

IWAKI  
ELECTROMAGNETIC  
METERING  
PUMPS

**EWN-Y**



# Electromagnetic metering pumps with precise flow monitoring,

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The EWN-Y electromagnetic pump combined with EFS flow sensor (option) provides accurate real time control & display of dosing rate.

The required flow rate is simply input to the pump. Through feedback from the EFS sensor, the pump constantly adjusts its speed to maintain the set dosing rate - even under changing temperature, viscosity, or suction & discharge pressure conditions.

The EFS is mounted directly on the pump to digitally display dosing rate per minute or hour - ALL WITHOUT ANY CALIBRATION.

The EWN-Y gives a proportional 4-20mA output signal of dosing rate and displays operating history such as total flow volume and power-on time.



EWN-Y  
With EFS flow sensor (option)

# feedback & control

## Displaying flow rate

Pump flow rate may be displayed. In case the EFS flow sensor (option) is installed, the EWN-Y pump can display accurate real time flow rate without any calibration.

## Feedback control (with EFS)

Flow rate monitoring of individual strokes by the EFS sensor enable fast response feed back control. The feedback control maintains the set capacity by manually or externally with analog input signal.

## Discharge detection

Direct connection to the IWAKI FCP or FCM flow counter (excluding certain low- pressure models) allows effective monitoring of pump discharge (number of shots). Gas lock, abnormal pressure (only with FCP), etc., are also detectable.

## Alarm output and analog output functions are provided as standard function

Two types of alarm outputs and analog output are provided as standard functions. The analog output can be used for flow rate monitoring.

## Waterproof structure (IP65)

With the aim of improving resistance to exposure to liquid, the controller unit is installed on the back of the pump and the control panel is protected with a cover as standard equipment.

A rubber gasket is provided between the pump head and the bracket to prevent water from entering from the periphery of the pump head.

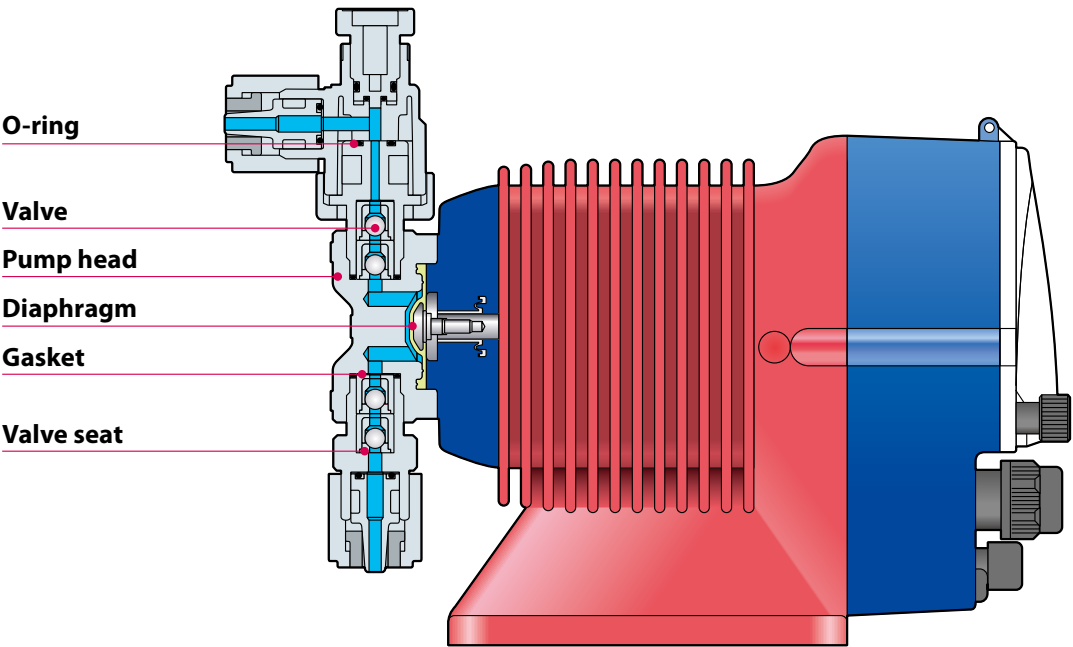
## Multi hose connection

The use of a new hose stopper eliminates a twist in tube connection.



