



Type COD Current Sensing Relay 0.5-2 and 1-4 Ampere Ranges

Effective: June 1990
Supersedes I.L. 41-112.1 dated June 1960
* Denotes change since previous issue.

CAUTION

Before putting relays into service, remove all blocking which may have been inserted for the purpose of securing the parts during shipment, make sure that all moving parts operate freely, inspect the contacts to see that they are clean and close properly, and operate the relay to check the settings and electrical connections

1. APPLICATION

This relay is used as a contacting making ammeter. It has an adjustable undercurrent and an independently adjustable overcurrent contact, used in a control function such as in switching a capacitor bank.

It is also used in capacitor bank protection, providing vernier choice of settings as opposed to the more conventional discrete top selection.

2. CONSTRUCTION

The relay consists of an induction disc type current sensing unit.

2.1 The Induction Unit

The electromagnet is an "E" type laminated structure with the tapped current coil mounted on the center leg that produces a flux which divides and returns through the outer legs. A shading coil on the right leg, front view, causes the flux to lag the

main pole flux. The out-of-phase fluxes, thus produced in the air gap cause torque on the disc. The current sensing unit has a tap block which provides two current ranges.

3. CHARACTERISTICS

The type COD relay has adjustable lower and raise current contacts that can be set around a calibrated scale between the limits of 0.5 and 2 amperes or 1 and 4 amperes. The moving contact assumes a position corresponding to the current through the relay and will stay in that position until the current changes. If the current changes either gradually or suddenly, the contact will assume a new position corresponding to the change unless the travel is limited by the setting of the adjustable contacts.

The induction unit has inverse timing; that is, the greater the change in current the faster the relay contact will travel.

3.1 Energy Requirements

* The 60 cycle burden for the relay are as follows:

	<u>.5-2 range</u>	<u>1-4 range</u>
Continuous rating	4 amps	8 amps
One second rating	110 amps	230 amps
Burden	3VA $\angle 70^\circ$ at 1.25A	3VA $\angle 70^\circ$ at 2.5A

All possible contingencies which may arise during installation, operation or maintenance, and all details and variations of this equipment do not purport to be covered by these instructions. If further information is desired by purchaser regarding this particular installation, operation or maintenance of this equipment, the local ABB Power T&D Company Inc. representative should be contacted.

4. SETTINGS

The current sensing unit settings can be defined either by contact setting or tap setting. The lower and raise current contact settings are described under Section 3: CHARACTERISTICS.

There are two tap settings; the .5-2 amp tap and the 1-4 amp tap. The connector screw on the tap plate to the left of the scale makes connections to the two taps on the operating coil. The tap setting is made by placing this screw in the desired tap as marked on the tap plate.

- * **NOTE:** Since the tap block connector screw carries operating current, be sure that the screw is turned tight.

5. INSTALLATION

The relays should be mounted on switchboard panels or their equivalent in a location free from dirt, moisture, excessive vibration and heat. Mount the relay vertically by means of the mounting stud for the type FT projection case or by means of the four mounting holes on the flange for the semi-flush type FT case. Either the stud or the mounting screws may be utilized for grounding the relay. The electrical connections may be made directly to the terminals by means of screws for steel panel mounting or to the terminal stud furnished with the relay for thick panel mounting. The terminal stud may be easily removed or inserted by locking two nuts on the stud and then turning the proper nut with a wrench. For detailed information on the FT case refer to I.L. 41-076.

6. ADJUSTMENTS AND MAINTENANCE

The proper adjustments to insure correct operation of this relay have been made at the factory. Upon receipt of the relay no customer adjustments other than those covered under Section 4: SETTINGS, should be required.

6.1 Acceptance Check

The following check is recommended to insure that the relay is in proper working order:

Current Sensing Unit

- a. **Contact** - Set the left-hand contact in the center of the scale and adjust the current until the moving contact just makes. Set the left-hand contact back out of the way and bring the right-hand contact up until the contacts just make. The right pointer should be within $\pm 1/32"$ of where the left hand pointer was.
- *b. **Calibration Check** - Check the scale markings by setting either of the two contacts at a value marked on the scale, then alternately apply this current plus .1 amp and minus .1 amp for the 1-4 amp range and plus or minus .05 amps for the .5-2.5 amp range. Contacts should make and break respectively. The 1.25 amp setting on the .5-2 amp range should coincide with 2.5 amp setting on the 1-4 amp range.

