Paddle Wheel Flowmeter

measuring • monitoring • analyzing

DPE

- Measuring Ranges: 1.5...8 GPM to 15...200 GPM
- Measuring Accuracy: ± 2.5% of Full Scale
- p_{max}: 580 PSIG
- t_{max}: 176 °F
- Connection: 1/2" NPT...3" NPT
- Material: Brass, Stainless Steel
- Output: Pulse, 4-20 mA, LED or LCD Displays, Contacts

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Description

The DPE series paddle wheel flowmeters are an economical yet reliable solution for measuring liquid flows in pipes up to 3 inches in diameter. The unique "insertion" impeller design protrudes minimally into the flow stream, which minimizes head loss. They feature a PVDF impeller supported on a sapphire bearing system which provides an exceptionally long life and excellent chemical resistance properties. They are available with either brass or stainless steel threaded bodies. A Hall effect sensor detects the passing of permanent magnets imbedded in the impeller blades. The output of the Hall sensor is converted to a linear pulse or 4-20 mA signal. Optionally, a variety of displays and controllers are available to provide flow rate indication, analog outputs and programmable setpoint switches. The combination of simple, reliable design and the variety of body materials and electronics makes the DPE a sure solution for the toughest flow metering applications.

Fields of Application

- Monitoring Cooling Water
- General Mechanical Engineering
- Waste Water Treatment
- Heavy Goods Industry
- Chemical Industry

Technical Details

Measuring Accuracy:	± 2.5 % of Full Scale
Process Temperature:	Max 176 °F
Ambient Temperature:	Max 176 °F
Max. Op. Pressure:	580 PSIG / 68 °F
Max. Pressure Loss	
DPE-..50:	0.73 PSIG
DPE-..55, DPE-..60:	0.44 PSIG
DPE-..65:	0.58 PSIG
DPE-..70:	0.29 PSIG
DPE-..75:	0.15 PSIG
Protection:	IP 65
Materials	
Housing:	Brass 316 Stainless Steel
Seals	
Brass Version:	NBR
SS Version:	FKM
Turbine Wheel:	PVDF
Axle:	Carbide
Bearing:	Sapphire

Electronics

Frequency Output (..F300)

Power Supply:	12 - 28 V_{DC}
Power Consumption:	10 mA
Pulse Output:	PNP, Open Collector, Max. 25 mA
Electrical Conn.:	Plug Connector M12x1

Frequency Output with Frequency Divider (..F390)

Power Supply:	24 V_{DC} ±20%
Power Consumption:	15 mA
Pulse Output:	PNP, Open Collector, Max. 25 mA
Electrical Conn.:	Plug Connector M12x1
Division Ratio:	1...$^{1}/_{128}$, Factory Set

Analog Output (..L342, ..L343, ..L442)

Power Supply:	24 V_{DC} ±20%
Output:	4-20 mA, 2- or 3-wire
Max. Load:	500 Ω
Electrical Conn.:	Plug Connector M12x1 or DIN 43 650
Optional:	Plug-on Display (with Plug Connector DIN 43 650, 2-wire)

Compact Electronics (..C3xx)

Display:	3-segment LED
Analog Output:	4 ... 20 mA Adjustable, Max. 500 W
Switching Outputs:	1 (2) Semiconductor PNP or NPN, Factory Set
Contact Operation:	N/C / N/O Contact, Programmable
Setting:	with 2 Buttons
Supply:	24 V_{DC} ±20%, 3-wire Technology, Approx. 100 mA
Electrical Conn.:	Plug Connector M12x1

ADI-1 Totalizing Electronic (..Kx42)

Display:	270° Bargraph, 5-Digit Digital Display
Analog Output:	4...20 mA, 0-10 V_{DC}
2 Switching Outputs:	Relay /Changeover Contact, Max. 250 V_{AC}/5 A Resistive Load, Max. 30 V_{DC} / 5 A
Setting:	with 4 buttons
Power Supply:	100 ... 240 V_{AC} ± 10 % or 18 ... 30 V_{AC} / 10 ... 40 V_{DC}
Electrical Conn.:	Pluggable Terminal Block via Cable Gland

ZED Totalizing Electronic (..E34R)

Display:	LCD, 2 x 8 Digit, Illuminated, Grand Total, Resettable Total and Flow Quantities Unit Selectable
Analog Output:	4...20 mA Adjustable
Load:	Max. 500 Ω
Switching Output:	2 Relays, Max. 250 V / 5 A / 1000 VA
Settings:	via 4 Buttons
Functions:	Reset, MIN/MAX Memory, Flow Monitor, Monitoring for Part and Total Quantity, Language
Power Supply:	24 V_{DC} ± 20 %, 3-wire
Power Consumption:	Approx. 170 mA
Electrical Conn.:	Pluggable Terminal Block via Cable Gland

