EE741

Modular, compact, inline flow meter for compressed air and gases

The EE741 inline flow meter is dedicated for accurate metering and monitoring of compressed air and technical gases. With three different gauge mounting blocks, one and the same transmitter unit can be installed on DN15, DN20 and DN25 pipes.
The thermal measuring principle and the well-proven E+E hot film sensor element lead to best long-term stability and fast response time.
Outstanding measuring accuracy, even in the lower measuring range is achieved by an application-specific multi-point factory adjustment, which is performed at 7 bar (102 psi). This allows reliable leak detection and corresponding energy savings.
The construction of the EE741 is optimized for easy installation and maintenance.


EE741

The EE741 is user configurable and can be easily adapted to any measuring task. The configuration can be set either using the optional display and push buttons or with the free product configuration software EE-PCS.

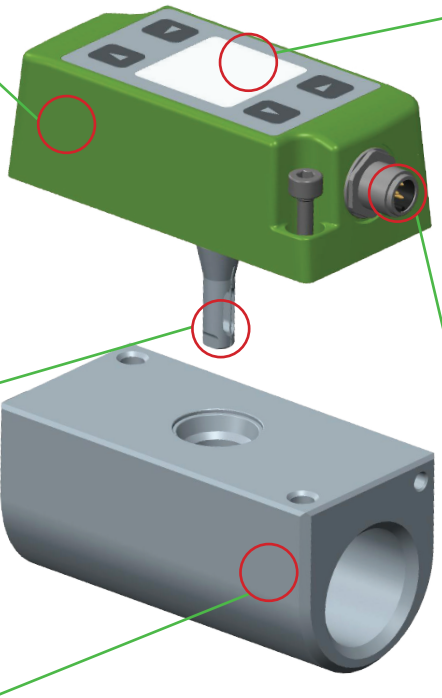
Typical applications

- Compressed air consumption measurement
- Flow measurement of technical gases (O_2, N_2, Ar, CO_2, He)
- Nitrogen generators
- Leak detection

Features

Transmitter
» Can be used for three different pipe diameters
» Installation and removal without disassembling the pipework facilitates regular calibration
» Application-specific adjustment under pressure for best accuracy

Display (optional)
» Shows instantaneous values and overall consumption
» Intuitive device setup with push-buttons
» Can be rotated in 90° increments



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

Output
» User configurable via display or software
» Analogue 0-20 / 4-20 mA
» 2 switch outputs
» Pulse output
» Modbus RTU
» M-Bus

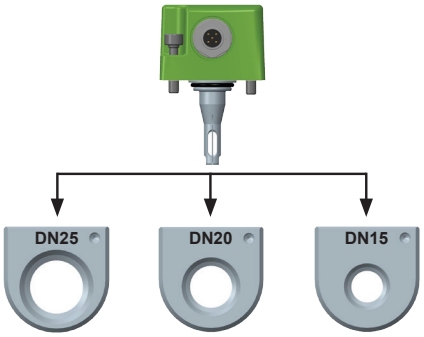
Measurands
» Standard volume flow
» Mass flow
» Standard flow
» Temperature
» Integrated consumption meter (totalisator) for cost-effective consumption analysis without additional datalogger

Gauge mounting block
» Precise and reproducible inline installation of the transmitter for best accuracy
» Aluminum or stainless steel
» Can be operated with sealing plug also without transmitter

Modular design

With the DN15, DN20 and DN25 gauge mounting blocks, one and the same transmitter unit can be installed on all three pipe diameters. The pipe diameter can easily be changed via display menu or with the EE-PCS product configuration software.

Once the gauge mounting block is built into the pipeline, the transmitter can be installed and removed without disassembling the pipework. As a result, the EE741 is also ideal for temporary measurements or even mobile use. The sealing plug included in the scope of supply enable the normal operation of the compressed air system when the transmitter is removed.



Technical data

Measured values

Flow

Measurands	m^3/h, m^3/min, l/min, l/s, kg/h, kg/min, m/s, SCFM, ft/min, °C, °F
Standard conditions (factory setting)	1013.25 mbar (14.7 psi), 0 °C (32 °F) (configurable)
Measuring range[1] in air	DN15: 0.2...76.3 Nm^3/h (0.12...44.88 SCFM) DN20: 0.4...135.6 Nm^3/h (0.24...79.77 SCFM) DN25: 0.6...212 Nm^3/h (0.36...124.71 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)
Temperature coefficient	± 0.25 % of the measured value / °C deviating from 23°C (73°F)
Pressure coefficient[3]	+ 0.5 % of the measured value / bar deviating from 7 bar (102 psi)
Response time t_{90}	< 2 sec.
Measuring rate	0.1 sec.

Temperature

Measuring 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.
Bus-interface	Modbus RTU (max. 32 units in one bus) or M-BUS (Meter-Bus)
Configuration interface	USB

General

Supply voltage	18 - 30 V DC
Current consumption (max.)	
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 / PN16
Ambient temperature	
with display	0...50 °C (32...122 °F)
without display	-20...60 °C (-4...140 °F)
Medium and storage temperature	-20...60 °C (-4...140 °F)
Humidity	0…100 % RH, non-condensing
Medium	Compressed air, nitrogen, oxygen, helium, CO_2, argon
Electrical connection	M12x1 4 pol. plug
Electromagnetic compatibility	EN61326-1 EN61326-2-3 Industrial environment
Material	
Enclosure	Polycarbonate
Sensor head / sensor element	Stainless steel 1.4404 / glass
Gauge mounting block	Aluminium anodized or stainless steel 1.4404
Enclosure protection class	IP65

1) Factory setting of the output see manual.
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).
3) The flow meter is factory adjusted at 7 bar (abs). At operating pressure other than 7 bar (abs), the error can be corrected by entering the actual system pressure via display menu or with EE-PCS configuration software.

