



# GNM1D

## Installation and use instructions

45 A direct connection single-phase energy analyzer with Modbus, pulse or M-Bus interface

The analyzer measures active and reactive energy, summing (easy connection mode only) or separating imported energy from exported energy. It manages two energy tariffs using a digital input or Modbus command. It can be equipped with an optional output to communicate measurements: pulse output, RS485 Modbus port or M-Bus port. It measures one DIN module, with touchless LCD display with sensitive touch screen areas for page scrolling and parameters setting.

## Installation och användarinstruktioner

45 A direktkopplad en-fas energimätare med puls, Modbus och M-Bus gränssnitt

Kompakt energimätare som mäter aktivt och reaktivt energiförbrukning. Mätaren kan fungera för nettömning mellan förbrukad och producerad elektrisk energi. Den finns gränssnitt för kommunikation via puls, Modbus och M-Bus. Mätningen presenteras i en bakgrundsbelyst LCD display, väsktill med mätarens och all annan hantering sker med hjälp av touchfält på displayen.

## Installations- und Gebrauchsanweisung

Energieanalytator 45 A für den Direktanschluss mit Modbus, Impuls- oder M-Bus-Schnittstelle

Der Energieanalytator misst die Wirk- und Blindenergie und summiert (Bei aktiviertem Modus: easy connection) oder trennt bezogene und gelieferte Energie. Es werden zwei Energieerfasser über Digitalisierung oder Modbus-Befehl verwaltet. Das Gerät verfügt über einen optionalen Ausgang für die Übermittlung der Messdaten: Impulsausgang, Modbus-Schnittstelle (RS485) oder M-Bus-Schnittstelle. Es ist mit einem Modus für die DIN-Schienenmontage sowie mit einem LCD-Display mit Hintergrundbeleuchtung und Touchbereich für die Navigation durch die Seiten und die Parametrierung ausgestattet.

## EN: Features

Electrical specifications: Power Consumption, Basic current, Maximum current (continuing), Minimum current, Start-up current, Working voltage, Frequency, Accuracy class

## Environmental specifications

Working temperature, Storage temperature, R.H., Environment

## For MD meters

The meter is intended to be installed in a Mechanical Environment M2 as per 2014/30/EU Directive. MD class applies to instruments used in locations with significant or high levels of vibration and shock, e.g. transmitted from machines and power lines in the vicinity or adjacent to heavy machines, conveyor belts, etc.

## Output specifications

Pulse output, Modbus RS485 port output, M-Bus port output

## LED specifications

Pulse weight, Duration, Color

## General features

Terminals, Protection grade, Dimensions

## Cleaning

Use a lightly dampened cloth to clean the instrument display; do not use abrasives or solvents.

## SERVICE AND WARRANTY

In the event of malfunction, fault or for information on the warranty, contact the GARCO branch or distributor in your country.

## SE: Funktioner

## Elektriska specifikationer

Mätförbrukning, Grundström, Mätstartström (kontinuerlig), Ljusa strömlinor (nagelström), Nöjningsgränser

## Miljöspecifikationer

Arbetsområde, Lagertemperatur, UTM, Miljö

## För MD-mätare

The meter is intended to be installed in a Mechanical Environment M2 as per 2014/30/EU Directive. MD class applies to instruments used in locations with significant or high vibrations, and shock, e.g. transmitted from machines and power lines in the vicinity or adjacent to heavy machines, conveyor belts, etc.

## Utgångsspecifikationer

Pulsutgång, Modbus M-Bus

## LED-specifikationer

Pulsvikt, Längd, Färg

## Generella egenskaper

Anslutningar, Skyddsklass, Mått

## Rengöring

Använd en lätt fuktad trasa för att rengöra displayen, använd inte slipmedel eller lösningsmedel.

## Support och garanti

Vid behov av support, fall av funktionsfel eller för information om garantivillkoren kontakta närmaste återförsäljare eller GARCO för hjälp.

