

Nos. 130 & 133 MODULARMS

WHAT YOU SHOULD KNOW ABOUT MODULARM 130

The Modularm "130" is a compact expandable system to automatically monitor alarm circuits at police headquarters, telephone answering services or other remote locations. The Modularm "130" distinguishes between an actual alarm condition and an open or shorted telephone line. A meter constantly shows when the supervisory current flowing through the telephone line is "NORMAL". An alarm condition at a protected location will start the horn unit blowing and at the same time a pilot light on the Modularm will identify the subscriber. The meter will also read "ALARM". The horn continues to blow until the button on the Modularm has been depressed. The horn will then be silenced, but the light will continue to identify the subscriber until the alarm panel at the protected location has been reset by an authorized person. At this time the Modularm will automatically reset itself and will be ready to report another alarm.

Telephone wire trouble will also start the horn in the Modularm unit. At the same time, the pilot light will identify the defective telephone line and the meter will read "TROUBLE". If the trouble is more than momentary, depressing the button on the Modularm will silence the horn. The light will remain on and the meter will continue to point to "TROUBLE". When the telephone line trouble has been repaired, the Modularm light and meter will return to "NORMAL" automatically. If the trouble on the telephone leased line is only momentary, the horn will sound for only an instant and will reset itself to normal automatically. A control instrument is required at the premises being protected. The control should be designed for connection directly to the leased line for the Modularm System (as are the Ademco Nos. AML and 1022) or via a headquarters relay connected to the control's alarm bell output.

WHAT YOU SHOULD KNOW ABOUT MODULARM 133

The Modularm "133" is a compact annunciator system for automatically keeping an electronic watch on security and other devices in plants, factories, stores, offices or other places requiring internal security. The Modularm "133" is also used for automatically monitoring alarm circuits over leased telephone lines to police headquarters, telephone answering services or other remote locations. The Modularm "133" differs from the Modularm "130" in that it will not differentiate between an alarm condition and a trouble condition over the telephone lines. Modularm "133" will announce any abnormal condition as an alarm condition by sounding the horn and lighting the indicating lamp.

The Modularm "133" may be used for telephone line supervision in any area where there is a history of limited telephone line trouble. When there is a possibility of poor telephone line service, it is suggested that the Modularm "130" be used.

The Modularm "133", if used as an annunciator panel, will give instant warning if any device that is electrically connected to it is disturbed from its normal position. The "133" can be connected directly to window or door contacts to detect unauthorized entry. It can be connected to temperature switches in freezers or refrigerators to indicate any source of trouble. The Modularm "133" will supervise water pressure, temperature, or any electrical device that requires supervision. The use of the Modularm is limited only by the ingenuity of the installer. Any normally open or normally closed set of contacts can be monitored.

Within a plant, only low voltage wiring is needed to connect switches or devices to Modularm "133" since a maximum of 5 milliamperes flows through the lines. When the switch or device is activated, the Modularm "133" lamp will light and a horn will sound. The horn can be silenced by depressing the momentary switch on the "133" unit. The light will remain on as long as the device is in the activated position. When the device or switch has been restored to normal, the light will restore itself automatically and the Modularm will be set for another alarm condition.

GENERAL INSTRUCTIONS

1. BEFORE MOUNTING CONSOLE CABINET TO WALL AT HEADQUARTERS: Avoid the annoyance of removing the CONSOLE CABINET from the wall each time a new subscriber is added, by wiring the five plug-in sockets and terminal block on the rear of the CABINET, to the telephone company's junction box and to a 6 volt DC source before the cabinet is fastened to the wall.
2. TO CONNECT THE CONSOLE CABINET TO THE TELEPHONE COMPANY'S JUNCTION BOX: Terminals 5 and 6 on the rear of the CONSOLE CABINET are wired to the telephone company's junction box, ready to be connected to headquarters with a leased telephone line. Solder one pair of 18/2 twisted wire on terminals 5 and 6 on each of the 5 sockets. Connect each of the 5 pairs to the telephone company's (or your own) junction box. Observe polarity. Solder the same color from each pair of wires on all No. 5 terminals on the plug-in sockets. Solder the other color on all No. 6 terminals. Identify each pair of wires by number; 1, 2, 3, 4 and 5. Mark the junction box terminals with the same numbers.
3. TO CONNECT A 6 VOLT POWER SOURCE TO THE CONSOLE CABINET: When a MODULARM UNIT is plugged into a CONSOLE CABINET, a 6 volt DC source is needed to operate the pilot lights, HORN UNIT and automatic relays. A single power source of sufficient capacity, such as the rechargeable No. 493 BATTERY PACK, or No. 83 ENERGY PACK plus a 6V. (No. 866) STANDBY BATTERY, is all that is needed for any quantity of CABINETS AND MODULARM UNITS. Although a 6 volt dry battery can also be used alone for this purpose, it is not recommended as the complete system becomes inoperative if the battery goes dead.

