SENECA

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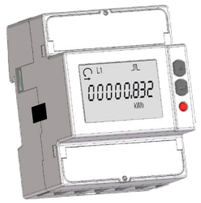
SENECA s.r.l.
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Tel. +39.049.8705355 - 8705359 - Fax +39.049.8706287
e-mail: info@seneca.it - www.seneca.it

S534-80
S504C-80

Contatore di energia 80A trifase - *80A three phase energy counter*

1MSNEM80X001

Soggetto a modifiche senza preavviso.
Subject to change without prior notice.



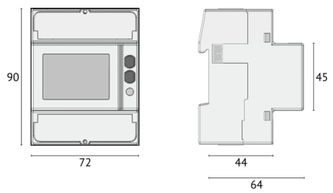
I - MANUALE D'USO

GB - USER MANUAL

⚠ **ATTENZIONE!**
L'installazione, la configurazione del circuito in cui è inserito il dispositivo e la sigillatura dei coprimorsetti deve essere eseguita da figure professionalmente qualificate. Togliere la tensione prima di intervenire sullo strumento.

⚠ ***WARNING!***
Device installation, wiring configuration and terminal cover sealing must be carried out only by qualified professional staff. Switch off the voltage before device installation.

DIMENSIONI (mm)
SIZE (mm)

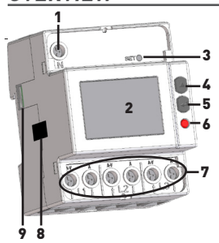


MODELLI DISPONIBILI
AVAILABLE MODELS

Nome *Name*	Modello/Porta *Model/Port*	Inserzioni possibili (es. 3.4.3=3fasi,4fili,3corr.) *Available wirings [e.g. 3.4.3=3phases,4wires,3curr.]* 3.4.3	3.3.3	3.3.2	Ingr. tariffa *Tariff in.*	Uscite S0 *S0 outputs*	Cert. MID *MID cert.*
S534-80	IR	●	●	●	1	2	
S504C-80-MBU	M-BUS	●	●	●	1	1	
S504C-80-MOD	RS485 MODBUS	●			1	1	
S504C-80-ETH	ETHERNET	●				1	
S534-80-MID	IR	●	●	●	1	2	●
S504C-80-MBU-MID	M-BUS	●	●	●	1	1	●
S504C-80-MOD-MID	RS485 MODBUS	●			1	1	●
S504C-80-ETH-MID	ETHERNET	●				1	●

I contatori parziali sono azzerabili su tutti i modelli.
In all device models partial counters are resettable.

PANORAMICA
OVERVIEW



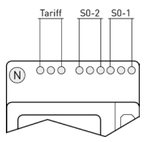
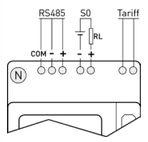
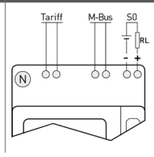
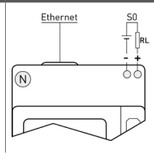
I - ITALIANO

1. Morsetto di neutro
2. Display LCD retroilluminato
3. Tasto SET
4. Tasto SU
5. Tasto ENTER
6. LED metrologico
7. Morsetti di corrente e tensione
8. Sigillo antieffrazione (NON RIMUOVERE)
9. Porta IR **- solo mod. IR**

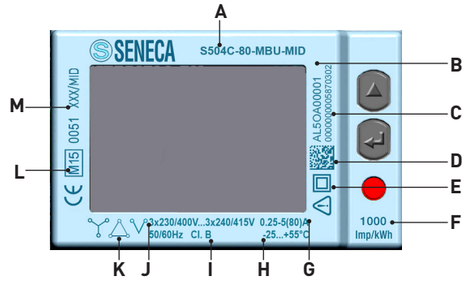
GB - ENGLISH

1. *Neutral terminal*
2. *Backlight LCD display*
3. *SET key*
4. *UP key*
5. *ENTER key*
6. *Metrological LED*
7. *Current and voltage terminals*
8. *Safety-sealing [DO NOT REMOVE]*
9. *IR port* ***- only IR model***

Il sigillo antieffrazione e la copertura dei morsetti piombabile sono inclusi solo con i contatori certificati MID.
The safety-sealing and the sealable terminal covers are included only with MID certified counters.

IR	RS485 MODBUS	M-BUS	ETHERNET
			

SIMBOLOGIA SUL PANNELLO FRONTALE (ESEMPIO)
SYMBOLS ON FRONT PANEL (EXAMPLE)



I - ITALIANO

A. Nome dispositivo
B. Numero seriale
C. Indirizzo secondario per modello M-BUS.
Per modello IR o RS485 MODBUS: campo vuoto
Per modello ETHERNET: indirizzo MAC
D. Data Matrix
E. Classe di protezione
F. Costante d'integrazione (LED metrologico)
G. Corrente base (corrente massima)
H. Temperatura di funzionamento
I. Classe di precisione
J. Tensione/frequenza nominale
K. Tipo di collegamento: ⅄=3fasi 4fili 3corr., △=3fasi 3fili 3corr., V=3fasi 3fili 2corr.
L. Simboli di approvazione MID
M. Certificato di approvazione del tipo

Se il dispositivo è versione NO MID, "CL.1 EN 62053-21" sostituirà i campi I, L e M.

GB - ENGLISH

A. *Device name*
B. *Serial number*
C. *Secondary address for M-BUS model.*
For IR or RS485 MODBUS model: field empty
For ETHERNET model: MAC address
D. *Data Matrix*
E. *Protection class*
F. *Meter constant (metrological LED)*
G. *Base current (max current)*
H. *Working temperature*
I. *Accuracy class*
J. *Nominal voltage/frequency*
K. *Wiring type:* ⅄=3phases 4wires 3curr., △=3phases 3wires 3curr., V=3phases 3wires 2curr.
L. *MID approval symbols*
M. *Type approval certification*

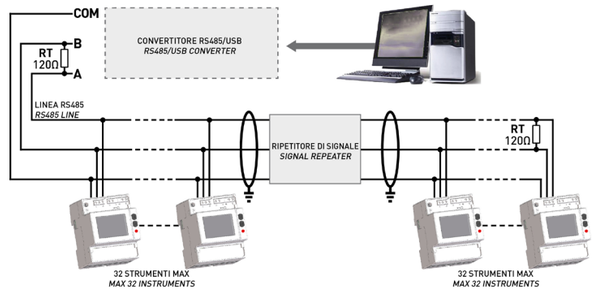
If the device is NO MID version, "CL.1 EN 62053-21" will be shown instead of I, L and M fields.

PORTA RS485
RS485 PORT

La porta RS485 è disponibile a seconda del modello di dispositivo.
The RS485 port is available according to the device model.

La porta RS485 consente la gestione del dispositivo tramite protocollo MODBUS RTU/ASCII. Per il collegamento del dispositivo alla rete, montare una resistenza di terminazione (RT=120...150 Ω) sul lato del convertitore RS485 e sull'ultimo dispositivo connesso alla linea. La massima lunghezza raccomandata per un collegamento è di circa 1200m a 9600 bps. Per lunghezze superiori è consigliabile utilizzare valori più bassi di velocità (bps), cavi con bassa attenuazione o ripetitori di segnale. Fare riferimento allo schema seguente.

The RS485 port allows to manage the device by MODBUS RTU/ASCII protocol. For device network connection, install a terminal resistance (RT=120...150 Ω) on the RS485 converter side and another one on the last device connected on the line. The maximum recommended distance for a connection is 1200m at 9600 bps. For longer distances, lower communication speed (bps), low-attenuation cables or signal repeaters are needed. Refer to the following scheme.

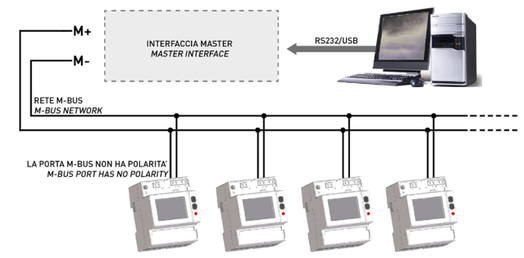


PORTA M-BUS
M-BUS PORT

La porta M-BUS è disponibile a seconda del modello di dispositivo.
The M-BUS port is available according to the device model.

La porta M-BUS consente la gestione del dispositivo tramite protocollo M-Bus. Tra il PC e la rete M-Bus è richiesta un'interfaccia master per adattare la porta RS232/USB alla rete. Il numero di dispositivi collegabili dipende dall'interfaccia master utilizzata. Per il collegamento tra i diversi dispositivi, utilizzare un cavo schermato con i due conduttori di segnale "twistati". Fare riferimento allo schema seguente.

The M-BUS port allows to manage the device by M-BUS protocol. A master interface is required between PC and the M-Bus network to adapt RS232/USB port to network. The maximum number of devices to be connected can change according to the used master interface. For the connection among the different devices, use a cable with a twisted pair and a third wire. Refer to the following scheme.



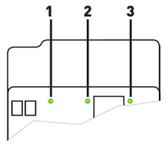
Il dispositivo comunica solo se almeno 2 fasi di tensione sono collegate.
The device can communicate when at least 2 voltage phases are connected.

PORTA ETHERNET
ETHERNET PORT

La porta ETHERNET è disponibile a seconda del modello di dispositivo.
The ETHERNET port is available according to the instrument device.

Installare la ferrite (in dotazione) sul cavo Ethernet ad un distanza massima di 5cm dal dispositivo. Assicurarsi di far fare un doppio giro al cavo Ethernet all'interno della ferrite.
La porta ETHERNET consente la gestione del dispositivo da un qualsiasi PC connesso sulla rete ETHERNET/ Internet. Nel campo d'indirizzo web del browser digitare **192.168.1.249**, verrà visualizzato il Web server. Web server è stato progettato per due tipi di utenza, **Amministratore** per l'accesso completo alle funzioni del dispositivo (**username: admin, password: admin**), e **Utente** per l'accesso limitato alle funzioni del dispositivo (**username: user, password: user**).

Install the included ferrite on the Ethernet cable at a maximum 5 cm distance from the device. Make sure that the Ethernet cable is rolled twice inside the ferrite.
*The ETHERNET port gives the possibility to manage the device by any PC connected on the ETHERNET/Internet network. In the browser web address field type **192.168.1.249**, the device Web server will be displayed. Web server has been designed for two user type, **Administrator** for full device access **(username: admin, password: admin)**, and **User** for limited device access **(username: user, password: user)**.*



I - ITALIANO

1. **LED STATO**: stato della comunicazione; LAMPEGGIANTE LENTO=com. interna ok, ON=accensione o aggiornamento in corso, LAMPEGGIANTE VELOCE=errore com. interna
2. **LED SPD**: velocità di comunicazione; OFF=10 Mbps, ON=100 Mbps
3. **LED LINK**: link activity; ON=link ok, LAMPEGGIANTE=link activity

GB - ENGLISH

1. ***STATUS LED****: communication status; SLOW BLINKING=internal comm. ok, ON=switching on or upgrading in progress, FAST BLINKING=internal comm. error*
2. ***SPD LED****: communication speed; OFF=10 Mbps, ON=100 Mbps*
3. ***LINK LED****: link activity; ON=link ok, BLINKING=link activity*

INGRESSO TARIFFA
TARIFF INPUT

L'ingresso tariffa è disponibile a seconda del modello di dispositivo.
The tariff input is available according to the device model.

