EE741

Inline flow meter for compressed air and gases

Versatility

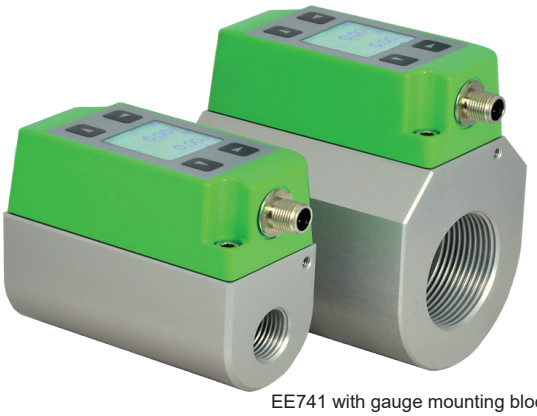
The modular and compact EE741 is dedicated for accurate metering and monitoring of compressed air and technical gases such as O_2, N_2, Ar or CO_2 in DN15 to DN50 pipes.

Measuring principle

The thermal measuring principle and the well-proven E+E hot film sensing element lead to best long-term stability and fast response time.

Measurement performance

Outstanding measuring accuracy even in the lower measuring range is achieved by an application-specific multi-point factory adjustment performed at 7 bar (102 psi) and allows for reliable leak detection.

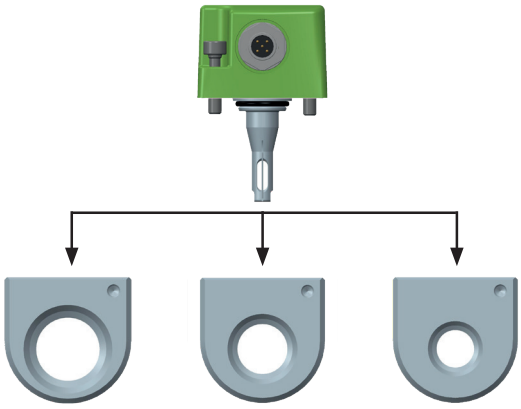


EE741 with gauge mounting block

Easy installation and configuration

The EE741 is optimized for easy installation, configuration and maintenance. The setup can be performed using either display and push buttons or the free product configuration software EE-PCS.

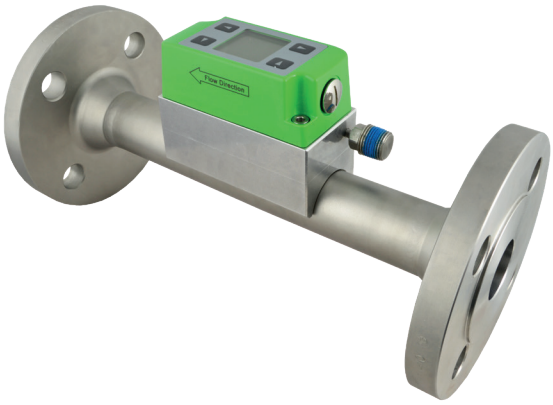
Modular design



The very same sensing unit can be used for three pipe diameters:

EE741: DN15 (1/2“)
DN20 (3/4“)
DN25 (1“)

EE741-N50: DN32 (1-1/4“)
DN40 (1-1/2“)
DN50 (2“)



EE741-N50 with gauge mounting block with flanges.

Once the mounting block is built into the pipeline, the sensing unit can be installed and removed without disassembling the pipework. As a result, the EE741 is also ideal for temporary measurement with several mounting blocks.

Features

Sensing unit

Display

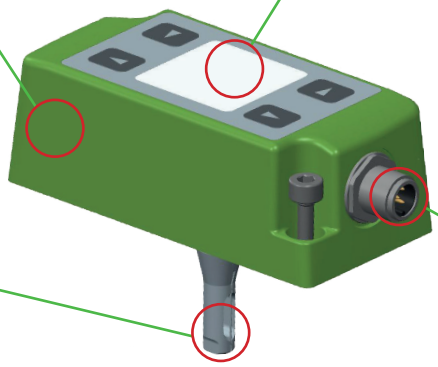
» Shows instantaneous values and overall consumption
» Intuitive device setup with push-buttons
» Rotation in 90° increments for convenient readability in any mounting position

Sensing Unit

» One for each three pipe diameters
» Installation and removal without disassembling the pipework facilitates regular calibration
» Best accuracy due to application-specific adjustment under pressure

