

Technical description

METER TOOL HCW
Heat/Cooling
MULTICAL[®] generation 3
Modules
ULTRAFLOW[®] X4
Pulse Divider



Contents

1	Introduction	5
2	Communication units.....	6
3	Supported products.....	9
4	System requirements.....	11
5	Registration and installation.....	11
6	Select mode.....	12
7	Start	13
8	Settings	15
8.1	Change language.....	15
8.2	Set COM port	15
8.3	Update program.....	16
8.4	Update database	16
8.5	Backup or restore databases.....	17
8.6	Install the USB driver.....	17
9	MULTICAL® generation 3	18
9.1	Introduction	18
9.1.1	Display segments	18
9.1.2	General reading	19
9.1.3	General configuration.....	19
9.2	Meter window.....	20
9.2.1	Meter details.....	21
9.2.2	Configuration	21
9.2.3	Time/date	34
9.2.4	Pre-set In-A/in-B	34
9.2.5	Controlled output	34
9.2.6	Communication On/Off	34
9.2.7	Leave transport mode.....	35
9.2.8	Bus address.....	35
9.2.9	Reset	36
9.2.10	Modules.....	36
9.2.11	Autointegration.....	37
9.2.12	Verification.....	38
9.2.13	Set the verification unit.....	39
9.2.14	Calibrate verification unit	39
9.2.15	Certificate	40

METER TOOL HCW

9.2.16	Optical interface.....	40
9.2.17	Hide loggers	40
10	Modules for MULTICAL® generation 3 meters	42
10.1	Introduction.....	42
11	ULTRAFLOW® X4.....	43
11.1	Introduction.....	43
11.2	The ULTRAFLOW® X4 box	45
11.2.1	Meter details	46
11.2.2	Meter type	46
11.3	Pulse Config. DN150-300.....	48
11.4	Print label DN15-40	49
11.5	Print label DN15-300	50
12	Pulse Divider	52
12.1	Introduction.....	52
12.2	The Pulse Divider 66-99-907 box.....	53
12.2.1	Meter type	54
12.2.2	Pulse Divider.....	55
12.2.3	Print Label	56
12.3	The Pulse Divider 66-99-607 box.....	58
12.3.1	Pulse Divider and printing of label.....	59

1 Introduction

METERTOOL HCW (Heat, Cooling, Water) is a license-free program that enables configuration and verification of Kamstrup's heat, cooling and water products. These products include thermal energy meters, flow sensors, communication modules, water meters and many more. To get METERTOOL HCW, it is necessary to register on Kamstrup's website, after which the program can easily be installed on a computer. Based on the registration, Kamstrup performs a validation before METERTOOL HCW is handed over. In addition to METERTOOL HCW, you must also have a Kamstrup communication unit, such as an optical head, before you can configure your meter. The communication interface establishes the communication between your Kamstrup product and METERTOOL HCW.

This document describes METERTOOL HCW when used with MULTICAL® 403/603/803 as well as ULTRAFLOW® X4 and Pulse Divider.

2 Communication units

It is necessary to use a communication unit for METER TOOL HCW to be able to establish a connection to a Kamstrup product. Read more about the individual communication units below.

USB optical head

With a USB optical head, see *Figure 1*, METER TOOL HCW can connect to all the supported Kamstrup products with an optical interface. To connect METER TOOL HCW to a product, it is necessary to place the optical head over the optical interface in the right orientation. This is due to the fact that the diodes in the optical head must be positioned correctly facing the diodes of the product before METER TOOL HCW can communicate with the product.

The USB optical head is available on article number 6699-099.



Figure 1 USB optical head

Bluetooth optical head

In addition to a USB optical head, a Bluetooth optical head is also available for situations where a wireless connection is preferred. Like the USB optical head, the Bluetooth optical head can read HCW Kamstrup products with an optical interface.

The Kamstrup Bluetooth optical head is available on article number 6696-005.



Figure 2: Bluetooth optical head

Metal plate for optical head

To retain the optical head on the calculator case, a metal plate can be mounted on MULTICAL® 302/403/603/803.

The metal plate for the optical head is available on article number 6699-042 (bag with 20 pcs).



Figure 3: Metal plate for optical head

USB module cable

With the USB module cable, see *Figure 4*, METERTOOL HCW can connect to all supported Kamstrup modules.

The USB module cable is available on article number 6699-035.



Figure 4: USB module cable

USB flow sensor cable for ULTRAFLOW® 14/24/34 and ULTRAFLOW® 54 (65-5-XXAX-XXX, 65-5-XXCX-XXX, 65-5-XXJX-XXX)

With this USB flow sensor cable, see *Figure 5*, METERTOOL HCW can be connected to ULTRAFLOW® 54 (A/C/J), and ULTRAFLOW® 14/24 via adapter 6699-002 and ULTRAFLOW® 34 via adapter 6699-006. In addition, the cable can be used for Pulse Divider (6699-907).

The USB flow sensor cable can be ordered on article number: 6699-141



Figure 5: USB flow sensor cable (6699-141)

USB flow sensor cable for ULTRAFLOW® (65-5-XXHX-XXX)

With this USB flow sensor cable, see *Figure 6*, METERTOOL HCW can be connected to ULTRAFLOW® 54 (H).

The USB flow sensor cable can be ordered on article number: 6699-024



Figure 6: USB flow sensor cable (6699-024)

METER TOOL HCW

Serial flow sensor cable for Pulse Divider 66-99-607

With this serial flow sensor cable, see *Figure 7* METER TOOL HCW can connect to Pulse Divider 66-99-607. Note that the Sub-D connector can be connected to the USB port of the computer via a USB Sub-D adapter.

The serial flow sensor cable can be ordered under item number 6699-140.



Figure 7: Serial flow sensor cable (6699-140)

3 Supported products

METERTOOL HCW supports a wide range of products listed in the tables below. This technical description includes only the use of METERTOOL HCW for MUTICAL® generation 3 meters. METERTOOL HCW for use with other products is described in the technical description of the individual product.

Thermal energy meters

Product	Technical description (doc. no.)
MULTICAL® 302	5512-1333
MULTICAL® 402	5512-741
MULTICAL® 403	5512-1688
MULTICAL® 601	5512-300
MULTICAL® 602/6L2/6M2/SVM S6	5512-930
MULTICAL® 603	5512-2028
MULTICAL® 801	5512-570
MULTICAL® 803	5512-2359

Flow sensors

Product	Technical description (doc. no.)
ULTRAFLOW® 14	-
ULTRAFLOW® 24	5512-1035
ULTRAFLOW® 34	5512-384
ULTRAFLOW® 44	5512-2599
ULTRAFLOW® 54 DN15-125	5512-384
ULTRAFLOW® 54 DN150-300	5512-384

Modules

Product	Description	Note	Technical description (doc. no.)
HC-003-10	Data Pulse, inputs (In-A, In-B)		-
HC-003-11	Data Pulse, outputs (Out-C, Out-D)		-
HC-003-20	Wired M-Bus, inputs (In-A, In-B)		5512-1890
HC-003-21	Wired M-Bus, outputs (Out-C, Out-D)		5512-1890
HC-003-22	Wired M-Bus, Thermal Disconnect	☞ 3IE ☞	5512-1890
HC-003-30	Wireless M-Bus, inputs (In-A, In-B), 868 MHz		5512-2167
HC-003-31	Wireless M-Bus, outputs (Out-C, Out-D), 868 MHz		5512-2167
HC-003-40	Analog outputs 2 x 0/4...20 mA	☞ 3IE	-
HC-003-41	Analog inputs 2 x 4...20 mA / 0...10 V	☞ 3IE	-

METER TOOL HCW

Product	Description	Note	Technical description (doc. no.)
HC-003-43	PQT Controller	⚡ 3E	-
HC-003-50	Low Power Radio, inputs (In-A, In-B), 434 MHz	🔧	-
HC-003-51	Low Power Radio GDPR, inputs (In-A, In-B), 434 MHz	⚡	-
HC-003-56	NB-IoT, inputs (In-A, In-B)	⚡	-
HC-003-60	LON TP/FT-10, inputs (In-A, In-B)	⚡	-
HC-003-66	BACnet MS/TP, inputs (In-A, In-B)	⚡	-
HC-003-67	Modbus RTU, inputs (In-A, In-B)	⚡	5512-2095
HC-003-80	2G/4G Network, inputs (In-A, In-B)	⚡	-
HC-003-82	Modbus/KMP TCP/IP, inputs (In-A, In-B)	⚡	5512-2095
HC-003-84	High Power Radio Router, inputs (In-A, In-B), 444 MHz	⚡	-
HC-003-085	High Power Radio Router GDPR, inputs (In-A, In-B), 444 MHz	⚡	-

- ⚡ Meter must be AC supplied
- ⚡ Meter must be supplied with High power supply
- 3E Module requires external 24VDC/VAC
- 🔧 See Module datasheet for required coding in meter

Water meters

Product	Technical description (doc. no.)
flowIQ® 2100	5512-2015
flowIQ® 2101	5512-897
flowIQ® 2102	5512-897
flowIQ® 2103	5512-897
flowIQ® 2250	5512-2189
flowIQ® 3100	5512-1241
flowIQ® 3101	5512-2015
flowIQ® 3250	5512-2189
MULTICAL® 21	5512-896
MULTICAL® 62	5512-1035

Other products

Product	Technical description (doc. no.)
Kamstrup PressureSensor	(Being prepared)
Kamstrup Valve	5512-2247
READy Gateway	-
Pulse Divider 66-99-907	5512-2463
Pulse Divider 66-99-607	5512-043

4 System requirements

METER TOOL HCW can be installed on Windows computers. It requires as a minimum Windows 7 Home Premium SP1 or Windows 10 Home Premium. Furthermore, the computer must as a minimum have the following hardware specifications, see Table 1.

	Minimum	Recommended
RAM	1 GB	4 GB
Hard disk space	10 GB	20 GB
Resolution	1280 x 720	1920 x 1080
COM ports	1 x USB	1 x USB

Table 1: The minimum and recommended hardware specifications for the computer on which METER TOOL HCW must be installed.

In addition, administrator rights for the used computer are required to install and use METER TOOL HCW. The program can only be installed and used by the same user.

5 Registration and installation

On Kamstrup’s website, you can find a registration form which must be completed before METER TOOL HCW is handed over, see Figure 8.

A common installation guide for METER TOOL HCW and LogView HCW (a license-free log reading program) is also available on the website. Read the installation guide before you start to download and install METER TOOL HCW to ensure a correct installation.

METER TOOL and LogView
Complete the form to gain access to the programs.

NB! METER TOOL HCW and LogView HCW are not supplied to private individuals.

Company *
Name *
Address *
Postal code * City *
Country *
Telephone *
Email *

I would like to download: *
 METER TOOL
 LogView

Enter your Kamstrup Customer No.

If you are not a Kamstrup registered customer, please state the reason for using METER TOOL and/or LogView

Figure 8: Registration form

6 Select mode

After downloading and installing METER TOOL HCW, the window "Select mode" is shown during start-up, see *Figure 9*. Please note that the program language by default is English the first time you open the application after installation. This can be changed in "Settings", see section 8.

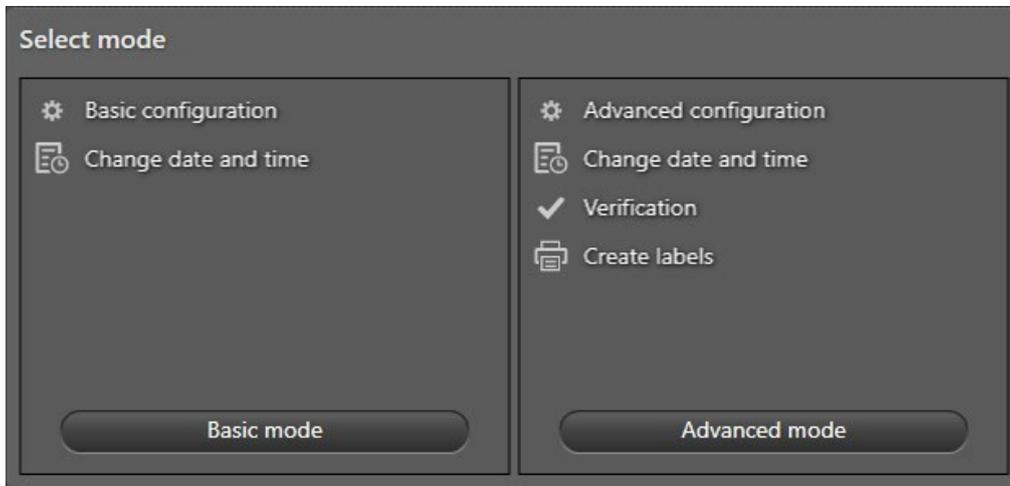


Figure 9: The "Select mode" box

In the "Select mode" window, you must select the mode to be used. The mode can be changed later in the start window in the "Connect to meter" area. The two modes are further described below.

Basic mode

This mode provides the basic functions to configure products and is simpler than "Advanced mode". Select this mode if you only need to see the basic functions, see *Table 2*. This technical description is based on "Advanced mode", since all the basic functions also are included in this mode. Press the "Basic mode" button, if the mode is sufficient.

Advanced mode

In addition to the basic functions, this mode includes extended functions to configure products such as verification and offline mode, see *Table 2*. To use the extended functions, select this mode by pressing the "Advanced mode" button. Generally, Kamstrup recommends using "Advanced mode".

	Basic mode	Advanced mode
Product information	✓	✓
Product configuration	✓	✓
Change of date and time	✓	✓
Communication set-up		✓
Pre-setting In-A and In-B		✓
Reset		✓
Labels		✓
Auto-integration		✓
Verification		✓

Table 2: The difference between basic mode and advanced mode.

7 Start

Once the mode is selected, the start window is displayed, and subsequently this window will be displayed when you start up METERTOOL HCW, see *Figure 10*.



Figure 10: Start window for METERTOOL HCW

In addition to the "Connect to meter" area, the start window has four buttons:  "Meter",  "Settings", "Help" and "About" and the Windows buttons: "Minimise", "Maximise" and "Close".

When starting up METERTOOL HCW, the  "Meter" button will be activated and light up yellow.

IMPORTANT: METERTOOL HCW is not necessarily updated after the installation. Therefore, it is recommended to check for updates to the application or product databases. This is done in settings, see section 8.3

METER TOOL HCW

Connect to meter

In addition to a description of how to connect to the various products, the "Connect to meter" area includes three buttons: "Connect", "Change mode" and "Offline mode", see *Figure 11*.

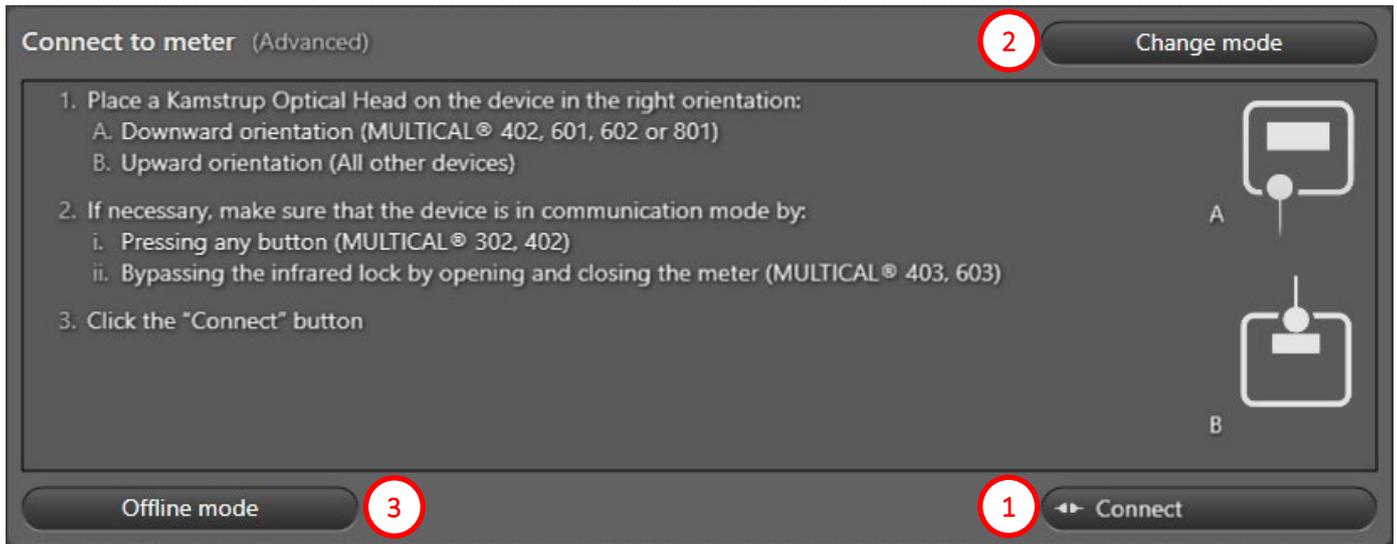


Figure 11: The "Connect to meter" box

Note: For products with an optical interface, the optical head must be positioned with the correct orientation. For the USB optical head, the cable must as a rule of thumb always point rectangular oriented away from the display, see illustration A and B in *Figure 11*. The Bluetooth optical head must also be placed in the right orientation, read more in section 9.1.2.

- 1** **Connect** Follow the instructions in the area to connect to your product, and then press the button "Connect". Read more in the specific product sections for more information on how to connect.
- 2** **Change mode** You can change between basic mode and advanced mode by pressing this button which returns to the "Select mode" window.
- 3** **Offline mode** If you press the "Offline mode" button, a menu with access to certificates and labels for the different meters will be shown. See section 9.2.15 if you would like more information on certificates. To exit the offline mode, press the "Exit offline mode" button.

