebezeichnung und Zulassungsdaten.

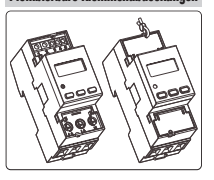
B) Siegel zwischen Gehäuseoberteil und -unterteil



Maße



Plombierbare Klemmenabdeckungen



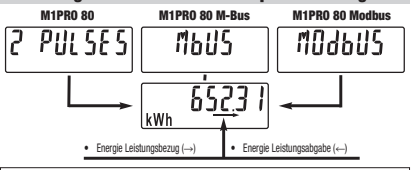
Kabel-Abisolierlänge und Drehmoment der Klemmenschrauben

80 A Direktanschluss Hauptklemmen
Schraubendreher PZ2
17 — 2 Nm

Tarif-und S0 Anschlußklemmen
Schraubendreher Klinke 0.8x3.5 mm
6 — 0.5 Nm

Kommuniktionsklemmen
Schraubendreher Klinke 0.8x3.5 mm
7 — 0.5 Nm

Meßgeräte-Anschluß und Hauptseitenanzeige

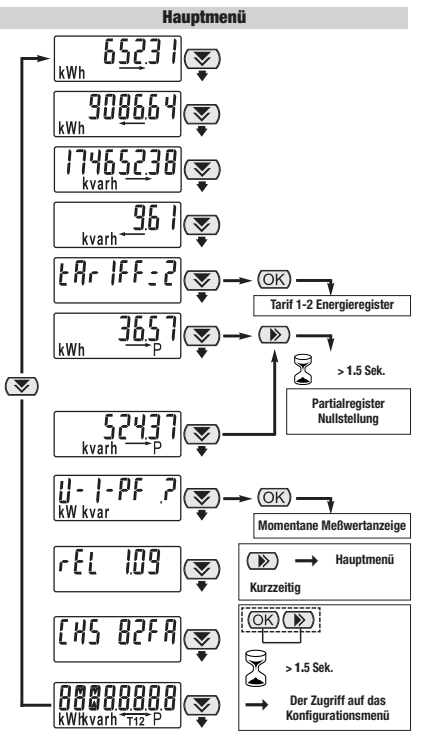


Hauptseiten:
Hier wird nicht nur die Betriebsmöglichkeit gezeigt sondern auch, bei Nichtbetätigung einer Taste für 30 Sekunden, die Summe des Energiestandes bezogener Energie Tarif 1 (T1) und des Energiestandes bezogener Energie Tarif 2 (T2) oder in Alternative das gleiche abgegebener Energie.

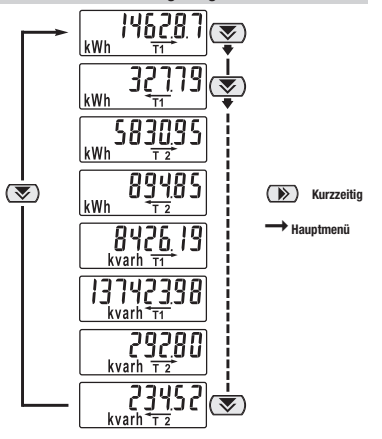
Beleuchtung des Displays

- Wenn länger als 40 Sekunden keine Taste gedrückt wird, kehrt das Display zur Startseite zurück und die Beleuchtung schaltet sich aus.
- Beim ersten Tastendruck wird die Seite nicht gewechselt, sondern die Beleuchtung des Displays eingeschaltet.

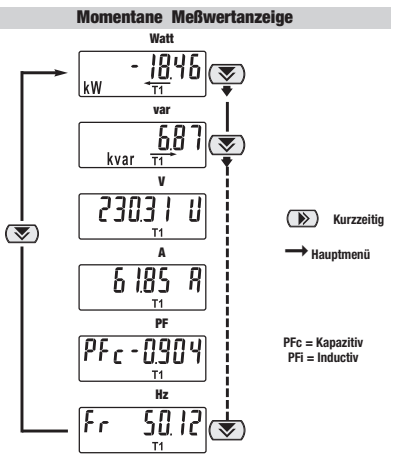
Hauptmenü



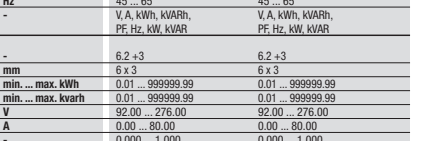
Tarif 1-2 Energie Register



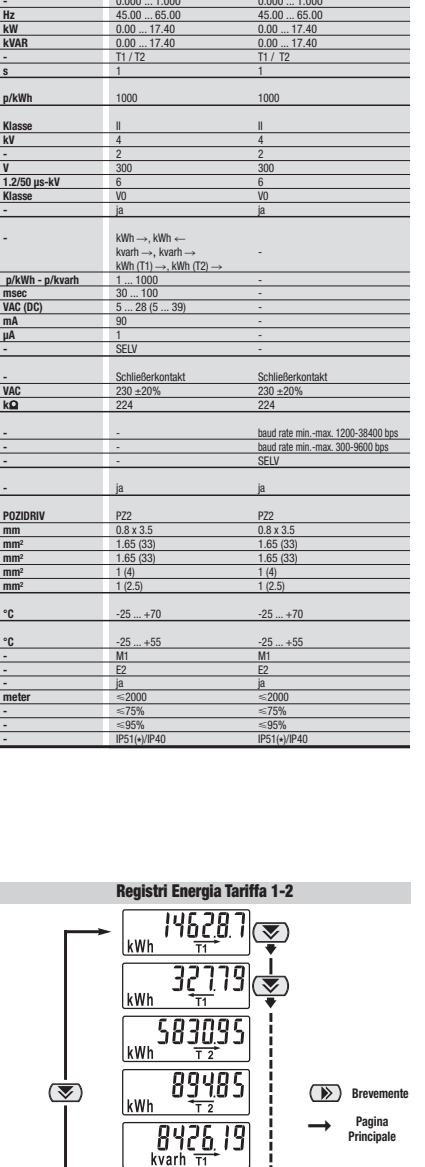
Momentane Meßwertanzeige



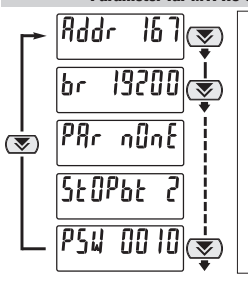
Partialregister Nullstellung



Der Zugriff auf das Konfigurationsmenü



Parameter für M1PRO 80 Modbus



Modbus-Adresse: 1 ... 247

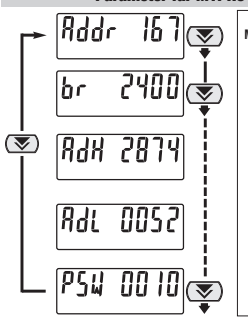
Baud Rate
1200-2400-4800-9600
19200-38400

Parität: keine, gerade und ungerade

Stop Bits: 1/2

Password: 0000 ... 9999

Parameter für M1PRO 80 M-Bus



M-Bus Primäradresse: 0 ... 250

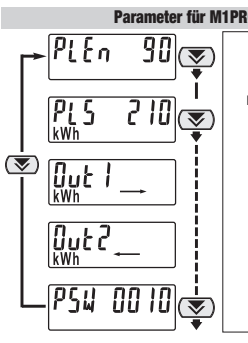
Baud Rate
300-600-1200-2400
4800-9600

M-Bus Sekundär Adresse (4 MS Ziffern)

M-Bus Sekundär Adresse (4 LS Ziffern)

Password: 0000 ... 9999

Parameter für M1PRO 80 S0



S0 p/kWh: 1 ... 1000

Impulsdauer (Einschaltzeit)
30 ... 100 mSek.

