Measuring capsule heat meter G54 / G55

Measuring capsule heat meter with optical interface and external modules for retrofitting. Thanks to integrated modules, the devices can be equipped with the required communication technology ex factory.

For use in the Q opto and Q basic systems or through an integrated communication module in the Q M-Bus system.
Can be retrofitted with external modules for use in the systems Q M-Bus, Q walk-by and Q AMR.

As series G55 with combined heat and cold metering.

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Application

The capsule meters G54 or G55 have been designed as replacement meters and are used wherever a heat meter housing (single-pipe connector) for capsule meters with a 2 inch coax thread is available. Due to their design height, the meters are generally fitted with a detachable calculator unit that can be fitted at a distance of up to 25 cm away from the volume meter.

With model G55, the combined measurement of heat and cold energy is possible. The main areas of application are in central heating systems where the heating energy is outputted individually to different consumers.

This is meaningful in:
~ Apartment buildings
~ Offices and administration buildings

Typical users are:
~ Metering service companies
~ Housing associations
~ Property management companies
~ Specialist companies for sanitary, heating and air-conditioning technology

Functions

~ 2" capsule heat meter G54 or combined 2" capsule heat/cold meter G55 for indirect installation of the temperature sensors
~ Fits in all 2" coax-EATs
~ Detachable calculator unit
~ Optical interface for external communication modules
~ Internal communication modules for M-Bus and impulse available ex factory
~ Mains-independent, for local use, 6 or 10-year lithium battery
~ PTB-approved, approval no. D 22.12/05.02
~ Values are measured by two platinum PT 1000 resistance thermometers and one hydraulic impeller wheel sensor (2" coax) with inductive impeller wheel scanning with carbide-sapphire bearings for low-wear and reliable long-term measuring operation (the counter housing (EAT, EAS) must be provided on site).
~ High resolution thanks to 7-digit LC display that indicates current value, old value, check number and many service and operating parameters
~ Additional display of 18 monthly values with date
~ Storage of the maximum supply flow and return flow temperatures as well as the maximum current flow with date
~ Programming of a due date can be carried out on-site via the optical interface
~ Add-on modules for radio or M-Bus communication as well as impulse output and RS 232 modules can be retrofitted at any time on-site via the optical interface
~ Thanks to integrated modules, the devices can be equipped with the required communication technology (M-Bus or impulse output) ex factory

Type summary

	Part number	
G54 / G55	Heat meter	Heat/cold meter
0.6 m³/h for immersion sleeve and direct measurement - temperature sensor 5.0 x 45 mm		
with 1.5 m temperature sensor cable	G54/3000-00	G55/3000-00
with 3.0 m temperature sensor cable	G54/3300-00	G55/3300-00
1.5 m³/h for immersion sleeve and direct measurement - temperature sensor 5.0 x 45 mm		
with 1.5 m temperature sensor cable	G54/3010-00	G55/3010-00
with 3.0 m temperature sensor cable	G54/3310-00	G55/3310-00
2.5 m³/h for immersion sleeve and direct measurement - temperature sensor 5.0 x 45 mm		
with 1.5 m temperature sensor cable	G54/3020-00	G55/3020-00
with 3.0 m temperature sensor cable	G54/3320-00	G55/3320-00
G54 / G55 for external installation spots		
0.6 m³/h for immersion sleeve measuring - temperature sensor 6.0 x 50 mm		
with 1.5 m temperature sensor cable	G54/2000-00	G55/2000-00
with 3.0 m temperature sensor cable	G54/2300-00	G55/2300-00
1.5 m³/h for immersion sleeve measuring - temperature sensor 6.0 x 50 mm		
with 1.5 m temperature sensor cable	G54/2010-00	G55/2010-00
with 3.0 m temperature sensor cable	G54/2310-00	G55/2310-00
2.5 m³/h for immersion sleeve measuring - temperature sensor 6.0 x 50 mm		
with 1.5 m temperature sensor cable	G54/2020-00	G55/2020-00
with 3.0 m temperature sensor cable	G54/2320-00	G55/2320-00
G54 / G55 with internal module		
Internal communication modules		
M-BUS module	G54/xxx2-xxx	G55/xxx2-xx
Impulse output	G54/xxx3-xxx	G55/xxx3-xx