6.2 Routine Maintenance

- * All relays should be inspected periodically and the time operation should be checked at least once every year or at such other time intervals as may be dictated by experience to be suitable to the particular application.

All contacts should be periodically cleaned. A contact burnisher #182A836H01 is recommended for this purpose. The use of abrasive material for cleaning contacts is not recommended, because of the danger of embedding small particles in the face of the soft silver and thus impairing the contact.

7. CALIBRATION

Use the following procedure for calibrating the relay if the relay has been taken apart for repairs or the adjustments disturbed. This procedure should not be used until it is apparent that the relay is not in proper working order. (See Section 6.1: Acceptance Check.)

Current Sensing Unit

- a. **Contacts** - Apply sufficient current to the relay, to cause the disc to float in the center of its travel. Move both of the adjustable contacts until they just make

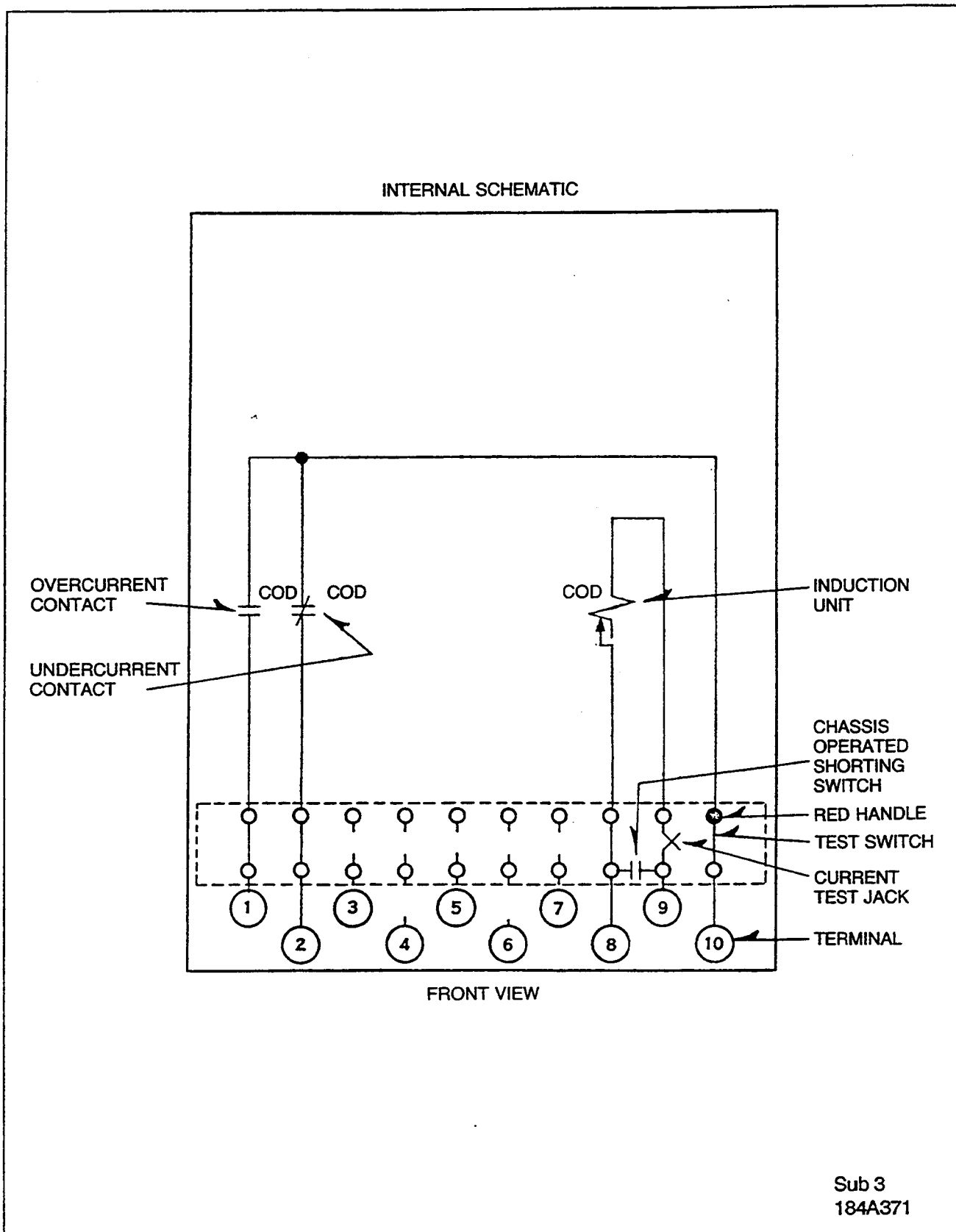
with the moving contact. If the two contact pointers do not meet at the same point on the scale, adjust the follow on both adjustable contacts. Approximately the same follow should be in each of the adjustable stationary contacts.

