



**INSTRUMENT TRANSFORMER
BURDEN DATA**

GENERAL  ELECTRIC

FOREWORD

This publication is designed to fill the need for readily available technical information regarding instrument transformer burdens. It contains convenient tables that show the burden characteristics of General Electric meters, instruments, relays, and miscellaneous control devices; data on both potential and current devices are included.

Metermen, relay engineers, industrial engineers, and others who use instrument transformers and have constant need for this information will find it particularly valuable. It can be used to check transformer accuracies, make meter corrections, determine relay settings, and for many other purposes.

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INSTRUMENT TRANSFORMER BURDEN DATA

EXPLANATION OF REFERENCE MARKS

*Instruments and meters of recent manufacture are identified by model numbers rather than type numbers. The model number is the type number formerly used, preceded by the figure 8, and followed by other letters and figures designating certain ratings and features. This means that the data for a wattmeter, Model Number 8AB10KAC, will be the same as that listed for a 115-volt polyphase wattmeter, Type AB-10. In situations where the model number designates a rating other than that listed, or in any case if the model number includes the letter Y, the data should be requested from the factory.

† The term "var" replaces the term "reactive volt-ampere."

Some of these instruments have Telechron motors. If the motor is operated from a potential transformer, its burden must be added. See page 10 for data on motors.

§ Inductance is neutralized with capacitance, giving 1.0 p-f.

‡ Does not include burden of autotransformers (see page 10) or burden of demand registers (see page 6).

**Types G-9, GS-9, GM-10, and GMS-10 demand meters are equipped with heating elements. Types DG-1, DG-2, M-16, MS-16, and PD-5 meters and Types C-13 and C-14 clocks may or may not be equipped with heating elements, depending on temperature conditions under which they are to operate. The figure in parenthesis after the word "Heater" in the table indicates the temperature which the heating element and its thermostat are designed to maintain. These heating elements, even when used, are not necessarily burdens, on potential transformers; for Types DG-1, DG-2, and PD-5 meters, they are frequently energized from some source other than a potential transformer.

• These elements are energized only momentarily; therefore, in calculating total burdens for the purpose of determining potential-transformer characteristics, the burden of these elements need not be included: They are listed here, however, to permit calculation of voltage drop in leads which under extreme conditions may be objectionable, even though momentary.

θ Note: Data apply for one-half the advancing coil and includes external resistor. Ordinarily, only one-half energized at a time.

¶ Watthour meters with type designations including the letter "M" are equipped with demand registers. For example, a Type DM-14 watthour meter is a Type D-14 meter with a Type M register. The burden data given here for these registers must be added (for one phase) to the burden of the particular watthour meter used. (See page 5 for watthour-meter data.)

△The totalizer may be equipped with a Type M-20, M-21, M-30, or M-31 register; in such cases, add the burden of the register to the burden of the totalizer.

π Values apply only at rated frequency and vary appreciably within the frequency range of the instrument. Values include impedor.

○The 3- and 4-ampere trip coils are ordinarily used with relays and therefore their burden need not be considered, as they are not energized except during the tripping operation.

◆ Small reactors are used with the Types HA-2, HC-2, MH-3, MH-5, MS-3, and MS-5 mechanisms; medium reactors with the Types HD-1, MS-4, MS-8, and MH-8 mechanisms; large reactors with the SD-18, SD-19, and MK-104 mechanisms.

The Types W or K current transformers may be used with the small-size and medium-size reactors with induction- or plunger-type relays; Type K transformers are required with the large reactors.

Instruments and meters should not be connected with tripping reactors to the same current transformers. An exception to this rule permits the connection of a 5-ampere ammeter to either a Type W or K current transformer operating in conjunction with the small-size or medium-size reactor and a Type IAC or equivalent relay. When there are meters in the same circuit, an additional set of current transformers or transformers with double secondaries is required. If the secondary burden imposed by the meter permits the addition of the relay windings to that set of transformers, the current transformers for the tripping reactors need not be of such accurate characteristics. In such cases, for the small reactors, the current transformers may be Types JY-285 or Y-298-D, while for the medium-size and large-size reactors, Type W transformers may be used.

When the relays and the tripping reactors are to operate in conjunction with Types SV or D-304 bushing-type current transformers, two transformers are required, one to actuate the relay and the other to operate the trip coil connected in multiple with the reactor.

ϕ Impedance, effective resistance and inductance are for full primary winding. Va, Watts, Vars, PF apply to either full or tapped primary winding at normal operating voltage.

♣ Burden varies with rating. Data for ratings other than 5:5 amperes can be obtained on request.

♦ The burden of an oscillograph is negligible. The volt-amperes and watts in the shunt may be calculated as I^2R .

(A) Capacitive.

(B) Current leads voltage.

(C) Burden varies with tap connections of input autotransformer and of ohm and starting units.

(D) In most cases the Y-potential of the Type GCX-14A relay will be 63.5 volts; therefore, the volt-amperes at 63.5 volts will be one third of the figure given for 115 volts.

(E) Burden with internal resistor short-circuited.

(F) Burden including internal resistor.

(G) This burden is imposed only during reclosing operation.

(H) Each relay has 4 potential coils. The data given are for one coil. Normally, two coils are connected in parallel, in which case the volt-ampere, watt and var figures must be multiplied by 2.

(I) Burden includes external series capacitor and resistor.

(J) Burden includes series resistor.

(K) The impedance of each of the two reactors supplied with the Type ICP-15B relay is approximately the same as that of the potential coil of the relay. The volt-amperes drawn by them (in series) will be half the volt-amperes drawn by the relay, assuming that measurements are being made at the same voltage.

(L) Based on measurement at 125 volts.

(M) Based on measurement at 70 volts.

(N) Instruments marked polyphase can be used as either wattmeter or varmeter by cross phasing or using appropriate autotransformer. The burden of the latter is not included nor is the burden of demand register included. Single-phase instruments are wattmeters unless otherwise noted.

(O) Burden with armature closed.

(P) Burden of each winding.

(Q) It is recommended that separate potential transformers be furnished for regulator applications. Separate transformers are essential if any other burden imposed on the transformer is not constant. The 50-volt-ampere transformers may be used with Type GDA-2, GDA-3, and GDA-4 regulators; 100- or 200-volt-ampere transformers may be used with Type TA or GFA-4 regulators.

(R) Burden on each of two potential transformers connected in open delta.

(S) The burden imposed by an oscillograph depends upon the amount of series resistance used. Volt-amperes and watts = E^2/R . Internal resistance of the oscillograph may be neglected.

(T) All polyphase power-factor-meter data for 3-wire, 3-phase instruments.

(U) These data apply when nameplate states "For use with instrument transformers" and when rating is 2.5 test amperes, or designated Class 10.

(V) With 5/20-ampere autotransformer.

(X) With 5/25-ampere autotransformer.

(Y) Ground relay.

(Z) With 5-ohm external resistor.

(a) This burden is imposed only for the duration of a phase-to-ground fault when the relay is used in a residual current circuit.

(b) Includes 5:20-ampere autotransformer.

(c) With 10-40-ampere instantaneous attachment on 10-ampere setting.

(d) With 20-80-ampere instantaneous attachment on 20-ampere setting.

(e) Continuous rating is same as tap rating when this exceeds the value listed.

(f) Burden is zero under normal conditions.

(h) Polarizing current.

(i) Residual line current.

(j) When the Type IAC-11L relay operates, the additional burden of the trip coil operated by the relay is added to the circuit temporarily.

(k) Each relay has 4 current coils, the data given are for 2 coils in series. The burden of the other coils is $\frac{1}{2}$ of this value.

(m) 9-ampere overcurrent unit.

(n) 4-ampere overcurrent unit.

(o) Total burden of restraining coil, which is shared equally by two current transformers.

(p) At minimum pickup.

(r) Operating coil.

(s) Restraining coil.

(t) Burden of trip coil must be added to relay burden.

(u) Half the burden of restraining coil, which is the effective burden on each transformer. The operating-coil burden is normally zero.

(v) These relays are ordinarily used in the residual circuit of current transformers, for ground fault protection. The burden is, therefore, not imposed, except for the duration of the ground, and need not be considered, except for this momentary period.

(x) Normal burden on each current transformer is 126 volt-amperes, the burden of the 5-ohm resistor and restraining-coil circuit. The normal burden of the operating-coil circuit is zero except during a fault.

(y) Burden varies with tap setting.

(aa) This burden is imposed only during the duration of a ground fault when the relay is used in a residual current circuit.

(bb) Burden of operating coils of directional and overcurrent units.

(cc) Burden of upper directional unit coil.

(dd) Burden of lower directional unit coil plus overcurrent unit.

(ee) Operating and restraining coils are connected to separate current transformers.

(fff) Burden of current polarizing coil of directional unit.

(hh) Minimum pickup 3.5 amperes for phase C-A fault, 7.0 amperes for phase A-B or B-C fault.

(ii) V.A. burden of thermal unit equals $325 \div (\text{thermal unit coil rating})^2$

BURDENS IMPOSED ON POTENTIAL TRANSFORMERS

(Data are for one element and based on 120 volts at rated frequency; where no specific frequency rating is assigned, data are for 60 cycles.)

G-E Type*	RATING		Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Henrys)	Volt- amperes	Watts	Vars†	Power Factor
	Volts	Cycles							

VOLTMETERS

AB-10-12-13-15-16-18	150	60	3020	2960	1.52	4.8	4.7	0.9	0.98
AB-15-16-18 Expanded Scale	130	60	2400	1870	4.0	6.0	4.67	3.76	0.78
AB-30	150	60	3190	3120	1.8	4.52	4.42	0.94	0.98
AD-6-7-10	150	25-60	2700	2700	0.50	5.3	5.3	0.3	1.00
ADB	175	25-60	2680	2680	0.35	5.3	5.3	0.2	1.00
AH-11	150	25-60	2000	2000	0	7.2	7.2	0	1.00
AH-11	175	25-60	2340	2340	0	6.1	6.1	0	1.00
AH-12	150	25-60	1790	1790	0	8.0	8.0	0	1.00
AH-12	175	25-60	1870	1870	0	7.7	7.7	0	1.00
AO-21, -22, -58, -72	150	25-60	15000	15000	0.50	1.0	1.0	0	1.00
AP-9	150	Up to 125	21300	21300	1.66	0.68	0.68	0	1.00
AR	175	Up to 125	1590	1590	0	9.0	9.0	0	1.00
AR-2	150	25-60	2220	2220	0.61	6.5	6.5	0.7	1.00
AR-2	175	25-60	2600	2600	0.61	5.6	5.6	0.4	1.00
C, C-4, C-6-7, CP	90-130	Up to 125	152 #	152	0	95.0	95.0	0	1.00
CP-4-5	150	Up to 125	760 #	760	0	19.0	19.0	0	1.00
CD-3-4-7-8, CDP-3-4	150	25-60	650 #	650	0 §	22.1	22.1	0 §	1.00 §
CD-13-14, CD-27-28									
C-20-21	90-130	25	548 #	540	0.57	26.4	26.0	4.2	0.99
CR, CR-2, CRP									
CR, CR-2, CRP, CRP-4-5-6	90-130	60	578 #	546	0.49	24.8	23.5	7.8	0.95
CR-16-17-18-19-20-21 24-25-26, CRP-4-5-6	90-130	25	569 #	560	0.66	25.3	24.8	4.6	0.98
CR-16-17-18-19-20-21 24-25-26, CRP-4-5-6	90-130	60	617 #	579	0.56	23.2	21.9	7.9	0.94
H, H-2	175	Up to 125	1870	1870	0	7.7	7.7	0	1.00
H-5	175	Up to 125	1870	1870	0	7.7	7.7	0	1.00
HW	175	Up to 125	757	757	0	19.1	19.1	0	1.00
O, OS	175	Up to 125	3730	3730	0	3.8	3.8	0	1.00
P	150	60	1700	1700	0.06	8.5	8.5	0.1	1.00
P	75-150	Up to 125	1520	1520	0	9.5	9.5	0	1.00
P-3	150	Up to 125	2030	2030	0.07	7.1	7.1	0.1	1.00
P-8	150	Up to 125	3030	3030	0	4.8	4.8	0	1.00
PL-2	150	Up to 125	1200	1200	0.03	12.0	12.0	0.1	1.00
R, R-2-4-6-7	175	Up to 125	1540	1540	0	9.4	9.4	0	1.00
RF	175	Up to 125	3200	3200	0	4.5	4.5	0	1.00

