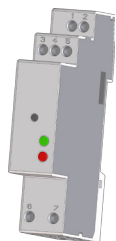


# S500-MOD

Modulo di comunicazione RS485 - RS485 communication module



**I** - MANUALE D'USO

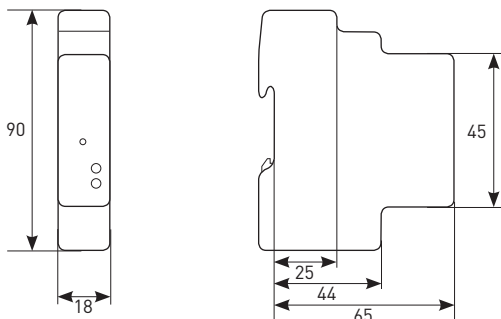
**GB** - USER MANUAL

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

**ATTENZIONE!**  
L'installazione e l'utilizzo dello strumento devono essere effettuate esclusivamente da personale qualificato. Togliere la tensione prima di intervenire sullo strumento.

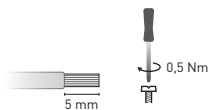
**WARNING!**  
Device installation and use must be carried out only by qualified staff.  
Switch off the voltage before device installation.

## DIMENSIONI (mm) SIZE (mm)



## LUNGHEZZA SPELATURA DEI FILI CABLE STRIPPING LENGTH

Collegamento morsetti  
Terminals connection



Utilizzare un cacciavite a taglio 0,8x3,5 mm  
Use a blade screwdriver with 0.8x3.5 mm size

## PANORAMICA OVERVIEW

### I ITALIANO

1. Morsetti da ponticellare per abilitare la resistenza di terminazione (RT)
2. Morsetti per collegamento RS485
3. Porta ottica di comunicazione
4. Tasto SET DEFAULT
5. LED di alimentazione
6. LED di comunicazione
7. Morsetti per alimentazione

### GB ENGLISH

1. Terminals to be jumpered for termination resistor (RT) enabling
2. RS485 connection terminals
3. Optical COM port
4. SET DEFAULT key
5. Power supply LED
6. Communication LED
7. Power supply terminals

## FUNZIONE SET DEFAULT SET DEFAULT FUNCTION

### I ITALIANO

La funzione SET DEFAULT consente di riportare sul modulo le impostazioni di default (es. in caso l'indirizzo MODBUS venga dimenticato).  
Per ripristinare le impostazioni di default, tenere premuto per almeno 5 s il tasto SET DEFAULT, il LED di comunicazione lampeggerà verde/rosso per 5 s. Dopo che il modulo ha effettuato la procedura di SET DEFAULT il LED di comunicazione si accenderà di rosso continuo per indicare di rilasciare il tasto.

\* 8N1=modalità RTU; 7E2=modalità ASCII

### GB ENGLISH

SET DEFAULT function allows to restore on the module default settings (e.g. in case of MODBUS address forgotten).  
To restore default settings, keep SET DEFAULT key pressed for at least 5 s, communication LED will blink green/red for 5 s. At the end of SET DEFAULT procedure, communication LED will be red continuously indicating to release the key.

\* 8N1=RTU mode; 7E2=ASCII mode

#### IMPOSTAZIONI SETTINGS

Velocità di comunicazione RS485  
RS485 communication speed  
Modalità RS485  
RS485 mode  
Indirizzo MODBUS  
MODBUS address

#### VALORI DI DEFAULT DEFAULT VALUES

38400 bps  
8N1\*  
01

## FUNZIONAMENTO DEI LED LEDS FUNCTIONALITY

I due LED sono presenti sul pannello frontale del modulo e consentono di segnalarne lo stato di alimentazione e comunicazione.

Two LEDs are available on the module front panel to provide power supply and communication status.