Output

» User configurable via display or PC
» 0-20 / 4-20 mA output
» Two switch outputs
» Pulse output
» Modbus RTU
» M-Bus



Sensing head with hot film sensor

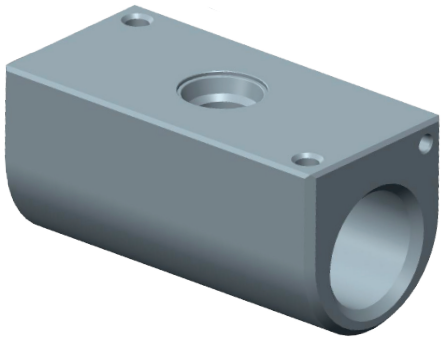
» Robust design in stainless steel
» Very short response time
» Wide measuring range
» Long-term stable and accurate
» Negligible pressure drop
» Highly insensitive to contamination
» No additional pressure and temperature compensation required

Measurands

» Standard volume flow [Nm³/h, Nm³/min, l/min, l/s, SCFM]
» Mass flow [kg/h, kg/min]
» Standard flow [Nm/s, SFPM]
» Temperature [°C, °F]
» Integrated consumption meter (totalisator) for cost-effective consumption analysis without additional data logger

Gauge mounting block

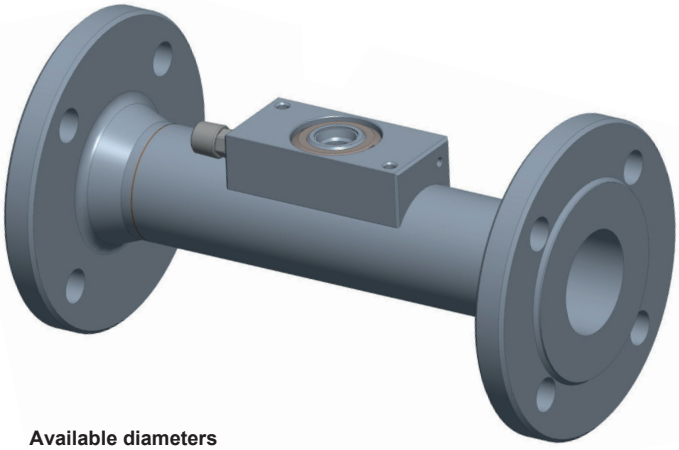
» Best accuracy due to precise and reproducible positioning of the sensing head
» Aluminum or stainless steel
» Can be operated with sealing plug also without sensing unit



Available diameters
» DN15 / DN20 / DN25
» DN32 / DN40 / DN50

Gauge mounting block with flanges

» Robust design for demanding industrial application
» Entire media-contacting surface in stainless steel 1.4404
» Easy installation due to flange design
» Precise and reproducible positioning of the sensing unit for best accuracy
» Can be operated with sealing plug also without sensing unit



Available diameters
» DN32 / DN40 / DN50

Technical data

Measurands

Flow

Standard conditions (factory setting)	1013.25 mbar (14.7 psi), 0 °C (32 °F) (configurable)
Measurement range [1] in air	DN15 (1/2"): 0.2...76.3 Nm^3/h (0.12...44.88 SCFM) DN20 (3/4"): 0.4...135.7 Nm^3/h (0.24...79.77 SCFM) DN25 (1"): 0.6...212 Nm^3/h (0.36...124.71 SCFM) DN32 (1-1/4"): 0.9...347.4 Nm^3/h (0.52...202.06 SCFM) DN40 (1-1/2"): 1.4...542.8 Nm^3/h (0.81...315.71 SCFM) DN50 (2"): 2.2...848.2 Nm^3/h (1.22...493.35 SCFM)
Accuracy [2] in air at 7 bar (102 psi) (abs) and 23 °C (73 °F)	± (3 % of measured value + 0.3 % of full scale)
Pressure dependency	compensated by entering the system pressure using the EE-PCS [3]
Response time t_{90}	< 2 sec.
Measurement interval	0.1 sec.