If a No. 493 BATTERY PACK is used, it can be placed in a cabinet (e.g. No. 200) and mounted in the vicinity of the MODULARM block on the rear of the MODULARM CABINET. Connect 1(+) & 3(-) to No. 493's 3(+) and 4(-). Using the unused set of screws on the terminal block of the CONSOLE CABINET, connect 3 pieces of wire 15 inches long; one each to terminals 1, 2 and 3. Do not strip the unused ends of the wires. They will be used to connect to the terminal block of a new MODULARM CABINET, whenever one is added. Arrange the 3 wires so that they can be picked up from behind the existing cabinet and connected to the terminal block of the new cabinet.

4. TO MOUNT CONSOLE CABINET TO WALL: When all wires on the rear of the CONSOLE CABINET have been connected, the cabinet is ready for installation. Cabinets should not be mounted directly against the wall, as space is needed behind the cabinet to drop the telephone and power wires. STEEL MOUNTING RACK No. 139 holds from 1 to 5 cabinets and spaces them 1/2" from the wall. It is ideal for any installation that contemplate adding additional units. An alternate method for mounting a single CABINET is to use two No. 30 BRACKETS. Still another method of mounting CONSOLE CABINETS is to fasten them on two furring strips attached vertically to the wall on 15-1/4" centers.
5. TO ADD AN ADDITIONAL CONSOLE CABINET: Simply connect terminals No. 1, 2 and 3 (use the 3 pieces of wire previously attached to these terminals and left behind the cabinet) from the terminal block on the existing cabinet to the same terminals on the new cabinet. Solder 5 pairs of twisted wire to the rear of the plug-in sockets, as previously directed. Fasten cabinet to the wall.
6. HORN SIGNALING UNIT: Only one HORN SIGNALING UNIT is needed in every group of MODULARM UNIT CONSOLE CABINETS connected to one another. It can be plugged into any space, provided no connection has been made to the rear of the plug-in socket. An additional HORN UNIT may be plugged into larger groups so that 2 HORN UNITS will blow in the event of an alarm, decreasing the possibility of failure.

INSTALLATION INSTRUCTIONS FOR MODULARM "130"

•Telephone Company Information: The leased telephone line actuates the coil of a 750 ohm relay in the MODULARM circuit. The relay requires only 3 volts D.C. with a maximum of 4 milliampers for operation.

No. 144*, No. 145* or No. 147* Headquarters relay. See...8 and 11

•NOTE: MODULARM "130" and MODULARM "133" can be intermixed and used together in the same console cabinet. However, when using MODULARM "133," with a leased telephone line use a control such as the No. ADL or APL-24 at the premises, connected to the telephone line via a No. 349 Telephone Line Voltage Booster.

