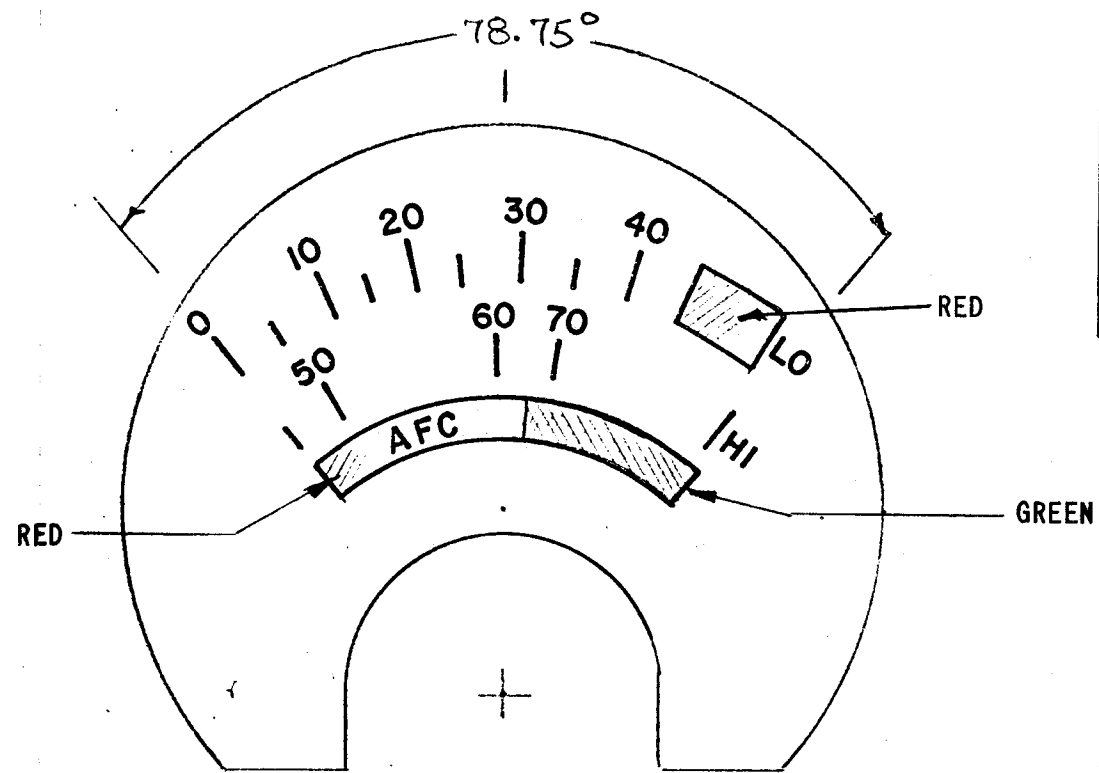


REVISIONS						
ZONE	LTR	DESCRIPTION	DATE	E.M.N.NO	DRAFT	CHKD APPD
	X	EXPERIMENTAL RELEASE			C.V.	
	Ø	ORIG. RELEASE FOR PROD	10/23/68	Ø	R.G.	JAD

REF: MFR SCALE CUT #10-0163-115A

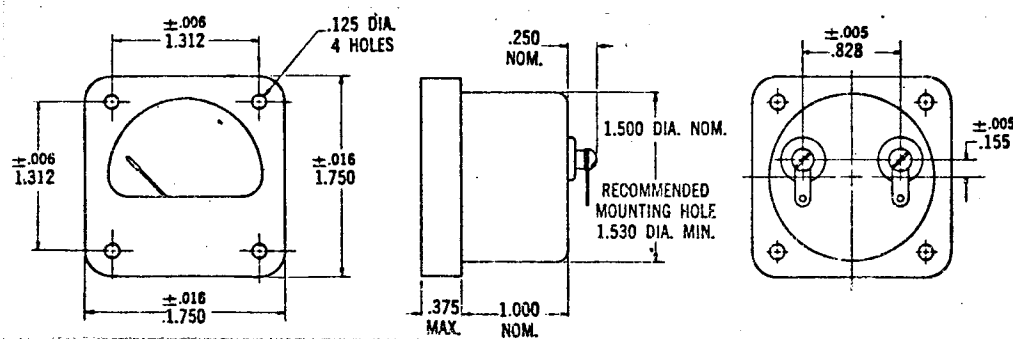


LO SCALE			HI SCALE		"HFC" SCALE		
10	16°	100uA	50	25	BELOW	BELOW	RED
20	32.3°	200uA	60	250	48.1°	300uA	
30	48.1°	300uA	70	325			
40	64.2°	400uA	HI	78.75	ABOVE	ABOVE	GREEN
RED	71.5°	450uA			48.1°	300uA	
BLK	78.75°	500uA					