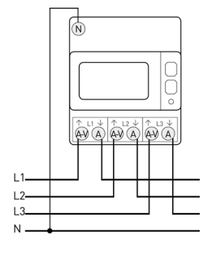
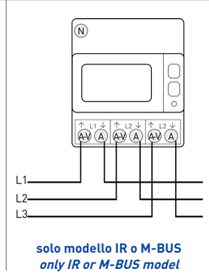
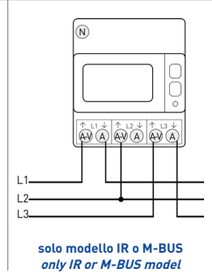
Per la gestione della tariffa, collegare all'ingresso tariffa un apparecchio esterno che genererà un segnale verso lo strumento. Il segnale verrà interpretato come segue:
- quando l'ingresso tariffa rileva un segnale senza tensione (0 V), lo strumento incrementa i contatori di tariffa 1
- quando l'ingresso tariffa rileva un segnale con tensione (fare riferimento alle Caratteristiche tecniche), lo strumento incrementa i contatori di tariffa 2

Nota: i contatori totali continuano ad incrementare indipendentemente dallo stato dell'ingresso tariffa.

The tariff management is carried out by connecting an external device to tariff input, which is providing a signal to the energy counter. The tariff signal is managed as follows:
- *if the tariff input detects a voltage free signal (0 V), the device will increase the tariff 1 counters group*
- *if the tariff input detects a voltage signal (see Technical features), the device will increase the tariff 2 counters group*

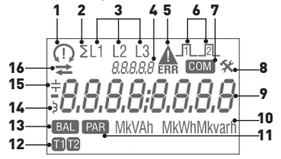
Note: Total counters increase continuously regardless from the tariff input status.

SCHEMI D'INSERZIONE
WIRING DIAGRAMS

3 FASI, 4 FILI, 3 CORRENTI *3 PHASES, 4 WIRES, 3 CURRENTS*	3 FASI, 3 FILI, 3 CORRENTI *3 PHASES, 3 WIRES, 3 CURRENTS*	3 FASI, 3 FILI, 2 CORRENTI *3 PHASES, 3 WIRES, 2 CURRENTS*
		
	solo modello IR o M-BUS ***only IR or M-BUS model***	**solo modello IR o M-BUS** ***only IR or M-BUS model***

SIMBOLOGIA A DISPLAY
SYMBOLS ON DISPLAY

I simboli a display sono disponibili a seconda del modello di dispositivo.
The display symbols are available according to the device model.



I - ITALIANO

1. Ordine delle fasi:
corretto (123)
errato (132)
non definito (es. manca una o più fasi)
2. Valore di sistema
3. Numero di fase del valore
4. Identifica la pagina di Programmazione (**SEtUP**) o Info (**InFO**)
5. Parametri metrologici corrotti (Code: XX). Contatore inutilizzabile, da restituire al Produttore
6. Stato attivo dell'uscita S0-1 / S0-2
7. Stato attivo della comunicazione
8. Pagina di Programmazione
9. Area principale
10. Area unità di misura
11. Valore di un contatore parziale. Lampeggiante=contatore fermo
12. Valore di un contatore tariffa 1 o 2
13. Valore di un contatore di bilancio
14. Valore induttivo
15. Valore capacitivo
16. Valore di potenza o energia importata (→), esportata (←)

GB - ENGLISH

1. *Phase sequence:*
correct (123)
wrong (132)
not defined (e.g. one or more phases are missing)
2. *System value*
3. *Value phase number*
4. *Identify the Setup page (**SEtUP**) or the Info page (**InFO**)*
5. *Metrological parameters corrupted (Code: XX). Useless counter, to be returned to the Manufacturer*
6. *S0-1 / S0-2 output active status*
7. *Communication active status*
8. *Setup page*
9. *Main area*
10. *Measuring unit area*
11. *Partial counter value. Flashing=stopped counter*
12. *1 or 2 tariff counter value*
13. *Balance counter value*
14. *Inductive value*
15. *Capacitive value*
16. *Imported (→), exported (←) energy or power value*

MISURE
MEASUREMENTS

I parametri sono disponibili a seconda del modello di dispositivo.
The parameters are available according to the device model.

	SIMBOLO *SYMBOL*	UNITÀ DI MISURA *MEASURE UNIT*	DISPLAY *DISPLAY*	PORTA *PORT*
VALORI ISTANTANEI ***INSTANTANEOUS VALUES***				
Tensione *Voltage*	V∑, V1, V2, V3	V		●
Tensione di linea *Line voltage*	V12, V23, V31	V		●
Corrente *Current*	I∑, I1, I2, I3, IN	A		■
Fattore di potenza *Power factor*	PF∑, PF1, PF2, PF3			●
Potenza apparente *Apparent power*	S∑, S1, S2, S3	kVA	■	■
Potenza attiva *Active power*	P∑, P1, P2, P3	kW	■	■
Potenza reattiva *Reactive power*	Q∑, Q1, Q2, Q3	kvar	■	■
Frequenza *Frequency*	f	Hz		●
Ordine delle fasi *Phase sequence*	CW / CCW		●	●
Direzione della potenza *Power direction*	→ ←		●	
DATI MEMORIZZATI ***RECORDED DATA***				
Energia totale attiva *Total active energy*	∑, L1, L2, L3	kWh	■	■
Energia totale reattiva ind. e cap. *Total ind. and cap. reactive energy*	∑, L1, L2, L3	kvarh	■	■
Energia totale apparente ind. e cap. *Total ind. and cap. apparent energy*	∑, L1, L2, L3	kVAh	■	■
Contatori di energia tariffe T1/T2 (NO modello ETHERNET) *T1/T2 tariff energy counters (NO ETHERNET model)*	∑, L1, L2, L3	kWh, kvarh, kVAh	■	■
Contatori di energia parziali azzerabili Resettable partial energy counters	∑	kWh, kvarh, kVAh	■	■
Bilancio energetico *Energy balance*	∑	kWh, kvarh, kVAh	■	■

In caso di modello ETHERNET, possono essere memorizzati tutti i parametri.
In case of ETHERNET model, all parameters can be recorded.

ALTRE INFORMAZIONI ***OTHER INFORMATION***	SIMBOLO *SYMBOL*	VALORE/STATO *VALUE/STATUS*	DISPLAY *DISPLAY*	PORTA *PORT*
Tariffa in uso (NO modello ETHERNET) *Present tariff (NO ETHERNET model)*	T	1/2		●
Tensione sopra/sotto il limite *Undervoltage/overvoltage*	VOL, VUL	ON/OFF		●
Corrente sotto/sopra il limite *Undercurrent/overcurrent*	IOL, IUL	ON/OFF		●
Frequenza sotto/sopra il limite *Underfrequency/overfrequency*	fOL, fUL	ON/OFF		●
Contatori parziali *Partial counters*	PAR	START/STOP	●	●
Stato dell'uscita S0 *S0 output status*	1 2	Active/Not active	●	

Legenda: ● = Standard ■ = Valore bidirezionale
Legend: ● = Standard ■ = Bidirectional value

Tutti i contatori di sistema [kWh∑, kvarh∑, kVAh∑] possono essere associati all'uscita S0. In caso di 2 uscite S0 (modello IR), non è possibile impostare lo stesso contatore per entrambe le uscite.
NOTA: in caso di inserzione 3 fili, i parametri di tensioni fase-neutro, corrente di neutro, potenze di fase, fattore di potenza di fase e tutti i contatori di fase non saranno disponibili.
All the system counters [kWh∑, kvarh∑, kVAh∑] can be associated to S0 output. In case of 2 S0 outputs (IR model), it is not allowed to set the same counter for both outputs.
NOTE: in case of 3 wire connection, phase-neutral voltages, neutral current, phase powers, phase power factors parameters and all phase counters are not available.

CALCOLO PER I VALORI DEI CONTATORI DI BILANCIO
BALANCE COUNTER VALUES CALCULATION

CONTATORE DI BILANCIO *BALANCE COUNTER*	FORMULA *FORMULA*
kWh	(→kWh T1) − (←kWh T1) + (→kWh T2) − (←kWh T2)
kVAh ind	(→kVAh ind T1) − (←kVAh ind T1) + (→kVAh ind T2) − (←kVAh ind T2)
kVAh cap	(→kVAh cap T1) − (←kVAh cap T1) + (→kVAh cap T2) − (←kVAh cap T2)
kvarh ind	(→kvarh ind T1) − (←kvarh ind T1) + (→kvarh ind T2) − (←kvarh ind T2)
kvarh cap	(→kvarh cap T1) − (←kvarh cap T1) + (→kvarh cap T2) − (←kvarh cap T2)

FUNZIONI DEI TASTI
KEY FUNCTIONS

Alcune funzioni sono disponibili a seconda del modello di dispositivo.
Some functions are available according to the device model.

