Installation Configuration Options for the E31 Split-Core Panelboard Monitoring System

⚠ DANGER ⚠

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
- Only install this product on insulated conductors.

Failure to follow these instructions will result in death or serious injury.

The information provided herein is intended to supplement the knowledge required of an electrician trained in high voltage installations. There is no intent to foresee all possible variables in individual situations, nor to provide all training needed to perform these tasks. The installer is ultimately responsible to assure that a particular installation will be and remain safe and operable under the specific conditions encountered.

Introduction

The E31 Series Panelboard Monitoring System is designed to measure the current, voltage, and energy consumption of up to 92 circuits (84 branch circuits, 2 3-phase mains, 2 neutrals) on a single board. One E31 main data acquisition board can monitor up to two panels.

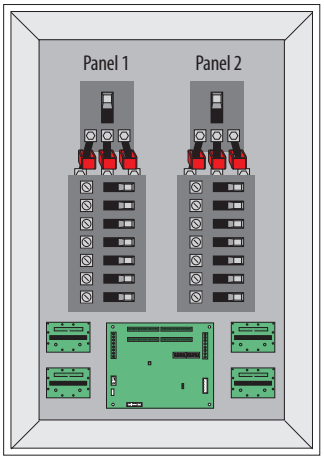
To install the E31, the adapter boards are connected to the main board via ribbon cable. Next, split-core current transducers are wired to the adapter boards and snapped onto the conductors at the branch level. Finally, 3-phase mains CTs are connected to the mains conductors on each panel and wired to the data acquisition board.

Accessing the full capabilities of the E31, therefore, requires a main data acquisition board, four adapter boards, 84 split-core CTs, two sets of 3-phase mains CTs, and all corresponding wiring and ribbon cable. This much equipment takes up a lot of space in already-crowded electrical panels. Luckily, the E31 can be installed in a number of configurations to adapt to whatever space is available.

Note: In the following diagrams, the ribbon cable and CT wiring are omitted for clarity. Data acquisition board, adapter boards, and mains CTs are pictured.

Option 1: Mount the main board and all adapter boards in the main electrical panel

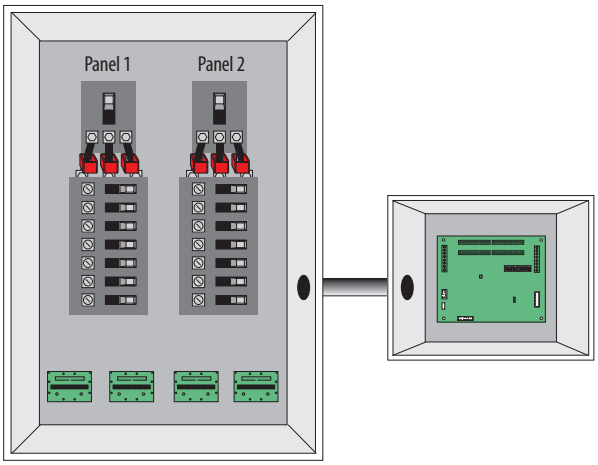
This is the easiest option when space allows, because it requires the shortest lengths of wiring and ribbon cable. Simply mount the boards adjacent to the panels inside the electrical enclosure.



Option 2: Mount the adapter boards in the main panel and the main board in a remote enclosure

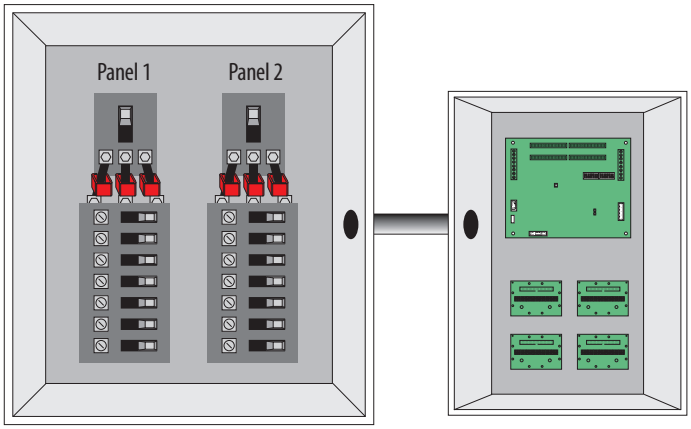
Connecting the data acquisition board in a remote enclosure requires longer lengths of ribbon cable and mains CT wiring. Ribbon cable is available in lengths up to 20 feet, so the remote enclosure can be up to 20 feet from the main panel.

