Panasonic

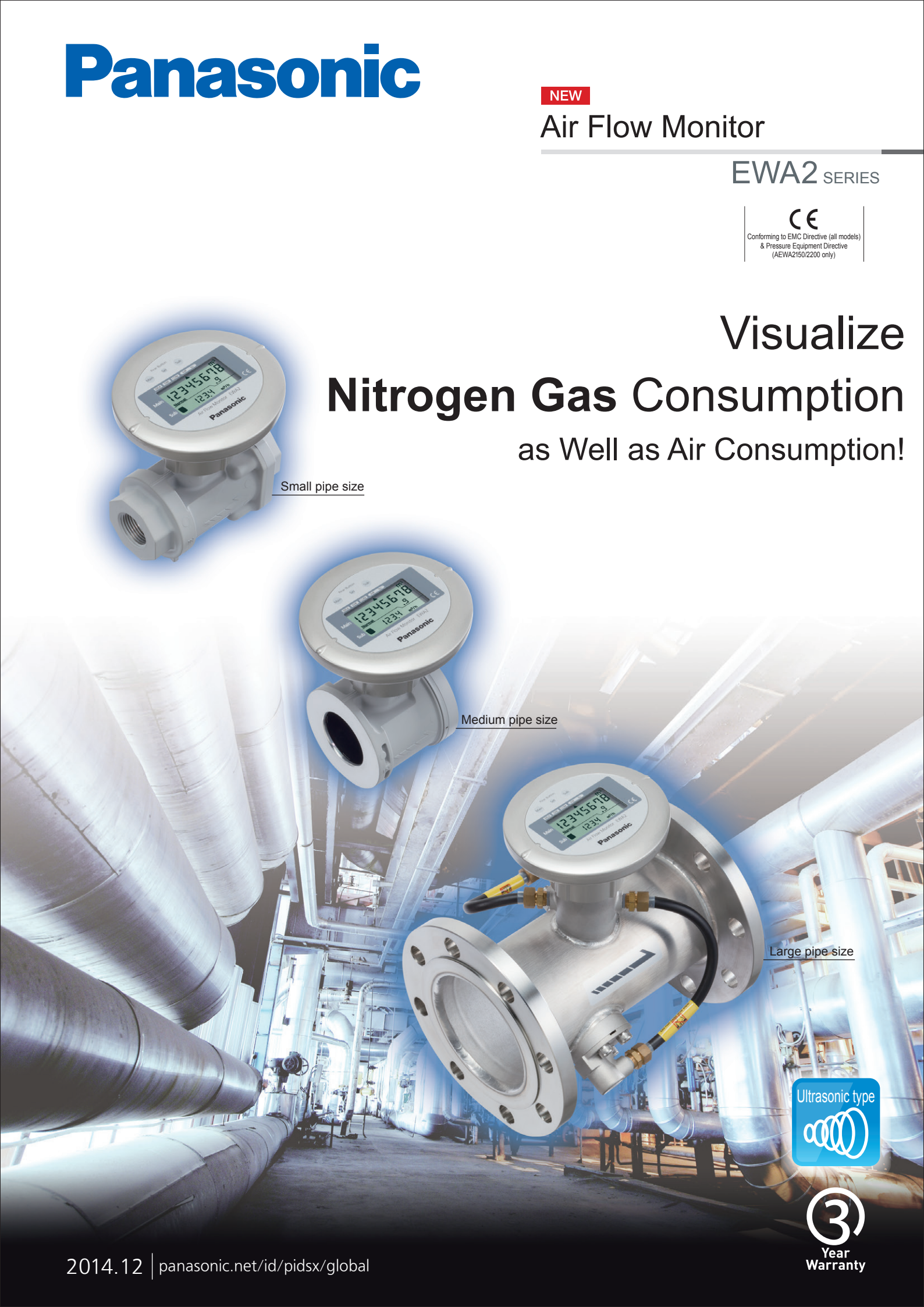
NEW

Air Flow Monitor

EWA2 SERIES

CE
Conforming to EMC Directive (all models)
& Pressure Equipment Directive
(AEWA2150/2200 only)

Visualize
Nitrogen Gas Consumption
as Well as Air Consumption!



Visualize Compressed Air and Nitrogen Gas (N_2)

Reducing power consumption in a factory starts with the identification of waste.
Waste can be fairly obvious in cases such as air conditioning and lighting, however,
hidden sources of waste may exist in the use of air within the factory.
By visually detecting how compressed air and nitrogen gas are wasted,
a plant operator can repair and eliminate the source of the loss.

Resistant to oil mist and maintenance-free!

Small pipe size: 25A or 32A

Medium pipe size: 40A, 50A, 65A or 80A

Large pipe size: 100A, 150A or 200A

Four features of Air Flow Monitor (EWA2 Series)

Feature 1

Ultrasonic detection system

Easy to use, with high durability!