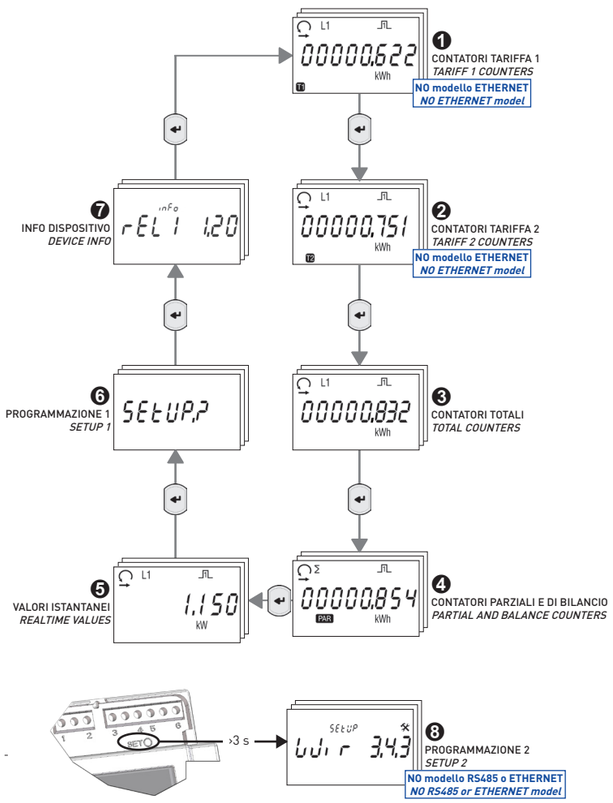
FUNZIONALITA' *HOW TO*	DOVE *WHERE*	TASTO *KEY*	PRESSIONE *PRESS TIME*
Scorrere i gruppi *Scroll loops*	Qualsiasi pagina eccetto Programmazione 1/2 *Any page except for Setup 1/2*	↵	Istantanea *Instantaneous*
Scorrere le pagine all'interno di un gruppo *Scroll pages in a loop*	Qualsiasi pagina dei gruppi *Any loops page*	▲	Istantanea *Instantaneous*
Accedere alle pagine di Programmazione 1 *Access Setup 1 pages*	Pagina "Setup?" *"Setup?" page*	↵	>3 s
Accedere alle pag. di Programmazione 2 *Access Setup 2 pages*	Qualsiasi pagina eccetto Programmazione 1 *Any page except for Setup 1*	SET	>3 s
Cambiare un valore/digit *Change a value/digit*	Pagine di Programmazione 1/2 *Setup 1/2 pages*	▲	Istantanea *Instantaneous*
Confermare un valore/digit *Confirm a value/digit*	Pagine di Programmazione 1/2 *Setup 1/2 pages*	↵	Istantanea *Instantaneous*
Uscire dalle pagine di Programmazione 1/2 *Exit Setup 1/2 pages*	Pagine di Programmazione 1/2 *Setup 1/2 pages*	↵	>3 s
Avviare/fermare il contatore parziale visualizzato *Start/stop the displayed partial counter*	Pagine contatori parziali *Partial counters pages*	↵+▲	Istantanea *Instantaneous*
Azzerare il valore del contatore parziale visualizzato Reset the displayed partial counter value	Pagine contatori parziali *Partial counters pages*	↵+▲	>3 s
Test del display *Display test*	Qualsiasi pagina eccetto Programmazione 1/2 *Any page except for Setup 1/2*	↵+▲	>10 s

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STRUTTURA PAGINE
PAGE STRUCTURE

Possono essere visualizzati fino a 8 gruppi di pagine. Alcuni gruppi potrebbero non essere disponibili a seconda del modello di dispositivo. Per scorrere le pagine all'interno di un gruppo premere ▲.

Up to 8 page loops can be displayed. Some loops can be unavailable according to the device model. Press ▲ to scroll pages in a loop.

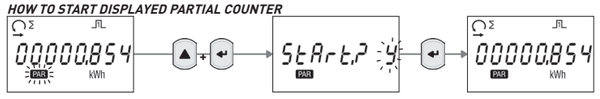


NOTA: in caso di inserzione 3 fili, le pagine con i valori di fase non saranno disponibili.
NOTE: in case of 3 wire connection, pages showing phase values are not available.

AVVIARE / FERMARE / AZZERARE I CONTATORI PARZIALI
HOW TO START / STOP / RESET PARTIAL COUNTERS

Funzione disponibile solo sulle pagine dei contatori parziali.
Feature available only on partial counter pages.

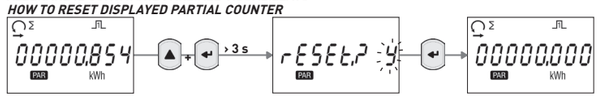
AVVIARE IL CONTATORE PARZIALE VISUALIZZATO
HOW TO START DISPLAYED PARTIAL COUNTER



FERMARE IL CONTATORE PARZIALE VISUALIZZATO PRECEDENTEMENTE AVVIATO
HOW TO STOP DISPLAYED PARTIAL COUNTER PREVIOUSLY STARTED



AZZERARE IL CONTATORE PARZIALE VISUALIZZATO
HOW TO RESET DISPLAYED PARTIAL COUNTER



Nelle pagine **START?**, **STOP?**, **RESET?**, i valori selezionabili sono: **Y**=per confermare, **N**=per annullare. Cambiare valore con ▲.
*In **START?**, **STOP?**, **RESET?** pages, selectable items are: **Y**=to confirm, **N**=to cancel. To change item, press ▲.*

PAGINE PROGRAMMAZIONE 1
SETUP 1 PAGES

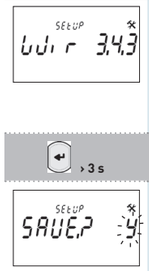


I - ITALIANO	GB - ENGLISH
PAGINA PER L'ACCESSO A PROGRAMMAZIONE 1	***SETUP 1 ACCESS PAGE***
INDIRIZZO MODBUS (01...F7 Hex) **Disponibile solo in caso di comunicazione MODBUS** 1. Premere ↵, il primo digit inizierà a lampeggiare. 2. Premere ▲ per cambiare valore. 3. Confermare con ↵. 4. Ripetere i punti 2 e 3 per il digit successivo.	***MODBUS ADDRESS (01...F7 Hex)*** ***Available only in case of MODBUS communication*** 1. *Press ↵, the first digit will start to flash.* 2. *Press ▲ to change the value.* 3. *Confirm with ↵.* 4. *Repeat points 2 and 3 for the next digit.*
INDIRIZZO PRIMARIO M-BUS (0...250) **Disponibile solo in caso di comunicazione M-BUS** 1. Premere ↵, il primo digit inizierà a lampeggiare. 2. Premere ▲ per cambiare valore. 3. Confermare con ↵. 4. Ripetere i punti 2 e 3 per gli altri digit.	***M-BUS PRIMARY ADDRESS (0...250)*** ***Available only in case of M-BUS communication*** 1. *Press ↵, the first digit will start to flash.* 2. *Press ▲ to change the value.* 3. *Confirm with ↵.* 4. *Repeat points 2 and 3 for the other digits.*
INDIRIZZO SECONDARIO M-BUS (0...99999999) **Disponibile solo in caso di comunicazione M-BUS** 1. Premere ↵, il primo digit dell'indirizzo secondario inizierà a lampeggiare. 2. Premere ▲ per cambiare il valore lampeggiante. 3. Confermare con ↵. 4. Ripetere i punti 2 e 3 per gli altri digit.	***M-BUS SECONDARY ADDRESS (0...99999999)*** ***Available only in case of M-BUS communication*** 1. *Press ↵, the first digit of the secondary address will start to flash.* 2. *Press ▲ to change the flashing value.* 3. *Confirm with ↵.* 4. *Repeat points 2 and 3 for the other digits.*
VELOCITA' DI COMUNICAZIONE **Disponibile solo in caso di comunicazione MODBUS o M-BUS** 1. Premere ↵, il valore inizierà a lampeggiare. 2. Premere ▲ per cambiare valore. 3. Confermare con ↵.	***COMMUNICATION SPEED*** ***Available only in case of MODBUS or M-BUS communication*** 1. *Press ↵, the value will start to flash.* 2. *Press ▲ to change the value.* 3. *Confirm with ↵.*
MODALITA' MODBUS (RTU=8N1, ASCII=7E2) **Disponibile solo in caso di comunicazione MODBUS** 1. Premere ↵, la modalità inizierà a lampeggiare. 2. Premere ▲ per cambiare modalità. 3. Confermare con ↵.	***MODBUS MODE (RTU=8N1, ASCII=7E2)*** ***Available only in case of MODBUS communication*** 1. *Press ↵, the item will start to flash.* 2. *Press ▲ to change the item.* 3. *Confirm with ↵.*
RIPRISTINO DEI PARAMETRI ETHERNET AI VALORI DI DEFAULT (Parametri di default: IP=192.168.1.249, Username=admin, Password: admin) **Disponibile solo in caso di modello ETHERNET** 1. Premere ↵, verrà visualizzata una nuova pagina di conferma. 2. Premere ▲ per cambiare il valore lampeggiante, **Y** per confermare il reset, **N** per annullare. 3. Confermare con ↵.	***ETHERNET PARAMETERS SET DEFAULT (Default parameters: IP=192.168.1.249, Username=admin, Password: admin)*** ***Available only in case of ETHERNET model*** 1. *Press ↵, a new page for confirmation will be displayed.* 2. *Press ▲ to change the flashing value, **Y** to confirm the reset, **N** to cancel.* 3. *Confirm with ↵.*
CONTATORE ABBINATO ALL'USCITA S0 1. Premere ↵, gli elementi che identificano il contatore (es. →, kWh) inizieranno a lampeggiare. 2. Premere ▲ per cambiare contatore da abbinare all'uscita S0-1. 3. Confermare con ↵. 4. In caso di 2 uscite S0 (modello IR), premere ▲ per visualizzare la pagina S0-2 e ripetere la stessa procedura fatta per l'uscita S0-1.	***COUNTER ASSIGNED TO S0 OUTPUT*** 1. *Press ↵, the items which identify the counter (e.g. →, kWh) will start to flash.* 2. *Press ▲ to change the counter to be assigned to the S0-1 output.* 3. *Confirm with ↵.* 4. *In case of 2 S0 outputs (IR model), press ▲ to display the S0-2 page and repeat the same procedure made for S0-1 output.*
RESET DI TUTTI I CONTATORI PARZIALI 1. Premere ↵, verrà visualizzata una nuova pagina di conferma. 2. Premere ▲ per cambiare il valore lampeggiante, **Y** per confermare il reset, **N** per annullare. 3. Confermare con ↵.	***ALL PARTIAL COUNTERS RESET*** 1. *Press ↵, a new page for confirmation will be displayed.* 2. *Press ▲ to change the flashing value, **Y** to confirm the reset, **N** to cancel.* 3. *Confirm with ↵.*
>3 s **SU QUALSIASI PAGINA DI PROGRAMMAZIONE 1**	***ON ANY SETUP 1 PAGE***
USCITA DA PROGRAMMAZIONE 1 1. Premere ▲ per cambiare il valore lampeggiante, **Y** per uscire e salvare le impostazioni, **N** per uscire senza salvare, **C** per continuare a scorrere le pagine di Programmazione 1. 2. Confermare con ↵.	***EXIT FROM SETUP 1*** 1. *Press ▲ to change the flashing value, **Y** to exit and save the settings, **N** to exit without saving, **C** to continue scrolling Setup 1 pages.* 2. *Confirm with ↵.*

PAGINE PROGRAMMAZIONE 2 (solo modelli IR e M-BUS)
SETUP 2 PAGES (only IR & M-BUS models)

La Programmazione 2 è disponibile solo per i modelli IR o M-BUS.
Per accedere alle pagine di programmazione 2, tenere premuto per almeno 3 secondi il tasto SET.

Setup 2 is available only for IR or M-BUS models.
To access setup 2 pages, keep SET key pressed for at least 3 seconds.