SPECIFICATIONS

MODEL: 163 (1-1/2" METER)
 MOVEMENT: 500 uA
 DIAL FACE: BLACK PRINTING
 EXCEPT AS NOTED

MFR (TMC CODE NO.): S401-467
 MFR PART NUMBER: 9-0163-007



HFRR-4		
QTY / UNIT	MODEL USED ON	ASS'Y NO.
APPLICATION		
CODE		

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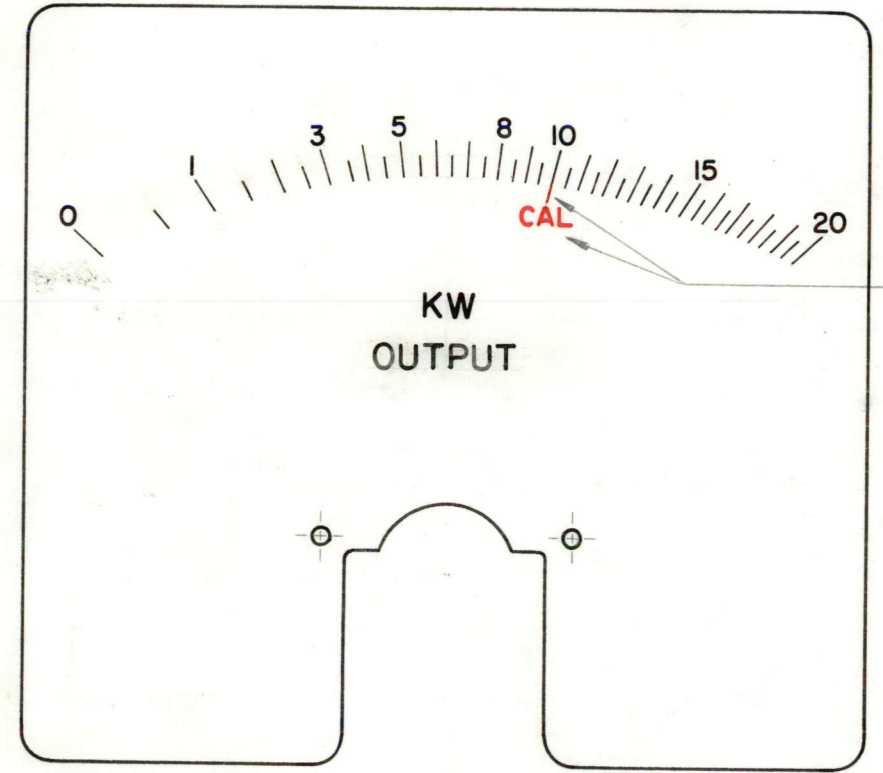
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES	
DECIMALS .X ± .05 .XX ± .01 .XXX ± .005	FRACTIONS 1/64 ANGLES 0° -30'
MATERIAL	
FINISH	

REQ'D	ITEM	PART NUMBER	DESCRIPTION	SYM.
POSE LIST OF MATERIAL				
THE TECHNICAL MATERIEL CORP. MAMARONECK, NEW YORK				
METER, RF/AFC				
SIZE	CODE IDENT. NO.	DWG NO.	ISSUE	
B	82679	MR 205	Ø	
SCALE			SHEET	OF

REVISIONS							
ZONE	LTR	DESCRIPTION	DATE	E.M.N.NO	DRAFT	CHKD	APPD
	X	EXP. RELEASE	5/8/69			K.H.	
	Ø	ORIG RELEASE FOR PROD	5/12/69			CV	
	A	NOTE CLARIFIED	1/9/70	19713	CV	K.D.	FB

MFR P/N: 52-3602-0000
MFR (TMC CODE NO.): S401-510

0-20 kW DIAL DATA FOR API METER
BIRD MODEL 4715 THRULINE WATTMETER
(METER IS 100 MICROAMPERES ±2% WITH 1050 OHMS RESISTANCE)



LOWER LETTERING
& CALIBRATION
POINT TO BE IN
RED

KILOWATTS	MICROAMPERES	KILOWATTS	MICROAMPERES
0	0	10.5	66.6
.5	8.8	11.0	68.5
1.0	15.4	11.5	70.4
1.5	20.6	12.0	72.3
2.0	24.9	12.5	74.2
2.5	28.5	13.0	76.1
3.0	31.8	13.5	78.0
3.5	34.8	14.0	79.9
4.0	37.5	14.5	81.8
4.5	40.0	15.0	83.6
5.0	42.5	15.5	85.4
5.5	45.0	16.0	87.2
6.0	47.4	16.5	88.9
6.5	49.7	17.0	90.6
7.0	52.0	17.5	92.2
7.5	54.2	18.0	93.8
8.0	56.4	18.5	95.4
8.5	58.5	19.0	97.0
9.0	60.6	19.5	98.5
9.5	62.6	20.0	100.0
10.0	64.6		