ZED Batching Electronic (..G34R)

Display:	LCD, 2 x 8 digit, Illuminated, Grand Total, Resetable Total and Flow Quantities Unit Selectable
Analog Output:	4...20 mA, Scalable
Load:	Max. 500 Ω
Switching output:	2 Relays, Max. 250 V / 5 A / 1000 VA
Settings:	via 4 Buttons
Functions:	Batching (Relay S2), Start, Stop, Reset, Fine Batching, Correction Amount, Flow Switch, Total Quantity, Language
Power Supply:	24 V_{DC} ± 20 %, 3-wire
Power Consumption:	Approx. 170 mA
Electrical Conn.:	Pluggable Terminal Block via Cable Gland

No responsibility taken for errors; subject to change without prior notice.

Order Details (Example: **DPE-1160 N6 K042**)

Please specify flow direction of meter configured with any Compact, ADI-1, and ZED electronic option. See flow direction diagram on pg. 5 for details.

Model				Evaluating Electronics
(GPM)	Material		Process Connection	
	Brass	Stainless Steel		
1.5...8	**DPE-1150..**	**DPE-1250..**	**..N4..** = ½" NPT	**Frequency Output** ..**F300** = Frequency Output, Plug Connector M12 x 1 ..**F390** = Frequency Divider 1...$^{1}/_{128}$, Plug Connector M12x 1 **Analog Output** ..**L342** = 4-20 mA Output, 2-wire, M12 x 1 Plug Connector ..**L343** = 4-20 mA Output, 3-wire, M12 x 1 Plug Connector ..**L442** = 4-20 mA Output, 2-wire, Plug Connector DIN 43 650 **Compact Electronic*** ..**C30R** = LED-Display, 2 x Open Collector, PNP, Plug Connector M12 x 1 ..**C30M** = LED-Display, 2 x Open Collector, NPN, Plug Connector M12 x 1 ..**C34P** = LED-Display, 4-20 mA, 1 x Open Collector PNP, Plug Connector M12 x 1 ..**C34N** = LED-Display, 4-20 mA, 1 x Open Collector NPN, Plug Connector M12 x 1 **ADI-1 Rate/Totalizing Electronic*** ..**K042** = Bargraph/Digital Display, 100-240 VAC, 4-20mA & 0-10 VDC, 2 SPDT Contacts ..**K342** = Bargraph/Digital Display, 10-40 VDC, 4-20mA & 0-10 VDC, 2 SPDT Contacts **ZED Rate/Totalizing Electronic*** ..**E34R** = LCD, 2x 8-digit, 24 VDC, 4-20 mA, 2 SPDT Contacts **ZED Batching Electronic*** ..**G34R** = LCD, 2x 8-digit, 24 VDC, 4-20 mA, 2 SPDT Contacts
3...13	**DPE-1155..**	**DPE-1255..**	**..N5..** = ¾" NPT	
5.5...20	**DPE-1160..**	**DPE-1260..**	**..N6..** = 1" NPT	
6.6...65	**DPE-1165..**	**DPE-1265..**	**..N8..** = 1½" NPT	
8...90	**DPE-1170..**	**DPE-1270..**	**..N9..** = 2" NPT	
15...200	**DPE-1175..**	**DPE-1275..**	**..NB..** = 3" NPT	

Accessory Cables

807.037 = 4-Pin Micro-DC Connector with 6-foot Cable for Output Types F300, F390, L342 & L343
807.007 = 5-Pin Micro-DC Connector with 6-foot Cable for Output Types C3xx

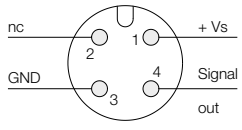
Plug-on Display for Model DPE...L442

(2-wire, 4-20 mA Output and DIN Connector)

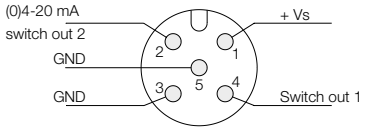
Description	Order Number
4-Digit LED, Connector DIN 43650, 2-wire, Supply through Analog Output	**AUF-1000**
As Above with Additional Open Collector Output	**AUF-1001**

Electrical Connection

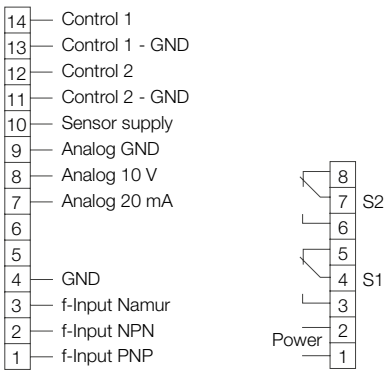
DPE-..F., DPE-..L3.. 3-wire



DPE-..C3..