WATTMETERS OR VARMETERS (N)

AB-10-12-13 (Single Phase)	115	25-125	6000	6000	0	2.4	2.4	0	1.00
AB-10-12-13 (Polyphase)	115	25-125	7000	7000	0	2.1	2.1	0	1.00
AB-15-16-18 Single Ph. Varmeter	120	60	4790	1510	12.0	3.0	0.95	2.85	0.32
AB-15-16-18 (Single Phase)	120	60	6790	6790	0	2.1	2.1	0	1.00
AB-30 (Single Phase)	120	60	8800	8800	0	1.64	1.64	0	1.00
AB-15-16-18 (Polyphase)	120	60	7340	7340	0	2.0	2.0	0	1.00
AB-30 (Polyphase)	120	60	9300	9300	0	1.55	1.55	0	1.00
AD-6-7 (Single Phase)	115	25-60	3700	3700	0.02	3.9	3.9	0	1.00
AD-6-7 (Polyphase)	115	25-60	3200	3200	0.01	4.5	4.5	0	1.00
ADB (Single Phase)	115	25-60	3600	3600	0.02	4.0	4.0	0	1.00
AH-12 (Single Phase & Polyphase)	115	25-60	2200	2200	0	6.5	6.5	0	1.00
AP-9 (Single Phase)	120	25-125	8220	8220	0.009	1.75	1.75	0	1.00
AR (Single Phase & Polyphase)	110	Up to 125	2690	2690	0	5.3	5.3	0	1.00
AR-2 (Single Phase)	115	25-60 500 W	2600	2600	0	5.6	5.6	0	1.00
CD-3-4 (Single Phase)	115	25-60	1100 #	1100	0.19	13.1	13.1	0.9	1.00
CK-2 to 7 incl	115	25	1570 #	256	9.87	9.1	1.4	9.0	0.16
12 to 25 incl	115	60	1090 #	120	2.87	13.3	1.4	13.2	0.11
C-4-6-7, CP (Single Phase)	110	60	108 #	105	0.06	133.0	130.0	27.8	0.98
C-4-6-7, CP (Polyphase)	110	60	114 #	113	0.02	126.0	126.0	8.4	1.00
C-20-21, CP-4-5 (Polyphase)	110	Up to 125	1100 #	1110	0.12	13.1	13.1	0.5	1.00
CD-3-4-7-8, CDP-3-4, CD-27-28									
C-12 to 17 incl, each element	110	25	1570 #	256	9.87	9.1	1.4	9.0	0.16
C-12 to 17 incl, each element	110	60	1090 #	120	2.87	13.3	1.4	13.2	0.11
H, H-5 (Single Phase & Polyphase)	110	Up to 125	2210	2210	0.01	6.5	6.5	0	1.00
H-2 (Single Phase & Polyphase)	110	Up to 125	2320	2320	0.01	6.2	6.2	0	1.00
P (Single Phase)	110	Up to 125	2800	2800	0.01	5.1	5.1	0	1.00
P-3-4-7 (Single Phase)	110	Up to 125	5500	5500	0.01	2.6	2.6	0	1.00
P-3-4-7 (Polyphase)	110	Up to 125	3300	3300	0.01	4.4	4.4	0	1.00
P-6 (Single Phase)	110	Up to 125	2250	2250	0.01	6.4	6.4	0	1.00
PL-2 (Single Phase)	100	Up to 125	840	840	0	17.1	17.1	0	1.00
S (Form WSP)	150	60	94	92	0.05	153.0	150.0	30.7	0.98

For explanation of Reference Marks, see page 3.

INSTRUMENT TRANSFORMER BURDEN DATA

BURDENS IMPOSED ON POTENTIAL TRANSFORMERS

(Data are for one element and based on 120 volts at rated frequency; where no specific frequency rating is assigned, data are for 60 cycles.)

WATTHOUR OR VARHOUR METERS † ‡

G-E Type*	RATING		Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Henrys)	Volt-amperes	Watts	Vars †	Power Factor	
	Volts	Cycles								
D-8-13 DS-11-12-13 I-15, IS-6-7	110	25	845	120	5.33	17.0	2.4	16.9	0.14	
D-14-15 (Includes potential indicating lamp) D-14-15	110	60	1220	183	3.20	11.8	1.8	11.7	0.15	
	110	60	1230	160	3.24	11.7	1.6	11.6	0.13	
DS-19-34-38-40 DS-20-35-39-41 DS-63-65-66	Includes potential indicating lamp	115	25	1180	240	7.40	12.2	2.5	12.1	0.20
		115	60	1150	207	3.00	12.5	2.2	12.4	0.18
		120	60	1500	243	3.94	9.6	1.6	9.5	0.17
I-30 I-50	120 120	60 60	1210 1735	139 249	3.19 4.56	11.9 8.3	1.4 1.1	11.8 8.2	0.12 0.14	
IB-7 IB-7 IB-8 IB-9 IB-10	110	25	820	108	5.18	17.6	2.3	17.4	0.13	
	110	60	860	89	2.27	16.8	1.7	16.7	0.10	
	110	60	830	78	2.18	17.3	1.7	17.2	0.10	
	115	60	678	69	1.80	21.2	2.2	21.1	0.10	
	120	60	880	75	2.32	16.3	1.4	16.2	0.09	
IS-8-9-10-11-12 IS-8-9-10-11-12	115	25	1120	198	7.00	12.9	2.3	12.8	0.18	
	115	60	1150	132	3.03	12.5	1.4	12.4	0.12	
V-3-4-5-9-10-16, VS-3-4 V-63-65-66	120 120	60 60	1310 1500	155 180	3.45 3.94	11.0 9.6	1.4 1.1	10.9 9.5	0.13 0.12	

DEMAND METERS AND ASSOCIATED DEVICES

These devices, except watthour demand meters, operate from a single-phase source of potential and are, therefore, single-phase burdens.

G-E Type*	Device	RATING		Imp. (Ohms)	Eff. Res. (Ohms)	Ind. (Henrys)	Va	Watts	Vars †	P-f
		Volts	Cycles							
BR-1-2	Demand Meter	120	60	.....	.....	.....	.....	.....	.....	.....
	Burden per circuit	.....	.....	2000	1040	4.54	7.2	3.7	6.2	0.52
	Type B-8 Telechron Motor **Heater (40 watt)	.....	.....	2720 300	1500 300	6.0 0	5.3 48.0	2.9 48.0	4.4 0	0.55 1.00
C-13	Contact-making Clock	115	60	.....	.....	.....	.....	.....	.....	.....
	Motor **Heater (0 F)	.....	.....	4010 500	2930 500	7.60 0	3.6 28.8	2.6 28.8	2.4 0	0.73 1.00
C-14-16	Contact-making Clock	120	60	.....	.....	.....	.....	.....	.....	.....
	Motor **Heater (0 F)	.....	.....	2720 500	1500 500	6.00 0	5.3 28.8	2.9 28.8	4.4 0	0.55 1.00
DG-1-2-3-4-5-6	Watthour Demand Meter	120	60	.....	.....	.....	.....	.....	.....	.....
	Top Element (plus motor)	.....	.....	838	226	2.14	16.5	4.6	15.9	0.28
	Other Elements	.....	.....	1230	184	3.22	11.8	1.8	11.7	0.15
	Note: All elements operated from separate transformers. **Heater—Either of two sizes may be used. Single-phase burden only. (32 F.) 25-watt Heater 40-watt Heater	.....	.....	500 300	500 300	0 0	28.8 48.0	28.8 48.0	0 0	1.00 1.00
DT-3	Totalizing Relay	120	60	.....	.....	.....	.....	.....	.....	.....
	Plunger out	.....	.....	273	246	0.31	52.6	47.4	22.5	0.90
	Plunger in Note: These data for one circuit only; total burden is obtained by multiplying by number of circuits the relay is constructed to totalize	.....	.....	747	410	1.65	19.3	10.6	16.2	0.55

For explanation of Reference Marks, see page 3.

Table continued on page 6

INSTRUMENT TRANSFORMER BURDEN DATA

BURDENS IMPOSED ON POTENTIAL TRANSFORMERS

(Data are for one element and based on 120 volts at rated frequency; where no specific frequency is assigned, data are for 60 cycles.)

DEMAND METERS AND ASSOCIATED DEVICES (CONT'D)

These devices, except wathour demand meters, operate from a single-phase source of potential and are, therefore, single-phase burdens.

G-E Type*	Device	RATING		Imp. (Ohms)	Eff. Res. (Ohms)	Ind. (Henrys)	Va	Watts	Vars †	P-f
		Volts	Cycles							
G-9	Demand Meter	120	60	.....	.....	.....	.....	.....	.....	.....
GS-9-12	Standard Form:									
GM-10	Advancing Coil	.....	.....	2550	1580	5.30	5.6	3.5	4.4	0.62
GMS-10-11	Return Coil	.....	.....	2550	1580	5.30	5.6	3.5	4.4	0.62
	Note: These coils are energized alternately, so net burden is 2550 ohms.									
	Form E:									
	● Advancing Coil	.....	.....	2550	1580	5.30	5.6	3.5	4.4	0.62
	Return Coil	.....	.....	2550	1580	5.30	5.6	3.5	4.4	0.62
	Form SD-2:									
	● Advancing Coil θ	.....	.....	1260	1220	0.79	11.4	11.1	2.7	0.97
	All Motors and Heaters:									
	△ Motor	.....	.....	2720	1500	6.00	5.3	2.9	4.4	0.55
	**Heater (40 F)	.....	.....	500	500	0	28.8	28.8	0	1.00
HI-1	Thermal Watt Demand Meter	120	60	.....	.....	.....	.....	.....	.....	.....
	Potential Transformer	.....	.....	4250	2930	8.16	3.4	2.3	2.5	0.69
IHM-1	Combination Wathour and Thermal Watt Demand Meter	120	60	1690	113	4.2	8.52	2.83	8.03	0.34
M-14	Register (Motor)	115	60	2100 ¶	1070	4.80	6.9 ¶	3.5	5.9	0.51
M-16	Demand Meter	120	60	.....	.....	.....	.....	.....	.....	.....
MS-16	Standard Form:									
	Advancing Coil	.....	.....	5720	2580	13.50	2.5	1.1	2.2	0.45
	Return Coil	.....	.....	6000	4500	10.60	2.4	1.8	1.6	0.75
	Note: These coils are energized alternately. For net burden use this average:									
	Form E:									
	● Advancing Coil	.....	.....	5860	3540	12.00	2.5	1.5	1.9	0.60
	Return Coil	.....	.....	5720	2580	13.50	2.5	1.1	2.2	0.45
	Form ED:									
	● Advancing Coil θ	.....	.....	2180	1700	3.62	6.6	5.2	4.1	0.78
	Return Coil	.....	.....	5720	4640	8.83	2.5	2.0	1.5	0.81
	All Motors and Heaters:									
	Motor	.....	.....	2720	1500	6.00	5.3	2.9	4.4	0.55
	**Heater (0 F)	.....	.....	500	500	0	28.8	28.8	0	1.00
M-20-21-30-31	Register (B-7 Telechron Motor)	120	60	2820 ¶	1860	5.60	5.1 ¶	3.4	3.9	0.66
M-60	Register	120	60	2370 ¶	1050	5.63	6.1 ¶	2.7	5.5	0.44
MD-1-D2 Δ	Totalizer (per circuit)	120	60	.....	.....	.....	.....	.....	.....	.....
MD-7-D2	Armature open	.....	.....	6970	4420	14.3	2.06	1.30	1.63	0.63
	Armature closed	.....	.....	10,000	7150	18.6	1.44	1.02	1.01	0.72
MD-3	Totalizer (per circuit)	120	60	2000	1040	4.5	7.2	3.74	6.15	0.52
PD-5-6-7-8	Demand Meter	120	60	.....	.....	.....	.....	.....	.....	.....
	Operating Coils (energized alternately):									
	Plunger out	.....	.....	375	270	0.74	38.4	27.6	28.4	0.72
	Plunger in	.....	.....	857	386	2.04	16.8	7.6	15.1	0.45
	● Printing Coil:									
	Plunger out	.....	.....	180	115	0.37	80.0	51.2	61.5	0.64
	Plunger in	.....	.....	300	129	0.72	48.0	20.6	43.4	0.43
	● Reset Coil:									
	Plunger out	.....	.....	286	174	0.60	50.4	30.4	39.6	0.61
	Plunger in	.....	.....	857	334	2.10	16.8	6.6	15.6	0.39
	**Heater—Either of two sizes may be used (30 F):									
	60-watt Heater	.....	.....	230	230	0	62.0	62.0	0	1.00
	80-watt Heater	.....	.....	165	165	0	87.0	87.0	0	1.00
	Motor (PD-7 and -8 only)	120	60	2720	1500	6.0	5.3	2.9	4.4	0.55
PD-55-57	Demand Meter									
	Impulse Motor	120	60	263	132	0.60	54.8	27.5	47.5	0.50
	Relay No. 1	120	60	29268	19036	59.00	0.5	0.3	0.4	0.65
	Relay No. 2	120	60	27907	17846	56.91	0.5	0.3	0.4	0.64
	Reset Motor	120	60	267	135	0.61	54.0	27.3	46.7	0.51
	Heater	120	60	248	248	0	58.0	58.0	0	1.00
	Timing Motor (PD-57 Only)	120	60	2667	1500	5.83	5.4	3.1	4.5	0.56
R-6-7	Demand-relay Switch ●	120	60	.....	.....	.....	.....	.....	.....	.....
	Contactors open	.....	.....	60	30	0.14	240.0	120.0	208.0	0.50
	Contactors closed	.....	.....	120	72	0.25	120.0	72.0	96.0	0.60
S-1-2	Auxiliary Relay	120	60	.....	.....	.....	.....	.....	.....	.....
	Armature open	.....	.....	2010	463	5.20	6.6	1.5	6.4	0.23
	Armature closed	.....	.....	2700	890	6.75	4.9	1.6	4.6	0.33
S-3	Auxiliary Relay	120	60	24245	14700	51.66	0.6	0.4	0.5	0.60
	Relay Amplifier	120	60	28571	18140	58.56	0.5	0.3	0.4	0.63
D-41	Contact Device	120	60	9541	8138	13.21	1.5	1.3	0.8	0.85

