

Installation instruction
Power analyzer for three-phase and two-phase systems**Istruzioni per l'installazione**
Analizzatore di potenza per sistemi trifase e bifase**Installationsanweisung**
Leistungsanalyse für Drei- und Zweiphasensysteme**Instructions pour l'installation**
Analyseur de puissance pour systèmes triphasé et biphasé**Instrucciones para la instalación**
Analizador de potencia para sistemas trifásicos y bifásicos**Vejledning til installation**
Analyseapparat effekt til trefasede og tofasede systemer

EN	
Operating temperature	From -25 to +55 °C/from -13 to +131 °F
Storage temperature	From -25 to +70 °C/from -13 to +158 °F
Protection degree	IP40 and IP51 (just in a distribution board with IP51 degree)
Overvoltage/Measurement category	III
Altitude	Max 2000 m
Consumption	<1.3 W/2.6 VA (W value not UL evaluated)
Digital output	V _{ON} 2.5 V ac/dc, max 100 mA. V _{OFF} 42 V ac/dc max
Digital input	Contact measuring voltage: 5 V dc +/- 5%. Contact measuring current: 5 mA max
Weight	270 g

Note: R.H. < 90 % non-condensing @ 40 °C / 104 °F.

IT	
Temperatura di esercizio	Da -25 a +55 °C/da -13 a +131 °F
Temperatura di stoccaggio	Da -25 a +70 °C/da -13 a +158 °F
Grado di protezione	IP40 e IP51 (solo in un quadro di distribuzione con grado IP51)
Categoria di sovrattensione/misura	III
Altitudine	Max 2000 m
Consumo	<1,3 W/2,6 VA (valore W non valutato UL)
Uscita digitale	V _{ON} 2,5 V ca/cc, max 100 mA. V _{OFF} 42 V ca/cc max
Ingresso digitale	Tensione misura contatto: 5 V cc +/- 5%. Corrente misura contatto: max 5 mA
Peso	270 g

Note: U.R. < 90 % senza condensa @ 40 °C / 104 °F.

DE	
Betriebstemperatur	-25 bis +55 °C/-13 bis +131 °F
Lagertemperatur	-25 bis +70 °C/-13 bis +158 °F
Schutzklasse	IP40 und IP51 (nur in einer Verteilertafel mit IP51-Schutzklasse)
Überspannungs-Messungskategorie	Kat. III
Höhe	Max 2000 m
Leistungsaufnahme	<1.3 W/2.6 VA (W nicht UL-geprüft)
Digitalausgang	V _{ON} 2.5 V ac/dc, max 100 mA. V _{OFF} 42 V ac/dc
Digitaleingang	Kontakt für Spannungsmessung: 5 V DC +/- 5%. Kontakt für Strommessung: 5 mA max.
Gewicht	270 g

HINWEIS: R.L. < 90 % nicht kondensierend @ 40 °C / 104 °F.

FR	
Température de fonctionnement	De -25 à +55 °C/de -13 à +131 °F
Température de stockage	De -25 à +70 °C/de -13 à +158 °F
Indice de protection	IP40 et IP51 (uniquement dans un tableau de distribution avec indice IP51)
Catégorie de surtension/mesure	Cat. III
Altitude	Max 2000 m
Consommation	<1.3 W/2.6 VA (W non évaluée par UL)
Sortie logique	V _{ON} 2.5 V ca/cc, max 100 mA. V _{OFF} 42 V ca/cc
Entrée numérique	Contact mesurant la tension : 5 V dc +/- 5%. Contact mesurant le courant : 5 mA max
Poids	270 g

Note : U.R. < 90 % sans condensation @ 40 °C / 104 °F.

ES	
Temperatura de funcionamiento	De -25 a +55 °C/de -13 a +131 °F
Temperatura de almacenamiento	De -25 a +70 °C/de -13 a +158 °F
Grado de protección	IP40 e IP51 (solo en un cuadro de distribución con grado IP51)
Categoría de sobretensión/medida	Cat. III
Altitud	Máx 2000 m
Consumo	<1.3 W/2.6 VA (W sin evaluación UL)
Salida digital	V _{ON} 2.5 V ca/cc, max 100 mA. V _{OFF} 42 V ca/cc
Entrada digital	Tensión de medición del contacto: 5 V CC +/- 5%. Intensidad de medición del contacto: 5 mA máx.
Peso	270 g

Note: U.R. < 90 % sin condensación @ 40 °C / 104 °F.