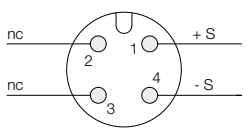


DPE-..Kx42*, ..E34R*, ..G34R*

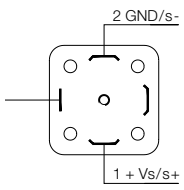


*Note: Consult model specific user manual for exact pin-out designations

DPE-..L342 2-wire

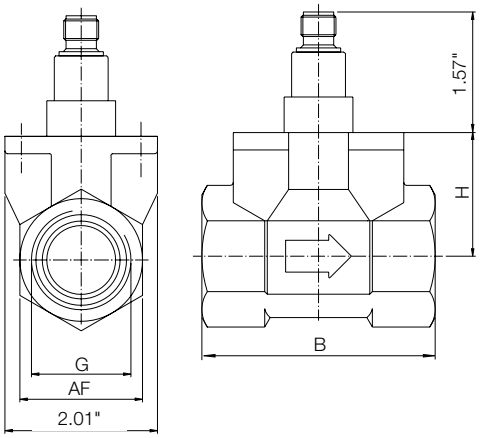


DPE-..L442

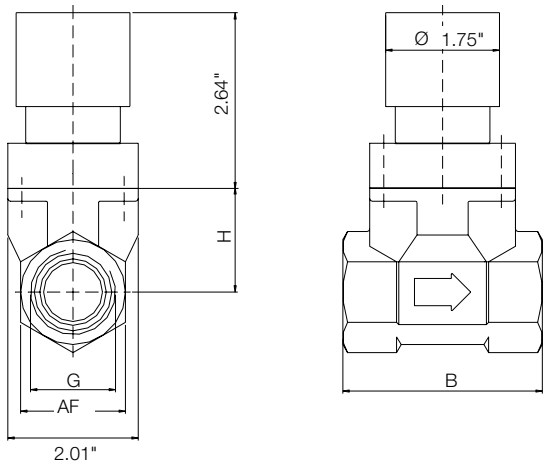


Dimensions

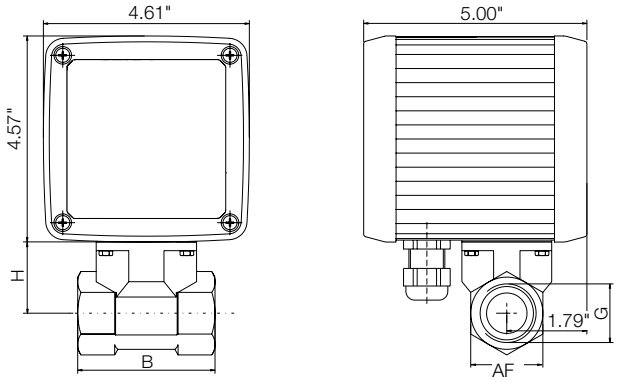
Model: DPE-..F3x0, ..L34x (with Freq. or Analog Output)



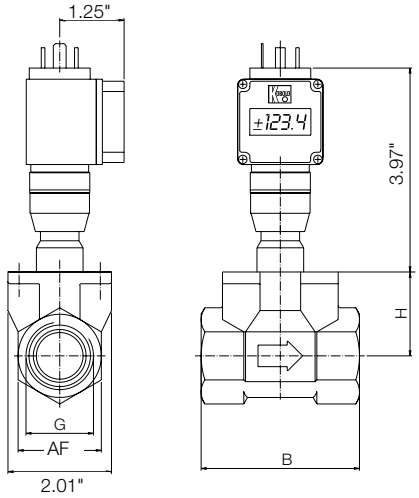
Model: DPE-..C3xx (with Compact Electronics)



Model: DPE-..Kx42, ..E34R, ..G34R
(with ADI-1 or ZED Evaluating Electronic)



Model: DPE-..L442
(with Analog Output & Optional Plug-on Display)



G	AF	B	H
1/2" NPT	1.06"	3.07"	1.57"
3/4" NPT	1.61"	3.07"	1.65"
1" NPT	1.61"	3.07"	1.65"
1-1/2" NPT	2.17"	3.07"	2.24"
2" NPT	2.76"	3.19"	2.28"
3" NPT	3.97"	4.17"	2.95"