Help

In this menu, there are two different tabs: "Contact" and "User manual".

Under the "Contact" tab, you will find links to Kamstrup's website and e-mail address to Kamstrup service. The "User manual" tab is a link to the technical descriptions for the supported products.

About

In this area, you will find the program version and revision number for METER TOOL HCW. In addition, you will see a list with revision numbers and descriptions of all the programs and product databases.

8 Settings

By pressing the  "Settings" button, the "Settings" window is displayed. The window contains a menu where updates, change of language and many more actions are available, see *Figure 12*.

The "Settings" window contains six buttons:

- Change language
- Set COM port
- Update program
- Update database
- Save or restore databases
- Install the USB driver

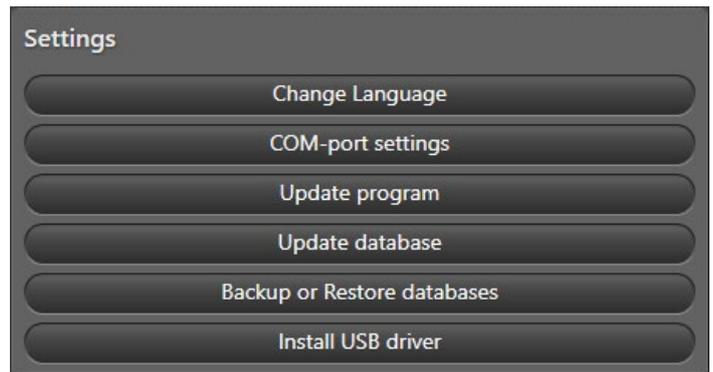


Figure 12: The "Settings" box

To return to the start window, press the  "meter" button.

8.1 Change language

In this window, you can change the language used in METERTOOL HCW. The following languages are supported:

- Czech
- Danish
- German
- English
- Spanish
- French
- Polish
- Russian
- Swedish

When you have chosen your language, press the "OK" button, and METERTOOL HCW restarts to change the language setting in METERTOOL HCW. Press the "Abort" button to return to the "Settings" window.



Figure 13: The "Select language" window

8.2 Set COM port

In this window, you can select the COM port that you want to use. METERTOOL HCW detects which devices are connected to which COM ports.

If several different types of communications interfaces are connected to the computer, a USB optical head can be selected to be default by selecting the box "Select Kamstrup USB if available".

The USB optical head (6699-099) and USB cable for module configuration (6699-035) are shown on the list as "Kamstrup USB Controller".

The Bluetooth optical head is included in the list as "Standard serial over Bluetooth link" and can appear on the list several times. If the Bluetooth optical head cannot communicate with the product, check if the correct COM port is selected. This can be done by a visual inspection of the "Connect" diode on the Bluetooth optical head, which must light up blue when communicating.

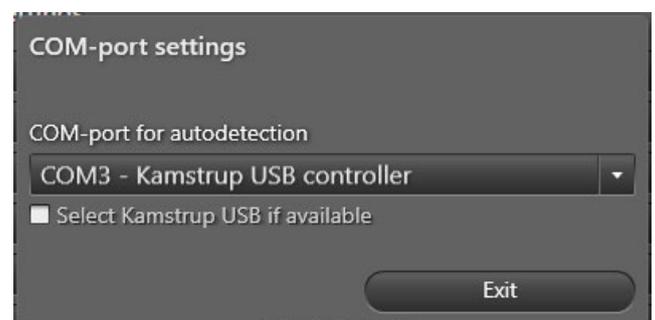


Figure 14: The "Set COM port" window

8.3 Update program

In this window, it is possible to verify that METER TOOL HCW is updated, see *Figure 15*.

If METER TOOL HCW is not updated, the "Update" button can be pressed. Check regularly that METER TOOL HCW is updated. By pressing the "Update" button, METER TOOL HCW will automatically download and install the latest update. After this, METER TOOL HCW will restart twice; the first time to install and the second time to verify that the installation has been successful.

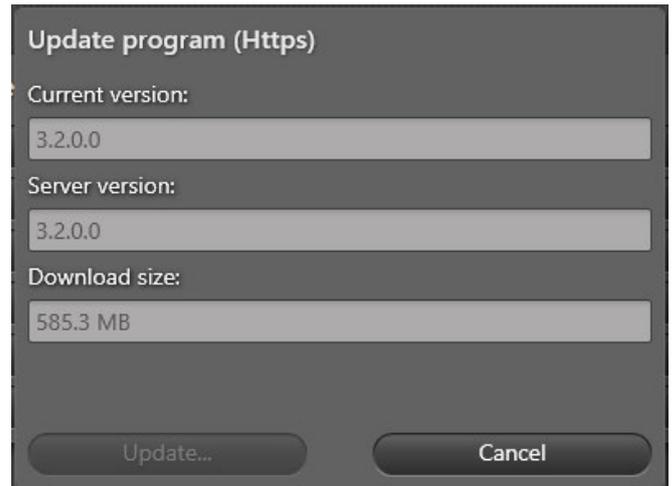


Figure 15: The "Update program" window

IMPORTANT: It is recommended to check for updates to the application or product databases on a regular basis.

8.4 Update database

METER TOOL HCW contains product databases for all the supported Kamstrup HCW products. The product databases contain information on valid configurations and will be updated regularly when new functions are added to the databases. In this window, it is possible to verify that the product databases are updated, see *Figure 16*.



Figure 16: "Update database" window

If a database is not updated, the "Update" button next to the current database can be pressed. As for program updates, it must be checked regularly that the current product databases are updated. When the relevant databases have been updated, press the 'Exit' button to return to the "Settings" window. Once the product databases are updated, METERTOOL HCW will restart two times; the first time to install and the second time to verify that the installation has been successful.

8.5 Backup or restore databases

In this window, the verification databases for heat/cooling meters can be saved or restored, see *Figure 17*. These databases are created the first time a verification is carried out on a MULTICAL® meter and contain the information from the performed verifications. The verification databases are updated whenever a verification is performed, and it is possible to export the verification databases.

In addition to the verification databases, an equipment database is created the first time a verification unit is connected to METERTOOL HCW. If a meter is connected to the verification unit subsequently, METERTOOL HCW can use the equipment databases and the verification databases making it possible to restore certificates if the equipment and verification database files are available.

Press the "Exit" button to return to the "Settings" window.

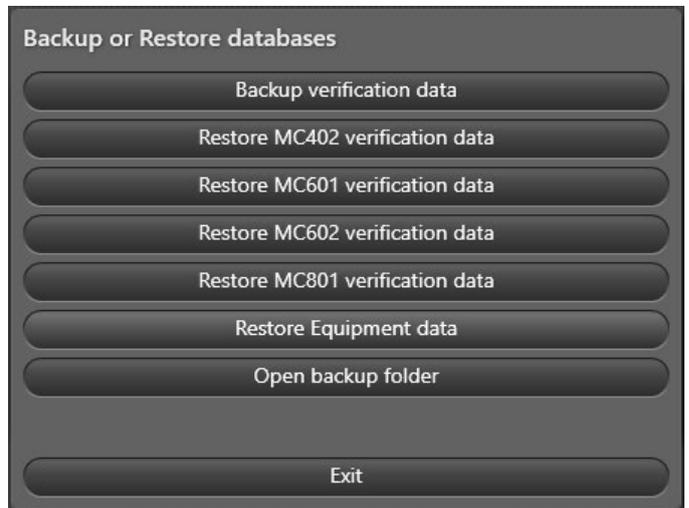


Figure 17: "Save or restore databases" window

8.6 Install the USB driver

In this window, it is possible to install, repair or uninstall Kamstrup USB driver, see *Figure 18*.



Figure 18: The window for the installation of the USB driver

9 MULTICAL® generation 3

9.1 Introduction

Flexibility has been a key value in the development of MULTICAL® generation 3 meters, and compared with previous MULTICAL® generations, it has a wider range of configuration options. Unlike previous models, the type label will be laser engraved on the meter’s front, and it is no longer possible to print a new type label. However, it is possible to configure the dynamic part of the type number directly in METER TOOL HCW, so that meter’s type label is correct during the entire lifetime of the meter. The dynamic part of the type number can always be read via the display on the meter’s front.

9.1.1 Display segments

The MULTICAL® generation 3 meter contains three small display segments in the lower left corner of the display, see *Figure 19*. The display segments indicate different status scenarios. Depending on whether it is static or flashing, each segment will inform about a given functionality in the meter. A description of the different display segments can be found below.

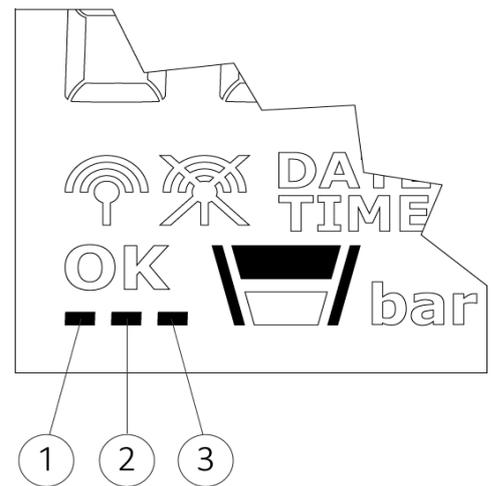


Figure 19: Display segments

- | | |
|--|--|
| ① Heart beat segment | <p>Flashing - This segment always flashes to indicate that both the meter and the display are active.</p> <hr/> <p>Constantly on - The meter’s configuration log is full, and it is therefore no longer possible to modify the configuration.</p> |
| ② SETUP and configuration segment | <p>Flashing - It is possible to access the SETUP loop. The segment flashes as long as the meter is in transport mode, or 4 minutes after the calculator top and base have been separated.</p> <p>Off - It is not possible to access the SETUP loop or configure the meter via METER TOOL HCW.</p> <hr/> <p>Constantly on - The meter’s optical interface is deactivated, and optical communication is therefore not possible.</p> |
| ③ Optical interface segment ¹ | <p>Flashing - The optical interface is temporarily active, flashes 4 minutes after the calculator top and base have been briefly separated. In this period, it is possible to activate the optical interface permanently.</p> <p>Off - The optical interface is active, and it is possible to communicate with the meter.</p> |

¹ The optical interface can be deactivated and activated via the optical head and METER TOOL HCW.

9.1.2 General reading

To read or configure a MULTICAL® generation 3 meter, METERTOOL HCW must have access to the meter. Therefore, it is necessary that the display segment ③ flashes or is turned off. A temporary access to the meter's optical interface can be created by separating the calculator top and base briefly, after which the meter can be read for 4 minutes. If you are using an optical head, it is necessary to place this correctly on the meter as shown in *Figure 20*. This is due to the fact that the diodes in the optical head must be positioned correctly facing the diodes in the meter before METERTOOL HCW can communicate with the meter.



Figure 20: USB optical head and Bluetooth optical head correctly positioned on the meter

Hint 1: As a rule of thumb, the cable line/key ring must point away from the display.

Hint 2: If the meter is equipped with a high-power module, it may be an advantage to remove the module as it has an impact on the time period in which the meter's top and base can be separated before the calculator is no longer active.

The meter must be read before carrying out the configuration. This is due to the fact that METERTOOL HCW must know the configuration of the meter. Then METERTOOL HCW sets up a valid configuration by comparing the meter configuration with the product databases.

9.1.3 General configuration

Except for the configuration of the meters' primary addresses, date and time, the meter must have access to the SETUP loop before METERTOOL HCW can configure the meter. It is possible to detect whether the meter has access to the SETUP loop by checking if the display segment ② flashes. If the meter has not been commissioned yet, the meter is in transport mode. The meter has access to the SETUP loop in the transport mode. If the display segment ② is not flashing, it is possible to create a temporary access to the SETUP loop by briefly separating the calculator top and base, after which it is possible to configure the meter within a period of 4 minutes.

It is recommended to follow the procedure below during configuration:

1. Make sure that the meter can be read (display segment flashes ③ or is off).
2. Read the configuration
3. Set the desired configuration.
4. Make sure that the meter has access to the SETUP loop (the display segment ② flashes).
5. Configure the meter.
6. Read and check that the meter is configured correctly.

9.2 Meter window

When METER TOOL HCW is successfully connected to the meter, the window for the MULTICAL® generation 3 meter is displayed with the tab "Meter details" (marked with yellow) selected, see *Figure 21*. The menu items in the tab menu will vary depending on the meter connected to METER TOOL HCW.

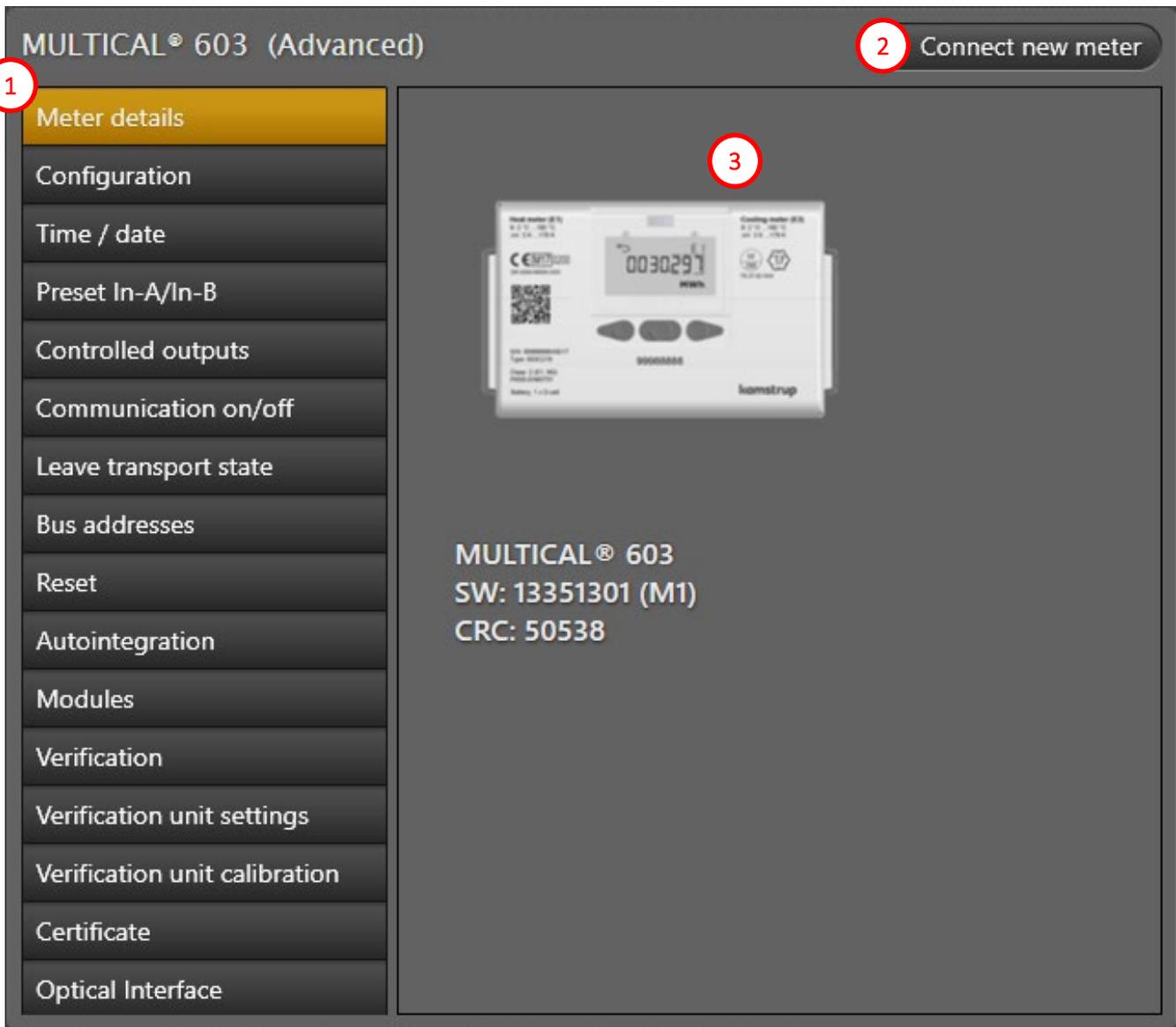


Figure 21: The "MULTICAL® 603" box

- 1** Tab menu
The tab menu can be used to navigate the different tabs. Depending on the meter type and software version, this tab menu may vary from the figure.
- 2** Connect new meter
This button can be used to return to the start window, where it is possible to connect to a different meter.
- 3** The tab
Depending on which tab is selected, the tab will show different information and configuration options.

In *Table 3* you can see which tab menus are available for the various MULTICAL® meters. The various tab menus are described in the following sections. See the section numbers in *Table 3*.

Tab	Section	MULTICAL® 403	MULTICAL® 603	MULTICAL® 803
Meter details	9.2.1	✓	✓	✓
Configuration	9.2.2	✓	✓	✓
Time/date	0	✓	✓	✓
Pre-set In-A/In-B	9.2.4	✓	✓	✓
Controlled output	9.2.5	✓	✓	✓
Communication On/Off	9.2.6	✓	✓	✓
Exit transport mode	0	✓	✓	✓
Bus address	9.2.8		✓	✓
Reset	9.2.9	✓	✓	✓
Auto-integration	9.2.11	✓	✓	✓
Modules	9.2.10	✓	✓	✓
Verification	9.2.12	✓	✓	✓
Set the verification unit	9.2.13	✓	✓	✓
Calibrate the verification unit	9.2.14	✓	✓	✓
Certificate	0	✓	✓	✓
Optical interface	9.2.16	✓	✓	✓
Hide loggers	9.2.17	✓	✓	✓

Table 3: Table with possible tab menus

9.2.1 Meter details

In this tab menu, you can see a picture of the connected MULTICAL® generation 3 meter as well as the SW (software version) and CRC (cyclic redundancy check), see *Figure 21*.

