

Parallel Balancing Module M-0115A



**Provides all
components that
are required for
paralleling LTC
Transformers using
the Circulating
Current Method**

M-0115A Parallel Balancing Module – Specification

The M-0115A Parallel Balancing Module includes all the components that must be added to load tapchanging (LTC) transformers to permit them to operate in parallel, using the circulating current method. The transformer controls must have a 0.2 A input for load and circulating current. Through the use of a circulating current sensitivity adjustment, the M-0115A avoids the problems of hunting (caused by too much sensitivity), or permitting the transformers to be several steps apart (caused by too little sensitivity). The M-0115A conforms to the procedure described in ANSI C57.12.10-1988, paragraph 10.2.

Current Inputs

Rated at 0.2 A, 12 VA, 50/60 Hz.

Current Ratings

Either winding K1, K2 or ACT from terminal TB1-1 to TB1-5 is rated for 0.2 A continuous.

All windings will withstand the following: 0.4 A continuous, 2.9 A for 5 sec; 3.3 A for 4 sec; 4.0 A for 3 sec; 5.0 A for 2 sec.

Cores are unsaturated at 12 VA burden.

Sensitivity Control

Sensitivity adjustment prevents LTC transformers from hunting or being several steps apart.

Sensitivity is adjustable from two times normal to 0.5 times normal in nine steps.

Parallel/Independent Switch

Mode of LTC control is switch selectable.

Transient Protection

Input and output circuits are protected against system transients. The M-0115A will exhibit no component failure or false commands when subjected to the requirements of ANSI/IEEE C37.90.1-1989, which defines oscillatory and fast transient surge withstand capability. All inputs and outputs will withstand 1500 Vac to chassis or instrument ground for one minute. Voltage inputs are electrically isolated from each other, from other circuits, and from ground.

Mounting

Panel mounted using 8-1/2" x 6-1/8" cutout (21.59 cm x 15.56 cm). May be surface mounted using the M-0124 Surface Mounting Adapter.

Environmental

Temperature Range: Stated accuracies are maintained from -40° to +80° C.

Humidity: Stated accuracies are maintained at up to 95% relative humidity (non-condensing).

Fungus Resistance: A conformal printed circuit board coating inhibits fungus growth.

Terminal Block Connections/Torque Requirements

The M-0115A Parallel Balancing Module is listed to UL Standards for Safety by Underwriters Laboratories Inc. (UL). The wire should be No. 22–16 AWG inserted in an AMP #36157 (or equivalent) connector, and the screws tightened to 4.8 inch-pounds torque.

Physical

Size: 10" high x 6 3/8" wide x 4 15/32" deep (25.40 cm x 16.19 cm x 11.35 cm). When using the M-0124 Surface Mounting Adapter, maximum depth is 4 9/16" (11.59 cm).

Approximate Weight: 6 lb (2.7 kg).

Approximate Shipping Weight: 7 1/2 lb (3.4 kg).

Warranty

The M-0115A unit is covered by a five year warranty from time of purchase.

Application

The Beckwith Electric **Comprehensive System Manual "LTC Transformer Control System including Paralleling and Backup Control"**, is available on www.BeckwithElectric.com, or by request. This manual includes an overview of typical system setup and connections, necessary components, and the information necessary to implement a paralleling scheme using the M-0115A in the Circulating Current paralleling method.

Using the M-0115A with Existing Equipment

The M-0115A Parallel Balancing Module can be ordered with new equipment from most transformer manufacturers or added to existing transformers. If the Module is added to existing equipment, the following factors should be considered:

- If the old control uses a 5A input for the line drop compensator, a new control must be installed to provide the required 0.2A load and circulating current inputs. A Beckwith Electric M-2001C/D Tapchanger Control is recommended for this application.
- The M-0115A is designed for use with 200 mA = 1 P.U. system currents. If only 5 A currents are available, then a suitable 5 A:0.2 A Auxiliary Current Transformer, such as the Beckwith Electric M-0169A, is recommended.
- If phase-to-phase voltage is used, two current transformers are used to derive a current in phase with the voltage. Connection must be made to Terminal 5 of the M-0169A instead of Terminal 1. Only required with M-0067E, M-2001C/D have a Phase Angle Correction Setting for this condition.
- Refer to the paralleling diagrams in the **LTC Comprehensive System Manual** for the following conditions:
 - If circuit breakers such as the "52 Line Breaker(s)" and the "24 Tie Breaker(s)" as shown in the paralleling diagrams are present, then their auxiliary contact connections should be included as shown to ensure proper automatic transfer from parallel to independent operations. Please note that auxiliary breaker contacts are shown in the parallel mode with all breakers closed.
 - If these breakers do not exist, and for example, only one common load breaker is used, the circuit should be wired to make a circuit where the normally closed contacts are shown. No circuit should be made where the normally open contacts are shown.
- If paralleling and hand-operated load switches are used:
 - a. **AUTO/MANUAL** switches on the M-2270, M-2278, M-2280, and other Beckwith Electric adapter panels should be placed in the **MANUAL** position.
 - b. Other controls should be placed in the **MANUAL** position.
 - c. The M-0115A **PARALLEL/ INDEPENDENT** switch should be placed in the **INDEPENDENT** position before the load switches are operated (see **CAUTION**).

▲ CAUTION: Do not place the **PARALLEL/ INDEPENDENT** switch on the front panel of the M-0115A in **INDEPENDENT** mode when the transformers are in parallel and under automatic control, as this will disable the controls' ability to monitor, track, and control the paralleling biasing functions of Circulating Current paralleling.