S01 Impulsaugang-Modus

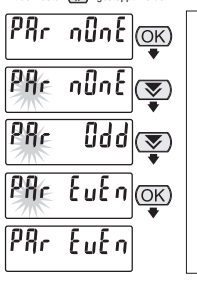
→ kWh, ← kWh,
→ kvarh, ← kvarh,
→ kWh T1, ← kWh T2,

S02 Impulsaugang-Modus

Password: 0000 ... 9999

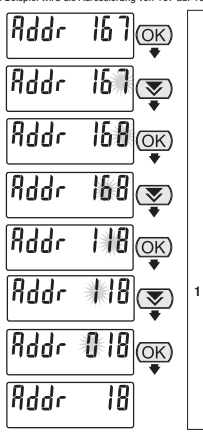
Multi Wert Parameter Änderung

In diesem Beispiel wird die Parität None Wert geändert. Jederzeit kann diese Änderung mit der Taste "→" gestoppt werden.



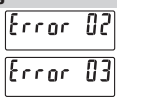
Zählerparaneter-Änderung

In diesem Beispiel wird die Adressierung von 167 auf 18 geändert.



Funktionsfehlermeldungg

Fehleranzeige Error
Wenn im Display die Anzeige **"Error 02"** oder **"Error 03"** erscheint, liegt eine Fehlfunktion vor und der Energiezähler muß ausgetauscht werden.



Service und Wartung

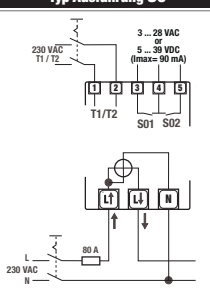
Das Gerät benötigt keinerlei Eichung während seiner Lebenszeit. Alle Bauteile haben keinen mechanischen Verschleiß. Die Sensorik für Strom und Spannung, mit sachgemäßen Gebrauch, haben keine Abweichungen, sollten diese trotzdem auftreten, so wurde das Gerät beschädigt und muß zur Reparatur oder Austausch eingeschickt werden. Sollte das Gerät verschmutzt sein, empfiehlt man die Reinigung mit einen feuchten Süßwasser getränkten weichen Tuch zu reinigen. Beachten Sie dabei daß Wasser nicht in das Gerät eindringt und dabei dasselbe beschädigen könnte.

ecs

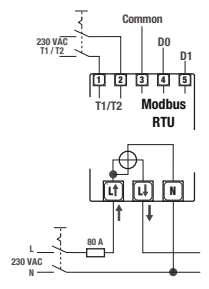
Manufactured by Herholdt Controls S.r.l. - 20132 Milano (Italy)

Schaltbild

Typ Ausführung S0

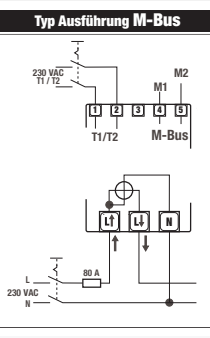


Typ Ausführung Modbus



RT-Terminierungs-widerstand wird in der Regel am letzten, heißt ammeist entfernten Meßgerätvom Mastergerät angeschlossen.

Typ Ausführung M-Bus



ecs

Manufactured by Herholdt Controls S.r.l. - 20132 Milano (Italy)

Technische Daten

Daten nach EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31			Direktanschluß 80 A Schnittstellen S0	Direktanschluß 80 A integri. Komm. Modbus/M-Bus
Allgemeine Daten				
• Gehäuse	DIN 43880	**DIN**	2 Module	2 Module
• Befestigung	EN 60715	**35 mm**	DIN Verteilerschiene	DIN Verteilerschiene
• Bauhöhe		**mm**	70	70
• Gewicht		**g**	175	175
Funktion				
• Betriebsart	einphasigen Netz (Anzahl der Leiter)	**n° Leiter**	2	2
• Speicherung der Einstellung und Zählerstand	über interne Flash	**-**	ja	ja
• Tarife	für Wirk-u. Blindenergie	**n° 2**	T1 / T2	T1 / T2
Beglaubigte Parameter (nach EN 50470-1 und EN 50470-3)				
• Bemessungssteuerspeisespannung **Un**		**VAC**	230	230
• Referenzstrom **(Iref)**		**A**	5	5
• Mindeststrom **(Imin)**		**A**	0.25	0.25
• Höchster Strom **(Imax)**		**A**	80	80
• Betriebsanlaufstrom **(Ist)**		**A**	0.015	0.015
• Referenzfrequenz **(fn)**		**Hz**	50	50
• Anzahl der Phasen und der Leiter		**-**	1 (2)	1 (2)
• Beglaubigte Messgrößen		**kWh**	→ kWh T1, ← kWh T1 → kWh T2, ← kWh T2	→ kWh T1, ← kWh T1 → kWh T2, ← kWh T2
• Genauigkeitsklasse	Wirkenergie und Wirkleistung (nach EN 50470-3)	**Klasse**	B	B
	Blindenergie und Blindleistung (nach EN 62053-23)	**Klasse**	2	2
Betriebsspannung und Leistungsaufnahme				
• Betriebsspannungsbereich		**V**	92 ... 276	92 ... 276
• Höchste Leistungsaufnahme (Spannungmeßkreis)		**VA (W)**	≤2 (1)	≤2 (1)
• Höchste Leistungsaufnahme in VA (Strommeßkreis) bei **Imax**		**VA**	≤1	≤1
• Spannungs-Wellenform		**-**	AC	AC
• Spannungsimpedanz		**MΩ**	1	1
• Aktuelle Impedanz		**mΩ**	≤20	≤20
Überlastbarkeit				
• Spannung	kontinuierlich	**VAC**	276	276
	Momentane (1 Sek.)	**VAC**	300	300
• Strom	kontinuierlich	**A**	80	80
	Momentane (10 ms)	**A**	2400	2400
Eigenschaft der Meßbereiche				
• Spannungsmeßbereich		**VAC**	92 ... 276	92 ... 276
• Strommeßbereich		**A**	0.015 ... 80	0.015 ... 80
• Frequenzmeßbereich		**Hz**	45 ... 65	45 ... 65
• Gemessene Grössen		**-**	V, A, kWh, kVARh, PF, Hz, kW, kVAR	V, A, kWh, kVARh, PF, Hz, kW, kVAR
Anzeige Daten				
• Displayart	LCD	**-**	6.2 +3	6.2 +3
	Abmessungen der Hauptanzeige	**mm**	6 x 3	6 x 3
• Wirkenergie	6 Stellig + 2 Dezimale	**min. ... max. kWh**	0.01 ... 999999.99	0.01 ... 999999.99
• Blindenergie	6 Stellig + 2 Dezimale	**min. ... max. kvarh**	0.01 ... 999999.99	0.01 ... 999999.99
• Spannung	3-stellig + 2 Dezimale	**V**	92.00 ... 276.00	92.00 ... 276.00
• Strom	2-stellig + 2 Dezimale	**A**	0.00 ... 80.00	0.00 ... 80.00
• Leistungsfaktor	1-stellig + 3 Dez.mit Vorzeichen + capac. / induc. Anzeige	**-**	0.000 ... 1.000	0.000 ... 1.000
• Frequency	2-stellig + 2 Dezimale	**Hz**	45.00 ... 65.00	45.00 ... 65.00
• Aktive und Leistungs	2-stellig + 2 Dezimale mit Vorzeichen	**kW**	0.00 ... 17.40	0.00 ... 17.40
• Blindleistung	2-stellig + 2 Dezimale mit Vorzeichen	**kVAR**	0.00 ... 17.40	0.00 ... 17.40
• Dargestellte Tarifanzeige	1 Ziffer	**-**	T1 / T2	T1 / T2
• Anzeigezyklus		**s**	1	1
Optische Schnittstelle (metrologische LED)				
• Front LED rot blinkend (Genauigkeitskontrolle)	proportionierend Wirkenergie (← und →)	**p/kWh**	1000	1000
Sicherheit				
• Schutzklasse (EN 50470)		**Klasse**	II	II
• AC Spannungsfestigkeitstest (EN 50470-3, 7.2)		**kV**	4	4
• Verschmutzungsgrad		**-**	2	2
• Betriebsspannung		**V**	300	300
• Prüfspannung		**1.2/50 µs-kV**	6	6
• Flammenwiderstand	UL 94	**Klasse**	V0	V0
• Siegel zwischen Gehäuseoberteil und -unterteil		**-**	ja	ja
S0 Schnittstellen (nach IEC 62053-31)				
• Impulsausgang 1 oder 2,	wählbar	**-**	kWh →, kWh ← kvarh →, kvarh → kWh (T1) →, kWh (T2) →	-
• Impulsmenge	einstellbar	**p/kWh - p/kvarh**	1 ... 1000	-
• Impulsdauer	einstellbar	**msec**	30 ... 100	-
• Erforderliche Spannung	Min. - Max.	**VAC (DC)**	5 ... 28 (5 ... 39)	-
• Zulässiger Strom ON	im Bereich von 3 ... 28 VAC (5 ... 39 VDC)	**mA**	90	-
• Verluststrom OFF	im Bereich von 3 ... 28 VAC (5 ... 39 VDC)	**µA**	1	-
• Isolationsklasse		**-**	SELV	-
Tarife				
• Tarif 1		**-**	Schließerkontakt	Schließerkontakt
• Tarif 2		**VAC**	230 ±20%	230 ±20%
• Widerstand		**kΩ**	224	224
Eingebettete Kommunikation				
• Modbus RTU	RS-485 - 3 Leiter	**-**	-	baud rate min.-max. 1200-38400 bps
• M-Bus	2 Leiter	**-**	-	baud rate min.-max. 300-9600 bps
• Isolationsklasse		**-**	-	SELV
IR Adapter für Kommunikation				
• Seitlich zur Anbindung von Kommunikationsmodulen	**(LAN-TCP/IP / M-Bus / Modbus RTU / KNX)**	**-**	ja	ja
Klemmen				
• Schraube der Hauptstrombahn	Kopf mit Z+/-	**POZIDRIV**	PZ2	PZ2
• Schraube des Tarif-und Kommunikation	Schlitzkopf	**mm**	0.8 x 3.5	0.8 x 3.5
• Klemmenkapazität Betriebs-und Hauptbahnen	starr min. (max.)	**mm²**	1.65 (33)	1.65 (33)
	flexibel, mit Hülse min. (max.)	**mm²**	1.65 (33)	1.65 (33)
• Klemmenkapazität des Tarif-und Kommunikation	starr min. (max.)	**mm²**	1 (4)	1 (4)
	flexibel, mit Hülse min. (max.)	**mm²**	1 (2.5)	1 (2.5)
Umweltbedingungen für Lagerung				
• Temperaturbereich		**°C**	-25 ... +70	-25 ... +70
Betriebs-Umweltbedingungen				
• Temperaturbereich		**°C**	-25 ... +55	-25 ... +55
• Mechanische Umgebung		**-**	M1	M1
• Elektromagnetische Umgebung		**-**	E2	E2
• Einbau	für Innenräume	**-**	ja	ja
• Höhe (max)		**meter**	≤2000	≤2000
• Feuchtigkeit	Jahres durchschnitt (ohne Kondensation)	**-**	≤75%	≤75%
	für 30 Tage jährlich (ohne Kondensation)	**-**	≤95%	≤95%
• Schutzart	Eingebautes Gerät Frontseite/Klemmen	**-**	IP51(*)/IP40	IP51(*)/IP40