SW The number shows the meter’s software version. The software version can influence the content of the tab menu.

CRC The cyclic redundancy check (CRC) is used to check that the meter software is installed correctly.

9.2.2 Configuration

If it is necessary to configure the connected MULTICAL® generation 3 meter, the menu “Configuration” can be selected, after which a tab with several configuration options is displayed. The tab "Configuration" is divided into the following categories:

- General
- Buttons
- Serial Number, Customer No. and Type number
- Configuration No.
- Daylight saving time
- Scheduler profile
- Usage data

METER TOOL HCW

The above categories are described in the following sections.

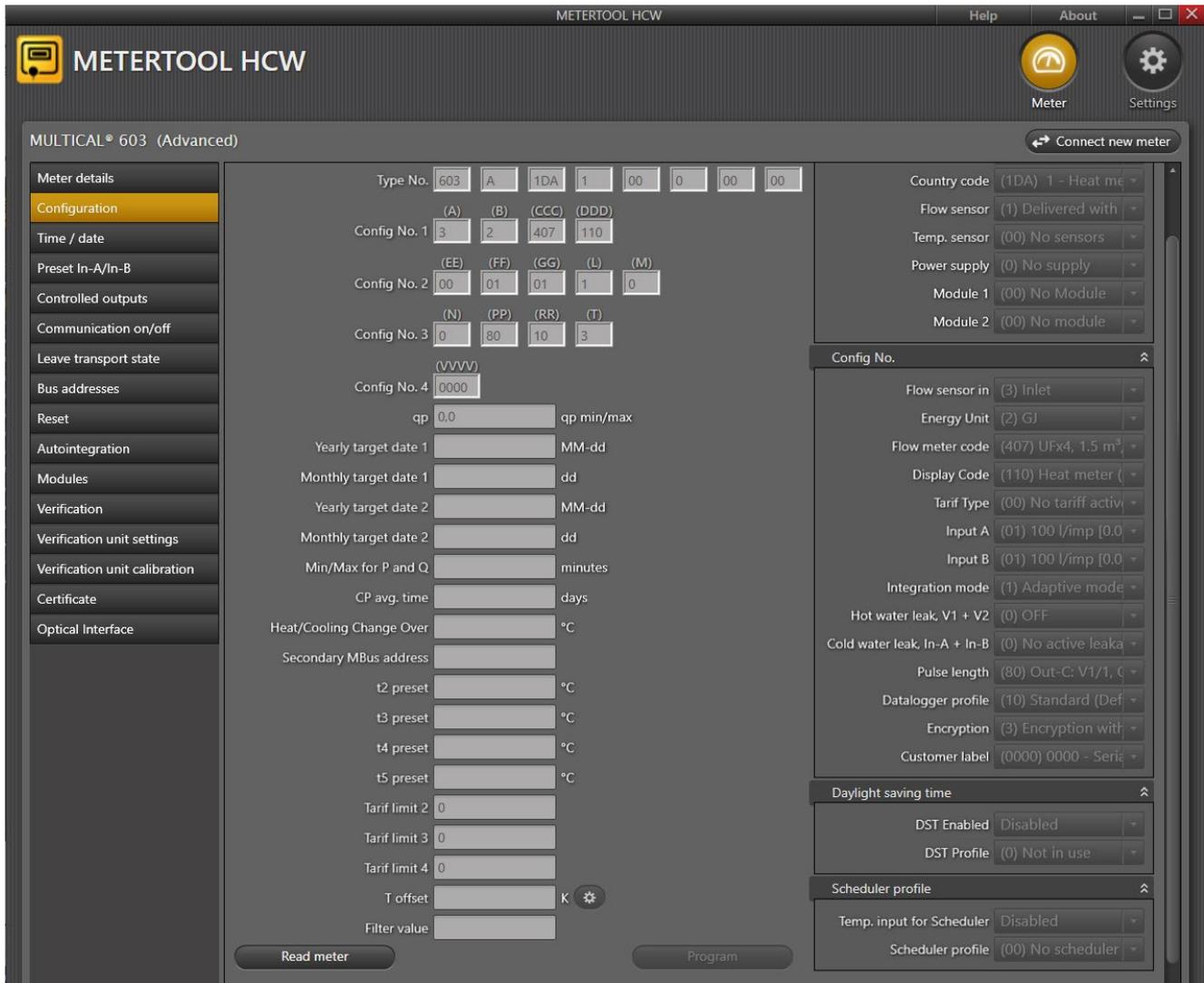


Figure 22: The tab "Configuration" for MULTICAL® 603

General

A setting can be copied to the clipboard by double-clicking the name of the setting. If you for example double-click "Type number", METERTOOL HCW will copy all the digits in the type number to the clipboard. This also applies to the configuration number.

Buttons

At the bottom of the tab, there are three buttons: "Read meter", "Start Auto Detect" and "Program", see Figure 23.



Figure 23: The buttons on the tab "Configuration"

Read meter With this button, it is possible to read the meter configuration. It is necessary to read the meter configuration before it can be configured. The button "Read meter" is located at the bottom of the tab "Configuration", and it may be necessary to use the scroll bar to the right to access the button.

Start Auto Detect This button does not appear before the meter's configuration is read and if the meter's flow sensor code is configured for Auto Detect. MULTICAL® 603/ 603 can automatically adjust its CCC code to match the connected ULTRAFLOW® X4 via the function Auto Detect. Auto Detect is active with CCC code 8xx.

Auto Detect works by MULTICAL® 603/803 automatically downloading the correct information on pulse figures and nominal flow (q_p) from the connected ULTRAFLOW® X4 flow sensors during start-up. Auto Detect is initiated by pressing this button or when the calculator top and base are disassembled and assembled again.

For MULTICAL® 803, it is also possible to detect which type of Pt temperature sensor is connected to the meter.

Program When the desired configuration has been set, this button can be used to configure the meter. Remember to check whether it is possible for METER TOOL HCW to put the meter in the SETUP loop before a configuration is initiated.

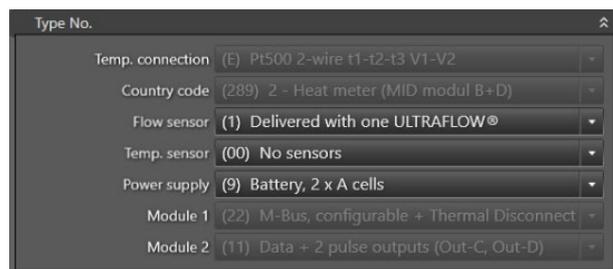
Serial number, Customer No. and Type number



Figure 24: Serial No., Customer no. and Type No.

When the meter is read, the fields "Serial number", "Customer no." and "Type number" will be displayed at the top of the "Configuration" tab, see Figure 24. Depending on the configuration options, the fields will be enabled or disabled. The "Type number" fields are also shown as drop-down lists.

Figure 25: Expanding menu "Type No."



The type number can also be read via the drop-down menus in the expanding menu "Type number", see Figure 24. The type number is further divided into model number, "Temp. connection", "Country code", "Flow sensor", "Temp. sensor", "Power supply" and Module 1...4, as described below. The drop-down lists will also be enabled or disabled depending on the configuration options.

Serial No. In this field, you can read the meter's serial number. The serial number is a unique number for each product and cannot be changed through METER TOOL HCW.

Customer No. In this field, the customer number can be read or set. Unless otherwise specified in the order, the customer number is the same as the serial number. The customer number is linked to the secondary M-Bus address, and a change of customer number will also change the secondary M-Bus address. Only the last 8 digits of the customer number are used for the secondary M-Bus address.

Model number The first number in the type number is always the model number. The model number only appears in the type number fields and describes the read MULTICAL® meter, for example 603. It is not possible to change the model number.

Temp. connection After the model number you will see the temperature sensor connection or calculator type indicated with letters. The calculator type describes the type of temperature sensor, the calculator is calibrated to, and this cannot be changed as it is determined by the hardware that

METER TOOL HCW

the meter is approved with.

Country code	<p>Depending on the read MULTICAL® meter, the country code will be the next descriptive field. The country code describes which language and approvals the meter comes with. The country code has an effect on which meter configurations are available and depends very much on the applicable national laws. Via the country code, you identify which type of meter you have read.</p> <p>"Country code" consists of meter type and country code. For example, a "Country code" 219 will be 2xx for heat meter MID-Module B+D and x19 for an English-language label.</p>
Flow sensor	<p>Depending on the meter type, the flow sensor choice is the next descriptive field. The flow sensor choice describes the flow sensor type connected to the calculator. This cannot be changed on compact meters, which is due to the fact that the flow sensor is an integrated part of the meter. For calculators, it is possible to connect different flow sensors, and therefore it is possible to configure the flow sensor code. If the meter is connected to an ULTRAFLOW® X4, it is possible to use Auto Detect of the flow sensor.</p>
Temp. sensor	<p>The temperature sensor code describes the temperature sensor pair delivered with the meter. This setting has no effect on the meter functions and is an information that shows what the meter is ordered with.</p>
Power supply	<p>The power supply code describes which power supply the meter is delivered with. This setting has no effect on the meter functions and is an information that shows what the meter is ordered with. However, the power supply code has an effect on the integration modes that can be selected.</p>
Module 1...4	<p>Module code 1...4 describes which modules are connected to the meter. The meter detects which modules are connected, and therefore it is not possible to change the module codes.</p>

Configuration

number

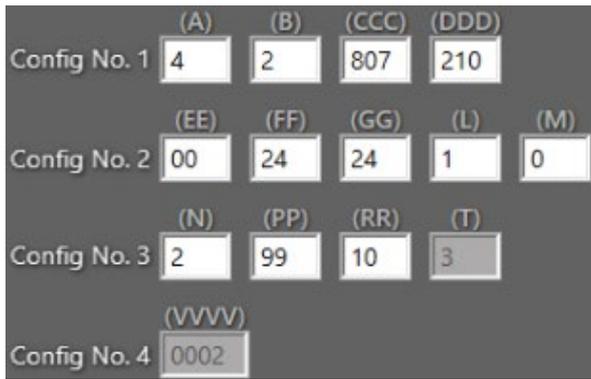


Figure 26: Configuration fields

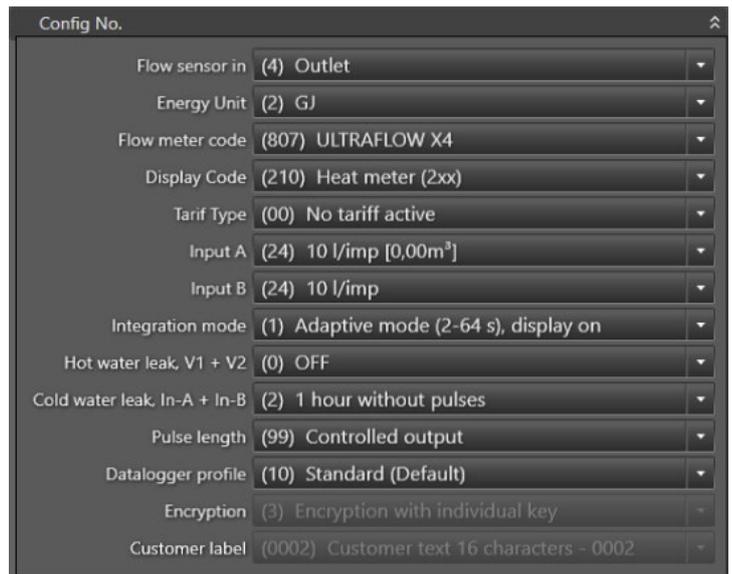


Figure 27: The expanding menu "Config No."

After the type number follows the configuration number. Like the type number, the configuration number can be read in two different places; in the configuration fields and in the "Configuration No." expanding menu. The configuration fields can be seen in Figure 26. The configuration number is divided into different codes, which you can read more about below.

You can find further information on the various codes in the technical description of the respective MULTICAL®. MULTICAL® 403 (5512-1689), MULTICAL® 603 (5512-2029) and MULTICAL® 803 (5512-2360).

Note: The country code has an effect on which meter configurations are available in METER TOOL HCW, and therefore it is not certain that all of the following configurations are available.

Flow sensor position

The A code indicates installation of flow sensor in inlet or outlet.

(A)

As the density and heat capacity of water vary with the temperature, the calculator must correct for this based on the installation type (A code). Incorrect programming or installation leads to error of measuring.

Energy unit

The B code indicates the measurement unit in which the energy register will be shown.

(B)

The possible energy units are: GJ, kWh, MWh and Gcal (for MULTICAL® 603/803). Unlike previous models, the legal registers will not be reset not on MULTICAL® generation 3 meters when the energy unit is changed.

Flow meter code

(CCC)

The CCC code optimises the display resolution for the selected flow sensor size, and at the same time the type approval regulations as to minimum resolution and maximum register overflow are observed.

If Auto Detect must be used, an 8xx CCC code must be selected.

Display code

(DDD)

The DDD code indicates which displays must be present in the meter's USER loop and are also called display codes. However, the USER loop will always include the meter's legal readings as a minimum.

The meter's legal readings, e.g. energy and volume reading, are in general displayed as 7-digit values. The display readings can be configured to eight-digit values via the CCC code. The first digit of the three-digit DDD code defines the meter type comprised by the DDD code in question.

Tariff type (EE)

The EE code describes the tariff type that the meter is set for. The meter has extra registers that can accumulate the heat or cooling energy in parallel with the main register. The accumulation in these tariff registers will be carried out based on the programmed tariff conditions (specified when ordering the meter). Irrespective of the selected tariff type, the tariff registers are named TA2, TA3 and TA4 in the display.

As the main register is considered the legal billing register, it is accumulated no matter the selected tariff function. The tariff conditions TL2 (Tariff limit 2), TL3 (Tariff limit 3) and TL4 (Tariff limit 4) are monitored at every integration. If the tariff conditions are fulfilled, consumed heat energy is accumulated in either TA2, TA3 or TA parallel with the main register.

The tariff limits can be changed under usage data.

Input A, B (FF-GG)

The FF-GG codes indicate how the pulse inputs should be interpreted, provided that the meter is equipped with modules with pulse inputs.

In general, it applies that if you need to read a water or electricity meter, it is possible to collect this information in the energy meter via modules with pulse inputs. If the energy meter is equipped with two modules with pulse inputs, the energy meter will handle inputs A1 and A2 in the same way. This also applies for B1 and B2. This means that input A1 and A2 must be the same type, and likewise for B1 and B2.

Under the "Pre-set In-A/In-B" tab, it is possible to enter the current value and serial number of the water or electricity meter. By doing this, the energy meter will display the same as the connected water or electricity meter.

Integration mode (L)

The L code describes the integration mode that the meter is configured with, and if the meter display automatically switches off after 4 minutes. The L code can be set to: "Fast mode (2s)", "Fast mode (8)", "Normal mode" and "Adaptive mode".

Fast mode (2s)

In Fast mode (2s), the integration interval is set at 2 seconds, which means that the meter calculates accumulated volume and energy every 2 seconds.

Fast mode (2s) is recommended for all systems including those with tap water exchanger. Fast mode (2s) is particularly suitable for applications where the meter is equipped with analogue outputs.

Fast mode (2 s) can only be selected when the power supply code is set to 230 V.

Fast mode (8s)

In Fast mode (8s), the integration interval is set at 8 seconds, which means that the meter calculates accumulated volume and energy every 8 seconds.

Fast mode (8 s) recommended for all systems including those with tap water exchanger.

Normal mode

In Normal mode, the integration interval is set at 32 seconds, which means that the meter calculates accumulated volume and energy every 32 seconds.

Normal mode is recommended for systems with hot water tank and similar systems where changes do not take place quickly.

Adaptive mode

Adaptive mode is an intelligent integration mode, in which the time interval is continuously adjusted. This mode combines the long battery lifetime obtained in Normal mode with the high measuring and calculation resolution obtained in Fast mode.

When the thermal system is stable, i.e. runs at stable flow and power, the meter will

use a time interval of 64 seconds. The MULTICAL® meter continuously measures for changes in flow and power, and if this is the case, the time interval is reduced. Depending on the change, the meter can reduce the interval to 2 seconds, which means that the meter calculates accumulated volume and energy every 2 seconds. Thereby, higher resolution and higher precision are obtained during periods with changes in the system. The adaptive algorithm in the MULTICAL® meter reacts to flow changes down to 1 %.

For applications with two flow sensors, it is worth noting that the MULTICAL® meter only measures changes for flow and power on V1 and not both on V1 and V2. This means that the integration of registers related to V1 and V2 occur simultaneously and based on time. In adaptive mode, the integration interval is adjusted only with changes in V1.

When the system is stable, the meter gradually returns to the 64 seconds interval. MULTICAL® reacts quickly to changes in the system by reducing the time interval; however, it gradually returns to the time interval of 64 seconds as the system becomes stable.

**Hot water leak, V1 + V2
(M)**

The M code describes the permissible leakage limit before an info code appears in the meter. Hot water leak can only be selected if the connected MULTICAL® meter is equipped with two identical flow sensors.

