Honeywell

SXB51 & SXB53 Self-Contained Split-Core kWh Transducers (pulse output)

INSTALLATION GUIDE

APPLICATION

The SXB51 and SXB53 devices combine microprocessor-based kWh transducers and high-accuracy split-core instrument grade current transformers (CTs) in a single unit. Integration of electronics lowers hardware and installation costs. The sensors automatically detect phase reversal, so CT load orientation is not a concern. The CTs and meters are calibrated as a set, so it is necessary to color-match the CTs and voltage leads when installing.

These devices are used in tenant submetering, performance contracting, and departmental costing applications. The 1% total system accuracy conforms to ANSIC12.1 metering standards.

SPECIFICATIONS

Input Voltage: 208 to 480 VAC

Input Frequency: 50/60 Hz

Number of Phases Monitored: 1 or 3

Frequency: 50/60 Hz

Maximum Primary Current: 2400 A continuous per phase

CT Case Isolation: 600 VAC

Internal Isolation: 2000 VAC rms

Operating Temperature Range:
0 to +60 ºC (+32 to +122 ºF) (<95% RH, non-condensing)

Storage Temperature Range:
-40 to +70 ºC (-40 to +158 ºF)

Accuracy:
+/- 1% of reading from 10% to 100% of the rated current (accuracy specified with conductors centered in the CT window)

62-0307-02

Pulse Output Type: N.O. Opto-Fet **Pulse Width:** 200 msec

Max. Output Current: 100mA@24VAC/DC

⚠ WARNING

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH
Follow safe electrical work practices. See NFPA 70E in the USA, or applicable local codes.
This equipment must only be installed and serviced by qualified electrical personnel.
Read, understand and follow the instructions before installing this product.
Turn off all power supplying equipment before working on or inside the equipment.
Use a properly rated voltage sensing device to confirm power is off. DO NOT DEPEND ON THIS PRODUCT FOR VOLTAGE INDICATION.
Failure to follow these instructions will result in death or serious injury.

⚠ CAUTION

This product is not intended for life or safety applications.
Do not install this product in hazardous or classified locations.
The installer is responsible for conformance to all applicable codes.

INSTALLATION

⚠ CAUTION

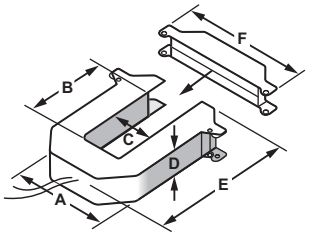
For use in a pollution degree 2 or better environment only. A Pollution Degree 2 environment must control conductive pollution and the possibility of condensation or high humidity. Consideration must be given to the enclosure, the correct use of ventilation, thermal properties of the equipment and the relationship with the environment.

Quick Install

⚠ WARNING

Disconnect and lock out power before installation.

1. Set the pulse rate switches located on the bottom of the CT.
2. Connect the voltage leads to the source to be monitored.
3. Snap the CT onto the conductor (observe color matching).
4. Connect the pulse output wires (observe polarity).



SMALL
100/300 AMP

A = 3-51/64 (96)
B = 1-13/64 (30)
C = 1-19/64 (31)
D = 1-13/64 (30)
E = 4 (100)
F = 4-51/64 (121)

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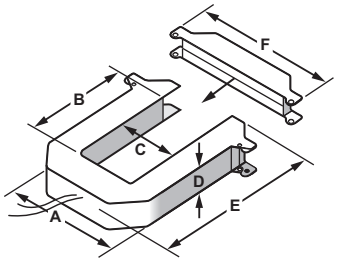
Fig. 1. Dimensions of small CT.



MEDIUM
400/800 AMP

A = 4-29/32 (125)
B = 2-29/32 (73)
C = 2-1/2 (62)
D = 1-13/64 (30)
E = 5-13/64 (132)
F = 5-29/32 (151)

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Fig. 2. Dimensions of medium CT.

