kamstrup

Data sheet

Wireless M-Bus inputs (In-A, In-B) outputs (Out-C, Out-D) 868 MHz

MULTICAL® 403
MULTICAL® 603
MULTICAL® 803

- Wireless M-Bus standard EN 13757-4:2019
- OMS Primary Communication, version 4.0.2
- Configurable datagrams
- Readout of loggers
- Up to 16 years battery lifetime
- Clear marking of module type

M-Bus wireless

Contents

Introduction

A set of high-performance Wireless M-Bus modules has been introduced for the MULTICAL® 403, MULTICAL® 603 and MULTICAL® 803 energy meter family. A new radio design with a focus on long battery life and configurable datagrams enables the Wireless M-Bus modules to always be adapted to your application.

The modules fulfil the requirements of the M-Bus standard EN 13757-4:2019 as well as the OMS Primary Communications version 4.0.2, which ensure readability of common Wireless M-Bus reading systems.

Applications

The Wireless M-Bus modules are designed with a focus on high flexibility to meet every conceivable application.

Billing

All data relevant to billing is supported in all meters.

Configuration

It is possible to order the modules fully configured with one of the numerous datagrams.

If you wish to change the datagram, this can be done with a configuration cable and METERTOOL.

Customized datagrams

With the flexibility of the M-Bus modules, Kamstrup can offer our customers to customize the datagrams to their specific needs.

Installation

The module is easily mounted in a free module slot in the meter.

Normally, the module requires no configuration.

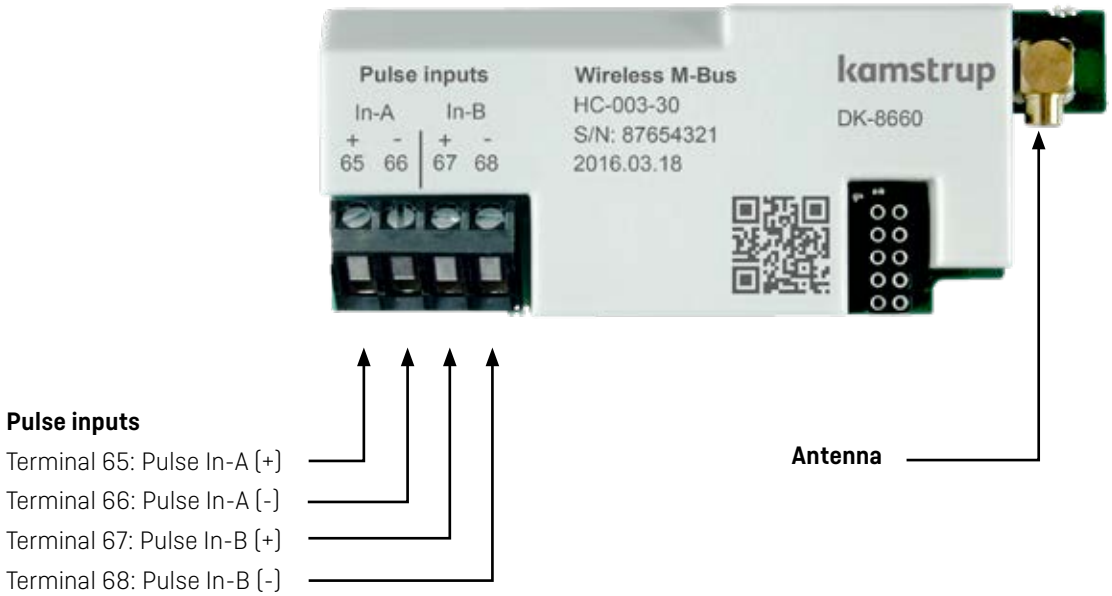
The M-Bus modules can be used in both battery- and mains-supplied meters.

Cable connections

Terminals

Max cable size 1.5 mm²

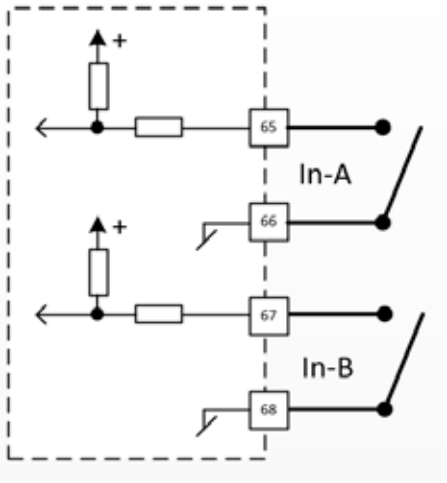
HC-003-30: Wireless M-Bus, inputs (In-A, In-B), 868 MHz



The module is equipped with two pulse inputs, In-A and In-B, to collect and accumulate pulses, e.g. from water and electricity meters.

The pulse inputs are physically placed on the module. However, the accumulation and logging of values are performed by the MULTICAL® calculator.