Since the ultrasonic sensor is adopted as a detection principle, elements such as filters are not required and air containing oil mist can also be measured.
The sensor is stain resistant, and no maintenance is required.

Measurable fluids

Feature 2

Compressed air Nitrogen gas NEW

* Nitrogen gas can be measured with small or medium pipe size only.

Nitrogen gas can be measured!

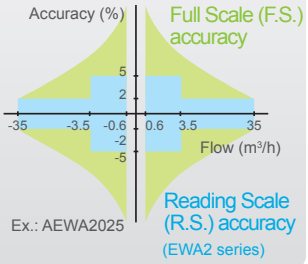
In addition to the compressed air, the capability to measure high-cost nitrogen gas is added.
Air leakage from pipes can be detected and air supply capacity of the compressor can be optimized to reduce the wasted power.

Zero energy losses

There are no obstructions within the measurement pipe due to the ultrasonic detection system, thus causing zero pressure losses.

High accuracy flow rate measurement

The R.S. (reading scale) accuracy is the accuracy applicable to all readings in the flow rate range. Therefore, flow rates even in the low flow rate range can be read with high accuracy.

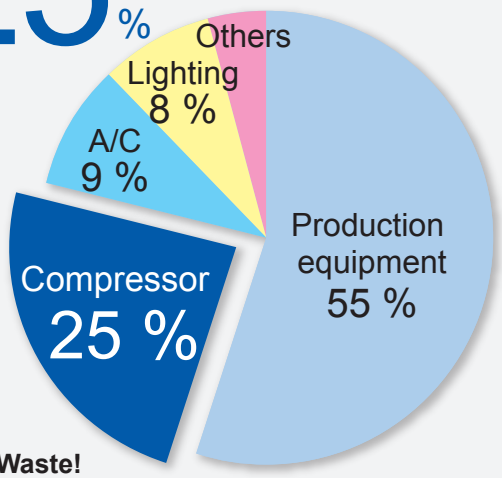


Consumption in order to Identify and Eliminate Waste!

What does this figure mean?

Ratio of power consumption by compressors to the total power consumption at factories

app. **25** %



(Breakdown of the power consumption by a typical factory)

Compressors typically require more electricity to run than other equipment.

Reducing the power consumption of air compressors should be a key target of any energy savings plan.

Moreover

In general, air leakage accounts for up to 20 to 25% of the overall air usage.

Visualize Air Consumption to Identify and Eliminate Waste!

Install the ultrasonic type Air Flow Monitor on each compressor to monitor air leakage and provide an overall improvement of the compressor's operating efficiency.

Flow conversion

Feature 3

NORMAL STANDARD

NEW

Selectable flow conversion function!

[Normal flow]	The volumetric flow rate per unit time at 0℃, 1 atm (atmospheric pressure)
[Standard flow]	The volumetric flow rate per unit time at set temperature (℃), 1 atm (atmospheric pressure)

RS485 Communication

NEW

Feature 4

MODBUS (RTU)

Read/Write

Newly installed communication function!

Data obtained at site can be transmitted to **Data Logger Light** (**DLL**).
Detailed data management can be realized with ease.

Usable in loop pipes

Direct and reverse flow can be measured. Consumption of air transferred between buildings can be measured.