## DE: Daten

## Elektrische Daten

Versorgung, Grundstrom, Max. Strom (Dauerstrom), Anlaufstrom, Nennspannung, Frequenz

## Genauigkeitsklasse

Wirkenergie, Blindenergie

## Umgebungsbedingungen

Betriebstemperatur, Lagertemperatur, Zulässige Umgebungsfeuchte, Umgebung

## Für MD-Meter

Das Gerät ist für eine Installation in mechanischen Umgebungsbedingungen Klasse M2, nach 2014/30/EU Richtlinie geeignet. Klasse M2 gilt für Geräte, die an Einsatzorten verwendet werden, an denen erhebliche bis starke Schwingungen und Erschütterungen auftreten können, verursacht z. B. von in der Nähe befindlichen Maschinen und vorübergehenden Fahrzeugen oder anlagen von angrenzenden Schwenkbrücken, Förderbändern usw. Das Gerät ist zur Verwendung in elektromagnetischen Umgebungsbedingungen Klasse 2, nach 2014/30/EU Richtlinie geeignet. Klasse 2 gilt für Geräte, die an Einsatzorten verwendet werden, an denen elektromagnetische Störungen wie in anderen Industrieanlagen auftreten können.

## Technische Daten Ausgänge

Impulsausgang, Modbus-Schnittstelle RS485, M-Bus-Schnittstelle

## Technische Daten LED

Impulsbreite, Impulsdauer, Farbe

## Allgemeine technische Daten

Klemmen, Schutzart, Abmessungen, Reinigung

## KUNDENDIENST UND GARANTIE

Bei Störungen oder Fragen bzw. wenn Sie Auskünfte bezüglich der Garantie benötigen, kontaktieren Sie bitte die Niederlassung von GARCO oder den zuständigen Vertriebspartner in Ihrem Land.

• 2004/108/EC • IEC62052-11 • 2014/30/EU • IEC 60417-5172 (only MID option) • IEC 61017-5172