To bell terminals of local alarm Control Instruments. See...8

To 115 volts AC
No. 89-24*
(or No. 349 Telephone Line Voltage Booster)

To add a signalling device to headquarters. See...14

Junction block at subscriber's premises, 2 terminals required

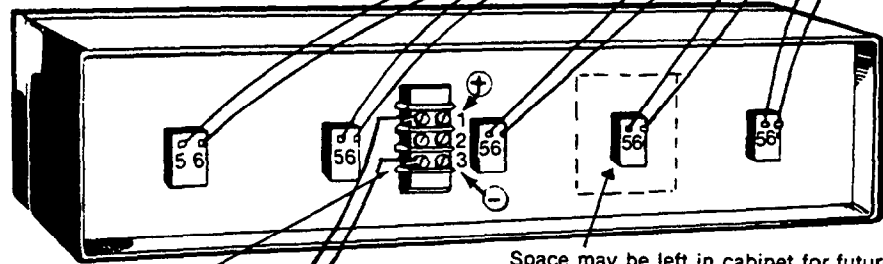
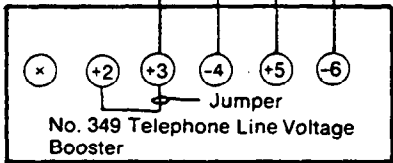
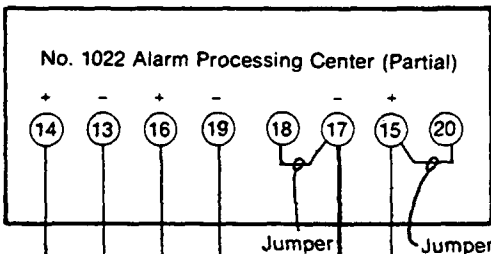
Leased telephone line

To Grade A Control #AML
AML-24, V-AML or ZML

Leased Telephone Lines

Horn Unit in first cabinet... See 6

Junction block at headquarters... See 1 and 2



•To ADD AN EXTERNAL BELL see...7

Polarity must be observed. See...3

•IMPORTANT NOTE: The first cabinet used holds only 4 MODULARM units. The 5th space is needed for plugging in a special signalling unit containing a warning horn. A horn unit can be plugged into any space in any cabinet without rewiring. Only one plug in horn unit is needed to operate a complete stack of MODULARMS.

Supplies power for lights and horn unit. See...3

Note:
A No. 83 Energy Pack plus 6V. (eg. No. 866) standby battery in a No. 515B or 200 cabinet may be used instead, as shown on next page.

*NOTE: ITEMS WITH * ARE NOT UL LISTED. ONLY LISTED UNITS MAY BE USED IN UL INSTALLATIONS.

7. TO CONNECT AN EXTERNAL ALARM BELL TO A MODULARM SYSTEM: To the rear of the plug-in socket into which the HORN UNIT was inserted, connect a UF 8, 8" or UF 10, 10" UNDERDOME BELL to terminals 3 and 4. NOTE: IMPORTANT, DO NOT SUBSTITUTE WITH ANY OTHER BELL AS DAMAGE MAY RESULT.

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8. TO CONNECT THE SUBSCRIBER'S PREMISES TO A LEASED TELEPHONE LINE: The subscriber's premises require a reliable closed circuit ALARM INSTALLATION. A local bell may be installed if wanted, or omitted if not wanted. Provision must be made to connect the local alarm with the leased telephone line. To do this, a HEADQUARTERS RELAY is required. All telephone line and telephone line power connections are made directly to these relays. ADEMCO controls Nos. AML, AML-24, ZML, V-AML & 1022 have built-in HEADQUARTERS RELAYS. A No. 349 Telephone Line Voltage Booster can be used to deliver 4 milliamperes of current to the Modularm 130. The meter on the Modularm unit will clearly show when the 4 milliamperes of current are flowing over the telephone line by the needle pointing to the green area marked, "NORMAL".
9. THE AMOUNT OF VOLTAGE OR BATTERIES NEEDED FOR TELEPHONE LINE. The amount of voltage (or batteries) required will vary with the length and size of wire of the leased telephone line. The longer the telephone line, the greater the voltage needed. The No. 349 supplies adequate voltage for both short and long telephone lines. Non-UL installations may use the No. 89-24* ENERGY PACK and standby batteries. (12 volts DC for shorter telephone lines; 24 volts DC for longer lines). No. 6 dry cell batteries are efficient and can also be used for the telephone line. To determine the number of batteries needed, proceed as follows: Turn the local alarm system "OFF", make sure the leased telephone line is connected and a MODULARM UNIT is plugged in at headquarters. Add sufficient DRY CELLS in series, one at a time, until the meter in the MODULARM UNIT reads in the green area marked, "NORMAL".

