

Non-contact Radar Open Channel Flow Meter

IS-6000 Meter

DESCRIPTION

For open channel and partially filled pipe flow measurement, the IS-6000 flow meter measures flow velocity and level to determine the flow rate and total volume passing through. Available with non-contact radar sensor and level sensor that mounts above the surface, the IS-6000 is a versatile meter that eliminates the need for weirs or flumes.

BENEFITS

- Flow rate and total of open channel or partially filled pipe
- Eliminate construction and maintenance of weirs and flumes
- Install meter without stopping flow
- Eliminate sensor fouling or signal damping due to sediment
- Program remotely with smartphone or laptop
- Upload data logs through Ethernet or WiFi

FEATURES

- Non-contact flow measurement
- Bidirectional flow measurement
- Flexible choice of external level sensor
- Data logging with time/date stamp
- Meter setup using WiFi with webserver
- Modbus RTU and Modbus TCP Ethernet
- Rugged, aluminum enclosure for a long service life in harsh environments

APPLICATIONS

- Wastewater treatment influent, in-plant and effluent
- Industrial discharge
- Aqueduct measurement

OPERATION

Area-velocity flow meters calculate the flow rate by multiplying the cross sectional area and the velocity of the fluid. The cross sectional area is determined by selecting the shape and size of the channel and measuring the height of the water level. The velocity of the water is measured by a non-contact radar sensor.

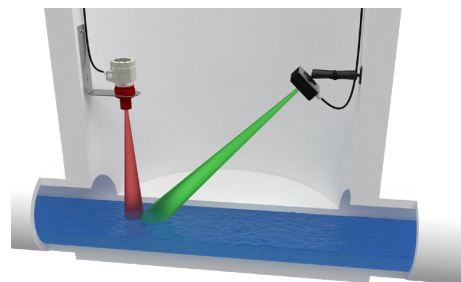


Set up the IS-6000 meter from a smartphone or laptop and connecting to the WiFi built into the meter. By using a standard web browser, there is no need to install an app or software. If a physical connection is preferred, the IS-6000 meter can be setup through the Ethernet LAN port. Built in security helps protect against unauthorized access for both WiFi and Ethernet LAN.

Radar Velocity Sensor

The compact radar velocity sensor mounts above the surface of the medium and sends a radar signal at an angle of approximately 55 degrees to the surface (green beam). The Doppler shift of the reflected signal is related to the velocity of the fluid in either direction.

Any level sensor (red beam) with a 4-20 mA output can provide the height measurement of fluid, enabling the optimal level sensor selection for every application.



SPECIFICATIONS

Transmitter

Display	LC-Display, 4 lines, 20 characters
Keyboard	4 keys
Enclosure	IP 66; Aluminum; wall mounted indoor use only or environmental enclosure
Operating Temperature	–4 to 140 °F (–20 to 60 °C)
Storage Temperature	–4 to 158 °F (–20 to 70 °C)
Maximum Humidity	90% (non-condensing)
Maximum Operating Altitude	AC device: 2000 m above sea level
Power Supply	100–240V AC, $\pm 10\%$ 47–63Hz or 10–36V DC, $\pm 15\%$, 5% residual ripple
Power Consumption	AC: max. 40 VA, typically: 30VA DC: max. 30 W, typically: 8 W
Operating Conditions	Protection class I Overvoltage category I Pollution degree 2
Outputs Analog	Four 4-20 mA active channels, load <550 Ohms
Outputs Digital	Four relays 60V DC 1A or 30V AC 1A 200 Hz max.; normally open or normally closed Two pulse/frequency outputs; 24V DC
Inputs Analog	Four 4-20 mA input channels; 1 channel reserved for level
Inputs Digital	Two inputs 30V DC max.
Communication	Modbus RTU 485; Modbus TCP Ethernet 10/100 Mbps RJ45
Programming Port	Webserver using standard web browser via WiFi or Ethernet; English, French, German, Spanish, Polish, Czech, Russian or Japanese languages
Data Logging	16 GB Micro SD card; 12 months of storage; file transfer through web browser
Channel/Pipe Shapes	Round radius, U-shape, rectangular, trapezoid, egg-shape, custom channel
CE Compliance	Low Voltage Directive, 2014/35/EU, EMC 2014/30/EU, Radio Equipment Directive 2014/53/EU, RoHS 2 2011/65/EU, 2015/863/EU

Radar Velocity Sensor



Sensor Type	RV11
Measuring Principle	Radar velocity measurement
Preferred application	Wastewater
Frequency	24 GHz
Beam width	11° (-3dB)
Range	± 0.05 m/s to ± 15 m/s
Resolution	1 mm/s min. wave height 3 mm
Accuracy Velocity	± 0.5% Full Scale
Accuracy Flow	typically < 5 % of reading, depending on site conditions
Measurement interval	continuous (every second)
Min. distance to surface	0.2 m
Max. distance to surface	10 m
Integrated angle compensation	–
Protection class	IP68 (48 h at 50 kPa, NEMA 6P)
Operating temperature	–40 to 85 °C
Dimensions	242 mm (L mounting), 100 × 100 mm (W × H sensor)