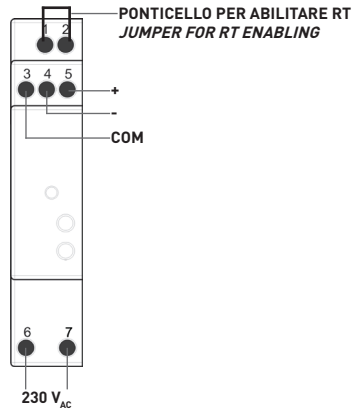
### I ITALIANO

COLORE LED	SEGNALAZIONE	SIGNIFICATO
<b>LED ALIMENTAZIONE</b>		
-	Spento	Modulo spento
VERDE	Sempre acceso	Modulo acceso
<b>LED COMUNICAZIONE</b>		
-	Spento	Modulo spento
VERDE	Lampeggio lento (tempo spegnimento 2 s)	Comunicazione RS485=OK Comunicazione con il contatore=OK
ROSSO	Lampeggio veloce (tempo spegnimento 1 s)	Comunicazione RS485=fallita/mancante Comunicazione con il contatore=OK
ROSSO	Sempre acceso	Comunicazione con il contatore=fallita/mancante
VERDE/ROSSO	Colori alternati per 5 s	Procedura di SET DEFAULT in corso

### GB ENGLISH

LED COLOUR	SIGNALLING	MEANING
<b>POWER SUPPLY LED</b>		
-	Power OFF	The module is OFF
GREEN	Always ON	The module is ON
<b>COMMUNICATION LED</b>		
-	Power OFF	The module is OFF
GREEN	Slow blink (2 s OFF time)	RS485 communication=OK Counter communication=OK
RED	Fast blink (1 s OFF time)	RS485 communication=fault/missing Counter communication=OK
RED	Always ON	Counter communication=fault/missing
GREEN/RED	Alternating colours for 5 s	SET DEFAULT procedure in progress

## COLLEGAMENTI CONNECTIONS



### I ITALIANO

Tra il PC e la rete RS485 è richiesto un convertitore seriale per adattare la porta RS232/USB alla rete. Se i moduli da collegare sono più di 32, occorre inserire un ripetitore di segnale. Ogni ripetitore può gestire fino a 32 moduli.

Il tipo di collegamento mostrato nella figura utilizza un terzo conduttore collegato al morsetto, per assicurare lo stesso livello di riferimento a tutti i dispositivi di rete. In presenza di forti disturbi elettromagnetici, che possono compromettere la comunicazione, è consigliabile l'utilizzo di un apposito cavo schermato con i due conduttori di segnale "twistati". All'interno del modulo è integrata una resistenza di terminazione [RT] che può essere abilitata ponticellando i relativi morsetti. Montare una resistenza di terminazione sul PC ed abilitarla sull'ultimo modulo connesso sulla linea. L'impiego di queste resistenze riduce il segnale riflesso lungo la linea.

La massima lunghezza raccomandata per un collegamento è di circa 1200 m a 9600 bps. Per lunghezze superiori è consigliabile utilizzare baudrate più bassi, cavi con bassa attenuazione o ripetitori di segnale.

Dopo aver effettuato i collegamenti sulla rete RS485, abbinare ogni modulo RS485 ad un singolo contatore: avvicinarli e allinearli perfettamente in modo che le rispettive porte ottiche si fronteggino.

I parametri RS485 possono essere modificati direttamente sul contatore abbinato oppure inviando gli appositi comandi di protocollo MODBUS al modulo.