- NOTE 1. ALL LINE WORK AND LETTERING TO BE BLACK AS SHOWN, AND TO BE IN ACCORDANCE WITH API SPECS.
2. DRAWING SHOWN FOR REFERENCE ONLY
3. USED ON API METER MODEL 1502-DC, 0-100 MICROAMP PIVOT AND JEWEL MOVEMENT ±2%; 1050 OHMS RESISTANCE

1	GPT-10KYA	
QTY / UNIT	MODEL USED ON	ASS'Y NO.
APPLICATION		
	CODE	

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES	
DECIMALS .X ± .05 .XX ± .01 .XXX ± .005	FRACTIONS 1/64 ANGLES 0° -30'
MATERIAL	
FINISH	

REQ'D	ITEM	PART NUMBER	DESCRIPTION	SYM.
LIST OF MATERIAL				
THE TECHNICAL MATERIEL CORP. MAMARONECK, NEW YORK				
METER, KW OUTPUT				
SIZE	CODE IDENT. NO.	DWG NO.	ISSUE	
B	82679	MR 213	A	
SCALE	SHEET		OF	
1:1				

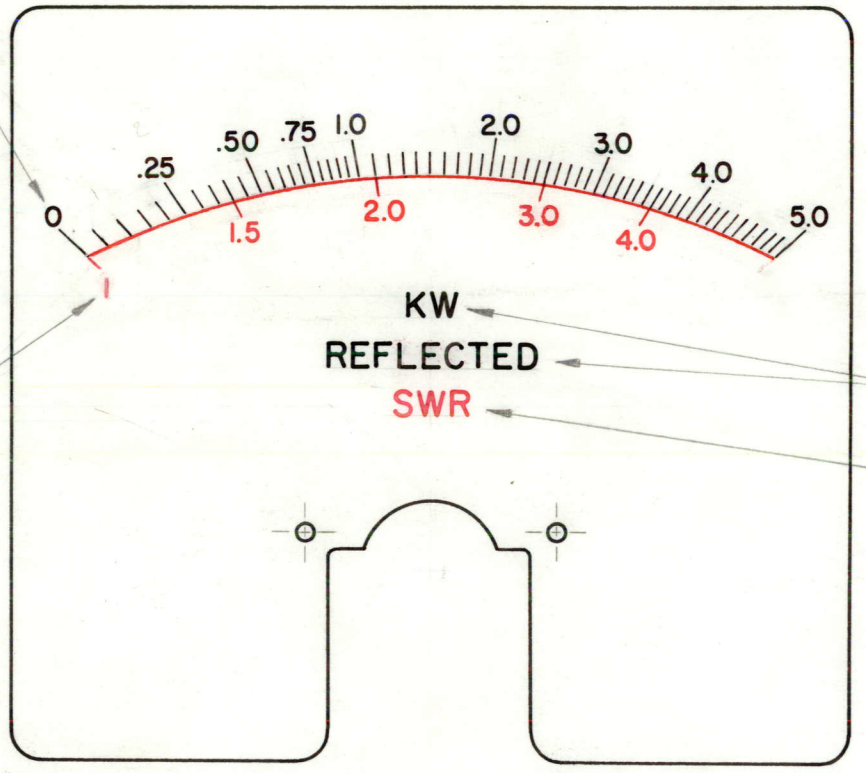
REVISIONS						
ZONE	LTR	DESCRIPTION	DATE	E.M.N.NO	DRAFT	CHKD APPD
	X	EXP. RELEASE	5/18/69		KH	
	Ø	ORIG RELEASE FOR PROD	5/12/69		CV	
	A	NOTE CLARIFIED,	1/9/70	19713	CV	KB FB

0-5 kW DIAL DATA FOR API METER
 BIRD MODEL 4715 THRULINE WATTMETER
 (METER IS 100 MICROAMPERES ±2% WITH 1050 OHMS RESISTANCE)

KILOWATTS	MICROAMPS	KILOWATTS	MICROAMPS
0	0	2.0	58.1
.05	3.0	2.1	59.7
.1	6.0	2.2	61.3
.15	8.6	2.3	62.9
.2	11.2	2.4	64.4
.25	13.6	2.5	65.9
.3	15.9	2.6	67.4
.35	18.1	2.7	68.9
.4	20.1	2.8	70.4
.45	22.1	2.9	71.9
.5	24.0	3.0	73.4
.55	25.7	3.1	74.8
.6	27.3	3.2	76.2
.65	28.8	3.3	77.6
.7	30.3	3.4	79.0
.75	31.7	3.5	80.4
.8	33.1	3.6	81.8
.85	34.5	3.7	83.2
.9	35.8	3.8	84.6
.95	37.1	3.9	86.0
1.0	38.4	4.0	87.3
1.1	40.8	4.1	88.6
1.2	43.1	4.2	89.9
1.3	45.2	4.3	91.2
1.4	47.2	4.4	92.5
1.5	49.2	4.5	93.8
1.6	51.1	4.6	95.1
1.7	52.9	4.7	96.4
1.8	54.7	4.8	97.6
1.9	56.4	4.9	98.8
2.0	58.1	5.0	100.0