The M code defines the leak limit, i.e. the sensitivity to the leakage monitoring. If a leak is detected in the system, the info code for leakage or burst is activated, depending on the size of the leak. The leak search is based on a difference in mass (Δ Masse) between the calculated mass for V1 and V2. The calculation of this mass difference is carried out over 24 hours, which means that the reaction time for the leak info code is 24 hours. A burst search is based on the flow difference between the V1 and V2 flow. The burst search is performed during a period of 120 s.

The sensitivity to a leak can be adjusted via the M code, while the sensitivity to a burst is defined. You can read more about this in the technical descriptions for the respective meters. It is possible to detect leaks down to 15 kg/h with a connection of two flow sensors of up to q_p 1.5 m³/h. Both the burst and leakage info codes can be disabled via the M code (M = 0).

**Cold water leak, In-A +
In-B
(N)**

The N code describes the period in the course of 24 hours, where no flow is expected in the water meter provided that a water meter is connected to the energy meter via a module with pulse inputs.

The pulse inputs A and B can be used for cold water leakage monitoring on the energy meter. However, the cold-water leakage monitoring is basically only active on input A (A1/A2), unless otherwise agreed with the customer. When the energy meter is used for leak monitoring, the sensitivity is determined by the configuration of the N code.

Leakage monitoring is measured over a period of 24 hours. The N code defines the resolution, by which the 24 hours are divided; either 48 intervals of half an hour, 24 intervals of one hour or 12 intervals of two hours. If the meter registers minimum one pulse during each of these intervals over the full period, info code 8, which indicates leakage, is activated. The info code is not activated until after the 24-hour period; however, it is reset again as soon as the meter registers an interval without pulses.

**Pulse length
(PP)**

The PP code describes the type of output selected for the pulse outputs C and D provided that the meter is equipped with a module with pulse outputs.

The pulse outputs have three application options:

- Sending out selected counter registers (controlled by the selected country code).
- Controlled output which means that the pulse outputs can be controlled via the

METER TOOL HCW

- data commands.
- Pulse transmitter/divider so that the pulse signal from V1 and V2 are sent out via pulse outputs.

Data logger profile (RR)

The data logger in a MULTICAL® generation 3 meter is fully configurable and to simplify the selection of options, you can choose between a few different profiles.

MULTICAL® generation 3 meters have a permanent memory (EEPROM), in which the results from various data loggers are saved. The data logger is programmable. The required data logger profile is selected via the RR code of the configuration number. Unless otherwise stated by the customer, the RR code is set at 10, which is the default data logger profile. If data logging of other registers, different intervals and logging depths is required, other data logging profiles can be composed to match the individual requirements.

The programmable data logger includes the following six data loggers:

- Yearly logger
- Monthly logger
- Daily logger
- Hourly logger
- Minute logger1
- Minute logger2

Encrypted (T)

By default, the wireless communication of all MULTICAL® generation 3 meters is encrypted. This is to protect the personal data that can be read from the meter.

Customer label (VVV)

The VVVV code describes the customer label that the meter is ordered with.

A customer label can be printed on the meter's front. The customer label can show utility logo, a bar code or the like. By default, the meter's serial number is written in the customer label field.

Please contact Kamstrup A/S for information on possible customer labels as well as regarding the creation of a new customer label.

The customer label cannot be changed as this will be engraved on the front of the meter.

Daylight saving time

In this expanding menu, the meter's daylight-saving time function can be read or configured, see *Figure 28*.

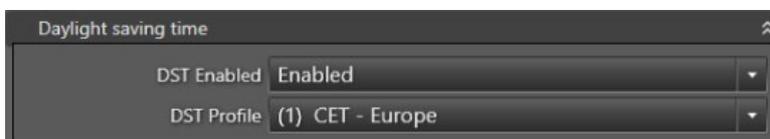


Figure 28: The expanding menu "Daylight saving time"

Daylight saving time activated

Daylight saving time can be activated or deactivated via this drop-down menu.

Daylight saving time profile

Via this drop-down menu, the following daylight-saving time profiles can be selected:

CET – Europe

Starts: On the last Sunday in March at 02:00

Ends: On the last Sunday in October at 03:00

WET – Europe

Starts: On the last Sunday in March at 01:00

Ends: On the last Sunday in October at 02:00

EET – Europe

Starts: On the last Sunday in March at 03:00

Ends: On the last Sunday in October at 04:00

ACST/AEST – Australia

Starts: On the first Sunday in October at 02:00

Ends: On the first Sunday in April at 03:00

USA

Starts: On the second Sunday in March at 02:00

Ends: On the first Sunday in September at 02:00

Canada

Starts: On the second Sunday in March at 02:00

Ends: On the first Sunday in September at 02:00

Scheduler profile

In this expanding menu, it is possible to activate a scheduler profile, see *Figure 29*.

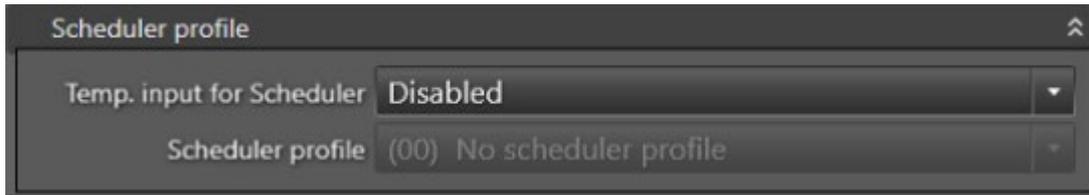


Figure 29: The expanding menu "Scheduler profile"

The scheduler profile makes it possible to set a temperature input instead of using a temperature sensor. This can be an advantage in the situations where it is not possible to measure both the input and output temperatures. The scheduler profile can regulate the specified temperature on a monthly basis. Since not all countries allow the use of specified temperatures, the scheduler profile is not enabled by default.

Temp. input for Scheduler

In this drop-down menu, it is possible to enable or disable the scheduler profile and determine which temperature input to set.

Scheduler profile

Via this drop-down menu, the various scheduler profiles can be selected. Below are two examples of a scheduler profile.

Date [MM-dd]	Aamot [°C]	Bacau [°C]
01-01	3,78	7,00
02-01	3,37	7,00
03-01	3,06	9,00
04-01	3,39	9,00
05-01	4,88	9,00
06-01	6,24	13,00
07-01	9,60	13,00
08-01	12,48	13,00
09-01	13,26	9,00
10-01	8,39	9,00
11-01	5,63	9,00
12-01	4,46	7,00

Usage data

After the configuration number fields come the usage data fields, see *Figure 30*. In contrast to the type number and configuration number, usage data is not hardware dependent except for "q_p" and "T offset".

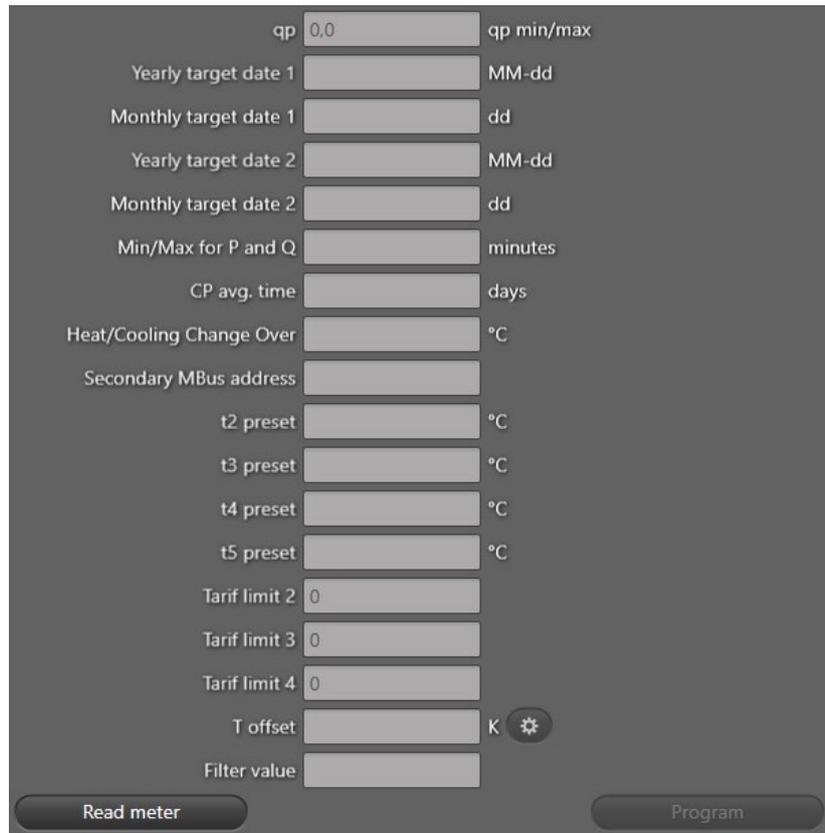


Figure 30: Usage data fields

q_p In this field, the flow sensor’s nominal flow, q_p, can be read or set. If an ULTRAFLOW® X4 is connected to the meter, it is possible to set the nominal flow automatically by using the button "Start Auto Detect". It is only possible to make an automatic detection, if the flow sensor code (CCC code) is set at 8xx.

Yearly target date 1 In this field, the yearly target date 1 in the format [MM-dd] can be read or set.
If the yearly target date is set for 01/01, data will be logged on 01/01 at 00:00 in the yearly log. This is different compared to previous models which logged data on 12-31 at 24:00, when the target date was set to 01/01.

Monthly target date 1 In this field, the monthly target date 1 can be read or set.
By default, the meter’s monthly target date is set to 01 [dd] of the month. This means that the target time is on 01 at 00:00. If the target date is set to the 31st of the month, the target time will be between the penultimate and last day of the month. For example, there are 28 days in February, and the logging will therefore be performed on the 28st at 00:00.

Yearly target date 2 In this field, an additional yearly target date 2 can be read or set.
If an additional yearly target date 2 is not required, yearly target date 2 must be set at 00-00 [MM-dd].

METER TOOL HCW

Monthly target date 2	<p>In this field, an additional monthly target date 2 can be read or set.</p> <p>This requires that yearly target data 2 is active. If an additional monthly target date 2 is not required, the date must be set at 00 [dd].</p>
Min./Max. for P and Q	<p>In this field, the time period for the average calculation of maximum and minimum power (P) and flow (Q) can be read or set.</p> <p>This field has a setting range of 0001...1440 minutes (24 hours). The registers for min/max power and flow will be updated if a new minimum or maximum is registered within the set time interval.</p>
CP average time	<p>If an electricity meter is connected to the energy meter, the average coefficient of performance (COP) can be used to check the energy efficiency of a system.</p> <p>In houses with heat pumps with one common heating circuit, it is expedient to measure both the released thermal energy and the gained electrical energy, based on which the coefficient of performance (COP or CP) can be calculated. COP is the abbreviation of "Coefficient of Performance".</p> <p>In this field, the time period, in which the average coefficient of performance (COP) is calculated, can be read or set. This field has an interval of 5...30 days.</p>
θ_{hc} limit value	<p>In this field, the temperature that the meter uses to switch between heating and cooling registers E1 and E3, can be read or set.</p> <p>θ_{hc} acts as a limit value for the measurement of heat/cooling energy. With θ_{hc} enabled, heat energy is only measured when t_1 is greater than or equal to θ_{hc}. Likewise, cooling energy is only measured if the inlet temperature t_1 is lower than θ_{hc}.</p>
ModuleBus address (not shown on <i>Figure 30</i>)	<p>This setting is only applicable to MULTICAL® 403 and can be used to read or set the module's main communication address. For other MULTICAL® generation 3 meters, the main communication addresses under the "Bus address" tab can be read or set.</p>
Secondary M-Bus address	<p>In this field, the secondary M-Bus address can be read. The secondary M-Bus address is the last eight digits of the customer number, and changes to it are done via the customer number.</p>
t2...t5 pre-setting	<p>In these fields, it is possible to read or set a fixed temperature value for t2, t3, t4 and t5. It is possible to use a variable temperature by using the scheduler profile.</p>
Tariff limit 2...4	<p>In these fields, the tariff limits TL2, TL3 and TL4 can be read or set. Depending on the selected tariff type (EE code), the fields change unit and interval automatically. For the tariff limits, the following applies: TL2 < TL3 < TL4 except for: TL4 = 0.0, which means that TL4 will be disabled.</p>

T offset

In this field, it is possible to perform an offset adjustment of the temperature sensor measurement, thus increasing the accuracy of the absolute temperature measurement. This is especially relevant in installation scenarios where the meter will be used for tariff billing based on absolute temperatures. In this case, it is an EN1434 requirement that the accuracy of the meter's absolute temperature reading must be within $\pm 1,0$ K. Offset adjustment is also extremely relevant in district cooling installations. In district cooling installations, the customer often requires a maximum inlet temperature. An absolute temperature measurement that measures with undesirable inaccuracy can cause the supplier to supply water with a lower inlet temperature than promised, resulting in unnecessary extra costs for the supplier.

Furthermore, METERTOOL HCW can calculate the correct T offset value on the basis of the temperature sensor characteristics, which are the R0, A and B values as well as the cable length. See *Figure 31* below.

The screenshot shows a software window titled "T offset". It is organized into two columns: "Inlet" and "Outlet".

- Under "Inlet", there are three input fields labeled "R0", "A", and "B".
- Under "Outlet", there are three corresponding input fields.
- To the right of the "R0" field is the unit "[Ω]".
- To the right of the "A" field is the unit "e-3[°C⁻¹]".
- To the right of the "B" field is the unit "e-7[°C⁻²]".

Below the input fields, there is a "Type" dropdown menu currently set to "2-wire".

Further down, there is a "Cable length" input field.

At the bottom, there are three buttons: "Calculate", "Transfer", and "Cancel".

Labels for the bottom two rows are "Calculated deviation [K]" and "Recommended T offset [K]".

Figure 31: The "T offset" window

Filter value

MULTICAL® 603 and MULTICAL® 803 both use time-based integration and are, by default, delivered with a filter value that "evens out" the measurements of flow and temperature in relation to the selected integration mode (L code). For some installations, it may be necessary to optimise the values read from the calculator by changing this filter value. This often only applies to cases in which the calculator is installed for regulation purposes, e.g. valve control.

METER TOOL HCW

9.2.3 Time/date

In this tab, date and time in the meter can be read or set. It is also possible to use the computer's clock by selecting the box "PC time". It is not necessary for METER TOOL HCW to have access to the SETUP loop to set the date/time.

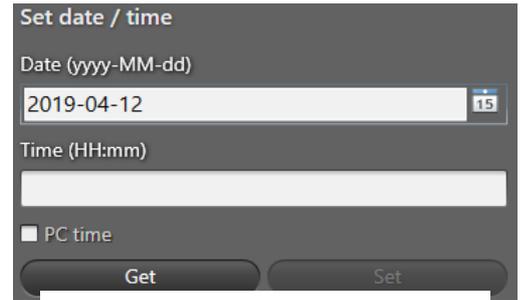


Figure 32: "Time/date" tab

9.2.4 Pre-set In-A/in-B

It is possible to connect a water or electricity meter to the pulse inputs on the modules in a MULTICAL® generation 3 meter. The pulse inputs are used for collection and remote accumulation of pulses in the energy meter.

In this tab, it is possible to pre-set the count and meter number for the connected meter.

The unit on the meter count is controlled by the FF and GG code.

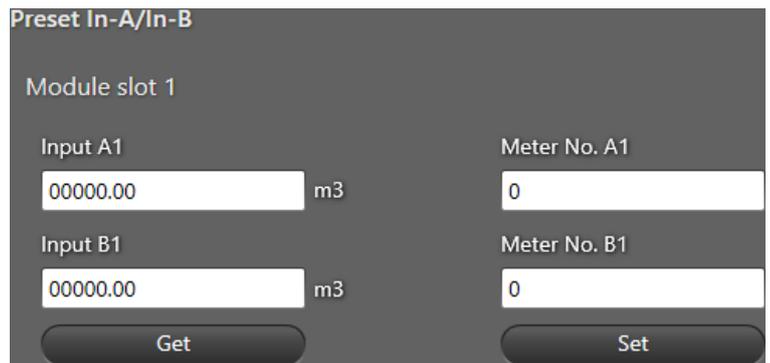


Figure 33: "Preset In-A/In-B" tab

9.2.5 Controlled output

In this tab, it is possible to switch the output signal between high and low level, provided that the pulse outputs are configured for controlled output (PP code=99).



Figure 34: "Controlled output" tab.

9.2.6 Communication On/Off

In this tab, it is possible to turn the wireless communication from the meter on or off. The meter must have access to the SETUP loop, and the communication mode must be collected before the communication is switched on or off.

To deactivate the optical communication, go to the "Optical interface" tab menu.

