

FLS F111

HOT TAP PADDLEWHEEL AND TURBINE FLOW SENSORS



The metal flow sensor type F111 offers high strength and mechanical resistance applied to hot-tap insertion technology. The sensor can be assembled in pressurized pipes using a proper clamp saddle for a precise positioning into the pipe and get the maximum accuracy.

The sensor is available with both paddlewheel and turbine technologies.

The paddlewheel sensor can measure flow from 0.15 m/s (0.5 ft/s) while the turbine sensor can start measuring from 0.08 m/s (0.26 ft/s) and the bi-directional version is able to recognize the direction of the flow.

APPLICATIONS

- Water distribution
- Leak Detection or Monitoring
- Irrigation
- Water treatment and regeneration
- Ground Water Remediation
- Filtration systems

MAIN FEATURES

- Adjustable sensor position
- Stainless steel or brass construction
- Paddlewheel or Turbine technology
- E-CTFE rotor with ceramic shaft and bearings or PVDF turbine
- Hot-Tap installation
- Safety chain
- Pressure intake
- Standard 1 1/4" BSP process connection
- Battery powered version
- Compatible with most Data Loggers



TECHNICAL DATA

General

- Pipe Size Range: DN50 to DN900 (2" to 36"). Special versions on request for other sizes
- Linearity: $\pm 0.75\%$ of full scale
- Repeatability: $\pm 0.5\%$ of full scale
- Minimum Reynolds Number Required: 4500
- Enclosure: IP68
- Maximum operating pressure/temperature: 20 bar (290 psi) @ 80°C (176°F)
- Sensor fitting joint: 1 1/4" BSP (male)
- Pressure Intake: quick connection 3/8"
- Wetted Materials:
 - sensor Body: AISI 304 Stainless Steel
 - sensor joint: AISI 304 Stainless Steel
 - o-rings: EPDM
 - rotor: ECTFE (Halar®)
 - turbine: PVDF
 - shaft: Ceramic (Al_2O_3)
 - bearings: Ceramic (Al_2O_3)

Specific for F111.H

- Flow Rate Range: 0.15 to 8 m/s (0.5 to 25 ft/s)
- Supply voltage: 5 to 24 VDC $\pm 10\%$, regulated
- Supply current: < 30mA @ 24 VDC
- Output signal:
 - square wave
 - output frequency: 45 Hz per m/s nominal (13.7 Hz per ft/s nominal)
 - output type: transistor NPN open collector
 - output current: 10 mA max
- Cable length: 8 m (26.4 ft) standard, 300 m (990 ft) maximum

Specific for F111.C

- Flow Rate Range: 0.15 to 8 m/s (0.5 to 25 ft/s)
- Supply voltage: 3 to 5 VDC $\pm 10\%$, regulated or 3.6 Volt Lithium battery
- Supply current: < 10 μ A

- Output signal:
 - square wave
 - output frequency: 45 Hz per m/s nominal (13.7 Hz per ft/s nominal)
 - min. input impedance: 100 k Ω
- Cable length: 8 m (26.4 ft) standard, 16 m (52.8 ft) maximum

Specific for F111.HT

- Flow Rate Range: 0.08 to 8 m/s (0.26 to 25 ft/s)
- Supply voltage: 5 to 24 VDC $\pm 10\%$, regulated
- Supply current: < 30mA @ 24 VDC
- Output Signal:
 - square wave
 - output frequency: 20 Hz per m/s nominal (6.1 Hz per ft/s)
 - output type: transistor NPN open collector
 - output current: 10 mA max
- Cable length: 8 m (26.4 ft) standard, 300 m (990 ft) maximum

