

## 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.

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.



EE741

### Typical applications

- Compressed air consumption measurement
- Flow measurement of technical gases (O<sub>2</sub>, N<sub>2</sub>, Ar, CO<sub>2</sub>, 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

#### 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

#### 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

#### Display (optional)

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

#### Output

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

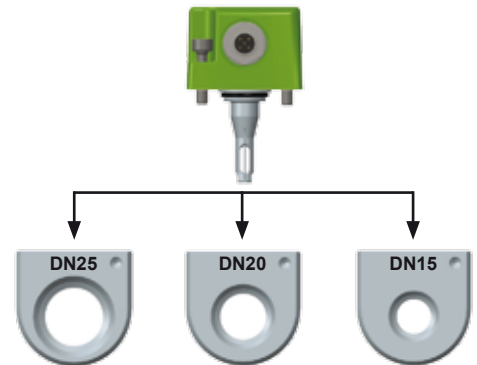
#### Measurands

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

## 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 <sup>3</sup> /h, m <sup>3</sup> /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 <sup>1)</sup> in air	DN15: 0.2...76.3 Nm <sup>3</sup> /h (0.12...44.88 SCFM) DN20: 0.4...135.6 Nm <sup>3</sup> /h (0.24...79.77 SCFM) DN25: 0.6...212 Nm <sup>3</sup> /h (0.36...124.71 SCFM)

Accuracy <sup>2)</sup> 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 <sup>3)</sup>	+ 0.5 % of the measured value / bar deviating from 7 bar (102 psi)
Response time t <sub>90</sub>	< 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 <sub>L</sub> < 500 Ohm
Switch output	DC PNP, max. 100 mA, V <sub>drop</sub> < 2.5 V Configurable: N/C or N/O, hysteresis, window
Pulse output	Consumption meter, pulse length 0.02...2 sec.
Bus-interface	Modbus RTU or M-BUS (Meter-Bus)
Configuration interface	USB

### General

Supply voltage	18 - 30 V DC
Current consumption (max.)	150 mA (with display) 100 mA (without display)
Operating pressure (max.)	16 bar / PN16
Ambient temperature with display	-10...50 °C (14...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 <sub>2</sub> , argon
Electrical connection	M12x1 4 pol. plug
Electromagnetic compatibility	EN61326-1 EN61326-2-3 
Material	Enclosure: Polycarbonate Probe tube: Stainless steel 1.4404 Probe head / sensor: 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)

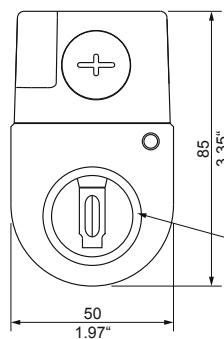
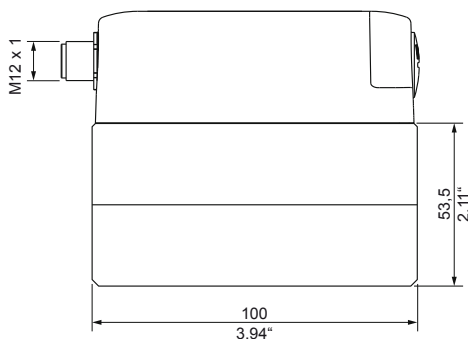
The state-of-the-art LCD shows the current measured values and the overall consumption. The user specific device setup can be easily performed with the push buttons and intuitive menu guidance.

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.



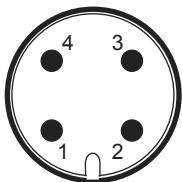
## Dimensions (mm/inch)



Internal thread:  
Whitworth thread according to EN 10226  
(old DIN 2999) or NPT

Mounting block	Thread R <sub>p</sub> or NPT
DN15	1/2"
DN20	3/4"
DN25	1"

## Connection diagram



M12 plug on device

Analogue/switch/  
pulse output

- 1...V+
- 2...Output 1
- 3...GND
- 4...Output 2

Modbus RTU

- 1...V+
- 2...RS485 A (=D+)
- 3...GND
- 4...RS485 B (=D-)

M-Bus / Meter-bus

- 1...V+
- 2...M-Bus
- 3...GND
- 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

### EE741:

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

### Gauge mounting block:

- Gauge mounting block incl. mounted 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 RS485 Modbus RTU M-Bus	A6 J3P1 J5P4	
	Display	No display With display	No code D2	
	Accessories for electrical connection	None M12x1 straight socket, can be assembled	No code AC2	
Software configuration	Pipe diameter (user selectable)	DN15 DN20 DN25	DN15 DN20 DN25	
	Output 1	Analogue output	4-20 mA 0-20 mA	No code GA5 GA9
		Switch output		
	Output 2	Pulse output	(Only with Measurand output 2 = Consumption)	No code GB9
		Switch output		
	Measurand output 1	Standard volume flow	V <sub>0</sub> [Nm <sup>3</sup> /h]	No code
			V <sub>0</sub> [Nm <sup>3</sup> /min]	MA84
			V <sub>0</sub> [l/min]	MA85
			V <sub>0</sub> [l/s]	MA86
			V <sub>0</sub> [SCFM]	MA87
		Mass flow	m' [kg/h]	MA80
			m' [kg/min]	MA81
	Standard flow	v <sub>0</sub> [Nm/s]	MA22	
		v <sub>0</sub> [SFPM]	MA23	
	Temperature	T [°C]	MA1	
T [°F]		MA2		
Measurand output 2	Consumption	Q <sub>0</sub> [Nm <sup>3</sup> ] (Only for output 2 = Pulse output)	No code	
	Standard volume flow	V <sub>0</sub> [Nm <sup>3</sup> /h]	MB83	
		V <sub>0</sub> [Nm <sup>3</sup> /min]	MB84	
		V <sub>0</sub> [l/min]	MB85	
		V <sub>0</sub> [l/s]	MB86	
		V <sub>0</sub> [SCFM]	MB87	
	Mass flow	m' [kg/h]	MB80	
m' [kg/min]		MB81		
Standard flow	v <sub>0</sub> [Nm/s]	MB22		
	v <sub>0</sub> [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 <sub>2</sub>	FU3	FU3	
	Oxygen <sup>1)</sup>	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 <sup>1)</sup>	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

Aluminium gauge mounting block DN15