I - ITALIANO	GB - ENGLISH
MODALITA' D'INSERZIONE **3.4.3 = 3 fasi, 4 fili, 3 correnti** **3.3.3 = 3 fasi, 3 fili, 3 correnti** **3.3.2 = 3 fasi, 3 fili, 2 correnti** 1. Premere ↵, la modalità d'inserzione inizierà a lampeggiare. 2. Premere ▲ per cambiare modalità. 3. Confermare con ↵.	***WIRING DIAGRAM*** ***3.4.3 = 3 phases, 4 wires, 3 currents*** ***3.3.3 = 3 phases, 3 wires, 3 currents*** ***3.3.2 = 3 phases, 3 wires, 2 currents*** 1. *Press ↵, the wiring mode will start to flash.* 2. *Press ▲ to change the mode.* 3. *Confirm with ↵.*
>3 s **SU QUALSIASI PAGINA DI PROGRAMMAZIONE 2**	***ON ANY SETUP 2 PAGE***
USCITA DA PROGRAMMAZIONE 2 1. Premere ▲ per cambiare il valore lampeggiante, **Y** per uscire e salvare le impostazioni, **N** per uscire senza salvare, **C** per continuare a scorrere le pagine di Programmazione 2. 2. Confermare con ↵.	**EXIT FROM SETUP 2** 1. Press ▲ to change the flashing value, **Y** to exit and save the settings, **N** to exit without saving, **C** to continue scrolling Setup 2 pages. 2. Confirm with ↵.

PAGINE INFO
INFO PAGES

I - ITALIANO

Possono essere visualizzate fino a 6 pagine contenenti le seguenti informazioni:
1. Rel. firmware metrologico (rel1)
2. Rel. firmware interfaccia utente (rel2)
3. Checksum parte metrologica (CS1)
4. Checksum interfaccia utente (CS2)
5. Tipo di comunicazione
6. Modalità d'inserzione impostata (solo mod. IR e M-BUS)

La quinta pagina, che mostra il tipo di comunicazione, cambia a seconda del modulo di comunicazione abbinato al dispositivo oppure a seconda del modello di dispositivo (vedi tabella). La quinta pagina non viene visualizzata in caso di modello IR senza modulo di comunicazione abbinato.

GB - ENGLISH

Up to 6 pages can be displayed to show details about:
1. *Metrological firmware release (rel1)*
2. *User interface firmware release (rel2)*
3. *Metrological part checksum (CS1)*
4. *User interface checksum (CS2)*
5. *Communication type*
6. *Set wiring mode (only IR & M-BUS models)*

The fifth page, which shows communication type, can change according to the communication module combined to the device or the device model (see table). The fifth page is not displayed in case of IR model not combined with communication module.

COMUNICAZIONE *COMMUNICATION*	**INFORMAZIONE VISUALIZZATA SULLA PAGINA INFO** *DETAIL DISPLAYED ON THE INFO PAGE*
RS485 MODBUS	Modbus
M-BUS	Mbus
ETHERNET	Lan → modulo LAN GATEWAY abbinato al dispositivo IR / *LAN GATEWAY module combined with IR device*
	Eth → dispositivo con comunicazione ETHERNET integrata / *device with integrated ETHERNET communication*

CARATTERISTICHE TECNICHE
TECHNICAL FEATURES

Le caratteristiche tecniche possono variare a seconda del modello di dispositivo.
The technical features can change according to the device model.

I - ITALIANO	GB - ENGLISH	
GENERALI	***GENERAL***	
Custodia conforme alla normativa	*Housing in compliance with standard*	**DIN 43880**
Morsetti conformi alla normativa	*Terminals in compliance with standard*	**EN 60999**
ALIMENTAZIONE	***POWER SUPPLY***	
Autoalimentato, tensione derivata dal circuito di misura	*Power supplied from the voltage circuit*	**-**
Range di alimentazione	*Voltage range*	**3x230/400...3x240/415 V ±20%**
Consumo massimo (per fase) per modelli IR e M-BUS	*Max consumption (for each phase) for IR & M-BUS models*	**7,5 VA - 0,5 W**
Consumo massimo (per fase) per modelli RS485 MODBUS e ETHERNET	*Max consumption (for each phase) for RS485 MODBUS & ETHERNET models*	**3,5 VA - 1 W**
Frequenza nominale	*Nominal frequency*	**50/60 Hz**
CORRENTE	***CURRENT***	
Corrente massima I_{max}	*Maximum current I_{max}*	**80 A**
Corrente di riferimento I_{ref} (I_b)	*Reference current I_{ref} (I_b)*	**5 A**
Corrente di transizione I_{tr}	*Transitional current I_{tr}*	**500 mA**
Corrente minima I_{min}	*Minimum current I_{min}*	**250 mA**
Corrente di avviamento I_{st}	*Starting current I_{st}*	**20 mA**
PRECISIONE	***ACCURACY***	
Energia attiva classe B conforme alla	*Active en. class B in compliance with*	**EN 50470-3 (MID)**
Energia attiva classe 1 conforme alla	*Active en. class 1 in compliance with*	**EN 62053-21 (NO MID)**
Energia reattiva classe 2 conforme alla	*Reactive en. class 2 in compliance with*	**EN 62053-23**
COMUNICAZIONE per modello RS485 MODBUS	***COMMUNICATION for RS485 MODBUS model***	
Conforme alla normativa	*In compliance with standard*	**EIA RS485**
Porta isolata	*Isolated port*	**RS485**
Unit load	*Unit load*	**1/8**
Protocolli	*Protocols*	**MODBUS RTU/ASCII**
Velocità di comunicazione	*Communication speed*	**300...57600 bps**
COMUNICAZIONE per modello M-BUS	***COMMUNICATION for M-BUS model***	
Conforme alla normativa	*In compliance with standard*	**EN 13757-1-2-3**
Porta isolata	*Isolated port*	**M-BUS**
Unit load	*Unit load*	**1**
Protocollo	*Protocol*	**M-BUS**
Velocità di comunicazione	*Communication speed*	**300...9600 bps**
COMUNICAZIONE per modello ETHERNET	***COMMUNICATION for ETHERNET model***	
Conforme alla normativa	*In compliance with standard*	**IEEE 802.3**
Porta isolata	*Isolated port*	**-**
Protocolli	*Protocols*	**MODBUS TCP, HTTP, NTP, DHCP**
Velocità di comunicazione	*Communication speed*	**10/100 Mbps**
USCITE S0	***S0 OUTPUTS***	
Optoisolate passive	*Passive optoisolated*	**-**
Valori massimi (conforme alla normativa EN 62053-31) per modello IR	*Max values (in compliance with EN 62053-31) for IR model*	**250 V_{AC-DC} - 100 mA**
Valori massimi (conforme alla normativa EN 62053-31) per mod. RS485 MODBUS, M-BUS, ETHERNET	*Max values (in compliance with EN 62053-31) for RS485 MODBUS, M-BUS, ETHERNET mod.*	**27 V_{DC} - 27 mA**
Costante del contatore. L'unità di misura (imp/kWh, imp/kvarh, imp/kVAh) cambia a seconda del contatore associato (kWh∑, kvarh∑, kVAh∑).	*Meter constant. The measuring unit (imp/kWh, imp/kvarh, imp/kVAh) changes according to the assigned counter (kWh∑, kvarh∑, kVAh∑).*	**100 imp/kWh, kvarh, kVAh**
Durata impulso	*Pulse length*	**50 ±2ms ON time min. 30 ±2ms OFF time**
INGRESSO TARIFFA (NO modello ETHERNET)	***TARIFF INPUT*** *(NO ETHERNET model)*	
Optoisolato attivo	*Active optoisolated*	**-**
Range di tensione per Tariffa 2 (T2)	*Voltage range for Tariff 2 (T2)*	**80...276 V_{AC-DC}**
LED METROLOGICO	***METROLOGICAL LED***	
Costante del contatore	*Meter constant*	**1000 imp/kWh**
DIAMETRO FILO PER MORSETTI	***WIRE DIAMETER FOR TERMINALS***	
Morsetti di misura (A & V)	*Measuring terminals (A & V)*	**1,5 ... 35 mm²**
Morsetti uscita S0 / tariffa	*S0 output / tariff terminals*	**0,14 ... 2,5 mm²**
SICUREZZA SECONDO EN 50470-1	***SAFETY ACCORDING TO EN 50470-1***	
Classe inquinamento	*Pollution degree*	**2**
Classe di protezione (EN 50470-1)	*Protective class (EN 50470-1)*	**II**
Prova tensione d'impulso	*Pulse voltage test*	**1,2/50µs 6kV**
Prova a tensione AC (EN 50470-3, 7.2)	*AC voltage test (EN 50470-3, 7.2)*	**4 kV**
Resistenza della custodia alla fiamma	*Housing material flame resistance*	**UL 94 class V0**
CONDIZIONI AMBIENTALI	***ENVIRONMENTAL CONDITIONS***	
Ambiente meccanico	*Mechanical environmental*	**M1**
Ambiente elettromagnetico	*Electromagnetic environmental*	**E2**
Temperatura di funzionamento	*Operating temperature*	**-25°C ... +55°C**
Temperatura di stoccaggio	*Storage temperature*	**-25°C ... +75°C**
Umidità relativa (senza condensa)	*Humidity (without condensation)*	**max 80%**
Ampiezza vibrazioni sinusoidali	*Sinusoidal vibration amplitude*	**50 Hz ±0,075 mm**
Grado di protezione parte frontale (garantito solo in caso di installazione in un quadro con almeno grado di protezione IP51)	*Protection degree - frontal part (granted only in case of installation in a cabinet with at least IP51 protection degree)*	**IP51**
Grado di protezione morsetti	*Protection degree - terminals*	**IP20**
USO INTERNO	*INTERNAL USE*	**-**

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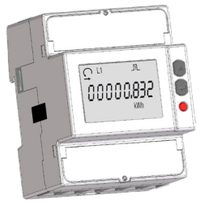
ISO 9001:2008

S534-80
S504C-80

80A Dreiphasiger Energiezähler - *80A three phase energy counter*

1MSOEM80X001

Änderungen vorbehalten.
Subject to change without prior notice.



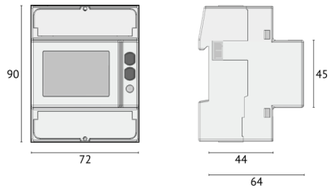
D - BEDIENUNGSANLEITUNG

GB - USER MANUAL

⚠ ACHTUNG!
Geräte-Installation, Verdrahtung und Klemmenabdeckung Dicht dürfen nur durch qualifiziertes Fachpersonal durchgeführt werden. Vor jeder Tätigkeit am Gerät muß die Versorgung getrennt werden.