The ribbon cable runs through a conduit. If bending the conduit is required to accomodate the available space, the installer must remember the "beer can rule," that the radius of a conduit bend must not be less than the radius of a beer can (see the latest NEC documents for details on wire bending best practices).

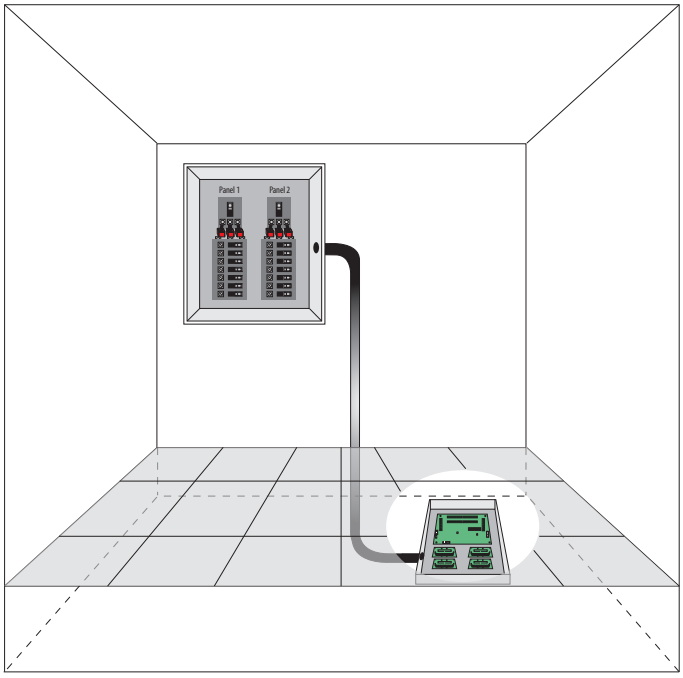


Option 3: Mount the main board and all adapter boards in a remote enclosure

Use this option when the main electrical panel is simply too crowded to house any more equipment. Only short lengths of ribbon cable are needed, since the data acquisistion board and adapter boards are in the same enclosure. CT wiring can be up to 20 feet in length.

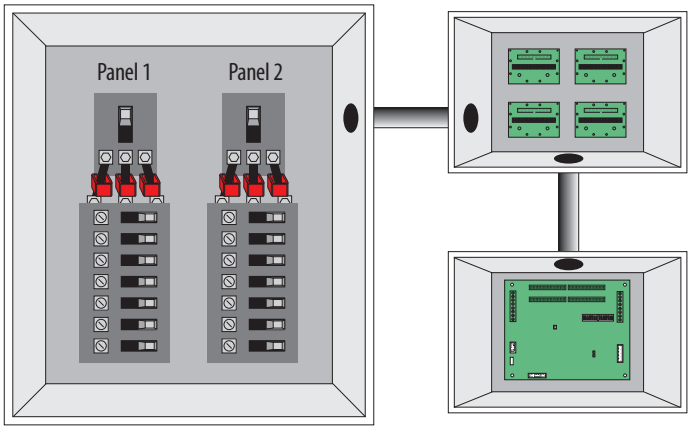


One possibile configuration is to mount the boards in an enclosure located under a raised floor. This can be a space-saving solution for facilities already crowded with equipment and wiring, such as data centers.



Option 4: Mount the main board and all adapter boards in separate remote enclosures

The main acquisition board and the adapter boards can be housed in separate remote enclosures. Conduit between each enclosure can extend up to 20 feet to accommodate ribbon cable and CT wiring.



The Versatile Choice

The E31 is an adaptable metering system, designed to accomodate crowded conditions. One meter accomplishes the tasks ordinarily done by several separate pieces of hardware, increasing space efficiency. The flexibility in installation options makes this an attractive choice for retrofit projects.