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 communication 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-IEFB-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
- Monitoring 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: 304 SS; Thermowell: 316 SS; O-ring: Silicone; Thermowells: 304 SS.
- BTL Accuracy per EN1434/ASTM E313/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% fs (±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°C)°C per EN60751.
- Differential Temperature Accuracy: Et = ±(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 (-9 to 71°C); Process: 15 to 250°F (-9 to 121°C); Storage: -40 to 185°F (-40 to 85°C).
- Process Connection: Flowmeter: 1˝ NPT with accessory full port ball valve options; Thermowell: (2) 1/2˝ NPT or BSPT thermowell with 1˝ full port ball valve options.
- Pressure Drop: 400 psi (27.6 bar) @ 100°F (37.8°C).
- Power Requirements: 12-42 VDC, .25 A @ 24 VDC; 12-36 VAC.
- 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).
- 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/PPDF, 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. 0.5% change. 10 to 90% non-condensing.
- Output Impedance: 4-20 mA: 500 Ohms; 5V: 500 Ohms; 10V: 1.27K Ohms.

*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.

FEATURE/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-IEFB-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
- Monitoring of heat energy performance
- Commercial and residential heat energy consumption and metering
- District heating and cooling monitoring
- Energy cost allocation monitoring
# INSERTION THERMAL ENERGY METER

**Field Adjustable, BACnet/Modbus® Outputs**

## CALIBRATION SERVICES AVAILABLE

### APPLICATIONS

- Condenser water
- Chilled water
- Hard-to-reach piping

### FEATURES/BENEFITS

- Varying cable lengths of up to 100 ft (30 m) allows for flexible installation on a wall or inaccessible.
- Indicator display makes it convenient to read process values if the meter is installed in a hard-to-reach location.
- 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.

### FULL FUNCTIONAL DISPLAY

- Convenient Access to IEF & IEFB Meter Readings
- Field Adjustable, BACnet/Modbus® Outputs
- Integral LCD display
- Removable terminal blocks, #22 AWG (100 ft (30 m) max).
- Enclosure Rating: (2) 1/2˝ NPT isolation valve, 1/2˝ branch outlet and 1˝ isolation valve 316 SS for 1-1/4˝ full port isolation valve brass kit**
- Setup kit (includes setup display, thickness gage, and measuring tape) and universal power adapter
- One orientation.

### ACCESORIES

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-IEF-KIT</td>
<td>Setup kit (includes setup display, thickness gage, and measuring tape) and universal power adapter</td>
<td>$1000.00</td>
</tr>
<tr>
<td>A-IEF-DSPT</td>
<td>Setup display</td>
<td>550.00</td>
</tr>
<tr>
<td>A-IEF-VLV-BR†</td>
<td>1-1/4˝ full port isolation valve brass kit**</td>
<td>250.00</td>
</tr>
<tr>
<td>A-IEF-VLV-SS†</td>
<td>1-1/4˝ full port isolation valve 316 SS kit</td>
<td>500.00</td>
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<tr>
<td>A-IEFB-THW-4</td>
<td>(2) 1/2˝ NPT, 4˝ thermowell for 4 to 7˝ pipe</td>
<td>25.00</td>
</tr>
<tr>
<td>A-IEFB-THW-6</td>
<td>(2) 1/2˝ NPT, 6˝ thermowell for 8˝ pipe</td>
<td>25.00</td>
</tr>
<tr>
<td>A-IEFB-THW-4-BSPT</td>
<td>(2) 1/2˝ BSPT, 4˝ thermowell for 4 to 7˝ pipe</td>
<td>25.00</td>
</tr>
<tr>
<td>A-IEFB-THW-6-BSPT</td>
<td>(2) 1/2˝ BSPT, 6˝ thermowell for 8˝ pipe</td>
<td>25.00</td>
</tr>
<tr>
<td>A-IEFB-VLV-BR-1&quot;</td>
<td>(2) 1/2˝ NPT full port isolation valve brass for temperature sensor with 1˝ branch outlet and 1˝ nipple**</td>
<td>175.00</td>
</tr>
<tr>
<td>A-IEFB-VLV-SS-1&quot;</td>
<td>(2) 1/2˝ NPT full port isolation valve 316 SS for temperature sensor with 1˝ branch outlet and 1˝ nipple</td>
<td>350.00</td>
</tr>
</tbody>
</table>

*Brass fittings and pipe are not to be used with NSF Certified models. Brass valves are non-RoHS compliant. BACnet® valves also available.

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

### MODEL CHART

#### Example

<table>
<thead>
<tr>
<th>Series</th>
<th>IEF</th>
<th>L</th>
<th>CND</th>
<th>R10</th>
<th>LCD</th>
<th>IEF-LN</th>
<th>CND-R10-LCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEF-LN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Example Accessory

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-IEF-VLV-SS†</td>
<td>1-1/4˝ full port isolation valve 316 SS kit</td>
</tr>
<tr>
<td>A-IEF-VLV-BR†</td>
<td>1-1/4˝ full port isolation valve brass kit**</td>
</tr>
</tbody>
</table>

**Items are net priced and are not subject to any discount.**

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

Modbus® is a registered trademark of Schneider Automation, Inc.

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# SERIES A-IEF

## REMOTE DISPLAY FOR SERIES IEF AND IEFB

Convenient Access to IEF & 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-SS-BR accessory valve

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**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.

### FEATURES/BENEFITS

- Full functional display can be used to set up the IEF or 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.
- Electrical Connection: Removable terminal blocks, #22 AWG (100 ft (30 m) max).
- Mounting Material: Wall or pipe mount.
- Weight: 2.46 lbs (1.12kg).
- Agency Approvals: CE.

### MODEL CHART

#### Example

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-IEF-FDSP-RM</td>
<td>A-IEF-FDSP-RM indicator remote display</td>
<td>$500.00</td>
</tr>
<tr>
<td>A-IEF-FDSP-RM</td>
<td>A-IEF-FDSP-RM full functional remote display</td>
<td>750.00</td>
</tr>
</tbody>
</table>

### ACCESSORIES

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-IEF-CBL-50</td>
<td>Plenum rated cable 50 ft (15.2 m)</td>
<td>$88.00</td>
</tr>
</tbody>
</table>

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