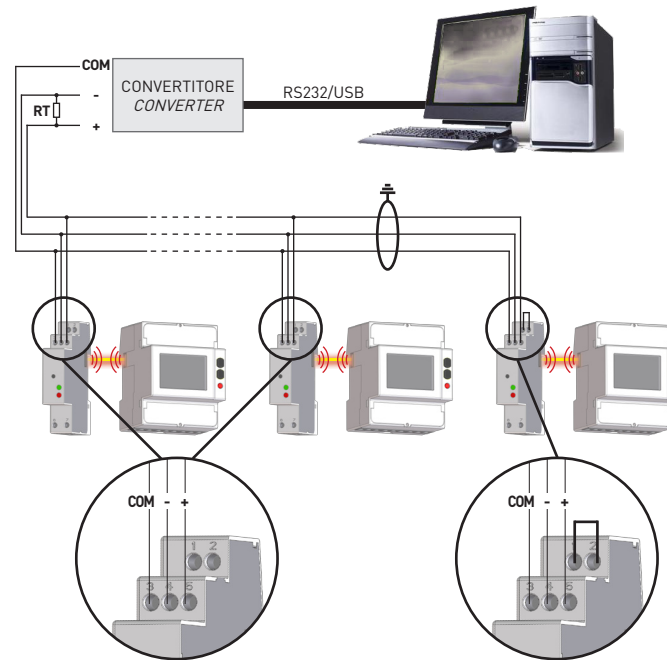
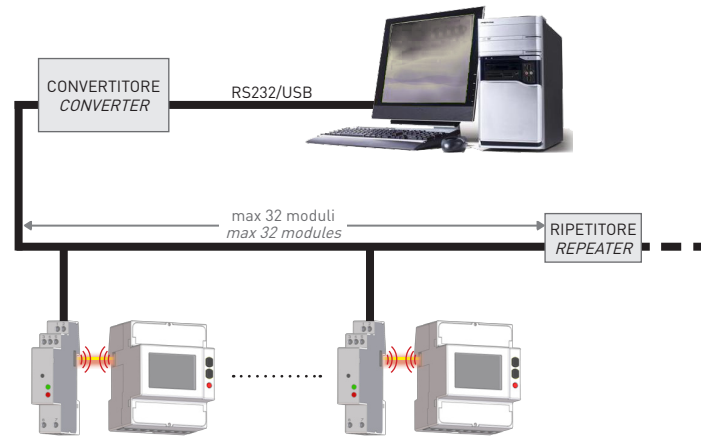
### GB ENGLISH

A serial converter is required between PC and the RS485 network to adapt RS232/USB port to network. If there are more than 32 modules to be connected, insert a signal repeater. Each repeater can manage up to 32 modules. For the connection among the different modules, use a cable with a twisted pair and a third wire. The type of connection shown in the picture uses the third conductor to ensure that all the devices on the network have the same reference level and improve the reliability of communication. When there are strong electromagnetic disturbances, which may affect communication, a shielded cable should be used. The module is integrated with a termination resistor [RT] which can be enabled by jumpering the relevant terminals. The termination resistor must be installed on the PC and enabled on the last module connected along the line. Thanks to these resistances, the reflected signal along the line is reduced.

The maximum recommended distance for a connection is 1200 m at 9600 bps. For longer distances, lower baud rates or low-attenuation cables or signal repeaters are needed.

After making RS485 connections, combine each RS485 module with a single counter: place them side by side, perfectly lined up, with module optical port facing the counter optical port.

RS485 parameters can be changed directly on the combined counter or by sending the proper MODBUS protocol commands to the module.



ABILITARE RT SULL'ULTIMO MODULO  
CONNESSO SULLA LINEA

ENABLE RT ON THE LAST MODULE  
CONNECTED TO THE LINE

## CARATTERISTICHE TECNICHE TECHNICAL FEATURES

### I ITALIANO

Dati conformi alla normativa EIA RS485.

#### ALIMENTAZIONE

Tensione nominale: 230 V<sub>CA</sub> ±20% / 50 Hz  
Massima tensione ripetitiva: 300 V<sub>CA</sub>  
Massima tensione di picco non ripetitiva: 320 V<sub>CA</sub> (20 ms)  
Consumo: max 5 VA  
Fusibile: tipo T, 100 mA (da montare esternamente)

#### COMUNICAZIONE RS485

Protocollo: MODBUS RTU (8N1) e ASCII (7E2)  
Porta: RS485  
Velocità di comunicazione: 300...57600 bps  
Resistenza di terminazione integrata nel modulo: 120 Ohm

#### COMUNICAZIONE SERIALE

Tipo: porta ottica  
Velocità di comunicazione: 38400 bps

#### NORME DI CONFORMITA'

EN61000-6-2 Immunità per ambienti industriali;  
EN61000-4-2 Compatibilità elettromagnetica, EN61000-4-3 Immunità a RF irradiata,  
EN61000-4-4 Immunità al burst/fast transient, EN61000-4-5 Immunità ai surge (Surge),  
EN61000-4-6 Immunità a RF condotta, EN61000-4-11 Immunità ai dips sull'alimentazione AC  
EN55011 classe A: emissioni irradiate, emissioni condotte  
Sicurezza: EN60950

#### DIAMETRO FILO PER MORSETTI DI CONNESSIONE

Morsetti: 0,14...2,5 mm<sup>2</sup>

#### CONDIZIONI AMBIENTALI

Temperatura di funzionamento: tra -15°C e +60°C  
Temperatura di stoccaggio: tra -25°C e +75°C  
Umidità relativa: 80% max senza condensa  
Grado di protezione: IP20

### GB ENGLISH

Data in compliance with EIA RS485 standard.