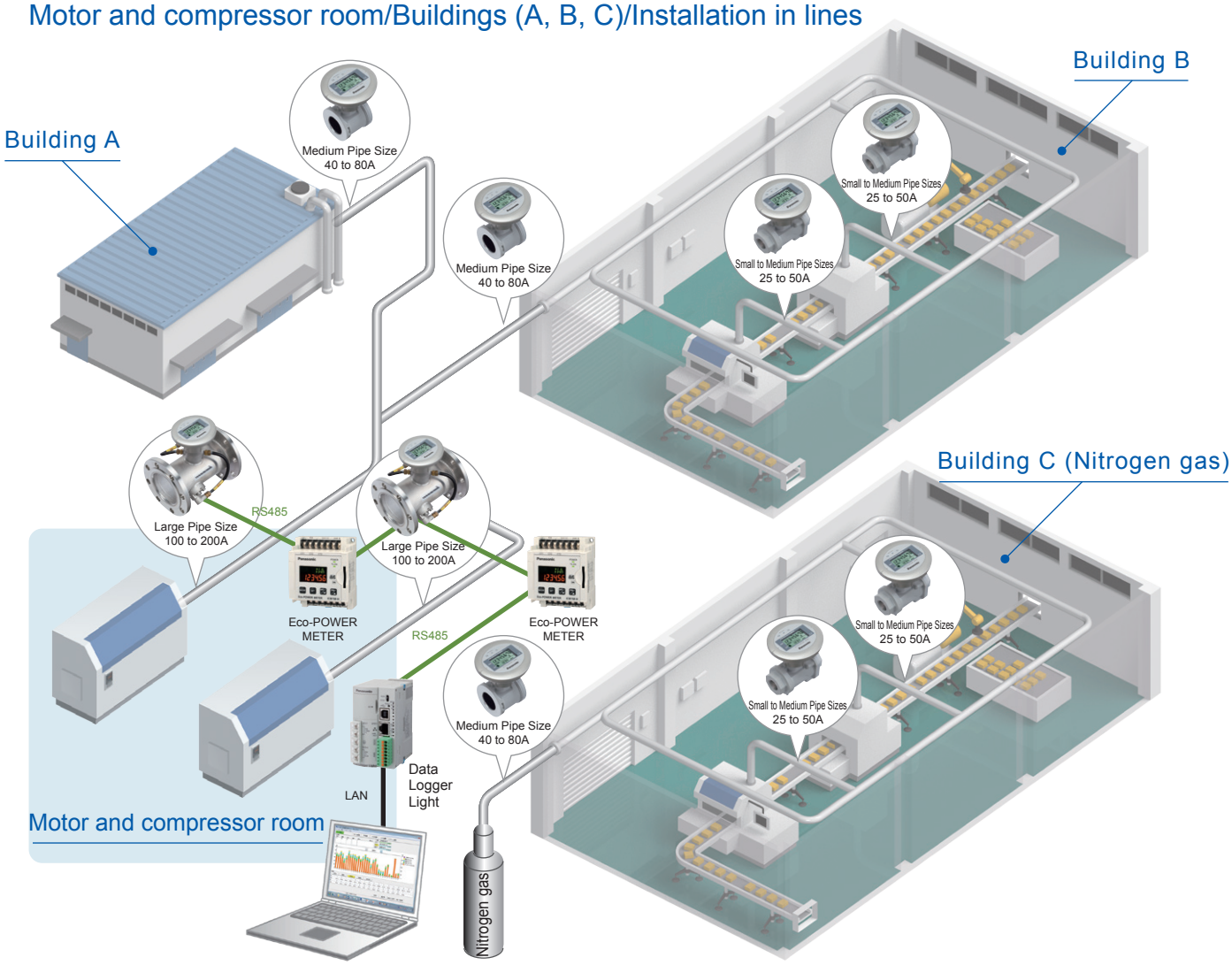
A variety of output functions

Pulse output and analog current output are available. It can be used during communication.

- Pulse output (Direct flow pulse)
- Analog current output (Select instant flow, pressure or temperature.)

Application example 1

Motor and compressor room/Buildings (A, B, C)/Installation in lines



Installation in compressors

Improve the operating efficiency of compressors

The monitor allows you to determine if the air supply capacity of the compressor is appropriate. Compressors in an unloaded state consume 30 to 40 % of the electricity required in a loaded state. Full operation of fewer compressors will lead to a reduction of the total power consumption of your factory.

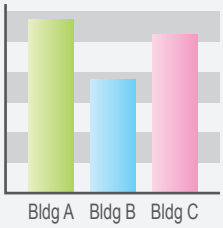
Identify the best timing for maintenance

It is time to perform maintenance on the compressor when power consumption begins to increase while the air consumption remains steady. Not only the wasted power, but also the workload can be reduced.

Installation in each building

Manage air consumption by building or by floor

You can monitor the overall consumption of compressed air and nitrogen gas of an entire building or by floor to analyze the site for areas with an abnormally high usage. Cost distribution for in-house energy consumption will be possible.



Installation in each line

Install in each line and find air leaks.

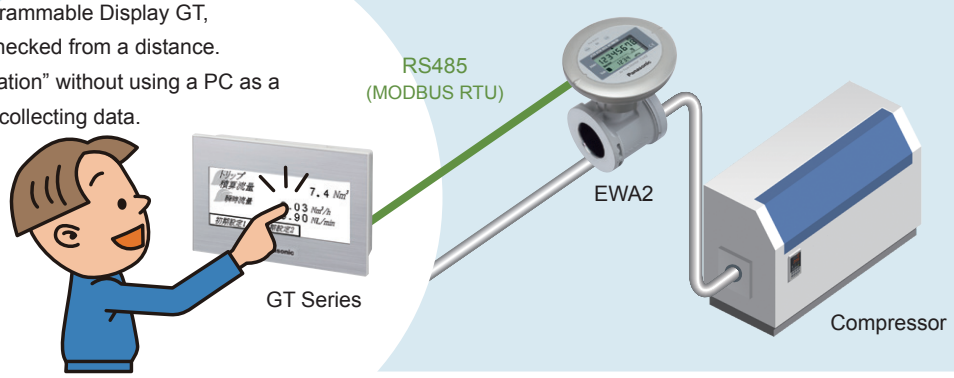
When a monitor installed on a piece of equipment is registering an air flow when all valves are closed, there is a leak present on the machine. By identifying the location of the leak, it allows the plant operator to quickly fix the problem.

