Multical® 403

Thermal energy meter

Your benefits

- Ultrasonic technology
  Long term stable energy measurement with highest accuracy
- Modular design with high flexibility
  Base device expandable, reduced inventory
- Comprehensive data logger
  Access to information for analysis and optimization
- One time reprogramming of metrological parameters on site without breaking the MID seal
  Flexibility and time saving during commissioning
- Option cards for various functions
  Cost effective base device
  Functions can be added later
- Swiss cooling approval (METAS) incl. initial verification
  Approved for billing purposes

Applications

- Especially suitable for district heating billing applications (main meters, transfer stations, etc.)
- Replacement of mechanical turbine heat meters
- Heating and or cooling consumption measurement in building services

Properties

- Nominal diameters DN 15 to DN 50
- Nominal flow rates q_p 0,6 bis q_p 15
- Any installation position
- Low pressure loss
- Medium temperature 2 to 90°C (up to 130°C wall mounting)
- Calculator temperature range 2 to 180°C
- Mains supply 230 VAC, 24 VAC supply or with 16-year battery (wall mounting) respectively 14 years (compact mounting)
- Integrated real time clock and data logger
- Large LCD display 7 digits
- Temperature sensors Pt500
- Storage of last 36 monthly and 20 yearly values
- Type approval / Certification:
  - Heating: Conformity according to the European Measuring Instruments Directive (MID) ()
  - Cooling: Swiss approval (METAS) including initial verification

Options

- Option cards for:
  - M-Bus with 2 water meter inputs
  - M-Bus with 2 pulse outputs energy and volume
  - Wireless OMS T1 868 MHz
  - 2 active analog outputs 0/4 to 20 mA
  - BACnet MS/TP RS485
  - Modbus RTU RS485
  - BACnet IP
  - LoRaWAN internal or external antenna

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Technical Data

Series															
Nominal diameter	**DN**	**mm**	**15**	**20**	**15**	**15**	**20**	**20**	**20**	**20**	**25**	**25**	**25**	**40**	**40**	**50**
Nominal flow rate	**q_p**	**m^3/h**	**0,6**	**0,6**	**1,5**	**1,5**	**1,5**	**1,5**	**2,5**	**2,5**	**3,5**	**6**	**6**	**10**	**10**	**15**
Nominal pressure [1]	PN	bar	16	16	16	16	16	16	16	16	16	16	-	16	-	-
Connection thread with meter	PN	bar	-	-	-	-	-	-	-	-	-	-	25	-	25	25
Meter connection thread	G...B	Zoll	¾	1	¾	¾	1	1	1	1	1¼	1¼	-	2	-	-
Maximum flow rate	q_s	m^3/h	1.2	1.2	3	3	3	3	5	5	7	12	12	20	20	30
Minimum flow rate +/- 5%	q_i	l/h	6	6	15	15	15	15	25	25	35	60	60	100	100	150
Kvs value		m^3/h	3,46	3,46	4,89	4,89	4,89	4,89	8,15	8,15	13,42	24,5	24,5	40,83	40,83	40,09
Start-up value		l/h	3	3	3	3	3	3	5	5	7	12	12	20	20	30
Temperature		max. °C	130													
Standard measuring range	q_i / q_p		1:100													

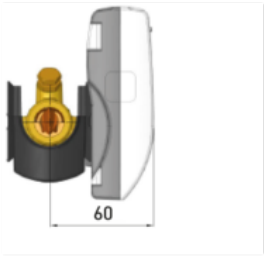
1] Auch mit Nenndruck PN 25 lieferbar

Dimensions and weights																
Length without couplings	**A**	**mm**	**110**	**190**	**110**	**165**	**130**	**190**	**130**	**190**	**260**	**260**	**-**	**300**	**-**	**-**
Total height	B	mm	67	76	67	67	70	76	76	76	71	73	-	84	-	-
Height from center of pipe	C	mm	35	38	35	35	38	38	38	38	51	53	-	55	-	-
Width	D	mm	48	48	48	48	48	48	48	48	-	-	-	-	-	-
Length with PN 25 flanges	**A**	**mm**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**260**	**-**	**300**	**270**
Height with flanges	E	mm	-	-	-	-	-	-	-	-	-	-	106	-	140	145
Flange outer diameter [2]	H	mm	-	-	-	-	-	-	-	-	-	-	115	-	150	165
Bolt circle diameter [2]	k	mm	-	-	-	-	-	-	-	-	-	-	85	-	110	125
Number of screws [2]		pcs	-	-		-	-	-	-	-	-	-	4	-	4	4
Weight without couplings		approx. kg	0,9	1,1	0,9	1.0	1.0	1,1	1.0	1,2	2.0	2,1	-	3.0	-	-
Weight with flanges		approx. kg	-	-	-	-	-	-	-	-	-	-	4,6	-	7,5	8,6