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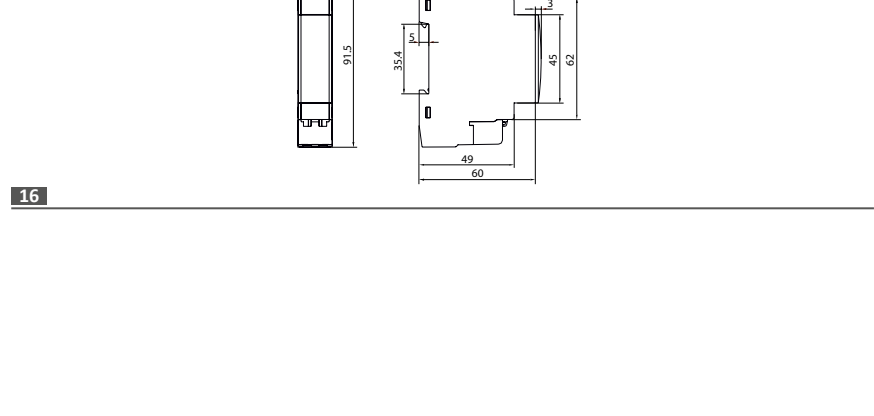
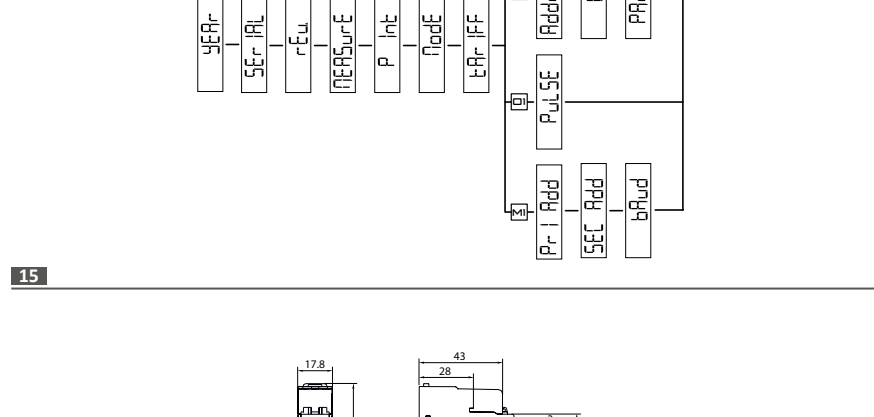
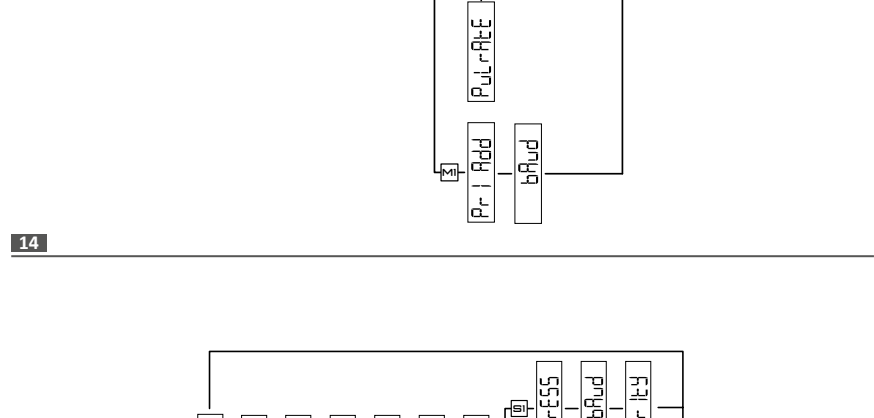
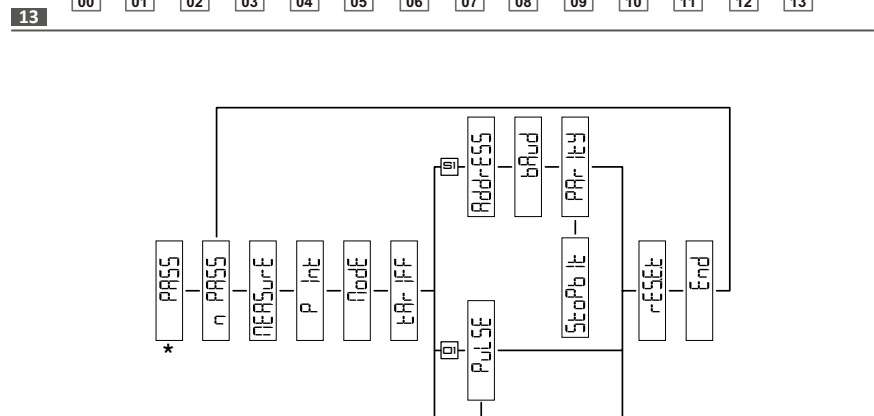
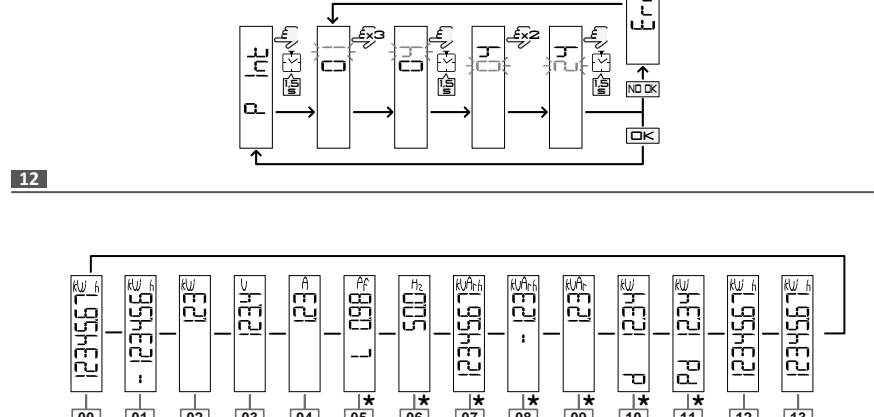