# Technical data

## Construction



## Wet-end materials

	Pump head	Valve	Valve seat	O-ring	Diaphragm	Gasket
VC	PVC	Alumina ceramic	FKM	FKM	PTFE+EPDM (EPDM of Diaphragm is not wet-end.)	PTFE
VH		Hastelloy C276	EPDM	EPDM		
PC	GFRPP	Alumina ceramic	FKM	FKM		
PH		Hastelloy C276	EPDM	EPDM		
FC	PVDF	Alumina ceramic	PCTFE	-		
TC			FKM	FKM		
SH	SUS316	Hastelloy C276	SUS316	-		

## Pump identification

EWN

-

B

11

VC

□

E

Y

□

Series symbol

EWN series

Diaphragm diameter

Effective diaphragm dia.

09: 8mm   11: 10mm   16: 15mm

21: 20mm   31: 30mm   36: 35mm

Wet-end material symbol

For details, see the table of materials.

Connection

Blank: Ø4 x Ø6 (B09,B11,B16,B21,C16,C21)

Ø9 x Ø12 (B31,C31,C36)

For other option, please contact us.

Drive unit symbol

Average power consumption

B: 20W   C: 24W

Controller function code

Y: Y type

Power code

E: With European cord

A: With Australian cord

Special version code

C: High compression type

H: High pressure type

V: Viscosity type

3

## Specifications of pump

Model		B11	B16	B21	B31	C16	C21	C31	C36	
									VC/VH/PC/PH	FC/SH/TC
Capacity	L/hr	2.3	3.9	6.0	12.0	4.8	7.8	16.2	25.2	24.6
	mL/min	38	65	100	200	80	130	270	420	410
	mL/shot	0.05 to 0.1	0.09 to 0.18	0.14 to 0.28	0.28 to 0.56	0.09 to 0.22	0.14 to 0.36	0.3 to 0.75	0.47 to 1.17	0.46 to 1.14
Rated discharge pressure	MPa	1.0	0.7	0.4	0.2	1.0	0.7	0.35	0.2	0.2
Max. pressure	MPa	(1.4)	(0.8)	(0.5)	-	(1.2)	(0.8)	-	-	-
Stroke rate	% (spm)	0.1 to 100 (1 to 360)								
Stroke length range	% (mm)	50 to 100 (0.5 to 1.0)				40 to 100 (0.5 to 1.25)				
Current	A	0.8				1.2				
Average power consumption	W	20				24				

• Each discharge capacity shown above is at discharge pressure (stroke length 100%, stroke rate 100%) and increases as a discharge pressure reduces.

• The performance is based on pumping clean water at ambient temperature at rated voltage.

• Liquid temperature -VC/VH types: -10 to 40°C -PC/PH/FC/SH/TC types: -10 to 60°C

• Max pressure is not guaranteed under any discharge condition. Max pressure of PVC type is 1.2MPa. Please contact us for details.