ALL UPPER NUMERALS, MAJOR AND MINOR CALIBRATION POINTS TO BE IN BLACK

ALL LOWER NUMERALS, MAJOR CALIBRATION POINTS AND BASE LINE TO BE IN RED



- NOTE 1. ALL LETTERING AND LINE WORK TO BE IN ACCORDANCE WITH API SPECS.
 2. DRAWING SHOWN, FOR REFERENCE ONLY
 3. USED ON API METER STYLIS MODEL 1502-C-DC, 0-100 MICROAMP PIVOT AND JEWEL MOVEMENT ±2%, 1050 OHMS RESISTANCE

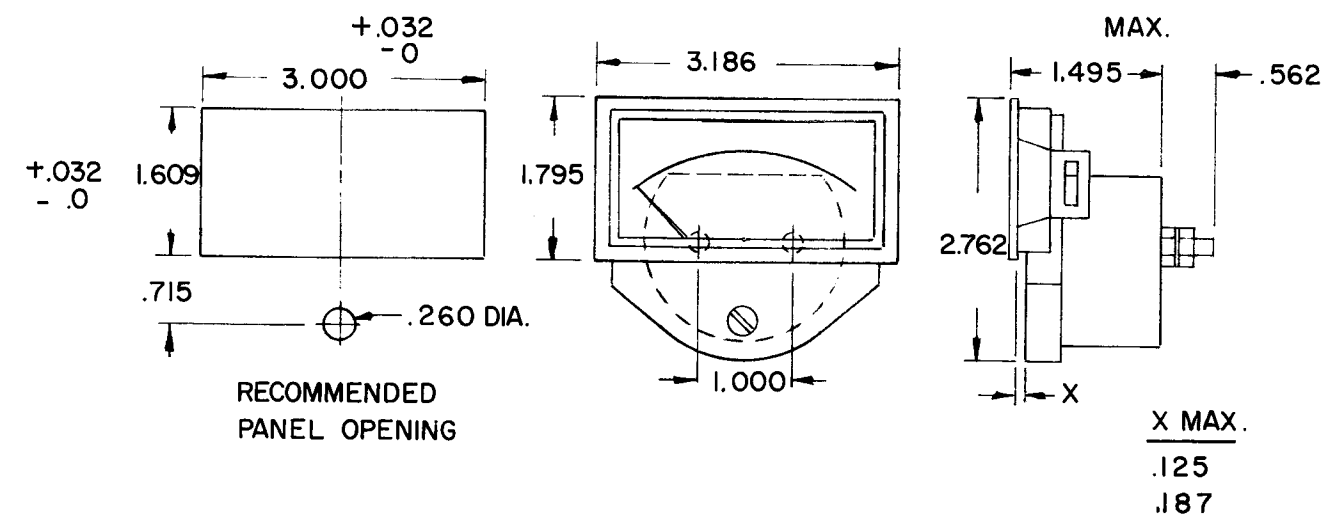
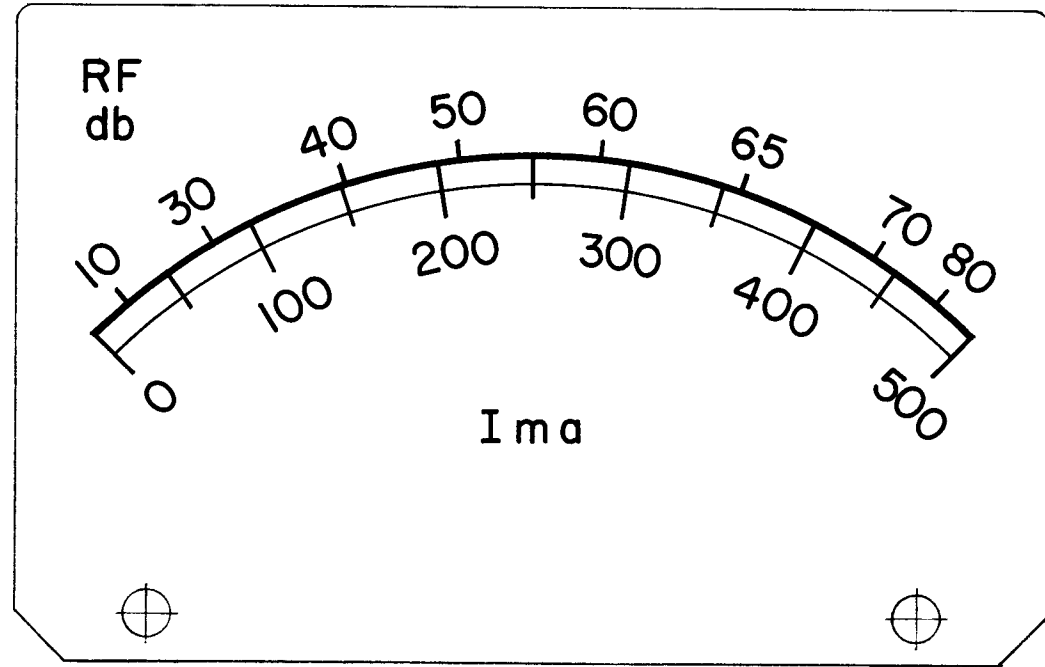
MFR P/N: 52-3732-2501
 MFR (TMC CODE NO.): S401-510