NOTE: IF THE METER READS IN THE REVERSE DIRECTION, THE POLARITY IS REVERSED AND SHOULD BE CORRECTED. SEE DIAGRAM.
- *10. WHEN USING ENERGY PACK 89-24 FOR THE LEASED TELEPHONE LINE: Rotate the potentiometer control counter clockwise in the ENERGY PACK. Connect the ENERGY PACK to the HEADQUARTERS RELAY using terminals No. 7 and No. 8. When all connections are made, rotate the potentiometer control slowly in a clockwise direction until the meter in headquarters reads in the green area marked "NORMAL".
- *11. TO MOUNT THE HEADQUARTERS RELAY NO. 144, NO. 145 OR NO. 147: These relays may be used only on non-UL installations. They should be mounted in a STEEL BOX No. 515B. This box holds an ENERGY PACK with a small standby battery. Mount the RELAY and its box in the vicinity of the CONTROL INSTRUMENT.
12. OPERATION OF THE ALARM SYSTEM: The local alarm installation at the subscriber's premises operates like any other local alarm, even though it is connected to headquarters with a leased telephone line. Any tampering with the protective circuit that would start an alarm and ring the local bell also causes the HEADQUARTERS RELAY to close and transmit an alarm to headquarters. The RELAY sends the alarm to headquarters by reversing the polarity of the current flowing over the telephone line. This reverse signal triggers the MODULARM UNIT in headquarters, causing its PILOT LIGHT to go on, the HORN UNIT to blow and its meter to read "ALARM".

The HORN UNIT continues to sound until shut off by depressing the push button on the subscriber's MODULARM UNIT. However, the PILOT LIGHT will remain "ON" and the meter will continue to read, "ALARM" until the local alarm at the premises has been turned "OFF" by an authorized person with a key. At this time the MODULARM UNIT automatically resets itself and is ready for another alarm.