## Specifications of controller

Model			EWN-Y	With EFS	Without EFS	
Operational mode	MAN control	MAN(Manual)		•	•	0.1-100.0%(1-360spm)
		Feedback control		•	N/A	0.1 - 999.9mL/min 0.001 - 59.994 L/H 0.001 - 15.829 GPH
	EXT control	DIV		N/A	•	/1-9999
		MULT		N/A	•	x1-9999
		Analog rigid		•	•	4-20, 20-4, 0-20, 20-0mA proportional control to stroke rates
		Analog variable		•	•	2 - point setting (Analog variable) (Proportional control to flow/stroke rates in the range of 0-20mA)
		BATCH		•	N/A	0.1 - 99999.9 mL 0.001 - 99.999 L 0.001 - 26.385 G
Display	LCD		14seg-5digits backlit LCD Operating conditions and Flow rates etc			
	LED	ON	A 2-color LED lights in orange when turning on power and in green during operation.			
		STOP	A 2-color LED lights in red when receiving the STOP signal and in orange when receiving the PreSTOP signal.			
		OUT	A LED lights in red when the pump is transmitting a signal to external devices.			
Keypad	5keys		START/STOP, EXT, ▲(UP), ▼(DOWN), Disp			
Control function	STOP/Pre-STOP		Pump keeps running when Pre-STOP is activated.Pump stops when STOP is activated.			
	Prime		Pump runs at max. stroke rate while up and down keys are pushed.			
	Key lock		Key can be locked and unlocked.			
	Inter lock		Operation stop at contact input* <sup>1</sup>			
	Reading calibration		Reading adjustment of flow volume per shot			
	Buffer		ON/OFF of the batch control buffer memory			
Input	Pulse signal input for batch control		No voltage contact or open collector* <sup>2</sup>			
	Analogue		0-20mADC (Input resistance is 220Ω.)			
	STOP/Pre-STOP (Level sensor)		No voltage contact or open collector* <sup>2</sup>			
	AUX		No voltage contact or open collector* <sup>2</sup>			
	Interlock		No voltage contact or open collector* <sup>2</sup>			
	Batch		No voltage contact or open collector* <sup>2</sup>			
Output	OUT1		No voltage contact (Mechanical relay), 250VAC 3A (Resistive load) Either the Signal recognition output*, Control error, or Poor flow detection is selectable (default: STOP).			
	OUT2		No voltage contact (PhotoMOS relay), AC/DC24V 0.1A Either the Sensor signal output, Synchronous output, Signal recognition output* <sup>3</sup> , Control error or Poor flow detection is selectable.			
	Analogue		4-20mA DC (Allowable load resistance : 500Ω)			
Data logging			Total flow volume Total number of strokes (1=1000 shots) Total number of signal outputs (OUT1) Total number of signal outputs (OUT2) Total power connection time Total operating time			
Buffer memory			Nonvolatile memory			
Power voltage* <sup>4</sup>			100-240VAC 50/60Hz			

Note 1: The setting can be changed to "operation resumption at contact input".

Note 2: The maximum applied voltage from the pump to an external contact is 12V at 2.3mA. When using a mechanical relay, its minimum application load should be 1mA or below.

Note 3: STOP/ Pre-STOP/ Interlock/ Batch completion outputs are separately enabled.

Note 4: Observe the specified power voltage range. Otherwise failure may result. The allowable power voltage range is 90-264VAC

# Optional accessories

## Sensors

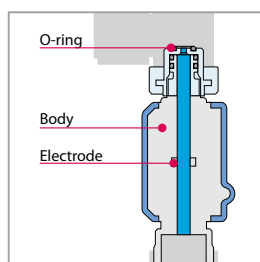
### • EFS flow sensor

The EFS flow sensor is an electromagnetic flow sensor for the electromagnetic metering pump, EWN-Y series. The flow sensor can measure the volume per stroke of pulsating output without the assistance of pulsation dampeners.



#### • Constructions and materials

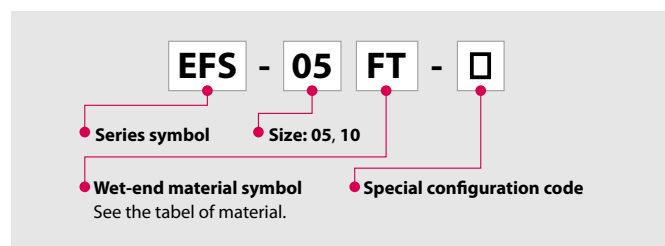
	FT	FH	FF
O ring	FKM	EPDM	FKM
Body	PVDF		
Electrode	Titanium	Hastelloy C22 or equivalent	