When installing a module with pulse inputs in slot 2 of MULTICAL® 603 and MULTICAL® 803, the pulse inputs will be registered in the meter as In-A2 and In-B2.

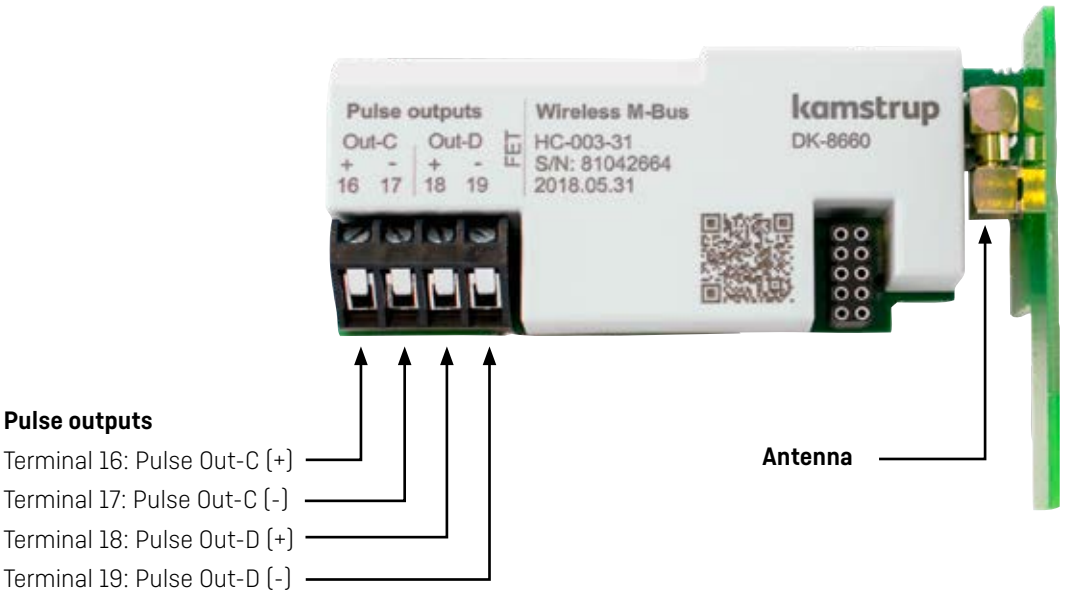


Cable connections

Terminals

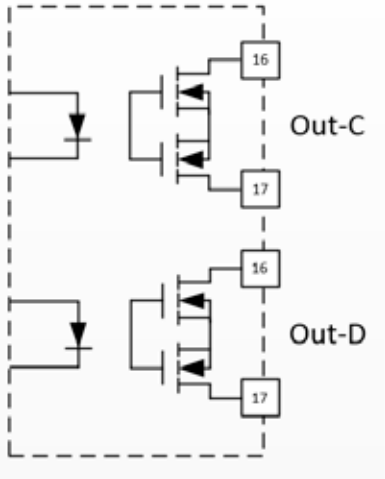
Max cable size 1.5 mm²

HC-003-31: Wireless M-Bus, outputs (Out-C, Out-D), 868 MHz



The module has two configurable pulse outputs, Out-C and Out-D, which are used for pulsing out selected registers from the MULTICAL® calculator.

The pulse outputs are physically placed on the module, but the pulses are generated by the MULTICAL® calculator.



Antenna

The radio-based module must have either an internal or external antenna connected.

When mounting an external antenna, please ensure that the antenna cable is arranged in such a manner that damage of the cable is prevented when the meter is assembled.

Functions

The Wireless M-Bus modules support:

- One- and two-way communication
- Walk-by/Drive-by reading
- Fixed Network
- Reading of meter's log
- Upload of datagram configuration
- Upload of firmware

The Wireless M-Bus can:

- Be configured for a wide range of datagrams
- Support both C-mode and T-mode communication
- Exchange data at high rates while maintaining a low battery consumption

Two-way communication enables:

- Changing configuration from Walk-by to Fixed Network
- Changing between C-mode and T-mode
- Changing the datagram to cover more application needs

M-Bus datagrams

The Wireless M-Bus modules can be used in the energy meters MULTICAL® 403, MULTICAL® 603 and MULTICAL® 803.

Note, however, that there are registers in MULTICAL® 803 that are not available in MULTICAL® 403 and 603, and that some registers in MULTICAL® 603 are not available in MULTICAL® 403. Likewise, the meter configuration influences which registers are available. If the meter does not have the relevant register, the module simply refrains from sending this register.

The datagram can be changed using METERTOOL via a USB configuration cable.