DA	
Driftstemperatur	Fra -25 til +55 °C/fra -13 til +131 °F
Opbevaringstemperatur	Fra -25 til +70 °C/fra -13 til +158 °F
Beskyttelsesgrad	IP40 og IP51 (kun i et fordelingsstavle med IP51-grad)
Overspændings-måle kategori	Kat. III
Højde	Maks. 2000 m
Forbrug	<1.3 W/2.6 VA (W ikke UL evaluert)
Digitale udgang	V _{ON} 2.5 V ac/dc, max 100 mA. V _{OFF} 42 V ac/dc
Digital indgang	Målepænding for kontakt: 5 V dc +/- 5%. Målestør for kontakt: 5 mA max
Vægt	270 g

Bemærk: R.F. < 90 % uden kondens @ 40 °C/104 °F.

ENGLISH**Warnings**

- DANGER!** Live parts. Heart attack, burns and other injuries.
 - Disconnect the power supply and loads before connecting/disconnecting the electrical wires.
 - Only use the analyzer at the specified voltage and current.
 - The analyzer should only be installed by qualified personnel experienced in working in safety.
 - Access to the terminals is reserved for qualified personnel for maintenance operations.
 - The system installer is liable for the safety of any system that includes the analyzer

NOTICE: only use the analyzer at the specified voltage and current to avoid permanent damage.

NOTICE: no one is authorized to open the analyzer. This operation is reserved exclusively for CARLO GAVAZZI technical service personnel. Protection may be impaired if the instrument is used in a manner not specified by the manufacturer.

This manual is an integral part of the product. It must be consulted for analyzer installation. It must be kept in good condition and in a clean location accessible to all operators.

Cleaning
Use a slightly dampened cloth to clean the display. Do not use abrasives or solvents.

Responsibility for disposal
The product must be disposed of at the relative recycling centers specified by the government or local public authorities. Correct disposal and recycling will contribute to the prevention of potentially harmful consequences to the environment and persons.

Service and warranty
In the event of malfunction, fault, requests for information or to purchase accessory modules, contact the CARLO GAVAZZI branch or distributor in your country. Installation and use of analyzers other than those indicated in the provided instructions void the warranty.

Assistencia e garantía
In caso di malfunzionamento, guasto, necessità informazioni o per acquistare moduli accessori, contattare la filiale CARLO GAVAZZI o il distributore nel paese di appartenenza. L'installazione e l'uso dell'analizzatore diversi da quanto indicato nelle istruzioni fornite invalidano la garanzia.

UL notes:

- The instrument must be installed taking care of leaving the external disconnecting device easily accessible.
- Disconnect the power supply and loads before connecting/disconnecting the electrical wires.
- An external switch or circuit-breaker that must be mounted near the instrument is required.
- To be used in a pollution degree 2 or better environment only
- Indoor use only
- Use copper conductors only
- Auxiliary inputs/outputs (Digital input, Digital output, RS485, M-Bus) must be connected only to Limited-Energy Circuit in accordance with UL/CSA 61010-1 or Class 2 supply source which complies with the National Electrical Code (NEC). NFPA 70, Clause 725.121 and Canadian Electrical Code (CEC), Part I, C22.1
- Evaluated as open type device; it is intended to be installed inside a dedicated NRTL certified fire/electrical enclosure (overall enclosure) or inside end-product equipment enclosure; it is not intended for retrofit installations in the enclosure of switchgears or panel boards.

Display icons

Symbol	Description
	ALARM (blinking icon): the value of the variable has exceeded the threshold set.
	WIRING ERROR (steady icon): a wiring fault has been detected, the control operates correctly if the selected system is 3Pn and for each phase the power is positive (imported). For problem solutions, see "EM500 IM wiring solutions"
	Serial communication state (reception / transmission)

The association of the phase terminal or the direction of the currents have been modified via UCS software to correct virtually a wiring fault. To view the current setup of the terminals, access the info screens (MENU > INFO > TERMINAL).