For explanation of Reference Marks, see page 3.

INSTRUMENT TRANSFORMER BURDEN DATA

BURDENS IMPOSED ON POTENTIAL TRANSFORMERS

(Data are for one element and based on 120 volts at rated frequency; where no specific frequency rating is assigned, data are for 60 cycles.)

G-E Type*	Coil	RATING		Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Henrys)	Volt-amperes	Watts	Vars †	Power Factor
		Volts	Cycles							

POWER-FACTOR METERS

AB-10-12-13	....	115	25-125	3800	3800	0	3.8	3.8	0	1.00
AB-15-16-18-30	....	120	60	3940	3940	0	3.66	3.66	0	1.00
AD-6, -7	....	115	25-60	3160	3160	0.01	4.6	4.6	0	1.00
ADB (Polyphase)	....	115	25-60	4900	4900	0	2.9	2.9	0	1.00
AH-12 (Polyphase)	A, B	115	25-60	2050	2050	0	7.0	7.0	0	1.00
	C, D	115	25-60	2320	2320	0	6.2	6.2	0	1.00
AR, AR-2 (Polyphase)	A, B	110	Up to 125	1900	1900	0	7.6	7.6	0	1.00
	C, D	110	Up to 125	2650	2650	0	5.5	5.5	0	1.00
C-4-6-7, CP (Polyphase)	A, B	110	Up to 125	135	135	0	107.0	107.0	0	1.00
	C, D	110	Up to 125	218	218	0	65.0	65.0	0	1.00
C-20-21 (Polyphase)	....	110	Up to 125	618	618	0.12	23.3	23.3	1.7	1.00
CD-3-4-7-8, CD-27-28	....	110	Up to 125	1100	1100	0.33	13.1	13.1	1.5	0.99
CDP-3-4, CP-4-5 (Polyphase)	A, B	110	Up to 125	2030	2030	0	7.1	7.1	0	1.00
H, H-2, H-5 (Polyphase)	C, D	110	Up to 125	2320	2320	0	6.2	6.2	0	1.00
P-3 (Polyphase)	A, B	110	Up to 125	4480	4480	0.01	3.2	3.2	0	1.00
	C, D	110	Up to 125	2570	2570	0.01	5.6	5.6	0	1.00
P-3 (Single Phase)	....	115	25-60	2390	1970	3.60	6.0	4.9	3.4	0.82

FREQUENCY METERS^π

AB-10-12-13	....	115	60	2800	1960	5.3	5.1	3.6	3.7	0.70
AB-15-16-18	....	120	60	2700	2672	1.0	5.3	5.3	0.76	0.99
DB-30	....	120	60	8000	7900	3.04	1.8	1.78	0.26	0.99
AD-6, AD-7	....	115	25	3270	3290	0	4.4	4.4	0	1.00
	....	115	60	1800	1770	0.86	8.1	8.0	1.4	0.98
ADB	....	115	25	3270	3290	0	4.4	4.4	0	1.00
	....	115	60	1800	1770	0.86	8.1	8.0	1.4	0.98
AH-12	....	115	25-60	1900	1900	0	7.6	7.6	0	1.00
	....	115	25	3140	3140	0	4.6	4.6	0	1.00
AR-4	....	115	60	2050	2050	0	7.0	7.0	0	1.00
CD-3-4-7-8	....	115	25	740	740	0	19.5	19.5	0	1.00
CD-27-28	....	115	60	1100	1100	0	13.1	13.1	0	1.00
AR, AR-2	....	110	25	795	294	4.70	18.1	6.6	16.9	0.37
AR, AR-2	....	110	60	706	286	1.71	20.5	8.3	18.7	0.40
AR-3	....	110	60	635	510	1.01	22.6	18.2	13.5	0.80
C-4-6-7	....	110	25	205	205	0.05	70.0	70.0	2.7	1.00
CP	....	110	60	248	244	0.13	58.0	56.8	11.3	0.98
H-2	....	110	25	772	258	4.64	18.6	6.2	17.5	0.33
H-3	....	110	60	769	764	0.24	18.7	18.5	2.3	0.99
H-4	....	110	60	863	267	2.16	16.2	5.2	15.9	0.31
H-5	....	110	25	796	282	4.70	18.1	6.4	16.9	0.36
H-5	....	110	60	868	307	2.14	16.5	5.9	15.6	0.36
H-6	....	110	25	1090	1070	1.36	13.2	12.8	2.6	0.98
H-6	....	110	60	840	809	0.62	17.1	16.4	4.8	0.96
P-3 (48-72 cyc)	....	110	60	735	735	0	19.6	19.6	0	1.00
P-3 (55-65 cyc)	....	110	60	2290	2290	0	6.3	6.3	0	1.00

SYNCHROSCOPES

AB-10-12-13 (with ext. impedor)										
(Running)	A, B	115	60	6900	5070	12.50	2.1	1.5	1.4	0.73
(Incoming)	C, D	115	60	2100	1170	4.60	6.9	3.8	5.7	0.55
AB-12-13-15-16-18 (Self-contained)	....	115	60	7200	6035	10.5	2.0	1.7	1.1	0.84
(Running)	....	115	60	3420	2848	(A)	4.2	3.5	2.3	0.83
(Incoming)	....	115	60	3420	2848	(A)	4.2	3.5	2.3	0.83
AD-13-14 (Running)	A, B	115	60	6900	5070	12.50	2.1	1.5	1.4	0.73
(Incoming)	C, D	115	60	2100	1170	4.60	6.9	3.8	5.7	0.55
AD-16-17-18-19-30 (Self-contained)	....	115	60	7200	6035	10.5	2.0	1.7	1.1	0.84
(Running)	....	115	60	3420	2848	(A)	4.2	3.5	2.3	0.83
(Incoming)	115	60	3420	2848	(A)	4.2	3.5	2.3	0.83

For explanation of Reference Marks, see page 3.

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INSTRUMENT TRANSFORMER BURDEN DATA

BURDENS IMPOSED ON POTENTIAL TRANSFORMERS

(Data are for one element and based on 120 volts at rated frequency; where no specific frequency is assigned, data are for 60 cycles.)

SYNCHROSCOPES (CONT'D)

G-E Type*	Coil	RATING		Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Henrys)	Volt-amperes	Watts	Vars	Power Factor
		Volts	Cycles							
AR-2, M-3 (Running)	A, B	115	25	120	23	0.75	120	23.4	117.6	0.19
	E, F	115	25	167	133	0.64	86	68.6	51.9	0.80
AR-2, M-3 (Incoming)	A, B	115	60	69	8	0.18	209	25	208	0.12
	E, F	115	60	126	90	0.23	114	81.7	80	0.71
AR-4, AR-7, AD-6-7	} (Running and Incoming)	115	25	2350	2345	0.80	6.1P	6.1P	0.3	1.00
		115	60	1320	1320	0	10.9P	10.9P	0	1.00
M-2 (Running)	A, B	110	25	141	23	0.88	102	16.4	101.5	0.16
	E, F	110	25	152	111	0.66	94.8	69	64.5	0.73
M-2 (Incoming)	A, B	110	60	80	6	0.21	180	13.1	180	0.07
	E, F	110	60	162	120	0.29	89	66	60	0.74

RELAYS

(Data are for one element and based on measurements at 120 volts and 60 cycles.)

G-E Type*	Rating (Volts)	Tap or Range	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Henrys)	Volt-amperes	Watts	Vars †	Power Factor	
AC-1	115	.....	290	180	0.6	50 (G)	31.0	40.4	0.62
ACR-11A-11B Motor & 179Z 0179E (operate) 0179E & 179R (Reset)	120	.....	780	485	1.62	18.5	11.5	14.5	0.62
		.....	240	142	0.38	60.0	35.6	41.4	0.59
		.....	34.5	15.85	0.08	405.0	190.0	358.0	0.47
									
CAP-15A	115	.....	2500	750	6.4	5.8 (H)	1.7	5.6	0.30
CBP-12A	} Phase 1-2 Phase 2-3 Phase 3-1	115	1170	680	2.5	12.3	7.2	10.0	0.58	
		115	655	400	1.4	22.0	13.5	17.3	0.61	
		115	1350	1010	2.4	10.7	8.1	7.1	0.75	
CEH-11A	115	.....	682	442	1.385	21.1	13.7	16.2	0.65
CFF-12A	115	56-59.5 cycles	1060	830	1.75	13.6	10.7	8.48	0.79	
CFF-12B	115	60.5-63 cycles	985	736	1.74	14.6	10.9	9.7	0.75	
CFP-11A, -12A CFPP-11A, -12A	115	.....	894	622	1.71	16.1	11.2	11.6(A)	0.70
CFT-11A, -11B CFT-12A, -12B		115	318	291	.34	44.8	41.1	18.1	0.92(J)
CFV-12A (Studs 7-8) CFV-12A (Studs 5-6) CFV-12A	115	25-90 volts	2455	1710	4.68	5.87	4.08	4.22	0.69	
		25-90 volts	777	540	1.48	18.5	12.8	13.3	0.69	
		6-20 volts	894	872	.507	16.1	15.7	3.43(A)	0.97	
CFV-16A	115	15-45 volts	1075	1070	.382	13.4	13.3	1.79(A)	0.99	
		30-100 volts	1075	1070	.382	13.4	13.3	1.79(A)	0.99	
CFVB-11A (Studs 5-6) CFVB-11A (Studs 6-7) CFVB-11A (Studs 15-16) CFVB-11A (Studs 16-17)	120	.....	5075	4930	1.26	2.83	2.74	.68	0.97
.....		2240	2170	1.44	6.43	6.25	1.56	0.97		
.....		5075	4930	1.26	2.83	2.74	.68	0.97		
.....		2240	2170	1.44	6.43	6.25	1.56	0.97		
CFW-11E	115	0-800 watts	884	456	2.01	16.3	8.4	14.0	0.52	
CFZ-11B, -11C CFZ-12A CFZ-13A, -13B CFZ-14A	115	.....	2205	2205	0	6.53	6.53	0	1.0
CHPV		115	900	650	1.65	16.0	11.4	11.2	0.72
CJC-15A		115	1262	1130	1.5	11.4	10.2	5.08	0.89
CJCG-15B		120	750	600	(A)	19.2	15.4	11.5	0.80
CJCP-15A	115	.....	1325	925	2.52	10.9	7.6	7.82	0.70
CKPG-11A	120	.....	375	300	(A)	38.4	30.8	23.0	0.80
CLPG-11A	120	.....	750	600	(A)	19.2	15.4	11.5	0.80
GCX-12A, -12B GCX-13A, -13B, -13C, -13D GCX-14A GCX-15A GCX-15B GCX-17A	115	.....	993	445	2.35	14.6 Min (C) (D)	6.5	13.1	0.45
		.....	318	274	0.42	45.5 Max (C) (D)	39.2	22.9	0.86
		Min.	1850	1830	0.69	7.8	7.8	1.14	0.99	
		Max.	330	307	0.32	43.6	40.6	15.9	0.93	
		.....	335	351	0.15	37.5 (max) (N)	36.8	7.2	0.98
GCY-12A	115	.....	308	286	0.3	43 (Max) (N)	41	15.7	0.93
GES-11A	115	.....	1760	.....	.....	8.2	.....	.....	.....
GGP-53A (Studs 13-14, 15-16, 17-18, 19-20) GGP-53A (Studs 2-12)	115	.....	2494	752	6.30	5.77(H)	1.74	5.5	0.30
.....		650	250	1.59	22.1	8.48	20.4	0.38		
HFA-11A, -12A	.....	.....	413	153	1.02	34.8	13.1	32.7	0.37
HGA	115	.....	1000	450	2.37	14.7	6.6	13.1	0.45
HMA-11A	115	.....	1590	750	3.8	8.3	3.9	7.3	0.47
		230	6400	3000	15.0	8.3	3.9	7.3	0.47
IAY-11A, -12A IAY-13A, -14A, -15A IAY-11B	115	1010	343	2.52	14.3	4.9	13.5	0.35	
.....		860	352	2.08	16.8	6.9	15.3	0.41		
.....		