⚠ WARNING!
Device installation, wiring configuration and terminal cover sealing must be carried out only by qualified professional staff. Switch off the voltage before device installation.

ABMESSUNGEN (mm)
SIZE (mm)

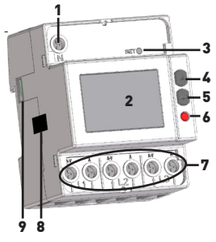


VERFÜGBARE AUSFÜHRUNGEN
AVAILABLE MODELS

Name *Name*	**Modell/Port** *Model/Port*	**Verfügbare Anschluß** [z.B. 3.4.3=3Phasen/4Leiter,3Strom] *Available wirings [e.g. 3.4.3=3phases,4wires,3curr.]* 3.4.3	3.3.3	3.3.2	**Tarifeing.** *Tariff in.*	**S0 Ausg.** *S0 outputs*	**MID Eich.** *MID cert.*
S534-80	IR	●	●	●	1	2	
S504C-80-MBU	M-BUS	●	●	●	1	1	
S504C-80-MOD	RS485 MODBUS	●			1	1	
S504C-80-ETH	ETHERNET	●				1	
S534-80-MID	IR	●	●	●	1	2	●
S504C-80-MBU-MID	M-BUS	●	●	●	1	1	●
S504C-80-MOD-MID	RS485 MODBUS	●			1	1	●
S504C-80-ETH-MID	ETHERNET	●				1	●

In allen Modellen dürfen die Teilzähler rückgesetzt werden.
In all device models partial counters are resettable.

ÜBERSICHT
OVERVIEW



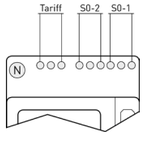
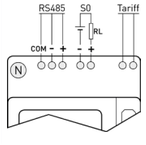
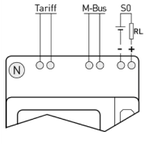
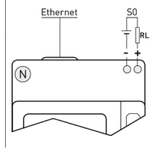
D - DEUTSCH

1. Neutralklemme
2. LCD Display Hintergrundbeleuchtung
3. SET Taste
4. UP Taste
5. ENTER Taste
6. Messtechnische LED
7. Strom- und Spannungsklemmen
8. Sicherheitsaufkleber (DARF NICHT ENTFERNT WERDEN)
9. IR Schnitt. **- nur bei IR Modell**

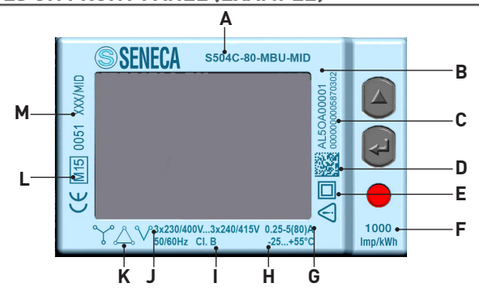
GB - ENGLISH

1. *Neutral terminal*
2. *Backlight LCD display*
3. *SET key*
4. *UP key*
5. *ENTER key*
6. *Metrological LED*
7. *Current and voltage terminals*
8. *Safety-sealing (DO NOT REMOVE)*
9. *IR port* **- *only IR model***

Die Sicherheitsaufkleber und die plombierbare Klemmenabdeckung sind nur mit MID-Zähler enthalten.
The safety-sealing and the sealable terminal covers are included only with MID certified counters.

IR	RS485 MODBUS	M-BUS	ETHERNET
			

SYMBOLE AUF FRONTSEITE (BEISPIELE)
SYMBOLS ON FRONT PANEL (EXAMPLE)



D - DEUTSCH

A. Gerätenamen
B. Seriennummer
C. Sekundäradresse für M-BUS Modell.
Für RS485 MODBUS Modell: Feld leer
Für ETHERNET Modell: MAC Adresse
D. Data Matrix
E. Schutzart
F. Integrationskonstante (Messtechnische LED)
G. Grundstromwert (Max Strom)
H. Arbeitstemperaturbereich
I. Genauigkeitsklasse
J. Nennspannung/Frequenz
K. Anschlußbild: Y =3Phasen 4Leiter 3Strom, Δ =3Phasen 3Leiter 3Strom, V=3Phasen 3Leiter 2Strom
L. MID Eichung Symbol
M. Homologationsnummer

Bei den nicht MID zugelassenen Zählern werden die Felder I, L, und M durch "CL.1 EN 62053-21" ersetzt.

GB - ENGLISH

A. *Device name*
B. *Serial number*
C. *Secondary address for M-BUS model.*
For IR or RS485 MODBUS model: field empty
For ETHERNET model: MAC address
D. *Data Matrix*
E. *Protection class*
F. *Meter constant (metrological LED)*
G. *Base current (max current)*
H. *Working temperature*
I. *Accuracy class*
J. *Nominal voltage/frequency*
K. *Wiring type:* Y =3phases 4wires 3curr., Δ =3phases 3wires 3curr., V=3phases 3wires 2curr.
L. *MID approval symbols*
M. *Type approval certification*

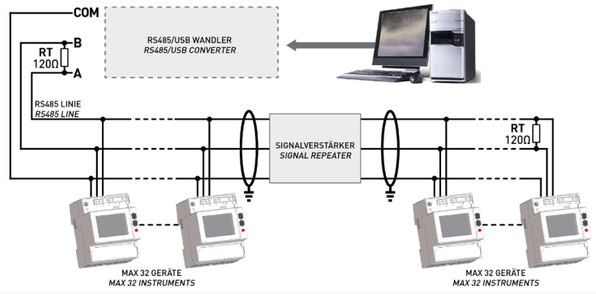
If the device is NO MID version, "CL.1 EN 62053-21" will be shown instead of I, L and M fields.

RS485 SCHNITTSTELLE
RS485 PORT

Die RS485 Schnittstelle ist je nach Gerätetyp vorhanden.
The RS485 port is available according to the device model.

Die RS485 Schnittstelle dient zur lokalen oder Fernverwaltung mit einem MODBUS RTU/ASCII Protokoll. In einem Gerätenetzwerk soll einen Endwiderstand (RT=120...150 Ω) an der RS485 Wandlerseite und einen anderen an dem letzen im Netz angeschlossenen Gerät angeschlossen werden. Die maximale empfohlene Länge ist 1200m auf 9600bps. Bei längeren Abständen werden eine langsamere Kommunikationsgeschwindigkeit (bps), oder Signalverstärker erfordert. Beziehen Sie sich auf das folgende Bild.

The RS485 port allows to manage the device by MODBUS RTU/ASCII protocol. For device network connection, install a terminal resistance (RT=120...150 Ω) on the RS485 converter side and another one on the last device connected on the line. The maximum recommended distance for a connection is 1200m at 9600 bps. For longer distances, lower communication speed (bps), low-attenuation cables or signal repeaters are needed. Refer to the following scheme.

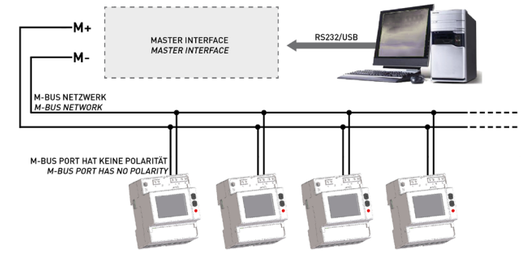


M-BUS SCHNITTSTELLE
M-BUS PORT

Die M-BUS Schnittstelle ist je nach Gerätetyp vorhanden.
The M-BUS port is available according to the device model.

Der M-BUS-Schnittstelle erlaubt es, das Gerät mit M-BUS-Protokoll zu verwalten. Zwischen PC und M-Bus Netzwerk ist ein Masterschnittstelle zur Anpassung der RS232/USB zum M-Bus Netzwerk erfordert. Die Anzahl der anzuschliessenden Geräte hängt von der angewendenten Master ab. Die Verdrahtung unter der verschiedenen Module soll mit geschilderten gedrehten Kabel durchgeführt werden. Beziehen Sie sich auf das folgende Bild.

The M-BUS port allows to manage the device by M-BUS protocol. A master interface is required between PC and the M-Bus network to adapt RS232/USB port to network. The maximum number of devices to be connected can change according to the used master interface. For the connection among the different devices, use a cable with a twisted pair and a third wire. Refer to the following scheme.



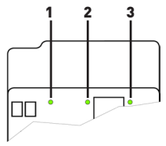
Das Gerät kann kommunizieren, wenn mindestens 2 Spannungsphasen verbunden sind.
The device can communicate when at least 2 voltage phases are connected.

ETHERNET SCHNITTSTELLE
ETHERNET PORT

Die ETHERNET Schnittstelle ist je nach Gerätetyp vorhanden.
The ETHERNET port is available according to the instrument device.

Der mitgelieferte Ferrit auf dem Ethernetleiter max 5 cm vom Gerät entfernt einbauen. Achten Sie darauf, dass die Leiter 2 Mal auf den Ferrit gewindet wird.
Die Ethernet Schnittstelle dient zur Verwaltung der Geräte mit allen an einem Ethernet / Internet angeschlossenen Netzwerk. In dem Browser Web Feld soll die Adresse **192.168.1.249** angegeben werden, dann wird die Weboberfläche des Gerätes dargestellt. Die Weboberfläche wurde für zwei unterschiedliche Zugangsniveau entwickelt: **Administrator**, der den ganzen Zugang zum Gerät hat (**Benutzername: admin, Passwort: admin**) und **Benutzer**, der einen beschränkten Zugang zum Gerät hat (**Benutzername: user, Passwort: user**).

Install the included ferrite on the Ethernet cable at a maximum 5 cm distance from the device. Make sure that the Ethernet cable is rolled twice inside the ferrite.
*The ETHERNET port gives the possibility to manage the device by any PC connected on the ETHERNET/Internet network. In the browser web address field type **192.168.1.249**, the device Web server will be displayed. Web server has been designed for two user type, **Administrator** for full device access **(username: admin, password: admin)**, and **User** for limited device access **(username: user, password: user)**.*



D - DEUTSCH

1. **LED STATUS**: Kommunikationsstatus; LANGSAM BLINKEND=interne Kommunikation ok, AN= laufendes Anschalten oder Upgrade, SCHNELL BLINKEND=interner Kommunikationsfehler
2. **LED SPD**: Kommunikationsgeschwindigkeit; AUS=10 Mbps, AN=100 Mbps
3. **LED LINK**: link activity; AN=link ok, BLINKEND=link activity

GB - ENGLISH

1. ***STATUS LED**: communication status; SLOW BLINKING=internal comm. ok, ON=switching on or upgrading in progress, FAST BLINKING=internal comm. error*
2. ***SPD LED**: communication speed; OFF=10 Mbps, ON=100 Mbps*
3. ***LINK LED**: link activity; ON=link ok, BLINKING=link activity*

TARIFEINGANG
TARIFF INPUT

Der Tarifeingang ist je nach Gerätetyp vorhanden.
The tariff input is available according to the device model.