* x = any option code

Ordering

Further order options

Volume measurement in heat pipes

Immersion sleeve and direct measurement, temperature sensor 5.0 x 45 mm	G54/Dxxx-xxx	G55/Dxxx-xx
Immersion sleeve measurement, temperature sensor 6.0 x 50 mm	G54/Cxxx-xxx	G55/Cxxx-xx

* x = any option code

Further accessories

Order data		Part no.
Programming key for due date programming		G99/PAFF-01
Remote display with wall bracket,	inc. plug-in cable 2.5 m long	R99/FANZ-01
	Extension cable 5 m long	390 980
M-Bus cable with sealable plug,	2-pole for M-Bus, 3.0 m long *	593 812
Impulse cable with sealable plug,	2-pole, 3.0 m long for G54 *	593 812
	4-pole, 3.0 m long for G55 *	593 559

* only for devices with integrated modules

The part numbers shown in the type summary must be quoted in orders. If a due date other than January 1 is required, the type description must be supplemented by the required month in the order (the due date is always the first of the month).
Ordering example for a heat meter with 110 mm installation length and May 1 as due date: G54/0000-00, due date: May

Technology

The heat meter G54 / G55 comprises a pair of precise temperature sensors and a volume meter which is installed in an existing single-pipe connector with 2 inch coax thread. An electronic calculator unit continually calculates the difference in temperature between the supply and return flow and multiplies the value by the flow rate. The result of this (current heating or cooling capacity) is cumulated, displayed or forwarded to a data-processing system by radio or cable.
The heat meter G54 / G55 is a heat meter that can be extended by different internal and external modules. Internal modules are integrated into the device during production in the factory.

The G54 / G55 has two communication interfaces available.

1. The optical interface Q opto (1107) which is accessible from the outside. This allows programming and retrofitting work on the G54 / G55 on-site at all times. The heat meter can be retrofitted for radio or other communication means. The respective modules are simply mounted on the calculator unit.
2. The internal module interface for internal impulse output or M-Bus modules. In the case of integrated modules, the information is forwarded via a permanently mounted, threaded and sealed cable connection (impulse output and M-Bus).

Measuring principle

The hydraulic sensor (volume meter) is based on the multi-jet impeller wheel sensor principle. The impeller wheel is scanned using changes in field strength in a coil depending on the impeller wheel position. There is no accumulation of magnetite, which could lead to blockage of the impeller wheel.

Determining water consumption

Using the measured difference in temperature between supply and return flow, the flow rate and the calculated thermal coefficient, the heat quantity is shown on the LC display in physical units (kWh, MWh, MJ, GJ) following an internal calculation process. To increase measuring accuracy, the density and enthalpy values are determined for every measurement and integrated into the calculation.

Storing the consumption values

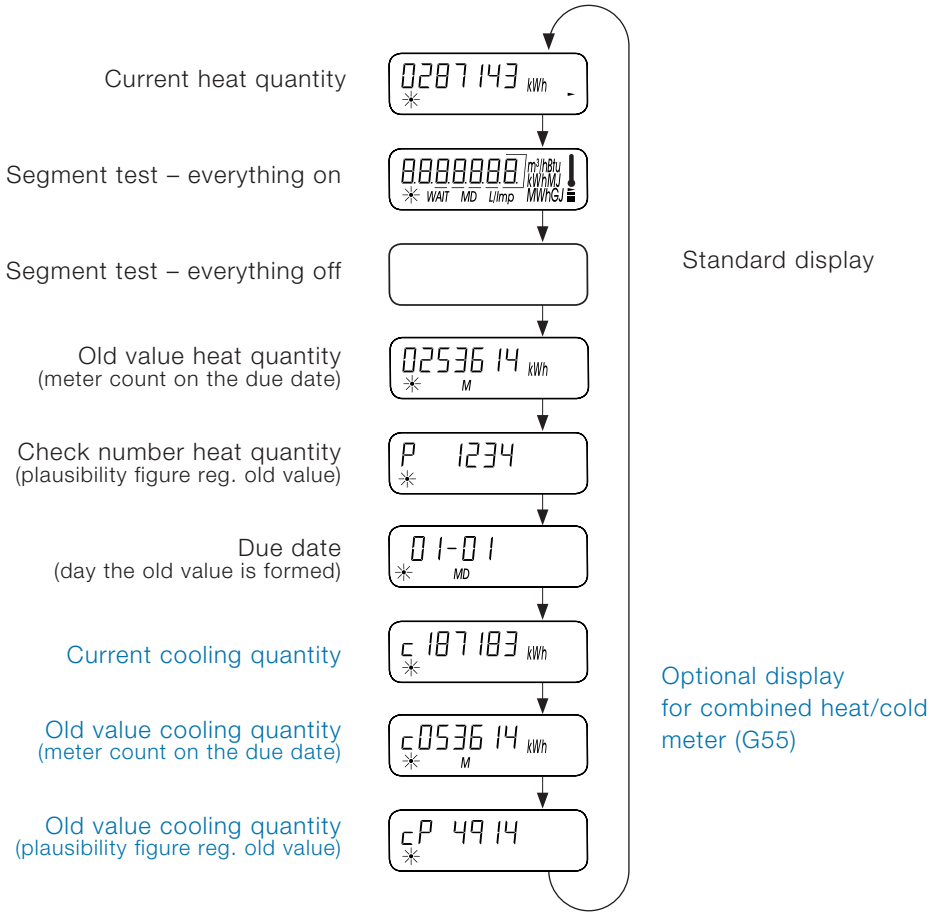
The heat consumption values are continually cumulated. The current status is stored at the beginning of the due date.
The due date can be set with the aid of a programming key; January 1 is set as the 01. standard due date (see «Ordering» section)
When the annual consumption is stored, the heat meter calculates a plausibility figure. This can be read out together with the due date value and checked in the billing program. This allows incorrect display readouts
(e.g. “switched digits”) to be detected. The stored due date value remains in place for one year.