For explanation of Reference Marks, see page 3.

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INSTRUMENT TRANSFORMER BURDEN DATA

BURDENS IMPOSED ON POTENTIAL TRANSFORMERS

(Data are for one element and based on measurements at 120 volts and 60 cycles.)

RELAYS (CONT'D)

G-E Type*	Rating (Volts)	Tap or Range	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Henrys)	Volt-amperes	Watts	Vars†	Power Factor						
IAV-51A	115	.....	1440	500	3.6	9.2	3.2	8.6	0.35					
IAV-53A	115	.....	780	304	1.9	17.0	6.6	15.7	0.39					
IAV-54E	.....	.....	.....	.....	.....	.....	.....	.....	.....
IBC-11A, -12A	115	5°	522	130	1.34	27.6	6.9	26.7	0.25						
IBC-13A, -17A	115	30°	658	418	1.34	21.9	14.2	16.9	0.65						
IBC-20A	115	45°	848	670	1.34	17.0	13.5	10.1	0.80						
IBC-14A, -24A	115	.....	1100	657	(A)	13.1 (B)	7.7	10.6	0.59 (B)					
IBC-24B, -25A															
IBC-14B, -27A	115	.....	1150	1020	(A)	12.5 (B)	11.1	5.7	0.89 (B)					
IBC-11A	190	5°	1480	371	3.81	9.7	2.4	9.4	0.25						
	190	30°	1640	771	3.81	8.8	4.1	7.7	0.47						
	190	45°	2310	1440	3.81	6.2	4.8	3.9	0.78						
IBC-31A, -32A	115	.....	604	217	1.48	23.8 (E)	8.9	22.1	0.38					
IBC-33A, -34A			795	557	1.49										
IBC-51A							
IBC-35A, -36A	115	.....	1337	945	(A)	10.8 (B)	7.6	7.6 (B)	0.71 (B)					
IBC-39A, -40A															
IBC-53A															
IBCG-51A	120	.....	750	600	(A)	19.2	15.4	11.5	0.80					
IBCG-52A															
IBCG-53A															
IBCG-54A															
IBCP-33A	115	.....	1320	920	2.5	10.0	7.0	7.1	0.7					
IBCP-51A	115	.....	1320	920	2.5	10.0	7.0	7.1	0.7					
IBCV-33A, -51A	115	.....	414	264	0.86	31.9	20.5	24.4	0.64					
			224	148	0.45					5.9	3.9	4.42	0.66		
ICC-16A, -22A	115	5°	497	70	1.30	29.0	4.1	28.6	0.14						
			632	367	1.36					23.8	13.9	19.3	0.58		
			802	642	1.28					18.0	14.4	10.8	0.80		
ICC-19A, -23A	115	45°	1100	649	2.35	13.1	7.7	10.7	0.59						
			
ICP-11A, -12A	115	0.5-2	1570(I)	1210	(A)	9.1 (I) (B)	7.1	5.8	0.77 (B)						
			-14A, -19A	6610(I)	5090					(A)	2.2 (I) (B)	1.69	1.38	0.77 (B)	
-13C, -14B	60 cycles	1.5-6	.....	.....	.....	.....	.....	.....	.....
ICP-15A	70-125	25-100 watts 50-200 watts 100-400 watts	1010	142	2.65	15.4 (L)	2.2 (L)	15.2 (L)	0.14						
ICP-15A, -15B	70	10-40 watts	422	63	1.10	11.5 (M)	1.65 (M)	11.4 (M)	0.15						
	70-125	25-100 watts	1010	142	2.65	4.84 (M) (K)	0.69 (M)	4.78 (M)	0.14						
	70-125	50-200 watts	1010	142	2.65	4.84 (M) (K)	0.69 (M)	4.78 (M)	0.14						
	70-125	100-400 watts	1010	142	2.65	4.84 (M) (K)	0.69 (M)	4.78 (M)	0.14						
	70-125	200-800 watts	1220	207	3.18	1.18 (M) (K)	0.20 (M)	1.16 (M)	0.17						
						
ICP-15L (60 cycles)	115	All	880	500	1.9	16.4	9.4	13.4	0.57						
ICP-15L (50 cycles)	115	All	1070	590	2.4	13.5	7.4	11.3	0.55						
ICP-51A	120 int	Parallel	1035	955	(A)	13.9	12.8	5.45	0.92						
			4140	3820	(A)					3.48	3.22	1.36	0.92		
			2600	2400	(A)					5.55	5.20	1.98	0.93		
			10400	9600	(A)					1.39	1.30	0.50	0.93		
ICR-12A, -14A	115	.....	4930	2240	11.60	2.9 upper	1.3	2.6	0.45					
			6580	3000	15.50					2.2 lower	1.0	1.95	0.46		
ICR-13B, -15A	115	.....	5270	2920	11.60	2.7 upper	1.5	2.3	0.55					
			6580	3000	15.50					2.2 lower	1.0	1.95	0.46		
ICR-51A	120	Lower	2770	1130	(A)	5.2	2.15	4.7	0.41						
ICR-53A			6000	1620	(A)					2.4	0.66	2.3	0.27		
ICR-53B			
ICR-54A			
ICT-11A, -11C	115	.....	196	152	0.33	73.5	57.2	46.5	0.78					
ICW-11A (single phase)	66.4	10-40 watts	1430	172	3.77	10.1	1.21	10.0	0.12 (M)						
ICW-11B			115	25-100 watts	1160					139	3.05	1.5	12.4	0.12	
.....			115	50-200 watts	1160					139	3.05	1.5	12.4	0.12	
.....			115	100-400 watts	1160					139	3.05	1.5	12.4	0.12	
ICW-11A (polyphase)	115	25-100 watts	855	588	1.65	16.8	11.6	12.2	0.69						
ICW-11B			115	50-200 watts	855					588	1.65	16.8	11.6	12.2	0.69
.....			115	100-400 watts	855					588	1.65	16.8	11.6	12.2	0.69
.....			115	200-800 watts	855					588	1.65	16.8	11.6	12.2	0.69
ICW-51A	120	All	4350	4300	1.72	3.32	3.28	0.50	0.99						
ICW-51B	120	10-40	920	129	(A)	15.7	2.20	15.5	0.14						
ICW-51B	120	All Others	3060	430	(A)	4.7	0.66	4.61	0.14						
ICW-52A	120	100-1000	4350	4300	1.72	3.32	3.28	0.50	0.99						
ICW-53A	120	15-150	920	129	(A)	15.7	2.20	15.5	0.14						
IJCV-51A	115	4-16 amp	725	396	1.61	19.9	10.9	16.7	0.55						
IJF-11A	115	.....	1410	605	3.38	10.2	4.4	9.3	0.43					
IJF-11B, -12A	115	.....	1470	1310	1.78	9.8	8.7	4.5	0.89					
IJF-51A	115	55-60 cycles	1522	1505	0.623	9.46	9.36	1.46	0.99						
IJF-51B	115	60-65 cycles	2280	2240	1.09	6.31	6.2	1.14	0.98						
IJF-52A	115	60 cycles	1240	1100	1.52	11.65	10.33	5.38	0.89						
IJS-11A	115	.....	1810	1060	3.70	7.9	1.4	6.4	0.59					
IJS-12A	115	.....	2130	874	5.15	6.8	2.7	6.2	0.41					
IJS-51 (Studs 5-6)	115	.....	1100	344	2.76	12.0	3.76	11.4	0.31					
IJS-51 (Studs 7-8)			1170	423	3.10					11.3	4.07	10.6	0.36		
IKP-12A	115	5°	520	130	1.40	27.2	6.9	26.2	0.25						
		30°	670	420	1.40					21.8	14.2	17.4	0.63		
		45°	850	670	1.40					17.0	13.4	10.3	0.79		
IKW-11A	115	.....	840	140	2.20	17.2	2.8	17.0	0.16					

For explanation of Reference Marks, see page 3.

Table continued on page 10

INSTRUMENT TRANSFORMER BURDEN DATA

BURDENS IMPOSED ON POTENTIAL TRANSFORMERS

(Data are for one element and based on measurements at 120 volts and 60 cycles.)

RELAYS (CONT'D)

G-E Type*	Rating (Volts)	Tap or Range	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Henrys)	Volt-amperes	Watts	Vars†	Power Factor
JBCP-33N JBCP-34N JBCP-51N JBCP-52N	1.5	....	1320	920	2.5	10.0	7.0	7.1	0.7
JBCV-33N, -51N Polarizing Coils Restraint Coils	115 115	.... ....	870 224	810 148	0.86 0.45	15.2 5.9	14.1 3.9	5.6 4.42	0.93 0.66
MC-16 Motor	115	....	514	319	1.07	28.1	17.4	21.9	0.62
Holding Coils	115	....	650	357	1.44	22.2 (O)	12.2	18.5	0.55
Motor and Holding Coils	115	....	287	171	0.61	50.1 (O)	29.8	39.1	0.60
PCV	115	....	464	52	1.22	31.0	12.5	28.3	0.40
PIG-11A-11B Normal ●Operate or Reset	115	.... ....	1570 443	1320 395	2.06 0.59	8 30	7 26	3.87 15	.88 .86
PJV	115	....	1550	745	3.61	9.2	4.50	6.60	0.48
RDC-11A RDC-12A	115	....	2200	2040	0.69	6.5 (J)	6.1	2.3	0.93

(Data are for one element and based on 120 volts at rated frequency; where no specific frequency rating is assigned, data are for 60 cycles.)