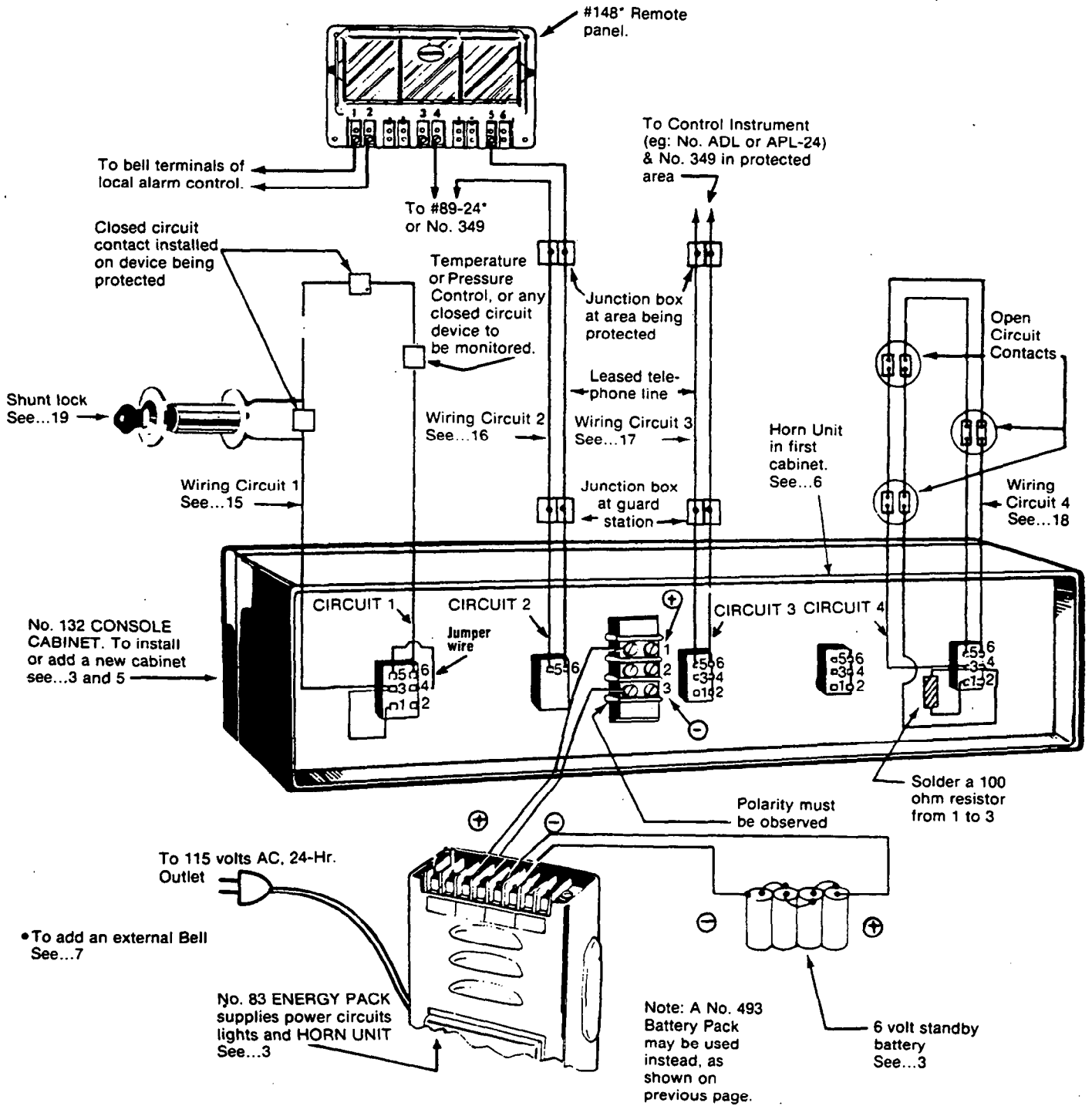
13. TELEPHONE LINE TROUBLE: In the event of telephone wire trouble, such as an open or short on the line, the HORN UNIT will SOUND ONLY FOR THE DURATION OF THE TROUBLE, AS THE MODULARM UNIT DOES NOT "LOCK IN" ON TROUBLE. If the trouble is more than momentary, the HORN UNIT can be shut off by depressing the push button on the subscriber's MODULARM UNIT. The pilot light will remain "ON" for the duration of the trouble. The meter will read "TROUBLE". When the trouble has been corrected, the MODULARM UNIT will automatically reset itself, ready for another alarm.
14. TO COMMUNICATE FROM THE SUBSCRIBER'S PREMISES TO HEADQUARTERS: By installing a NORMALLY CLOSED push button switch on the subscriber's premises in series with the telephone line, (see diagram) signals can be sent to headquarters after opening, or before closing the premises, if desired. Every time the push button is depressed the HORN UNIT will sound in headquarters for as long as the switch is held down.

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15. USE WIRING CIRCUIT 1, to protect doors, windows and other points of entry from intrusion where the area to be protected can be connected to the MODULARM CONSOLE CABINET without need for a leased telephone line. Solder a twisted pair to terminals 3 and 6, then run the pair past each door, window or point of entry being protected against entry. Cut open either wire at each opening and connect a NORMALLY OPEN contact. The pair should terminate at the last contact. This circuit can also be used for supervising temperature control, boiler and pressure controls, etc. The switch on the THERMOSTATIC CONTROL, PRESSURE CONTROL, etc. must "CLOSE" when the CONTROL is normal and must "OPEN" to cause an alarm. NOTE: This wire in this circuit is protected against tampering and will trigger an alarm if cut.
16. USE WIRING CIRCUIT 2, to protect a distant area where constant 24 hours a day supervision is required and connection is made to the MODULARM CONSOLE CABINET with either a leased telephone line, or an extremely long run of cable. On the rear of console cabinet, connect the leased telephone line to 5 and 6 on the plug-in socket. Connect the bell terminals of the ADEMCO CONTROL in the premises to terminals 1 and 2 of a No. 148* relay. Connect a No. 349 Tel. Line Voltage Booster or No. 89-24* ENERGY PACK to the No. 148* and the telephone wires. CAUTION: Before connecting a No. 89-24*, turn the adjustment screw fully counter clockwise. Temporarily insert a milliammeter in series with one of the telephone lines. Adjust the No. 349 or 89-24* until the meter reads 4 ma.
17. USE WIRING CIRCUIT 3, to protect a distant area, where certain doors being supervised are used for access during parts of the day or night and connection is made to the MODULARM CONSOLE CABINET with a leased telephone line. A control instrument, No. ADL or APL-24 is required on the premises. On the rear of the CONSOLE CABINET, connect the leased telephone line to 5 and 6 of the plug-in socket. At the premises, connect the telephone line to the control instrument. Follow the instruction sheet furnished with the instrument.
18. USE WIRING CIRCUIT 4, to connect open circuit contacts directly to the CONSOLE CABINET via a two wire supervised protection loop. Closure of any contact or an open in either side of the loop will trigger an alarm. Run one leg of the loop from 3 to 6 of the plug-in socket and the other from 4 to 5. Solder a 100 ohm, 1 watt resistor to 1 and 3 on the plug-in socket.
19. TO PREVENT DOORS THAT MUST BE OPENED DURING THE DAY FROM CAUSING AN ALARM: Use a shunt lock connected to the terminals of the contact installed on the access door. When the lock is turned to its "ON" position, opening and closing the door will not cause an alarm.

