Dwyer

SERIES IEFB

INSERTION THERMAL ENERGY METER

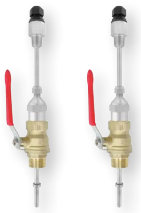
Field Adjustable, BACnet/Modbus® Outputs

IEFB-X-X-TXX

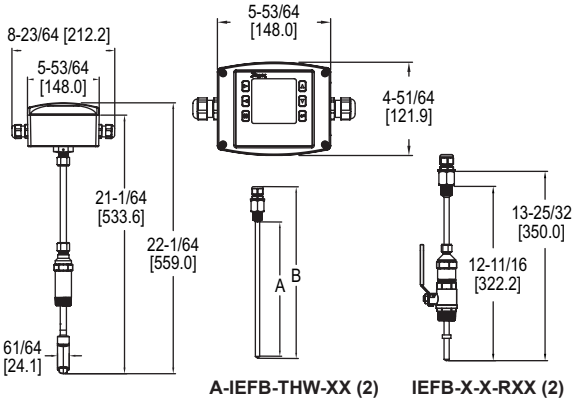
IEFB-X-X-TXX Shown with A-IEF-VLV-BR accessory valve

-LCD option

A-IEFB-THW-XX (2)



Hot-tap thermowells for model IEFB-X-X-RXX (2) shown with A-IEFB-VLV-BR-1 accessory valve



A-IEFB-THW-XX (2)

IEFB-X-X-RXX (2)

VIDEO ONLINE

THERMOWELL MODEL CHART		
Model	A	B
A-IEFB-THW-4	4-11/16″ (119.0 mm)	5-25/32 (146.8 mm)
A-IEFB-THW-6	6-11/16″ (169.8 mm)	7-25/32 (197.6 mm)

The **Series IEFB** is a field-adjustable insertion thermal energy meter that uses electromagnetic technology to accurately and reliably measure fluid velocity and energy consumption. The high accuracy IEFB is adjustable to fit pipe sizes from 4 to 10″ (100 to 250 mm), while the standard accuracy IEFB fits pipe sizes 4 to 36″ (100 to 900 mm). The energy meter is simple to install and incorporates a temperature meter and calculator into a single unit. The IEFB incorporates a temperature meter and a calculator into a single unit. The LCD display provides clear readings of the meter's values, including temperature and energy consumption, making it ideal for installation on chillers, boilers, and other heating and cooling applications. The high measuring accuracy and long lifetime keeps annual operating costs at a minimum. In addition, it offers several output options, including selectable BACnet MS/TP or Modbus® RTU communications protocol over 2-wire RS-485 and standard analog, frequency, and alarm outputs.

FEATURES/BENEFITS

- Flexible, field configurable setup displays (-LCD integral option or remote accessory A-IEF-DSP) accommodate a variety of application configurations. Application information is display selectable and includes pipe size, pipe material, liquid type, analog output, pulse/frequency output, alarm outputs, communication, outputs, damping, and calibration factor
- High performance accuracy is maintained through changes in temperature, density and/or viscosity
- The Setup Wizard and installation tool are simple to use, providing quick and precise installation
- Accessory setup kit A-IEF-KIT comes with a thickness gage and measuring tape to ensure exact installation depth
- The meter has no moving parts and electrodes that discourage fouling, which gives the meter a long lifecycle and minimizes the need for maintenance
- Hot-tap isolation valve accessories allow for easy installation and removal in operational systems without system downtime

APPLICATIONS

- Monitoring chiller cooling output performance
- Industrial boiler heating performance
- Energy efficiency monitoring
- Optimization of heat energy performance
- Commercial and residential heat energy consumption and metering
- District heating and cooling monitoring
- Energy cost allocation monitoring

SPECIFICATIONS

Service: Compatible clean or dirty non coating, conductive liquids.
Range: 0 to 20 ft/s (0 to 6 m/s).*
Wetted Materials: Body shaft/fitting: 316 SS; Electrodes: 316 SS; Electrode cap: Polymer/polystyrene; O-ring: Silicone; Thermowells: 304 SS.
BTU Accuracy per EN1434/ASTM E3137/CSA C900.1-13: High Accuracy Units: Class 2 for 2 to 20 ft/s (0.6 to 6 m/s)**; Standard Accuracy Units: Class 3 for 6.5 to 20 ft/s (2 to 6 m/s)**.
Flow Sensor Accuracy: High Accuracy Units: ±0.5% of reading at calibrated velocity, ±1% of reading from 2 to 20 ft/s (0.6 to 6 m/s) ±0.02 ft/s (±0.006 m/s) at < 2 ft/s (0.6 m/s); Standard Accuracy Units: ±1% FS.
Temperature Accuracy: Class B ±(0.30 + 0.005*t)°C per EN60751.
Differential Temperature Accuracy: Et = ±(0.5 +3*ΔΘmin/ΔΘ) % per EN1434.
Calculator Accuracy: Ec = ±(0.5 +ΔΘmin/ΔΘ) % per EN1434.
Temperature Compensation: 140 to 220°F (60 to 104.4°C) < 2% error over ±30°F (-1.1 °C) change, 40 to 70°F (4.4 to 21.1°C) < 2% error over ±10°F (-12.2°C) change.
Temperature Limits: Ambient: -20 to 160°F (-29 to 71°C)**; LCD -4 to 158°F (-20 to 70°C); Process: 15 to 250°F (-9 to 121°C); Storage: -40 to 185°F (-40 to 85°C).
Process Connection: Flowmeter: 1″ NPT or BSPT with accessory full port ball valve options; Thermowell: (2) 1/2″ NPT or BSPT thermowell with 1″ full port ball valve options.
Pressure Limit: 400 psi (27.6 bar) @ 100°F (37.8°C).
Pressure Drop: < 0.1 psi at 12 ft/s in 4″ (<0.01 bar at 3.7 m/s in 100 mm) and larger pipe.
Outputs: (1) Analog: 4-20 mA, 0-5 V, 0-10 V or 2-10 V (display selectable); (1) Pulse/Frequency: 0-15 V peak pulse, 0 to 500 Hz or scalable pulse output (display selectable); (2) Alarm: Empty pipe detection or minimum/maximum velocity, (display selectable) & Reverse flow output indication.
Power Requirements: 12-42 VDC, .25 A @ 24 VDC; 12-36 VAC.
Electrical Connection: Removable terminal blocks, (2) model selectable 1/2″ female NPT conduit connection, (2) PG 16 gland or (2) PG 16 gland with 10 ft (3 m) 9 conductor 22 AWG plenum rated cables, accessory cable lengths up to 200 ft (61 m) optional.
Display (-LCD option): 2 x 2″ (50 x 50 mm) graphic LCD with backlight.
Conductivity: >20 microsiemens.
Enclosure Material: Powder coated die cast aluminum.
Enclosure Ratings: NEMA 6P (IP68) (Non display models); NEMA 4X (IP66) (-LCD option).
Agency Approvals: BTL.