ITALIANO**Avvertenze**

- DPERICOLO!** Parti sotto tensione. Arresto cardiaco, bruciature e altre lesioni.
 - Scollegare l'alimentazione e i carichi prima di collegare/scollegare i cavi elettrici.
 - Utilizzare l'analizzatore solo alla tensione e corrente specificate.
 - L'installazione degli analizzatori deve essere eseguita solo da personale specializzato.
 - Il accesso ai terminali è riservato a personale specializzato per operazioni di manutenzione.
 - L'accesso ai terminali è riservato a personale specializzato per operazioni di manutenzione.
 - La sicurezza di qualsiasi sistema che incorpora l'analizzatore ricade sotto la responsabilità dell'installatore del sistema.

AVVISO: utilizzare l'analizzatore solo alla tensione e corrente specificate per evitare danni permanenti.

AVVISO: nessuno è autorizzato ad aprire l'analizzatore. Solo il personale dell'assistenza tecnica CARLO GAVAZZI può farlo. La protezione può essere compromessa se lo strumento viene usato in un modo non specificato dal costruttore.

Questo manuale è parte integrante del prodotto. Deve essere consultato per l'installazione dell'analizzatore. Deve essere mantenuto in buone condizioni e conservato in un luogo pulito e accessibile agli operatori.

Pulizia
Per mantenere pulito il display usare un panno leggermente inumidito. Non usare abrasivi o solventi.

Responsabilità di smaltimento

Smaltire con raccolta differenziata tramite le strutture di raccolte indicate dal governo o dagli enti pubblici locali. Il corretto smaltimento e il riciclaggio aiuteranno a prevenire conseguenze potenzialmente negative per l'ambiente e per le persone.

Service et garantie
En cas de malfonctionnement, de panne, de besoin d'informations, ou pour acheter des modules accessoires, contacter la filiale ou le distributeur CARLO GAVAZZI ou le détaillant dans l'Etat ou le pays. Une installation et une utilisation de l'analyseur autres que celles indiquées dans les instructions fournies invalident la garantie.

Kundendienst und Garantie
Bei Funktionsstörungen, Ausfall, Anforderung von Informationen oder Erwerb von Zusatzmodulen bitte Kontakt mit der Filiale CARLO GAVAZZI oder mit dem Händler im Installationsland aufnehmen. Von den Angaben dieser Anleitung abweichende Installation und Betrieb des Analyseurs führen zur Ungültigkeit der Garantie.

Icone del display

Simbolo	Descrizione
	ALLARME (icona lampante): il valore della variabile ha superato la soglia impostata.
	ERRORE DI CABLAGGIO (icona fissa): è stato rilevato un errore di cablaggio, il controllo funziona correttamente il sistema selezionato è 3Pn e se per ogni fase la potenza è positiva (importata). Per risoluzione problemi, vedi "EM500 IM Verkabelungslösungen".

Rx Tx Stato della comunicazione seriale (ricezione / trasmissione)

Rx Tx Zustand der seriellen Kommunikation (Empfang / Übertragung)
 L'associazione del terminale di fase o la direzione delle correnti sono state modificate tramite UCS software per correggere virtualmente un errore di cablaggio. Per vedere la configurazione corrente dei terminali, accedere alle pagine info (MENU > INFO > TERMINAL).

DEUTSCH**Hinweise**

- GEFAHR!** Unter Spannung stehende Teile. Herzstillstand, Verbrennungen und sonstige Verletzungen.
 - Bevor Stromkabel angeschlossen/gelöst werden, muss die Stromversorgung und die Last unterbrochen werden.
 - Den Analysator ausschließlich mit der angegebenen Spannung und dem angegebenen Strom betreiben.
 - Die Installation der Analysatoren darf ausschließlich von Personen vorgenommen werden, die in der Lage sind, unter Sicherheitsbedingungen zu arbeiten.
 - Der Zugang zu den Klemmen ist qualifiziertem Personal für Wartungsarbeiten vorbehalten.
 - Die Sicherheit jedes Systems, in welches der Analysator eingebaut wird, liegt in der Verantwortung derjenigen Person, die das System installiert.
- </div

Installing EM540 / Installare EM540 / Installation des EM540 / Installer le EM540 / Instalar el EM540 / Installer EM540

- Mount EM540 on DIN rail.
- Open terminal caps.
- Complete measuring input connections.