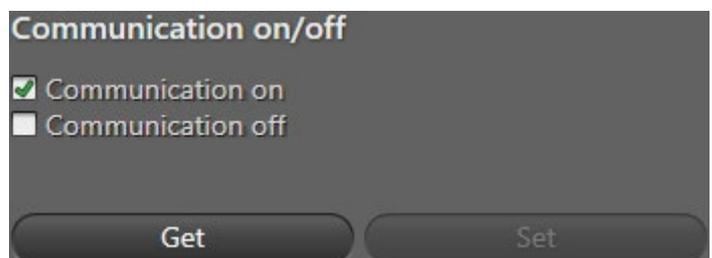


Figure 35: "Communication On/Off" tab

9.2.7 Leave transport mode

In this tab, it is possible to force the meter out of transport mode. This function is useful if the meter is installed in a public place, or if the meter must be commissioned before a flow is registered

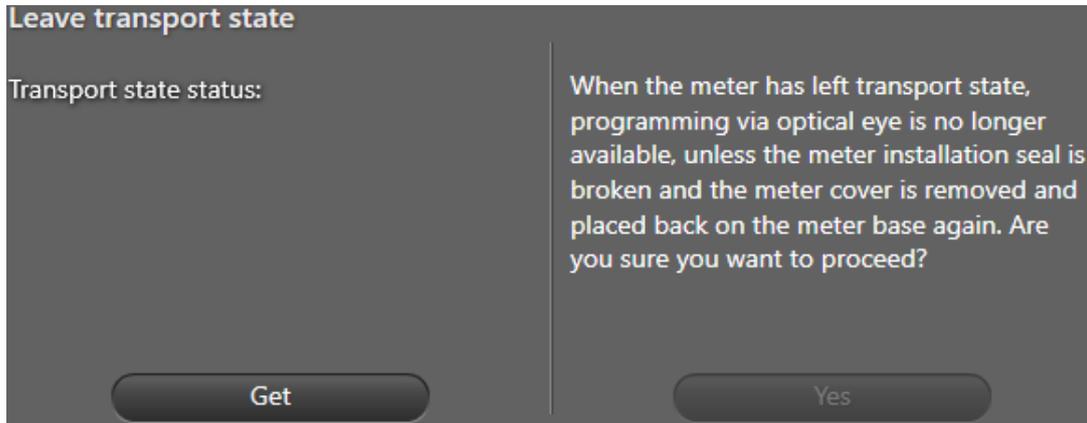


Figure 36: "Exit transport mode" tab

Until a MULTICAL® generation 3 meter has detected a flow of 1 % of q_p or larger for the first time, the meter is in transport mode. The transport mode includes that:

- No info codes are saved in the meter's logger and the info-event counter is not active.
- A power saving measuring sequence is used.
- The SETUP loop is accessible, which enables you to configure the meter before commissioning.

Note: Depending on the country code, the SETUP loop may not be available in the transport mode.

9.2.8 Bus address

In this tab, it is possible to read or set the integrated M-Bus address and the primary communication address (Bus address) of the meters. It is not necessary for the meter to be in the SETUP loop to configure the communication addresses.

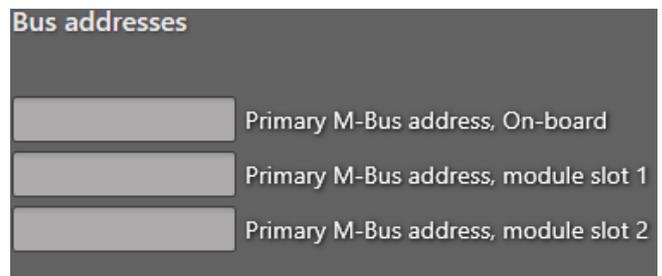


Figure 37: "Bus address" tab

METER TOOL HCW

9.2.9 Reset

In this tab, the various loggers can be reset.

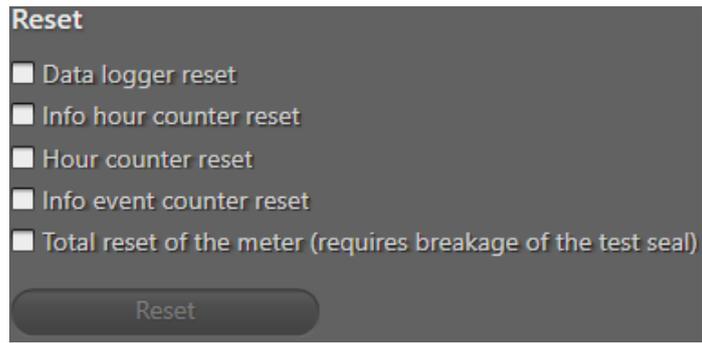


Figure 38: "Reset" tab

Delete data logger

By selecting this field and pressing "Reset", the programmable loggers in the meter can be reset. The programmable loggers consist of yearly log, monthly log, daily log, hour log, minute log 1 and minute log 2.

Resetting the info-hour counter

By selecting this field and pressing "Reset", the info-hour logger can be reset. The info-hour counter registers for how long the meters has had an active info code. This hour counter is not active in the transport mode.

Reset of hour counter

By selecting this field and pressing "Reset", the hour counter can be reset. The hour counter registers for how long the meter has been in operation. This hour counter is not active in transport mode.

Resetting the info-event counter

By selecting this field and pressing "Reset", the info-event counter can be reset. The info-event counter registers how many times the info code has been changed.

Total reset of the meter

By selecting this field and pressing "Reset", a total reset of all meter loggers can be performed, but the meter's current configuration will not be reset. A reset can only be performed if the meter is in test mode.

9.2.10 Modules

In this tab, it is possible to read or set the configuration of the meter's modules.

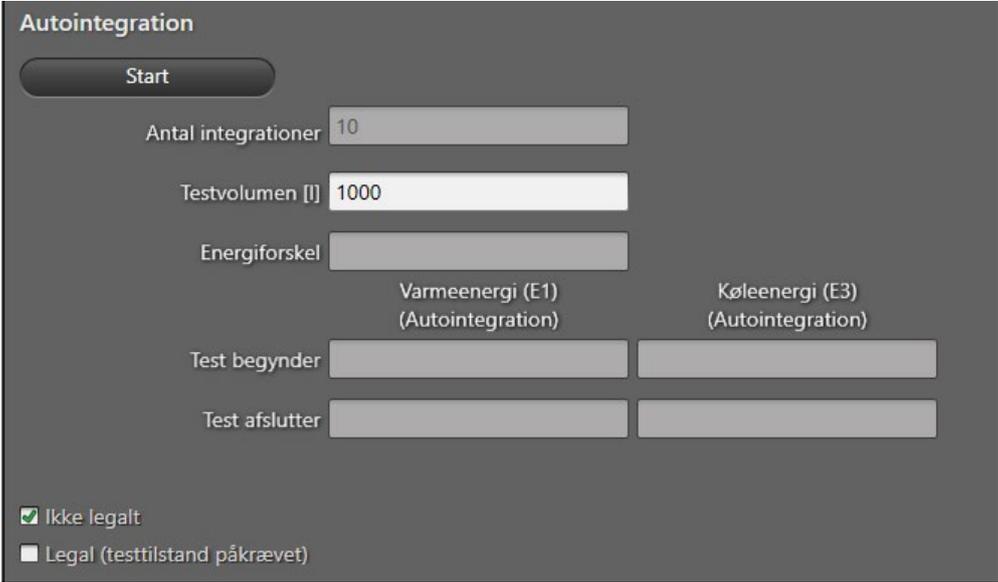


For more information on the possible configurations of the modules, see "Logger Profiles and Datagrams" (5512-2245). The modules can be configured in two ways; via the optical head through the meter's optical interface or via a module cable. See more about this in section 10.

9.2.11 Autointegration

On this tab, you can test the accuracy of the temperature measurements. The meter counts a simulated volume at each pulse (integrations). The temperature of the temperature sensors is measured at each pulse, and on the basis of this measurement as well as the simulated increase in volume, energy is calculated.

This test can be stored in the autointegration register in the meter (non-legal) or in the meter's E1 / E3 (legal and requires breaking the test seal).



Autointegration

Start

Antal integrationer 10

Testvolumen [l] 1000

Energiforskel

Test begynder

Test afslutter

Varmeenergi (E1)
(Autointegration)

Køleenergi (E3)
(Autointegration)

Ikke legalt

Legal (testtilstand påkrævet)

METER TOOL HCW

9.2.12 Verification

On this tab, you can start a verification of the meter.

Energy test results 2							
True volume	True Tf	True Tr	True energy	Measured Tf	Measured Tr	Measured energy	Error

Energy test results 3							
True volume	True Tf	True Tr	True energy	Measured Tf	Measured Tr	Measured energy	Error

Display values			
	Energy (Heat energy (E1))	Energy (Cooling energy (E3))	Volume (V1)
Test start			
Test stop			

The microcontroller from the verification base simulates the volume based on pulse frequency and a number of pulses per test point. Temperature simulation is obtained by means of fixed precision resistors which are automatically changed via relays controlled by the microcontroller. After the test, the computer reads all registers in the calculator and compares the values to the calculated values. For more information, see “Calibration unit for MULTICAL® 603” (FILE100000489/55123273).

9.2.13 Set the verification unit

On this tab, you can maintain calibration data in the calibration equipment. You change the calibration data by clicking “Write” and then transferring new data to the equipment. In order to avoid unintentional change of calibration data, the function “Write” is protected by a password, which can be obtained from Kamstrup A/S. For more information, see “Calibration unit for MULTICAL® 603” (FILE100000489/55123273).

Verification unit		1st	2nd	3rd	4th	5th							
Serial number:	<input type="text"/>												
Configured:	<input type="text"/>												
Counts:	<input type="text"/> <input type="button" value="Clear"/>												
Verification													
Avg. room temp.:	<input type="text"/>												
Room temp. range:	<input type="text"/>												
	Permissible error	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	%						
	Uncertainty	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	%						
	Heat coefficients - flow pipe	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	MJ / (m ³ °C)						
	Heat coefficients - return pipe	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	MJ / (m ³ °C)						
	Number of integrations	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>							
Test points													
		1st Tf	1st Tr	2nd Tf	2nd Tr	3rd Tf	3rd Tr	4th Tf	4th Tr	5th Tf	5th Tr	T3	
Measured resistance	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	Ω
True temperature	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	°C
Nominal temperature	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	°C
<input type="button" value="Edit"/>		<input type="button" value="Write"/>		<input type="button" value="Read"/>									

9.2.14 Calibrate verification unit

To read the temperature values of the verification unit, it is possible to set the verification base of the 5 different test points. The test points can be read using a multimeter on the terminals of the unit. If the values do not correspond to the values in the menu “Set the verification unit”, they can be corrected in the same menu to the read values from the multimeter. For more information on how to perform a calibration, see “Calibration unit for MULTICAL® 603” (FILE100000489/55123273).

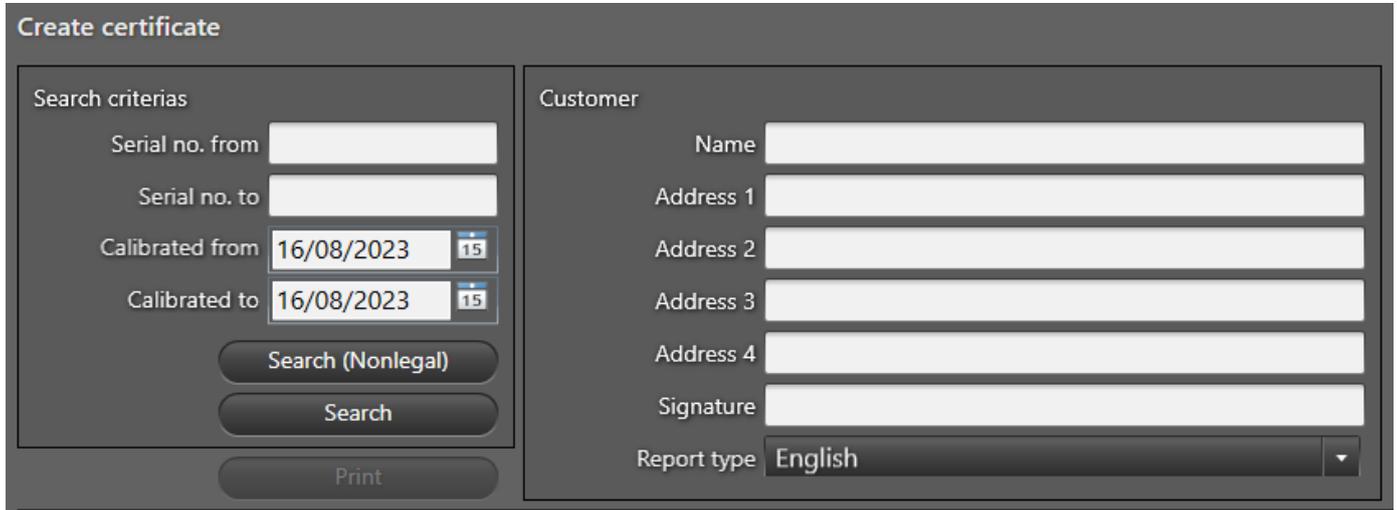
Verification unit calibration

- Set test point 1
- Set test point 2
- Set test point 3
- Set test point 4
- Set test point 5

METER TOOL HCW

9.2.15 Certificate

From this tab, you can print test reports and calibration certificates. A calibration certificate can only be issued by an authorised laboratory with authorised personnel. This document is signed by the authorised person and states that the meter has been verified. The test report can, however, be printed by everyone and shows that the meter is accurate but not legally verified. For more information, see “Calibration unit for MULTICAL® 603” (FILE100000489/55123273).



9.2.16 Optical interface

In this tab, the optical communication can be enabled or disabled. Via the meter’s display segments in the lower left corner, you can see if the meter’s optical communication is disabled. If the display segment ③, see Figure 40, is shown continuously, the meter’s optical communication is disabled, and a short separation of the calculator top and base will temporarily activate the optical communications for 4 minutes. In this way, it is possible to read or configure the meter and to activate the optical communication permanently.

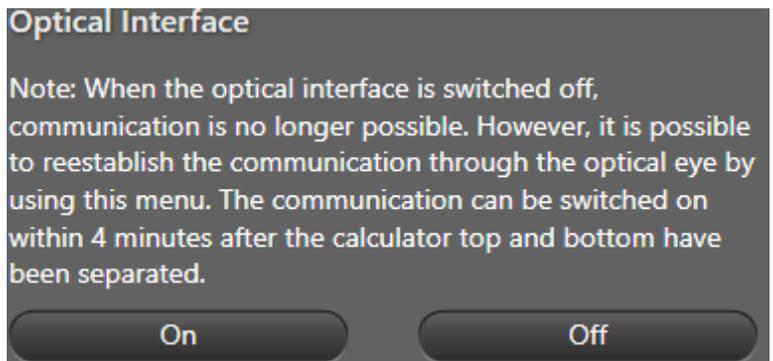


Figure 39: "Optical interface" tab

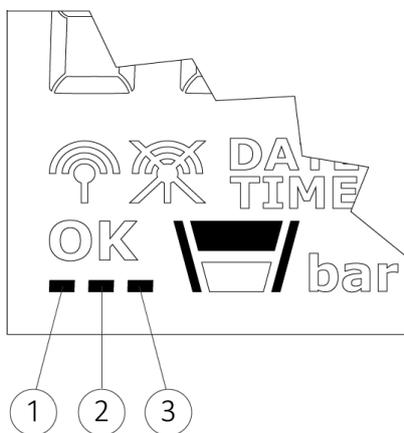


Figure 40: Display segments

9.2.17 Hide loggers



In this tab, you can hide the loggers making them unavailable in the meter display. This function can be used when a new user takes over a meter, and it is necessary to hide the former user's consumption data.

By pressing the "Hide loggers" button, all consumption data from loggers are hidden from the moment the button is pressed. All consumption data can be accessed again via the display, LogView HCW or with the "Show loggers" button, if the meter has access to the SETUP loop.

Figure 41: "Hide loggers" tab

10 Modules for MULTICAL® generation 3 meters

10.1 Introduction

Common for all meters in the MULTICAL® generation 3 series is that they can be used across all of meter types; MULTICAL® 403, 603 and 803. The modules can be configured through the optical interface or via the module programming cable.

This list indicates the configurations possible in the modules

Type number	Module name	Note
HC-003-10	Data Pulse, inputs (In-A, In-B)	-
HC-003-11	Data Pulse, outputs (Out-C, Out-D)	-
HC-003-20	Wired M-Bus, inputs (In-A, In-B)	M+ D
HC-003-21	Wired M-Bus, outputs (Out-C, Out-D)	M+ D
HC-003-22	Wired M-Bus, Thermal Disconnect	M+ D
HC-003-30	Wireless M-Bus, inputs (In-A, In-B), 868 MHz	D
HC-003-31	Wireless M-Bus, outputs (Out-C, Out-D), 868 MHz	D
HC-003-32	linkIQ/wM-Bus, inputs (In-A, In-B), EU	D
HC-003-33	linkIQ/wM-Bus, outputs (Out-C, Out-D), EU	D
HC-003-34	wM-Bus, inputs (In-A, In-B), 912,5/915/918,5 MHz	D
HC-003-40	Analog outputs 2 x 0/4...20 mA	A
HC-003-41	Analog inputs 2 x 4...20 mA / 0...10 V	A
HC-003-43	PQT Controller	A
HC-003-50	Low Power Radio, inputs (In-A, In-B), 434 MHz	D
HC-003-51	Low Power Radio GDPR, inputs (In-A, In-B), 434 MHz	D
HC-003-56	NB-IoT, inputs (In-A, In-B)	D
HC-003-60	LON TP/FT-10, inputs (In-A, In-B)	-
HC-003-66	BACnet MS/TP, inputs (In-A, In-B)	A
HC-003-67	Modbus RTU, inputs (In-A, In-B)	A
HC-003-80	2G/4G Network, inputs (In-A, In-B)	D
HC-003-82	Modbus/KMP TCP/IP, inputs (In-A, In-B)	A
HC-003-83	READy Ethernet, inputs (In-A, In-B)	-
HC-003-84	High Power Radio Router, inputs (In-A, In-B), 444 MHz	-
HC-003-85	High Power Radio Router GDPR, inputs (In-A, In-B), 444 MHz	-

M: Bus address/M-Bus Primary and M-Bus secondary addresses.