***NOTE: ITEMS WITH * ARE NOT UL LISTED. ONLY LISTED UNITS MAY BE USED IN UL INSTALLATIONS.**

INSTALLATION INSTRUCTIONS FOR MODULARM "133"



***NOTE: ITEMS WITH * ARE NOT UL LISTED. ONLY LISTED UNITS MAY BE USED IN UL INSTALLATIONS.**

TROUBLESHOOTING Nos.130 and 133

TROUBLE: 1. LIGHT GOES ON DURING TROUBLE OR ALARM BUT HORN DOES NOT SOUND.

PROBABLE CAUSE

6 volt supply at console is reversed.

REMEDY

Reverse the 6 volt D.C. leads of the power supply.

TROUBLE: 2. ALL LIGHTS OF MODULARM OPERATE BUT ONE OF THE MODULARMS DOES NOT SOUND HORN.

PROBABLE CAUSE

The diode inside the No. 130 or No. 133 unit is open.

REMEDY

Return module (130 or 133) to factory to replace diode.

TROUBLE: 3. ACTIVATION OF ANY MODULARM IN THE RACK OPERATES ANOTHER MODULARM.

PROBABLE CAUSE

Shorted diode in modularm.

REMEDY

Return modularm (130 or 133 to factory to replace diode.

TROUBLE : 4. PUSHING BUTTON ON MODULE DOES NOT SILENCE HORN.

PROBABLE CAUSE

A. Weak power at console.

B. Spring tension in modularm relay too great.

REMEDY

A. Replace batteries at modularm - preferably use No. 89 energy pack or No. 492 recharger pack.

B. Return to factory for adjustment.

TROUBLE: 5. LIGHT ON MODULARM DOES NOT GO OUT WHEN ALARM AT PREMISES IS RESET.

PROBABLE CAUSE

Low or no power on telephone line.

REMEDY

Increase lease line voltage to obtain 5 ma. reading.

TROUBLE: 6. DIODES INSIDE OF NO. 130 AND NO. 133 UNITS CONTINUALLY SHORTING OR OPENING.

PROBABLE CAUSE

Excessive drain on horn circuit caused by use of incorrect sounding device.

REMEDY

Replace any additional sounding (audible) devices from horn circuit with No. 518 horn or No. UF 8-4 or No. UF 10-4 bell (maximum load - 500 milliamperes).

TROUBLE: 7. MODULARM OPERATES ALTHOUGH CONTROL AT LOCAL PREMISES IS TURNED OFF.

PROBABLE CAUSE

Swinger or short on telephone line.

REMEDY

Notify telephone company.

TROUBLE: 8. MODULARM (NO. 130) READS ALARM ALTHOUGH SUBSCRIBER'S CONTROL IS IN OFF POSITION.

PROBABLE CAUSE

REMEDY

Wrong polarity on telephone line.

Reverse telephone leads either at subscriber or Police Department (or central station).

