**Installation**

The electronic unit is fixed to a mounting plate. Never handle the heat meter by the electronic unit. Handle the heat meter only by the threaded connection.

All cables must be laid at least 12 inches from power or high frequency cables.

If two or more meters are installed in one unit, make sure all the meters operate under the same mounting conditions.

Avoid cavitation over the entire measurement range by overpressure, i.e. at least 1 bar to \(q_p\) and about 2 bar on overload \(q_s\) (valid for ca. 80°C).

The heat meter left the factory in perfect safe condition. Calibration, maintenance, component replacement, and repairs must only be performed by trained personnel who are familiar with the hazards involved. The manufacturer will provide further technical support on request. Heat meter safety marks that are relevant for calibration must not be damaged or removed! Doing so voids the warranty and calibration validity of the device.

**Mounting**

The installation location for the meter (return/flow pipe) is printed on the dial plate. Please study the dimensions and check there is sufficient clearance.

If the heat meter is installed on the common return of two heating circuits, e.g. heating and hot water, the mounting location must be a sufficient distance, at least 10 × DN, from the T-element to ensure different temperatures homogenize.

Rinse the system thoroughly before mounting the heat meter.

As shown in the examples, mount the volume measuring unit horizontally or vertically between two shut-off valves with the arrow pointing in the direction of flow. The sensors must be mounted in the same heating circuit as the volume measuring unit. (Pay attention to mixture). For the installation as **cold meter** see page 2.

The sensors can be mounted in T-elements, ball valves, or pockets, depending on the model. The pockets must extend into the center of the pipe cross-section. Temperature sensors and screw connections must be sealed against manipulation.

**Calculator**

The ambient temperature of the calculator must not exceed 55°C. Avoid direct sunlight. Mounting can be vertical or horizontal with respect to the volume measuring unit (Fig. 4). Remove the calculator from the volume measuring unit, rotate it, and plug it in the required position. **For heating water temperatures above 90 °C**, the calculator must be mounted on the wall. For wall mounting, remove the electronic unit from the volume measuring unit, unscrew mounting plate, and mount on wall. Slice the calculator onto the mounting plate again. (Fig. 5)
Installation as a cold meter

The transducers must be directed sideward or to the bottom when mounted as a cold meter (condensation of water). The measuring tube has to be installed always in return. The calculator must be split from the tube and e.g. mounted to the wall. It has to be ensured that no condensed water can run along the wiring into the calculator.

Power Supply

ULTRAHEAT® XS comes as a standard equipped with a long-life battery for 6 or 11 years operating time (24V AC/DC external supply, with galvanic insulation, is also possible).

If the meter needs to be sent back by air freight then the battery must be removed prior to shipping!

Interfaces of the Calculator

The heat meter ULTRAHEAT® XS is equipped with an M-bus protocol optical interface.

Communication

If the heat meter is equipped with one of the options “M-bus”, “Minibus” or “pulse output”, it is delivered with a two wire cable, which can be lengthened with a cable 2 × 0.75mm² (put a distributing box). Pay attention to the proper polarity in case of the pulse output.

Temperature Sensors

The cables must not be split, shortened, or extended.

Sealing

Two self-lock seals are delivered with the heat meter for sealing of the temperature sensor in the flow pipe and of the fitting of the measuring tube.

For example the temperature sensor:

Parameterization

From code entry in the service loop, continuously pressing the button takes you to the entry mode. After entering the current date, you will enter the parameterization level. Set a value with a long press of the button. Accept the value with a short press of the button. After correct entry, a rolling menu appears and switches to the next menu item every 1.5s.

You can parameterize as follows:

- 01.01. - - S Yearly set day  (01.01. --)
- 12.05.99 D Date  (12.05.99)
- 15.33.06 T Time  (15:33:06)
- 2 3 4 5 6 7 8 K Customer No. or M-BUS (secondary address) *
- 123 A Primary address *
- Ft + Reset missing time
- Nb - - - - - Return to normal mode

As soon as the required function is displayed, press the scroll button to accept the function. Set the value by pressing the button continuously. Press the button briefly to accept the flashing value. The next least significant digit then flashes and can also be set by pressing the button continuously and accepted by pressing the button briefly. The * character is output briefly as end acknowledgment for a display line. To correct a wrong entry run through the loop again.