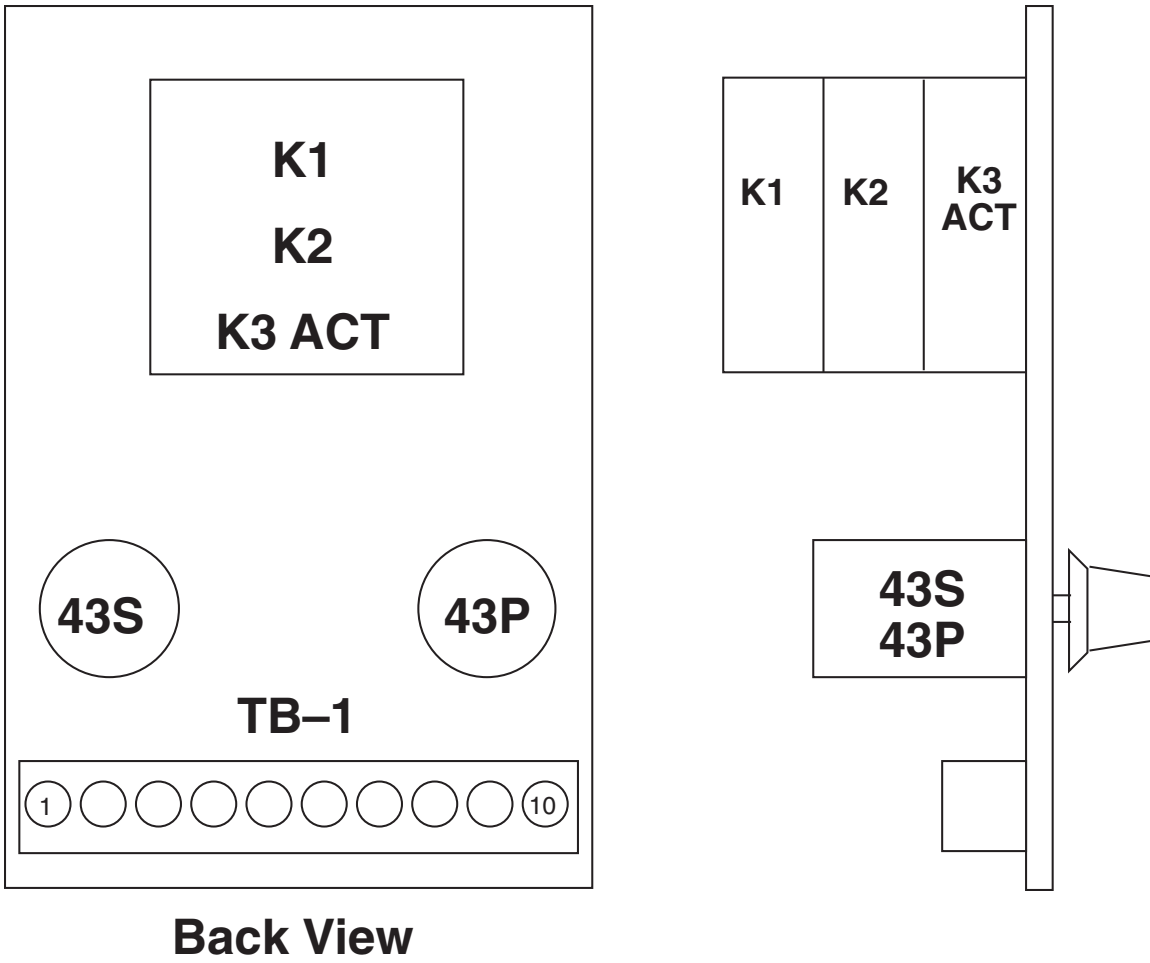


Figure 1 M-0115A Component Location

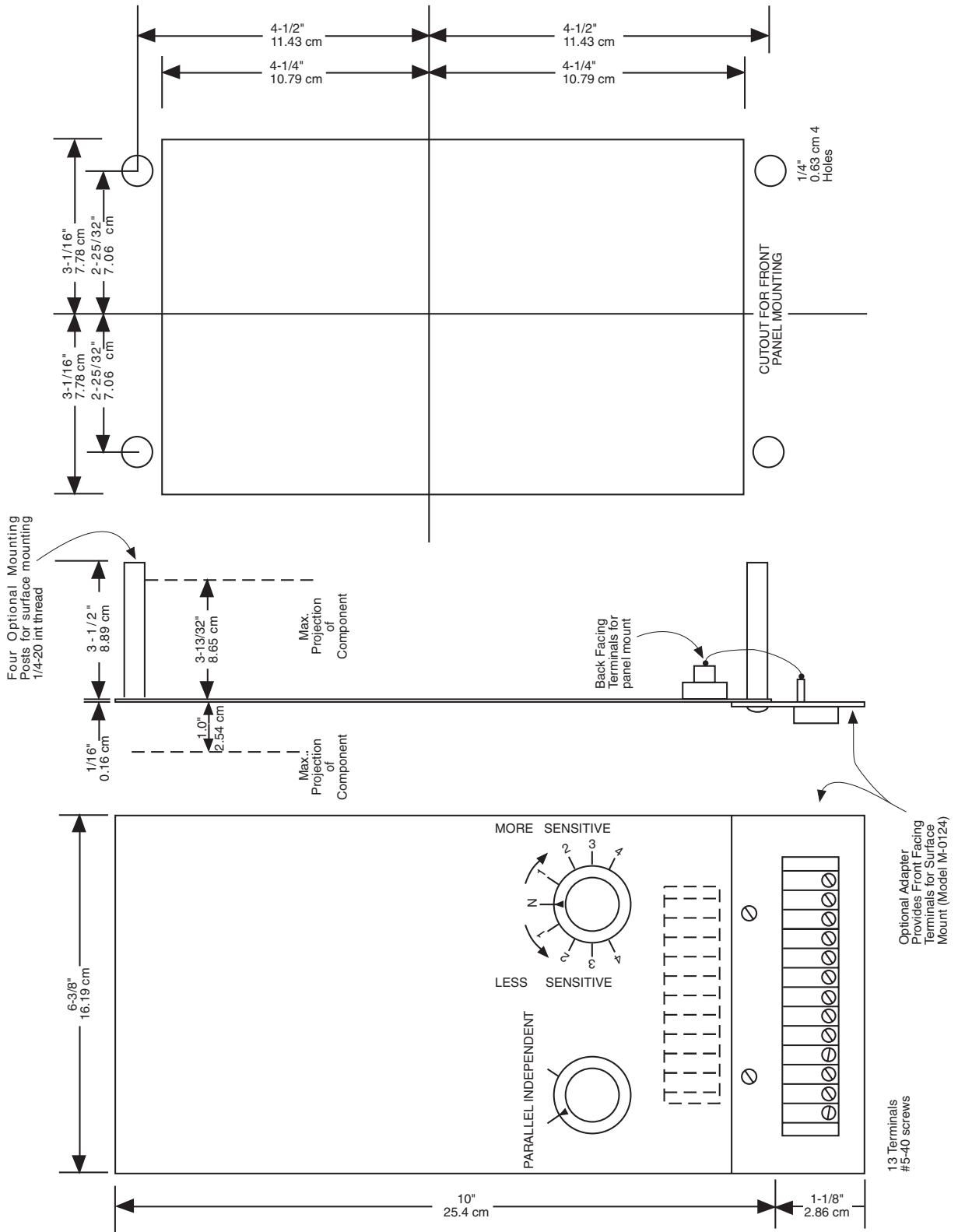
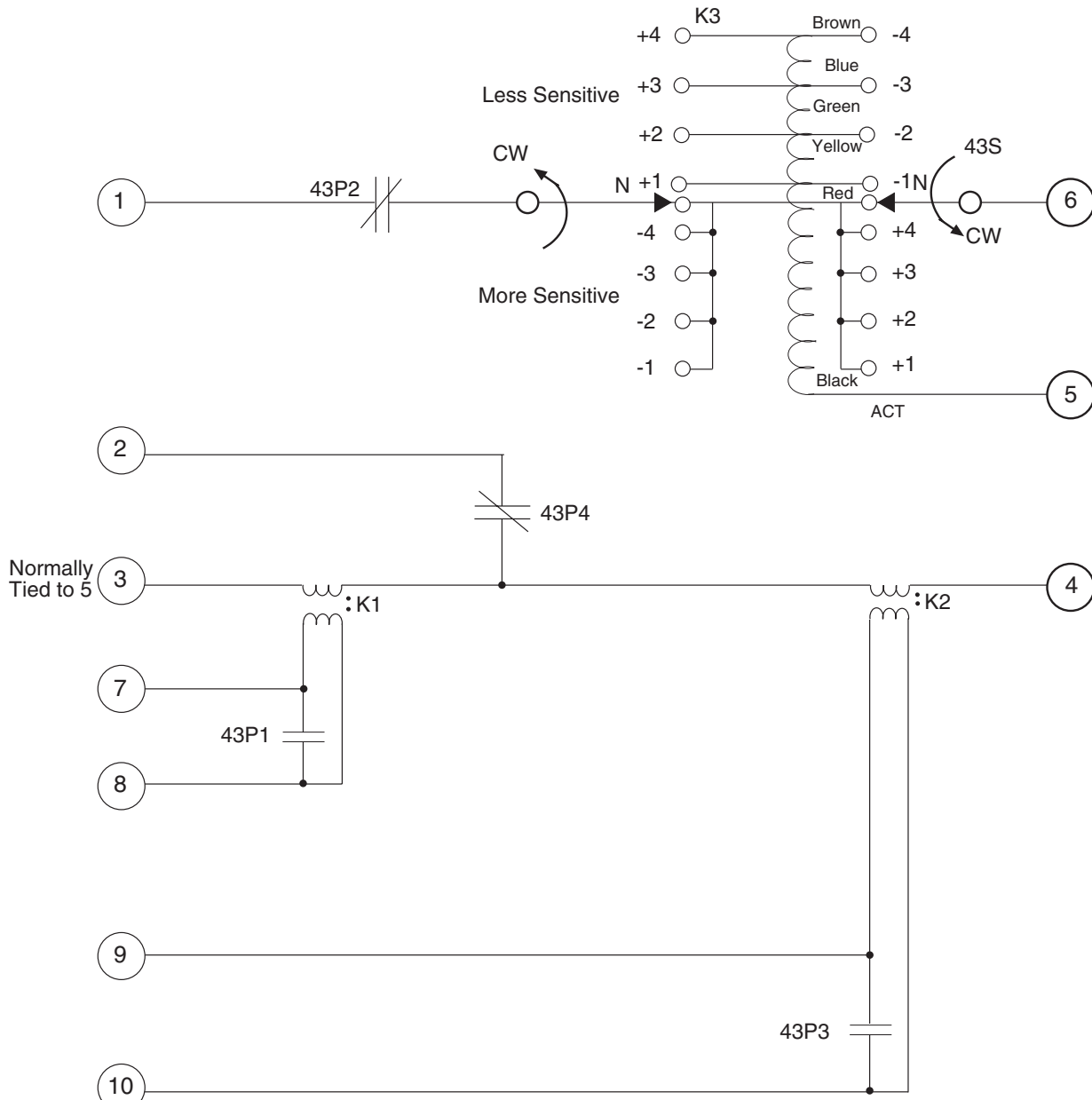


Figure 2 M-0115A Outline and Mounting Dimensions

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43P Parallel - Independent switch shown in "P" position.

43S Sensitivity Switch

Figure 3 M-0115A Schematic

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Specification subject to change without notice. Beckwith Electric has approved only the English version of this document.



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