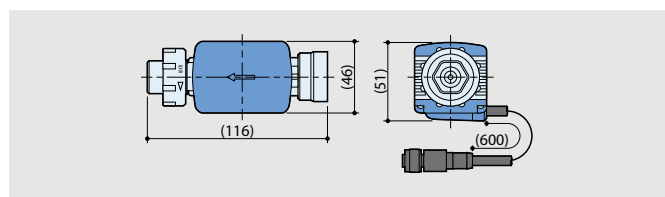
#### • Specifications

Applicable pump	EFS-05	EWN-B11, B16, B21, C16, C21-Y
	EFS-10	EWN-C31, C36-Y
Available medium	Minimum conductivity 10mS/cm	
Liquid temp.	0 to 60 °C	

#### • Identification



#### • Dimensions in mm



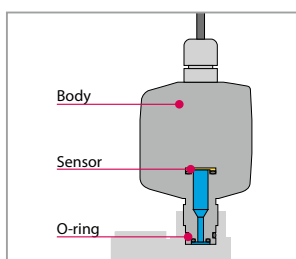
### • FCP flow counter (Posi-flow)

The FCP flow counter (Posi-flow) detects the pump pulsation by a pressure sensor. This sensor can check not only the number of dosing but also abnormal pressure (Low and high) as pipe clogging, gas-lock or pipe leakage.



#### • Constructions and materials

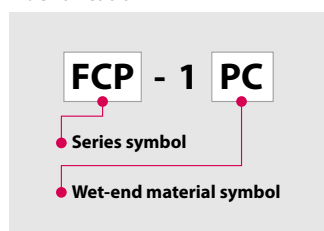
	1PC	1PE	1VC	1VE
O ring	FKM	EPDM	FKM	EPDM
Body	GFRPP		PVC	
Sensor	Ceramic (Al <sub>2</sub> O <sub>3</sub> ) 99.7%			



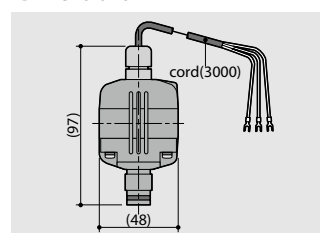
#### • Specifications

Applicable pump	EWN-B11, B16, B21, C16, C21
Operating pressure range	0.30 to 1.0 MPa
Indicators	Stop / Error : LED disappears Pressure error : LED lights redly Normal operation : LED lights greenly
Liquid temp.	0 to 40 °C

#### • Identification



#### • Dimensions in mm



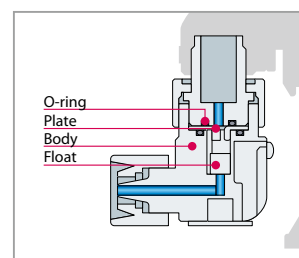
### • FCM flow checker

The FCM is a simple flow checker for the electromagnetic metering pump. A magnet molded float sensor and proximity switch detects pulsation of dosing output.



#### • Constructions and materials

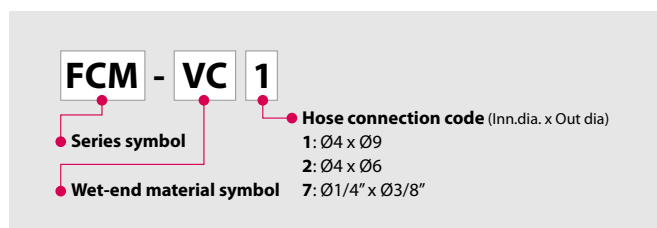
	VC	VH
Body	PVC	
Float	PVC	
Plate	PVC	
O ring	FKM	EPDM



#### • Specifications

Power voltage	5-24VDC
Max consumption current	8 mA
Max load capacity	15 mA
Output	NPN Open collector
Frequency	Max 6 Hz
Pulse output range	Min flow rate: 0.1 mL/shot Min discharge pressure: 0.2 MPa Max discharge pressure depends on each pump spec. Pump stroke rate: 1-360 spm Pump stroke length: Fixed to 100% (Factory setting)

#### • Identification



## Accessories

### • Check valve CAN / CBN / CS

This has the function of a non-return valve and prevents siphon and overfeed.