* if the meter is already connected to the M-Bus then a change in M-bus supply voltage must be initiated manually in order to make a new M-bus address effective.

Para mode is exited:

- By pressing the scroll button when Nb ----- appears in the display
- Automatically after 10 minutes

Commissioning

Open shut-off valves. Check the heating system for tightness and vent carefully. After no more than 100 s message F0 will disappear again. Then check the measurement values "temperatures" and "flowrate" for plausibility. (See display list in Operating Instructions UH 304-101.) Vent the system until the flowrate display is stable. Attach user locks on screw connections and sensors. Read and note readings for heat quantity / volume and operating / missing hours.

When the response thresholds are exceeded and the flow rate and temperature difference are positive, the heat quantity and the volume are summated.

The segment test displays all display segments for test purposes.

On the yearly set day, the meter readings for heat quantity and volume are placed in a previous year memory each year.
The flowrate, heat power, and temperature difference are recorded signed. Values below the response threshold are preceded by a \textit{u}. The current \textit{temperatures} are displayed together as integer °C values on one display line.

The 8-digit customer number (secondary address for M-bus operation) can be set in parameterization mode. In this case, the most significant digit is not displayed and set to zero internally. The \textit{device number} is assigned by the manufacturer.

The \textit{operating hours} are counted from initial connection of the power source. Missing hours are summated if a fault is pending that prevents the heat meter from measuring. Missing hours summated while meter on stock (because of error F0 due to air in the measuring tube) are \textit{reset once} after installation at a volume reading of 10 liters.

The \textit{date} is incremented daily. As a standard the meter is always delivered with Central European Time (CET).

The \textit{firmware version} number is assigned by the manufacturer.

\section*{Fault Codes and IDs}

The heat meter constantly performs self-diagnosis and can display various faults.

\begin{table}[h]
\begin{tabular}{|c|c|c|}
\hline
Fault Code & Fault & Measures \hline
\hline
FL nEG & Wrong flow direction & Check / correct flow or mounting direction \hline
& Eventually changing with & \hline
DIFF nEG & Negative temperature difference & Check / exchange mounting position of sensors \hline
& Eventually changing with & \hline
F0 & No flow rate can be measured & Air in the measuring unit/pipe, vent pipe (as-delivered state) \hline
F1 & Interruption in the supply sensor & Contact service \hline
F2 & Interruption in the return sensor & Contact service \hline
F3 & Electronics for temperature evaluation defective & Contact service \hline
F4 & Battery empty & Contact service \hline
F5 & Short-circuit in the supply sensor & Contact service \hline
F6 & Short-circuit in the return sensor & Contact service \hline
F7 & Fault in internal storage operation & Contact service \hline
F8 & Fault F1, F2, or F3 or F5, F6 pending for longer than 8 hours, detection of fraud attempts. No more measurements are performed. & This F8 error message must be reset by service. \hline
F9 & Fault in the electronics & Contact service \hline
\end{tabular}
\end{table}

\section*{Notes}

\begin{itemize}
\item Regulations for the use of heat meters must be observed, see EN1434 part 6! Particularly cavitation in the system must be avoided.
\item Ensure by appropriate mounting of the meter that flooding the meter or water dripping is avoided.
\item Regulations for electrical installations must be observed!
\item All information given in the data sheet of the heat meter must be observed.
\item Heat meter safety marks relevant for calibration must not be damaged or removed! Doing so void the warranty and calibration validity of the device.
\item The transport of the heat meter is permitted only in the original package.
\item If the meter needs to be sent back by air freight then the battery must be removed prior to shipping!
\end{itemize}

For up-to-date information, go to INTERNET address: \url{www.landisgyr.com}

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