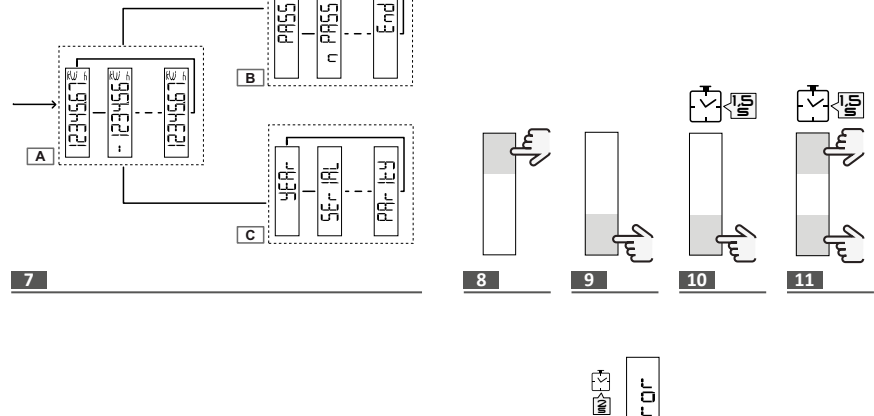
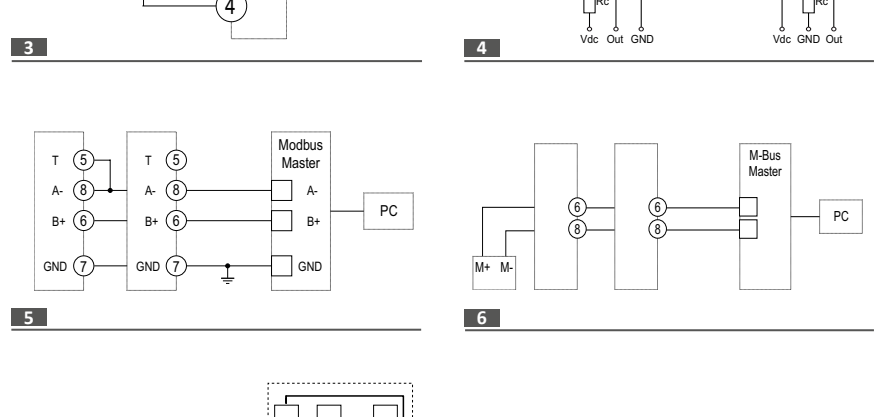
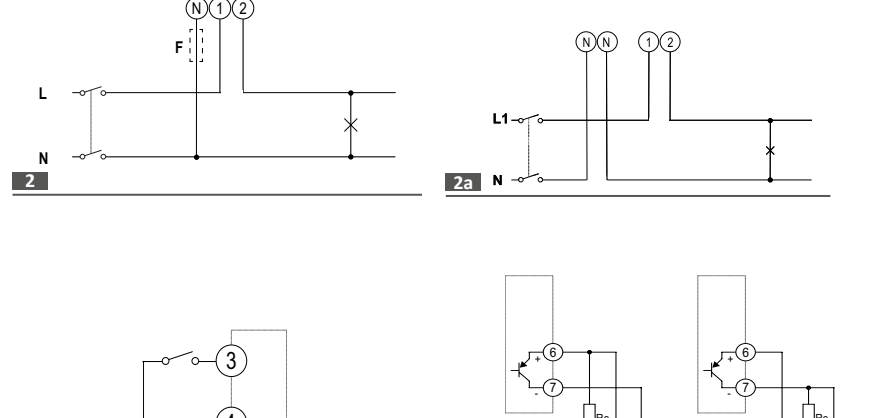
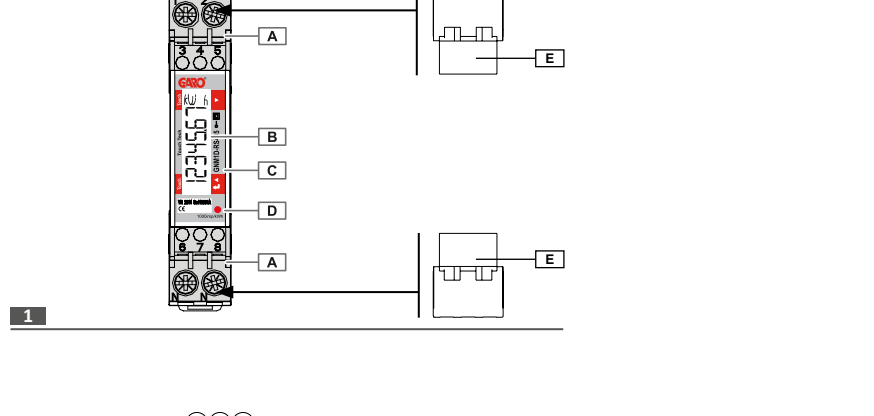
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## GENERAL WARNINGS