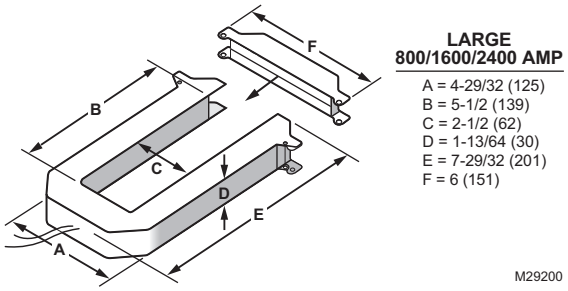
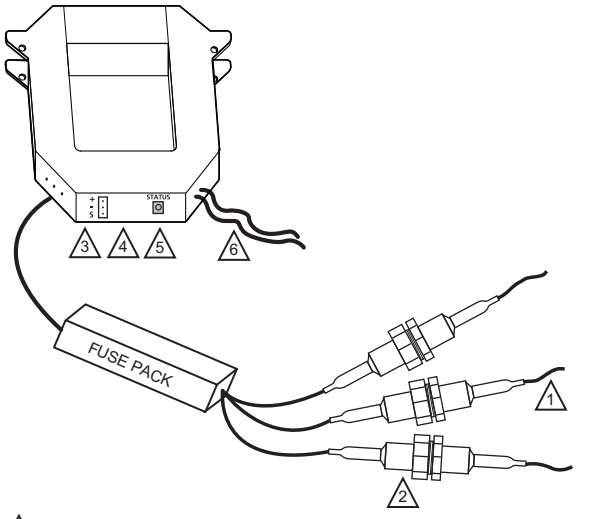


Fig. 3. Dimensions of large CT.

Product Diagram



1. VOLTAGE LEADS: INPUT RANGE IS 208 TO 480V.
2. FUSES: MAXIMUM CURRENT DRAW 60MA. FUSES PROVIDED BY THE FACTORY ARE RATED ½A, 600VAC, 200 KAIC. REPLACE ONLY WITH FUSES OF THE SAME TYPE AND RATING.
3. PULSE OUTPUT CONNECTOR
4. STATUS LED: BLINK CODES: SLOW GREEN FOR NORMAL OPERATION; SLOW RED FOR INCORRECT WIRING OR LOW POWER FACTOR (LESS THAN 0.5); FAST RED FOR MAX. CURRENT EXCEEDANCE.
5. PULSE RATE SWITCHES: USED TO SET THE PULSE OUTPUT RATE.
6. EXTERNAL CTS: PERMANENTLY ATTACHED; DO NOT DISCONNECT OR USE WITH OTHER POWER METERS.

M29201

Fig. 4. Diagram of product components.

⚠ CAUTION

Color match CTs and voltage leads!
Example: clamp the red labeled CT.

⚠ CAUTION

around the power conductor connected to the red voltage wire.

Installation Details

⚠ CAUTION

RISK OF EQUIPMENT DAMAGE

SXB meters are rated for use at 50-60Hz. Exposure to extreme harmonics from VFDs or similar sources may permanently damage the product. Failure to follow these instructions can result in overheating and permanent equipment damage.

⚠ WARNING

Disconnect and lock out power before installation.

1. Set the switches for the desired pulse-rate as shown. Not all settings are allowed for this device.

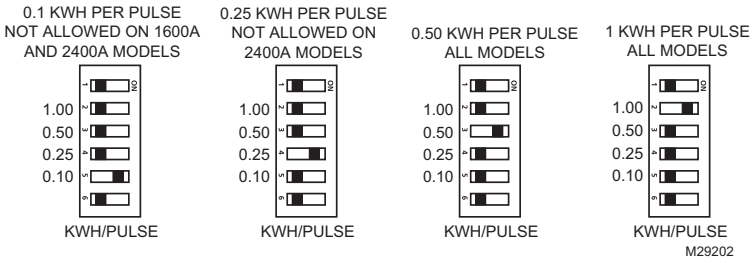


Fig. 5. Setting pulse-rate switches on the meter.

2. Connect the voltage leads to the phase conductors, at a location that is not normally turned off. Connect voltage leads on the Line side of the conductor to ensure constant power to the meter. See the Wiring section on the following page.
3. Snap the CT onto the conductor. If the application can exceed 20 times the rated CT current, use wire ties to secure the I-bar to the CT housing. This CT automatically detects phase reversal, so CT load orientation is not important.