GPT-10KYA		
QTY / UNIT	MODEL USED ON	ASS'Y NO.
APPLICATION		
CODE		
NOTICE TO PERSONS RECEIVING THIS DRAWING THE TECHNICAL MATERIEL CORPORATION claims proprietary right in the material disclosed hereon. This drawing is issued in confidence for engineering information only and may not be reproduced or used to manufacture anything shown hereon without permission from THE TECHNICAL MATERIEL CORPORATION to the user. This drawing is loaned for mutual assistance and is subject to recall at any time.		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES	
DECIMALS .X ± .05 .XX ± .01 .XXX ± .005	FRACTIONS 1/64 ANGLES 0° -30'
MATERIAL	
FINISH	

REQ'D	ITEM	PART NUMBER	DESCRIPTION	SYM.
LIST OF MATERIAL				
THE TECHNICAL MATERIEL CORP. MAMARONECK, NEW YORK				
METER, REFLECTED POWER				
SIZE	CODE IDENT. NO.	DWG NO.	ISSUE	
B	82679	MR 214	A	
SCALE	SHEET		OF	

REVISIONS							
E.M.N. NO.	DRAFT	CHKD	ZONE	LTR	DESCRIPTION	DATE	APPROVED
	<i>EP</i>			\emptyset	ORIGINAL RELEASE FOR PRODUCTION	9/27/72	