Temperature

Measurement range	-20...60 °C (-4...140 °F)
Accuracy at 20 °C (68 °F) and flow >0.5 Nm/s	± 0.7 °C (1.26 °F)

Outputs

Analogue output (scalable)	0 - 20 mA / 4 - 20 mA R_L<500 Ohm
Switch output	DC PNP, max. 100 mA, V_{drop} <2.5 V, 10 kOhm pull-down Configurable: N/C or N/O, hysteresis, window
Pulse output	Consumption meter, pulse length 0.02...2 sec.
Digital output	RS485 with Modbus RTU (max. 32 unit load devices in one bus - EE741 = 1 unit load) or M-BUS (Meter-Bus)
Service interface	USB

General

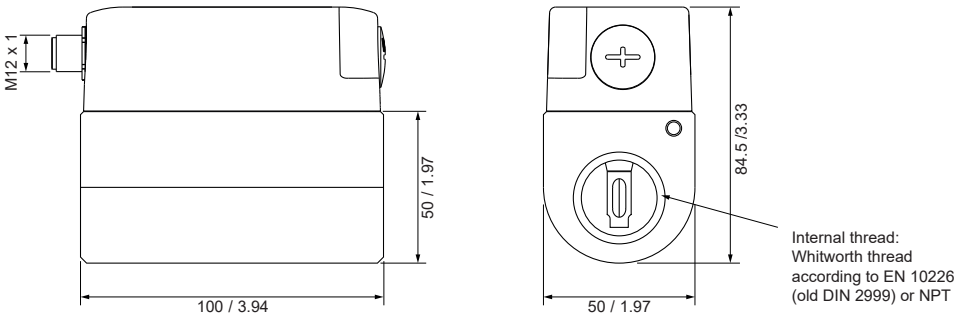
Supply voltage	18 - 30 V DC
Current consumption	
with display	I_{max} ≤120 mA (P_{max} ≤2,5 W)
without display	I_{max} ≤60 mA (P_{max} ≤1,6 W)
Operating pressure (max.)	16 bar (232 psi) / PN16
Ambient temperature range	
with display	0...50 °C (32...122 °F)
without display	-20...60 °C (-4...140 °F)
Medium and storage temperature range	-20...60 °C (-4...140 °F)
Humidity working range	0…100 % RH, non-condensing
Medium	Compressed air or none corrosive gases
Electrical connection	M12x1 4 pol. plug
Electromagnetic compatibility	EN61326-1 EN61326-2-3 Industrial environment
Material	
Enclosure sensing unit	Polycarbonate
sensing head / sensor element	Stainless steel 1.4404 / glass
Gauge mounting block	Aluminium anodizied or stainless steel 1.4404
Gauge mounting block with flanges	Entire media contacting surface in stainless steel 1.4404
Enclosure protection class	IP65

1) See operation manual for factory settings.
2) The tolerance specifications include the uncertainty of the factory calibration with a coverage factor k=2 (2 x standard deviation). The tolerance was calculated in accordance with EA-4/02 following the GUM (Guide to the Expression of Uncertainty in Measurement). Temperature coefficient: ± 0.25 % of measured value / °C deviating from 23 °C (73 °F)
3) The flow meter is factory adjusted at 7 bar (abs, 102 psi). Pressure compensation is valid for v = 10 ... 120 Nm / s. Without entering the system pressure into the EE741, the pressure dependency is +/- 0.5 % of the measured value / bar deviating from 7 bar.

Dimensions (mm/inch)

Gauge mouting block

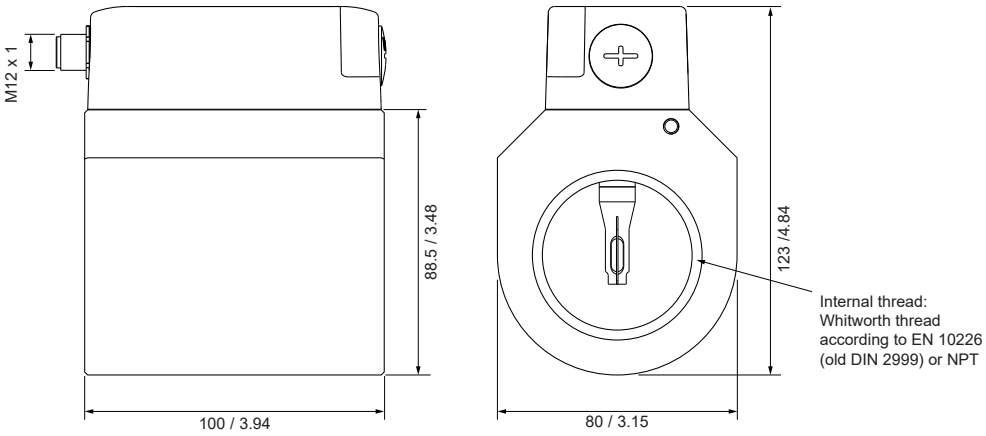
EE741:



Mounting block	Thread R_p or NPT
DN15	1/2"
DN20	3/4"
DN25	1"
DN32[1)]	1-1/4"
DN40	1-1/2"
DN50	2"

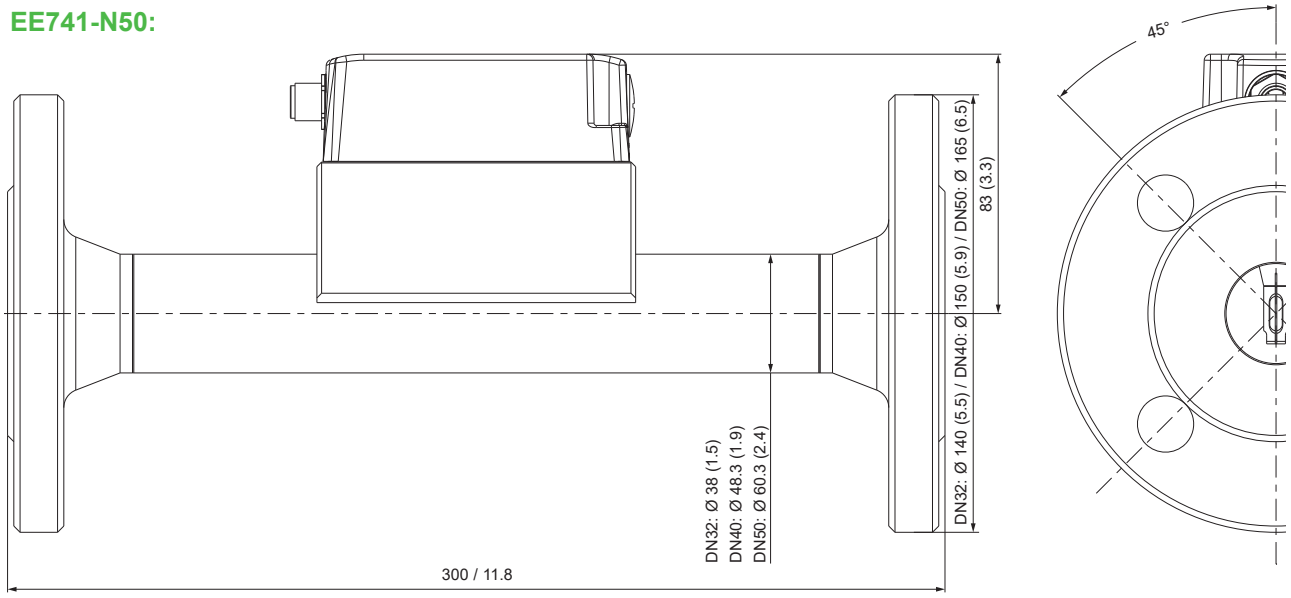
1) only R_p thread

EE741-N50:



Gauge mouting block with flanges

EE741-N50:



Ordering information

The EE741 flow meter consists of a sensing unit (Item 1) and a gauge mounting block (Item 2).