TROUBLE: 9. HORN SOUNDS BUT LIGHT DOES NOT OPERATE.

PROBABLE CAUSE

REMEDY

Burned out bulb.

Replace with bulb No. 765.

TROUBLE: 10. NO HORN, NO LIGHT DURING ALARM AT POLICE DEPARTMENT.

PROBABLE CAUSE

REMEDY

No power at Police Department.

Check 6 volt supply at Police Department.

TROUBLE: 11. ALARM AT PREMISES IS ACTIVATED, BUT NO. 130 MODULARM IS IN "TROUBLE" CONDITION.

PROBABLE CAUSE

REMEDY

Dirty contacts on reversing relay at subscriber's premises.

Clean contacts on reversing relay at the subscriber's premises.

TROUBLE: 12. PANEL AT PREMISES IN ALARM CONDITION BUT NO SIGNAL IS TRANSMITTED (NO. 130 or 133 MODULARM IS IN "NORMAL" CONDITION).

PROBABLE CAUSE

REMEDY

A. No bell power supply to control at premises.

A. Make sure bell power supply is connected whether bells are used or not.

B. Short on bell lines.

B. Check bell lines and replace if necessary.

C. Open coil on reversing relay.

C. Measure coil resistance. Replace relay if open coil is revealed. See Part 1 of this manual, Section G, page 41.

D. Incorrect polarity to terminals 1 and 2 of Nos. 145, 147, or 149 if used.

D. Reverse wires from alarm control to these terminals.

TROUBLE: 13. ALARM CONDITION TRANSMITTED TO POLICE DEPARTMENT WHEN AC POWER FAILS (NO. 130).

PROBABLE CAUSE

REMEDY

Incorrect polarity on standby batteries for reversing relays Nos. 144, 145, 147, and 149.

Reverse polarity of the standby battery.

TROUBLE: 14. PUSHING THE RESET BUTTON ON THE NO. 130 MODULARM UNIT, WHEN IN THE "NORMAL" CONDITION, WILL NOT LIGHT THE PILOT LIGHT ON THE UNIT.

PROBABLE CAUSE

A solid-state version of No. 130 Modularm is in use.

REMEDY

This is a normal condition on solid state version of No. 130 (identified by a lighter weight unit) which will be modified in future production runs to light the pilot lamp when the RESET button is pushed.