(*) Für die Installation in einem Verteiler mit mindestens IP51 Schutz.

Notizen

M1PRO 80

ITALIANO

Contatore d'Energia Monofase Digitale
Connessione diretta 80 A

Istruzioni Operative

- Questa famiglia di contatori di energia elettrica ha la fondamentale capacità di monitorare un' installazione a singola fase.
- Sono disponibili 3 modelli che si differenziano per la tipologia di comunicazione in remoto.

(+) Parametri della certificazione: 0.25-5 (80) A, Classe B, 230 VAC 50 Hz, -25 °C ... +55 °C, 4 quadranti in 2 tariffe.

- Classe B (norma EN-50470) - Energia attiva Classe 2 (norma IEC 62053-23) - Energia reattiva
- Connessione diretta (fino a 80 A)
- Display LCD e 3 tasti a pulsante (per visualizzare Energia, V, I, PF, F, P, Q e configurazione parametri)
- LCD display con 8 digit.
- Auto alimentato (dalla tensione di ingresso stesso)
- 2 moduli DIN (36 mm)
- 2 tariffe controllate da un ingresso digitale 230 VAC
- A seconda dei modelli:
  - 2 uscite a impulsi a bassa tensione S0 standard,
  - Comunicazione incorporata Modbus RTU
  - Comunicazione incorporata M-Bus (1 unità di carico)

⚠ RISCHIO DI FOLGORAZIONE, USTIONI O ESPLOSIONE

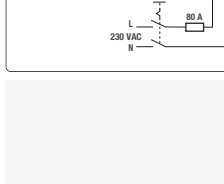
Questo strumento deve essere installato e manutenuto SOLO da personale qualificato e debitamente autorizzato.
Durante l'installazione, assicurarsi della mancanza di tensione.

Ordering information

Codice	Modello	Descrizione
888-105	**M1PRO 80 MID**	Uscita impulsi 2 x S0 - 2 Tariffe, **certificato MID**
	M1PRO 80 M-Bus MID	Comunicazione incorporata M-Bus - 2 Tariffe, **certificato MID**
	M1PRO 80 Modbus MID	Comunicazione incorporata Modbus - 2 Tariffe, **certificato MID**

(+) Per il mercato Svizzero solo energia attiva a display

Display



- Visualizza kWh
- Visualizza kWh / kvarh
- Indicatore di Tariffa e visualizzazione
- Valore energia **"Partial"**
- LED controllo di precisione

- Energia importata (→)
- Energia esportata (←)

Tasti comando

- **Tasto navigazione:** è utilizzato solo per navigare nelle pagine e modificare i parametri. L'azione sul tasto è efficace solo se più breve di 1.5 secondi
- **Tasto OK:** serve per dare l'accesso ad una nuova funzione o per confermare la modifica di un parametro
- **Tasto ESC:** serve per uscire da un sotto menù, per cancellare la modifica di un parametro o per tornare alla pagina principale. In questi casi l'azione sul tasto è efficace solo se più breve di 1.5 secondi.
- Una pressione prolungata (oltre 1.5 secondi) è utilizzata per resettare i valori dei Registri Parziali di energia
- Premere i due tasti contemporaneamente per oltre 1.5 secondi per entrare nel Menu Parametri

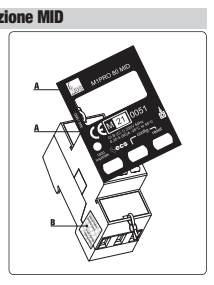
Simboli

- Elementi di misura
- Protetto da doppio isolamento

Certificazione MID

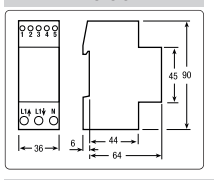
A) Indicazioni per codice strumento e dati di certificazione

