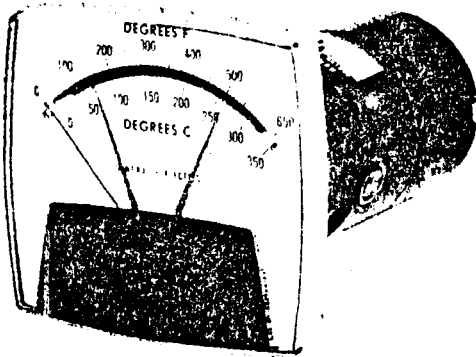




INSTRUCTIONS

198 4556K52-001F
Supersedes 4556K52-001E
and GEI-88935

TYPE 195 AND 196 METER RELAYS



TYPE 195
(Big Look Styling)



TYPE 196
(Horizon Line Styling)

Fig. 1. GENERAL ELECTRIC METER RELAYS

INTRODUCTION

These instructions cover the installation of General Electric Type 195 (Big Look) Meter Relays in three sizes and Type 196 (Horizon Line) Meter Relays in two sizes.

General Electric Meter Relays consist of two separate units; an indicator set-point unit and a control unit. The indicator set-point unit is basically an electric indicating panel instrument, to which has been added control point indication and initiation. The indicator

set-point unit has a control point adjustment knob(s), control point indication pointer(s), light switch(es), lamp and light shield. The control unit consists of load relay(s) and supplies power to the lamp and light switch(es) in the indicator set-point unit.

In addition to DC and AC (rectifier) models, pyrometer models can be supplied. Pyrometer models have bi-metal, cold junction compensation and may be supplied with or without a thermocouple break protecting circuit.

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

As a measurement, control or protection device or system, customer should note that a failure of this instrument or system for whatever reason, may leave the monitored process unprotected. It is suggested that the customer review the need for further redundant or other alternate means of protection.

GENERAL  ELECTRIC

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SPECIFICATIONS
(CONTROL FUNCTION)

ACCURACY: (at 77°F)

Set Point; $\pm 2\%$ F.S.
(referred to indicating pointer)

REPEATABILITY

0.3% F.S.

VOLTAGE INFLUENCE

0.75% max. change with 10 volt
change (from 117V reference)

INDICATING POINTER TRAVEL

The indicating pointer will indicate
accurately above or below either
set-point.

LOAD RELAY

- a. Double pole-double throw for
each set-point.
- b. Rating; 5 amps AC non-inductive
at 120V; 5 amps DC non-inductive
at 28V.

MOUNTING POSITION

Indicator Set-Point Unit;
Standard; scale vertical
Optional; Any-with special
calibration
Control Unit; no position influence

POWER SUPPLY FOR CONTROL UNIT (See note A)
Nominal:- 117V, 50/60 cps, 7.0 V.A. max
for either single or double set-
point unit.

Max.: 127V, 50/60 cps

Min.: 107V, 50/60 cps

NOTE A:

If the load being controlled causes
a voltage drop of more than 2 volts in
the voltage supply for the controller,
this supply should come from a different
source to eliminate "hunting".

DEAD BAND

$\pm 0.5\%$ F.S.

FREQUENCY INFLUENCE

0.3% max. change, 60 cps to 45 cps
or 60 cps to 65 cps.

CONTROL ACTION

Automatic On-Off action (Automatic
Reset). If Alarm Action (Manual
Reset) is desired the user can con-
vert to this by removing jumper
wire and add momentary contact or
pushbutton switches as shown in
fig. 2.

LAMP

Expected life 5 years.

DIELECTRIC TEST

Live parts to face and panel-2600V
RMS.

INSTALLATION

MOUNTING

NOTE: All drilling of the panel
should be completed before the unit is
mounted.

The General Electric Meter Relays
are sturdily constructed and will with-
stand reasonable amounts of vibration
and handling.

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The 3 1/2 and 4 1/2 inch sizes may be mounted as a unit (see Fig. 5, 6, 8 and 9) or the control unit may be mounted separately from the indicator set-point unit (see Fig. 7 for separate mounting of the control unit). The 2 1/2 inch size (Big Look Only) requires separate mounting of the control unit with a bracket and a connection cable, which are furnished with this size (see Fig. 7).

The indicator set-point unit is of self-shielded construction and may be mounted in magnetic or non-magnetic panels without special calibration.

In cases where panel vibration is of a magnitude to cause false pointer indication, this can usually be eliminated by mounting the control unit separately.

CONNECTIONS

Indicator Set-Point Unit

Connections to the circuit being measured are made to terminal studs on the back of the case of the indicator set-point unit (see Fig. 4). The left hand stud (rear view) is always positive. The contact surface of nuts, washers, and cable terminals must be thoroughly clean to insure good contact.