Not available in U.S./Canada

Level Sensors

Sensor Type	DL10	DL24	ULM
Measuring Range	49 in. (1.25 m)	9.8 ft (3.0 m)	7.9 in.–19.6 ft (0.2–6.0 m)
Accuracy	0.125 in. (3 mm)	± 0.2% of range	± 0.15% of range
Frequency	80 kHz	–	–
Dead Band	2 in. (50 mm)	2 in. (50 mm)	–
Beam Width	2 in. (50 mm)	2 in. (50 mm)	–
Beam Angle	–	–	14°
Mounting	1 in. NPT or 1 in. G	1 in. NPT or 1 in. G	1-1/2 in. G
Temperature	20 to 140 °F (–7 to 60 °C)	20 to 140 °F (–7 to 60 °C)	–
Ingress Protection	Type 6P	Type 6P	Type 67
Cables	Polyurethane	Polyurethane	Polyurethane

TRANSMITTER DIMENSIONS

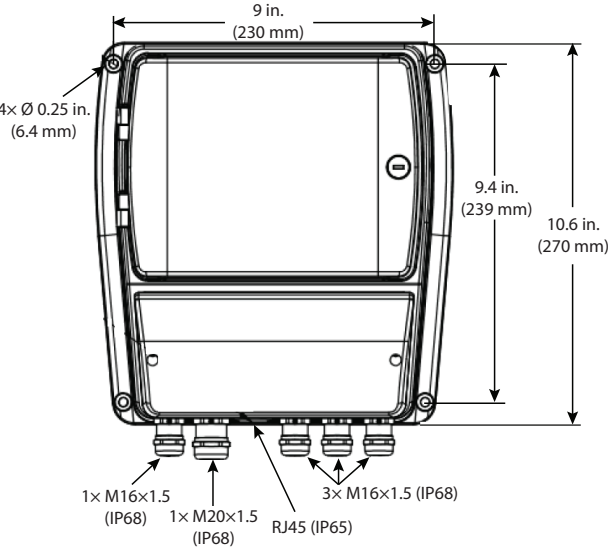


Figure 1: Front view

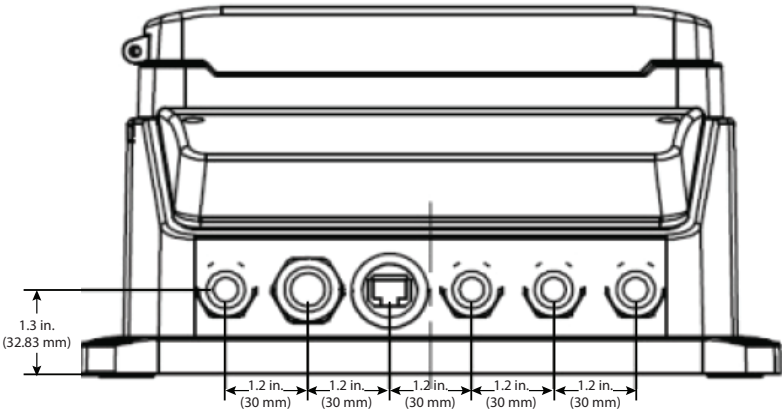


Figure 2: Bottom view with cable glands

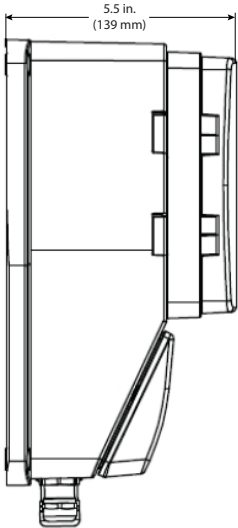


Figure 3: Side view

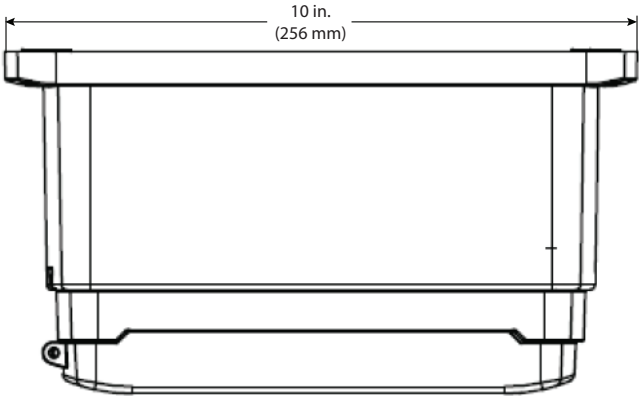


Figure 4: Top view

PART NUMBER CONSTRUCTION

Dynasonics IS-6000 Area Velocity Meter with Integrated Level

Product Type

Area Velocity Open Channel Flow Meter

DKV		-		-		-		-		-		-		-		-		-	
DKV																			

Certifications

CE General Safety

C

Transmitter Type

Non-contact Radar, 9...36 V DC

RF

Communication

Standard

S

Sensor Connection Type

Standard

S

Sensor Type

Non-contact Radar Velocity Sensor

S

Sensor Cable¹

Standard Sensor Cable, 33 ft (10 m)

AG

Standard Sensor Cable, 65 ft (20 m)

AP

Standard Sensor Cable, 100 ft (30 m)

BW

Calibration

Standard Calibration with Test Report

S

Reserved

None

XX

Reserved

None

WW

Sensor Mounting

Standard Base Plate

S

¹ Additional cable lengths and level options available. Contact factory for ordering information.

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