B) Sigillo antieffrazione tra custodia e base

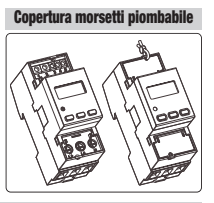


Herholdt Controls srl - 20132 Milano (Italy)

Dimensioni



Copertura morsetti piombabile



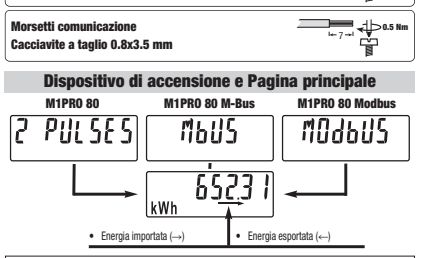
Lunghezza di spelatura dei fili e coppia di serraggio

80 A connessione diretta morsetti principali
Cacciavite PZ2
17 — 2 Nm

Morsetti tariffe e uscita impulsi
Cacciavite a taglio 0.8x3.5 mm
6 — 0.5 Nm

Morsetti comunicazione
Cacciavite a taglio 0.8x3.5 mm
7 — 0.5 Nm

Dispositivo di accensione e Pagina principale

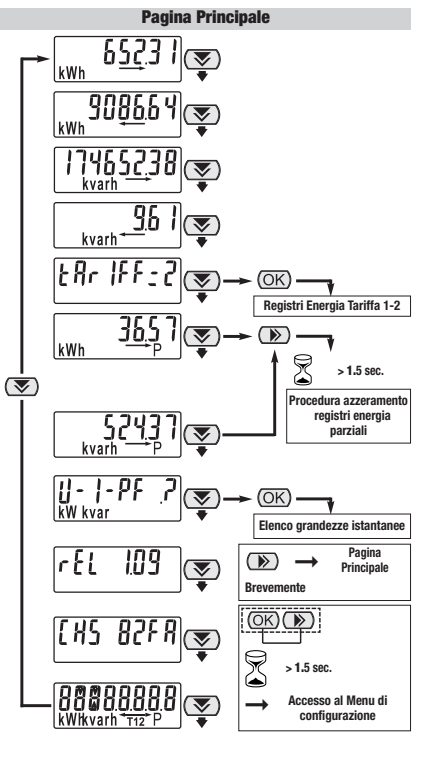


Pagina Principale:
Questa pagina viene visualizzata non solo all'accensione del contatore, ma anche nel caso in cui non venga premuto nessun tasto per almeno 30 secondi. Il valore in lettura è la somma di due registri: Enegia attiva importata Tariffa 1 + Enegia attiva importata Tariffa 2 (o in alternativa la somma delle energie esportate).

Retroilluminazione

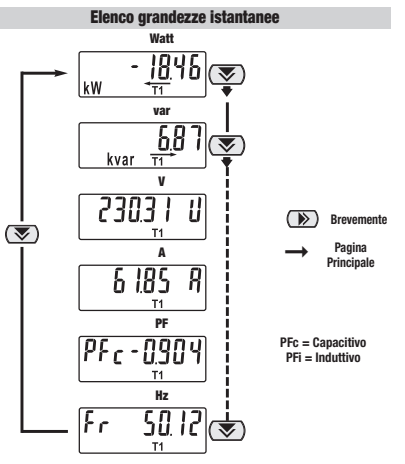
- Se non viene premuto alcun tasto per 40 secondi, lo schermo torna alla **Pagina Principale** e la retroilluminazione viene spenta.
- La successiva pressione di un tasto non cambia pagina visualizzata ma accende la retroilluminazione.

Pagina Principale

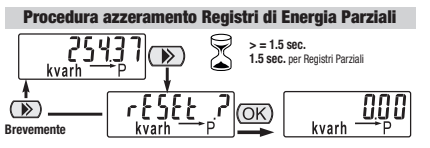


Registri Energia Tariffa 1-2

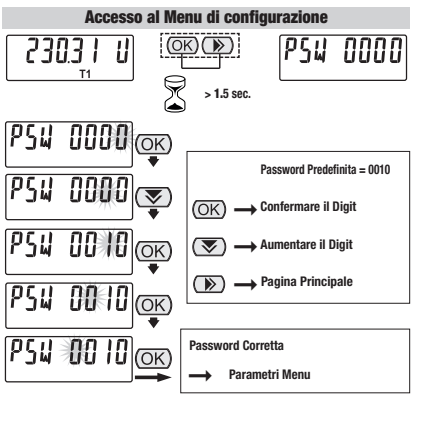
Elenco grandezze istantanee



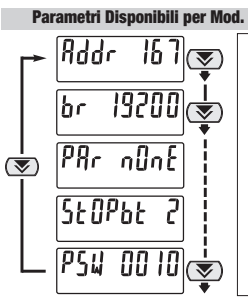
Procedura azzeramento Registri di Energia Parziali



Accesso al Menu di configurazione



Parametri Disponibili per Mod. M1PRO 80 Modbus



Indirizzo Modbus: 1 ... 247

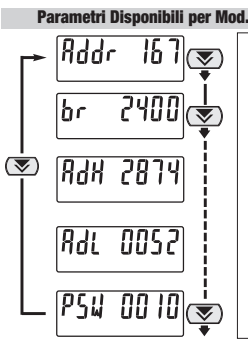
Velocità di Trasmissione
1200-2400-4800-9600
19200-38400

Parità: nessuna, pari e dispari

Bit di Stop: 1/2

Password: 0000 ... 9999

Parametri Disponibili per Mod. M1PRO 80 M-Bus



Indirizzo Primario
M-Bus: 0 ... 250

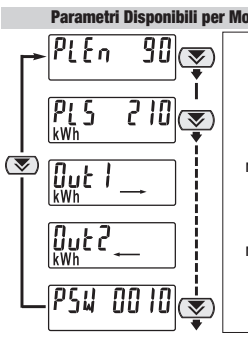
Velocità di Trasmissione
300-600-1200-2400
4800-9600

Indirizzo Secondario M-Bus (4 cifre MS)

Indirizzo Secondario M-Bus (4 cifre LS)

Password: 0000 ... 9999

Parametri Disponibili per Mod. M1PRO 80 S0



S0 p/kWh: 1 ... 1000

Durata dell'impulso (ON)
30 ... 100 msec.

Modalità Uscita Impulsi S01

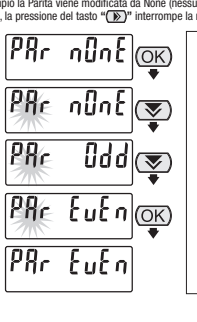
→ kWh, ← kWh,
→ kvarh, ← kvarh,
→ kWh T1, ← kWh T2,

Modalità Uscita Impulsi S02

Password: 0000 ... 9999

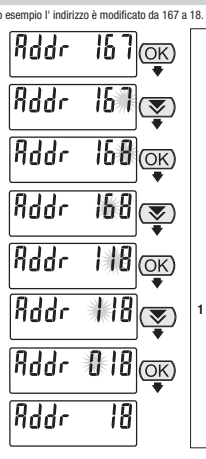
Modifica parametri multivalori

Nell'esempio la Parità viene modificata da None (nessuno) a EVEN (pari). In qualsiasi momento, la pressione del tasto "→" interrompe la modifica.



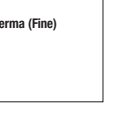
Modifica Numerico dei Parametri

In questo esempio l' indirizzo è modificato da 167 a 18.