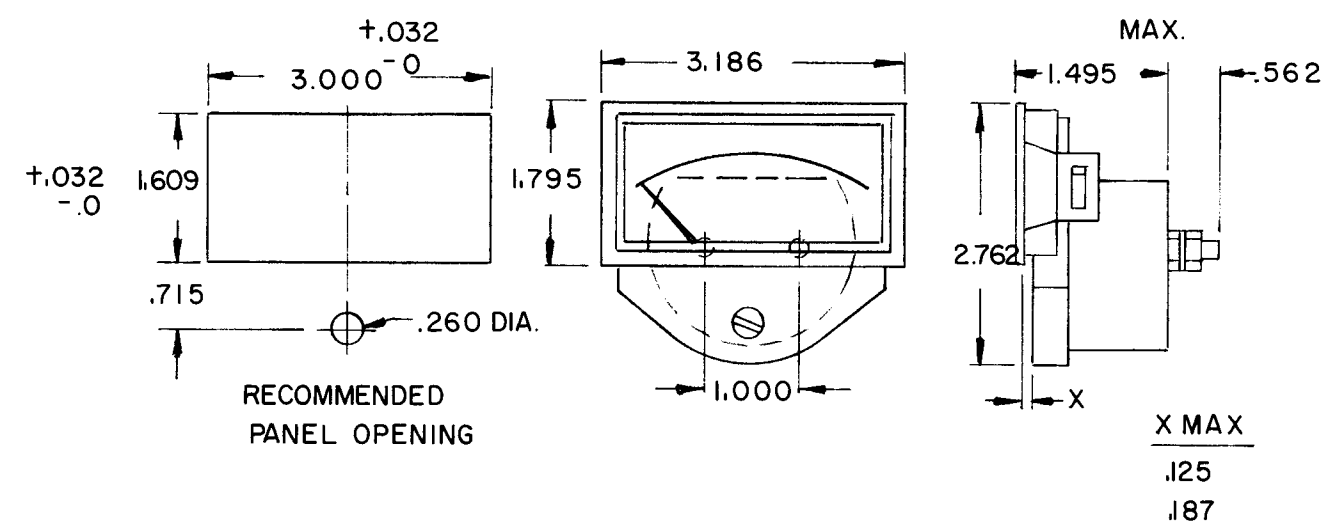
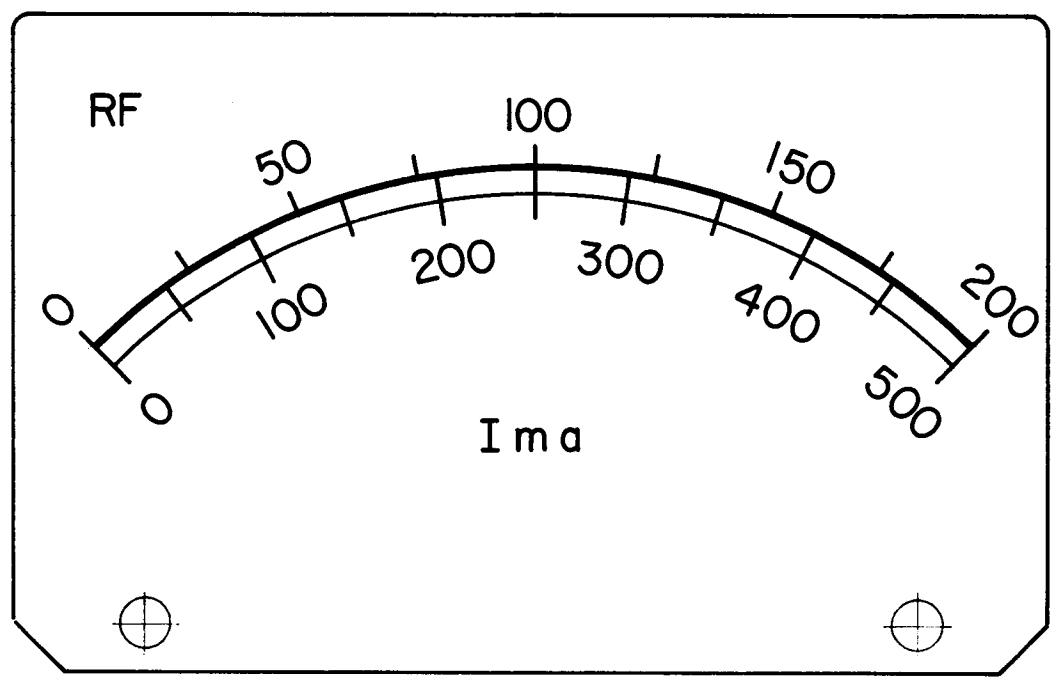
SPECIFICATIONS
 RANGE - 1 MA RESISTANCE - 100

<i>TM 125</i>		
QTY / UNIT	MODEL USED ON	ASS'Y NO.
APPLICATION		
CODE		

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES		FINAD APPROVAL <i>[Signature]</i> DATE MECH. DES. <i>ack.</i> DATE ELECT. DES. DATE CHECKED DATE DRAWN <i>GE</i> DATE <i>9/28/72</i>		LIST OF MATERIAL THE TECHNICAL MATERIEL CORP. MAMARONECK, NEW YORK <i>METER, MILLIAMP</i>	
DECIMALS	FRACTIONS	SIZE	CODE IDENT. NO.	DWG NO.	ISSUE
.X ± .05	1/64	B	82679	MR 231	\emptyset
.XX ± .01	TOLS. ANGLES	SCALE 2:1		SHEET 1 OF 1	
.XXX ± .005	0° - 30'				

REVISIONS							
E.M.N. NO.	DRAFT	CHKD	ZONE	LTR	DESCRIPTION	DATE	APPROVED
	5j			Ø	ORIGINAL RELEASE FOR PRODUCTION	10-20-72	



