SERIES IEFB

INSERTION THERMAL ENERGY METER
Field Adjustable, BACnet/Modbus® Outputs

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 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: stainless steel; Fitting: 316 SS; Electrodes: 316 SS; Electrode cap: 316 SS; Thermowell: 316 SS;
BTU Accuracy per EN1434
- Class B: ±2% of reading ±1% of indication (Class B: ±0.5% of reading ±1% of indication (Class B: ±0.5% of reading ±0.5% of indication (Class B: ±1% of reading ±0.5% of indication (Class B: ±0.5% of reading ±0.5% of indication (Class B: ±0.5%)
- Class A: ±0.5% of reading ±0.5% of indication

Etn = ±(0.5 +3*ΔΘmin/ΔΘ) % per EN1434.
Differential Temperature Accuracy: Et = ±(0.5 +3*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

Industrial 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.

Supported Baud Rates: 9600, 19200, 38400, 57600, 76800, 115200

Device Load: 1/8 unit load.

ADDITIONAL SPECIFICATIONS
Type: BACnet MS/TP or Modbus® RTU communication protocol (default disabled, display selectable).

Power Requirements: 12-42 VDC, .25 A @ 24 VDC; 12-36 VAC.

Power Output Combinations: (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.

Flow 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 length 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)

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Temperature Limits:
- Ambient: -20 to 160°F (-29 to 71°C)**; LCD -4 to 158°F (-20 to 71°C)**
- Process: 15 to 250°F (-9 to 121°C); Storage: -40 to 185°F (-40 to 85°C).

Pressure Limits:
- Pressure Drop: 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 sizes.

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 length 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.

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Agency Approvals: BTL.
Series IEF

Insertion Thermal Energy Meter
Field Adjustable, BACnet/Modbus® Outputs

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Model Chart

<table>
<thead>
<tr>
<th>Example</th>
<th>IEF</th>
<th>L</th>
<th>N</th>
<th>CND</th>
<th>R10</th>
<th>LCD</th>
<th>IEF-LN-CND-R10-LCD</th>
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<tbody>
<tr>
<td></td>
<td>IEF</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Insertion meter</td>
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<td>Process</td>
<td>Connection</td>
<td>N</td>
<td>B</td>
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<td></td>
<td></td>
<td>1” Male NPT 1” Male BSPT</td>
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<tr>
<td>Housing</td>
<td>Electrical Connection</td>
<td>CND</td>
<td>PG</td>
<td>10</td>
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<td>1/2” female NPT</td>
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<td>PG 16 gland without cable</td>
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<td></td>
<td>PG 16 gland with (2) 10’ (3 m) cables</td>
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<td>Temperature Sensors</td>
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<td>T10</td>
<td>(2) 10 (3 m) PT temperature sensors*</td>
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<td>T20</td>
<td>(2) 20 (6 m) PT temperature sensors*</td>
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<td>T50</td>
<td>(2) 50 (15 m) PT temperature sensors*</td>
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<td>R10</td>
<td>(2) 10 (3 m) PT temperature sensors with hot-tap thermowells</td>
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<td>R20</td>
<td>(2) 20 (6 m) PT temperature sensors with hot-tap thermowells</td>
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<td>R50</td>
<td>(2) 50 (15 m) PT temperature sensors with hot-tap thermowells</td>
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<td>Options</td>
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<td>NIST</td>
<td>NIST traceable calibration certification for flow and temperature</td>
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<td>FC</td>
<td>Factory calibration certification for 0.5% of reading at single point</td>
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<td>Custom configuration (required input)</td>
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Accessories

<table>
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<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-IEF-KIT</td>
<td>Setup kit (includes setup display, thickness gauge, and measuring tape) and universal power adapter</td>
</tr>
<tr>
<td>A-IEF-DSP</td>
<td>1-1/4’ full port isolation valve brass kit</td>
</tr>
<tr>
<td>A-IEF-VLV-BR</td>
<td>1-1/4’ full port isolation valve 316 SS kit</td>
</tr>
</tbody>
</table>

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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) |
| Agency Approvals: CE |

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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

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Series IEF Remote Display for Series IEF and IEFB
Convenient Access to IEF & IEFB Meter Readings

ACCESSORIES

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-IEF-CBL-50</td>
<td>Plenum rated cable 50 ft (15.2 m)</td>
</tr>
</tbody>
</table>

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Series A-IEF Remote Display

The Series A-IEF Remote Display can be installed almost anywhere near a Series IEF flow transmitter or IEF 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.

**Features/Benefits**

- 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

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*Thermowells not included. Refer to accessories model chart to purchase permanent thermowells.

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**Note:** FOR MAXIMUM PERFORMANCE SELECT -LCD OPTION OR SETUP DISPLAY ACCESSORY.

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