DANGER: Live parts. Heart attack, burns and other injuries. Disconnect the power supply and load before installing the analyzer.

The energy analyzer should only be installed by qualified/authorized personnel.

These instructions are an integral part of the product. They should be consulted for all situations related to installation and use. They should be kept within easy reach of operators, in a clean place and in good conditions.

## Code key (analyzer side)

GNM Model: Single-phase current system, two-wire; Self-powered (via measured voltage); Output type: O1: pulse; RS485: Modbus RS485 port; MBUS: M-Bus port

## Produkt (Fig. 1)

Area Description: A Current and communication connection terminals; B Backlit LCD display with sensitive touch screen areas; C Model, feature summary and serial number; D LED; E Sealeable terminal caps

In case you want to mount the sealing terminal caps (Fig. 1) remember to lock them with the appropriate cable sealing.

## Connection diagrams

Diagram Description: Fig. 2 Single-phase system 315 mA fuse (F), if required by local law; Fig. 3 1-fas system; Fig. 4 Digital input. Open contact = tariff 1, closed contact = tariff 2; Fig. 5 Pulse output (two possible connections); Fig. 6 External voltage (direct current); Fig. 7 Out: output contact (transistor PNP open collector); Fig. 8 GND: ground output contact (transistor PNP open collector); Fig. 9 Open collector outputs: the load resistance (Rc) must be designed so that the closed contact current is under 100 mA (Vp = is equal to 1 V dc); DC voltage (Vd) must be less than or equal to 80 V; Fig. 10 RS485 Modbus with Master; Fig. 11 M-Bus with Master

Note: additional instruments with RS485 are connected in parallel. The serial port must only be terminated on the last network device connecting terminals A and I. For connections longer than 1000 m use a signal repeater.

Note: Maximum 250 transceivers on the same bus (1 M-Bus load).

## Menu map (Fig. 7)

Area Function: A Measurement menu. Measurements displayed by default when turned on. Pages are characterized by the reference unit of measure; B Parameter menu. Parameter settings pages. Require login password; C Information menu. The pages display information and set parameters without having to enter a password.

## Commands

Navigation Operation: Operation Increase a parameter value; Exit the next page; View the previous page; Open the parameter menu; Exit the parameter menu; Open the information menu; Open the information menu

Note: after 120s of disuse, the measurement home page is displayed and the command only works if touched twice. Upon first touch of the touch command area, the display lock light turns on.

## Setting a parameter (Fig. 12)

Procedure example: how to set P=24. NOTE: the first displayed value is the current one. Settings are applied when the value is confirmed. The set value is out of range if Error appears. After 120 s of disuse on a value being set, the title page is displayed (P in the figure). After another 120 s, the initial measurement page is displayed.

## Measurement menu (Fig. 13)

NOTE: only displayed if full display mode is set (Mode = Full). Page Description: 00 Home page. Total imported active energy. If easy connection is on (Measure = A), it indicates total active energy without considering the direction; 01 Only if imported and exported energy are measured separately (Measure = b). Total exported active energy; 02 Active power; 03 Voltage; 04 Current; 05 Power factor (L = inductive, C = capacitive); 07 Home page. Total imported reactive energy. If easy connection is on (Measure = A), it indicates total reactive energy without considering the direction; 08 Only if imported and exported energy are measured separately (Measure = b). Total exported reactive energy; 09 Reactive power (Pd = demand) calculated for the set interval. The value remains the same for the entire interval. It is = 0 during the first start up interval; 10 Maximum requested power (Pd = Peak demand) reached since last reset; 11 Active energy imported with tariff 1. tar 1 appears after 5 s and remains displayed for 2 s. Displayed if tariff management is on (Tariff = on); 12 Active energy imported with tariff 2. tar 2 appears after 5 s and remains displayed for 2 s. Displayed if tariff management is on (Tariff = on); 13