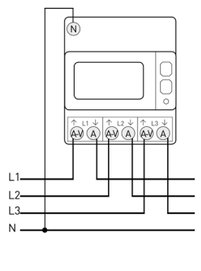
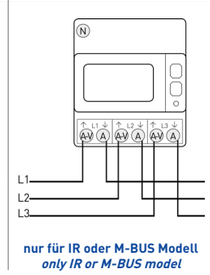
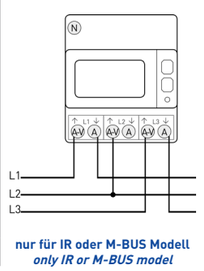
Das Tarifmanagement wird durch den Anschluß eines externen Gerätes realisiert, dass ein Signal an den Zähler sendet. Das Signal kann am Tarifeingang folgendes bewirken:
- bei einem spannungsfreien Signal (0 V) erhöhen sich die Zählerstände am Tarif 1
- bei einem spannungsführenden Signal (der Wert wird bei den "Technische Daten" angegeben) erhöhen sich die Zählerstände am Tarif 2

Bemerkung: Die Gesamtzählerstände erhöhen sich ständig unabhängig vom Status des Tarifeingangs.

The tariff management is carried out by connecting an external device to tariff input, which is providing a signal to the energy counter. The tariff signal is managed as follows:
- *if the tariff input detects a voltage free signal (0 V), the device will increase the tariff 1 counters group*
- *if the tariff input detects a voltage signal (see Technical features), the device will increase the tariff 2 counters group*

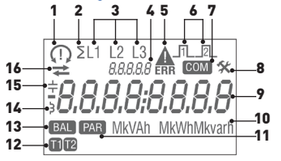
Note: Total counters increase continuously regardless from the tariff input status.

ANSCHLUSSBILDER
WIRING DIAGRAMS

3 PHASEN, 4 LEITER, 3 STROM *3 PHASES, 4 WIRES, 3 CURRENTS*	3 PHASEN, 3 LEITER, 3 STROM *3 PHASES, 3 WIRES, 3 CURRENTS*	3 PHASEN, 3 LEITER, 2 STROM *3 PHASES, 3 WIRES, 2 CURRENTS*
		
nur für IR oder M-BUS Modell *only IR or M-BUS model*	nur für IR oder M-BUS Modell *only IR or M-BUS model*	

ANZEIGENSYMBOLE
SYMBOLS ON DISPLAY

Die Anzeigensymbole sind je nach Gerätetyp vorhanden.
The display symbols are available according to the device model.



D - DEUTSCH

1. Phasenfolge:
richtige (123)
falsche (132)
undefinierte (z.B. eine oder zwei Phasen fehlen)
2. Systemwerte
3. Phasenanzahl
4. Identifiziert die Einstell- (**SEtUP**) oder Info (**InFO**) Seiten
5. Beschädigten metrologischen Parameter (Code: XX). Der Zähler ist unnutzbar und soll sofort an der Hersteller retouriert werden
6. Status des aktiven S0 Ausgangs S0-1 / S0-2
7. Laufende Kommunikation
8. Einstellseite
9. Hauptanzeigefeld
10. Messeinheitsfeld
11. Teilzählerwerte. Blinkend=Zähler gestoppt
12. Zählerwert der Tarif 1 oder 2
13. Symmetrischer Zählerwert
14. Induktivwert
15. Kapazitivwert
16. Bezogener (→), gelieferter (←) Leistungs- oder Energiewert

GB - ENGLISH

1. *Phase sequence:*
correct (123)
wrong (132)
not defined (e.g. one or more phases are missing)
2. *System value*
3. *Value phase number*
4. *Identify the Setup page (**SEtUP**) or the Info page (**InFO**)*
5. *Metrological parameters corrupted (Code: XX). Useless counter, to be returned to the Manufacturer*
6. *S0-1 / S0-2 output active status*
7. *Communication active status*
8. *Setup page*
9. *Main area*
10. *Measuring unit area*
11. *Partial counter value. Flashing=stopped counter*
12. *1 or 2 tariff counter value*
13. *Balance counter value*
14. *Inductive value*
15. *Capacitive value*
16. *Imported (→), exported (←) energy or power value*

MESSUNGEN
MEASUREMENTS

Die Parameter sind je nach Gerätetyp vorhanden.
The parameters are available according to the device model.

	SYMBOL *SYMBOL*	**MESSEINHEIT** *MEASURE UNIT*	**ANZEIGE** *DISPLAY*	**PORT** *PORT*
ECHTZEITWERTE ***INSTANTANEOUS VALUES***				
Spannung (Phase-Phase) *Voltage*	V∑, V1, V2, V3	V		●
Außenleiterspannung (Phase-0) *Line voltage*	V12, V23, V31	V		●
Strom *Current*	I∑, I1, I2, I3, IN	A		■
Leistungsfaktor *Power factor*	PF∑, PF1, PF2, PF3			●
Scheinleistung *Apparent power*	S∑, S1, S2, S3	kVA	■	■
Wirkleistung *Active power*	P∑, P1, P2, P3	kW	■	■
Blindleistung *Reactive power*	Q∑, Q1, Q2, Q3	kvar	■	■
Frequenz *Frequency*	f	Hz		●
Phasenfolge *Phase sequence*	CW / CCW		●	●
Leistungsrichtung *Power direction*	→ ←		●	
GESPEICHERTEN ANGABEN ***RECORDED DATA***				
Gesamtwirkenergie *Total active energy*	∑, L1, L2, L3	kWh	■	■
Gesamtblindenergie ind. und kap. *Total ind. and cap. reactive energy*	∑, L1, L2, L3	kvarh	■	■
Gesamtscheinenergie ind. und kap. *Total ind. and cap. apparent energy*	∑, L1, L2, L3	kVAh	■	■
Energiezähler Tarif T1/T2 (NO ETHERNET Modell) *T1/T2 tariff energy counters (NO ETHERNET model)*	∑, L1, L2, L3	kWh, kvarh, kVAh	■	■
Rücksetzbare Energieteilzähler Resettable partial energy counters	∑	kWh, kvarh, kVAh	■	■
Energiebilanz *Energy balance*	∑	kWh, kvarh, kVAh	■	■

In der ETHERNET Ausführung können alle Parameter gespeichert werden.
In case of ETHERNET model, all parameters can be recorded.

WEITERE ANGABEN ***OTHER INFORMATION***	**SYMBOL** *SYMBOL*	**WERT/STAND** *VALUE/STATUS*	**ANZEIGE** *DISPLAY*	**PORT** *PORT*
Aktuelle Tarif (NO ETHERNET Modell) *Present tarif (NO ETHERNET model)*	T	1/2		●
Spannung über / unter der Grenze *Undervoltage/overvoltage*	VOL, VUL	ON/OFF		●
Strom über / unter der Grenze *Undercurrent/overcurrent*	IOL, IUL	ON/OFF		●
Frequenz außerhalb des Bereichs *Frequency out of range*	fOL, fUL	ON/OFF		●
Teilzähler *Partial counters*	PAR	START/STOP	●	●
S0-Ausgang Status *S0 output status*	1 2	Active/Not active	●	

Bedeutung: ● **= Standard** ■ **= Bidirektionalwert**
Legend: ● ***= Standard*** ■ ***= Bidirectional value***

Alle Systemzähler (kWh∑, kvarh∑, kVAh∑) an S0-Ausgang zugeordnet werden. In der Ausführung mit 2 S0-Ausgänge (IR Modell), ist es nicht möglich, den selben Zählerstand für beide Ausgänge auszuwählen.
ANMERKUNG: bei einer 3 Leiter Anschluss werden die Werte der Ph-N Spannungen, der Neutralstrom, der Phasenleistungen, der Phasenleistungsfaktor und aller Zählerstände nicht angezeigt.
All the system counters (kWh∑, kvarh∑, kVAh∑) can be associated to S0 output. In case of 2 S0 outputs (IR model), it is not allowed to set the same counter for both outputs.
NOTE: in case of 3 wire connection, phase-neutral voltages, neutral current, phase powers, phase power factors parameters and all phase counters are not available.

BILANZZÄHLERWERTE BERECHNUNG
BALANCE COUNTER VALUES CALCULATION

BILANZZÄHLER *BALANCE COUNTER*	**FORMEL** *FORMULA*
kWh	(→kWh T1) – (←kWh T1) + (→kWh T2) – (←kWh T2)
kVAh ind	(→kVAh ind T1) – (←kVAh ind T1) + (→kVAh ind T2) – (←kVAh ind T2)
kVAh cap	(→kVAh cap T1) – (←kVAh cap T1) + (→kVAh cap T2) – (←kVAh cap T2)
kvarh ind	(→kvarh ind T1) – (←kvarh ind T1) + (→kvarh ind T2) – (←kvarh ind T2)
kvarh cap	(→kvarh cap T1) – (←kvarh cap T1) + (→kvarh cap T2) – (←kvarh cap T2)

TASTENFUNKTIONEN
KEY FUNCTIONS

Einige Funktionen ändern sich abhängig von der Ausführung.
Some functions are available according to the device model.