D: Datagram and module software via Module programming cable, see *Figure 42*.

A: All module parameters, datagram and software.

- : No configurations in module.



Figure 42: Module programming cable.

11 ULTRAFLOW® X4

11.1 Introduction

ULTRAFLOW® is a static flow sensor based on the ultrasonic principle. It is primarily used as a volume flow sensor for thermal energy meters such as MULTICAL®. Flow measuring in ULTRAFLOW® is based on ultrasonic measuring and microprocessor technique. A single-board construction comprises all calculating and flow measuring circuits, which provides a compact and rational design and, in addition, exceptionally high measuring accuracy and reliability is obtained. For more information about ULTRAFLOW®, see the respective technical descriptions.

Before METERTOOL HCW can configure the flow sensors, it is necessary to be able to install the connector in the flow sensor. This requires that the sealing cover of the flow sensor is removed. If the sensor is used where verification is required, an authorised laboratory must reverify and reseal the flow sensor before it is remounted. The supply of ULTRAFLOW® must be disconnected during programming. The sensor is powered via the connected communication unit. The USB flow sensor cables (6699-141 and 6699-024) includes a converter box, which ensures galvanic separation of the supply for the flow sensor. In the figures below, the installation of the flow sensor cables on the various ULTRAFLOW® X4 units is shown.



Figure 43. Location of the four-pole connector in ULTRAFLOW® 54 (A/C/J)



Figure 44. Location of the four-pole connector in ULTRAFLOW® 54 (H).



Figure 45. Location of the four-pole connector incl. ULTRAFLOW® 14 adapter in ULTRAFLOW® 14/24 (MULTICAL® 61/62).

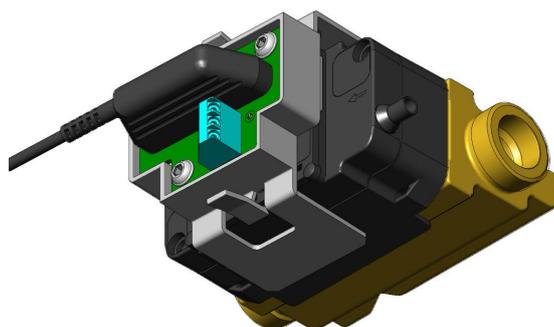


Figure 46. Location of the four 4-pole connector incl. ULTRAFLOW® 34 adapter in ULTRAFLOW® 34.



Figure 47: Location of the four-pole connector in ULTRAFLOW® DN150-300.

11.2 The ULTRAFLOW® X4 box

When METERTOOL HCW has been successfully connected to the flow sensor, the ULTRAFLOW® X4 box appears with the “Meter details” tab open (marked with yellow), see *Figure 47*.

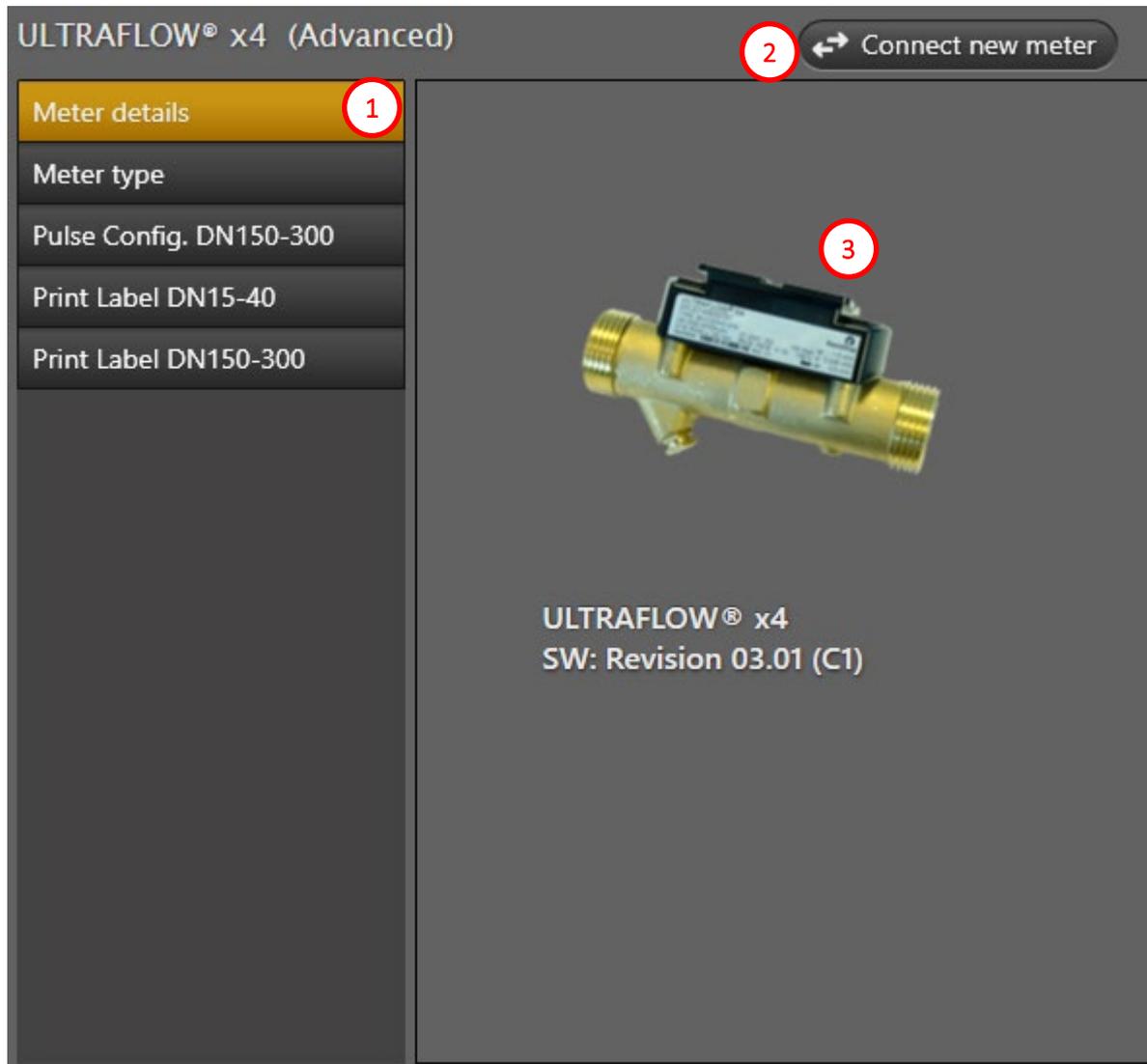


Figure 48: The “Meter details” tab menu for ULTRAFLOW® X4.

- | | |
|--|---|
| <p>1 Tab menu</p> <p>2 Connect new meter</p> <p>3 The tab</p> | <p>The tab menu can be used to navigate the different tabs.</p> <p>This button is used to return to the home window and connect to a new product.</p> <p>Depending on which tab is selected, the tab shows different information and configuration options.</p> |
|--|---|

METER TOOL HCW

11.2.1 Meter details

In this tab menu, you can see a picture of the connected ULTRAFLOW® X4 as well as the SW (software version), see Figure 48.

SW The number shows the meter’s software version. The software version can influence the content of the tab menu.

11.2.2 Meter type

In this tab menu, you can see detailed information about the flow sensor design and configuration, see Figure 49.

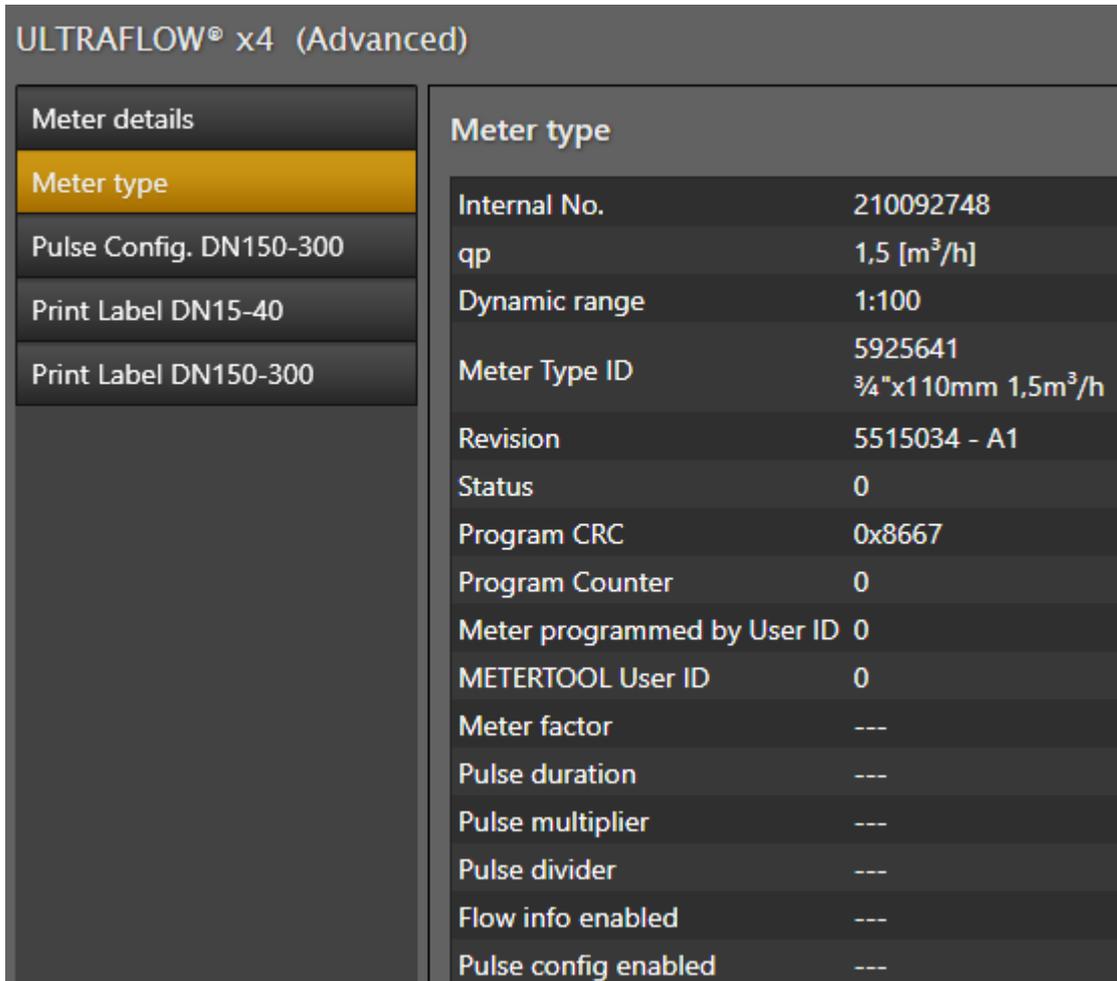


Figure 49: The “Meter type” tab.

- Internal no.** This line displays the internal number of the flow sensor. The internal number is a preliminary serial number that is assigned prior to the first time verification of the flow sensor.
- q_p** This line displays the nominal flow, q_p, of the flow sensor. If ULTRAFLOW® X4 is connected to a MULTICAL® generation 3, the calculator can automatically read the nominal flow and configure the display if the calculator is set to auto detect.
- Dynamic area** This line displays the dynamic range of the flow sensor. The dynamic range describes the relation between the minimum flow q_i and the nominal flow q_p [q_i:q_p].
- Meter type ID** This line displays the article number and dimensions of the flow sensor. In general, the article number and the flow curve number are the same with the exception of ULTRAFLOW® 65-5-XXHX-XXX.

Revision	This line displays the revision number of the flow sensor. For ULTRAFLOW® (65-5-XXHX-XXX), the flow curve number also appears from this line.
Status	Reserved for future use.
Program CRC	This line displays the cyclic redundancy check (CRC) of the flow meter software. The cyclic redundancy can be used to check that the flow sensor software is installed correctly. The software CRC appears from the flow sensor type approval certificate.
Program counter	This line displays the number of reconfigurations of the flow sensor. The program counter value is set to zero when the flow sensor leaves Kamstrup.
Meter programmed by user ID	This line displays the user ID of the last performed reconfiguration.
METERTOOL HCW user ID	This line displays the METERTOOL HCW user ID of the current METERTOOL HCW user.
Meter factor	This line displays the meter factor. The meter factor describes how many pulses per litre the flow sensor sends. If q_p is less than 150 m ³ /h, the meter factor is not displayed and --- will be shown on the line instead. The reason for this is that the meter factor is not configurable for ULTRAFLOW® X4 with a nominal flow less than 150 m ³ /h.
Pulse duration	This line displays the pulse duration. By default, the pulse duration is 3,9 ms but can also be set to 20 ms, 50 ms or 100 ms. If q_p is less than 150 m ³ /h, the pulse duration is not shown and --- will be shown on the line instead. The reason for this is that the pulse duration is not configurable for ULTRAFLOW® X4 with a nominal flow less than 150 m ³ /h.
Pulse multiplier	This line displays the pulse multiplier. The pulse multiplier is used together with Pulse Divider to enable a greater range of division of pulses than what would be possible with Pulse Divider alone. For example, division 62,5 can be achieved by combining Pulse Divider: 625 and pulse multiplier: 10. If q_p is less than 150 m ³ /h, the pulse multiplier is not shown and --- will be shown on the line instead. The reason for this is that the pulse multiplier is not configurable for ULTRAFLOW® X4 with a nominal flow less than 150 m ³ /h.
Pulse divider	This line displays the pulse divider. Pulse Divider is used in the case that the calculator cannot handle the number of pulses from the flow sensor. Pulse Divider thus does not reduce the amplitude of the pulse but the number of pulses. See also the description of the pulse multiplier. If q_p is less than 150 m ³ /h, Pulse Divider is not shown and --- will be shown on the line instead. The reason for this is that Pulse Divider is not configurable for ULTRAFLOW® X4 with a nominal flow less than 150 m ³ /h.
Flow info activated	This line displays if the info codes of the flow sensor are activated (true) or deactivated (false). The flow info codes can help with solving problems such as incorrect flow direction or air in the system. The flow info codes are deactivated if the pulse configuration is active. The reason for this is that a galvanically separated output module must be used in the flow sensor when the pulse configuration is active. If q_p is less than 150 m ³ /h, Flow info activated is not shown and --- will be shown on the line instead. The reason for this is that flow info is not supported in ULTRAFLOW® X4 with a nominal flow less than 150 m ³ /h.
Pulse configuration enabled	This line displays if the pulse configuration is activated (true) or deactivated (false). The pulse configuration is active if a non-standard meter factor is used. When the pulse configuration is active, flow info is deactivated. If q_p is less than 150 m ³ /h, "Pulse configuration enabled" is not shown and --- will be shown on the line instead. The reason for this is that the pulse configuration is not supported in ULTRAFLOW® X4 with a nominal flow less than 150 m ³ /h.

11.3 Pulse Config. DN150-300

In this tab the menu, you can configure ULTRAFLOW® X4 DN150-300, see *Figure 49*.

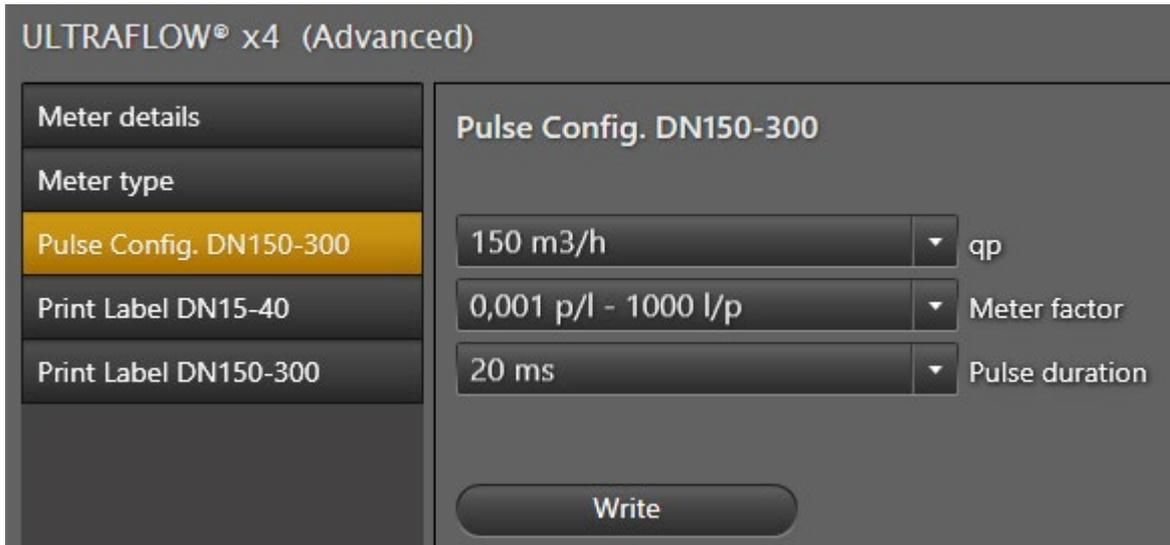


Figure 50: The “Pulse Config. DN150-300” tab.

- q_p** Via this drop-down menu, you can configure the nominal flow of the flow sensor.
- Meter factor** Via this drop-down menu, you can set the meter factor. The meter factor describes how many pulses per litre the flow sensor sends. If the meter factor is changed from standard, the flow info codes will no longer be active.
- Pulse duration** Via this drop-down menu, you can set the duration of the pulses. By default, the pulse duration is 3,9 ms but can also be set to 20 ms, 50 ms or 100 ms depending on the q_p and meter factor.
- Write** When the setting of the flow sensor has been set up as desired, you can configure the flow sensor by clicking this button.