Applications

Application example 2

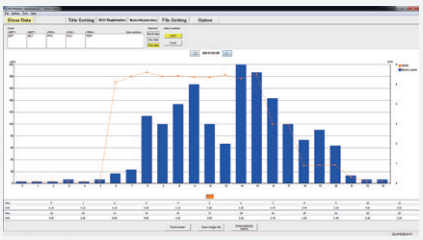
Setting/monitoring using Programmable Display GT Series

By connecting to the Programmable Display GT,
Air consumption can be checked from a distance.
You can achieve “Visualization” without using a PC as a display or Data logger for collecting data.



Use in combination with the Eco-POWER METER and KW Watcher to visualize the all aspects of energy usage in one place.

1. Connect the pulse output of Air Flow Monitor to Eco-POWER METER.
2. Display graphs of electricity, temperature, compressed air and nitrogen gas usage, and other data as collected by the **Data Logger Light** (DLL) using the **KW Watcher** PC software.
   This helps to analyze the electricity and compressed air/nitrogen gas usage from multiple points of view.



PRODUCT TYPES

For the lead time, please contact your dealer.

Main units

Type	Appearance	Pipe size	Model No.	Flow range (normal flow) with supply pressure 0.7 MPa and temperature in pipe 25℃
Small pipe size		25A (1B)	**AEWA2025**	-4.3 to -250 Nm^3/h or +4.3 to +250 Nm^3/h
		32A (1 1/4B)	**AEWA2032**	-8 to -470 Nm^3/h or +8 to +470 Nm^3/h
Medium pipe size		40A (1 1/2B)	**AEWA2040**	-9.4 to -580 Nm^3/h or +9.4 to +580 Nm^3/h
		50A (2B)	**AEWA2050**	-18 to -1,090 Nm^3/h or +18 to +1,090 Nm^3/h
		65A (2 1/2B)	**AEWA2065**	-29 to -1,740 Nm^3/h or +29 to +1,740 Nm^3/h
		80A (3B)	**AEWA2080**	-36 to -2,170 Nm^3/h or +36 to +2,170 Nm^3/h
Large pipe size		100A (4B)	**AEWA2100**	-72 to -3,620 Nm^3/h or +72 to +3,620 Nm^3/h
		150A (6B)	**AEWA2150**	-170 to -8,690 Nm^3/h or +170 to +8,690 Nm^3/h
		200A (8B)	**AEWA2200**	-290 to -14,490 Nm^3/h or +290 to +14,490 Nm^3/h

Options

The connecting cable is not included. Please be sure to purchase it.

Type	Model No.	Descriptions	
Connecting cable	**AEWA1C05**	Cable length: 5 m 16.40 ft	0.2 mm^2 6-core cabtyre cable with connector on one side
	AEWA1C20	Cable length: 20 m 65.62 ft	

COMMON SPECIFICATIONS

Item			Specifications
Rated pressure range			0 to 1 MPa (gauge pressure)
Rated operating voltage			24 V DC ±10 %
Power consumption			1.5 W or less
Pulse output			Open drain output •Max. inflow current: 50 mA •Applied voltage: 24 V DC or less •Residual voltage: 1.5 V or less (at inflow current 50 mA)
	Output mode		Direct flow pulse
	Over current protection		Equipped
	Pulse output time		Duty (1:1) 50/100/125/250/500 ms (select in setting mode)
Analog current output			Output current: 4 to 20 mA Output accuracy: ±0.1 mA Max. external load: 400 Ω or less
	Output mode		Instant flow, air pressure and temperature (select in setting mode)
		Instant flow	Zero point: 4 mA (Direct flow display mode, reverse flow ~ within low flow cut off) 12 mA (Direct/Reverse flow display mode, within low flow cut off)
		Air pressure	0 kPa: 4 mA, 1 MPa: 20 mA
		Temperature	-10 °C +14 °F: 4 mA, +60 °C +140 °F: 20 mA
Pressure loss			Extremely small (same as straight pipe)
Response time			500 ms
Using environment	Enclosure protection		IP64 (IEC)
	Ambient temperature		-10 to +60 °C +14 to +140 °F (Storage: -20 to +70 °C -4 to +158 °F)
	Ambient humidity		90 % RH or less (No dew condensation or icing allowed)

COMMUNICATION SPECIFICATIONS

Item		Specifications
Interface		Conforming to EIA-485
Protocol		MODBUS (RTU)
Communication method		Half-duplex
Synchronous system		Synchronous communication method
Number of connected units		115,200 bps: Max. 8 units 9,600/19,200/38,400/57,600 bps: Max. 31 units
Transmission speed		9,600/19,200/38,400/57,600/115,200 bps (select in setting mode)
Transmission format	Data length	8 bit
	Stop bit	1 bit/2 bit
	Parity	None/Odd number/Even number
Data buffer		100 byte
Response time		9,600 bps: 100 to 130 ms 19,200 bps: 70 to 100 ms 38,400 bps: 50 to 80 ms 57,600 bps: 40 to 70 ms 115,200 bps: 40 to 70 ms
Ending resistance		100 Ω approx. (built-in) (select in setting mode)

* The number of connectable units, transmission distance, and transmission speed may differ depending on the device to be connected and transmission path. Please confirm using the actual device.