## Measurement faults

If the measured signal exceeds the admitted analyzer limits, a specific message appears: • EE blinking: the measured value is out of limits; • EE on: the measurement depends on a value that is out of limits; NOTE: active and reactive energy measurements are displayed but do not change.

## Parameter menu (Fig. 14)

NOTE: the value settings page automatically opens after 3 s.

## Shared pages

Page Description: PASS Enter current password; PWRSS Many for tariff management; MEASurE Measurement type

P int Interval for medevarberäkning av effekt (minuter); MODE Display mode; TARIFF Tariff management; rESEt Enable/disable tariff, maximum requested power, partial active energy and partial reactive energy reset (the last two only set via serial port); End Return to the initial measurement page

## Pages specific to the S1 version

Page Description: Address Modbus address; bAUD Baud rate (kbps); PARITY Parity; STOP bit Only if no parity. Stop bit.

## Pages specific to the O1 version

Page Description: PULSE Pulse time (ON time, milliseconds); PulRate Pulse weight. Multiples of 100 impulses/kWh.

## Pages specific to the M1 version

Page Description: Pr iAdd M-Bus primary address; bAUD Baud rate (kbps)

NOTE \*\*: default values are underlined.

## Information menu (Fig. 15)

NOTE: the value automatically alternates every 2 s with the page title.

## Information (Fig. 15)

Information (Fig. 15) Note: all versions: always between rubric and current value.

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## ENGLISH

Läs noggrant genom manualen. Om instrumentet används på ett sådant sätt som inte specificeras av tillverkaren, kan instrumentets angivna säkerhet reduceras. Bryt manöverspanning och last trennen. Den installation som Skydd anslutningarna med medföljande täcklock. Energimätaren bör endast installeras av behörig elektriker.

These instructions are an integral part of the product. De bör läsas inför de situationer som handlar om installation och användning. De bör förvaras inom räckhåll för användarna, i gott på en lättillgänglig plats.

## Artikelnnummer (tryckt på mätarens sida)

Modell: GNM1D 45A 230V/LN Pulsutgång; GNM1D-RS485 45A 230V/LN Modbus RS485; GNM1D-MBUS 45A 230V/LN M-Bus

## Produkt (Fig. 1)

Område: A Anslutningar för mätning och kommunikation; B Bakgrundsbelyst LCD-display med touchfunktion; C Modell, sammanfattning funktioner och serienummer; D LED; E Täcklock för anslutningsliten. Lucks i separat förpackning

Vid montage av täcklock för anslutningsliten (Abb. 1 E) monterar du kablaförslutning (figur 1 E).

## Kopplingschema

Koppling Beskrivning: Fig. 2 1-fas system. I de fall lokala föreskrifter kräver säkring på nolledare ska den dimensioneras för 315 mA (F); Fig. 3 1-fas system; Fig. 4 Digital ingång. Öppen kontakt = tariff 1, slutet kontakt = tariff 2; Fig. 5 Pulsutgång (två möjliga inkopplingar); Fig. 6 Extern spänning (direkt current); Fig. 7 Utgång från öppen kollektor: lasten (



## GNM1D

### Instructions d'installation et d'utilisation

#### Analyseur d'énergie monophasé à branchement direct 45 A avec interface Modbus, impulsion ou M-Bus

Code 8021570

L'analyseur mesure l'énergie active et réactive, en additionnant (mode easy connection activé) ou en séparant l'énergie importée de l'énergie exportée. Il gère les deux tarifs d'énergie à l'aide d'une entrée numérique ou de la commande Modbus. Il peut être équipé d'une sortie en option servant à communiquer les mesures : sortie d'impulsion, port RS485 Modbus ou port M-Bus. Il mesure un module DIN, avec affichage ACL rétroéclairé avec zones sensibles de l'écran tactile pour le défilement des pages et la définition des paramètres.