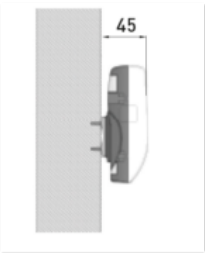
2] DIN EN 1092

Massbilder

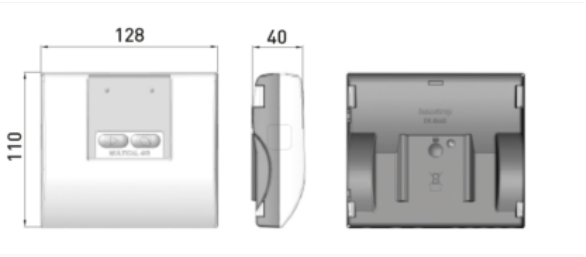
Compact installation
MULTICAL® 403



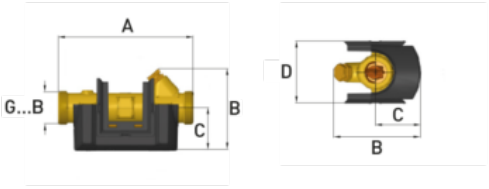
Wall mounting
MULTICAL® 403



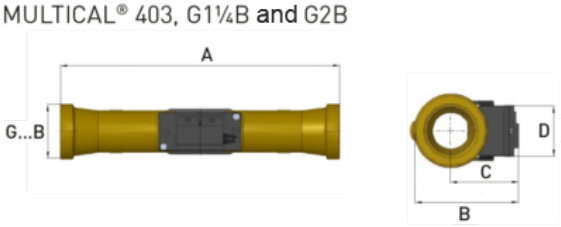
Dimensions of MULTICAL® 403



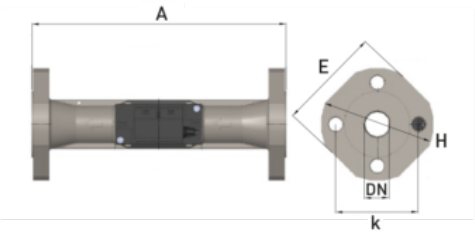
MULTICAL® 403, G¾B and G1B



MULTICAL® 403, G1¼B and G2B



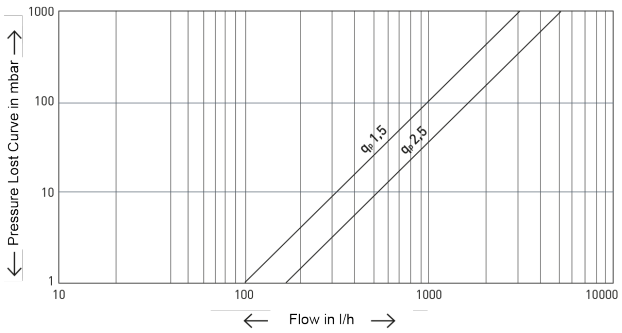
MULTICAL® 403, DN 25 to DN 50



Einbaulagen

Pipeline:	horizontal	
	vertical	
	inclined	
Head of the meter MULTICAL® 403:	to the side ±0°	

Pressure lost curve



Option cards

The MULTICAL® 403 is factory prepared for the installation of various option cards. These can also be retrofitted to already installed heat meters. Technical data available on request.

Installation note

For the MULTICAL® 403, the black electronic housing must be installed sideways (for horizontal installation). The flow sensor should be mounted at an angle of 0° and can be rotated 90° downward. The MULTICAL® 403 requires neither a straight inlet nor outlet pipe section. The MULTICAL® 403 must not be exposed to pressure below ambient pressure (vacuum).

Installation recommendations

Significant flow disturbances usually occur in connection with partially open valves, pumps and multiple bends. The minimum distances listed below have proven effective for the installation of thermal energy meters (best practice approach):

Minimal empfohlene Abstände	Ultrasonic volume measuring section DN 15 - 50
At partially open valves	20 x DN
Downstream of pumps	20 x DN
At multiple bends	5 x DN

Calculator	
Temperature range	2 to 180°C
Temperature difference	3 to 178K
Max. display resolution (7 digits)	■ 9'999,999 ■ 99'999,99 ■ 999'999,9 ■ 9'999'999
Power supply	■ 230VAC Mains supply ■ 24VAC Supply
Lithium battery power supply	3,6V ±0,1V
Battery lifetime	16 years
Environmental class	EN 1434 – Class A
Protection class	IP54
Ambient temperature	5 to 55°C
Storage temperature	-25 to +60°C
Temperature sensor connection	2-wire connection

Temperature sensor	
Sensor element	Pt 500
Version	■ Direct immersion sensor ■ Thermowell measurement
Connection diagram	2-wire connection
Installation length	65mm / 90mm / 140mm
Cable lengths	2x1,5m / 2x3m