Connections between the indicator set-point unit and the control unit are made through a built-in connector and socket as the control unit is mounted to the indicator set-point unit (3 1/2 and 4 1/2 inch size) or by a pre-wired cable assembly for the 2 1/2 inch size.

Control Unit

Terminals for the 117V, 60 cps power supply, for the double pole - double throw relay (one per set point), and for the alarm control action are on the back of the control unit. Each terminal is supplied with a #6-32 pan head machine screw. (See Fig. 3 for terminal layout).

The relay terminals are entirely passive and are completely isolated from either the measured circuit or the power supply circuit. (See Table A and Fig. 2 for relay operation).

ADJUSTMENTS

Adjustment of Indicating Pointer with Zero Adjuster

The following adjustment may be necessary in some cases due to a shift in zero position because of shock in transportation.

The Meter Relay should be in its operating position when any such adjustment is made.

A. Electric Quantity Meter Relay

1. Zero on scale - adjust pointer to zero with no power applied.
2. Suppressed Zero - apply end scale power and adjust pointer to correct indication.

B. Pyrometer Meter Relays

1. Without Thermocouple Break Protection - pointer should indicate ambient temperature, adjust zero set as required.
2. With Thermocouple Break Protection
 - a. Control unit unenergized - with or without T/C: - pointer is off scale below zero - do not adjust zero set.
 - b. Control unit energized without T/C: - pointer is off scale above full scale - do not adjust zero set.

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- c. Control unit energized - with adjusted T/C connected but at ambient temperature:- pointer should indicate ambient temperature (after 1/2 hour warm-up) adjust zero set as required.

Adjustment of Thermocouple Resistance

Note: Total thermocouple resistance may be equal to or less than the lead resistance printed on the scale of the indicator set-point unit.

A small resistor is mounted on the back of the case of the indicator set-point unit. This resistor is connected in series with the thermocouple and its resistance is adjusted until the resistance of the thermocouple plus resistor is equal to the lead resistance printed on the scale of the indicator set-point unit. (See Fig. 4.)

A. Method of Adjustment

Connect negative (-) thermocouple wire to the smaller of the two terminals which support the resistor. Connect an ohmmeter to the larger of the two terminals, which support the resistor, and to the positive (+) thermocouple wire.

DO NOT connect the positive (+) thermocouple wire to the instrument until resistance adjustment is complete.

The resistor is a double wound, pull off style of approximately 10 ohms. Wire can be removed from the body of the resistor without unsoldering. Resistance of the thermocouple-resistor combination is reduced by unwrapping the looped end of wire from the resistor and shorting between the wires. Continue to remove wire and shorting between the wires until the resistance of the thermocouple and resistor equals the resistance specified on the scale.

Connect the positive (+) thermocouple wire to the positive (+) terminal

of the indicator set-point unit.

ADJUSTMENT OF CONTROL POINT

This adjustment is made using the knob(s) mounted on the cover of the indicator set-point unit. The setting of the control point(s) is indicated by the position of the set pointer. Control will occur as the indicating pointer matches the set pointer(s).

The set pointer(s) may be adjusted to any position, from zero to full scale, and do not interfere in any way with the movement of the indicating pointer. Double set-pointers may be positioned to within two angular degrees of each other which is approximately 2% of full scale. Unless otherwise specified on the order, the operation of the set-points may overlap when the set points are brought to their minimum mechanical distance apart.

For best accuracy, allow at least 10 minutes warm-up (with lamp energized) before making final set-point adjustment. This improves the accuracy approximately 0.5%. To check set-point accuracy; a 117V, 60 cps supply must be used.

MAINTENANCE

To clean the plastic window, wash it with soap and water. To remove grease or oil, use kerosene sparingly. DO NOT use acetone, benzene, carbon tetrachloride, fire-extinguisher fluids, lacquer thinners, or window sprays containing these solvents, since they will smear or soften the window.

It is recommended that the window be wiped or blotted periodically with a clean damp chamois. Do not rub the window with a dry cloth as this is likely to cause scratches and to build up an undesirable electrostatic charge which will cause erroneous readings. After cleaning, an antistatic agent, such as GE Spec. No. A50W321, should be applied to the window to neutralize any electrostatic charges present.

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PARTS REPLACEMENT

Lamp - Cat. No. 4868K32-001
(See below)

In the event of lamp failure, the lamp may be removed by removing control unit, loosening the two screws at the rear of the indicator set-point unit, then rotate the lamp cover and pull out the lamp holder. (See Fig. 4.) Replace the lamp with GE Cat. No. 4868K32-001 (Purchase from Instrument Dept., General Electric Company, 40 Federal Street, W. Lynn, Mass. only).

