

Data sheet

Analog input module

for MULTICAL® 603

- Two analog inputs, selectable as 4...20 mA or 0...10 V
- Individual scaling of measuring ranges
- Individual setup of measuring unit and decimal point
- Selectable update interval from 1 second to 1 hour
- Analog inputs are galvanically separated from the meter
- An external 24 VAC/VDC supply for the sensors is required



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Description

HC-003-41 is an all-round analog input module for use in the MULTICAL® 603 energy meter. The analog signals can come from sensors, which are often used in industry, or from sensors that are used in building automation, e.g. temperature, pressure, air velocity, air energy content and air humidity sensors. Typically, sensors emit 4...20 mA or 0...10 V signals. The module writes the values of the analog signals to the P1 and P2 registers of the meter. The analog signals can be read from the meter display, and at the same time, they are logged in the memory of the meter. The analog signals can also be remotely read via the many various communication modules that are available for MULTICAL® 603. In addition to the scaling of the min. value, max value and decimal position of the signal inputs, various measuring units can also be allocated, e.g. bar, m/s, %RH, etc. The reading speed of the analog inputs can be selected between a number of intervals ranging from 1 second to 1 hour. A quick reading enables the analog signals to be used for control and regulation purposes. The analog inputs are galvanically separated from the meter. The module supplies the connected sensors via an isolated power supply, which also supplies the module itself.

Applications

The module can be used at places where there is a need for connecting 1 or 2 external sensors and where you want to read their measuring values in the meter display or remotely read the values via wired communication modules such as M-Bus, Modbus, BACnet and LON or wirelessly via wireless M-Bus and Kamstrup Low Power Radio and Kamstrup High Power RadioRouter.

Installation

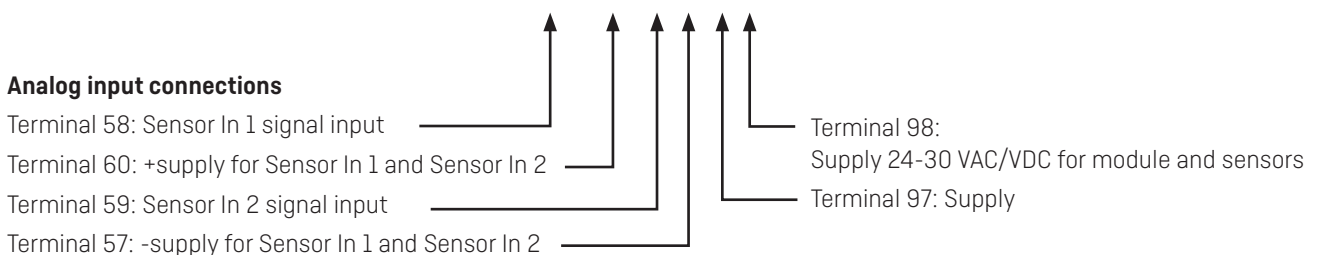
The module is mounted in one of the module connectors of the meter. If there is a need for adjusting the module's configuration, this can be done by using METERTOOL HCW via the optical eye or by using a module programming cable.

Note: There can only be 1 analog input module in the meter.

Cable connections

Cable size

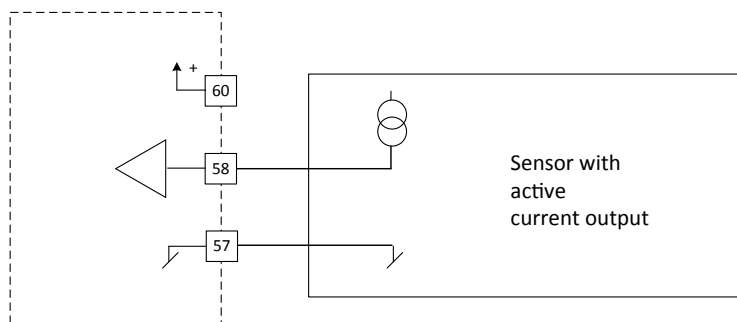
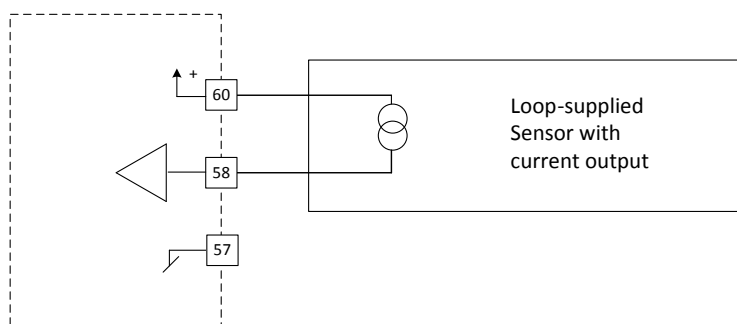
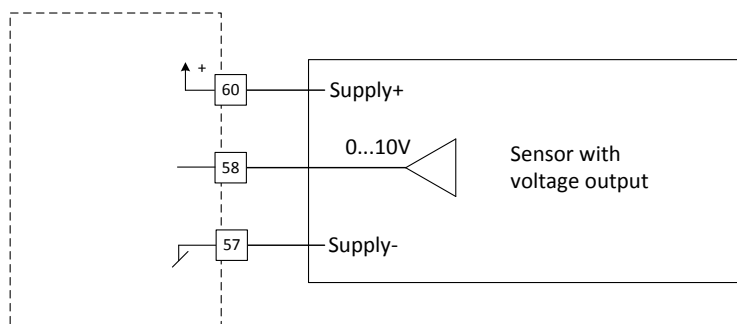
Max cable size 1.5 mm²



Description

Examples of connection of sensors to input 1.