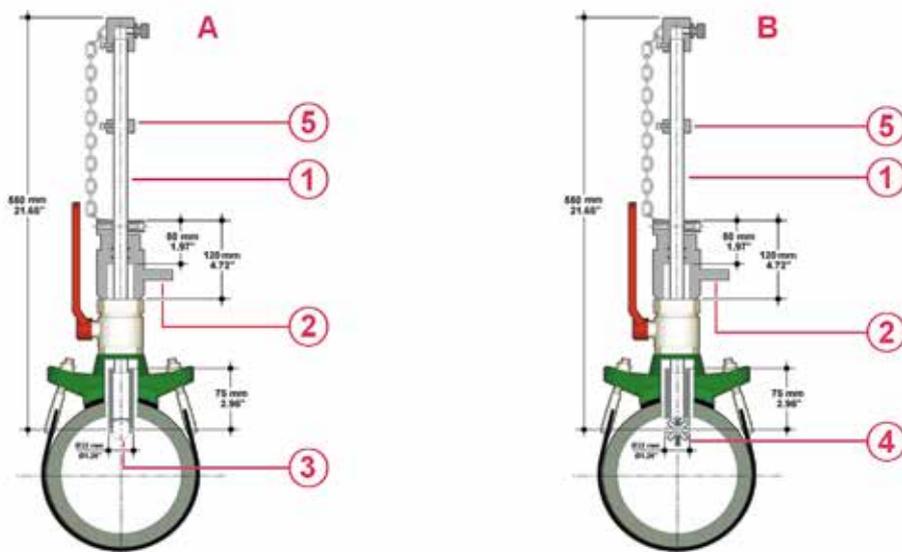
Specific for F111.HT.BD

- Flow Rate Range: 0.08 to 1.5 m/s (0.26 to 4.9 ft/s)
- Supply voltage: 4 to 5 VDC $\pm 10\%$, regulated
- Supply current: 0.6 mA @ 5 VDC
- Output Signal:
 - square wave
 - output frequency: 10 Hz per m/s nominal (3.05 Hz per ft/s nominal)
 - output type: CMOS active output
- Cable length: 8 m (26.4 ft) standard, 100 m (330 ft) maximum

Standards & Approvals

- Manufactured under ISO 9001
- Manufactured under ISO 14001
- CE
- RoHS Compliant
- GOST R

DIMENSIONS

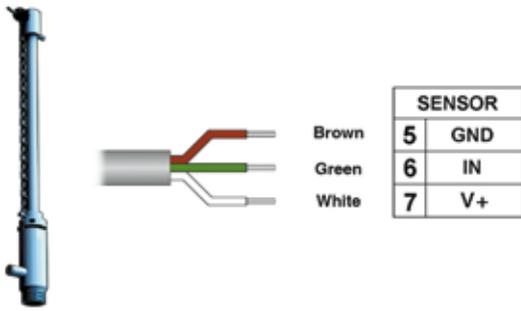


A F111 Paddlewheel Sensor
B F111 Turbine Sensor

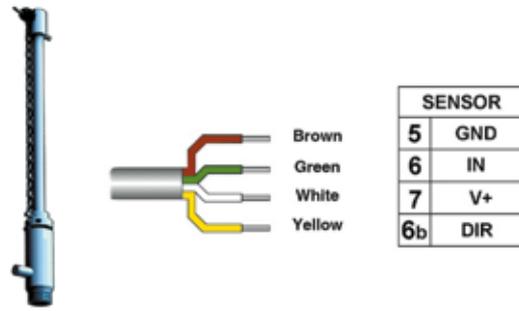
- 1 Sliding Rod
- 2 Pressure intake
- 3 ECTFE (Halar®) Open-cell rotor
- 4 PVDF Turbine
- 5 Clinching Ring

WIRING CONNECTIONS

F111 Monodirectional sensor wiring connection



F111 Bi-directional sensor wiring connection



ORDERING DATA

F111.X.XX Hot Tap Insertion Flow Sensors							
Part No.	Version	Power supply	Length	Main wetted materials	Enclosure	Flow Rate Range	Weight (gr.)
F111.H.01	Hall Paddlewheel	5 - 24 VDC	550mm	SS AISI 304/EPDM	IP 68	0.15 to 8 m/s (0.5 to 25 ft./s.)	5000
F111.H.02	Hall Paddlewheel	5 - 24 VDC	550mm	BRASS/EPDM	IP 68	0.15 to 8 m/s (0.5 to 25 ft./s.)	5000
F111.C.01	Coil Paddlewheel	3 - 5 VDC	550mm	SS AISI 304/EPDM	IP 68	0.15 to 8 m/s (0.5 to 25 ft./s.)	5000
F111.C.02	Coil Paddlewheel	3 - 5 VDC	550mm	BRASS/EPDM	IP 68	0.15 to 8 m/s (0.5 to 25 ft./s.)	5000
F111.HT.01	Hall Turbine	5 - 24 VDC	550mm	SS AISI 304/EPDM	IP 68	0.08 to 8 m/s (0.26 to 25 ft./s.)	5000
F111.HT.BD	Turbine Bi-directional	4 - 5 VDC	550mm	SS AISI 304/EPDM	IP 68	0.08 to 1.5 m/s (0.26 to 4.9 ft./s.)	5000