MISCELLANEOUS DEVICES

Device	G-E Type*	Rating (Volts)	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Henrys)	Volt-amperes	Watts	Vars †	Power Factor
Autotransformers	MC-1, MC-7	120	2880	860	7.3	5.0	1.5	4.7	0.30
	MC-2	120	2770	1720	5.8	5.2	3.2	4.1	0.62
	MC-8	120	3800	1370	9.4	3.8	1.4	3.6	0.36
	MC-21, MC-27	120	1060	179	2.77	13.6	2.3	13.4	0.17
	MC-22, MC-28	120	1565	443	3.98	9.2	2.6	8.8	0.28
Under-voltage Devices	HE-1 with rectifier	115	441	366	0.65	32.6	27.2	18.2	0.83
	MG-2	115	441	366	0.65	32.6	27.2	18.2	0.83
	PF-2	115	331	235	0.58	43.5	32.6	29.4	0.75
	PG-4 with rectifier	115	441	366	0.65	32.6	27.2	18.2	0.83
	PG-5 with rectifier	115	441	366	0.65	32.6	27.2	18.2	0.83
Magnetic Locks for Manually Operated Breakers	FK-5	115	132	39.6	0.33	109	32.6	104	0.30
	FK-33	115	132	39.6	0.33	109	32.6	104	0.30
	FK-35	115	132	39.6	0.33	109	32.6	104	0.30
	FK-232	115	132	39.6	0.33	109	32.6	104	0.30
	FK-142	115	189	68.0	0.47	76	27.2	71	0.36
	FK-143 (600 and 1200 amp)	115	189	68.0	0.47	76	27.2	71	0.36
	FK-43 (2000 amp)	115	189	68.0	0.47	76	27.2	71	0.36
Voltage Regulators	GDA-1M	115	276	276	0	43.5 (Q)	52.3	0	1.00
	GDA-1	115	330	330	0	43.5 (Q)	43.5	0	1.00
	GDA-2	115	189	189	0	76 (Q)	76	0	1.00
	GDA-3, -4	115	155	155	0	92.5 (Q)	92.5	0	1.00
	TA (All forms) GFA-4 (All sizes)	115 115	57.5 57.5	57.5 55.2	0 0.04	250 (Q) 250 (Q) (R)	250 241	0 69.6	1.00 0.96
Line-drop Compensator	R-10	115	262	249	0.22	55.0	52.0	17.2	0.95
Temperature Meter	AB-10	115	3600	2500	6.94	4.0	2.7	2.9	6.9
Oscillograph						(S)			
Telechron Motors	B-2, B-8	115	3010	1505	7.4	4.8	2.4	4.1	0.50
	B-3, B-9	115	2005	1042	4.5	7.2	3.7	6.1	0.52
	B-7	115	2820	1860	5.6	5.1	3.4	3.8	0.66
	C-2, C-5	115	1150	560	2.7	12.5	6.1	10.8	0.49
Torque Balance Telemeter	Wattmeter	120	4000	4000	0.01	3.6	3.6	0	1.0
	Varmeter	150	2120	2120	0.3	6.8	6.8	0.4	1.0
Frequency-type Telemeter	Wattmeter	120	1230	160	3.24	11.7	1.6	11.6	0.13
	Varmeter	150	975	604	2.0	14.8	9.2	11.6	0.62
Auxiliary Transformers	JE-25	120	300	66	0.78	48.0	11.0	46.8	0.22
	JE-27	120	655	196	1.66	22.0	6.6	21.0	0.30
	YT-1557M ϕ	120	720	288	1.75	20.0	8.0	18.3	0.40

For explanation of Reference Marks, see page 3.

INSTRUMENT TRANSFORMER BURDEN DATA

BURDENS IMPOSED ON CURRENT TRANSFORMERS (Data are for one element and are based on 5 amperes, 60 cycles.)

G-E Type*	Rating (Amperes)	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Microhenrys)	Volt- amperes	Watts	Vars †	Power Factor
AMMETERS								
AB-10, -12, -13	5	0.116	0.055	270	2.9	1.4	2.5	0.48
AB-15-16-18	5	0.086	0.050	187	2.2	1.3	1.8	0.58
AB-30	5	0.100	0.075	175	2.6	1.95	1.71	0.75
AD, ADB	5	0.050	0.045	60	1.3	1.2	0.6	0.92
AD-6, AD-7, AD-10	5	0.075	0.060	120	1.9	1.5	1.1	0.80
AH-11	5	0.090	0.085	92	2.3	2.1	0.9	0.92
AH-12	5	0.080	0.070	110	2.0	1.8	1.0	0.87
AO-21, AO-22, AO-72	5	0.005	0.005	2	0.1	0.1	0	0.98
AP-9	5	0.034	0.034	11.3	0.85	0.84	0.11	0.992
AR	5	0.170	0.160	160	4.3	4.0	1.5	0.94
AR-2	5	0.175	0.155	230	4.4	4.0	2.1	0.88
AS-2	5/10	0.045	0.040	43	1.1	1.0	0.4	0.93
		0.025	0.020	27	0.6	0.5	0.3	0.90
C	4	3.380	1.500	8040	84.5	37.5	75.6	0.45
C	5	2.180	0.970	5180	54.5	24.2	48.8	0.45
C-4-6-7, CP	5	1.660	0.835	3800	41.5	20.9	35.8	0.50
CD-3, CD-4, CD-27-28	5	0.515	0.140	1310	12.8	3.5	12.3	0.27
C-20-21, CD-3-4, CD-7-8, CDP-3-4	5	0.425	0.295	810	10.6	7.4	7.6	0.70
CR, CR-2, CRP	5	0.230	0.100	540	5.7	2.5	5.1	0.44
CRP-4-5-6, CR-16-18-20	5	0.295	0.115	725	7.4	2.9	6.8	0.39
CR-17-19-21-24-25-26	5	0.295	0.115	725	7.4	2.9	6.8	0.39
H	4	0.450	0.390	616	11.3	9.7	5.8	0.86
H	5	0.190	0.130	360	4.7	3.2	3.4	0.69
H-2	4	0.205	0.195	154	5.1	4.9	1.4	0.96
H-2	5	0.090	0.080	90	2.2	2.0	0.8	0.92
H-5	5	0.090	0.080	90	2.2	2.0	0.8	0.92
HWP	7	0.075	0.075	0	1.9	1.9	0	1.00
O, OS	5	0.080	0.065	110	2.0	1.6	1.0	0.85
P	5	0.075	0.055	132	1.9	1.4	1.2	0.74
P-3	5	0.070	0.060	100	1.8	1.5	0.9	0.87
P-8	5	0.070	0.070	23	1.7	1.7	0.2	0.99
PL-2 (with Shunt)	5	0.465	0.465	100	11.6	11.6	0.9	1.00
	10	0.250	0.247	25	6.2	6.2	0.27	1.00
R, R-2	4	0.265	0.220	399	6.6	5.5	3.8	0.82
R, R-2	5	0.170	0.145	249	4.3	3.6	2.3	0.84
R-6	5	0.095	0.090	90	2.4	2.2	0.8	0.93
RF	4	0.030	0.025	33	0.7	0.6	0.3	0.90
RF	5	0.050	0.050	19	1.2	1.2	0.2	0.99
WATTMETERS OR VARMETERS ‡								
AB-10-12-13 (Single Phase & Polyphase)	5	0.102	0.023	260	2.5	0.6	2.5	0.22
AB-15-16-18-30 (Single Phase & Polyphase)	5	0.063	0.019	160	1.6	0.5	1.5	0.30
AD-6-7 (Single Phase)	5	0.070	0.050	130	1.8	1.3	1.2	0.75
AD-6-7 (Polyphase)	5	0.075	0.055	130	1.9	1.4	1.2	0.75
ADB (Single Phase & Polyphase)	5	0.045	0.035	77	1.1	0.9	0.7	0.75
AH-12 (Single Phase & Polyphase)	5	0.155	0.145	141	3.9	3.6	1.3	0.94
AP-9	5	0.024	0.022	30	0.6	0.55	0.25	0.92
AR (Single Phase), AR-2 (Single Phase)	5	0.190	0.170	223	4.7	4.2	2.1	0.89
AR (Polyphase), AR-2 (Polyphase)	5	0.145	0.130	150	3.6	3.3	1.4	0.92
C-4-6-7, CP (Single Phase)	5	0.700	0.520	1245	17.5	13.0	11.7	0.74
C-7 (Polyphase)	5	0.800	0.630	1300	20.0	15.8	12.2	0.79
C-12-13-14-15-16-17-22-23-24-25	5	0.050	0.025	122	1.3	0.6	1.1	0.50
CD-3-4 (Single Phase), CD-27-28	5	0.230	0.160	450	5.8	4.0	4.2	0.69
CD-3-4 (Polyphase), CD-27-28	5	0.150	0.105	295	3.8	2.6	2.8	0.70
C-20-21, CP-4-5 (Polyphase)	5	0.150	0.105	295	3.8	2.6	2.8	0.70
CD-7-8, CDP-3-4	5	0.140	0.070	313	3.5	1.8	3.0	0.52
CK-22-23 (Polyphase)	5	0.140	0.070	313	3.5	1.8	3.0	0.52
CK (All others) (Polyphase)	5	0.050	0.025	122	1.3	0.6	1.1	0.50
H (Single Phase)	4	0.210	0.200	203	5.2	5.0	1.9	0.94
H (Single Phase)	5	0.135	0.125	130	3.4	3.1	1.2	0.94
H (Polyphase)	4	0.290	0.270	203	7.2	6.8	2.0	0.96
H (Polyphase)	5	0.145	0.135	130	3.6	3.4	1.2	0.94
H-5 (Single Phase)	5	0.175	0.170	141	4.4	4.3	1.3	0.95
H-5 (Polyphase)	5	0.140	0.130	141	3.5	3.3	1.3	0.94
P (Single Phase)	5	0.070	0.070	30	1.8	1.8	0.3	0.99
P-3 (Single Phase)	5	0.090	0.080	110	2.3	2.0	1.0	0.89
P-3 (Polyphase)	5	0.160	0.145	150	4.0	3.6	1.5	0.92
P-8 (Single Phase)	5	0.075	0.070	56	1.9	1.8	0.5	0.96
PL-2 (Single Phase)	5	0.090	0.080	100	2.2	2.0	0.9	0.91
TS (Form W)	3.5	1.800	0.610	4480	44.9	15.3	42.2	0.34

For explanation of Reference Marks, see page 3.

INSTRUMENT TRANSFORMER BURDEN DATA

BURDENS IMPOSED ON CURRENT TRANSFORMERS (Data are for one element and are based on 5 amperes, 60 cycles.)

G-E Type*	Rating (Amperes)	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Microhenrys)	Volt-amperes	Watts	Vars†	Power Factor
POWER-FACTOR METERS								
AB-10-12-13 (Polyphase)	5	0.144 (T)	0.100	260	3.6 (T)	2.6	2.5	0.72
AB-15-16-18-30 (Polyphase)	5	0.170 (T)	0.131	286	4.25 (T)	3.3	2.7	0.77
AD-6-7 (Polyphase)	5	0.155 (T)	0.115	280	3.9 (T)	2.9	2.6	0.74
ADB (Polyphase)	5	0.155 (T)	0.115	280	3.9 (T)	2.9	2.6	0.74
AH-12 (Polyphase)	5	0.155 (T)	0.145	141	3.9 (T)	3.7	1.3	0.94
AR (Polyphase), AR-2 (Polyphase)	5	0.190 (T)	0.170	225	4.7 (T)	4.3	2.1	0.90
C-20-21, CP-4-5 (Polyphase) CD-7-8, CDP-3-4 (Polyphase) CD-3-4, CD-27-28 (Polyphase)	5	1.340 (T)	0.710	3010	33.5 (T)	17.8	28.4	0.55
H, H-2, H-5 (Polyphase)	5	0.155 (T)	0.145	147	3.9 (T)	3.6	1.4	0.94
P-3 (Single phase)	5	0.100	0.090	110	2.5	2.2	1.0	0.90
P-3 (Polyphase)	5	0.170 (T)	0.160	176	4.3 (T)	4.0	1.7	0.92

WATTHOUR, WATTHOUR DEMAND, AND VARHOUR METERS

D-14-15	5	0.015	0.005	32	0.4	0.2	0.3	0.51
D-14-15	TR (U) or 2.5	0.050	0.025	122	1.3	0.6	1.2	0.50
DG-1-2	TR (U) or 2.5	0.050	0.025	119	1.3	0.6	1.2	0.50
DS-19-20-34-35-38-39-40-41-43-44	TR (U) or 2.5	0.050	0.025	123	1.3	0.6	1.2	0.50
DS-63-66	2.5	0.051	0.028	146	1.53	0.71	1.36	0.47
DS-63-66	5	0.015	0.007	37	0.38	0.18	0.34	0.47
DS-65	2.5	0.027	0.019	52	0.67	0.47	0.49	0.59
DS-65	5	0.007	0.005	13	0.17	0.12	0.12	0.69
I-16-20	5	0.015	0.005	33	0.4	0.2	0.3	0.44
I-16-20	TR (U) or 2.5	0.050	0.025	120	1.3	0.6	1.2	0.49
I-30	TR (U) or 2.5	0.106	0.052	245	2.6	1.3	2.3	0.50
I-30	5	0.028	0.014	64	0.7	0.4	0.6	0.50
1-50 (2 wire current coil)	TR (U) or 2.5	0.04	0.02	90	1.036	0.60	0.85	0.60
1-50 (3 wire current coil single coil)	TR (U) or 2.5	0.021	0.013	44	0.523	0.306	0.415	0.60
IB-7	5	0.050	0.045	68	1.3	1.1	0.6	0.87
IB-8	5	0.055	0.050	59	1.4	1.2	0.6	0.91
IB-9	5	0.036	0.034	34	0.9	0.8	0.3	0.93
IB-10	5	0.042	0.030	80	1.1	0.8	0.8	0.70
IS-8-9-10-11-12	5	0.050	0.025	120	1.3	0.6	1.2	0.49
IS-8-9-10-11-12	TR (U) or 2.5	0.050	0.025	120	1.3	0.6	1.2	0.49
V-3-4-6-7-9-10-16, VS-3-4	TR (U) or 2.5	0.084	0.052	176	2.1	1.3	1.7	0.60
V-3-4-6-7-9-10	5	0.021	0.013	44	0.5	0.3	0.4	0.60
V-63-66	2.5	0.061	0.028	146	1.53	0.71	1.36	0.47
V-63-66	5	0.015	0.007	37	0.38	0.18	0.34	0.47
V-5, V-65	2.5	0.027	0.019	52	0.67	0.47	0.49	0.59
V-5, V-65	5	0.007	0.005	13	0.17	0.12	0.12	0.69

RELAYS

(Data are for one element and are calculated for 5 amperes, 60 cycles from measurement at minimum pickup current, or at 5 amperes when minimum pickup current exceeds 5 amperes.)