Condizione di errore

Condizione di errore
Nel caso in cui sul display appaiano questi messaggi, il contatore ha subito un malfunzionamento e deve essere sostituito



Servizio e Manutenzione

Non dovrebbe essere necessario ricalibrare il contatore nel corso del suo esercizio dal momento che si tratta di un apparecchiatura senza parti removibili, la cui elettronica, i sensori di tensione e corrente non degradano per condizioni ambientali speciali.
Nel caso in cui si osservi un degrado di una prestazione, il contatore è stato danneggiato e deve essere riparato o sostituito. Se il contatore è sporco e ha bisogno di essere pulito, utilizzare un panno leggermente inumidito con un detergente delicato ad acqua. Fare attenzione che non entri un liquido nel dispositivo perché potrebbe danneggiarlo.

ecs

Manufactured by Herholdt Controls S.r.l. - 20132 Milano (Italy)

M1PRO 80

ENGLISH

Single-phase Digital Energy meters
Direct connection 80 A

Operating instructions

- This family of metering equipments provides the essential measurement capabilities required to monitor a single phase electrical installation.
- There are 3 models, mainly distinguished by the type of remote communication:

(*) certification parameters: 0.25-5 (80) A, Class B, 230 VAC 50 Hz, -25 °C ... +55 °C, 4 Quadrants, 2 Tariffs.

- Active Energy Class B (according to EN-50470) and Reactive Energy Class 2 (according to IEC 62053-23)
- Direct connected (up to 80 A)
- Backlightet LCD display and 3 push-button keys (to read Energies, V, I, PF, F, P, Q and to configure some parameters)
- Display with 8 digits.
- Self supplied (by the input voltage itself)
- 2 DIN modules width (36 mm)
- 2 Tariffs controlled by a 230 VAC digital input
- Depending on the models:
  - 2 S0 standard low voltage pulse outputs, or
  - communication via Modbus RTU or
  - communication via M-Bus (1 unit load)

⚠ RISK OF ELECTRIC SHOCK, BURNS OR EXPLOSION

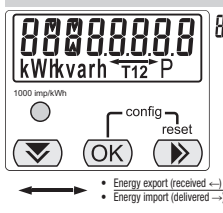
This device must be installed and maintained ONLY by qualified and duly authorized personnel.
During its installation, be sure there is no voltage applied.

Ordering information

Code	Model	Description
888-105	M1PRO 80 MID	2 x S0 pulses out - 2 Tariffs, **MID certified**
	M1PRO 80 M-Bus MID	built-in M-Bus - 2 Tariffs, **MID certified**
	M1PRO 80 Modbus MID	built-in Modbus - 2 Tariffs, **MID certified**

(+) For swiss market only active energy on display

Display



- Energy value
- kWh / kvarh display
- Running tarif, called tarif
- Energy value **"Partial"**
- Precision control LED
- Energy export (received ←)
- Energy import (delivered →)

Commands

- **Scroll Key:** This key is used to scroll pages and to modify parameters value. Its pushing is accepted only if it is shorter than 1.5 second.
- **OK key:** This key is used alone to enable a new menu function or to confirm a parameter value during its modification. Its pushing is accepted only if shorter than 1.5 seconds
- **ESC key:** This key is used alone to exit from a sub-menu, to cancel a parameter modification or to go back to the main page. In these cases, its pushing is accepted only <1.5 seconds
- A long pushing (>1.5 seconds) of the **"ESC key"** is used in the Partial Energy Registers Pages to reset their values.
- Push these 2 keys together, for at least 1.5 seconds, to enter into the Configuration Menu

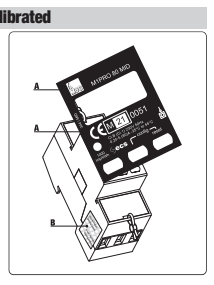
Symbols

- Measuring elements
- Protected by double insulation

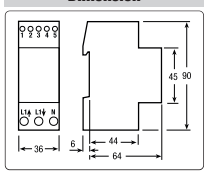
MID calibrated

A) Device code and certification data indications

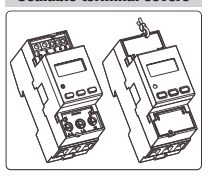
B) *Safety-sealing between upper and lower housing part*



Dimension



Sealable terminal covers



Cable stripping length and terminal screw torque

80 A direct connection main terminals
Screw driver PZ2
17 — 2 Nm

Tariff and Pulse outputs terminals
Screw driver blade 0.8x3.5 mm
6 — 0.5 Nm

Communication terminals
Screw driver blade 0.8x3.5 mm
7 — 0.5 Nm

Device Switch-on and Main Page

M1PRO 80 | **M1PRO 80 M-Bus** | **M1PRO 80 Modbus**

2 PULSES | M-bUS | MOdbUS

65231 kWh

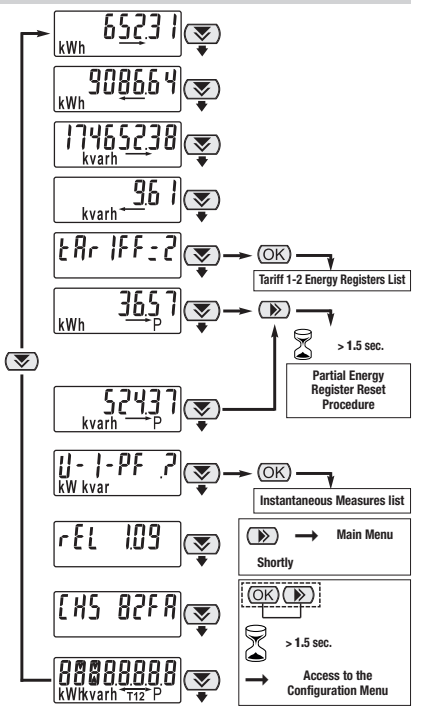
- Energy import (supplied →)
- Energy export (absorbed ←)

Main Page:
This page appears not only at device switch on, but also in case for 30 seconds no key is pushed. The value is the sum of 2 registers:
Imported Act. Energy Tariff T1 + Imported Act. Energy Tariff T2. (or, alternatively, the sum of the Exported ones).

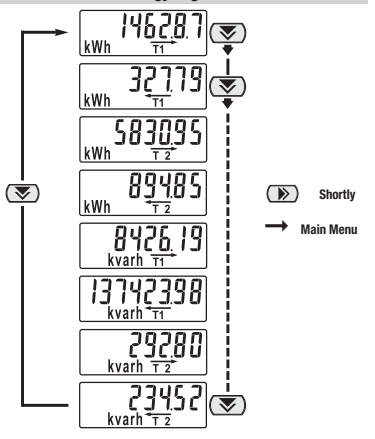
Display Back light

- If no button is pushed for 40 seconds, the display goes back to the **Main Page** and the backlight is switched off.
- The first button pushing does not change the page but is used to switch the backlight on.