COMMUNICATIONS (-COM OPTION)
Type: BACnet MS/TP or Modbus® RTU communication protocol (default disabled, display selectable).
Supported Baud Rates: 9600, 19200, 38400, 57600, 76800, or 115200 bps (display selectable).
Device Load: 1/8 unit load.

ADDITIONAL SPECIFICATIONS
Applicable Pipe Material: Most popular plastic and metal pipes; i.e. Carbon steel, SS, copper, UPVC/PVDF, galvanized steel, mild steel, and brass.
Applicable Pipe Size: 4 to 36″ (100 to 900 mm), model dependent. See model chart.
Diameter Length Requirements: >10 upstream, >5 downstream.
Temperature Resistance: Matched 4 wire platinum RTD's.
Relative Humidity: 10 to 90% non-condensing.
Output Impedance: 4 to 20 mA: 536 Ω; 5V: 500 Ω; 10V: 1.27k Ω.

*For max flowrates >10 ft/s (3 m/s) order option -CC.
**Verified at standard temperature 73.4°F (23°C) refer to listed standards for detailed accuracy formulations.

INSERTION THERMAL ENERGY METER

Field Adjustable, BACnet/Modbus® Outputs

MODEL CHART							
Example	**IEFB**	**-L**	**N**	**-CND**	**-R10**	**-LCD**	**IEFB-LN-CND-R10-LCD**
Series	IEFB						Insertion thermal energy meter
Accuracy		L G S F I E T H					Standard accuracy <10″ (250 mm) pipe; 1% FS Standard accuracy >10″ (250 mm) pipe; 1% FS Standard accuracy 4 to 36″ (100 to 900 mm) pipe; 1% FS High accuracy 4″ (100 mm) pipe; 1% of reading High accuracy 6″ (150 mm) pipe; 1% of reading High accuracy 8″ (200 mm) pipe; 1% of reading High accuracy 10″ (250 mm) pipe; 1% of reading High accuracy 4 to 10″ (100 to 250 mm) pipe; 1% of reading
Process Connection			N B				1″ Male NPT 1″ Male BSPT
Housing Electrical Connection				CND PG 10			1/2″ female NPT PG 16 gland without cable PG 16 gland with (2) 10′ (3 m) cables
Temperature Sensors					T10 T20 T50 R10 R20 R50		(2) 10′ (3 m) PT temperature sensors* (2) 20' (6 m) PT temperature sensors* (2) 50' (15 m) PT temperature sensors* (2) 10′ (3 m) PT temperature sensors with hot-tap thermowells (2) 20′ (6 m) PT temperature sensors with hot-tap thermowells (2) 50′ (15 m) PT temperature sensors with hot-tap thermowells
Options						LCD COM NIST FC CC	Integral LCD display BACnet or Modbus® communications protocol (display selectable) NIST traceable calibration certification for flow and temperature Factory calibration certification for 0.5% of reading at single point Custom configuration (required input)
*Thermowells not included. Refer to accessories model chart to purchase permanent thermowells.							

ACCESSORIES	
Model	**Description**
A-IEF-KIT	Setup kit (includes setup display, thickness gage, and measuring tape) and universal power adapter
A-IEF-DSP	Setup display
A-IEF-VLV-BR†	1-1/4″ full port isolation valve brass**
A-IEF-VLV-SS†	1-1/4″ full port isolation valve 316 SS
Thermowells	
A-IEFB-THW-4	(2) 1/2″ NPT, 4″ thermowell for 4 to 7″ pipe
A-IEFB-THW-6	(2) 1/2″ NPT, 6″ thermowell for ≥ 8″ pipe
A-IEFB-THW-4-BSPT	(2) 1/2″ BSPT, 4″ thermowell for 4 to 7″ pipe
A-IEFB-THW-6-BSPT	(2) 1/2″ BSPT, 6″ thermowell for ≥ 8″ pipe
Hot-Tap Valves	
A-IEFB-VLV-BR-1†	(2) 1″ NPT full port isolation valve brass for temperature sensor with 1″ branch outlet and 1″ nipple**
A-IEFB-VLV-SS-1†	(2) 1″ NPT full port isolation valve 316 SS for temperature sensor with 1″ branch outlet and 1″ nipple
**Brass fittings and pipe are not to be used with NSF Certified models. Brass valves are non-RoHS compliant. †BSPT valves also available	