#### POWER SUPPLY

Rated voltage: 230 V<sub>AC</sub> ±20% / 50 Hz  
Max repetitive voltage: 300 V<sub>AC</sub>  
Max non repetitive voltage peak: 320 V<sub>AC</sub> (20 ms)  
Consumption: max 5 VA  
Fuse: T type, 100 mA (to be mounted externally)

#### RS485 COMMUNICATION

Protocol: MODBUS RTU (8N1) and ASCII (7E2)  
Port: RS485  
Communication speed: 300...57600 bps  
Termination resistor (RT) integrated in the module: 120 Ohm

#### SERIAL COMMUNICATION

Type: optical port  
Communication speed: 38400 bps

#### STANDARDS COMPLIANCE

EN61000-6-2 Immunity for industrial environments;  
EN61000-4-2 Electrostatic discharge, EN61000-4-3 RF radiated disturbance,  
EN61000-4-4 Fast Transient (BURST), EN61000-4-5 Overvoltage (Surge),  
EN61000-4-6 RF conducted disturbance, EN61000-4-11 Voltage dips and short interruptions,  
EN55011 Class A: radiated emissions, conducted emissions  
Safety: EN60950

#### DIAMETER WIRE FOR CONNECTION TERMINALS

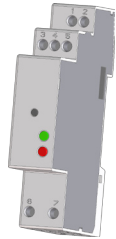
Terminals: 0.14...2.5 mm<sup>2</sup>

#### ENVIRONMENTAL CONDITIONS

Operating temperature: between -15°C and +60°C  
Storage temperature: between -25°C and +75°C  
Humidity: 80% max without condensation  
Protection degree: IP20

# S500-MOD

RS485 Kommunikationsmodul - RS485 communication module



**D** - BEDIENUNGSANLEITUNG

**GB** - USER MANUAL

Änderungen vorbehalten.  
Subject to change without prior notice.

1MS0EC485001

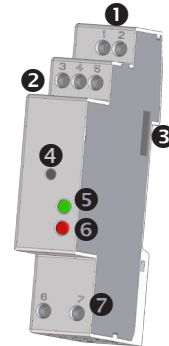
## ÜBERSICHT OVERVIEW

### D DEUTSCH

1. Klemmen brücken zum Einschalten des Terminationswiderstandes (RT)
2. Klemmen zum RS485 Anschluss
3. Infrarot-Schnittstelle
4. Taste WERKSEINSTELLUNG
5. LED der Hilfsspannung
6. LED der Kommunikation
7. Hilfsspannungsklemmen

### GB ENGLISH

1. Terminals to be jumpered for termination resistor (RT) enabling
2. RS485 connection terminals
3. Optical COM port
4. SET DEFAULT key
5. Power supply LED
6. Communication LED
7. Power supply terminals



**⚠ ACHTUNG!**  
Die Installation und Inbetriebnahme des Moduls darf nur von ausgebildeten Fachkräften durchgeführt werden. Vor jeder Tätigkeit am Gerät muß die Versorgung getrennt werden.

**⚠ WARNING!**  
Device installation and use must be carried out only by qualified staff.  
Switch off the voltage before device installation.

## FUNKTION WERKSEINSTELLUNG SET DEFAULT FUNCTION

### D DEUTSCH

Die Funktion WERKSEINSTELLUNG dient zum Rücksetzen aller Einstellungen und stellt die Werkseinstellungen ein (z.B. wenn die MODBUS Adresse vergessen wird). Um die Werkseinstellung durchzuführen soll die Taste WERKSEINSTELLUNG mindestens 5 s ausgedrückt werden, dann wird das Kommunikationsled Grün/Rot für 5 s blinken. Nach der Werkseinstellung wird das Kommunikationsled ständig Rot sein, damit die Taste erlösen wird.