● Note on installation
When installing the monitor in a horizontal pipe, install it with its display facing up. It can also be installed to vertical pipings.

INDIVIDUAL SPECIFICATIONS

Small pipe size type

Model No.		AEWA2025	AEWA2032
Pipe size		25A (1B)	32A (1 1/4B)
Measurable fluids		Air (compressed air), Nitrogen gas	
Flow range (actual flow)		-0.6 to -35 m^3/h or +0.6 to +35 m^3/h	-1.1 to -65 m^3/h or +1.1 to +65 m^3/h
Flow measuring accuracy	±5 % R.S.	-0.6 to -3.5 m^3/h or +0.6 to +3.5 m^3/h	-1.1 to -6.5 m^3/h or +1.1 to +6.5 m^3/h
	±2 % R.S.	-3.5 to -35 m^3/h or +3.5 to +35 m^3/h	-6.5 to -65 m^3/h or +6.5 to +65 m^3/h
Conversion accuracy		±2.5 % R.S. [at dry air or nitrogen gas (at 90 % RH or below), ordinary temperatures and 0.5 MPa]	
Unit for pulse output		10 / 100 / 1,000 [L/pulse]	
Low flow cut off		Within ±0.1 m^3/h	Within ±0.2 m^3/h
Material		Measuring pipe: Aluminum alloy, PPS and FVMQ	
Net weight		1.5 kg approx.	1.4 kg approx.
Accessories		M4 hexagon wrench: 1 pc	

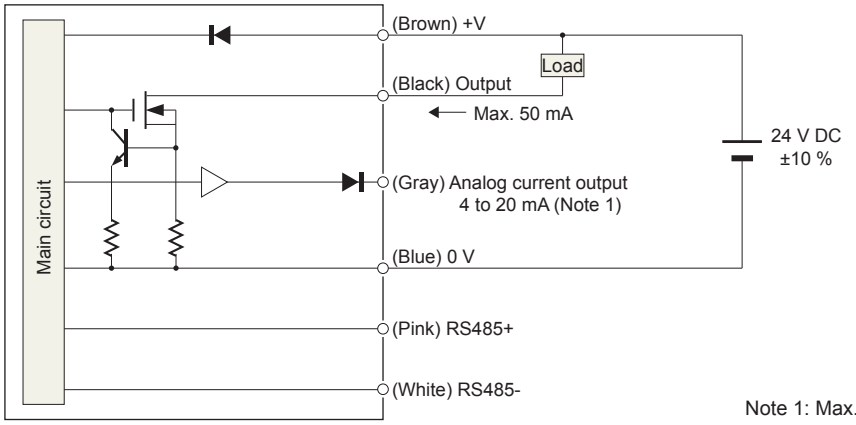
Medium pipe size type

Model No.		AEWA2040	AEWA2050	AEWA2065	AEWA2080
Pipe size		40A (1 1/2B)	50A (2B)	65A (2 1/2B)	80A (3B)
Measurable fluids		Air (compressed air), Nitrogen gas			
Flow range (actual flow)		-1.3 to -80 m^3/h or +1.3 to +80 m^3/h	-2.5 to -150 m^3/h or +2.5 to +150 m^3/h	-4 to -240 m^3/h or +4 to +240 m^3/h	-5 to -300 m^3/h or +5 to +300 m^3/h
Flow measuring accuracy	±5 % R.S.	-1.3 to -8 m^3/h or +1.3 to +8 m^3/h	-2.5 to -15 m^3/h or +2.5 to +15 m^3/h	-4 to -24 m^3/h or +4 to +24 m^3/h	-5 to -30 m^3/h or +5 to +30 m^3/h
	±2 % R.S.	-8 to -80 m^3/h or +8 to +80 m^3/h	-15 to -150 m^3/h or +15 to +150 m^3/h	-24 to -240 m^3/h or +24 to +240 m^3/h	-30 to -300 m^3/h or +30 to +300 m^3/h
Conversion accuracy		±2.5 % R.S. [at dry air or nitrogen gas (at 90 % RH or below), ordinary temperatures and 0.5 MPa]			
Unit for pulse output		10 / 100 / 1,000 [L/pulse]			
Low flow cut off		Within ±0.2 m^3/h	Within ±0.4 m^3/h	Within ±0.6 m^3/h	Within ±0.8 m^3/h
Material		Measuring pipe: Aluminum alloy, PPS and FVMQ			
Net weight		1.0 kg approx.	1.2 kg approx.	1.4 kg approx.	1.7 kg approx.
Accessories		Positioning collar: 4 pcs, M4 hexagon wrench: 1 pc, Flange packing: 2 pcs, Bolt set: 1 set (bolt, nut and plain washer)			