Un (L-N)	120 ... 240 V
Un (L-L)	208...415 V
Voltage tolerance	-20, +15%
Frequency	50...60 Hz
Note: for MID versions the voltage range is limited to 3x120 (208)...3x230 (400)V, frequency to 50Hz.	
Ib/Iref	5 A
Imax	65 A

- Montare EM540 su guida DIN.
- Aprire i coprimorsetti
- Eseguire i collegamenti degli ingressi di misura.

Un (L-N)	120 ... 240 V
Un (L-L)	208...415 V
Tolleranza tensione	-20, +15%
Frequenza	50...60 Hz
Note: per le versioni MID il range di tensione è limitato a 3x120 (208)...3x230 (400)V, la frequenza a 50Hz.	
Ib/Iref	5 A
Imax	65 A

- EM540 auf DIN-Schiene montieren.
- Anschlussabdeckungen öffnen.
- Eingangsanschlüsse komplett durchmessen.

Un (L-N)	120 ... 240 V
Un (L-L)	208...415 V
Spannungstoleranz	-20, +15%
Frequenz	50...60 Hz
Hinweis: bei MID-Versionen ist der Spannungs-Bereich limitiert a 3x120 (208)...3x230 (400)V und die Frequenz auf 50Hz begrenzt.	
Ib/Iref	5 A
Imax	65 A

- Monter EM540 sur un rail DIN.
- Ouvrir les cache-bornes.
- Compléter la mesure des connexions d'entrée.

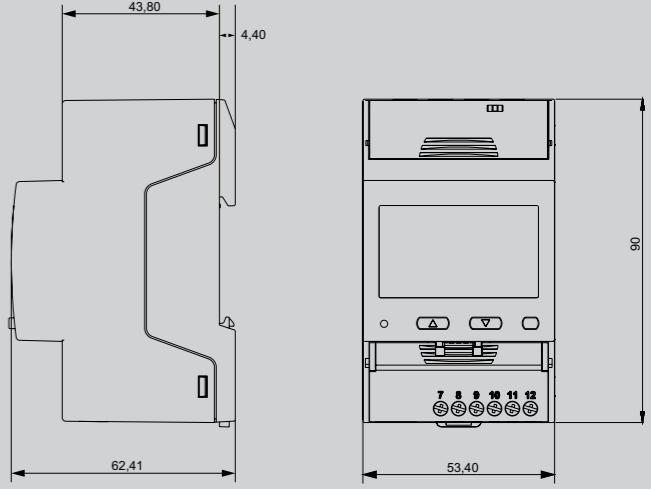
Un (L-N)	120 ... 240 V
Un (L-L)	208...415 V
Tolérance de tension	-20, +15%
Fréquence	50...60 Hz
Remarque: pour les versions MID, la plage de tension est limitée à 3x120 (208)...3x230 (400)V et la fréquence à 50Hz.	
Ib/Iref	5 A
Imax	65 A

- Montar el EM540 en el carriel DIN.
- Abrir los tapones para terminales.
- Realizar las conexiones de las entradas de medición.

Un (L-N)	120 ... 240 V
Un (L-L)	208...415 V
Tolerancia de tensión	-20, +15%
Frecuencia	50...60 Hz
Nota: para las versiones MID, el rango de tensión está limitado a 3x120 (208)...3x230 (400)V, la frecuencia a 50Hz.	
Ib/Iref	5 A
Imax	65 A

- Montér EM540 på DIN-skinne.
- Åbn klemmedæksler.
- Udfør måling af indgangsforbindelser.