To arrange for other repairs, consult the nearest General Electric sales office.

ACCESSORY FOR REMOTE MOUNTING
OF CONTROL UNIT

Cat. No. 1012K10G700**

Includes plug, socket, connection diagram, bracket and hardware--customer can make cable of any desired length by soldering insulated wires to plug and socket.

Cat. No. 1012K10G701*

Includes 6 ft. cable with plug and socket connectors attached, plus bracket and hardware.

*Cable assembly, bracket and hardware (Cat. No. 1012K10G701) is furnished as standard equipment with the 2 1/2" meter relay.

TABLE A
MODE OF OPERATION OF RELAY(s)

Inst. Pointer Relative to Set Points	High Set Point Relay	Low Set Point Relay
Downscale from Set Point	Energized	De-energized
Between Set Pointers	Energized	Energized
Upscale from Set Point	De-energized	Energized

**As a general rule select conductor size so that resistance of each conductor is 0.1-ohm or less. The following table lists some possibilities.

AWG. SIZE	MAX. CABLE LENGTH
18	19 feet
20	12 feet
22	7 feet
24	4.5 feet
26	3.0 feet

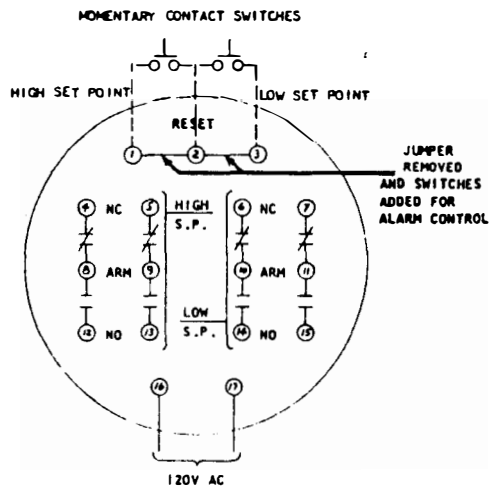


Fig. 2. External Connections
(Cont. Unit)

NOTE: Relays shown de-energized
(no power to instrument)

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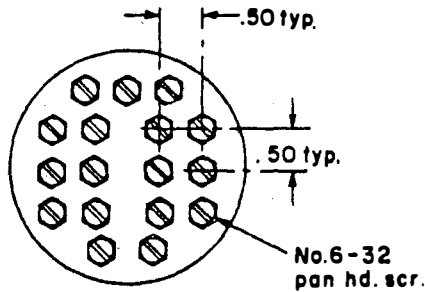


Fig. 3. Rear view of control unit showing spacing of screw-type connections

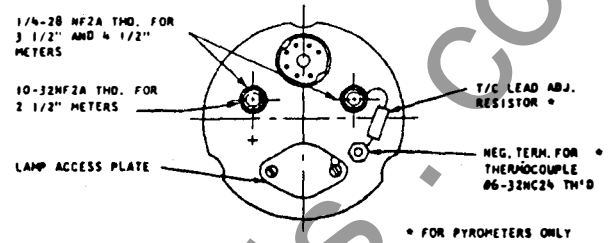


Fig. 4. Typical rear view of indicator set-point unit

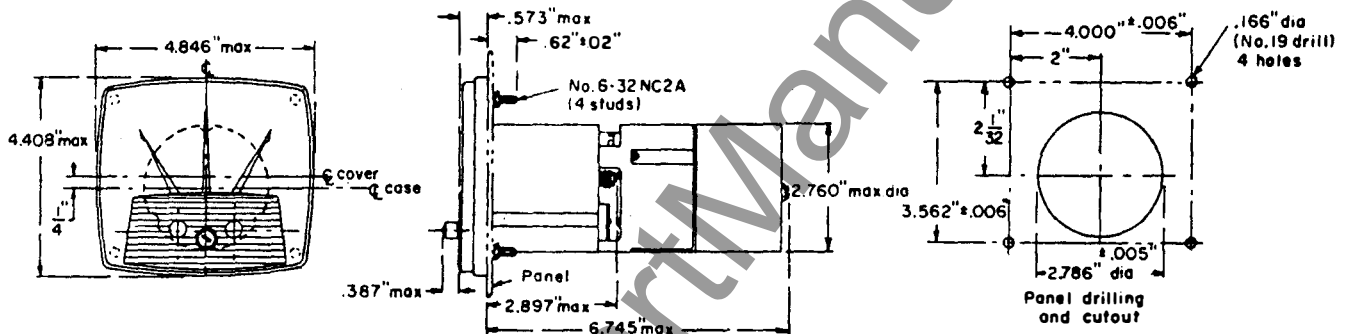


Fig. 5. Outline and panel cut-out dimensions for Type 195 meter relay, 4 1/2-inch with control unit piggy-back mounted.