Large pipe size type

Model No.		AEWA2100	AEWA2150	AEWA2200
Pipe size		100A (4B)	150A (6B)	200A (8B)
Measurable fluid		Air (compressed air)		
Flow range (actual flow)		-10 to -500 m^3/h or +10 to +500 m^3/h	-24 to -1,200 m^3/h or +24 to +1,200 m^3/h	-40 to -2,000 m^3/h or +40 to +2,000 m^3/h
Flow measuring accuracy	±5 % R.S.	-10 to -50 m^3/h or +10 to +50 m^3/h	-24 to -120 m^3/h or +24 to +120 m^3/h	-40 to -200 m^3/h or +40 to +200 m^3/h
	±2 % R.S.	-50 to -500 m^3/h or +50 to +500 m^3/h	-120 to -1,200 m^3/h or +120 to +1,200 m^3/h	-200 to -2,000 m^3/h or +200 to +2,000 m^3/h
Conversion accuracy		±2.0 % R.S. [at dry air (at 90 % RH or below), ordinary temperatures and 0.3 MPa]		
Unit for pulse output		100 / 1,000 / 10,000 [L/pulse]		
Low flow cut off		Within ±2.6 m^3/h	Within ±5.0 m^3/h	Within ±9.0 m^3/h
Material		Measuring pipe: Stainless alloy, PPS and FVMQ		
Net weight		10.3 kg approx.	18.3 kg approx.	24.4 kg approx.
Accessories		Positioning collar: 2 pcs, M4 hexagon wrench: 1 pc		

I/O CIRCUIT DIAGRAM



Note 1: Max. resistive load should be 400 Ω or less.

NORMAL FLOW CONVERSION VALUE EXAMPLES (unit: Nm^3/h)