\* 8N1=RTU Modus; 7E2=ASCII Modus

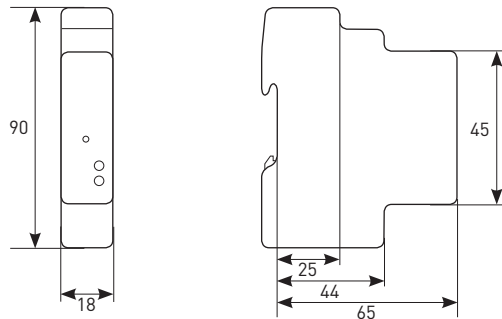
### GB ENGLISH

SET DEFAULT function allows to restore on the module default settings (e.g. in case of MODBUS address forgotten). To restore default settings, keep SET DEFAULT key pressed for at least 5 s, communication LED will blink green/red for 5 s. At the end of SET DEFAULT procedure, communication LED will be red continuously indicating to release the key.

\* 8N1=RTU mode; 7E2=ASCII mode

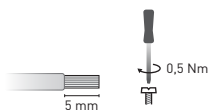
EINSTELLUNGEN SETTINGS	WERKSEINSTELLUNGEN DEFAULT VALUES
RS485 Kommunikationsgeschwindigkeit RS485 communication speed	19200 bps
RS485 Modus RS485 mode	8N1*
MODBUS Adresse MODBUS address	01

## ABMESSUNGEN (mm) SIZE (mm)



## KABELABISOLIERE LÄNGE CABLE STRIPPING LENGTH

Verdrahtung an den Klemmen  
Terminals connection



Ein 0,8x3,5 mm Flachschaubendreher anwenden  
Use a blade screwdriver with 0.8x3.5 mm size

## LED FUNKTION LEDS FUNCTIONALITY

Die zwei LED befinden sich auf die Frontseite des Moduls zur Anzeige des Versorgungs- und Kommunikationsstandes.

Two LEDs are available on the module front panel to provide power supply and communication status.

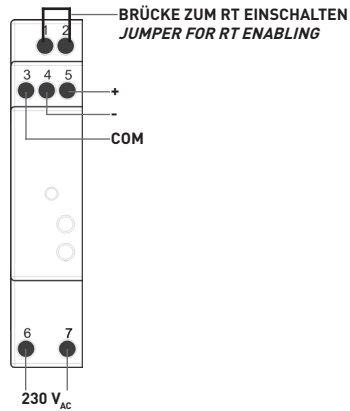
### D DEUTSCH

LED FARBE	MELDUNG	BEDEUTUNG
<b>LED DER HILFSSPANNUNG</b>		
-	Ausgeschaltet	Ausgeschaltetes Modul
GRÜN	Immer angeschaltet	Eingeschaltetes Modul
<b>LED DER KOMMUNIKATION</b>		
-	Ausgeschaltet	Ausgeschaltetes Modul
GRÜN	Langsam blinkend (jede 2 s aus)	RS485 Kommunikation=OK Kommunikation zum Zähler=OK
ROT	Schnell blinkend (jede 1 s aus)	RS485 Kommunikation=fehlende/fehlerhaft Kommunikation zum Zähler=OK
ROT	Immer angeschaltet	Kommunikation zum Zähler=fehlende/fehlerhaft
GRÜN/ROT	Wechselfarben für 5 s	Laufende Werkseinstellung

### GB ENGLISH

LED COLOUR	SIGNALLING	MEANING
<b>POWER SUPPLY LED</b>		
-	Power OFF	The module is OFF
GREEN	Always ON	The module is ON
<b>COMMUNICATION LED</b>		
-	Power OFF	The module is OFF
GREEN	Slow blink (2 s OFF time)	RS485 communication=OK Counter communication=OK
RED	Fast blink (1 s OFF time)	RS485 communication=fault/missing Counter communication=OK
RED	Always ON	Counter communication=fault/missing
GREEN/RED	Alternating colours for 5 s	SET DEFAULT procedure in progress

## VERDRÄHTUNG CONNECTIONS



### D DEUTSCH

Zwischen PC und RS485 Netzwerk ist ein Schnittstellenwandler zur Anpassung der RS232/USB zum Netzwerk erforderlich. Wenn die anzuschliessenden Module mehr als 32 sind, ist ein Signalrepeater erforderlich. Jeder Repeater kann bis zu 32 Geräte verwalten.