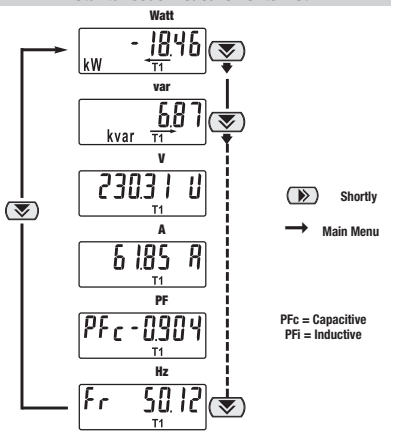
Main Menu



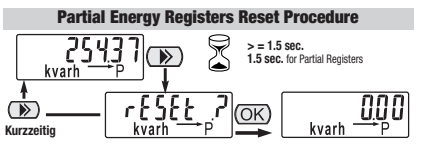
Tariff 1-2 Energy Registers List



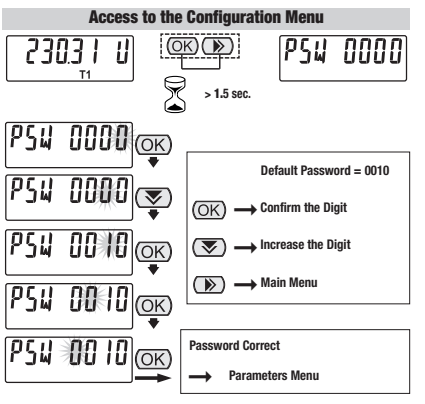
Instantaneous Measurements List



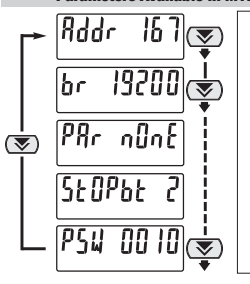
Partial Energy Registers Reset Procedure



Access to the Configuration Menu



Parameters Available in M1PRO 80 Modbus



Modbus Address: 1 ... 247

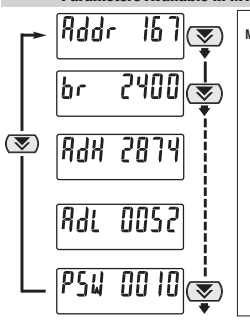
Baud Rate
1200-2400-4800-9600
19200-38400

Parity: None-Even and Odd

Stop Bits: 1/2

Password: 0000 ... 9999

Parameters Available in M1PRO 80 M-Bus



M-Bus Primary Address: 0 ... 250

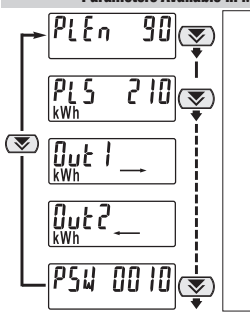
Baud Rate
300-600-1200-2400
4800-9600

M-Bus Secondary Addresse
(4 MS digits)

M-Bus Secondary Addresse
(4 LS digits)

Password: 0000 ... 9999

Parameters Available in M1PRO 80 S0



S0 p/kWh: 1 ... 1000

Pulse length (ON time)
30 ... 100 msec

S01 Pulse Output Mode

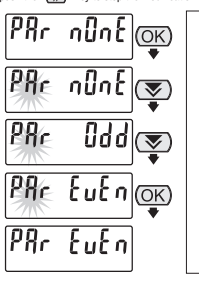
→ kWh, ← kWh,
→ kvarh, ← kvarh,
→ kWh T1, ← kWh T2,

S02 Pulse Output Mode

Password: 0000 ... 9999

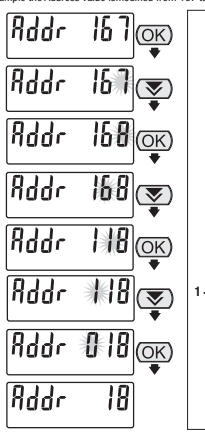
Multivalue Parameters Modification

In this example the Parity value is changed from None to Even. In any moment, push the "(»)" key to stop the modification



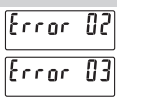
Numeric Parameters Modification

In this example the Address value ismodified from 167 to 18.



Diagnostic Message

Error Condition
If the display shows these messages, the meters has got a malfunction and must be replaced.



Service and Maintenance

It should not be necessary to recalibrate device during its lifetime as it is an electronic meter with no moving parts with electronics and voltage and current sensors that do not naturally degrade or change with time under specified environmental conditions. If a degradation in the performance is observed the device has probably been partly damaged and should be sent for repair or exchanged. If the meter is dirty and needs to be cleaned, use lightly moistened tissue with a water based mild detergent. Make sure no liquid goes into the meter as this could damage the meter.

Secs

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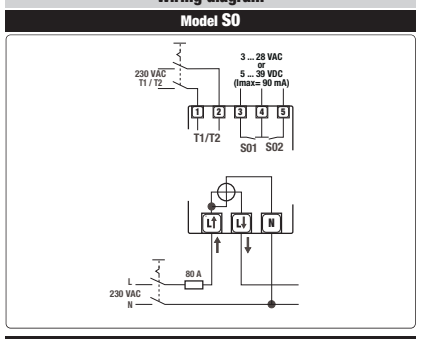
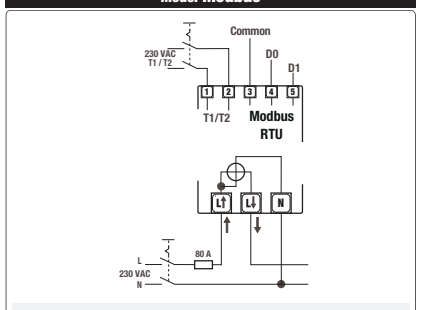
Wiring diagram

Model S0

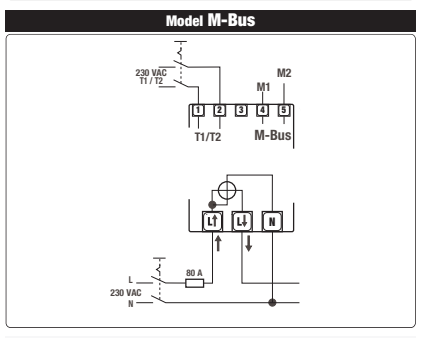


Model Modbus



RT = termination resistance (apply RT in cases reccomended by RS-485 norm)