Display

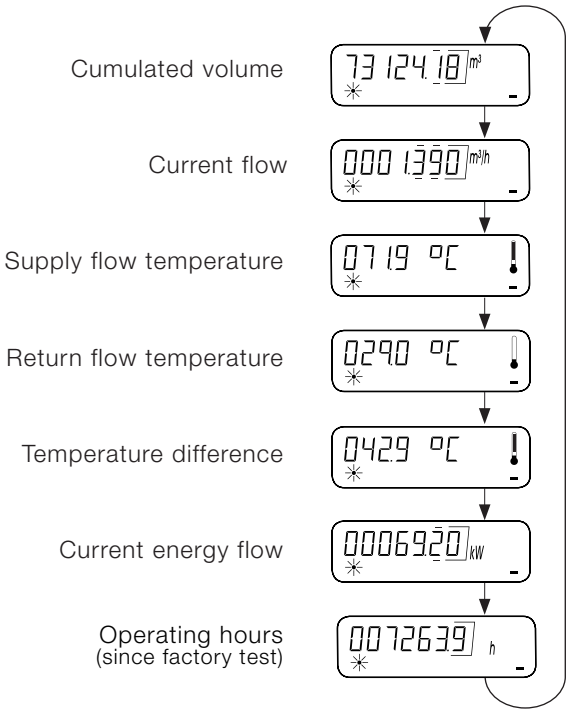
Device states, display units and consumption values are shown via the LC display on several levels (up to 5 levels). The heat meter is equipped with a key that can be used to switch between the individual display steps and levels. The display includes the following values:

- Current heat quantity and, with G55, cold quantity
- Display test
- Old value heat quantity and, with G55, cold quantity
- Check number heat quantity and, with G55, cold quantity
- Due date
- Cumulated volume
- Current flow
- Supply flow temperature
- Return flow temperature
- Temperature difference
- Current energy flow
- Operating hours
- High-resolution heat quantity
- Volume per input impulse
- Software status
- Any module installed
- Storage date and consumption values for the last 18 months for quantity of heat and cold (with G55)