**CAN:** Available in PVC and GFRPP.

**CBN:** In-line type to be connected in the middle of a hose; made of PVC.

**CS:** Made of stainless steel for SH type.



### • Specifications

Model	Connection		Set pressure MPa	Material			Applicable pump
	Inlet mm	Outlet mm		Body	Spring	O-ring	
CAN-1VC (1V)	4x6, 5x8	R3/8 and R1/2	0.17±0.04	PVC (GFRPP/ CFRPP)	Hastelloy C276	FKM	EWN-B09, 11, 16, 21, C16, 21
CAN-1VE (1E)	6x8, 6x12		0.17±0.04			EPDM	
CAN-1VC-H (1E)	4x9, 4x6					FKM	
CAN-1VE -H(1E)	6x8, 1/4"x3/8"		0.17±0.04			EPDM	
CAN-2VC (2V)	6x12					FKM	EWN-C31
CAN-2VE (2E)	9x12		EPDM				
CAN-2VCL (2VL)	6x12		0.05 ± 0.04 - 0.03			FKM	EWN-B31, C36
CAN-2VEL (2EL)	9x12					EPDM	
CBN-1VC	4x6, 5x8		0.17±0.04	PVC	Hastelloy C276	FKM	EWN-B09, 11, 16, 21, C16, 21
CBN-1VE	6x8, 6x12					EPDM	
CS-1S	Rc1/4	Rc1/4	0.2±0.03	SUS316	Hastelloy C276	-	EWN-B11, 16, 21, C16, 21, 31
CS-1SL			0.05±0.03				EWN-B31, C36

### • Siphon preventing valve BVC

Made of PVC or GFRPP consisting of non-metallic parts.



### • Specifications

Model	Connection		Set pressure MPa	Material		Applicable pump
	Inlet mm	Outlet mm		Body	O-ring	
Note <b>BVC-1</b> □ □ □	4x6 9x12	R3/8 or R1/2	0.2 or 0.05	PVC	FKM or EPDM	All models

Note: Different models are available. Please contact for particulars.

### • Multi-function valve MFV

This valve has the multi-function of air vent, pressure release inside pipe, pressure releaf and back pressure valh



### • Specifications

Model	Tube connection	Set pressure		Material	Applicable pump
		Back pressure valve	Relief valve		
<b>MFV-HTC</b>	4x6mm, 5x8mm, 6x8mm, 6x12mm, 9x12mm, 10x12mm, 1/4x3/8, 3/8x1/2	0.25±0.1 MPa	1.25±0.2 MPa	PVDF / FEPM / PTFE+EPDM* *(Not a wet end)	EWN-B11, 16, 21, C16, 21, 31, 36
<b>MFV-MTC</b>		0.25±0.1 MPa	0.55±0.1 MPa		
<b>MFV-LTC</b>		0.1±0.05 MPa	—		

### • Foot valve FS / FSP / FSTC

This foot valve with a strainer is made of PVC or GFRPP.



### • Specifications

Model	Tube connection	Material	Applicable pump
<b>FSV</b>	4x6mm	PVC / FKM / Alumina ceramic	All models
<b>FSE</b>	5x8mm	PVC / EPDM / HastelloyC276	
<b>FSPV</b>	6x8mm	GFRPP / FKM / Alumina ceramic	
<b>FSPE</b>	6x12mm	GFRPP / EPDM / HastelloyC276	
<b>FSTC</b>	9x12mm 10x12mm	PVDF / FKM / Alumina ceramic	

### • Chemical tank EXDT

This is a polyethylene round tank.