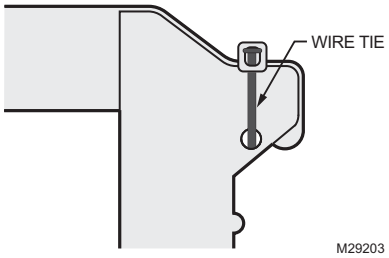


Fig. 6. Use wire ties to secure the I-bar to the CT housing.

4. Attach the pulse output wires as shown. Observe (+), (-), and Shield polarity. Insulate any exposed wiring.

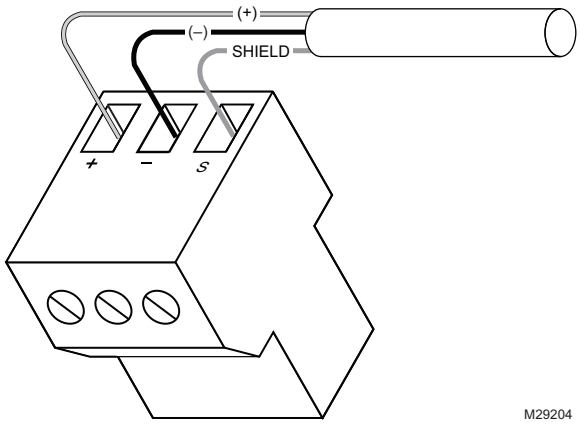


Fig. 7. Shield any exposed wiring.

5. Check power reading (these calculations are approximations only).

Expected power:
kW = Volts x Amps x 1.732 x PF / 1000
kW = Horsepower x 0.746

Seconds per pulse:
S = kWh pulse setting
seconds/pulse = (3600 x S) / kW

WIRING

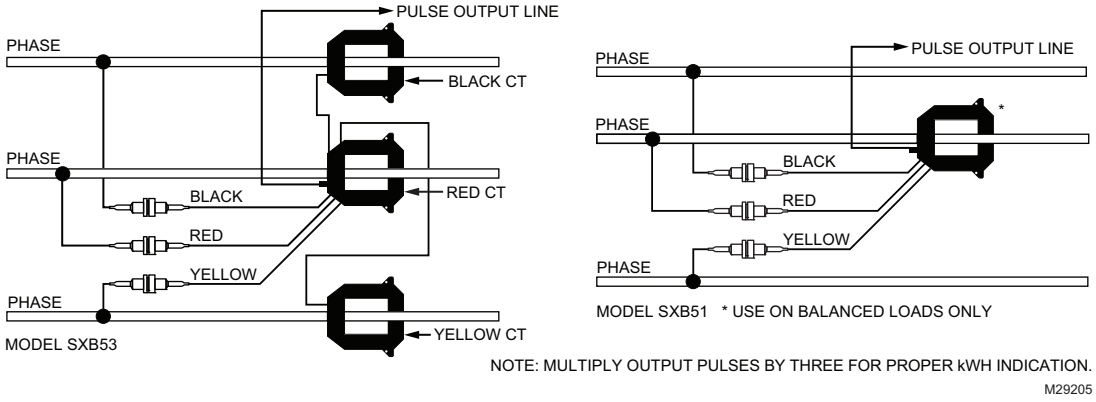


Fig. 8. Typical 208/480 VAC 3Ø, 3- or 4-wire installation.