Model No.	Actual flow	Temp [°C]	Air pressure [MPa]							
			0 (atmospheric pressure)	0.4	0.5	0.6	0.7	0.8	0.9	0.98
AEWA2025	±0.6 to 35 m^3/h	0	±0.6 to 35	±3 to 170	±3.6 to 210	±4.2 to 240	±4.7 to 280	±5.3 to 310	±5.9 to 350	±6.4 to 370
		20	±0.6 to 33	±2.8 to 160	±3.3 to 190	±3.9 to 230	±4.4 to 260	±5 to 290	±5.5 to 320	±6 to 350
		25	±0.5 to 32	±2.7 to 160	±3.3 to 190	±3.8 to 220	±4.3 to 250	±4.9 to 290	±5.4 to 320	±5.9 to 340
		30	±0.5 to 32	±2.7 to 160	±3.2 to 190	±3.7 to 220	±4.3 to 250	±4.8 to 280	±5.3 to 310	±5.8 to 340
AEWA2032	±1.1 to 65 m^3/h	0	±1.1 to 65	±5.4 to 320	±6.5 to 390	±7.6 to 450	±8.7 to 510	±9.8 to 580	±11 to 640	±12 to 690
		20	±1 to 61	±5.1 to 300	±6.1 to 360	±7.1 to 420	±8.1 to 480	±9.1 to 540	±10 to 600	±11 to 650
		25	±1 to 60	±5 to 290	±6 to 350	±7 to 410	±8 to 470	±9 to 530	±10 to 590	±11 to 640
		30	±1 to 59	±4.9 to 290	±5.9 to 350	±6.9 to 410	±7.8 to 460	±8.8 to 520	±9.8 to 580	±11 to 620
AEWA2040	±1.3 to 80 m^3/h	0	±1.3 to 80	±6.4 to 400	±7.7 to 470	±9 to 550	±10 to 630	±12 to 710	±13 to 790	±14 to 850
		20	±1.2 to 75	±6 to 370	±7.2 to 440	±8.4 to 520	±9.6 to 590	±11 to 660	±12 to 740	±13 to 800
		25	±1.2 to 73	±5.9 to 360	±7.1 to 430	±8.2 to 510	±9.4 to 580	±11 to 650	±12 to 720	±13 to 780
		30	±1.2 to 72	±5.8 to 360	±7 to 430	±8.1 to 500	±9.3 to 570	±10 to 640	±12 to 710	±12 to 770
AEWA2050	±2.5 to 150 m^3/h	0	±2.5 to 150	±12 to 740	±15 to 890	±17 to 1,040	±20 to 1,190	±22 to 1,330	±25 to 1,480	±27 to 1,600
		20	±2.3 to 140	±12 to 690	±14 to 830	±16 to 970	±18 to 1,110	±21 to 1,240	±23 to 1,380	±25 to 1,490
		25	±2.3 to 140	±11 to 680	±14 to 820	±16 to 950	±18 to 1,090	±20 to 1,220	±23 to 1,360	±24 to 1,470
		30	±2.3 to 140	±11 to 670	±13 to 800	±16 to 940	±18 to 1,070	±20 to 1,200	±22 to 1,340	±24 to 1,440
AEWA2065	±4 to 240 m^3/h	0	±4 to 240	±20 to 1,190	±24 to 1,420	±28 to 1,660	±32 to 1,900	±36 to 2,130	±40 to 2,370	±43 to 2,560
		20	±3.7 to 220	±18 to 1,110	±22 to 1,330	±26 to 1,550	±29 to 1,770	±33 to 1,990	±37 to 2,210	±40 to 2,390
		25	±3.7 to 220	±18 to 1,090	±22 to 1,300	±25 to 1,520	±29 to 1,740	±33 to 1,960	±36 to 2,170	±39 to 2,350
		30	±3.6 to 220	±18 to 1,070	±21 to 1,280	±25 to 1,500	±29 to 1,710	±32 to 1,920	±36 to 2,140	±38 to 2,310
AEWA2080	±5 to 300 m^3/h	0	±5 to 300	±25 to 1,480	±30 to 1,780	±35 to 2,080	±40 to 2,370	±44 to 2,670	±49 to 2,960	±53 to 3,200
		20	±4.7 to 280	±23 to 1,380	±28 to 1,660	±32 to 1,930	±37 to 2,210	±41 to 2,490	±46 to 2,760	±50 to 2,980
		25	±4.6 to 270	±23 to 1,360	±27 to 1,630	±32 to 1,900	±36 to 2,170	±41 to 2,440	±45 to 2,720	±49 to 2,930
		30	±4.5 to 270	±22 to 1,340	±27 to 1,600	±31 to 1,870	±36 to 2,140	±40 to 2,400	±45 to 2,670	±48 to 2,880
AEWA2100	±10 to 500 m^3/h	0	±10 to 500	±49 to 2,470	±59 to 2,970	±69 to 3,460	±79 to 3,950	±89 to 4,450	±99 to 4,940	±110 to 5,340
		20	±9.3 to 470	±46 to 2,300	±55 to 2,760	±64 to 3,220	±74 to 3,680	±83 to 4,140	±92 to 4,600	±99 to 4,970
		25	±9.2 to 460	±45 to 2,270	±54 to 2,720	±63 to 3,170	±72 to 3,620	±81 to 4,070	±91 to 4,530	±98 to 4,890
		30	±9 to 450	±45 to 2,230	±53 to 2,670	±62 to 3,120	±71 to 3,560	±80 to 4,010	±89 to 4,450	±96 to 4,810
AEWA2150	±24 to 1,200 m^3/h	0	±24 to 1,200	±120 to 5,940	±140 to 7,120	±170 to 8,310	±190 to 9,490	±210 to 10,670	±240 to 11,860	±260 to 12,810
		20	±22 to 1,120	±110 to 5,530	±130 to 6,640	±150 to 7,740	±180 to 8,840	±200 to 9,950	±220 to 11,050	±240 to 11,930
		25	±22 to 1,100	±110 to 5,440	±130 to 6,520	±150 to 7,610	±170 to 8,690	±200 to 9,780	±220 to 10,860	±230 to 11,730
		30	±22 to 1,080	±110 to 5,350	±130 to 6,420	±150 to 7,480	±170 to 8,550	±190 to 9,620	±210 to 10,680	±230 to 11,540
AEWA2200	±40 to 2,000 m^3/h	0	±40 to 2,000	±200 to 9,890	±240 to 11,870	±280 to 13,840	±320 to 15,820	±360 to 17,790	±400 to 19,760	±430 to 21,340
		20	±37 to 1,860	±180 to 9,220	±220 to 11,060	±260 to 12,900	±290 to 14,740	±330 to 16,580	±370 to 18,420	±400 to 19,890
		25	±37 to 1,830	±180 to 9,070	±220 to 10,870	±250 to 12,680	±290 to 14,490	±330 to 16,300	±360 to 18,110	±390 to 19,550
		30	±36 to 1,800	±180 to 8,920	±210 to 10,690	±250 to 12,470	±290 to 14,250	±320 to 16,030	±360 to 17,810	±380 to 19,230

Normal flow conversion

$$\text{Normal flow } [Nm^3/h] = \frac{\text{Absolute temperature of 0 °C 32 °F (273.15 [K])}}{\text{Absolute temperature of operating temperature (273.15 [K] + t)}} \times \frac{\text{Absolute pressure of operating pressure (0.10133 [MPa] + p)}}{\text{Absolute pressure of 1 atm (0.10133 [MPa])}} \times \text{Actual flow } [m^3/h]$$

t: Temperature in pipe [°C °F], p: Supply pressure (gauge pressure) [MPa]
* Conversion with 0 °C 32 °F and 1 atm