**Capacity:** 35, 60, 100, 200 or 300L

### • Priming set PS

Made of PVC furnished with level sensor(s) and foot valve.



### • Specifications

Model	Level switch	Connection mm	Length mm
<b>PS-1</b>	Single	4x6, 5x8, 6x8, 6x12, 9x12	520, 650, 810, 1000, 1350
<b>PS-2</b>	Double		520, 720, 810, 1000, 1350

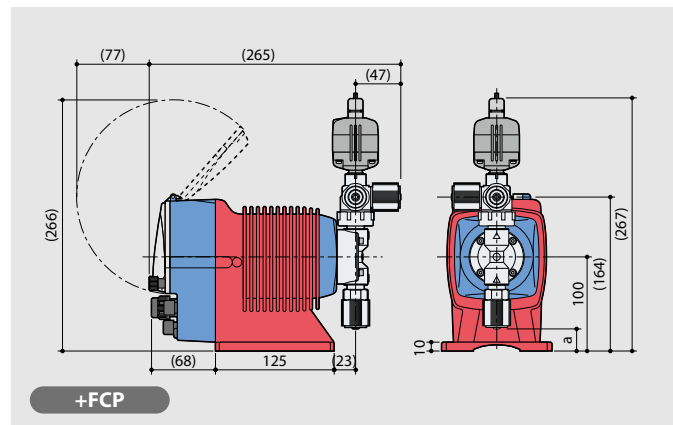
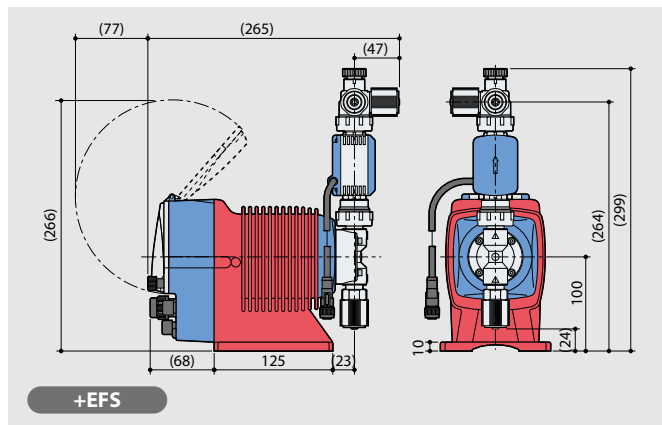
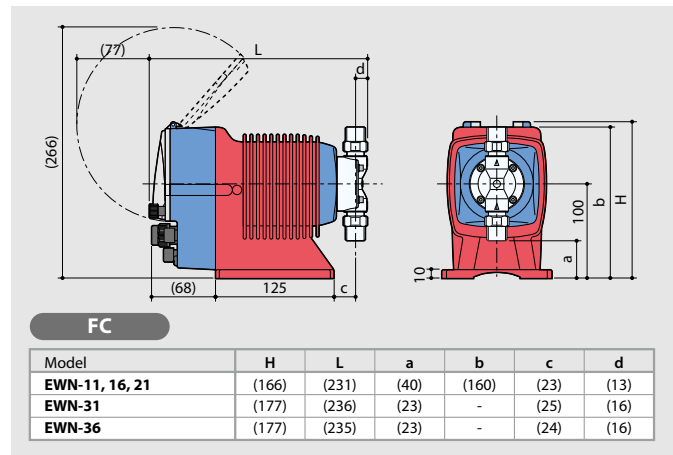
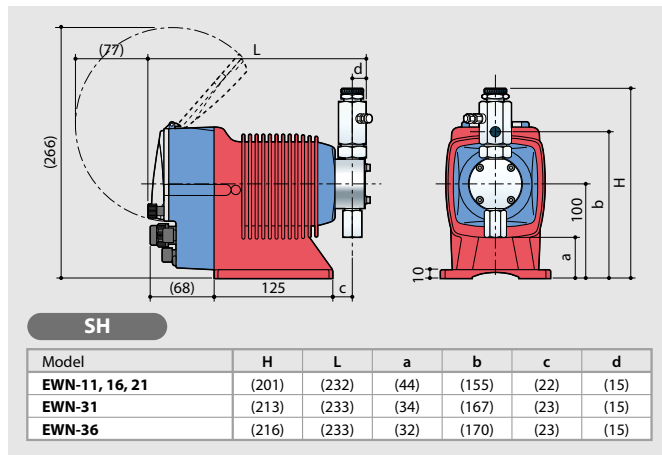
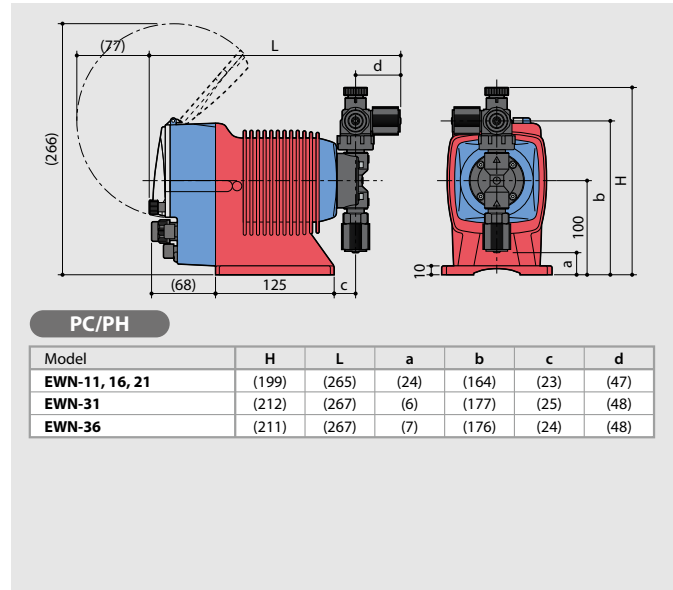
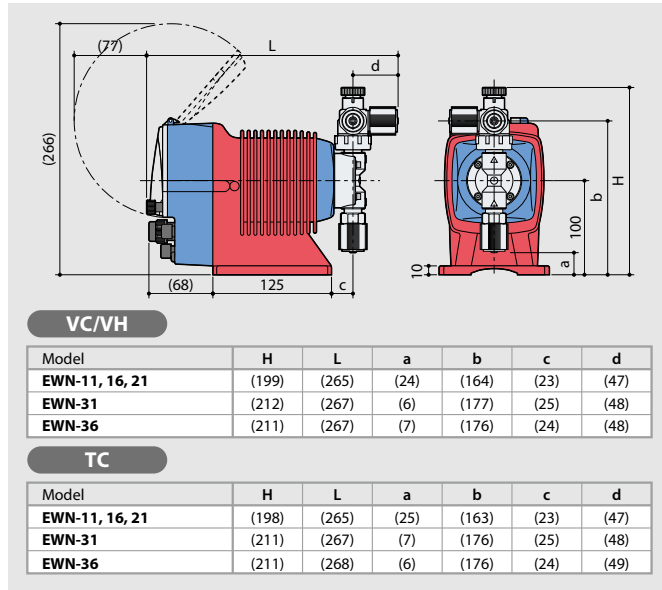
### • Pulse oscillating flow meter



### • Specifications

Connection	Max. capacity	Range of pulse
3/4"	5m <sup>3</sup> /h	1xOutput pulse against 0.25L
		1xOutput pulse against 0.50L
		1xOutput pulse against 1.00L
1"	12m <sup>3</sup> /h	1xOutput pulse against 0.25L
		1xOutput pulse against 0.50L
		1xOutput pulse against 1.00L
1 1/2"	20m <sup>3</sup> /h	1xOutput pulse against 0.25L
		1xOutput pulse against 0.50L
		1xOutput pulse against 1.00L

## Dimensions in mm



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 Before use of pump, read instruction manual carefully to use the product correctly.

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