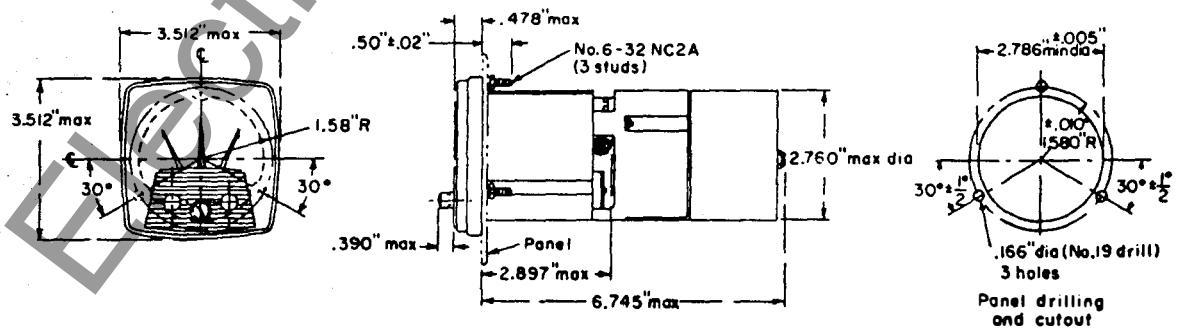


Fig. 6. Outline and panel cut-out dimensions for Type 195 meter relay, 3 1/2-inch size, with control unit piggy-back mounted.

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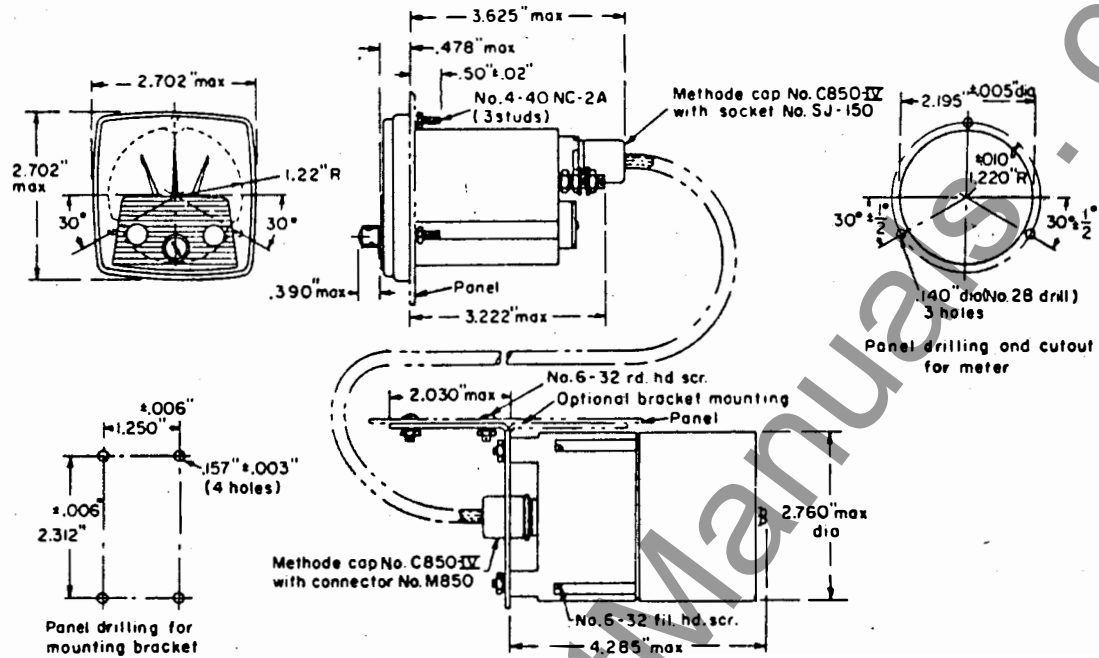


Fig. 7. Outline and panel cut-out dimensions for Type 195 meter relay, 2 1/2-inch size, control unit remote mounted as required due to small-size indicator set-point unit. (This Figure shows remote mounting of control unit for both Type 195 and Type 196 meter relays, as desired.)