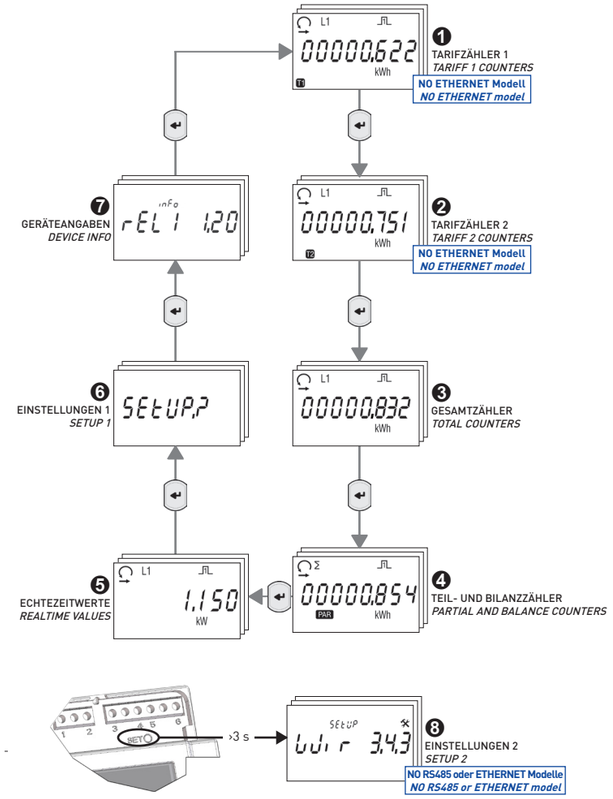
FUNKTION *HOW TO*	**WO** *WHERE*	**TASTE** *KEY*	**WIE LANGE** *PRESS TIME*
Gruppe blättern *Scroll loops*	Jede Seite außer der Einstellung 1/2 *Any page except for Setup 1/2*	↵	Sofort *Instantaneous*
Die Seiten einer Gruppe blättern *Scroll pages in a loop*	Jede Seite einer Gruppe *Any loops page*	▲	Sofort *Instantaneous*
Zugang zu den Einstellseiten 1 *Access Setup 1 pages*	"Setup?" Seite *"Setup?" page*	↵	>3 s
Zugang zu den Einstellseiten 2 *Access Setup 2 pages*	Jede Seite außer der Einstellung 1 *Any page except for Setup 1*	**SET**	>3 s
Einen Wert ändern *Change a value/digit*	Einstellseite 1/2 *Setup 1/2 pages*	▲	Sofort *Instantaneous*
Bestätigung eines Wertes / Anzahl *Confirm a value/digit*	Einstellseite 1/2 *Setup 1/2 pages*	↵	Sofort *Instantaneous*
Ausgang aus der Einstellseiten 1/2 *Exit Setup 1/2 pages*	Einstellseite 1/2 *Setup 1/2 pages*	↵	>3 s
Den angezeigten Teilzähler starten / sperren *Start/stop the displayed partial counter*	Teilzählerseiten *Partial counters pages*	↵+▲	Sofort *Instantaneous*
Den angezeigten Teilzähler rücksetzen Reset the displayed partial counter value	Teilzählerseiten *Partial counters pages*	↵+▲	>3 s
Displaytest *Display test*	Jede Seite außer der Einstellung 1/2 *Any page except for Setup 1/2*	↵+▲	>10 s

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ANZEIGE REIHENFOLGE
PAGE STRUCTURE

Bis zu 8 Seitengruppe können angezeigt werden. Einige Gruppe können je nach Gerätetyp nicht vorhanden sein. Mit der Taste ▲ werden die Seiten einer Gruppe geblättert.

Up to 8 page loops can be displayed. Some loops can be unavailable according to the device model. Press ▲ to scroll pages in a loop.

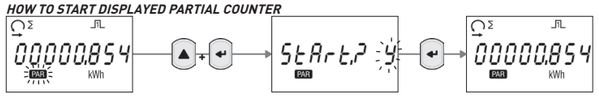


ANMERKUNG: bei einer 3-Leiter Anschluss werden die Anzeigeseiten der Phasenwerte abwesend sein.
NOTE: in case of 3 wire connection, pages showing phase values are not available.

TEILZÄHLER STARTEN/SPERREN/RÜCKSETZEN
HOW TO START / STOP / RESET PARTIAL COUNTERS

Die Funktion ist nur bei der Teilzähleranzeige verfügbar.
Feature available only on partial counter pages.

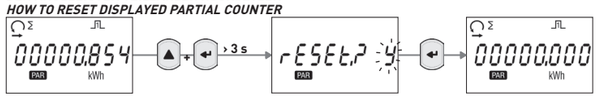
DEN ANGEZEIGTEN TEILZÄHLER STARTEN
HOW TO START DISPLAYED PARTIAL COUNTER



SPERREN DER FRÜHER GESTARTETEN TEILZÄHLER
HOW TO STOP DISPLAYED PARTIAL COUNTER PREVIOUSLY STARTED



DEN ANGEZEIGTEN TEILZÄHLER RÜCKSETZEN
HOW TO RESET DISPLAYED PARTIAL COUNTER



Bei den Seiten **START?**, **STOP?**, **RESET?**, können: **Y**=zur Bestätigung oder **N**=zum Beenden ausgewählt werden. Die Taste ▲ dient zur Wertände.
*In **START?**, **STOP?**, **RESET?** pages, selectable items are: **Y**=to confirm, **N**=to cancel. To change item, press ▲.*

EINSTELLSEITEN 1
SETUP 1 PAGES

	D - DEUTSCH	**GB** - ENGLISH
SEtuP,P	**ZUGANGSSEITE ZUM MENÜ EINSTELLUNGEN 1**	***SETUP 1 ACCESS PAGE***
› 3 s		
SEtuP Addr 01	**MODBUS ADRESSE (01...F7 Hex)** **Verfügbar nur bei MODBUS Kommunikation** 1. Durch Drücken der Taste ↵ blinkt die erste Ziffer. 2. Die Taste ▲ zur Wertänderung drücken. 3. Mit der Taste ↵ bestätigen. 4. Die Punkte 2 und 3 zur Einstellung der darauffolgenden Stelle wiederholen.	***MODBUS ADDRESS (01...F7 Hex)*** ***Available only in case of MODBUS communication*** 1. *Press ↵, the first digit will start to flash.* 2. *Press ▲ to change the value.* 3. *Confirm with ↵.* 4. *Repeat points 2 and 3 for the next digit.*
SEtuP APri 250	**M-BUS PRIMÄRADRESSE (0...250)** **Verfügbar nur bei M-BUS Kommunikation** 1. Durch Drücken der Taste ↵ blinkt die erste Ziffer. 2. Die Taste ▲ zur Wertänderung drücken. 3. Mit der Taste ↵ bestätigen. 4. Die Punkte 2 und 3 zur Einstellung der darauffolgenden Stelle wiederholen.	***M-BUS PRIMARY ADDRESS (0...250)*** ***Available only in case of M-BUS communication*** 1. *Press ↵, the first digit will start to flash.* 2. *Press ▲ to change the value.* 3. *Confirm with ↵.* 4. *Repeat points 2 and 3 for the other digits.*
SEtuP ASEC ... / SEtuP 0000000 1	**M-BUS SEKUNDÄRADRESSE (0...99999999)** **Verfügbar nur bei M-BUS Kommunikation** 1. Durch Drücken der Taste ↵ blinkt die erste Ziffer. 2. Die Taste ▲ zur Wertänderung drücken. 3. Mit der Taste ↵ bestätigen. 4. Die Punkte 2 und 3 zur Einstellung der darauffolgenden Stelle wiederholen.	***M-BUS SECONDARY ADDRESS (0...99999999)*** ***Available only in case of M-BUS communication*** 1. *Press ↵, the first digit of the secondary address will start to flash.* 2. *Press ▲ to change the flashing value.* 3. *Confirm with ↵.* 4. *Repeat points 2 and 3 for the other digits.*
SEtuP bAud 38,4 k	**KOMMUNIKATIONSGESCHWINDIGKEIT** **Verfügbar nur bei MODBUS oder M-Bus Kommunikation** 1. Durch Drücken der Taste ↵ blinkt der Wert. 2. Die Taste ▲ zur Wertänderung drücken. 3. Mit der Taste ↵ bestätigen.	***COMMUNICATION SPEED*** ***Available only in case of MODBUS or M-BUS communication*** 1. *Press ↵, the value will start to flash.* 2. *Press ▲ to change the value.* 3. *Confirm with ↵.*
SEtuP CONF rtu	**MODBUS MODUS (RTU=8N1, ASCII=7E2)** **Verfügbar nur bei M-BUS Kommunikation** 1. Durch Drücken der Taste ↵ blinkt der Modus. 2. Die Taste ▲ zur Modusänderung drücken. 3. Mit der Taste ↵ bestätigen.	***MODBUS MODE (RTU=8N1, ASCII=7E2)*** ***Available only in case of MODBUS communication*** 1. *Press ↵, the item will start to flash.* 2. *Press ▲ to change the item.* 3. *Confirm with ↵.*
SEtuP Eth SdEF	**RÜCKSTELLEN DER ETHERNET AN DER WERKSEINSTELLUNGEN (Werkseinstellung: IP=192.168.1.249, Benutzername=admin, Passwort: admin)** **Verfügbar nur bei ETHERNET Modell** 1. Durch Drücken der Taste ↵ wird eine Bestätigung angefordert. 2. Die Taste ▲ zur Änderung des blinkenden Wertes drücken: **Y** zur Bestätigung des rücksetzens und **N** zum beenden. 3. Mit der Taste ↵ bestätigen.	***ETHERNET PARAMETERS SET DEFAULT (Default parameters: IP=192.168.1.249, Username=admin, Password: admin)*** ***Available only in case of ETHERNET model*** 1. *Press ↵, a new page for confirmation will be displayed.* 2. *Press ▲ to change the flashing value, **Y** to confirm the reset, **N** to cancel.* 3. *Confirm with ↵.*
SEtuP ConF,P		
Σ SEtuP →0- 1 kWh	**S0 ZUGEWIESENER ZÄHLERSTÄND** 1. Durch Drücken der Taste ↵ blinken die Zähleridentifizierung (z.B. →, kWh). 2. Die Taste ▲ zur Änderung der zugewiesenen Zählerstand drücken. 3. Mit der Taste ↵ bestätigen. 4. In der Ausführung mit 2 S0-Ausgänge (IR Modell), die Taste ▲ drücken, um die S0-2 Seite anzuzeigen. Das gleiche Verfahren von S0-1 Ausgang wiederholen.	***COUNTER ASSIGNED TO S0 OUTPUT*** 1. *Press ↵, the items which identify the counter (e.g. →, kWh) will start to flash.* 2. *Press ▲ to change the counter to be assigned to the S0-1 output.* 3. *Confirm with ↵.* 4. *In case of 2 S0 outputs (IR model), press ▲ to display the S0-2 page and repeat the same procedure made for S0-1 output.*
SEtuP rES ALL PAR / SEtuP ConF,P	**ALLE TEILZÄHLER ZU RÜCKSETZEN** 1. Durch Drücken der Taste ↵ wird eine Bestätigung angefordert. 2. Die Taste ▲ zur Änderung des blinkenden Wertes drücken: **Y** zur Bestätigung des rücksetzens und **N** zum beenden. 3. Mit der Taste ↵ bestätigen.	***ALL PARTIAL COUNTERS RESET*** 1. *Press ↵, a new page for confirmation will be displayed.* 2. *Press ▲ to change the flashing value, **Y** to confirm the reset, **N** to cancel.* 3. *Confirm with ↵.*
› 3 s	**IN ALLEN EINSTELLSEITE 1**	***ON ANY SETUP 1 PAGE***
SEtuP SAVE,P	**AUSGANG AUS EINSTELLANZEIGEN 1** 1. Die Taste ▲ zur Änderung des blinkenden Wertes drücken: **Y** zum Verlassen mit Speicherung der Änderungen, **N** zum Verlassen ohne Speicherung und **C** zum weiter blättern im Menü Einstellungen 1. 2. Mit der Taste ↵ bestätigen.	***EXIT FROM SETUP 1*** 1. *Press ▲ to change the flashing value, **Y** to exit and save the settings, **N** to exit without saving, **C** to continue scrolling Setup 1 pages.* 2. *Confirm with ↵.*

EINSTELLSEITEN 2 (nur bei IR und M-BUS Modelle)
SETUP 2 PAGES (only IR & M-BUS models)

Einstellseiten 2 sind verfügbar nur bei IR und M-BUS Modelle.
Die Taste SET mindestens 3 s drücken, um das Menu Einstellungen 2 aufzurufen.