G-E Type*	Calibration or Tap Range (Amperes)	Minimum Pickup (Amperes)	Continuous Rating (Amperes)	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Microhenrys)	Volt-amperes	Watts	Vars†	Power Factor
BDD-15A-16A Max. Burden	2.9-8.7	2.9	5	0.128	0.128	0	3.2 (N)	3.2	0	1.0
CAP-15A	.....	.....	5	0.032	0.018	68	0.8 (k)	0.4	0.7	0.55
CAP-15B	.....	.....	5	0.282	0.141	650	7.2 (k)	3.6	6.2	0.50
CBP-12A	.....	7	5	0.096	0.048	220	2.4 (k)	1.2	2.1	0.50
.....	.....	12	5	0.032	0.016	73	0.8 (k)	0.4	0.7	0.50
Studs 9-11 or 13-15	.....	12	5	0.02	0.01	37	0.4	0.2	0.3	0.50
Studs 5-7	.....	12	5	0.03	0.02	74	0.8	0.4	0.7	0.50
CCP-13A, -13B, -13C	.....	.....	5.0	0.48	0.196	1160	12.0	4.9	10.9	0.41
CCP-13D	.....	.....	5.0	0.68	0.276	1650	17.0	6.9	15.55	0.41
CEB-12A, -12B, -13A	{ 3-30 ohms 4-20 ohms	.....	5.0	0.30	0.15	663	7.4 (N)	3.9	6.3	0.53
.....	.....	.....	5.0	0.59	0.31	1330	14.7 (N)	7.8	12.5	0.53
CEH-11A	.....	.....	5.0	0.43	0.23	955	10.7	5.7	9.0	0.53
CEX-17A	.....	.....	5.0	0.452	0.336	753	11.3	8.4	7.1	0.74
Studs 5-6 or 7-8	3.0 ohms	.....	5.0	1.32	0.796	2785	32.9	19.9	26.2	0.60
Studs 5-6 or 7-8, with 6 & 7 jumpered	3.0 ohms	.....	5.0	1.32	0.796	2785	32.9	19.9	26.2	0.60

For explanation of Reference Marks, see page 3.

Table continued on page 13

INSTRUMENT TRANSFORMER BURDEN DATA

BURDENS IMPOSED ON CURRENT TRANSFORMERS

(Data are for one element and are calculated for 5 amperes, 60 cycles from measurement at minimum pickup current, or at 5 amperes when minimum pickup current exceeds 5 amperes.)

RELAYS (CONT'D)

G-E Type*	Calibration or Tap Range (Amperes)	Minimum Pickup (Amperes)	Continuous Rating (Amperes)	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Microhenrys)	Volt-amperes	Watts	Vars†	Power Factor
CEX-17B Studs 5-8 with 6 & 7 jumpered	3.0 ohms	....	5.0	1.48	0.90	3130	37.0	22.5	29.5	0.61
	0.5 ohm	....	5.0	0.38	0.22	795	9.5	5.5	7.5	0.58
CEX-18A	0.5 or 1 ohm	....	5.0	0.74	0.45	1555	18.5	11.3	14.6	0.61
	0.25 ohm	....	5.0	0.19	0.11	411	4.75	2.76	3.88	0.58
CEY-12A	3-30 ohms	....	5.0	.046	0.0292	95.5	1.14 (N)	0.73	0.90	0.64
CFCB-11A	....	3.0	3.0	0.87	0.49	1910	21.8	12.2	18.0	0.56
	....	7.0	7.0	0.16	0.09	350	4.0	2.24	3.30	0.56
CFD-11A, -12A, -12B	....	....	5.0	0.07	0.04	159	1.75 (o) (s)	1.0	1.4	0.57
	....	0.2	0.5	58.0 (P)	29.0	133000	1440 (r)	720.0	125.0	0.50
CFW-11E	0-800 watts	....	5.0	0.52	0.20	1270	13.0	5.0	12.0	0.38
CFP-11A, -12A CFPP-11A, -12A	....	....	5.0	0.52	0.20	1270	13.0	5.0	12.0	0.38
	0.5-2	0.5	2.5	2.08	0.80	5100	52.0 (aa) (i)	20.0	48.0	0.38
CFPC-11A, -12A, -12B, -13A, -14A, -15A	0.5-2	0.5	2.5	0.84	0.80	677	21.0 (aa) (h)	20.0	6.37	0.95
	1-4	1.0	5.0	0.52	0.20	1270	13.0 (aa) (i)	5.0	12.0	0.38
	1-4	1.0	5.0	0.21	0.20	167	5.25 (aa) (h)	5.0	1.57	0.95
	2-8	2.0	5.0	0.12	0.046	295	3.0 (aa) (i)	1.15	2.78	0.38
	2-8	2.0	5.0	0.048	0.046	45	1.21 (aa) (h)	1.15	0.425	0.95

CFZ-11B, -11C, -12A, -13A, -14A	....	....	5.0	0.63	0.38	1270	16.0	9.6	12.0	0.60
CHPV	....	....	5.0	0.16	0.09	354	4.0 (k)	2.2	3.4	0.55
CJC-15A	2-8	2.0	5.0	0.58	0.22	1425	14.5	5.51	13.4	0.38
	4-16	4.0	5.0	0.13	0.049	318	3.2	1.22	3.0	0.38
	10-40	10.0	5.0	0.03	0.0106	74.3	0.7	0.266	0.70	0.38
CJCC-15A Studs 5-6 Studs 5-6 Studs 5-6 Studs 5-6 Studs 7-8 Studs 7-8 Studs 7-8 Studs 7-8	0.5-2	0.5	2.5	2.9	1.11	7110	72.5	27.6	67.0	0.38
	1-4	1.0	5.0	0.75	0.284	1850	18.7	7.1	17.4	0.38
	2-8	2.0	5.0	0.58	0.22	1425	14.5	5.51	13.4	0.38
	4-16	4.0	5.0	0.53	0.204	1295	13.3	5.05	12.2	0.38
	0.5-2	0.5	2.5	0.8	0.76	663	20.0	19.0	0.625	0.95
	1-4	1.0	5.0	0.2	0.19	166	5.0	4.75	1.56	0.95
	2-8	2.0	5.0	0.2	0.19	166	5.0	4.75	1.56	0.95
	2-8	2.0	5.0	0.2	0.19	166	5.0	4.75	1.56	0.95
	4-16	4.0	5.0	0.2	0.19	166	5.0	4.75	1.56	0.95

CJCG-15B	0.5-2	0.5	5.0	0.358	0.33	292	8.95 (ff)	8.25	2.75	0.92
	1-4	1.0	5.0	1.4	0.54	3450	35	13.5	32.2	0.39
	2-8	2.0	5.0	0.66	0.26	1595	16.5	6.5	15.1	0.39
	2-8	2.0	5.0	0.53	0.21	1300	13.2	5.25	12.2	0.39
	4-16	4.0	5.0	0.50	0.20	1220	12.0	5.00	11.5	0.39
CJCP-15A	0.5-2	0.5	2.5	1.43	0.544	3500	35.8	13.6	33.0	0.38
	1-4	1.0	5.0	0.75	0.284	1850	18.7	7.1	17.4	0.38
	2-8	2.0	5.0	0.58	0.22	1425	14.5	5.51	13.4	0.38
	4-16	4.0	5.0	0.53	0.204	1295	13.3	5.05	12.2	0.38

CKPG-11A	0.5-2	0.5	5.0	1.57	0.74	3690	39.3 (bb)	18.6	34.7	0.47
	0.5-2	0.5	5.0	0.68	0.66	584	17.2 (ff)	16.3	5.4	0.95
CLPG-11A	0.5-2	0.5	5.0	2.1	1.16	4000	52.4 (bb)	29.1	37.7	0.55
	0.5-2	0.5	5.0	0.34	0.33	292	8.6 (ff)	8.15	2.7	0.95
CPD	....	3.5 or 7 (hh)	5.0	0.04	0.012	101	1.0	0.5	0.95	0.30
	1.0	1.0	....	0.48	0.14	1220	{ 12 Min. }	3.6	11.4	0.30
CPD-11A Max. 3-phase burden. Phase to ground burdens with ground-fault sensitivity adjustment	3.5	3.5	....	2.28	0.68	5730	{ 57 Max. }	17.1	54.0	0.30
	....	....	5.0	0.04	0.012	101	1.0	0.3	0.95	0.30
	....	....	5.0	0.48	0.14	1220	12.0	3.6	11.4	0.30
	....	....	5.0	0.60	0.18	1510	15.0	4.5	14.2	0.30
	....	....	5.0	0.88	0.26	2230	22.0	6.6	20.9	0.30
	....	....	5.0	1.36	0.41	3420	34.0	10.2	32.2	0.30
	....	....	5.0	2.28	0.68	5730	57.0	17.1	54.0	0.30
CPD-11D Max. 3-phase burden. Phase to ground burdens with ground-fault sensitivity adjustment	....	....	5.0	0.16	0.048	398	4.0	1.2	3.8	0.30
	....	....	5.0	1.92	0.57	4830	68.0	20.4	65.0	0.30
	....	....	5.0	2.4	0.72	6050	90.0	24.0	76.0	0.30
	....	....	5.0	3.52	1.05	8850	110.0	33.0	105.0	0.30
	....	....	5.0	5.44	1.63	13700	150.0	45.0	143.0	0.30
	....	....	5.0	9.12	2.74	23000	215.0	64.5	205.0	0.30

For explanation of Reference Marks, see page 3.

Table continued on page 14

INSTRUMENT TRANSFORMER BURDEN DATA

BURDENS IMPOSED ON CURRENT TRANSFORMERS

(Data are for one element and are calculated for 5 amperes, 60 cycles from measurement at minimum pickup current, or at 5 amperes when minimum pickup current exceeds 5 amperes.)