11.4 Print label DN15-40

In this tab menu, you can set up and print new labels for ULTRAFLOW® X4 DN15-40 (type 65-5-XXHX-XXX), see *Figure 50*.

Figure 51: The “Print label DN15-40” tab

NB: When replacing the type label of ULTRAFLOW® 54, legal marking requirements must be taken into account.

Country code	The country code describes with which language and approvals the meter must be marked. The country code depends very much on applicable national laws. Via the country code, you can identify which flow sensor type you have read. The first digit of the country code indicates the meter type. For example, the country code “219” will be 2xx for heat meter MID module B+D and x19 for an English-language label.
Flow type	Via this drop-down menu, you can select the type number of the flow sensor. The flow type consists of various information. Based on <i>Figure 51</i> , the flow type contains the following: flow sensor type (65-5), dynamic range (C), q_p (A), platform (H), size (A) and country code (219).
Flow sensor in	Via this drop-down menu, you can select the flow sensor position that must appear from the label. The flow sensor position can be selected for inlet or outlet.
Configuration no.	Via this drop-down menu, you can select configuration number or flow curve number that must appear from the label.
SW revision	In this field, you can enter the software revision that must appear from the label. SW revision describes the firmware revision of the flow sensor.
Serial number	In this field, you can enter the flow sensor serial number.
Year	In this field, you can enter the production year of the flow sensor that must appear from the label.
Offset X [1/10mm]	In this field, the label start point can be moved along the horizontal direction when printing.
Offset Y [1/10mm]	In this field, the label start point can be moved along the vertical direction when printing.
Preview	When the label has been set up as desired, you can see a print preview by clicking this button, see <i>Figure 51</i> .

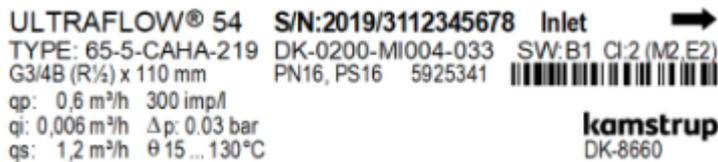


Figure 52: Print preview of a label for the 65-5-CAHA-219 flow sensor.

- Select Label Printer** When the label is ready for printing, you can select a printer by clicking this button.
- Print** Press this button to print the label.

11.5 Print label DN15-300

In this tab menu, you can set up and print new labels for ULTRAFLOW® X4 DN150-300, see Figure 52.

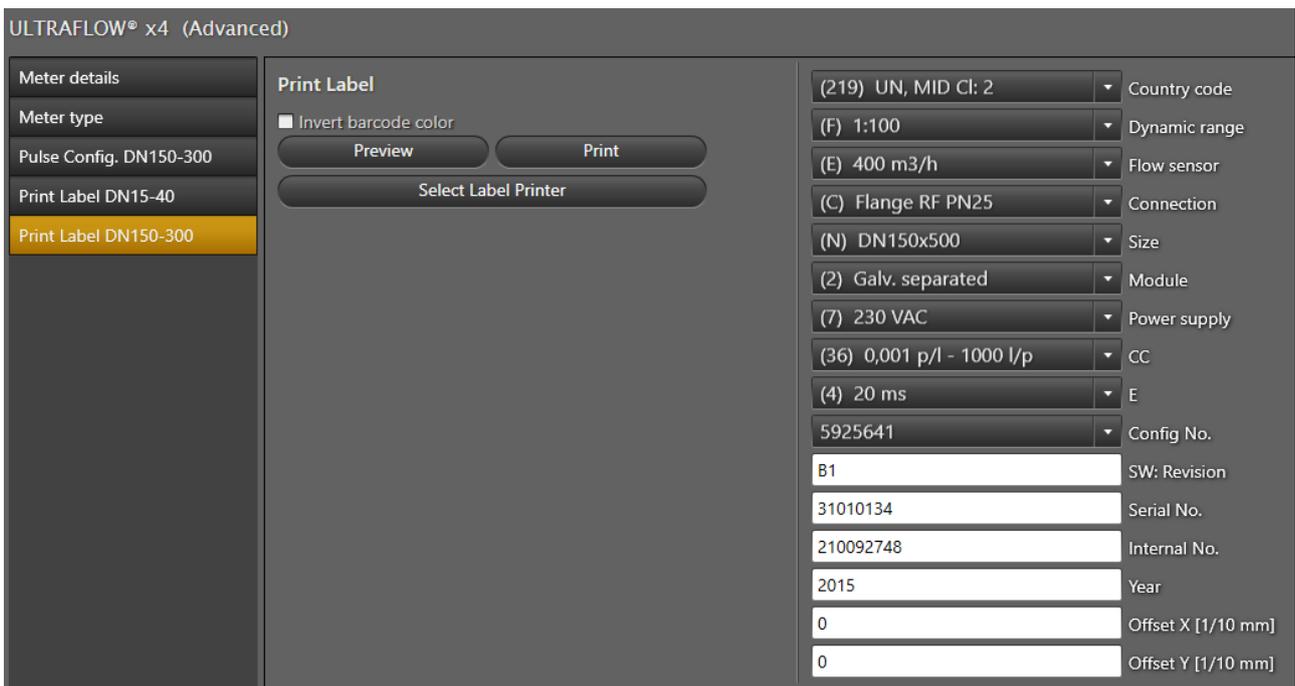


Figure 53: The “Print label DN150-300” tab

NB: When replacing the type label of ULTRAFLOW® 54, legal marking requirements must be taken into account.

- Country code** The country code describes with which language and approvals the meter must be marked. The country code depends very much on applicable national laws. Via the country code, you can identify which flow sensor type you have read. The first digit of the country code indicates the meter type. For example, the country code “219” will be 2xx for heat meter MID module B+D and x19 for an English-language label.
- Dynamic range** Via this drop-down menu, you can select the dynamic range that must appear from the label. The dynamic range describes the relation between the minimum flow q_i and the nominal flow q_p [$q_i:q_p$].
- Flow sensor** Via this drop-down menu, you can select the nominal flow, q_p , of the flow sensor.
- Connectivity** Via this drop-down menu, you can select the connection type.
- Size** Via this drop-down menu, you can select the flow sensor size.
- Module** Via this drop-down menu, you can select the output module type.
- Power supply** Via this drop-down menu, you can select the power supply.

- CC** Via this drop-down menu, you can set the meter factor of the flow sensor to p/l .
- Meter factor**
- E** Via this drop-down menu, you can select the pulse duration of the flow sensor if this is valid.
- (Pulse duration)**
- Configuration no.** Via this drop-down menu, you can select the configuration number or flow curve number that must appear from the label.
- SW: Revision** In this field, you can enter the software revision that must appear from the label. SW revision describes the firmware revision of the flow sensor.
- Serial number** In this field, you can enter the flow sensor serial number.
- Internal no.** In this field, you can enter the internal number of the flow sensor. The internal number is a preliminary serial number that is assigned prior to the first time verification of the flow sensor. The internal number appears from the type label and can also be found on the “Meter type” tab.
- Year** In this field, you can enter the production year of the flow sensor.
- Offset X [1/10mm]** In this field, the label start point can be moved along the horizontal direction when printing.
- Offset Y [1/10mm]** In this field, the label start point can be moved along the vertical direction when printing.
- Invert barcode colour** With this box, you can switch the background and bar colours (black and white). This is used when the label is printed on a white background.
- Preview** When the label is set up as desired, you can see a print preview by clicking this button, see *Figure 53*.



Figure 54: Preview of a label for the 65-5-FECN-219 flow sensor

- Select Label Printer** When the label is ready for printing, you can select a printer by clicking this button.
- Print** Push this button to print the label.

12 Pulse Divider

12.1 Introduction

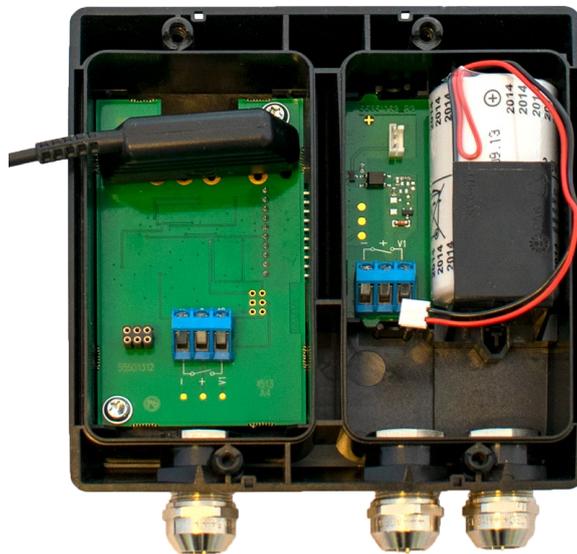
Depending on the application situation of ULTRAFLOW®, galvanic separation, adaptation of the meter factor to a foreign calculator or a longer cable between ULTRAFLOW® and MULTICAL® may be necessary. Pulse Divider (6699-907) is an electronic box that is installed between ULTRAFLOW® and the calculator, which thus can solve the above-mentioned adjustments. Pulse Divider is available with built-in supply for ULTRAFLOW®. By default, Pulse Divider is powered by a built-in battery. Alternatively, Pulse Divider is externally powered by 24 VAC or 230 VAC. Pulse Divider is available with galvanically separated output module. Galvanic separation is used in the following situations:

1. Request for cable lengths between MULTICAL® and ULTRAFLOW® of 10 to 100 m.
2. For flow sensor number 2 in connection with MULTICAL®. If two flow sensors are used together with MULTICAL®, one must be galvanically separated.
3. If ULTRAFLOW® is connected to other equipment/foreign calculators.

Note: Due to the galvanic separation, flow info is not possible when using Pulse Divider.

It is possible to use Pulse Transmitter (6699-903) if it is desirable only to galvanically separate and/or extend the cable length between MULTICAL® and ULTRAFLOW® and if adjustment of the meter factor is not necessary. In the case where galvanic separation is not necessary and flow info is requested, Cable Extender Box (6699-036) enables the extension of the cable length between ULTRAFLOW® and MULTICAL® up to max 30 m. For more information about Pulse Divider, Pulse Transmitter and Cable Extender Box, see the technical description of ULTRAFLOW® 54 DN15-125.

Before METER TOOL HCW can communicate with Pulse Divider, the communication unit must be connected via USB flow sensor cable (6699-141) to the computer and the 4-pole connector of Pulse Divider. See *Figure 55*.



*Figure 55: Correct location of the communication unit in Pulse Divider 66-99-907.
Note the disconnected power supply.*

Note: The supply of Pulse Divider must be disconnected during programming. Pulse Divider is powered through the connected interface cable.

12.2 The Pulse Divider 66-99-907 box

When METERTOOL HCW has been successfully connected to Pulse Divider, the Pulse Divider box appears with the “Meter details” tab open (marked with yellow), see *Figure 56*.

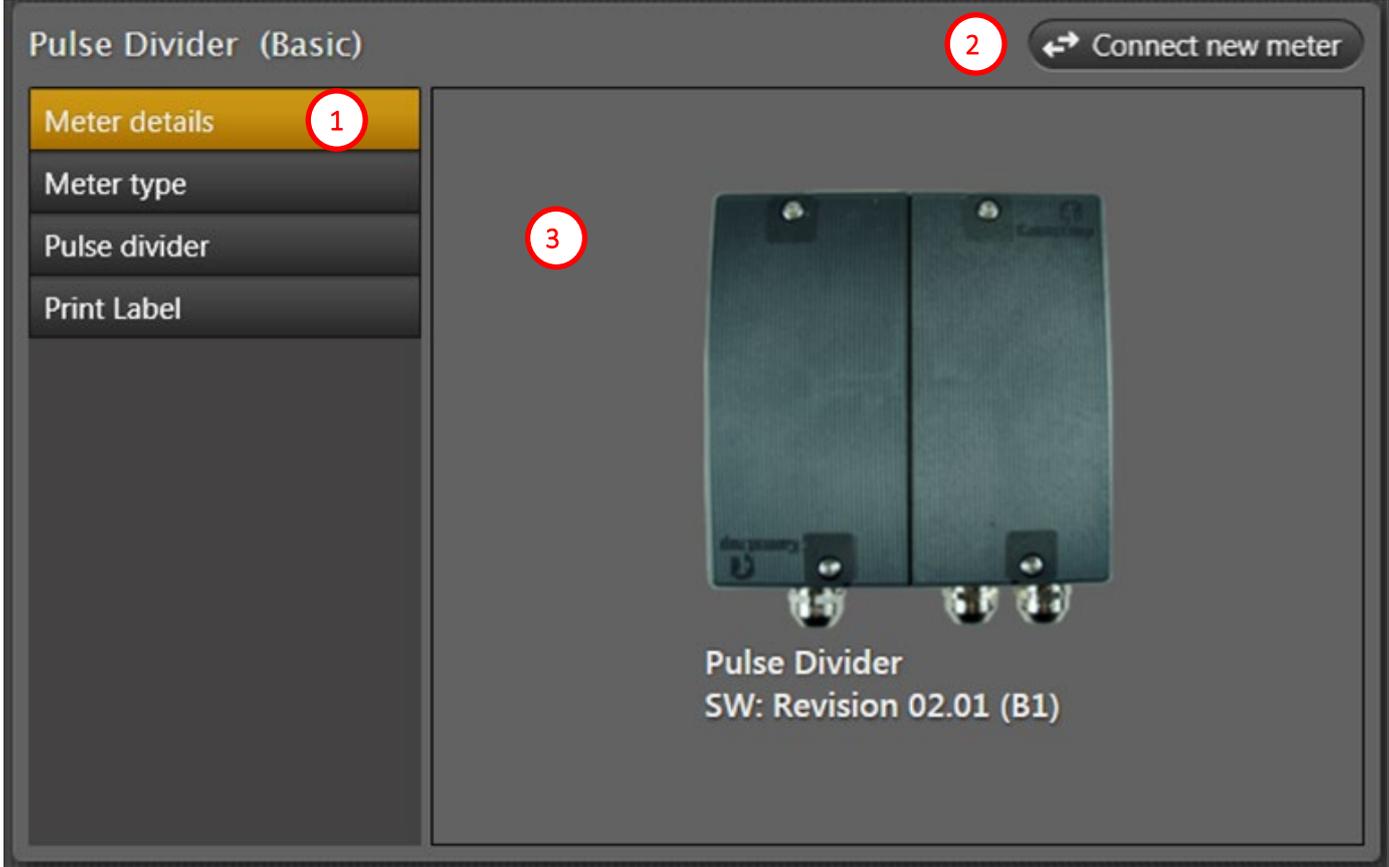


Figure 56. The “Meter details” tab for Pulse Divider.

- 1** Tab menu This tab menu can be used to navigate the different tabs.
- 2** Connect new meter This button can be used to return to the start window where it is possible to connect to another product.
- 3** The tab Depending on which tab is selected, the tab shows different information and configuration options.

METER TOOL HCW

12.2.1 Meter type

This tab menu displays the Pulse Divider configuration, see *Figure 57*.

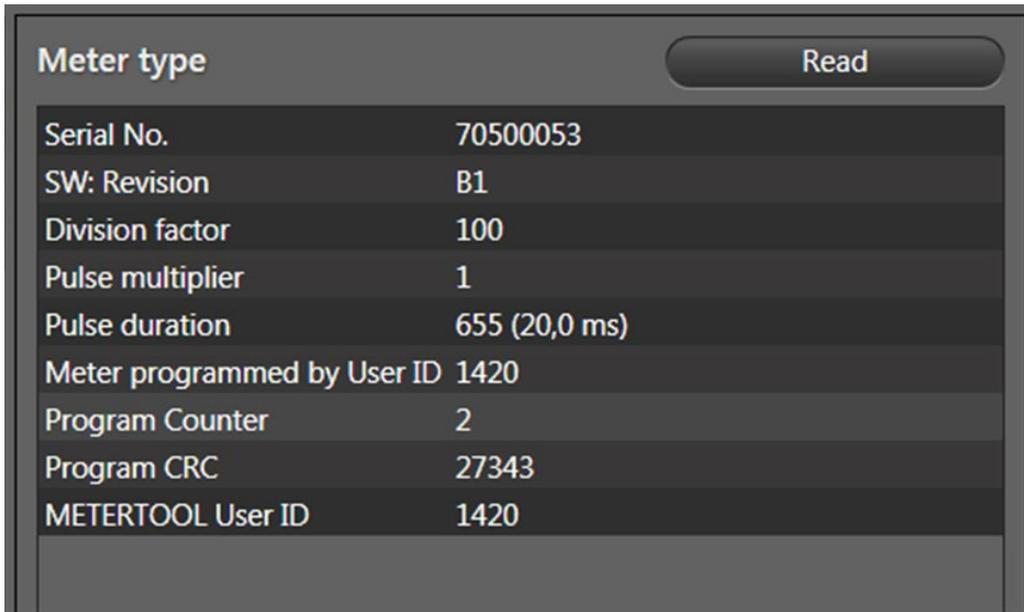


Figure 57: The "Meter type" tab.