Der im Abbild angezeigte Anschluss verfügt über einen dritten Leiter an der Klemme, der das selbe Bezugsniveau an allen Geräten auf dem Netzwerk gewährleistet. Bei starken elektromagnetischen Störungen, die die Kommunikation beeinträchtigen können, wird die Anwendung eines zwei-geschichteten gedrehten Leiterkabels empfohlen. Das Modul ist mit einem Terminationswiderstand (RT) ausgestattet, der beim Brücken der entsprechenden Klemmen eingeschaltet wird. Ein Terminationswiderstand am PC aufbauen, und auf das letzte an der Linie angeschlossene Modul einschalten.

Die maximal empfohlene Länge der Drahte ist 1200 m mit 9600bps. Für längere Netzwerke ist es ratsam, eine niedrigere Baudrate, Kabel mit geringerer Dämpfung oder Signalrepeater zu verwenden.

Nachdem das Netzwerk verdrahtet worden ist, jedes RS485 Modul mit dem entsprechenden Zähler anknüpfen: die zwei näher und einreihen, damit die Infrarot-Schnittstelle gegenüber stehen.

Die RS485 Parameter können sowohl am angeschlossenen Zähler als auch beim Versenden der entsprechenden MODBUS Befehle verändert werden.

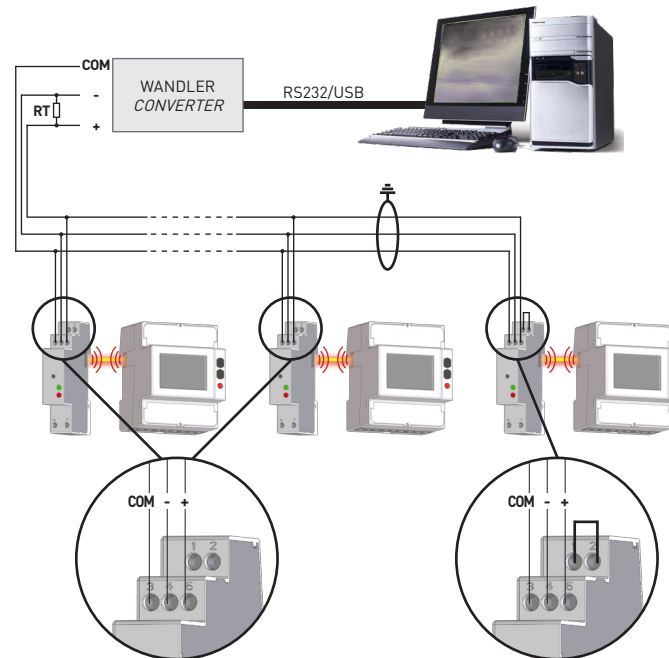
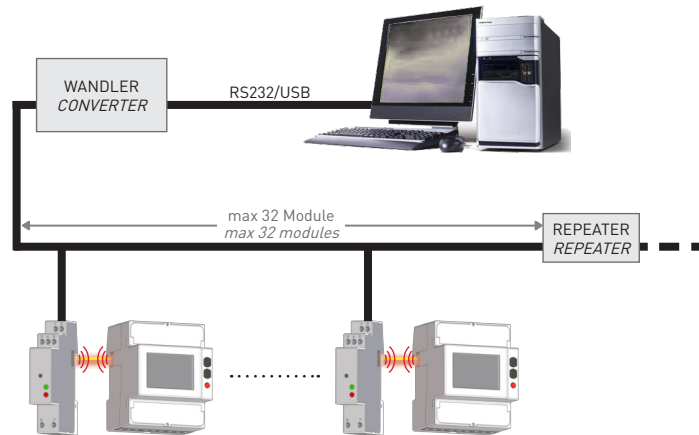
### GB ENGLISH

A serial converter is required between PC and the RS485 network to adapt RS232/USB port to network. If there are more than 32 modules to be connected, insert a signal repeater. Each repeater can manage up to 32 modules. For the connection among the different modules, use a cable with a twisted pair and a third wire. The type of connection shown in the picture uses the third conductor to ensure that all the devices on the network have the same reference level and improve the reliability of communication. When there are strong electromagnetic disturbances, which may affect communication, a shielded cable should be used. The module is integrated with a termination resistor (RT) which can be enabled by jumpering the relevant terminals. The termination resistance must be installed on the PC and enabled on the last module connected along the line. Thanks to these resistances, the reflected signal along the line is reduced.