RELAYS (CONT'D)

G-E Type*	Calibration or Tap Range (Amperes)	Minimum Pickup (Amperes)	Continuous Rating (Amperes)	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Micro-henrys)	Volt-amperes	Watts	Vars†	Power Factor
ICC-16A, ICC-19A	4-15	4.0	10.0	0.18	0.12	372	4.5	2.9	3.5	0.64
ICC-22A	1.5-6	1.5	4.5	1.72	0.69	4180	43.0 (aa)	17.0	39.5	0.40
ICC-23A	0.5-2.0	0.5	1.5 (e)	7.00	3.36	16300	175.0 (aa)	84.0	155.0	0.48
ICC-51A	0.5-2	0.5	5.0	0.49	0.28	1060	12.2 (bb)	7.0	10.0	.57
ICC-52A	0.5-2	0.5	5.0	0.95	0.84	1170	23.8 (ff)	21.0	11.1	.88
	1-4	1.0	5.0	0.12	0.07	265	3.05 (bb)	1.75	2.5	.57
	1-4	1.0	5.0	0.22	0.19	265	5.55 (ff)	4.75	2.6	.88
	1.5-6	1.5	5.0	0.065	0.037	141	1.62 (bb)	0.92	1.31	.57
	1.5-6	1.5	5.0	0.098	0.086	119	2.45 (ff)	2.14	1.15	.88
ICC-17A	1.5-6	1.5	4.5	0.76	0.67	950	19.0 (aa) (cc)	17.6	4.0	0.88
ICC-24A	1.5-6	1.5	4.5	1.72	0.69	4180	43.9 (aa) (dd)	17.0	39.5	0.40
	0.5-2.0	0.5	1.5 (e)	0.76	0.67	950	19.0 (aa) (cc)	17.6	4.0	0.88
	0.5-2.0	0.5	1.5 (e)	7.00	3.36	16300	175.0 (aa) (dd)	84.0	155.0	0.48
ICP-11A, -12A, -13C	0.15-0.6	0.15	2.5	0.35	0.110	890	8.8	2.9	8.3	0.33
ICP-14A, -14B	0.5-2	0.5	2.5	0.10	0.050	217	2.4	1.2	2.0	0.52
ICP-19A	1.5-6	1.5	6.0	0.04	0.023	99	1.1	0.6	0.9	0.52
ICP-15A	10-40 w	.....	5.0	0.14	0.072	330	3.6	1.8	3.1	0.50
ICP-15B	25-100 w	.....	5.0	0.14	0.072	330	3.6	1.8	3.1	0.50
ICP-15L	50-200 w	.....	5.0	0.07	0.036	165	1.8	0.9	1.5	0.50
	100-400 w	.....	5.0	0.02	0.009	41	0.4	0.2	0.4	0.51
ICP-16A	1.5	.....	4.0	1.12	0.350	2700	28.0	8.7	26.0	0.31
ICP-51A	0.15-6	0.16	1.5	13	6.5	30000	325.0	162.0	280.0	0.50
ICP-52A	0.5-2	0.5	5.0	1.17	0.58	2650	29.0	14.5	25.0	0.50
	1.5-6	1.5	5.0	0.13	0.065	292	3.25	1.62	2.8	0.50
ICW-11A	10-40, single-phase watts	.....	5.0	0.254	0.112	605	6.35	2.8	5.7	0.44
	25-100, single-phase watts	.....	5.0	0.254	0.112	605	6.35	2.8	5.7	0.44
	50-200, single-phase watts	.....	5.0	0.062	0.027	146	1.55	0.675	1.37	0.44
	100-400, single-phase watts	.....	5.0	0.016	0.007	37.1	0.40	0.175	0.35	0.44
ICW-11B	25-100, 3-phase watts	.....	5.0	0.254	0.112	605	6.35	2.8	5.7	0.44
	50-200, 3-phase watts	.....	5.0	0.254	0.112	605	6.35	2.8	5.7	0.44
	100-400, 3-phase watts	.....	5.0	0.062	0.027	146	1.55	0.675	1.37	0.44
	200-800, 3-phase watts	.....	5.0	0.016	0.007	37.1	0.40	0.175	0.35	0.44
ICW-51A	15-60	15	3.5	3.24	1.62	7480	81.0	40.5	70.0	0.50
	25-100	25	5.0	1.17	0.58	2650	29.25	14.62	25.4	0.50
	50-200	50	5.0	0.29	0.15	690	7.35	3.67	6.35	0.50
	100-400	100	5.0	0.073	0.036	170	1.825	0.91	1.58	0.50
	200-800	200	5.0	0.018	0.009	39.8	0.45	0.22	0.38	0.50
ICW-51B	10-40	10	5.0	1.48	0.74	3400	37.0	18.5	32.0	0.50
	25-100	25	5.0	1.17	0.58	2650	29.25	14.62	25.4	0.50
	50-200	50	5.0	0.29	0.15	690	7.35	3.67	6.35	0.50
	100-400	100	5.0	0.073	0.036	170	1.825	0.91	1.58	0.50
	200-800	200	5.0	0.018	0.009	39.8	0.45	0.22	0.38	0.50
ICW-52A	100-1000	100	5.0	0.81	0.40	1830	20.3	10.1	17.3	0.50
ICW-53A	15-150	15	5.0	0.81	0.40	1830	20.3	10.1	17.3	0.50
IFD-12A	.....	2.5	5.0	0.024	0.02	36	0.6 (s)	0.5	0.34	0.83
	.....	.....	5.0	0.50	0.22	1180	12.5 (r)	5.5	11.1	0.44
IFD-14A, -14B	.....	2.5	5.0	0.024	0.02	37.1	0.6 (s)	0.5	0.34	0.83
	.....	.....	5.0	0.50	0.22	1180	12.5 (r)	5.5	11.1	0.44
IFD-51A	.....	2.5	5.0	0.358	0.128	890	8.9 (r) (f)	3.2	8.3	0.36
	.....	.....	.....	0.02	0.019	18	0.5 (s)	0.47	0.17	0.94
IJC-11B	5.0	7.0	10.0	0.04	0.03	82	1.2	0.8	0.9	0.67
IJC-11A	5.0	1.0	3.0	1.45	0.49	3600	36.0 (aa)	12.0	34.0	0.33
IJC-11C	5.0	1.0	5.0	0.61	0.26	1500	15.4	6.6	14.0	0.43
IJC-11D	5.0	8.0	5.0	0.08	0.04	205	2.2 (ee) (r)	1.0	2.0	0.45
	.....	.....	.....	0.18	0.06	460	4.6 (ee) (s)	1.6	4.3	0.34
IJC-12A	5.0	3.0	5.0	0.54	0.36	1060	13.5 (ee) (s)	9.0	10.0	0.67
	.....	.....	.....	0.38	0.12	950	9.5 (ee) (r)	3.1	8.9	0.33
IJC-51B (125% Slope)	.....	1.0	5.0	0.66	0.28	1570	16.5	7.0	14.75	0.43
IJC-52A (120% Slope)	.....	3.0	8.7	0.33	0.14	795	8.3 (r) (ee)	3.5	7.5	0.43
IJC-51A	.....	3.0	8.7	0.50	0.22	1190	12.5 (s)	5.5	11.25	0.43
IJC-51A	4-16	4.0	5.0	1.3	0.52	3160	32.4	13.0	29.8	0.40
IJD-12A	5.0	.....	5.0	0.4	0.115	1000	10.0 (u) (s)	3.0	9.5	0.29
IJD-12B	.....	0.1	0.5	66.0	36.00	145000	1650.0 (f) (r)	900.0	1365.0	0.55
IJD-14A	3.2-8.7	1.3-3.5	10.0	0.04	0.03	50	1.0 (u) (s)	0.9	0.4	0.90
IJD-14B	.....	.....	5-8.7	0.96	0.30	2410	24.0 (f) (r)	7.4	22.7	0.31
IJD-11C	5.0	.....	5.0	5.00	4.95	1850	126 (s) (x) (z)	126.0	1.0	0.99
IJD-12C	0.125	0.5	39.00	11.70	98800	980 (f) (r) (z)	300.0	930.0	0.30

For explanation of Reference Marks, see page 3.

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BURDENS IMPOSED ON CURRENT TRANSFORMERS

(Data are for one element and are calculated for 5 amperes, 60 cycles from measurement at minimum pickup current, or at 5 amperes when minimum pickup current exceeds 5 amperes.)

RELAYS (CONT'D)

G-E Type*	Calibration or Tap Range (Amperes)	Minimum Pickup (Amperes)	Continuous Rating (Amperes)	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Microhenrys)	Volt-amperes	Watts	Varst	Power Factor
IJD-52A	5.0	0.1	5.0	0.78	0.32	1900	10 (u) (s)	4.1	9.1	0.41
IJD-52B	5.0	0.1	5.0	72.5	19.6	185000	1800 (f) (r)	486.0	1730.0	0.27
IJD-53A	5.0	0.5	5.0	0.4	0.17	960	5 (u) (s)	2.2	4.4	0.44
IJD-53B	5.0	0.5	2.5	4.2	1.5	10300	105 (f) (r)	37.0	98.0	0.35
IJD-53B	3.2-8.7	40% of tap setting	10.0	0.043	0.040	40	0.55 (u) (s)	0.52	0.19	0.94
IJD-53B	3.2-8.7	40% of tap setting	5.0	0.82	0.27	2040	20.5 (f) (r)	6.8	19.3	0.33
IKP-12A	5.0	0.1	5.0	0.08	0.06	160	2.1	1.5	1.5	0.70
IKW-11A	0-1000 w	5.0	5.0	0.19	0.10	420	4.8	2.5	4.0	0.53
INC-77A-77N Max. Burden Balanced 3φ	3.0-4.5	3.0	5.0	0.37	0.35	305	7.6 (N)	7.2	2.35	0.95
JBC-51N	4-16	4.0	10.0 (c)	0.52	0.20	1280	13.3 (c) (bb)	5.32	12.20	0.40
JBCG-51N	0.5-2.0	0.5	5	0.35	0.33	290	8.8 (ff)	8.35	2.72	0.95
JBCG-51N	0.5-2.0	0.5	1.5 (e)	21.5	8.10	52000	540 (c) (aa) (bb)	200	500.0	0.37
JBCG-51N	1.5-6.0	1.5	5	0.35	0.33	290	8.8 (ff)	8.35	2.72	0.95
JBCG-51N	1.5-6.0	1.5	5 (e)	3.25	1.2	800	82 (c) (aa) (bb)	30.00	76.0	0.37
JBC-53N	4-16	4.0	10 (e)	0.25	0.11	560	6.2 (c) (bb)	3.78	5.5	0.45
JBCG-53N	0.5-2.0	0.5	5	0.35	0.33	290	8.8 (ff)	8.35	2.72	0.95
JBCG-53N	0.5-2.0	0.5	1.5 (e)	5.66	2.34	13700	142 (c) (aa) (bb)	58.3	130.0	0.41
JBCG-53N	1.5-6.0	1.5	5	0.35	0.33	290	8.8 (ff)	8.35	2.72	0.95
JBCG-53N	1.5-6.0	1.5	1.5 (e)	1.03	0.49	2380	26 (c) (aa) (bb)	12.2	23.0	0.47
JBCC-33N, -34N										
Overcurrent Units	1.5-6	1.5	4.5	0.68	0.42	1440	17.0	10.4	13.5	0.61
Overcurrent Units	0.5-2	0.5	1.5	6.2	3.8	13100	155.0	95.0	123.0	0.61
Polarizing Coils	1.5-6	1.5	4.5	0.2	0.19	165	5.0	4.75	1.55	0.95
Polarizing Coils	0.5-2	0.5	1.5	0.2	0.19	165	5.0	4.75	1.55	0.95
Directional Unit Operating Coil	1.5-6	1.5	4.5	0.52	0.20	1280	13.0	5.0	12.0	0.38
Directional Unit Operating Coil	0.5-2	0.5	1.5	0.52	0.20	1280	13.0	5.0	12.0	0.38
JBCC-51N, -52N										
Overcurrent Units	1.5-6	1.5	4.5	2.35	0.61	6100	59.0	15.3	57.0	0.26
Overcurrent Units	0.5-2	0.5	1.5	21.2	5.5	55200	530.0	138.0	520.0	0.26
Directional Unit Operating Coil	1.5-6	1.5	4.5	0.52	0.20	1280	13.0	5.0	12.0	0.38
Directional Unit Operating Coil	0.5-2	0.5	1.5	0.52	0.20	1280	13.0	5.0	12.0	0.38
Polarizing Coil	1.5-6	1.5	4.5	0.2	0.19	165	5.0	4.75	1.55	0.95
Polarizing Coil	0.5-2	0.5	1.5	0.2	0.19	165	5.0	4.75	1.55	0.95
JBCP-33N, -34N										
Overcurrent Units	1.5-6	1.5	4.5	0.68	0.42	1440	17.0	10.4	13.5	0.61
Overcurrent Units	0.5-2	0.5	1.5	6.2	3.8	13100	155.0	95.0	123.0	0.61
Directional Unit Operating Coil	1.5-6	1.5	4.5	0.52	0.20	1280	13.0	5.0	12.0	0.38
Directional Unit Operating Coil	0.5-2	0.5	1.5	0.52	0.20	1280	13.0	5.0	12.0	0.38
JBCP-51N										
Overcurrent Units	1.5-6	1.5	4.5	2.35	0.61	6100	59.0	15.3	57.0	0.26
Overcurrent Units	0.5-2	0.5	1.5	21.2	5.5	55200	530.0	138.0	520.0	0.26
Directional Unit Operating Coil	1.5-6	1.5	4.5	0.52	0.20	1280	13.0	5.0	12.0	0.38
Directional Unit Operating Coil	0.5-2	0.5	1.5	0.52	0.20	1280	13.0	5.0	12.0	0.38
JBCV-33N										
Overcurrent Units	2-8	2.0	5.0	0.39	0.23	820	9.6	5.8	7.7	0.60
Directional Unit Operating Coil	2-8	2.0	5.0	0.13	0.05	320	3.2	1.25	3.0	0.385
JBCV-51N										
Overcurrent Units	2-8	2.0	5.0	1.43	0.4	3700	36.0	10.0	35.0	0.28
Directional Unit Operating Coil	2-8	2.0	5.0	0.13	0.05	320	3.2	1.25	3.0	0.385
PAC-11A, -11B	0.5-1.5	0.5	0.5	74.50	25.30	186000	1860.0	640.0	1730.0	0.34
PAC-11A, -11B	1-3	1.0	1.0	18.60	6.33	50000	465.0	160.0	437.0	0.34
PAC-12A, -12B	2-6	2.0	2.0	4.96	1.64	12400	124.0	40.6	117.0	0.33
PAC-12A, -12B	3-9	3.0	3.0	2.20	0.77	5500	55.0	19.2	51.7	0.35
PAC-13A, -13B	4-12	4.0	4.0	1.24	0.42	3100	31.0	10.6	29.0	0.34
PAC-13A, -13B	5-15	5.0	5.0	0.80	0.27	2000	20.0	6.9	18.6	0.34
PAC-14A, -14B	10-30	10.0	10.0	0.22	0.08	530	5.4	2.1	4.8	0.39
PAC-14A, -14B	20-60	20.0	20.0	0.05	0.02	130	1.3	0.5	1.2	0.36
PAC-14A, -14B	40-120	40.0	40.0	0.01	0.01	28	0.31	0.1	0.3	0.47
PBC-11A	0.5-1.5	0.5	1.0	20.8	6.5	52300	520.0	161.0	494.0	0.31
PBC-11A	1-3	1.0	2.0	5.3	1.6	13400	132.0	40.0	125.0	0.30
PBC-11B	2.5-7.5	2.5	5.0	0.88	0.28	2200	22.0	7.0	21.0	0.32
PBC-12B	5-15	5.0	10.0	0.21	0.08	510	5.3	2.0	4.9	0.38
PBC-12A	2.5-7.5	2.5	5.0	0.950	0.370	2000	24.0	10.0	18.7	0.42
PBC-13A	5-15	5.0	5.0	0.230	0.100	530	6.0	2.875	5.0	0.42
PBC-13B	10-30	10.0	5.0	0.130	0.080	270	3.2	2.0	2.5	0.63
PHC-16A	1-4	1.0	5.0	2.60	1.7	5300	65.0	41.6	49.8	0.64
PHC-20A	4-16	4.0	5.0	0.16	0.10	325	4.1	2.6	2.6	0.64
PJC-11A	0.5-2	0.5	1.5	6.61	2.18	16500	165.0	54.0	155.0	0.33
PJC-11A	1-4	1.0	3.0	1.63	0.52	4060	41.0	13.0	39.0	0.32
PJC-11A	2-8	2.0	6.0	0.46	0.14	1160	11.5	3.6	10.9	0.31
PJC-12A	4-16	4.0	12.0	0.10	0.03	250	2.65	0.79	2.52	0.30
PJC-12A	10-40	10.0	25.0	0.16	0.05	400	0.40	0.12	0.38	0.31
PJC-12A	20-80	20.0	40.0	0.004	0.001	11	0.10	0.03	0.10	0.31
PJC-12A	40-160	40.0	40.0	0.001	0.0003	3	0.025	0.008	0.024	0.31
PJC-31D	10-40	10.0	25.0	0.018	0.008	41.5	0.44	0.19	0.39	0.44
PJV-31C	4-16	4.0	12.0	0.104	0.043	250	2.6	1.09	23.6	0.42