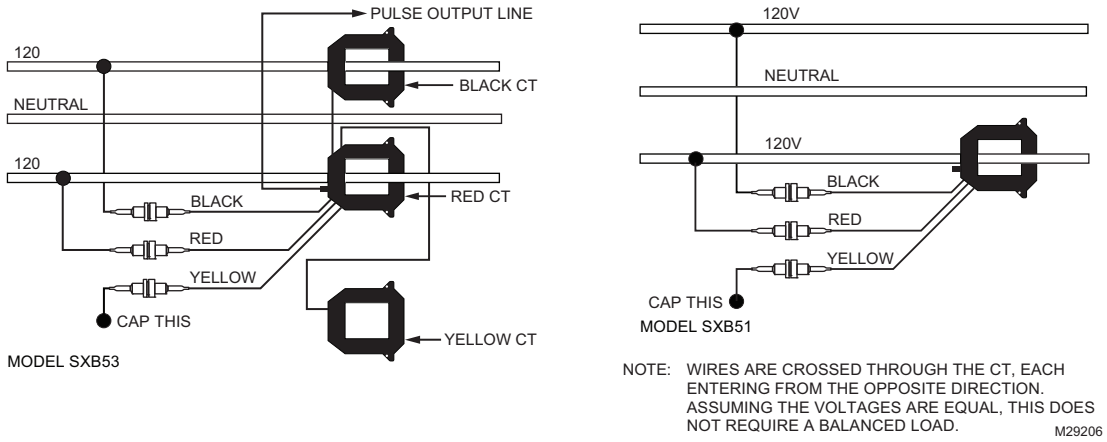


Fig. 9. Typical 240/120 VAC 1Ø, 3-wire installation.

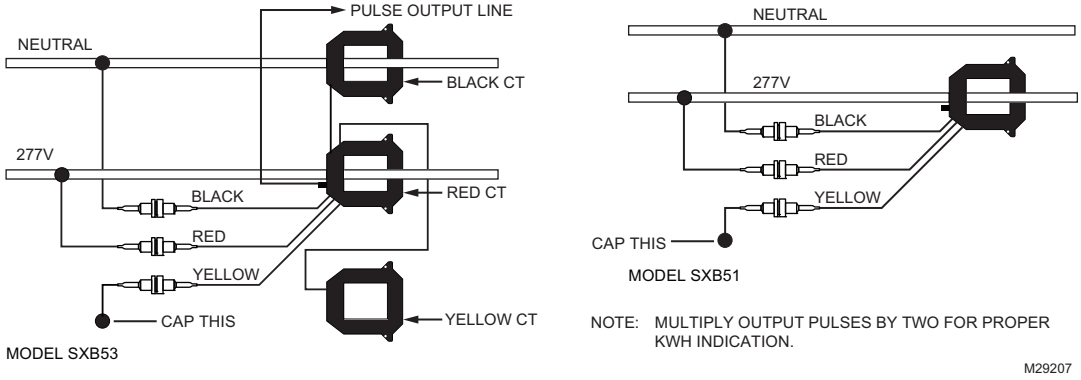


Fig. 10. Typical 277 VAC 1Ø, 2-wire installation.

NOTES:

1. DO NOT GROUND THE SHIELD INSIDE THE ELECTRICAL PANEL. All wires, including the shield, should be insulated to prevent accidental contact with high voltage conductors.
2. The cable should be mechanically secured where it enters the electrical panel.
3. The cable should be shielded twisted pair wire BELDEN 1120A or similar.

⚠ WARNING

After wiring, remove all scraps of wire or foil shield from the electrical panel. This could be DANGEROUS if wire scraps come into contact with high voltage wires!

TROUBLESHOOTING

Problem	Solution
Status LED does not blink	Check fuses and voltage connections. Status LED should blink regardless of CTs, pulse output connections, and DIP switch setting.
Readings seem highly inaccurate.	• Check that each CT is installed on the conductor with the corresponding color voltage input lead attached. In most cases, incorrect wiring will cause the STATUS LED to blink RED (slowly). However, a power factor lower than 0.5 could cause the LED to blink this way, even if the unit is installed properly. • It does not matter which side of the CT faces towards the load. • If current is below 7% of full scale maximum for the CT, use a smaller CT or wrap each wire through the CT multiple times • If using the single-phase SXB51, use an amp-clamp to ensure that all three phases are passing the same approximate current. If phases are unbalanced, try the SXB53 model.
Meter goes offline when load is switched off.	Voltage leads must be connected on the Line side of the conductor. The power meter cannot communicate without voltage.
Status LED blinks red.	• If the LED blinks quickly (i.e., about 5 blinks in two seconds), then either the pulse rate settings are incorrect or the CT used is too small. • If the LED blinks slowly (i.e., about 1 blink in two seconds) the CTs are not installed on the correct conductors, or the power factor is less than 0.5. The meter can accurately measure these low PFs, but few loads operate normally at such a low power factor.

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