Examples of datagrams

30-10-101: C1, Drive-by, Standard	30-11-107: C1, Fixed Network, In-A	30-24-401: T1 OMS, 868Mhz,12 s
Heat energy E1	Heat energy E1	Heat energy E1
Cooling energy E3	Cooling energy E3	Cooling energy E3
Cooling energy E3	Cooling energy E3	Cooling energy E3
Energy E8	Pulse input A1	Volume V1
Energy E9	Pulse input B1	Info bits
Volume V1	Volume V1	Flow V1 actual
Flow V1 actual	Flow V1 actual	t1 actual (2 decimals)
t1 actual (2 decimals)	t1 actual (2 decimals)	t2 actual (2 decimals)
t2 actual (2 decimals)	t2 actual (2 decimals)	Power actual
Info bits	Info bits	Date
Date		Operating hours
Heat energy E1		t1-t2 diff. temp. (2 decimals)
Cooling energy E3		Date
Cooling energy E3		Heat energy E1
Volume V1		Cooling energy E3
Date		Cooling energy E3
		Volume V1

For a complete overview of datagrams, see Logger Profiles and Datagrams.

Technical data

Physical

For installation in	MULTICAL® 403, MULTICAL® 603 and MULTICAL® 803

Mechanical data

Dimensions (L x W x D)	90 x 35 x 14 mm
Weight	< 45 g

MULTICAL® supply

	Battery or AC supply

Radio communication

Transmit frequency	868,950 MHz
Receive frequency	869,525 MHz
Protocol	Wireless M-Bus, C- and T-modems 13757-4:2013
Transmission interval	16/96 seconds
Transmission power	10/25 mW
Range	Internal antenna <300 m External antenna <600 m

Pulse inputs

Input type	Contact input
Open voltage	3.6 V
Current	≤ 5 µA
Max cable length	10 m

Pulse outputs

Output type	Opto-FET
External voltage	5...45 VAC/VDC
Current	1...50 mA
R_{ON}	≤ 40 Ω
Max cable length	25 m

Environment

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

Markings/approvals

CE, MID, RED together with the type approval of MULTICAL® 403, MULTICAL® 603 and MULTICAL® 803

Compatibility

EN13757	M-Bus standard

Programming

Configuration	Via the multipole connector on the module using METERTOOL HCW
Firmware	C2 via READy Converter

Battery lifetime

Expected	16 years (D-Cell) Depends on the selected module configuration

Ordering

Description	Order no.
Wireless M-Bus, inputs (In-A, In-B), 868 MHz	HC-003-30
Wireless M-Bus, outputs (Out-C, Out-D), 868 MHz	HC-003-31
Internal antenna	6699 485
External antenna, Mini-Triangle	6699 448
USB configuration cable for H/C module	6699 035
Infrared optical read-out head w/USB A-plug	6699 099
METERTOOL HCW	www.kamstrup.com
USB Meter Reader	www.kamstrup.com
READy	www.kamstrup.com

Configuration

	HC 003	XX	-	YY	-	ZZZ
Product type of module						
Wireless M-Bus, inputs (In-A, In-B), 868 MHz		30		00		100
Wireless M-Bus, outputs (Out-C, Out-D), 868 MHz		31				
System configuration						
C1, 868 MHz, 16 s interval, Walk-by/Drive-by, Frame format B				10		
C1, 868 MHz, 96 s interval, Fixed Network, Frame format B				11		
C1, 868 MHz, 16 s interval, 25 mW, Frame format B				12		
T1 OMS, 868 MHz, 16 s interval, Walk-by/Drive-by, Frame format A				20		
T1 OMS, 868 MHz, 15 min. interval, Fixed Network (MUC), Frame format A				21		
				...		
Datagram						
C1, Drive-by, Standard registers						101
C1, Drive-by, Alternative registers						102
C1, Fixed Network, Standard registers						103
C1, Fixed Network, target data						104
...						...
T1 OMS						201
T1, BS-compliant						202
T1 OMS, In-A + In-B						203
...						...
C1, Fixed Network, PDO						301
C1 ,Fixed Network, PDO + In-A						302
						...

This list of datagrams is not complete as new datagrams are added regularly.
An updated overview can be found here: Logger Profiles and Datagrams.

Displayed information

Module information can be read by selecting the "TECH loop" on the MULTICAL® display.

Module in module slot 1: Select menu 2-101 in the "TECH loop".

Module in module slot 2: Select menu 2-201 in the "TECH loop".

Module in module slot 3: Select menu 2-301 in the "TECH loop".

Menu	Menu index	Information	Display example
2-x01	31	Module type and configuration	
2-x01-1	32	Module firmware and revision	
2-x01-2	33	Module serial number	

Wireless M-Bus, inputs (In-A, In-B), 868 MHz
Wireless M-Bus, outputs (Out-C, Out-D), 868 MHz

MULTICAL® 403
MULTICAL® 603
MULTICAL® 803

Kamstrup A/S • 58101475_H2_GB_09.2020

Kamstrup A/S
Industrivej 28, Stilling
DK-8660 Skanderborg
T: +45 89 93 10 00
F: +45 89 93 10 01
info@kamstrup.com
kamstrup.com