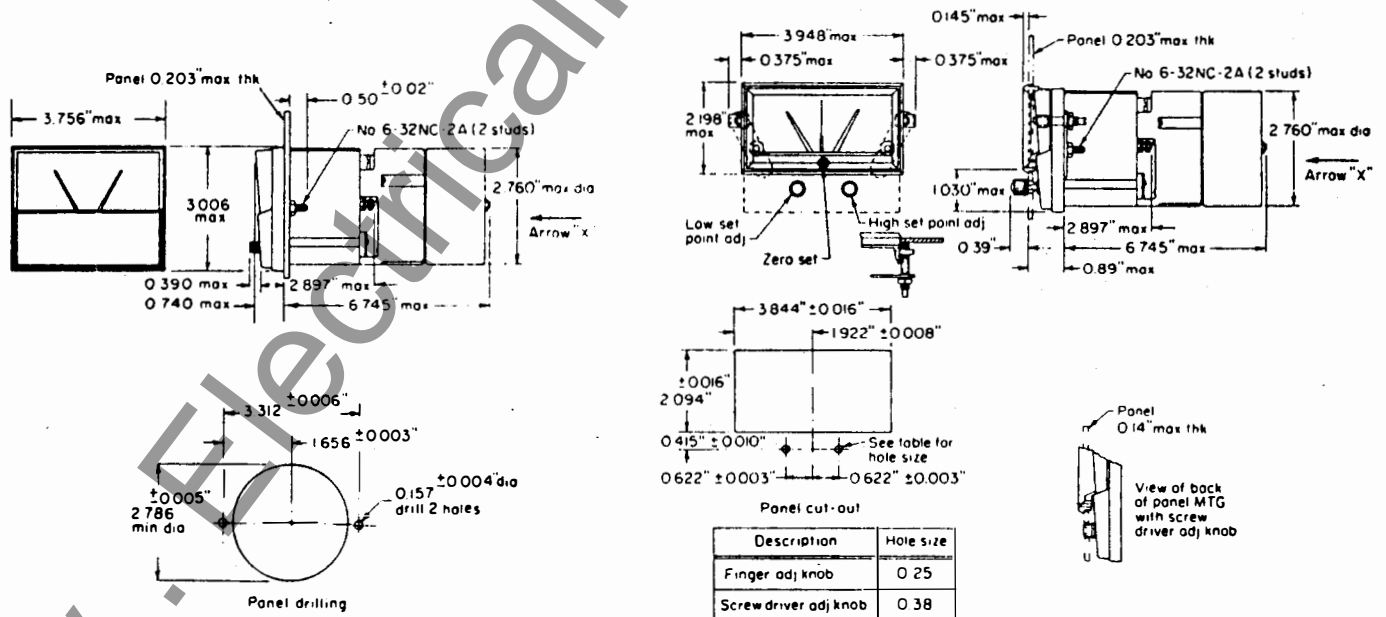


Fig. 8. Outline and panel cutout dimensions for Type 196 meter relay, 3 1/2-inch size, front mounted.

Fig. 9. Outline and panel cutout dimensions for Type 196 meter relay, 3 1/2-inch size, built-in.

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Type 195 and Type 196 Meter Relay

