

HGR43 Series

Quad Load Three Phase easywire® Multifunction DIN Rail Energy Meter (MID Certified)

- Advanced net load type monitoring in Power and Lighting board applications
- Advanced Multi mode operation to suit orientation and load types being monitored in Distribution boards
- Simple mode of operation selection
- Energy pulse LED
- True RMS measurement
- High definition white backlit LCD display
- Modbus communication
- Four module DIN rail mounted



Product Description

The HGR43 series are part of the **easywire®** family of meters. This series of meters are optimised for the application of UK style Power and Lighting Distribution boards. The meter provides net energy values for each load type (group of circuits). Advanced features include multi-mode operation, to better match application requirements. A high efficiency white backlit LCD display provides clear indication of measured values in all light conditions. Energy data is labelled on the meter as SM (Small Power), LL (Lighting Circuits) SE (Services) and SYS (System / total energy). Push-buttons on the front of the meter allow the user access to the display page required. The meter is available in two version with RS485 Modbus communication (RJ12 - In and Out). The unit is housed in a compact four module width housing suitable for DIN rail mounting.

Displayed Parameters

Per load group and total system

Voltage - L-L, L-N and average

Current - Per phase and average

Power Factor - per phase and average

Frequency

Power - Active, Reactive and Apparent (per phase and total)

Power Max. demand - Active and apparent power.

Energy - Active, reactive and apparent (per load and total)



Communications	Part Number
MID Certified Quad Load Input with RS485 Modbus Output	HGR43

Display

Display Type	LCD, high definition with white back-light
Digit height	6.35mm (displayed parameter)
Page scrolling	Manual by front key / or auto scroll mode
Displayed parameters and accuracies	Voltage 0.5% of full scale Current 0.5% of full scale Frequency 0.1% of full scale (L-N >20V) Power factor 1% of unity Active power 1% Reactive power 1% Apparent power 1% Active Energy Class 1 (IEC/EN62053-21), Class B (IEC/EN50470) Reactive Energy Class 2 (IEC/EN62053-23)
Energy maximum display	9999999
Resolution	0.01K, 0.1K, 1K, 0.01M, 0.1M (depending on CT ratio & VT ratio)

Programming

Parameters that can be changed using programming menu	Number of Channels : 4 or 12 Network Selection : 3PH4W or Single Phase (L1, L2 or L3) CT Primary current - Load 1, Load 2, Load 3, Load 4, CT (each load independently settable) VT primary voltage VT secondary voltage Communication address Communication speed (Baud) Communication Parity Communication number of stop bits Back-light time-out period Demand period (for integration) Pulse duration Pulse output (kWh) Reset to Factory Default Reset Energy and Maximum Demand Reset Active Energy Reset Reactive Energy Reset Apparent Energy Reset Maximum Current Reset Maximum Active Power Reset Minimum Active Power Reset Maximum Reactive Power Reset Minimum Reactive Power Reset Maximum Apparent Power
Programming access	Password protected (user selectable)
Memory retention	Non volatile memory

Modes of operation

Mode 1 -	<ul style="list-style-type: none"> - Factory default setting - Small Power (SP) circuits - lower section of Distribution board Lighting (LL) circuits - - middle section of Distribution board Mechanical Services (SER) - Top section of the - Distribution board
Mode 2 -	<ul style="list-style-type: none"> - Selectable option as an alternative board configuration in meter settings Lighting (LL) circuits - - lower section of Distribution board - Small Power (SP) circuits middle section of Distribution board Mechanical Services (SER) - - Top section of the Distribution board
Mode 3 -	<ul style="list-style-type: none"> - Selectable option in meter settings as an alternative board configuration where there is no requirement for Mechanical service loads - Small Power (SP) circuits - lower section of Distribution board - Lighting (LL) - Combined middle and upper section of the Distribution board
Mode 4 -	<ul style="list-style-type: none"> - Selectable option in meter settings as an alternative board configuration where there is no requirement for Mechanical service loads - Lighting (LL) circuits - lower section of Distribution board - Small Power (SP) - Combined middle and upper section of the Distribution board