The maximum recommended distance for a connection is 1200 m at 9600 bps. For longer distances, lower baud rates or low-attenuation cables or signal repeaters are needed.

After making RS485 connections, combine each RS485 module with a single counter: place them side by side, perfectly lined up, with module optical port facing the counter optical port.

RS485 parameters can be changed directly on the combined counter or by sending the proper MODBUS protocol commands to the module.



RT AUF DAS LETZTE AN DER LINIE ANGESCHLOSSENE MODUL EINSCHALTEN

ENABLE RT ON THE LAST MODULE CONNECTED TO THE LINE

## TECHNISCHE EIGENSCHAFTEN TECHNICAL FEATURES

### D DEUTSCH

Angaben gemäß der Richtlinie EIA RS485.

#### HILFSSPANNUNG

Nennspannung: 230 V<sub>AC</sub> ±20% / 50 Hz  
Max Wiederholspannung: 300 V<sub>AC</sub>  
Max nicht Wiederholspannung Spitzenwert: 320 V<sub>AC</sub> (20 ms)  
Verbrauch: max 5 VA  
Vorsicherung: Typ T, 100 mA (extern zu installieren)

#### RS485 KOMMUNIKATION

Protokoll: MODBUS RTU (8N1) und ASCII (7E2)  
Schnittstelle: RS485  
Kommunikationsgeschwindigkeit: 300÷115200 bps  
Terminationswiderstand im Modul eingebaut: 120 Ohm

#### BUSLINIE

Typ: Infrarot-Schnittstelle  
Kommunikationsgeschwindigkeit: 38400 bps

#### KONFORMITÄTSEKTLÄRUNG

EN61000-6-2 Störfestigkeit (Industriebereich);  
EN61000-4-2 Elektromagnetische Verträglichkeit, EN61000-4-3 Abgestrahlte RF Störung, EN61000-4-4 schnelle Transienten (Burst), EN61000-4-5 Stoßspannungen (Surge), EN61000-4-6 leitungsgeführte RF-Signale, EN61000-4-11 Spannungseinbrüche am AC Hilfsspannung EN55011 Klasse A: Angestrahlte und Ausgeführte Ausstoß  
Sicherheitsbestimmungen: EN60950

#### ANSCHLIESSBARER LEITER

Klemmen: 0,14÷2,5 mm<sup>2</sup>

#### UMWELTBEDIENGENGEN

Arbeitstemperaturbereich: zwischen -15°C und +60°C  
Lagertemperaturbereich: zwischen -25°C und +75°C  
Relative Luftfeuchte: 80% max ohne Kondensation  
Schutzgrad: IP20

### GB ENGLISH

Data in compliance with EIA RS485 standard.

#### POWER SUPPLY

Rated voltage: 230 V<sub>AC</sub> ±20% / 50 Hz  
Max repetitive voltage: 300 V<sub>AC</sub>  
Max non repetitive voltage peak: 320 V<sub>AC</sub> (20 ms)  
Consumption: max 5 VA  
Fuse: T type, 100 mA (to be mounted externally)

#### RS485 COMMUNICATION

Protocol: MODBUS RTU (8N1) and ASCII (7E2)  
Port: RS485  
Communication speed: 300÷115200 bps  
Termination resistor (RT) integrated in the module: 120 Ohm

#### SERIAL COMMUNICATION

Type: optical port  
Communication speed: 38400 bps

#### STANDARDS COMPLIANCE

EN61000-6-2 Immunity for industrial environments;  
EN61000-4-2 Electrostatic discharge, EN61000-4-3 RF radiated disturbance, EN61000-4-4 Fast Transient (BURST), EN61000-4-5 Overvoltage (Surge), EN61000-4-6 RF conducted disturbance, EN61000-4-11 Voltage dips and short interruptions, EN55011 Class A: radiated emissions, conducted emissions  
Safety: EN60950

#### WIRE DIAMETER FOR CONNECTION TERMINALS

Terminals: 0.14÷2.5 mm<sup>2</sup>

#### ENVIRONMENTAL CONDITIONS

Operating temperature: between -15°C and +60°C  
Storage temperature: between -25°C and +75°C  
Humidity: 80% max without condensation  
Protection degree: IP20