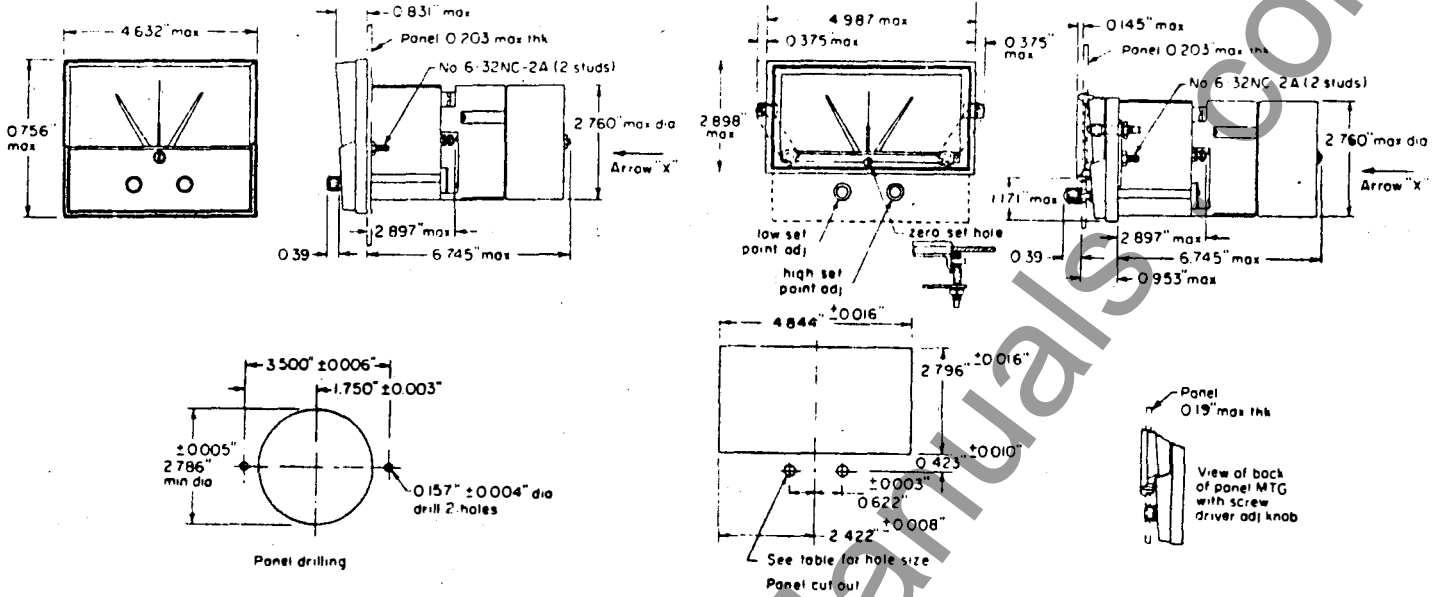


Fig. 10. Outline and panel cutout dimensions for Type 196 meter relay, 4 1/2-inch size front mounted.

Fig. 11. Outline and panel cutout dimensions for Type 196 meter relay, 4 1/2-inch size, built-in.

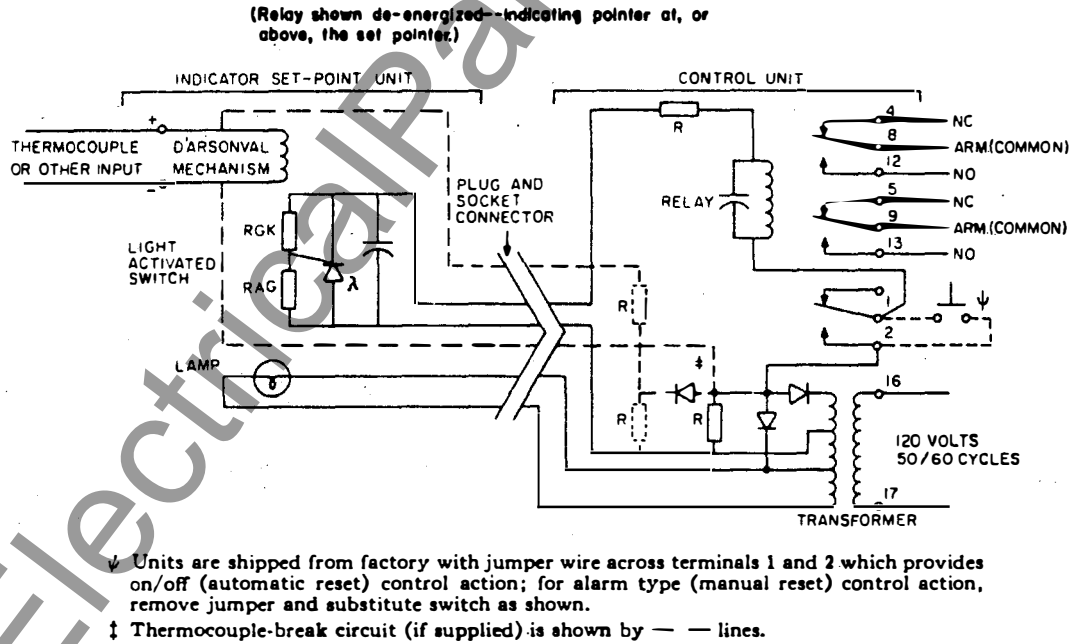
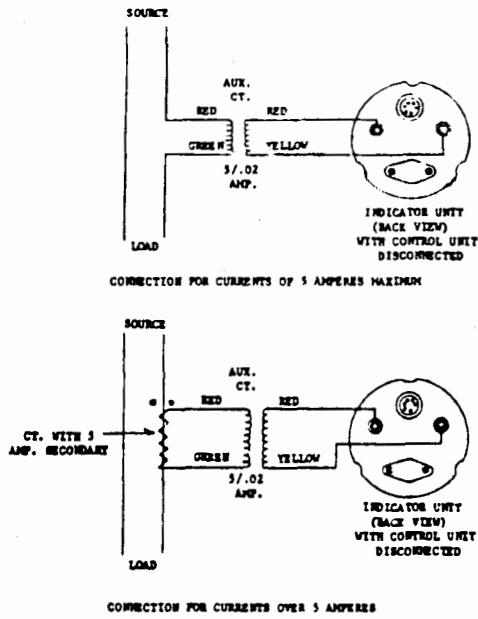