Item 1 - Sensing unit				EE741-	EE741-
Hardware	Pipe diameter / Type	for DN15, DN20, DN25		no code	no code
		for DN32, DN40, DN50		N50	N50
	Output	Analogue/switch/pulse output		A6	
		RS485 Modbus RTU			J3
		M-Bus			J5
	Display	Without display		no code	no code
		With display		D2	D2
	Cleaning	without		no code	no code
		degreased for oxygen measurement [1]		AF2	AF2
Software configuration	Factory setting pipe diameter (selectable)	DN15 (1/2“)		DN15	DN15
		DN20 (3/4“)		DN20	DN20
		DN25 (1“)		DN25	DN25
		DN32 (1-1/4“) only for N50		DN32	DN32
		DN40 (1-1/2“) only for N50		DN40	DN40
		DN50 (2“) only for N50		DN50	DN50
	Output 1	Analogue output	4-20 mA	no code	
			0-20 mA	GA5	
		Switch output		GA9	
	Output 2	Pulse output	(Only with Measurand output 2 = Consumption)	no code	
		Switch output		GB9	
	Measurand output 1	Standard volume flow	V‘n [Nm³/h]	no code	
			V‘n [Nm³/min]	MA84	
			V‘n [l/min]	MA85	
			V‘n [l/s]	MA86	
			V‘n [SCFM]	MA87	
		Mass flow	m‘ [kg/h]	MA80	
			m‘ [kg/min]	MA81	
		Standard flow	vn [Nm/s]	MA22	
			vn [SFPM]	MA23	
		Temperature	T [°C]	MA1	
			T [°F]	MA2	
	Measurand output 2	Consumption	Qn [Nm³] (Only for output 2 = Pulse output)	no code	
		Standard volume flow	V‘n [Nm³/h]	MB83	
			V‘n [Nm³/min]	MB84	
			V‘n [l/min]	MB85	
			V‘n [l/s]	MB86	
			V‘n [SCFM]	MB87	
		Mass flow	m‘ [kg/h]	MB80	
			m‘ [kg/min]	MB81	
		Standard flow	vn [Nm/s]	MB22	
			vn [SFPM]	MB23	
		Temperature	T [°C]	MB1	
			T [°F]	MB2	
	Unit for process parameters	SI units [mbar, °C]		no code	no code
		US units [psi, °F]		U2	U2
	Medium[2]	Air		no code	no code
		Nitrogen		FU2	FU2
		CO_2		FU3	FU3
		Oxygen		FU4	FU4
		Argon		FU7	FU7

Factory setting: Modbus: baud rate 9600, even parity, 1 stop bit
M Bus: baud rate 2400, even parity, 1 stop bit

Item 2 - Gauge mounting block		BSP-thread	NPT-thread	Flange version
Aluminum gauge mounting block	DN15 (1/2“)	HA079015	HA179015	
	DN20 (3/4“)	HA079020	HA179020	
	DN25 (1“)	HA079025	HA179025	
	DN32 (1-1/4“)	HA079032		
	DN40 (1-1/2“)	HA079040	HA179040	
	DN50 (2“)	HA079050	HA179050	
Stainless steel gauge mounting block	DN15 (1/2“)	HA078015	HA178015	
	DN20 (3/4“)	HA078020	HA178020	
	DN25 (1“)	HA078025	HA178025	
Stainless steel gauge mounting block for oxygen [1]	DN15 (1/2“)	HA081015	HA181015	
	DN20 (3/4“)	HA081020	HA181020	
	DN25 (1“)	HA081025	HA181025	
Stainless steel gauge mounting block with flanges	DN32 (1-1/4“)			HA278032
	DN40 (1-1/2“)			HA278040
	DN50 (2“)			HA278050

1) The parts of the transmitter/mounting block in contact with the medium are oil and grease-free. Only for DN15, DN20 and DN25.
2) Other gases upon request

Order Example

Item 1 - Sensing unit

EE741-A6D2DN15

Pipe diameter/type	for DN15, DN20, DN25
Output:	Analogue/switch/pulse output
Display:	With display
Pipe diameter (selectable):	DN15 (1/2”)
Output 1:	4-20 mA
Measurand 1:	Standard volume flow [Nm³/h]
Output 2:	Pulse output
Measurand 2:	Consumption [Nm³]
Unit for process parameters:	SI units [mbar, °C]
Medium:	Air

Item 2 - Gauge mounting block

HA079015

Aluminum gauge mounting block	DN15 (1/2“) BSP-thread

Accessories

- Inlet and outlet path BSP thread, stainless steel, for mounting block	DN15 (1/2“)	HA070215
	DN20 (3/4“)	HA070220
	DN25 (1“)	HA070225
	DN32 (1-1/4“)	HA070232
	DN40 (1-1/2“)	HA070240
	DN50 (2“)	HA070250
- Gasket set for gauge mounting block with flanges	DN32 (1-1/4“)	HA074532
	DN40 (1-1/2“)	HA074540
	DN50 (2“)	HA074550
- Cable M12x1 female, angled 90°, 4 pins	3 m	HA010824

Scope of supply

Item 1: EE741:

- EE741 according to ordering guide
- 1 x Allen key
- 1 x USB cable
- M12x1 straight socket, can be assembled
- Operating instructions
- Two self-adhesive labels for configuration changes (see user guide at www.epluse.com/relabeling)
- Inspection certificate according to DIN EN10204 - 3.1

Item 2: Gauge mounting block:

- Gauge mounting block incl. sealing plug