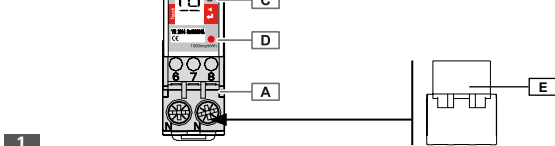


Fig. 1

### Instrucciones de instalación y uso

#### Analizador de energía monofásico de conexión directa con interfaz Modbus, de impulsos o M-Bus, 45 A

Código 8021570

El analizador mide la energía activa y reactiva, combinando modo (easy connection on) o separando las energías suministrada y consumida. Permite la medida según dos tarifas usando una entrada digital o un comando Modbus. Puede dotarse una salida opcional para comunicar las medidas: salida de pulso, puerto RS485 Modbus o puerto M-Bus. Mide un módulo DIN con pantalla LCD retroiluminada con zonas táctiles para moverse por las páginas y fijar los valores de los parámetros.

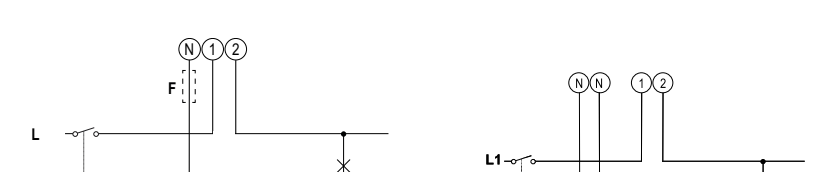


Fig. 1

### Installations- og betjeningsvejledning

#### 1-faset 45 A energianalysator med direkte tilslutning med Modbus, puls- eller M-bus-anslutning

Code 8021570

Analysatoren måler aktiv og reaktiv energi ved at opsummere (easy connection modultilslutning til) eller separere importeret energi fra eksporteret energi. Kan håndteres to energitarif'er via digital indgang eller Modbus-kommando. Kan udstyres med valgfri udgang til kommunikation af målinger: pulsudgang, RS485 Modbus-port eller M-Bus-port. Den måler et DIN-modul med baggrundsløst LCD display med berøringssensitivt skærmområde, som kan rullees eller bruges til parameterindstilling.



Fig. 1

### FR: Caractéristiques

Spécifications électriques	
Alimentation	Auto-alimenté (par la tension mesurée)
Consommation	≤ 1 W, 0,8 VA
Courant de base	45 A
Courant maximal (continu)	45 A
Courant de démarrage	0,2 A
Fréquence de service	ANSI 120 V ac, de -30% à +20%
Fréquence	50/60 Hz (cas de certification MID)
Classe de précision	Energie active : Classe 1 (EN62053-21) / Classe 0 (EN62053-22) Energie réactive : Classe 2 (EN62053-23)

Spécifications environnementales	
Température de fonctionnement	De -25 à +55 °C (de -13 à +131 °F) (En cas de certification MID)
Température de stockage	De -30 à +80 °C (de -22 à +176 °F)
Humidité	De 0 à 90% sans condensation @ 40°C
Environnement	Utilisation en intérieur seulement.

### EN: Specifications

**Power consumption:** The console does not require installation in an Environment Machine M2, with dual shock and vibration, NI 1, handheld or 2014/26/261 directives. Power consumption is measured in the operating mode with the display on and the meter is in the ready state. Power consumption is measured in the ready state. Power consumption is measured in the ready state. Power consumption is measured in the ready state.

Spécifications de sortie	
Sortie d'impulsion	1000 impulsions/kWh. Proportionnelle à l'énergie active mesurée (EN62053-31)
Port RS485	Protocole Modbus RTU (EN13757-1), 3 frames
Port M-Bus	Protocole M-Bus (EN13757-1), 3 frames

Spécifications du voyant	
Poids d'impulsion	90 ms
Color	Orange et orange

Caractéristiques générales	
Bornes	1, 2, N, section 2,5-6 mm <sup>2</sup> , couple 1,1 Nm
	3-8, section 1,5 mm <sup>2</sup> , moment 0,4 Nm
	Front: IP51, bornes: IP20
Dimensions	Voir Fig. 16.