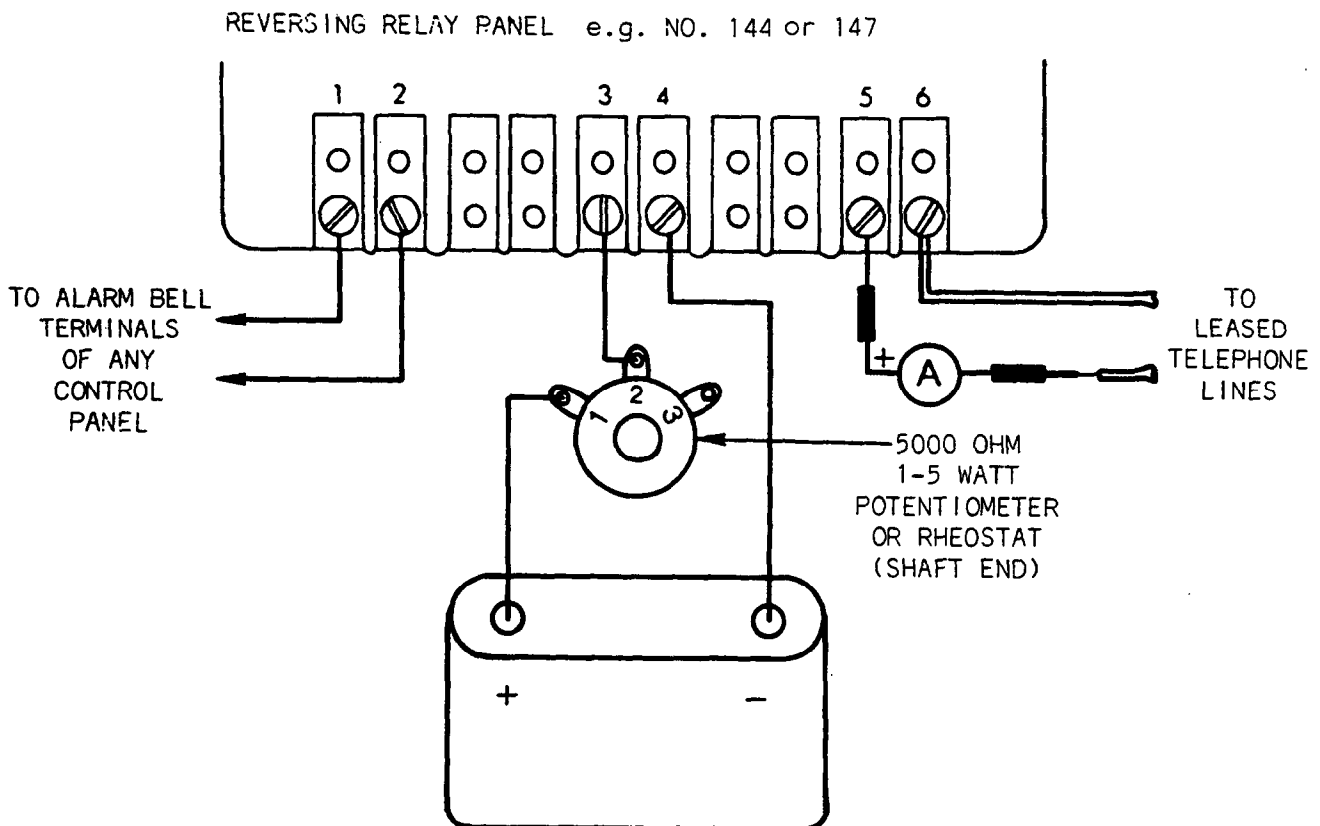
SOME NOTES ON USING REVERSING RELAYS WITH MODULARM OR MINI-MODULARM SYSTEMS

When using Modularm or Mini-Modularm equipment, the current designed to flow from the subscriber's premises through the phone lines to the system at the central station is only 4 milliamps. This is true for all conditions of operation (NORMAL and ALARM) except a TROUBLE indication.

Normally, a 6 volt power source is sufficient to effect the 4 ma current flow, but in certain cases, the telephone lines may be quite long and thus present too great a resistance to the flow of electric current, to prevent the 4 ma from flowing with the 6 volt source.

In such cases, voltage boosting devices are recommended which are adjustable through a varied range to enable the proper current to flow through the phone lines. These devices, Nos. 89-24 and 349 can be used in this application to achieve desired results. See the Installation Instructions elsewhere in this section. Be sure to adjust the output voltage level with the milliammeter as a guide as described in these instructions.

Some installers prefer to use replaceable dry cells instead of power supplies to power these Modularm systems, and in such cases, certain procedures should be followed to prevent problems at the central station.



These procedures are to be used after the central station Modularm wiring has been performed and all telephone lines installed at the subscriber's premises.

1. Attach a multimeter between one of the telephone line wires and the corresponding relay panel terminal as shown above. This multimeter should be set to its highest DC current range, and installed with the test lead polarity as shown.
2. Obtain a 5000 ohm potentiometer or rheostat rated between 1 and 5 watts, and insert it in series with the positive terminal of the battery being used and the corresponding terminal of the relay panel, as shown in the diagram. Connect the negative battery terminal to the relay panel.
3. Adjust the potentiometer to the point at which 4 milliamperes are indicated on the meter. Select a meter range that will enable easy reading of the scale. Do not let the pointer be pinned off scale.
4. Remove the battery, potentiometer, and the multimeter from the circuit and without disturbing the potentiometer setting, measure the resistance between its terminals 1 and 2 with an ohmmeter.
5. Obtain a $\frac{1}{2}$ watt resistor locally which is as close as possible to the resistance measured in Step 4, above.
6. Install that resistor between the positive terminal of the battery and the relay panel. In this manner, only the proper current will flow through the telephone lines to the Modularm circuitry.
7. Reattach all connections as required.