Standard flow conversion

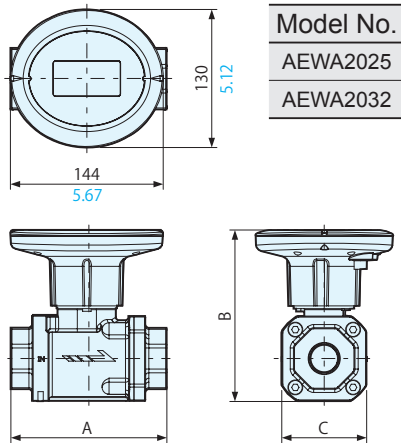
$$\text{Standard flow } [Sm^3/h] = \frac{\text{Absolute temperature of 0 °C 32 °F (273.15 [K]) + ts}}{\text{Absolute temperature of operating temperature (273.15 [K] + t)}} \times \frac{\text{Absolute operating pressure (0.10133 [MPa] + p)}}{\text{Absolute pressure of 1 atm (0.10133 [MPa])}} \times \text{Actual flow } [m^3/h]$$

t: Temperature in pipe [°C °F], p: Supply pressure (gauge pressure) [MPa], ts: Designated temperature [°C °F]
* The volumetric flow at designated temperature (°C, °F), 1 atm

DIMENSIONS (Unit: mm in)

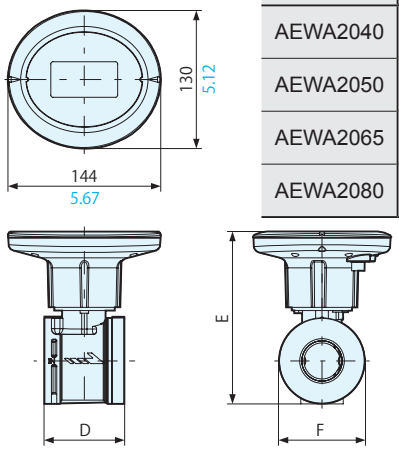
The CAD data of the dimensions can be downloaded from our website.

Small pipe size type



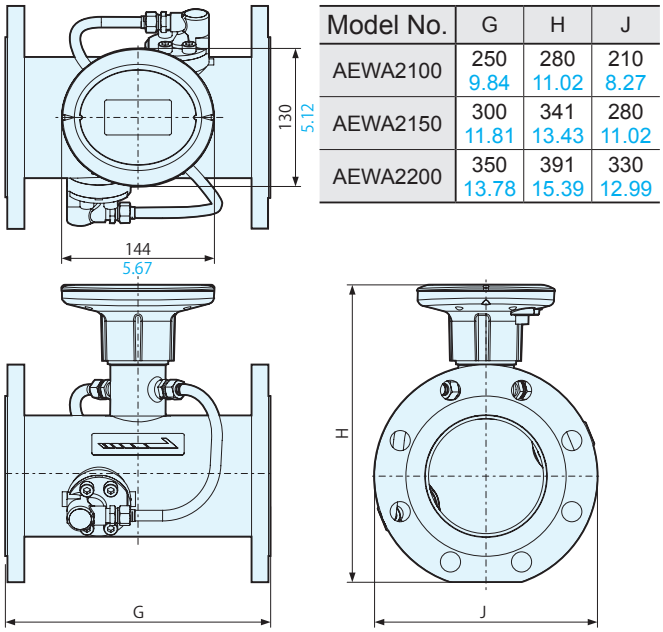
Model No.	A	B	C
AEWA2025	147 5.79	162 6.38	80 3.15
AEWA2032			

Medium pipe size type



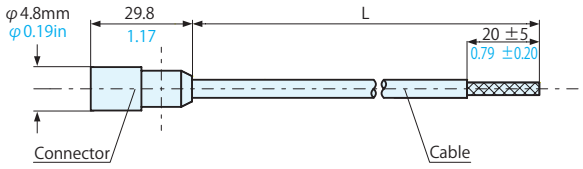
Model No.	D	E	F
AEWA2040	76 2.99	163 6.42	81 3.19
AEWA2050	90 3.54	176 6.93	96 3.78
AEWA2065	108 4.25	197 7.76	117 4.61
AEWA2080	117 4.61	220 8.66	126 4.96

Large pipe size type



Model No.	G	H	J
AEWA2100	250 9.84	280 11.02	210 8.27
AEWA2150	300 11.81	341 13.43	280 11.02
AEWA2200	350 13.78	391 15.39	330 12.99

Connecting cable (Sold separately)



Model No.	L
AEWA1C05	5,000 ± 50 196.85 ± 1.97
AEWA1C20	$20{,}000^{+100}_{0}$ $787.4^{+3.94}_{0}$

Please contact :

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