+

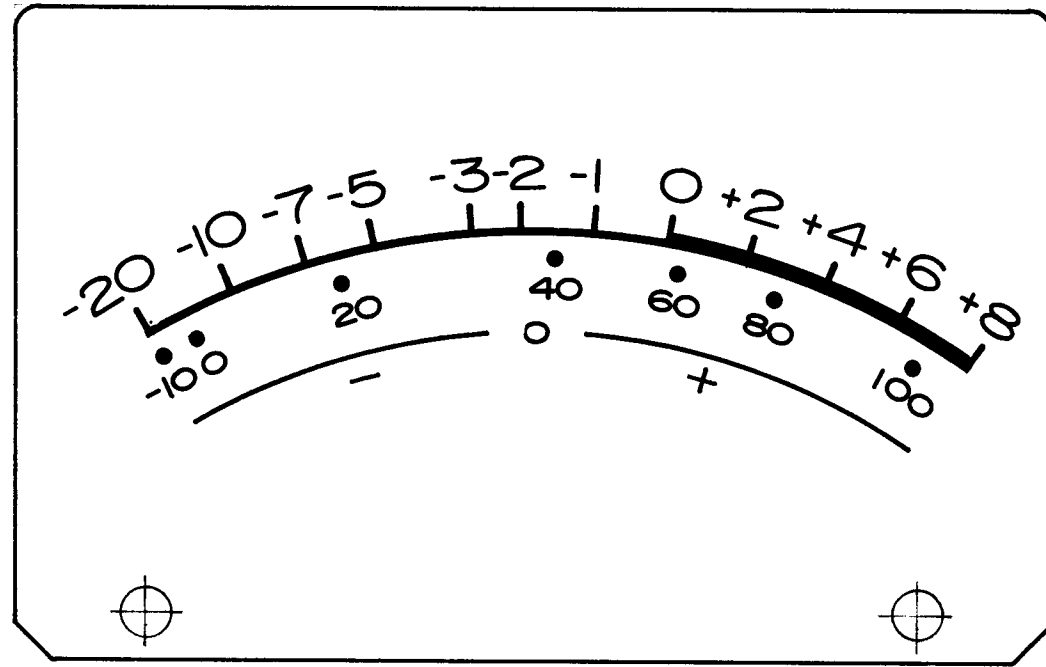
SCALE 2X

SPECIFICATIONS
 RANGE-1MA RESISTANCE-100 Ω

1	TMA350	
QTY / UNIT	MODEL USED ON	ASS'Y NO.
APPLICATION		
	CODE	
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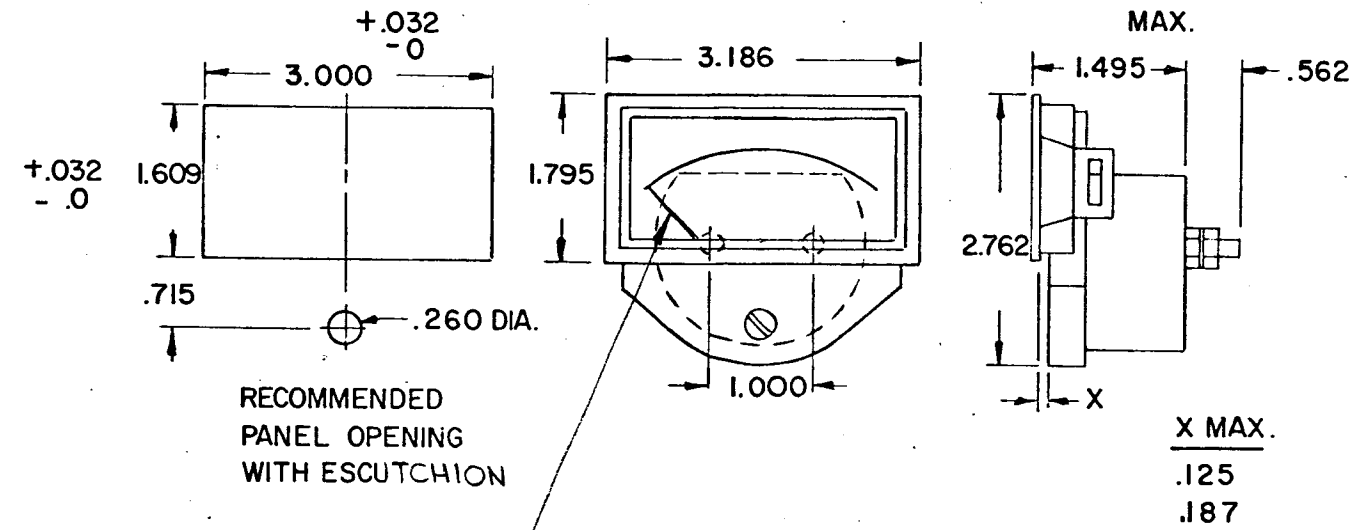
5401-		REQ'D	ITEM	PART NUMBER	DESCRIPTION	SYM.
		F.B		LIST OF MATERIAL		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES		FINAL APPROVAL	DATE	THE TECHNICAL MATERIEL CORP.		
DECIMALS .X ± .05 FRACTIONS 1/64		MECH. DES.	DATE	MAMARONECK, NEW YORK		
.XX ± .01 TOLS. ANGLES		ELECT. DES.	DATE	METER, MILLIAMP		
.XXX ± .005 0° -30'		CHECKED	DATE			
MATERIAL		DRAWN	DATE	SIZE	CODE IDENT. NO.	DWG NO.
FINISH			10/19/72	B	82679	MR 232
				SCALE		SHEET OF

REVISIONS							
E.M.N. NO.	DRAFT	CHKD	ZONE	LTR	DESCRIPTION	DATE	APPROVED
				X	POINTER NOTE ADDED		
	G.E.			Ø	ORIGINAL RELEASE FOR PRODUCTION	1-25-77	*



SCALE 2:1 REDUCTION 50%

NOTE: ALL LETTERING, DOTS AND LINWORK TO BE WHITE ON A FLAT BLACK BACKGROUND.