Model M-Bus



Secs

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Technical Data

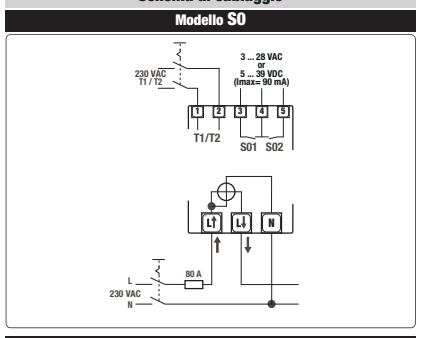
Data in compliance with EN 50470-1, EN 50470-3, EN 62053-23 and EN 62053-31			Direct Connection 80 A Pulse output S0	Direct Connection 80 A built-in Comm. Modbus/M-Bus
General characteristics				
• Housing	DIN 43880	**DIN**	2 Modules	2 Modules
• Mounting	EN 60715	**35 mm**	DIN rail	DIN rail
• Depth		**mm**	70	70
• Weight		**g**	175	175
Operating features				
• Connection	to single-phase network	**n° wires**	2	2
• Storage of energy values and config.	Internal flash memory	-	yes	yes
• Tariff	for active and reactive energy	**n° 2**	T1 / T2	T1 / T2
Approval (according to EN 50470-1, EN 50470-3)				
• Reference Voltage **Un**		**VAC**	230	230
• Reference Current **(Iref)**		**A**	5	5
• Minimum Current **(Imin)**		**A**	0.25	0.25
• Maximum Current **(Imax)**		**A**	80	80
• Starting Current **(Ist)**		**A**	0.015	0.015
• Reference Frequency **(fn)**		**Hz**	50	50
• Number of phases (number of wires)		-	1 (2)	1 (2)
• Certified Measures		**kWh**	→ kWh T1, ← kWh T1 → kWh T2, ← kWh T2	→ kWh T1, ← kWh T1 → kWh T2, ← kWh T2
• Accuracy	Active Energies (accor. to EN 50470-3) and Active Powers	**classe**	B	B
	Reactive Energies (accor. to EN 62053-23) and Reactive Power	**classe**	2	2
Supply Voltage and Power Consumption				
• Operating Supply Voltage range		**V**	92 ... 276	92 ... 276
• Maximum Power Dissipation (Voltage circuit)		**VA (W)**	≤2 (1)	≤2 (1)
• Maximum VA burden (Current circuit) @ **Imax**		**VA**	≤1	≤1
• Voltage Input Waveform		-	AC	AC
• Voltage impedance		**MΩ**	1	1
• Current impedance		**mΩ**	≤20	≤20
Overload capability				
• Voltage	continuous	**VAC**	276	276
	Temporary (1 s)	**VAC**	300	300
• Current	continuous	**A**	80	80
	Temporary (10 ms)	**A**	2400	2400
Measuring Features				
• Voltage range		**VAC**	92 ... 276	92 ... 276
• Current range		**A**	0.015 ... 80	0.015 ... 80
• Frequency range		**Hz**	45 ... 65	45 ... 65
• Measured Quantities		-	V, A, kWh, kVARh, PF, Hz, kW, kVAR	V, A, kWh, kVARh, PF, Hz, kW, kVAR
Display features				
• Display type	LCD backlightet	-	6.2 +3	6.2 +3
	Energy digits dimension	**mm**	6 x 3	6 x 3
• Active Energy	6 digits + 2 decimal digits	**min. ... max. kWh**	0.01 ... 999999.99	0.01 ... 999999.99
• Reactive Energy	6 digits + 2 decimal digits	**min. ... max. kvarh**	0.01 ... 999999.99	0.01 ... 999999.99
• Voltage	3 digits + 2 decimal digits	**V**	92.00 ... 276.00	92.00 ... 276.00
• Current	2 digits + 2 decimal digits	**A**	0.00 ... 80.00	0.00 ... 80.00
• Power factor	1 digits + 3 dec. digits + capac./induc. indic.	-	0.000 ... 1.000	0.000 ... 1.000
• Frequency	2 digits + 2 decimal digits	**Hz**	45.00 ... 65.00	45.00 ... 65.00
• Active Power	2 digits + 2 ecimal digits with sign	**kW**	0.00 ... 17.40	0.00 ... 17.40
• Reactive Power	2 digits + 2 ecimal digits with sign	**kVAR**	0.00 ... 17.40	0.00 ... 17.40
• Running Tariff	1 digit	-	T1 / T2	T1 / T2
• Display refresh period		**s**	1	1
Optical metrological LED				
• Front mounted red LED (meter constant)	proportional to active imp/exp Energy	**p/kWh**	1000	1000
Safety				
• Protective class		**classe**	II	II
• AC voltage test (EN 50470-3, 7.2)		**kV**	4	4
• Degree of pollution		-	2	2
• Operational voltage		**V**	300	300
• Impulse voltage test		**1.2/50 µs-kV**	6	6
• Housing material flame resistance	UL 94	**classe**	V0	V0
• Safety-sealing between upper and lower housing part		-	yes	yes
Pulse Outputs (S0 signals, acc. to IEC 62053-31)				
• Pulse Ouput 1 or 2	selectable	-	kWh →, kWh ← kvarh →, kvarh → kWh (T1) →, kWh (T2) →	-
• Pulse Rate	adjustable	**p/kWh - p/kvarh**	1 ... 1000	-
• Pulse ON duration	adjustable	**msec**	30 ... 100	-
• Operating voltage	Min. - Max.	**VAC (DC)**	5 ... 28 (5 ... 39)	-
• Pulse ON maximum current	in the range 3 ... 28 VAC (5 ... 39 VDC)	**mA**	90	-
• Pulse OFF leakage current	in the range 3 ... 28 VAC (5 ... 39 VDC)	**µA**	1	-
• Isolation class		-	SELV	-
Tariff				
• Tariff 1		-	open contact	open contact
• Tariff 2		**VAC**	230 ±20%	230 ±20%
• Input impedance		**kΩ**	224	224
Embedded communication				
• Modbus RTU	RS-485 - 3 wires	-	-	baud rate min.-max. 1200-38400 bps
• M-Bus	2 wires	-	-	baud rate min.-max. 300-9600 bps
• Isolation class		-	-	SELV
IR Connectable Communication Modules				
• For communication moduls connection	**(LAN-TCP/IP / M-Bus / Modbus RTU / KNX)**	-	yes	yes
Connection terminals				
• Screwdriver for mains terminals	head with Z +/-	**POZIDRIV**	PZ2	PZ2
• Screwdriver for tariff and communic. terminals	slotted head	**mm**	0.8 x 3.5	0.8 x 3.5
• Terminal capacity main current paths	solid wire min. (max)	**mm²**	1.65 (33)	1.65 (33)
	stranded wire with sleeve min. (max)	**mm²**	1.65 (33)	1.65 (33)
• Terminal capacity for tariff and communication	solid wire min. (max)	**mm²**	1 (4)	1 (4)
	stranded wire with sleeve min. (max)	**mm²**	1 (2.5)	1 (2.5)
Environmental conditions (storage)				
• Temperature range		**°C**	-25 ... +70	-25 ... +70
Environmental conditions (operating)				
• Temperature range		**°C**	-25 ... +55	-25 ... +55
• Mechanical environment		-	M1	M1
• Electromagnetic environment		-	E2	E2
• Installation	Indoor	-	yes	yes
• Altitude (max)		**m**	≤2000	≤2000
• Humidity	yearly average, not condensing	-	≤75%	≤75%
	on 30 days per year (not condensing)	-	≤95%	≤95%
• IP rating		-	IP51(*)/IP40	IP51(*)/IP40

(*) The metering equipment must be installed inside a cabinet with IP rating IP51 or better.

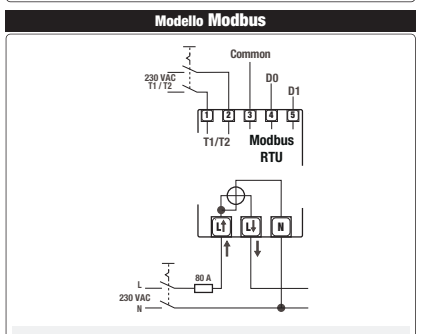
Note

Schema di cablaggio

Modello S0

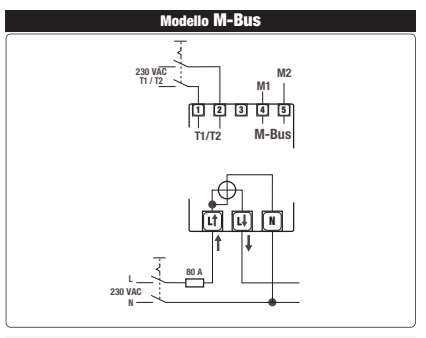


Modello Modbus



RT = resistenza di terminazione (applicabile nei casi raccomandati dalla norma RS-485)

Modello M-Bus



Secs

Manufactured by Herholdt Controls S.r.l. - 20132 Milano (Italy)

