Dwyer

SERIES IEFB

INSERTION THERMAL ENERGY METER

Field Adjustable, BACnet/Modbus® Outputs

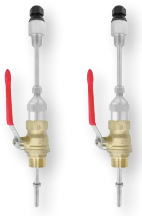
CALIBRATION SERVICES AVAILABLE

IEFB-X-X-TXX

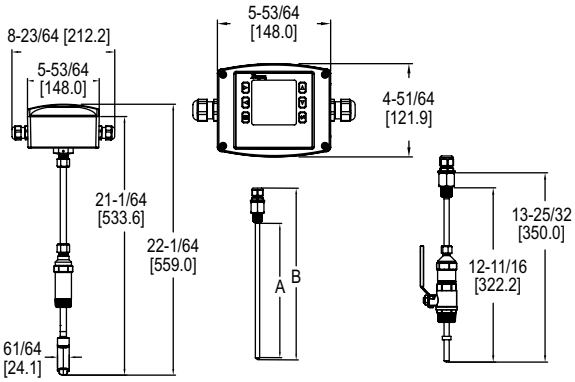
IEFB-X-X-TXX Shown with A-IEF-VLV-BR accessory valve

-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.

BENEFITS/FEATURES

- Save time and reduce installation costs with flow, temperature sensors and calculator delivered in one preprogrammed, complete package.
- Maintain system energy efficiency with high performance accuracy that is maintained through changes in temperature, density or viscosity per universally accepted standard
- Meet application requirements with field configurable setup displays (-LCD integral option or remote accessory A-IEF-DSP), which accommodate a variety of application configurations with one model through multiple display configurations i.e. pipe size, pipe material, liquid type, analog output, pulse/frequency output, alarm outputs, communication outputs, damping, and calibration factor
- Quick and easy ordering and set up with Setup Wizard and installation tool that are simple to use and allow for precise installation
- Save time with accessory setup kit A-IEF-KIT that ensures exact installation application depth with included thickness gage and measuring tape
- Reduced costs, long product life, and minimal maintenance requirements with no moving parts to wear or break and electrodes that discourage fouling
- Minimize installation costs with isolation valve accessory options to allow for installation in operational systems via hot-tap kit or easy removal without system downtime
- Required documents included with NIST traceable pass/fail verification certificate included standard for Carbon Steel Schedule 40 pipes sized 4″ (102 mm), 6″ (150 mm), 8″ (200 mm)

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) and 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).
Compliance: 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: 4-20 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.

Dwyer

SERIES IEFB

INSERTION THERMAL ENERGY METER

Field Adjustable, BACnet/Modbus® Outputs

CALIBRATION SERVICES AVAILABLE

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 4 to 10″ (200 to 250 mm) pipe; 1% FS Standard accuracy > 10 to 36″ (250 to 900 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						CC COM FC LCD NIST	Custom configuration (required input) BACnet or Modbus® communications protocol (display selectable) Factory calibration certification for 0.5% of reading at single point Integral LCD display NIST traceable calibration certification for flow and temperature
*Thermowells not included. Refer to accessories model chart to purchase permanent thermowells.							
Note: For maximum performance select -LCD option or setup display accessory.							

ACCESSORIES	
Model	**Description**
A-IEF-DSP	Setup display
A-IEF-KIT	Setup kit (includes setup display, thickness gage, and measuring tape) and universal power adaptor
A-IEF-VLV-BR†	1-1/4″ full port isolation valve brass kit**
A-IEF-VLV-SS†	1-1/4″ full port isolation valve 316 SS kit
Thermowells	
A-IEFB-THW-4	(2) 1/2″ NPT, 4″ thermowell for 4 to 7″ pipe
A-IEFB-THW-4-BSPT	(2) 1/2″ BSPT, 4″ thermowell for 4 to 7″ pipe
A-IEFB-THW-6	(2) 1/2″ NPT, 6″ thermowell for ≥ 8″ 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.	

Modbus® is a registered trademark of Schneider Electric USA, Inc.

SERIES A-IEF

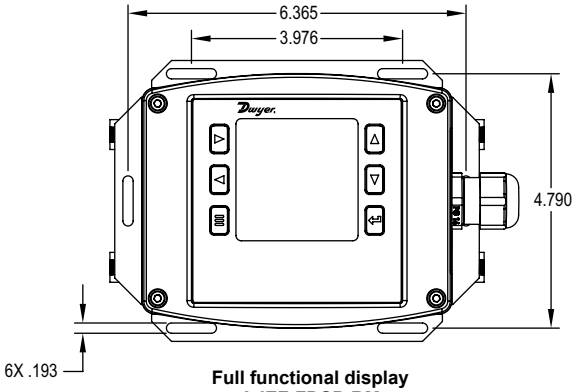
REMOTE DISPLAY FOR SERIES IEF AND IEFB

Convenient Access to IEF and IEFB Meter Readings

Full functional display
A-IEF-FDSP-RM

Indicator display
A-IEF-IDSP-RM

Shown with IEF-HN-PG and
A-IEF-VLV-BR accessory valve



Full functional display
A-IEF-FDSP-RM

The **Series A-IEF Remote Display** can be installed almost anywhere near a Series IEF flow transmitter or IEFB thermal energy meter. Both the indicator display (A-IEF-IDSP-RM) and the full functional display (A-IEF-FDSP-RM) have a maximum display cable length of 100 ft (30 m) to permit easy viewing of flow readings. The full functional display allows for convenient adjustment of configuration settings and allows the user to save the IEF or IEFB configuration settings to a computer for printing.

BENEFITS/FEATURES
- Full functional display can be used to set up the IEF/IEFB and adjust the settings if it is installed in a hard-to-reach location
- Indicator display makes it convenient to read process values if the meter is inaccessible
- Varying cable lengths of up to 100 ft (30 m) allows for flexible installation on a wall or pipe mount
- Easy to install and wire in the field

APPLICATIONS
- Mechanical rooms with a small footprint
- Hard-to-reach piping
- Boilers and chillers
- Chilled water
- Condenser water
- Make-up water
- Heating water
- Boiler feed water
- Steam condensate

SPECIFICATIONS
Temperature Limits: Ambient: -4 to 158°F (-20 to 70°C); Storage: -40 to 185°F (-40 to 85°C). **Display:** 3.3″ diagonal graphic LCD. Backlight (full functional display only). **Enclosure Material Housing:** Powder coated die cast aluminum. **Enclosure Rating:** NEMA 4X (IP66). **Electrical Connection:** Removable terminal blocks, #22 AWG (100 ft (30 m) max). **Mounting:** Wall or pipe mount. **Mounting Orientation:** Any orientation. **Weight:** 2.46 lbs (1.12kg). **Compliance:** CE.

MODEL CHART	
Model	**Description**
A-IEF-IDSP-RM	A-IEF-DSP-RM indicator remote display
A-IEF-FDSP-RM	A-IEF-DSP-RM full functional remote display

ACCESSORIES	
Model	**Description**
A-IEF-CBL-50	Plenum rated cable 50 ft (15.2 m)