For explanation of Reference Marks, see page 3.

Table continued on page 18

INSTRUMENT TRANSFORMER BURDEN DATA

BURDENS IMPOSED ON CURRENT TRANSFORMERS

(Data are for one element and are calculated for 5 amperes, 60 cycles from measurement at minimum pickup current, or at 5 amperes when minimum pickup current exceeds 5 amperes.)

RELAYS (CONT'D)

G-E Type*	Calibration or Tap Range (Amperes)	Minimum Pickup (Amperes)	Continuous Rating (Amperes)	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Microhenrys)	Volt-amperes	Watts	Vars†	Power Factor
PYC-11A PYC-11D PYC-11F PYC-12A	2-8	2.0	3.5	0.80	0.51	1500	20.0	12.0	14.0	0.60
	4-16	4.0	5.0	0.22	0.15	400	5.0	3.7	3.7	0.74
	10-40	10.0	5.0	0.03	0.02	70	0.8	0.4	0.7	0.50
	15-60	15.0	5.0	0.01	0.01	30	0.4	0.2	0.3	0.50
	20-80	20.0	5.0	0.01	0.01	20	0.2	0.2	0.2	0.70
PYC-12C	4-16	4.0	5.0	0.22	0.11	500	5.0	2.5	4.3	0.50
	10-40	10.0	5.0	0.032	0.020	67	0.8	0.5	0.6	0.63
	20-80	20.0	5.0	0.008	0.005	16	0.2	0.1	0.15	0.65
	40-160	40.0	5.0	0.002	0.002	3	0.05	0.04	0.03	0.80
RDC-11A RDC-12A	..... .....	3.0 1.0	5.0 2.5	0.5 2.8	0.290 1.6	1080 6100	12.5 71.0 (Y)	7.3 41.0	10.2 58.0	0.58 0.58
RDD-11A, RDD-12A	.....	2.0	5.0	.....	.....	.....	0.4 (v)	.....	.....	.....
RDD-13A, 14A	.....	0.2	5.0	0.09	0.05	180	2.2 (v)	1.3	1.7	0.61
REA-11B REA-12B, -12C	..... .....	3.5 3.5	5.0 5.0	2.40 0.40	1.08 0.22	5660 885	60.0 10.0	27.0 5.5	53.0 8.4	0.45 0.55
TC-211 with Autotransformer	80-120% of current rating	.....	.....	1.08	1.03	890	27 (V)	26.0	8.4	0.95
TC-221 with Autotransformer	.....	.....	.....	1.68	1.60	1380	42 (X)	40.0	13.0	0.95
TC-213C with Autotransformer	3.5-5	.....	.....	0.75-1.5	.....	.....	18.8-37	.....	.....	0.95
TC-213D with Autotransformer	2.3-5	.....	.....	1.2-3.7	.....	.....	32-93	.....	.....	0.95
TMC-11A Thermal Unit	.....	.....	2.42	2.31	2.1	2780	13.5 (ii)	12.0	6.15	0.89

MISCELLANEOUS DEVICES

Device	G-E Type*	Rating (Amperes)	Impedance (Ohms)	Effective Resistance (Ohms)	Inductance (Microhenrys)	Volt-amperes	Watts	Vars†	Power Factor	
Instantaneous Trip Coils	For HA-2, HC-2, MH-3, and MH-5 levers	5	1.00	0.44	2380	25	11.0	22.4	0.45	
		4	.....	.....	.....	35 ○	.....	.....	.....
		3	.....	.....	.....	50 ○	.....	.....	.....
	For HD-1, MH-5C, and MH-8 levers	5	15
		4	30 ○
		3	35 ○
	For MS-3 and MS-5 solenoids	5	1.00	0.44	2380	25	11.0	22.4	0.45
		4	35 ○
		3	50 ○
	For MS-4, MS-5C, MS-8, SD-18 and SD-19 solenoids	5	15
		4	30 ○
		3	35 ○
For MS-5A, MS-5B, and MS-7A solenoids	5	.....	.....	.....	.....	25	.....	.....	.....
	4	.....	.....	.....	.....	35 ○	.....	.....	.....
	3	.....	.....	.....	.....	50 ○	.....	.....	.....
For MK-104 motor mechanisms	4	.....	.....	.....	.....	50 ○	.....	.....	.....
	3	.....	.....	.....	.....	80 ○	.....	.....	.....
Time-delay Trip Coils	For HA-2, HC-2, HC-5, MH-3, and MH-5 levers	5	1.40	0.64	3320	35	16.0	31.2	0.46	
		5	.....	.....	.....	25	.....	.....	.....
	For MS-3, MS-5, SD-18, and SD-19 solenoids	5	1.40	0.64	3320	35	16.0	31.2	0.46	
		5	.....	.....	.....	35	.....	.....	.....
For MS-4, MS-8, MS-9, MS-13, ML-11 and MH-9 solenoids	5	.....	.....	.....	.....	25	.....	.....	.....
	5	.....	.....	.....	2360	.....	.....	.....	.....
Line-drop Compensator	R-10	5.0 8.66	2.80 0.93	2.56 0.85	3080 1030	70.0 23.3	63.7 21.2	29.0 10.0	0.91 0.91	
Tripping Reactors	Small, Medium, Large	5.0	.....	.....	.....	◆	.....	.....	.....
Totalizing Transformers	Y-353	5:5	0.92	0.75	1410	23.0 ▲	19.0	13.0	0.82	
	JY-4	5:5	0.39	0.34	490	9.8 ▲	8.6	4.7	0.88	
	JAR-0	5:5	0.31	0.31	50	7.9	7.9	0.5	1.00	
Oscillograph Shunt	.....	.....	.....	.....	.....	↓	.....	.....	.....
Wire (100 ft)	50 ft No. 12 Awg copper leads	.....	0.16	0.16	0	4.0	4.0	0	1.00
		.....	0.10	0.10	0	2.5	2.5	0	1.00
		.....	0.17	0.17	0	4.3	4.3	0	1.00
		.....	0.08	0.08	0	2.1	2.1	0	1.00
Torque Balance Telemeter	Wattmeter	5.0	0.075	0.055	130	1.9	1.4	1.2	0.75	
	Ammeter	5.0	0.075	0.055	130	1.9	1.4	1.2	0.75	
Frequency-type Telemeter	Wattmeter	5.0	0.05	0.025	122	1.3	0.6	1.2	0.50	
	Ammeter	5.0	0.59	0.366	1220	14.8	9.2	11.6	0.62	

For explanation of Reference Marks, see page 3.

Standard burdens and accuracy classes

ASA Accuracy Classes for Potential Transformers

Accuracy Class	Limits of Ratio Correction Factor and Transformer Correction Factor	Limits of Power Factor (Lagging) of Metered Power Load
1.2	1.012-0.988	0.6-1.0
0.6	1.006-0.994	0.6-1.0
0.3	1.003-0.997	0.6-1.0

ASA Standard Burdens for Potential Transformers

Burden	Volt-amperes	Burden Power Factor
W	12.5	0.10
X	25	0.70
Y	75	0.85
Z	200.	0.85
ZZ	400.	0.85

The limits given for each accuracy class apply from 10 percent above rated voltage to 10 percent below rated voltage, at rated frequency, and from no burden on the potential transformer to the specified burden.

ASA Accuracy Classes for Metering Current Transformers

Accuracy Class	LIMITS OF RATIO CORRECTION FACTOR AND TRANSFORMER CORRECTION FACTOR				Limits of Power Factor (Lagging) of Metered Power Load
	100% Rated Current		10% Rated Current		
	Min	Max	Min	Max	
1.2	0.988	1.012	0.976	1.024	0.6-1.0
0.6	0.994	1.006	0.988	1.012	0.6-1.0
0.3	0.997	1.003	0.994	1.006	0.6-1.0
0.5	*0.995	*1.005	0.995	1.005	0.6-1.0

* These values also apply to 150 percent rated current.

ASA Standard Burdens for Current Transformers at 60 Cycles

Designation of Burden	BURDEN CHARACTERISTICS		SECONDARY BURDEN AT 60 CYCLES AND 5 AMPERES SECONDARY CURRENT		
	Resistance Ohms	Inductance Millihenrys	Impedance Ohms	Volt-amperes	Power Factor
B-0.1	0.09	0.116	0.1	2.5	0.9
B-0.2	0.18	0.232	0.2	5.0	0.9
B-0.5	0.45	0.580	0.5	12.5	0.9
B-1	0.5	2.3	1.0	25.0	0.5
B-2	1.0	4.6	2.0	50.0	0.5
B-4	2.0	9.2	4.0	100.0	0.5
B-8	4.0	18.4	8.0	200.0	0.5

FOR MORE COMPLETE INFORMATION

about the many dry and liquid-filled types of General Electric instrument transformers, contact your nearest General Electric Apparatus Sales Office or Agent.

**METER BUSINESS DEPARTMENT
GENERAL ELECTRIC COMPANY
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