Setup 2 is available only for IR and M-BUS models.
To access setup 2 pages, keep SET key pressed for at least 3 seconds.

	D - DEUTSCH	**GB** - ENGLISH
SEtuP uJir 3.4.3	**ANSCHLUSSBILD** **3.4.3 = 3 Phasen, 4 Leiter, 3 Strom** **3.3.3 = 3 Phasen, 3 Leiter, 3 Strom** **3.3.2 = 3 Phasen, 3 Leiter, 2 Strom** 1. Durch Drücken der Taste ↵ blinkt der Modus. 2. Die Taste ▲ zur Modusänderung drücken. 3. Mit der Taste ↵ bestätigen.	***WIRING DIAGRAM*** ***3.4.3 = 3 phases, 4 wires, 3 currents*** ***3.3.3 = 3 phases, 3 wires, 3 currents*** ***3.3.2 = 3 phases, 3 wires, 2 currents*** 1. *Press ↵, the wiring mode will start to flash.* 2. *Press ▲ to change the mode.* 3. *Confirm with ↵.*
› 3 s	**IN ALLEN EINSTELLSEITE 2**	**ON ANY SETUP 2 PAGE**
SEtuP SAVE,P	**AUSGANG AUS EINSTELLANZEIGEN 2** 1. Die Taste ▲ zur Änderung des blinkenden Wertes drücken: **Y** zum Verlassen mit Speicherung der Änderungen, **N** zum Verlassen ohne Speicherung und **C** zum weiter blättern im Menü Einstellungen 2. 2. Mit der Taste ↵ bestätigen.	**EXIT FROM SETUP 2** 1. Press ▲ to change the flashing value, **Y** to exit and save the settings, **N** to exit without saving, **C** to continue scrolling Setup 2 pages. 2. Confirm with ↵.

INFO SEITEN
INFO PAGES

D - DEUTSCH

Bis zu 6 Seiten können vorhanden sein:
1. Messtechnische Firmwarestand (rel1)
2. Benutzeroberfläche Firmwarestand (rel2)
3. Messtechnische Prüfsumme (CS1)
4. Benutzeroberfläche Prüfsumme (CS2)
5. Kommunikationstyp
6. Eingestelltes Anschlussbild (nur für IR/M-BUS Modell)

Die fünfte Seite, die die Kommunikationseinstellungen betrifft, ändert sich abhängig von dem angekoppelten Gerät oder der Geräteausführung (siehe Tabelle). Die fünfte Seite ist nicht für IR-Modell ohne Kommunikationsmodul angezeigt.

GB - ENGLISH

Up to 6 pages can be displayed to show details about:
1. *Metrological firmware release (rel1)*
2. *User interface firmware release (rel2)*
3. *Metrological part checksum (CS1)*
4. *User interface checksum (CS2)*
5. *Communication type*
6. *Set wiring mode (only IR & M-BUS models)*

The fifth page, which shows communication type, can change according to the communication module combined to the device or the device model (see table). The fifth page is not displayed in case of IR model not combined with communication module.

KOMMUNIKATION ***COMMUNICATION***	**ANGABEN AUF DIE INFO SEITE** ***DETAIL DISPLAYED ON THE INFO PAGE***
RS485 MODBUS	Modbus
M-BUS	Mbus
ETHERNET	Lan → IR Modell mit LAN GATEWAY Module / *LAN GATEWAY module combined with IR device* Eth → ETHERNET Modell / *device with integrated ETHERNET communication*

TECHNISCHE EIGENSCHAFTEN
TECHNICAL FEATURES

Die technischen Eigenschaften ändern sich je nach Gerätetyp.
The technical features can change according to the device model.

D - DEUTSCH	**GB** - ENGLISH	
ALLGEMEIN	***GENERAL***	
Gehäuse gemäß Richtlinie	*Housing in compliance with standard*	**DIN 43880**
Klemmen gemäß Richtlinie	*Terminals in compliance with standard*	**EN 60999**
HILFSSPANNUNG	***POWER SUPPLY***	
Hilfspannung wird vom Messkreis aufgenommen	*Power supplied from the voltage circuit*	**-**
Hilfspannungsbereich	*Voltage range*	**3x230/400...3x240/415 V ±20%**
Max Verbrauch (je Phase) für IR und M-BUS Modelle	*Max consumption (for each phase) for IR & M-BUS models*	**7,5 VA - 0,5 W**
Max Verbrauch (je Phase) für RS485 MODBUS und ETHERNET Modelle	*Max consumption (for each phase) for RS485 MODBUS & ETHERNET models*	**3,5 VA - 1 W**
Nennfrequenz	*Nominal frequency*	**50/60 Hz**
STROM	***CURRENT***	
Maximalstrom I_{max}	*Maximum current I_{max}*	**80 A**
Bezugsstrom I_{ref} (I_b)	*Reference current I_{ref} (I_b)*	**5 A**
Übergangsstrom I_tr	*Transitional current I_{tr}*	**500 mA**
Minimalstrom I_{min}	*Minimum current I_{min}*	**250 mA**
Einschaltungsstrom I_{st}	*Starting current I_{st}*	**20 mA**
GENAUIGKEIT	***ACCURACY***	
Wirkenergie Klasse B gemäß	*Active en. class B in compliance with*	**EN 50470-3 (MID)**
Wirkenergie Klasse 1 gemäß	*Active en. class 1 in compliance with*	**EN 62053-21 (NO MID)**
Blindenergie Klasse 2 gemäß	*Reactive en. class 2 in compliance with*	**EN 62053-23**
KOMMUNIKATION für RS485 MODBUS Modell	***COMMUNICATION for RS485 MODBUS model***	
Gemäß	*In compliance with standard*	**EIA RS485**
Isolierteschnittstelle	*Isolated port*	**RS485**
Unit load	*Unit load*	**1/8**
Protokolle	*Protocols*	**MODBUS RTU/ASCII**
Kommunikationsgeschwindigkeit	*Communication speed*	**300...57600 bps**
KOMMUNIKATION für M-BUS Modell	***COMMUNICATION for M-BUS model***	
Gemäß	*In compliance with standard*	**EN 13757-1-2-3**
Isolierteschnittstelle	*Isolated port*	**M-BUS**
Unit load	*Unit load*	**1**
Protokolle	*Protocol*	**M-BUS**
Kommunikationsgeschwindigkeit	*Communication speed*	**300...9600 bps**
KOMMUNIKATION für ETHERNET Modell	***COMMUNICATION for ETHERNET model***	
Gemäß	*In compliance with standard*	**IEEE 802.3**
Isolierteschnittstelle	*Isolated port*	**-**
Protokolle	*Protocols*	**MODBUS TCP, HTTP, NTP, DHCP**
Kommunikationsgeschwindigkeit	*Communication speed*	**10/100 Mbps**
S0 AUSGÄNGE	***S0 OUTPUTS***	
Passivoptoisolierte	*Passive optoisolated*	**-**
Max Werte (gemäß der Richtlinie EN 62053-31) für IR Modell	*Max values (in compliance with EN 62053-31) for IR model*	**250 V_{AC-DC} - 100 mA**
Max Werte (gemäß der Richtlinie EN 62053-31) für RS485 MODBUS, M-BUS, ETHERNET Modelle	*Max values (in compliance with EN 62053-31) for RS485 MODBUS, M-BUS, ETHERNET mod.*	**27 V_{DC} - 27 mA**
Zählerkonstante. Die Messeinheit (imp/kWh, imp/kvarh, imp/kVAh) ändert sich entsprechend der zugeordneten Zähler (kWh∑, kvarh∑, kVAh∑).	*Meter constant. The measuring unit (imp/kWh, imp/kvarh, imp/kVAh) changes according to the assigned counter (kWh∑, kvarh∑, kVAh∑).*	**100 imp/kWh, kvarh, kVAh**
Impulsdauer	*Pulse length*	**50 ±2ms ON time** **min. 30 ±2ms OFF time**
TARIFEINGANG (NO ETHERNET Modell)	***TARIFF INPUT*** *(NO ETHERNET model)*	
Aktivoptoisolierte	*Active optoisolated*	**-**
Hilfspannungsbereich für Tarif 2 (T2)	*Voltage range for Tariff 2 (T2)*	**80...276 V_{AC-DC}**
MESSTECHNISCHE PRÜF-LED	***METROLOGICAL LED***	
Zählerkonstante	*Meter constant*	**1000 imp/kWh**
ANSCHLIESSBARER LEITER	***WIRE DIAMETER FOR TERMINALS***	
Messeingänge (A & V)	*Measuring terminals (A & V)*	**1,5 ... 35 mm²**
S0 / Tarifausgänge	*S0 output / tariff terminals*	**0,14 ... 2,5 mm²**
SICHERHEIT GEMÄß EN 50470-1	***SAFETY ACCORDING TO EN 50470-1***	
Verschmutzungsgrad	*Pollution degree*	**2**
Schutzklasse (EN 50470-1)	*Protective class (EN 50470-1)*	**II**
Impulsspannungsprüfung	*Pulse voltage test*	**1,2/50µs 6kV**
AC Spannungsprüfung (EN 50470-3, 7.2)	*AC voltage test (EN 50470-3, 7.2)*	**4 kV**
Gehäuse Flammbeständigkeit	*Housing material flame resistance*	**UL 94 class V0**
UMGEBUNGSBEDINGUNGEN	***ENVIRONMENTAL CONDITIONS***	
Mechanische Umgebungsbedingungen	*Mechanical environmental*	**M1**
Elektromagnetische Umgebungsbedingungen	*Electromagnetic environmental*	**E2**
Betriebstemperaturbereich	*Operating temperature*	**-25°C ... +55°C**
Lagertemperaturbereich	*Storage temperature*	**-25°C ... +75°C**
Relative Luftfeuchte (ohne Kondensation)	*Humidity (without condensation)*	**max 80%**
Sinusförmiger Vibrationsumfang	*Sinusoidal vibration amplitude*	**50 Hz ±0,075 mm**
Schutzgrad – Frontseite (gewährleistet nur bei Installation in einem Schaltschrank mit mindestens Schutzart IP51)	*Protection degree - frontal part (granted only in case of installation in a cabinet with at least IP51 protection degree)*	**IP51**
Klemmenschutzart	*Protection degree - terminals*	**IP20**
INTERNE ANWENDUNG	*INTERNAL USE*	**-**

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