Note: Modbus registers stay the same irrespective of Mode of operation – see HGR43 meter user guide for further information on Modbus registers

Input

Connection (1ph, 3ph etc., configurable)	Single phase (selectable L1, L2 or L3 CT voltage reference), Three phase four wire Single phase 12 x CTs on same phase
Input voltage range	3 x 85...240V (L - N), 3 x 147...415V (L - L)
Voltage Rated Burden	<8VA
Nominal current input	4 x easywire ® input - 1A (330mV)
Max current (Imax)	easywire ® - 1.2A (396mV) Nominal x 1.2
Current Rated Burden	N/A (easywire ® input)
Starting current	2mA (0.66mV)
Short time overcurrent	30 x Imax to IEC/EN62053-21 + 23
Impulse voltage withstand	6kV 1.2/50µs 0.5J
AC voltage withstand	4kV 50Hz for 1 min
CT primary current	5...6000A
VT primary voltage	100...600V
Frequency	50Hz

Auxiliary Supply

Voltage range	Self supplied from measuring input
Operating frequency	See input section
Power consumption	See input section

Outputs

Communication - Modbus	
Communication type	RS485
Communication protocol	Modbus
Address	1...255
Number of bits	8bits
Parity	None, odd, even
Baud rate	300, 600, 1200, 2400, 4800, 9600, 19200
Required response time to request	≤100ms
Number of meters connected on the bus	32 (up to 255 with RS485 repeater)
Max distance from Master device	500M

Insulation

Installation category	III
Pollution degree	2
Insulation voltage rating	300V (L-N)

Environmental Conditions

Reference temperature	23°C ±2°C
Specified temperature operating range	-10°C...+55°C
Storage temperature	-20°C...+75°C
Relative humidity	0...85%, non condensing
Mechanical environment	M1
Electromagnetic environment	E2

Mechanical

Housing	
Housing	4 module DIN 43880
Mounting	Snap-on 35mm rail
Tamper sealing	Meter housing (by means of a tamper evident seal).
Housing material	Self-extinguishing polycarbonate (UL94 V-0)
Protection degree (IEC/EN60529)	IP20 (terminals), IP51 (front of housing)
Weight	<240g
Termination	
Current input terminal type	4 x RJ45 connection
Max. wire size	N/A
Voltage input terminal type	Pluggable terminal block - Screw clamp type
Max. wire size	0.5...2.5mm ²
Voltage output terminal type	Pluggable terminal block - Screw clamp type
Max. wire size	0.5...2.5mm ²
Voltage output terminal type	Pluggable terminal block - Screw clamp type
Max. wire size	N/A

Conformity

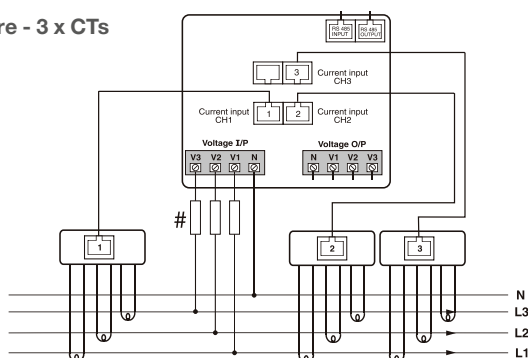
Electromagnetic compatibility	IEC/EN61326-1, IEC/EN55011 Class A, IEC/EN61000-4-2, -3, -4, -5, -6, -8, -11 IEC/EN50470-1/3
Accuracy and functionality	IEC/EN62053-21, IEC/EN62053-23
Safety	IEC/EN61010, IEC/EN62053-31

Wiring Diagrams

Note: # All fuse types : 0.5A Class CC UL type
0.5A fast acting 600V

Max. 3A (Actual rating is dependent on the number of meters connected to the voltage supply and must be determined during system design).

3 Phase 4 Wire - 3 x CTs



Communications	Part Number
MID Certified Quad Load Input with RS485 Modbus Output	HGR43