Un (L-N)	120 ... 240 V
Un (L-L)	208...415 V
Spændingstolerance	-20, +15%
Frekvens	50...60 Hz
Bemærkninger: for MID-versioner er spændingsområdet begrænset til 3x120 (208)...3x230 (400)V, frekvens til 50Hz.	
Ib/Iref	5 A
Imax	65 A

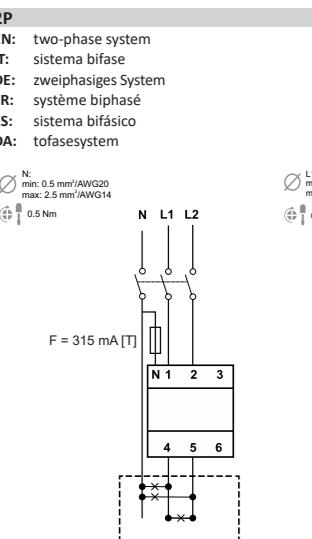
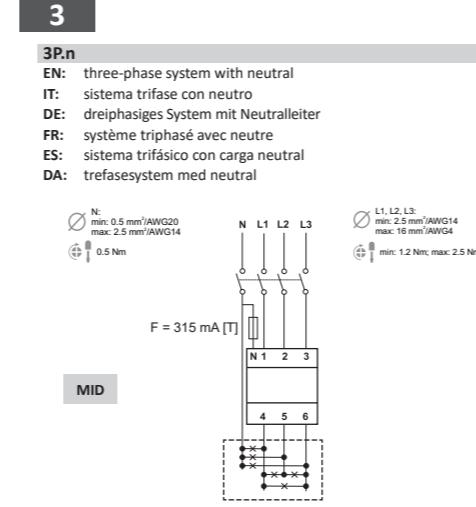
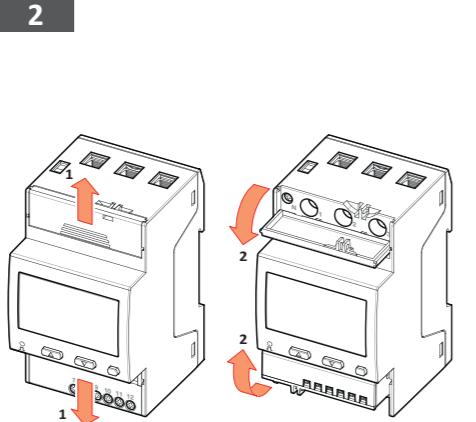
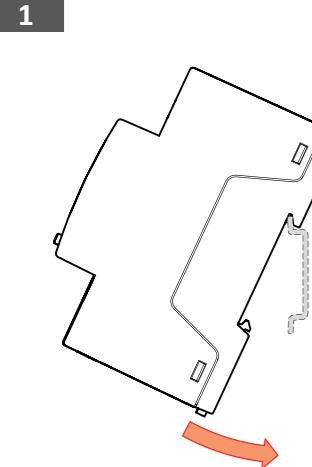


- Close the terminal caps.
- Seal the terminal caps (MID requirement).
- Connect inputs and digital output, RS485 or M-Bus.
- Turn on power and check correct operation.
- Configure EM540.

- Chiudere i coprimorsetti.
- Sigillare i coprimorsetti (requisito MID).
- Collegare ingressi e uscita digitale, RS485 o M-Bus.
- Alimentare e verificare il corretto funzionamento.
- Configurare l' EM540.

- Anschlussabdeckungen schließen.
- Siegeln Sie die Anschlussabdeckungen (MID-Anforderung).
- Eingänge und digitalen Ausgang, RS485 oder M-Bus anschließen.
- Stromversorgung einschalten und die einwandfreie Funktion prüfen.
- Configurer EM540.

- Cerrar los tapones para terminales.
- SELLAR los cubrebornes (requisito MID).
- Conectar las entradas y la salida digital, RS485 o M-Bus.
- Alimentar y comprobar el correcto funcionamiento.
- Configurar el EM540.



EN: M-Bus port (option M1) FR: Porta M-Bus (opción M1)
IT: Porta M-Bus (opzione M1) ES: Puerto M-Bus (opción M1)
DE: M-Bus Port (Option M1) DA: M-Bus-port (option M1)

min: 0.2 mm²/AWG24 max: 1.5 mm²/AWG14 ≤ 0.4 Nm

Front view connection diagram for the M-Bus port (option M1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm²/AWG14, torque: ≤ 0.4 Nm.

Front view connection diagram for the RS485 port (option S1). It shows connections for phases N, L1, L2, and ground. Terminal sizes: min: 0.2 mm²/AWG24, max: 1.5 mm