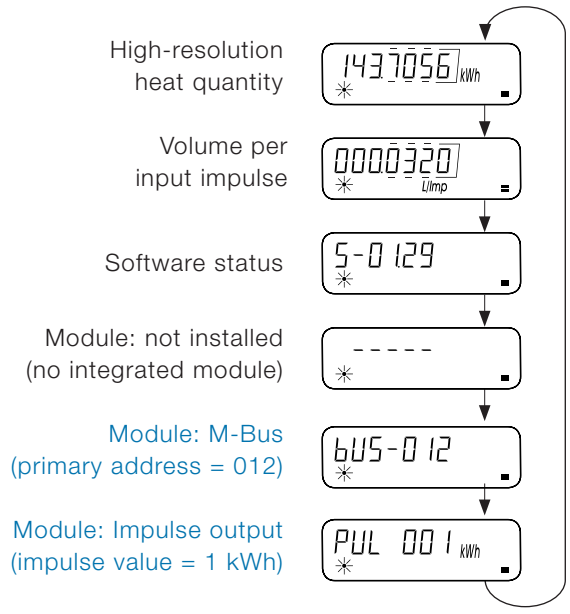
Display level 0



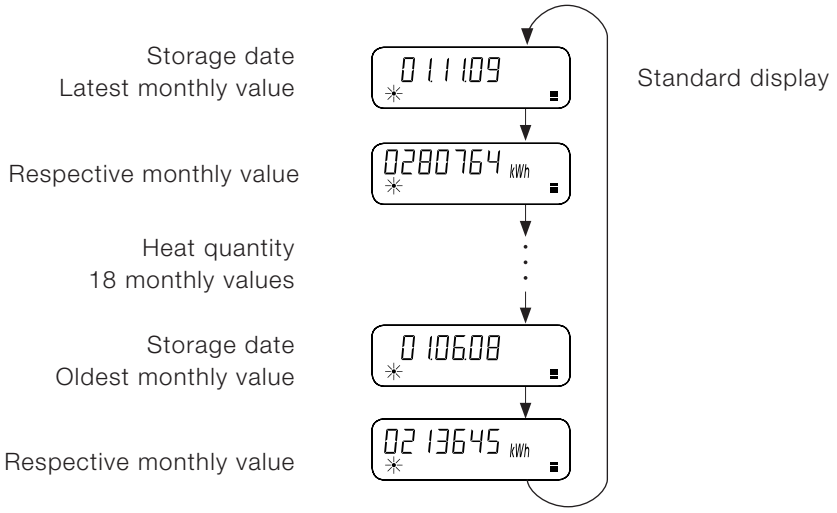
Display level 1



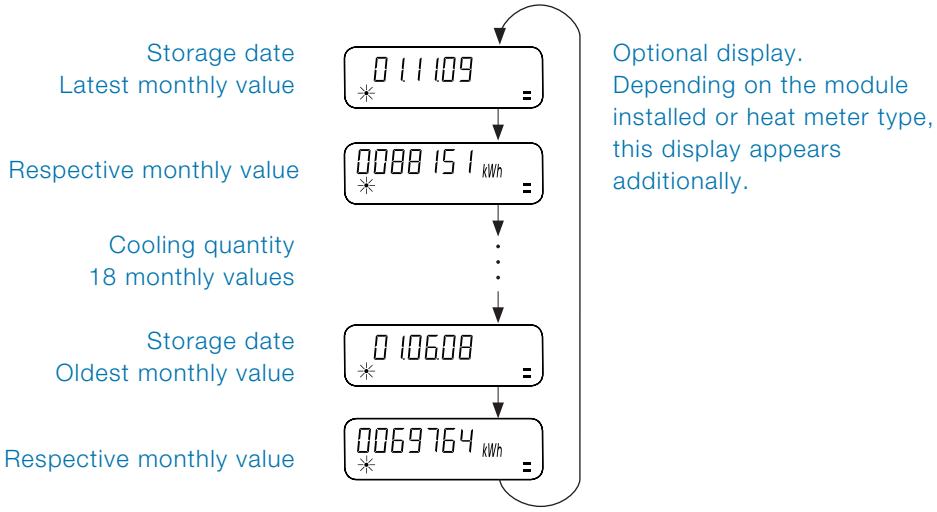
Display level 2



Display level 3

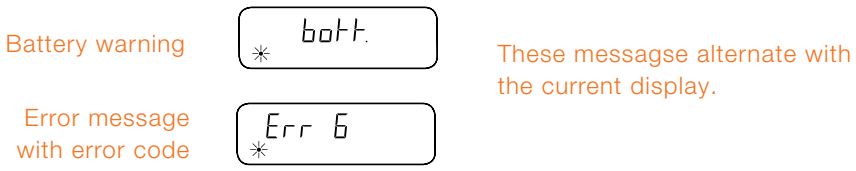


Display level 4

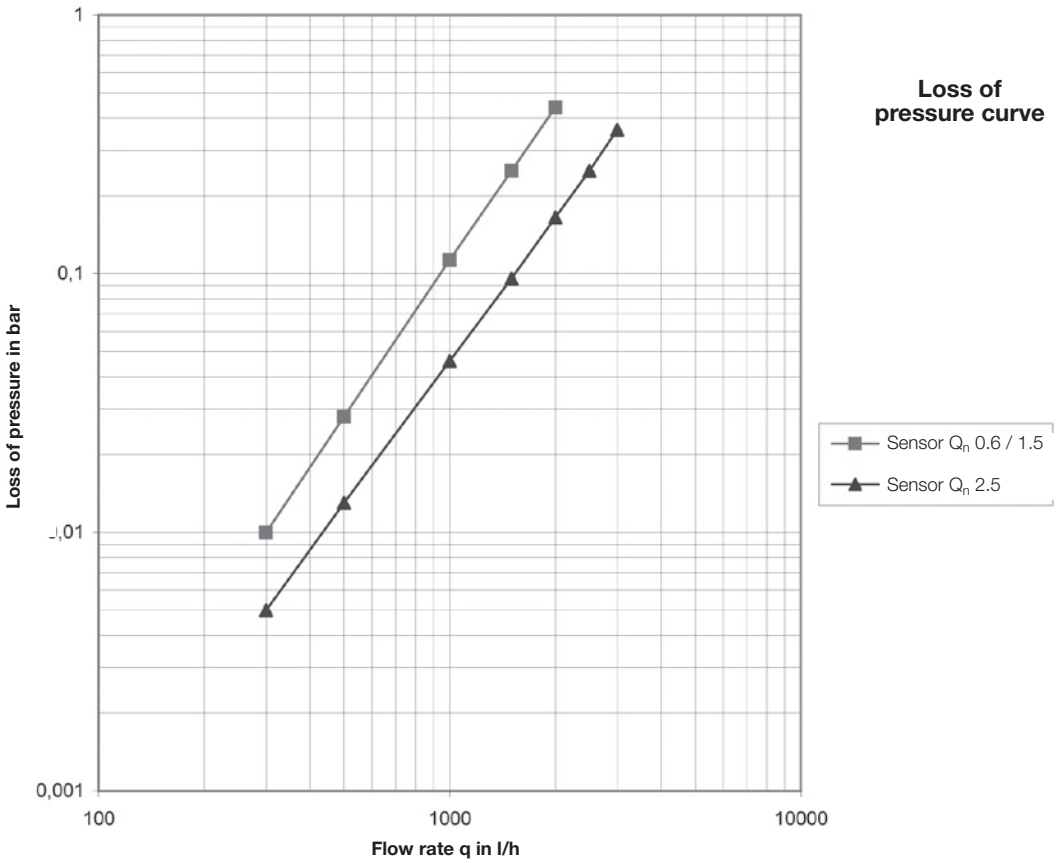


Special displays
Error messages

The heat meter is self-monitoring and can display errors established.



Measurement



Technical data

Norms and standards

CE conformity	Directive 1995/5/EC (R&TTE Directive) Legislation concerning radio systems and telecommunications equipment (FTEG)