Dati tecnici

Secondo Norma EN 50470-1, EN 50470-3, EN 62053-23 e EN 62053-31			Connessione Diretta 80 A Uscita impulsi S0	Con. Diretta 80 A Comunicaz. Incorpor. Modbus/M-Bus
Caratteristiche generali				
• Custodia	DIN 43880	**DIN**	2 Moduli	2 Moduli
• Fissaggio	EN 60715	**35 mm**	binario DIN	binario DIN
• Profondità		**mm**	70	70
• Peso		**g**	175	175
Funzionamento				
• Connessione	alla rete monofase	**n° fili**	2	2
• Memoriz. energia misurata e configuraz.	memoria interna Flash	-	si	si
• Tariffa	per energia attiva e reattiva	**n° 2**	T1 / T2	T1 / T2
Parametri di approvazione (secondo EN 50470-1 e EN 50470-3)				
• Tensione di riferimento **Un**		**VAC**	230	230
• Corrente di riferimento **(Iref)**		**A**	5	5
• Corrente minima **(Imin)**		**A**	0.25	0.25
• Corrente massima **(Imax)**		**A**	80	80
• Corrente iniziale **(Ist)**		**A**	0.015	0.015
• Frequenza di riferimento **(fn)**		**Hz**	50	50
• Numero di fasi, (numero di fili)		-	1 (2)	1 (2)
• Misure certificate		**kWh**	→ kWh T1, ← kWh T1 → kWh T2, ← kWh T2	→ kWh T1, ← kWh T1 → kWh T2, ← kWh T2
• Classe di precisione	Energia attiva (secondo EN 50470-3)	**classe**	B	B
	Energia reattiva (secondo EN 62053-23)		2	2
Tensione di alimentazione e potenza consumata				
• Intervallo operativo di alimentazione		**VAC**	92 ... 276	92 ... 276
• Massima potenza dissipata (circuito di tensione)		**VA (W)**	≤2 (1)	≤2 (1)
• Massimo carico in VA (circuito di corrente) a corrente **Imax**		**VA**	≤1	≤1
• Forma d'onda di tensione		-	AC	AC
• Impedenza di tensione		**MΩ**	1	1
• Impedenza di corrente		**mΩ**	≤20	≤20
Sovraccaricabilità				
• Tensione **Un**	continuo	**VAC**	276	276
	momentanea (1 sec.)	**VAC**	300	300
• Corrente **Imax**	continuo	**A**	80	80
	momentanea (10 ms)	**A**	2400	2400
Caratteristiche dei circuiti di misura				
• Campo di misura della tensione		**VAC**	92 ... 276	92 ... 276
• Campo di misura della corrente		**A**	0.015 ... 80	0.015 ... 80
• Campo operativo di frequenza		**Hz**	45 ... 65	45 ... 65
• Valori misurati		-	V, A, kWh, kVARh, PF, Hz, kW, kVAR	V, A, kWh, kVARh, PF, Hz, kW, kVAR
Visualizzazione dati				
• Tipo di display	LCD	-	6.2 +3	6.2 +3
	dimensioni delle cifre principali	**mm**	6 x 3	6 x 3
• Energia attiva	6 cifre + 2 cifre decimali	**min. ... max. kWh**	0.01 ... 999999.99	0.01 ... 999999.99
• Energia reattiva	6 cifre + 2 cifre decimali	**min. ... max. kvarh**	0.01 ... 999999.99	0.01 ... 999999.99
• Tensione	3 cifre + 2 cifre decimali	**V**	92.00 ... 276.00	92.00 ... 276.00
• Corrente	2 cifre + 2 cifre decimali	**A**	0.00 ... 80.00	0.00 ... 80.00
• Fattore di Potenza	1 cifre + 3 cifre decimali con il segno capac. / Induc. sul display	-	0.000 ... 1.000	0.000 ... 1.000
• Frequenza	2 cifre + 2 cifre decimali	**Hz**	45.00 ... 65.00	45.00 ... 65.00
• Potenza attiva	2 cifre + 2 cifre decimali con segno	**kW**	0.00 ... 17.40	0.00 ... 17.40
• Potenza reattiva	2 cifre + 2 cifre decimali con segno	**kVAR**	0.00 ... 17.40	0.00 ... 17.40
• Tariffa vigente	1 cifra	-	T1 / T2	T1 / T2
• Ritmo di aggiornamento dati su display		**secondi**	1	1
Interfaccia ottica (LED metrologico)				
• LED rosso visibile sul frontale (costante)	proporzionale ad Energia Attiva (← e →)	**p/kWh**	1000	1000
Sicurezza				
• Classe di isolamento		**classe**	II	II
• Tensione di prova (EN 50470-3, 7.2)		**kV**	4	4
• Classe inquinamento		-	2	2
• Tensione di funzionamento		**VAC**	300	300
• Prova tensione di impulso		**1.2/50 µs-kV**	6	6
• Resistenza della custodia alla fiamma	UL 94	**classe**	V0	V0
• Protezione meccanica - sigillo fra custodia e base **(mod. ECSEM212MID-ECSEM214MID-ECSEM216MID)**		-	si	si
Uscite a impulsi (uscite S0, secondo la IEC 62053-31)				
• Uscita a Impulsi 1 e 2,	selezionabile	-	kWh →, kWh ← kvarh →, kvarh → kWh (T1) →, kWh (T2) →	-
• Frequenza di impulsi	regolabile	**p/kWh - p/kvarh**	1 ... 1000	-
• Durata Impulso ON	regolabile	**msec**	30 ... 100	-
• Tensione Operativa Impulsi	Min. - Max.	**VAC (DC)**	5 … 28 (5 … 39)	-
• Massima corrente di impulse ON	intervallo 3 ... 33 VAC (5 ... 70 VDC)	**mA**	90	-
• Corrente di perdita con impulso OFF	intervallo 3 ... 33 VAC (5 ... 70 VDC)	**µA**	1	-
• Classe di isolamento		-	SELV	-
Tariffa				
• Tariffa 1		-	contatto aperto	contatto aperto
• Tariffa 2		**VAC**	230 ±20%	230 ±20%
• Impedenza		**kΩ**	224	224
Comunicazione incorporata				
• Modbus RTU	RS-485 - 3 fili	-	-	baud rate min.-max. 1200-38400 bps
• M-Bus	2 fili	-	-	baud rate min.-max. 300-9600 bps
• Classe di isolamento		-	-	SELV
Moduli collegabili tramite interfaccia IR				
• Per il collegamento ai moduli di comunicazione **(LAN-TCP/IP / M-Bus / Modbus RTU / KNX)**		-	si	si
Morsetti di connessione				
• Cacciavite per i morsetti collegati alla rete	testa della vite Z +/-	**POZIDRIV**	PZ2	PZ2
• Cacciavite per i mors. di tariffa e comun.	testa della vite a taglio	**mm**	0.8 x 3.5	0.8 x 3.5
• Capacità morsetto corrente principale	filo compatto min. (max)	**mm²**	1.65 (33)	1.65 (33)
	filo flessibile con capocorda min. (max)	**mm²**	1.65 (33)	1.65 (33)
• Capacità morsetto tariffa e comunicazione	filo compatto min. (max)	**mm²**	1 (4)	1 (4)
	filo flessibile con capocorda min. (max)	**mm²**	1 (2.5)	1 (2.5)
Condizioni ambientali (immagazzinamento)				
• Campo di temperatura		**°C**	-25 ... +70	-25 ... +70
Condizioni ambientali (operative)				
• Campo di temperatura		**°C**	-25 ... +55	-25 ... +55
• Condizioni ambientali meccaniche		-	M1	M1
• Condizioni ambientali elettromagnetiche		-	E2	E2
• Istallazione	ambienti Interni	-	si	si
• Altitudine (max.)		**m**	≤2000	≤2000
• Umidità	media annuale (non condensante)	-	ω	≤75%
	per 30 giorni l'anno (non condensante)	-	≤95%	≤95%
• Grado IP		-	IP51(*)/IP40	IP51(*)/IP40

(*) Grado di protezione garantito in un quadro con almeno grado di protezione IP51

Note