Fig. 12. Schematic for meter relay, single (high) set-point

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- NOTE: 1. AUX. CT. 5/.02 AMPERES SUPPLIED WITH TYPE 195 METER RELAY TO BE PROVIDED BY USER.
2. INDICATOR UNIT RATED 0-.02 AMPERES AC FULL SCALE.
3. AVOID OPEN SECONDARY WHEN PRIMARY IS ENERGIZED

Fig. 13. External connections of Meter Relay with current transformer

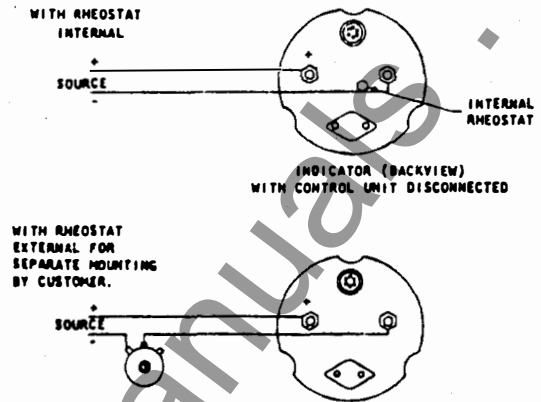


Fig. 14. External connections of Meter Relay with rheostat

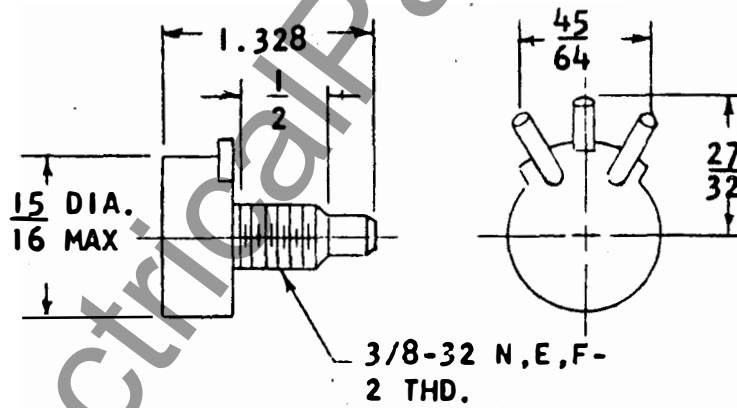


Fig. 15. Dimensions of external rheostat for meter relay

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LOCATION	CAPABILITY DESIGNATION	AREA CODE	DAY PHONE	ADDRESS	DIAL COMM CODE
Albany, N. Y. 12205		518	459-4110 or 4111	1097 Central Avenue	8*231-1121
Allentown, Pennsylvania, 18103		215	435-9501	868 East Highland St.	8*243-7287
Appleton, Wisc. 54910		414	734-6586	P. O. Box 83, Appleton, Wisc. 664 Valley Rd., Menasha, Wisc.	Not on DIAL COMM
(Atlanta) Chamblee, Ga. 30006	ABC	404	467-2501	5035 Peachtree Industrial Blvd.	8*281-7875
Baltimore, Md. 21230	AC	301	Mulberry 5-6500	920 East Fort Ave.	8*272-8200
Birmingham, Ala. 35211		205	State 1-4126	P. O. Box 3667, 1500 Mims Ave., S.W.	8*283-8101
(Boston) Medford, Mass. 02155	ABCD	617	Export 6-9600	3960 Myatic Valley Parkway	8*261-3930
Buffalo, N. Y. 14211	A	716	822-5849/5850	318 Urban St.	8*252-2257
Charleston, W. Va. 25328	AC	304	346-9428	306 MacCorkle Ave., S.E.	8*331-3140
Charlotte, N. C. 28206		704	334-1844	2328 Thrift Rd.	8*282-6118
Chicago, Ill. 60632	ABCD	312	Lafayette 3-4231	4360 West 47th St.	8*321-1330
Cincinnati, Ohio 45202	AC	513	421-1455	444 West Third St.	8*333-2331
Cleveland, Ohio 44125	AC	216	883-10	4477 East 49th St.	8*343-3121
Columbus, Ohio 43223		614	274-1131	2126 Eakin Rd.	8*333-7121
Corpus Christi, Texas 78401		512	Tulip 2-3811	115 Waco St.	Not on DIAL COMM
Dallas, Texas 75235	ABCD	214	Fleetwood 2-7587	3202 Manor Way	8*352-2327
(Davenport) Bettendorf, Iowa 52722		319	355-2131	1025 State St.	8*322-6145 or-8146
Denver, Colo. 80205	AB	303	222-3687	3353 Larimer St.	8*353-6306
Detroit, Mich. 48202	ABC	313	872-2800	5950 Third Ave.	8*362-4381
(Duluth) West Duluth, Minn. 55807		218	628-2223	P. O. Box 7198	8*326-1244
Flint, Mich. 48505		313	785-7839	1506 East Carpenter Road	8*361-3911
Pt. Wayne, Ind. 46803		219	742-9454	1731 Edsall Ave.	8*322-2674
Houston, Texas 77020	AC	713	Walnut 3-2651	5634 Harvey Wilson Drive	8*354-9411 or-9412
Indianapolis, Ind. 46222	AC	317	639-1565	1740 W. Vermont St.	8*335-2287
Jacksonville, Fla. 32203	ABC	904	358-1522	P. O. Box 2932, 2020 W. Beaver St.	8*283-3286