Electromagnetic compatibility

Interference resistance	EN 61000-6-2
Emitted interference	EN 61000-6-3

Protection rating

IP protection rating	IP54 according to EN 60529

Heat meter

Heat meter	EN1434
Quality of heat medium	VDI guideline 2035

Technical data

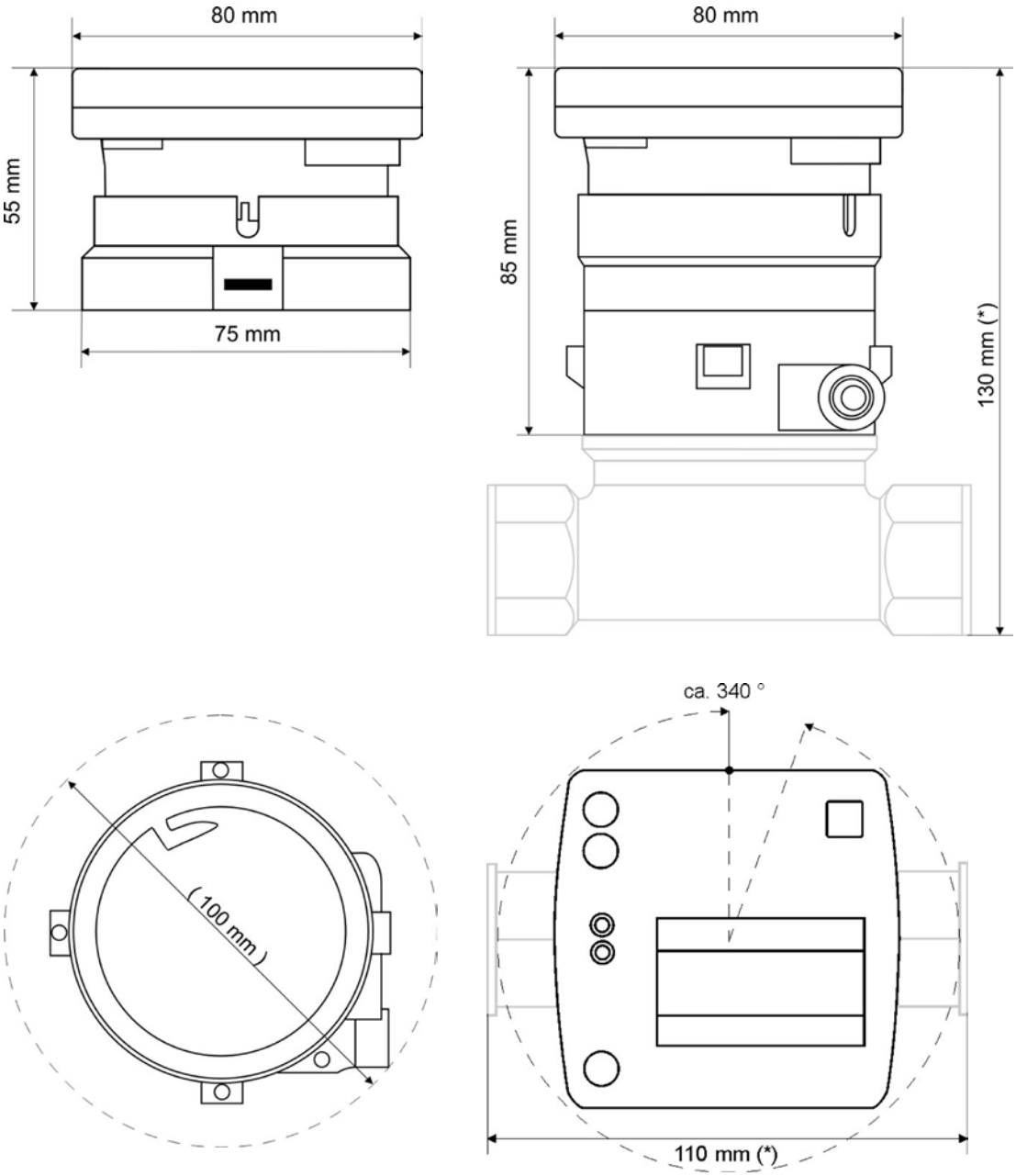
General device data

Flow conditions	G54 / G55	G54 / G55
Nominal flow Q_n	1.5 m³/h	2.5 m³/h
Installation position	horizontal/vertical	horizontal/vertical
Metrological class	B (opt.C)	B (opt. C)
Start-up	5 l/h	7 l/h
Dynamics Q_n/Q_{min}	50:1 (100:1)	50:1 (100:1)
Minimum flow Q_{min}	0.030 (0.015) m³/h	0.050 (0.025) m³/h
Maximum flow Q_{max}	3.0 m³/h	5.0 m³/h
Loss of pressure at Q_n	< 0.23 bar	< 0.22 bar
Nominal pressure PN	16 bar	16 bar
Nominal diameter	DN 15	DN 20
Connection sizes and dimensions		
Installed length	The heat meters G54 / G55 are delivered as replacement meters and installed in the EATs already available on site.	
Temperature range	25 - 90 °C	25 - 90 °C
Maximum temperature (for brief periods)	110 °C	110 °C
Calibrated temperature difference	3 - 70 K	3 - 70 K
Minimum temperature difference	1.0 / 0.2 K	1.0 / 0.2 K
Type of temperature sensor	PT 1000	PT 1000
Cable length of temperature sensor	1.5 (opt. 3.0) m	1.5 (opt. 3.0) m
Energy supply	Lithium battery	Lithium battery
Service life	> 6 (opt. 10) years	> 6 (opt. 10) years
Protection rating	IP 54	IP 54
Length of calculator unit cable:	approx. 25 cm	approx. 25 cm
Display levels	4 / 5	4 / 5
Display	7-digit LCD	7-digit LCD
Energy display	kWh (opt. MWh, MJ, GJ)	kWh (opt. MWh, MJ, GJ)

Dimensional drawing

G54 / G55 with volume meter

(EAT not included in the scope of supply)



(*) Dimensions can vary depending on EAT variant

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