Weights

Sensor		Electronics	
Model	**Weight**	**Model**	**Weight**
1/2"	approx. 1.66 lbs	Frequency Output	0.28 lbs
3/4"	approx. 2.32 lbs	Analog Output	0.28 lbs
1"	approx. 1.99 lbs	Compact Electronic	approx. 1.43 lbs
2"	approx. 3.31 lbs	ADI-1 Electronics	3.09 lbs
3"	approx. 6.62 lbs	ZED Electronics	3.09 lbs

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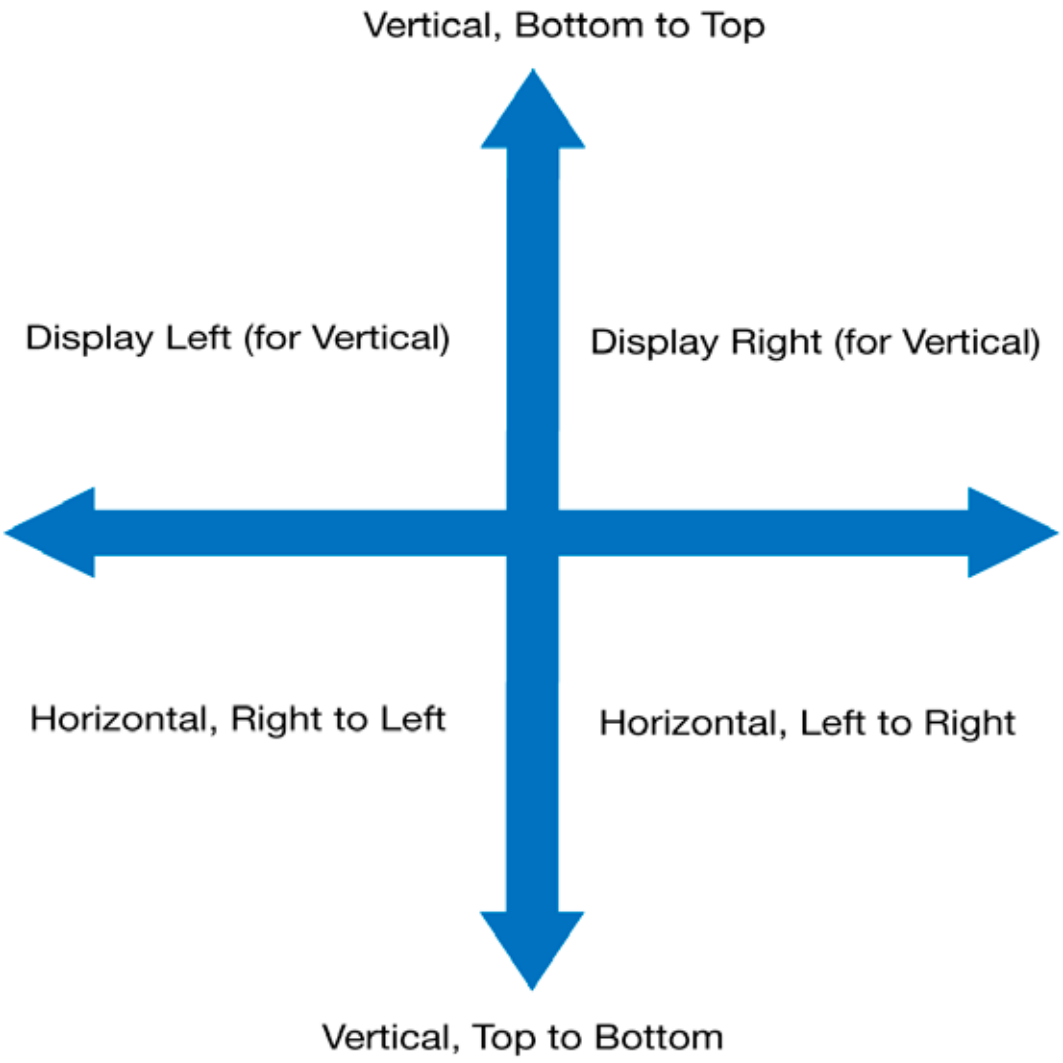
Flow Direction Diagram



Flow is in the direction of the arrow. Orientation is indicated as directly facing the flowmeter with flow direction aligned with the diagram. For horizontal flows, the display is specified on the top of the meter. For vertical flows with ADI or ZED electronic, indicate if the display should be on the right or the left side of the meter.

Example: Vertical flow, bottom to top, with display on the left

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