Depending on sensor type, there may be a difference in how to connect them to the terminals of the module.



Technical data

Physical

Application For installation in MULTICAL® 603 only

Analog inputs

Measuring ranges 4...20 mA or 0...10 V
 Measuring accuracy Better than 0.1 %
 Galvanic separation According to PTB-A50.1

Supply of sensors

Voltage 15 VDC $\pm 5\%$
 Current ≤ 50 mA

External supply

Voltage 24 VDC/VAC $\pm 30\%$
 Recommended current ≥ 100 mA

Environment

Operating temperature 5 °C - 55 °C
 Humidity 25 - 85 %RH non-condensing

Programming

Configuration Via optical eye or the multipole connector on the module
 Firmware update Via METERTOOL HCW

Marking/approvals

CE and EN 1434 together with the type approval of MULTICAL® 603.

Ordering

Description

Analog input module
 Transformer 230/24 VAC
 USB configuration cable for H/C modules
 Optical read-out head with USB plug
 Optical read-out head with RS-232 D-SUB 9F
 METERTOOL HCW

Order no.

HC-003-41
 6699-403
 6699-035
 6699 -099
 6699-102
www.kamstrup.com

Configuration

Configuration of the module can be done when ordering or via METERTOOL HCW.

	XX	YY	ZZZ
Module type			
Analog input module	41	00	100
Input 1 and Input 2 signal type			
4...20 mA		00	
0...10 V		10	

Parameters

The following parameters can be adapted to input 1 and input 2:

0 % value	The value of the signal when the current is 4 mA or the voltage is 0 V
100 % value	The value of the signal when the current is 20 mA or the voltage is 10 V
Decimal	It is possible to select between 3, 2, 1 or none decimals
Measuring unit	The following units are selectable:

Measuring unit	Description
Bar	Pressure
°C	Temperature
%RH	Relative humidity
g/kg	Absolute humidity
O ₂ %	Oxygen %
m/s	Velocity [air]
kJ/kg	Enthalpy, energy content of air
pH	pH, acidity
none	Numeric value

Reading speed
It is possible to choose between the following intervals, which are common to both inputs:





1 second	2 minutes
2 seconds	5 minutes
5 seconds	10 minutes
10 seconds	15 minutes
15 seconds	30 minutes
30 seconds	60 minutes
60 seconds	

Display readings

Current values

The current values can be read from the energy meter's display by choosing the TECH loop.

Display examples:

Menu	Menu index	Information	Display example
2-004-2	P1	Current value of input 1 Example: Pressure with 2 decimals	 The display shows '2.64' in large digits. Above it, 'P1' is visible. Below the digits, 'bar' is shown as the unit. The background shows various menu options like 'TEMP', 'MID', 'MAX', 'TA', 'EL', 'VOL', 'LOG', 'SP', 'TL'.
2-004-2	P1	Current value of input 1 Example: Temperature with 1 decimal	 The display shows '146.8' in large digits. Above it, 'P1' is visible. Below the digits, '°C' is shown as the unit. The background shows various menu options like 'TEMP', 'MID', 'MAX', 'TA', 'EL', 'VOL', 'LOG', 'SP', 'TL'.
2-005-2	P2	Current value of input 2 Example: O ₂ % with 2 decimals Note that unit is not displayed.	 The display shows '19.70' in large digits. Above it, 'P2' is visible. No unit is displayed. The background shows various menu options like 'TEMP', 'MID', 'MAX', 'TA', 'EL', 'VOL', 'LOG', 'SP', 'TL'.
2-005-2	P2	Current value of input 2 Example: pH with 3 decimals Note that unit is not displayed.	 The display shows '7.436' in large digits. Above it, 'P2' is visible. No unit is displayed. The background shows various menu options like 'TEMP', 'MID', 'MAX', 'TA', 'EL', 'VOL', 'LOG', 'SP', 'TL'.

Display readings

Module information

The module information can be read by choosing the TECH loop on the MULTICAL® meter.

Module placed in module slot 1: Choose menu 2-101 in the TECH loop

Module placed in module slot 2: Choose menu 2-201 in the TECH loop

The following module information is available:

Menu	Menu index	Information	Display example
2-x01	31	Module configuration	
2-x01-1	32	Module firmware and revision	
2-x01-2	33	Module serial number	
2-x01-3	34	Module status * 0: Ok 1: No configuration 2: Internal error 4: No 24 V supply	

* There are 3 sources of errors that are weighted with each of their values. The sum of these 3 error values is shown in Module status.
If Module status shows other values than 0 and 4, the module must be sent in for repair.

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