- b. **Calibration Check** - The adjustment of the spring tension in calibrating the relay is most conveniently made with the damping magnet removed. Set either of the adjustable stationary contacts in the center of its travel and apply this current to the relay. Wind up the spiral spring by means of the spring adjuster until the stationary contact and moving contact just make.

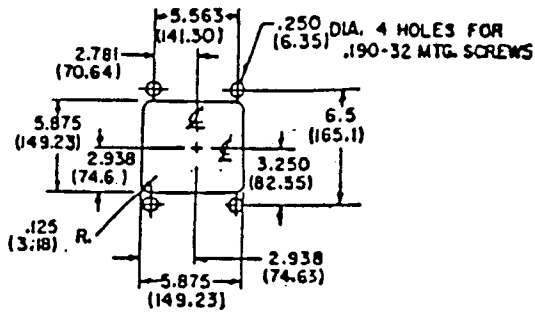
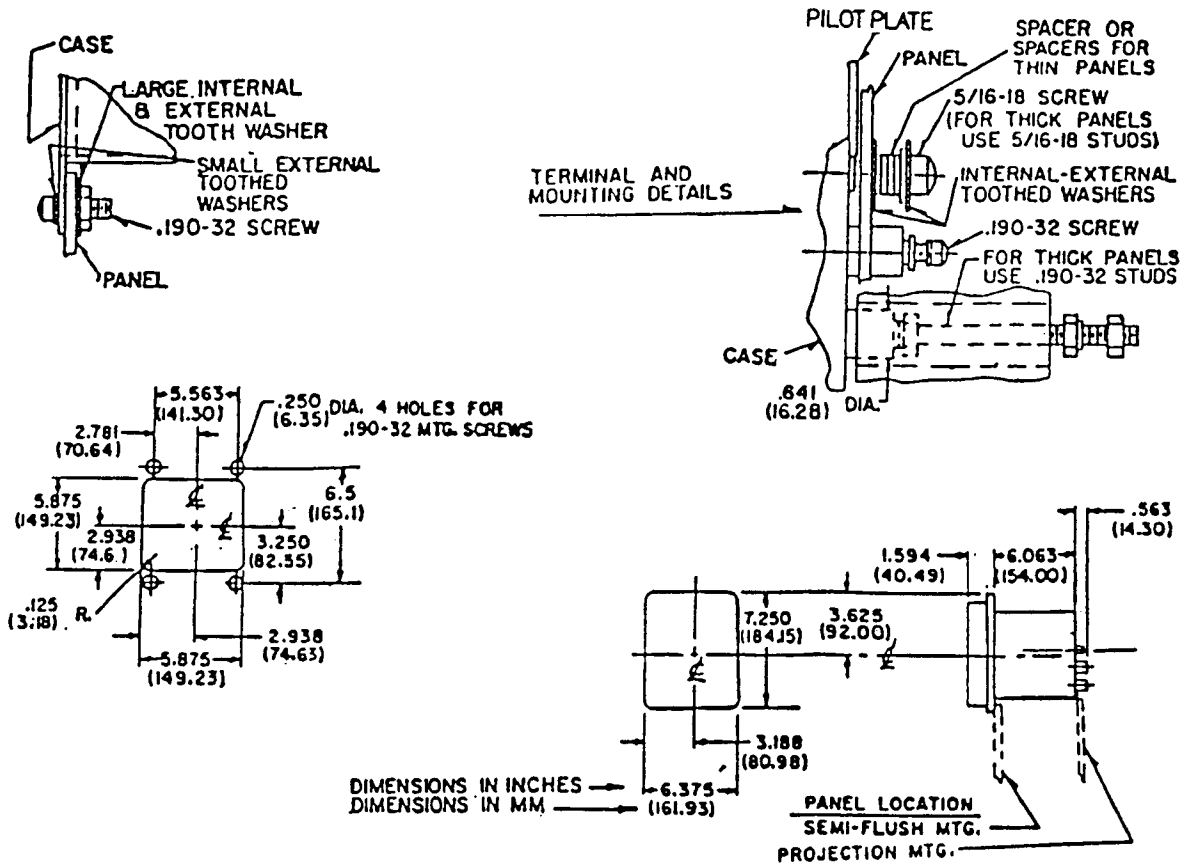
Check the other scale markings by setting the adjustable contact on these markings and applying the corresponding current to the relay. The contacts should make within plus or minus .1 amp of scale marking for the 1-4 amp range and .05 amp for the .5 to 2 amp range. The 1.25 amp marking on the .5-2 amp range should coincide with the 2.5 amp marking on the 1-4 amp range.