### ES: Características

Especificaciones eléctricas	
Alimentación	Autónoma (a través de la tensión medida)
Consumo	≤ 1 W, 0,8 VA
Corriente base	45 A
Corriente máxima (continua)	45 A
Corriente de arranque	0,2 A
Tensión de funcionamiento	ANSI 120 V ac, de -30% a +20%
Frecuencia	50/60 Hz (caso de conformidad con la MID)
Clase de precisión	Energía activa: Clase 1 (EN62053-21) / Clase 0 (EN62053-22) Energía reactiva: Clase 2 (EN62053-23)

### ES: Características medioambientales

Temperatura de funcionamiento	
Operación	De -25 a +55 °C (de -13 a +131 °F) (En caso de certificación MID)
Almacenamiento	De -30 a +80 °C (de -22 a +176 °F)
Humedad	De 0 a 90% (sin condensación a 40°C)
Entorno	Solo para uso en interiores.

### ES: Características mecánicas

**Power consumption:** The console does not require installation in an Environment Machine M2, with dual shock and vibration, NI 1, handheld or 2014/26/261 directives. Power consumption is measured in the operating mode with the display on and the meter is in the ready state. Power consumption is measured in the ready state. Power consumption is measured in the ready state. Power consumption is measured in the ready state.

Especificaciones de salida	
Salida de pulso	1000 impulsos/kWh. Proporcional a la energía activa medida (EN62053-31)
Salida puerto Modbus	Protocolo Modbus RTU (EN13757-1), 3 frames
Salida puerto M-Bus	Protocolo M-Bus (EN13757-1), 3 frames

Especificaciones LED	
Duración	90 ms
Color	Rojo y naranja

Características generales	
Bornes	1, 2, N, sección 2,5-6 mm <sup>2</sup> , par 1,1 Nm
	3-8, sección 1,5 mm <sup>2</sup> , momento 0,4 Nm
	Front: IP51, bornes: IP20
Dimensiones	Véase Fig. 16.

### REPARACIÓN Y GARANTÍA

Si se producen fallos o anomalías en el funcionamiento o quiere conocer las condiciones de garantía póngase en contacto con GARO S.A. distribuidor de su país.

### DA: Egenskaber

Elektriske specifikationer	
Effekt	Selv-alimentet (via målt spænding)
Forbrug	≤ 1 W, 0,8 VA
Navnstrøm	45 A
Maksimal strøm (kontinuerlig)	45 A
Startstrøm	0,2 A
Driftfrekvens	ANSI 120 V ac, fra -30% til +20%
Frekvens	50/60 Hz (ifølge af MID certificering)

Nøjagtighedsklasse	
Side	Aktiv energi: Klasse 1 (EN62053-21) / Klasse 0 (EN62053-22)
	Reaktiv energi: Klasse 2 (EN62053-23)

### Specifikationer for driftsomgivelserne

Driftstemperatur	
Drift	De -25 a +55 °C (de -13 a +131 °F) (ifølge af MID certificering)
Opbevaring	De -30 a +80 °C (de -22 a +176 °F)
Luftfugtighed	De 0 a 90% (uden kondensering ved 40 °C)
Omgivelser	Kun beregnet til indendørs brug.

### Specifikationer for LED-lamper

Klemmer	
1, 2, N	Kvadratisk 2,5-6 mm <sup>2</sup> , moment 1,1 Nm
3-8	Rund 1,5 mm <sup>2</sup> , moment 0,4 Nm
Front: IP51, klemmer: IP20	

### REPARATION OG GARANTI

Hvis der opstår fejltilfælde og defekter, eller hvis der er brug for oplysninger om garantien, bedes du kontakte den lokale GARO-forhandler eller afdeling.

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