Serial No.	This line displays the revision number of the flow sensor. The serial number is unique for each Pulse Divider.
SW: Revision	This line displays the software version/revision of Pulse Divider.
Division factor	This line displays the division factor. The division factor is used in the case that the calculator cannot handle the number of pulses from the flow sensor. The division factor thus does not reduce the amplitude of the pulse but the number of pulses. See also the description of the pulse multiplier.
Pulse multiplier	This line displays the pulse multiplier. The pulse multiplier is used together with the division factor to enable a greater range of division of pulses than what would be possible with the pulse divider alone. For example, division 62,5 can be achieved by combining division factor: 625 and pulse multiplier: 10.
Pulse duration	This line displays the pulse duration. By default, the pulse duration of Kamstrup products is 3,9 ms. For other products, the pulse duration can also be set to 20 ms, 50 ms or 100 ms.
Meter programmed by user ID	This line displays the user ID of the last performed reconfiguration.
Program Counter	This line displays the number of reconfigurations of Pulse Divider. Reconfigurations imply changes of the nominal flow, q_p , Pulse Divider and/or pulse duration.
Program CRC	This line displays the cyclic redundancy check (CRC) of the Pulse Divider software. The cyclic redundancy can be used to check that the Pulse Divider software is installed correctly. The CRC of the software appears from the type approval certificate of ULTRAFLOW® 54 DN15-125.
METER TOOL user ID	This line displays the METER TOOL HCW user ID of the current METER TOOL HCW user.

12.2.2 Pulse Divider

On this tab, you can read or configure the Pulse Divider setup, see *Figure 58*. The tab contains three drop-down menus and a button that are further described below.

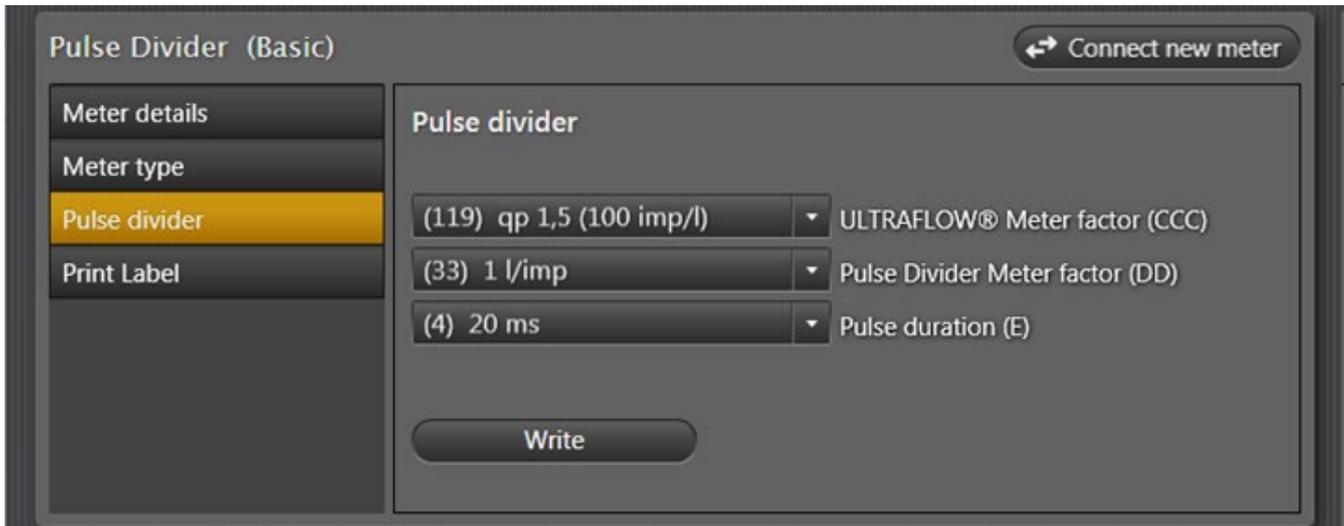


Figure 58: The “Pulse Divider” tab.

ULTRAFLOW® Meter factor (CCC)

In this field, you can set the flow sensor’s nominal flow, q_p and the meter factor. It is necessary to set up the meter factor of the flow sensor so that Pulse Divider reproduces the input pulses correctly. The meter factor and the nominal flow, q_p , appear from the label on the flow sensor.

Pulse Divider Meter factor (DD)

In this drop-down menu, you can set the meter factor of Pulse Divider. The number of pulses can thus be reduced as Pulse Divider only emits a pulse when the meter factor is reached. Only valid meter factors of Pulse Divider are selectable on the basis of the CCC code.

Pulse duration (E)

In this drop-down menu, you can set the pulse duration. Only valid pulse durations are selectable on the basis of the CCC and DD code.

Write

When the configuration has been set as desired, you can configure Pulse Divider by clicking this button.

12.2.3 Print Label

On this tab, you can create and print new type labels for Pulse Divider, see *Figure 59*.

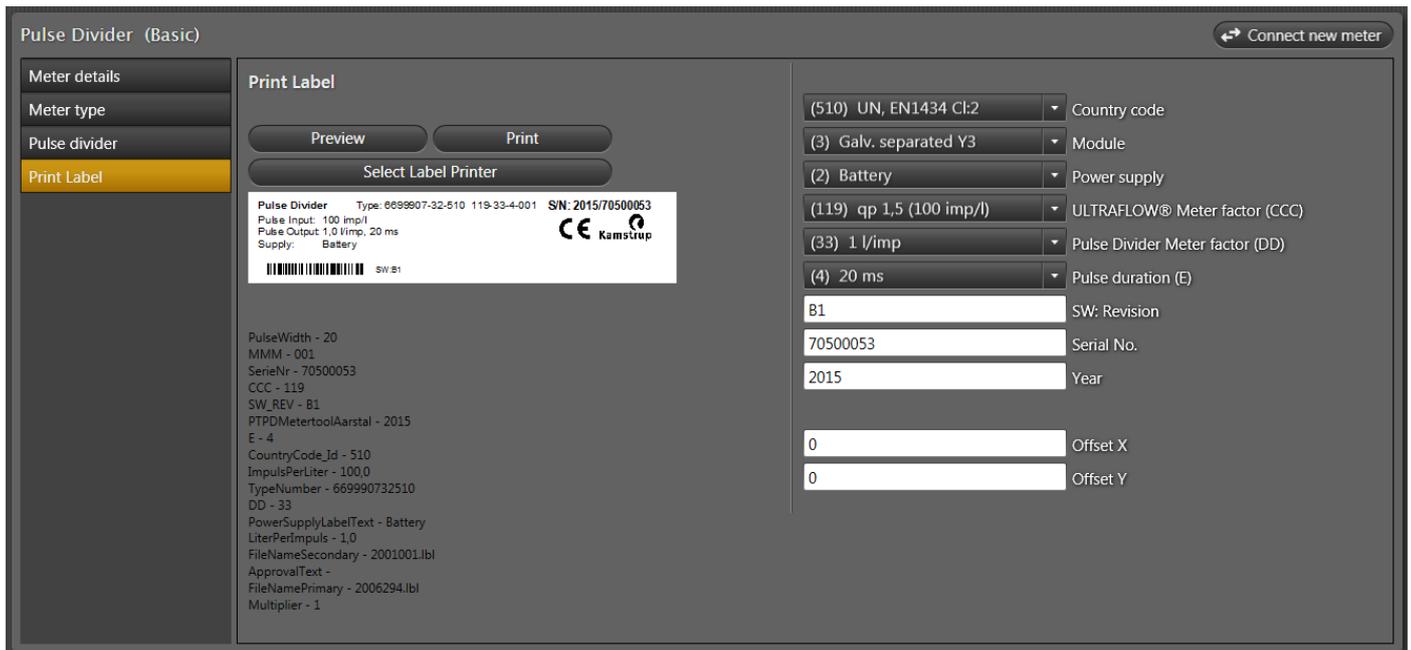


Figure 59: The “Print Label” tab.

Note: When replacing the type label of Pulse Divider, legal marking requirements must be taken into account.

- Country code** In this drop-down menu, you can set the country code that must appear from the label. The country code describes the language and approvals with which Pulse Divider is marked and appear from the original label of Pulse Divider.
- Module** In this drop-down menu, you can set the output module that must appear from the label. The output module influences the cable length between Pulse Divider and the calculator and appears from the original label of Pulse Divider.
- Power supply** In this drop-down menu, you can select the power supply that must appear from the label. Pulse Divider must be supplied by battery, 24 VAC or 230 VAC.
- ULTRAFLOW® Meter factor (CCC)** In this drop-down menu, you can set the ULTRAFLOW® meter factor that must appear from the label. The meter factor can be found on the label of the respective ULTRAFLOW®.
- Pulse Divider Meter factor (DD)** In this drop-down menu, you can set the Pulse Divider meter factor that must appear from the label. The Pulse Divider meter factor can be read on the “Pulse Divider” tab.
- Pulse duration** In this drop-down menu, you can set the pulse duration of Pulse Divider that must appear from the label. The Pulse Divider pulse duration is displayed on the “Pulse Divider” tab.
- SW: Revision** In this field, you can set the Pulse Divider software revision that must appear from the label. The Pulse Divider software revision is displayed on the “Meter details” tab.
- Serial number** In this field, you can set the Pulse Divider serial number that must appear from the label. The Pulse Divider serial number is displayed on the “Meter type” tab.
- Year** In this field, you can set the production year of Pulse Divider that must appear from the label. The production year of Pulse Divider can be found on the original label.
- Offset X** In this field, you can set the horizontal offset of the label. Under Preview, you can check the set offset. Positive values will lead to an offset to the right.

Offset Y

In this field, you can set the vertical offset of the label. Under Preview, you can check the set offset. Positive values will lead to a downward offset.

Preview

Clicking this button will show you an example of the label:



Figure 60: Preview of label for Pulse Divider 66-99-907.

Invert barcode color

With this box, you can change the background color and the border color (black and white). This is used when the label is printed on a white background.

Select Label Printer

Clicking this button allows you to select the printer to be used to print labels.

Print

When the label has been set up as desired, you can print the label by clicking this button.

12.3 The Pulse Divider 66-99-607 box

Pulse Divider type 66-99-607 is a discontinued product, but is supported by METER TOOL HCW for the configuration of Pulse Divider and the printing of labels.

Pulse Divider is connected to the computer via the communication unit (6699-140) via the Sub-D connector through the serial port of the computer (or through the USB port via a USB Sub-D adapter) and the 8-pin connector of Pulse Divider, see **Error! Reference source not found.**

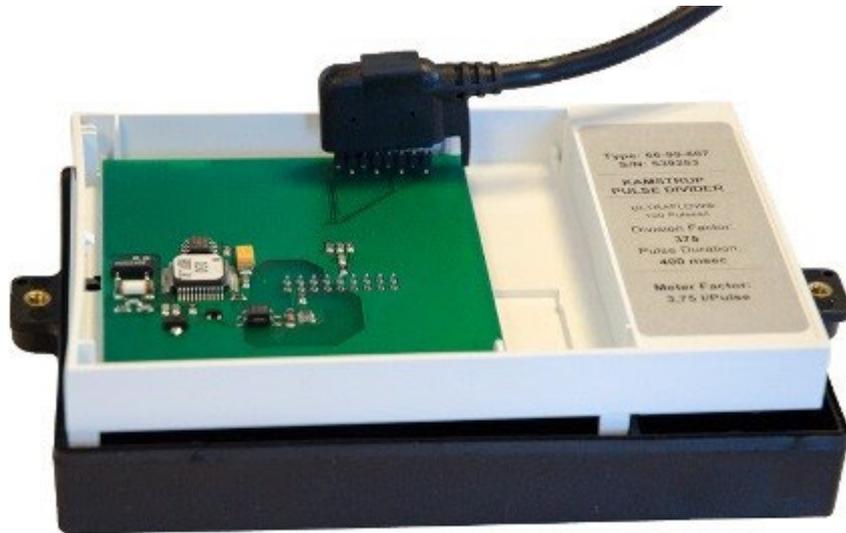


Figure 61: Correct location of the communication unit in Pulse Divider 66-99-607.

12.3.1 Pulse Divider and printing of label

As Pulse Divider 66-99-607 is not automatically recognised by METER TOOL HCW, you must select “Offline mode” in the start window and then “Pulse Divider 66-99-607” in the tab menu, see **Error! Reference source not found.**

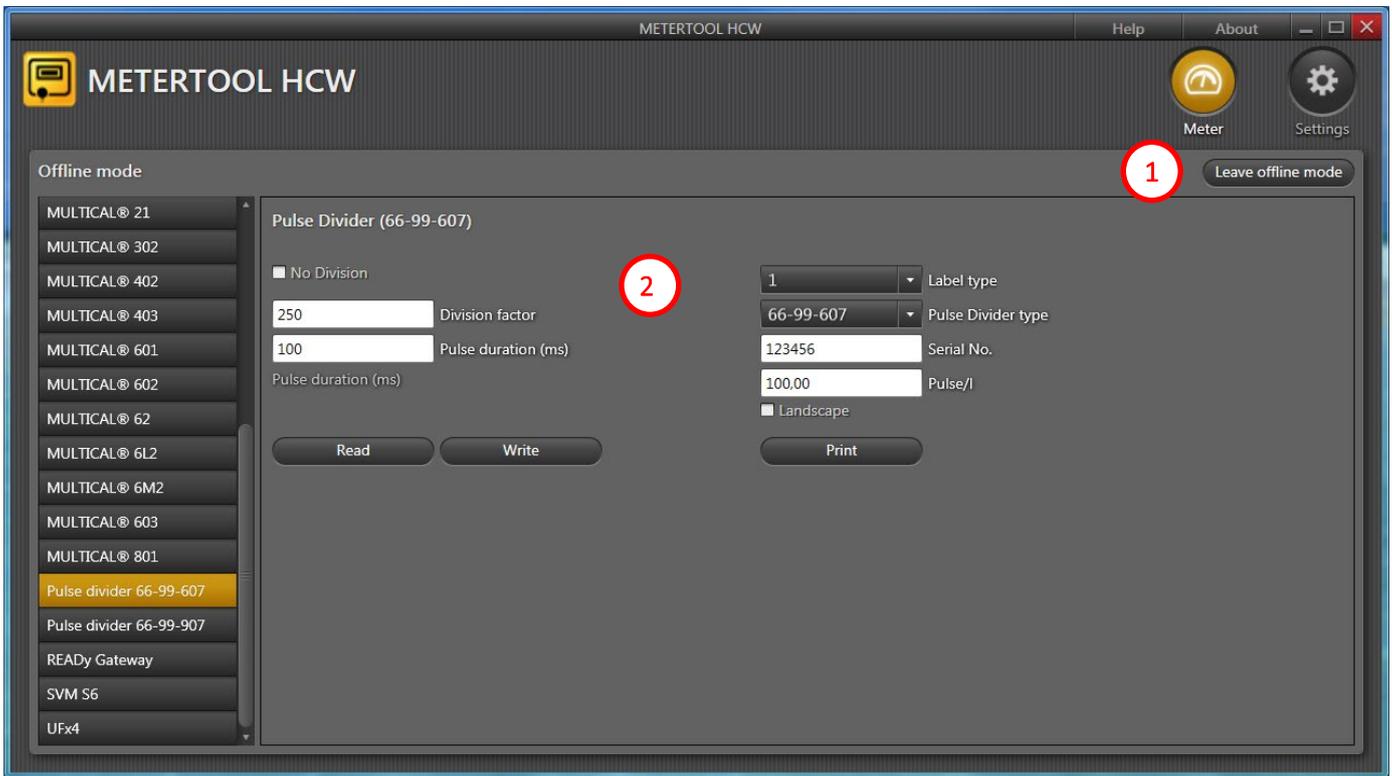


Figure 62. The “Pulse Divider 66-99-607” tab.

- 1 Leave offline mode Click the “Leave offline mode” button to return to the start window.
- 2 The tab The tab has 3 functions: Reading of Pulse Divider, configuration of Pulse Divider and printing of label for Pulse Divider.

No Division If this field is selected, Pulse Divider will be configured for division 1 when you click the button “Write”. Note that the fields “Division factor” and “Pulse duration (ms)” disappear when the field is selected. The values in these two fields must thus be entered before selecting “No division” and configuring Pulse Divider or printing the label.

Division factor In this field, the division of the ULTRAFLOW® meter factor “Pulse/l” is entered¹. If you, for example, want an ULTRAFLOW® meter factor of 100 imp/l divided into 10 l/imp, you must select 1000. Only this field, together with the field “Pulse duration (ms)”, has influence on the function of Pulse Divider (configuration).

Pulse duration (ms) In this field, you can enter the duration of the pulses on the output of Pulse Divider¹. Only this field, together with the field “Division factor” has influence on the function of Pulse Divider (configuration).

Read This button reads the configuration of Pulse Divider.

METER TOOL HCW

- Write** When the requested configuration has been set, you can configure Pulse Divider by clicking this button.
- Label type** The selections in this drop-down menu influence where in the print area the label is printed. The 4 selections each represent their placement, with selection 1 being top left, selection 2 being directly to the right of this and so on.
- Pulse Divider type** In this drop-down menu, you can select the Pulse Divider type. It is either 66-99-606 (active output) or 66-99-607 (passive output).
- Serial No.** With this field, you can enter the serial number that must appear from the label.
- Pulse/l** With this field, you can enter the meter factor for ULTRAFLOW®.
- Landscape** With this field, you can select landscape or portrait printing.
- Print** Click this button to print the label. Printing takes place on the printer selected as default.

¹ For valid combinations of division factors and pulse duration, see guide 5511-727.

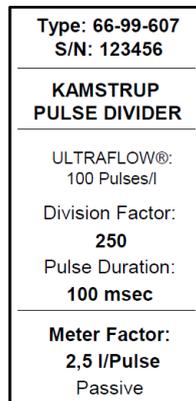


Figure 63: Preview of label for Pulse Divider 66-99-607.