8. RENEWAL PARTS

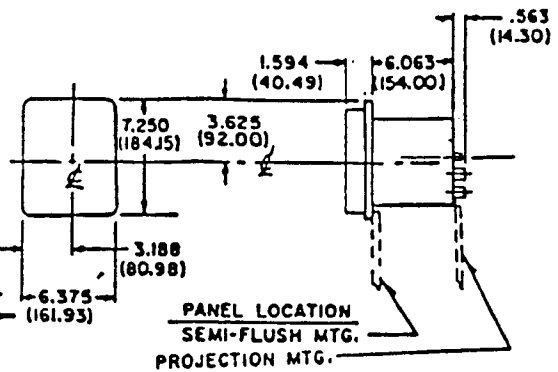
Repair work can be done most satisfactorily at the factory. However, interchangeable parts can be furnished to the customers who are equipped for doing repair work. When ordering parts, always give the complete nameplate data.



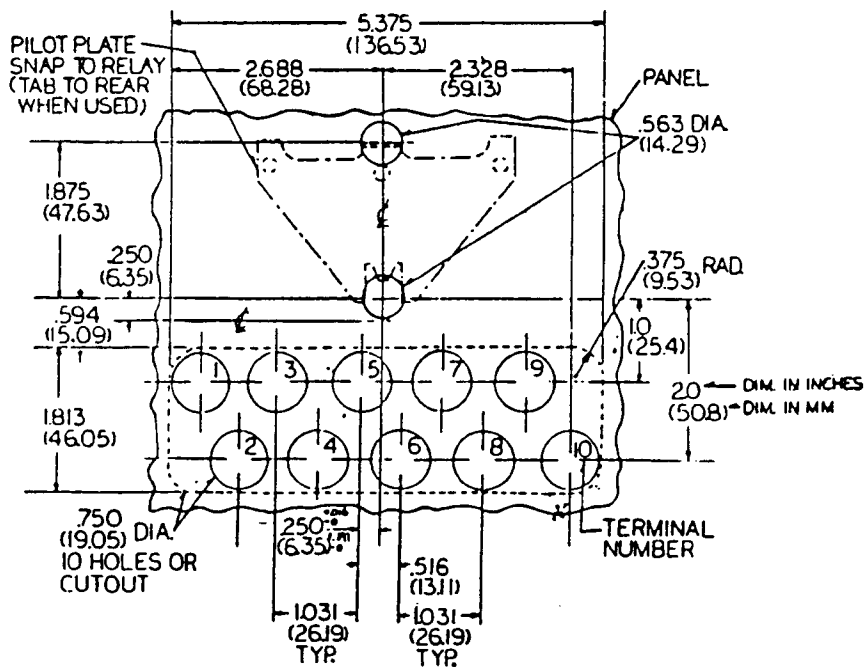
* Figure 1. Internal Schematic of the Type COD Relay in Type FT-11 Case.



DIMENSIONS IN INCHES
DIMENSIONS IN MM



PANEL LOCATION
SEMI-FLUSH MTG.
PROJECTION MTG.



Sub 18
57D7900

* Figure 2. Outline and Drilling Plan for the Type COD Relay in Type FT-11 Case.