Johnstown, Pa. 15902		814	538-7829	841 Oak St.	8*342-6304
Kansas City, Mo. 64120	AC	816	Victor 2-9745	3525 Gardner Ave.	8*322-4262
Los Angeles, Calif. 90001	ABCD	213	Pleasant 2-6136	6900 Stanford Ave.	8*431-1026
Louisville, Ky. 40209		502	366-5661	3900 Crittenden Drive	8*334-3171
(Miami) Hialeah, Fla. 33010		305	Oxford 6-0611	1062 East 26th St.	8*285-4143
Midland, Texas 79704		915	Mutual 2-7072	704 South Johnston St.	Not on DIAL COMM
Milwaukee, Wisc. 53207		414	482-4200	235 W. Oaklahoma Ave.	8*326-5295 or-5296
Minneapolis, Minn. 55430	AC	612	529-9502	2025 - 49th Ave., North	8*326-1289
New Orleans, La. 70114	AC	504	387-8528	1115 De Armas Street	8*285-9163
(New York) North Bergen, N. J. 07047	ABCD	201 212	Union 6-2181 (NJ) Oxford 5-0060 (NY)	6001 Tonelle Ave.	8*224-6240
Oakland, Calif. 94608		415	653-9474	3400 Wood St.	8*422-9011
Philadelphia, Pa. 19124	AC	215	Cumberland 9-0400	1040 East Erie Ave.	8*243-9155
(Phoenix) Glendale, Ariz. 85301	ABD	602	939-3391	4911 W. Colter St.	8*433-3289
(Pittsburgh) West Mifflin, Pa. 15122	ABC	412	462-7400	4930 Butterliik Hollow Rd., R.D. 1	8*342-4120
Portland, Oregon 97210	AC	503	228-0281	2727 N W 29th Ave.	8*442-1291 or-1292
Richmond, Va. 23224	AC	703	342-8931	1403 Ingram Ave.	8*273-7163
Roanoke, Va. 24007		703	342-8931	P. O. Box 1327 115 Albermarle Ave., S.E.	8*272-7011 Ask for 342-8931
Sacramento, Calif. 95814		916	442-4775	99 North 17th St.	8*422-1011
St. Louis, Mo. 63110	AC	314	Mission 7-5575	1115 East Rd.	8*326-4307 or-4011
Salt Lake City, Utah 84110	AC	801	328-0526	301 S. 7th West St., P.O. Box 2519	8*352-3152
San Francisco, Calif. 94103	ABC	415	434-2211	1098 Harrison St.	8*422-1344
Schenectady Instrumentation Service	ABCD	518	Ft 4-2211, Ext. 5-4505	1 River Rd., Schenectady, N. Y. 12305	8*235-4506
Seattle, Wash. 98134	ABC	206	Main 3-7981	3422 First Ave., South	8*442-3275/3276/3277
(Southington) Plantaville, Conn. 06479		203	628-9638	370 Atwater St.	8*223-5591
Spokane, Wash. 99211		509	Keystone 5-2056	E. 4323 Mission St.	8*441-1120 or-1123
Syracuse, N. Y. 13208		315	456-3382	P. O. Box 207, 1015 E. Hiawatha Blvd.	8*256-3382
Tampa, Fla. 33601	A	813	248-5765	P. O. Box 1245	8*281-7507
Toledo, Ohio 43605		419	691-3501	405 Dearborn Ave.	8*342-7179
York, Pa. 17403		717	843-8995	54 N. Harrison St.	8*241-0150
Youngstown, Ohio 44507		216	782-8143	272 E. Indianola Ave.	8*342-5281

CAPABILITY DESIGNATIONS

- A—Electric Measuring Devices
- B—Electronic Measuring Devices
- C—Process Control
- D—Computer Component Servicing



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