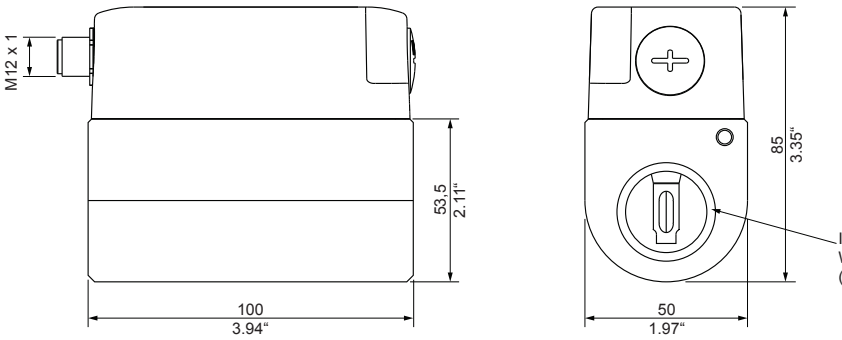
Display (optional)

The state-of-the-art LCD shows the current measured values and the overall consumption. The user specific device setup can be easily performed with the push buttons and intuitive menu guidance.

The display can be rotated in 90° increments with a push button for convenient orientation in any mounting position of the flow meter.

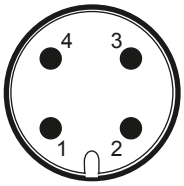
The EE741 without display can be configured by the user via USB interface with the free EE-PCS product configuration software.

Dimensions (mm/inch)



Mounting block	Thread R_p or NPT
DN15	1/2"
DN20	3/4"
DN25	1"

Connection diagram



M12 plug on device

Analogue/switch/ pulse output	Modbus RTU	M-Bus / Meter-bus
1...V+	1...V+	1...V+
2...Output 1	2...RS485 A (=D+)	2...M-Bus
3...GND	3...GND	3...GND
4...Output 2	4...RS485 B (=D-)	4...M-Bus

The output signal is freely selectable and scalable by the user:
Output 1: Analogue [mA] or switch
Output 2: Pulse or switch

Accessories

- Inlet and outlet path BSP thread, stainless steel, for mounting block	DN15	HA070215
	DN20	HA070220
	DN25	HA070225

Scope of supply

Item 1: EE741:
- EE741 according to ordering guide
- 1 x Allen key
- 1 x USB cable
- Operating instructions
- Inspection certificate according to DIN EN10204 - 3.1

Item 2: Gauge mounting block:
- Gauge mounting block incl. sealing plug

Ordering information

A complete flow meter consists of a transmitter (Item 1) and a gauge mounting block (Item 2).

Item 1 - Transmitter				EE741-	EE741-
Hardware	**Output**	Analogue/switch/pulse output		A6	
		RS485 Modbus RTU			J3P1
		M-Bus			J5P4
	Display	No display		No code	No code
		With display		D2	D2
	Accessories for electrical connection	None		No code	No code
		M12x1 straight socket, can be assembled		AC2	AC2
	Cleaning	without		No code	No code
		degreased for oxygen measurement		AF2	AF2
Software configuration	**Pipe diameter** (user selectable)	DN15		DN15	DN15
		DN20		DN20	DN20
		DN25		DN25	DN25
	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	v_n [Nm/s]	MA22	
			v_n [SFPM]	MA23	
		Temperature	T [°C]	MA1	
			T [°F]	MA2	
	Measurand output 2	Consumption	Q_n [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	v_n [Nm/s]	MB22	
			v_n [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	Air		No code	No code
		Nitrogen		FU2	FU2
		CO_2		FU3	FU3
		Oxygen [1]		FU4	FU4
		Helium		FU6	FU6
		Argon		FU7	FU7

Item 2 - Gauge mounting block		BSP-thread	NPT-thread
Aluminum gauge mounting block	DN15	HA079015	HA179015
	DN20	HA079020	HA179020
	DN25	HA079025	HA179025
Stainless steel gauge mounting block	DN15	HA078015	HA178015
	DN20	HA078020	HA178020
	DN25	HA078025	HA178025
Stainless steel gauge mounting block for oxygen [1]	DN15	HA081015	HA181015
	DN20	HA081020	HA181020
	DN25	HA081025	HA181025

1) The parts of the transmitter/mounting block in contact with the medium are oil and grease-free.

Order Example

Item 1 - Transmitter

EE741-A6D2DN15

Output:	Analogue/switch/pulse output
Display:	With display
Accessories for electrical connection:	None
Pipe diameter (user selectable):	DN15
Unit for process parameters:	SI units [mbar, °C]
Medium:	Air

Item 2 - Gauge mounting block

HA079015

Aluminum gauge mounting block	DN15