RECOMMENDED PANEL OPENING WITH ESCUTCHION

NOTE POINTER MUST BE WHITE WHEN BLACK FACE IS USED

SPECIFICATIONS
RANGE 1 MA
RESISTANCE 100

S401-AMMOL (BP2)

1	GPR110	BMA514
QTY / UNIT	MODEL USED ON	ASS'Y NO.
APPLICATION		
	CODE	

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES

DECIMALS
.X ± .05
.XX ± .01
.XXX ± .005

FRACTIONS
1/64
ANGLES
0°-30'

MATERIAL

FINISH

REQ'D	ITEM	PART NUMBER	DESCRIPTION	SYM.
F. BUIDETTI LIST OF MATERIAL				
FINAL APPROVAL			THE TECHNICAL MATERIEL CORP. MAMARONECK, NEW YORK	
MECH. DES.			METER MILLIAMP	
ELECT. DES.			MR 236	
CHECKED			82679	
DRAWN			MR 236	
SIZE			CODE IDENT. NO.	DWG NO.
B			82679	MR 236
SCALE			SHEET OF	

5

4

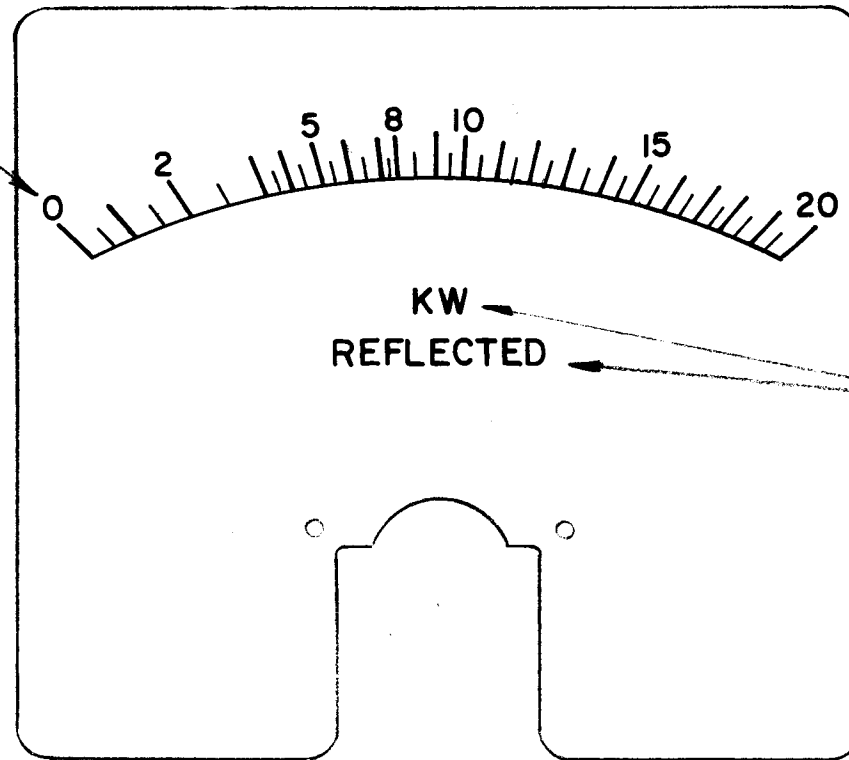
3

2

1

REVISIONS							
E.M.N. NO.	DRAFT	CHKD	ZONE	LTR	DESCRIPTION	DATE	APPROVED
	MAC			Ø	ORIGINAL RELEASE FOR PRODUCTION	9-6-79	[Signature]

ALL NUMERALS,
CALIBRATION POINTS
AND BASLINE TO BE
IN BLACK



KW
REFLECTED

BLACK

NOTE:

- 1- ALL LINE WORK AND LETTERING TO BE BLACK AS SHOWN AND TO BE IN ACCORDANCE WITH API SPECS.
- 2- DRAWING SHOWN FOR REF. ONLY.
- 3- USED ON API METER STYLIS MODEL 1502-C-DC, 0-100 MICROAMP PIVOT AND JEWEL MOVEMENT $\pm 2\%$ 1050 OHMS RESISTANCE

1	AX 789, MFT	
QTY / UNIT	MODEL USED ON	ASS'Y NO.
APPLICATION		
	CODE	

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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
AND INCLUDE CHEMICALLY APPLIED
OR PLATED FINISHES

DECIMALS	FRACTIONS
.X \pm .05	1/64
.XX \pm .01	TOLS. ANGLES
.XXX \pm .005	0° - 30'

MATERIAL

FINISH

REQ'D	ITEM	PART NUMBER	DESCRIPTION	SYM.
LIST OF MATERIAL				
FINAL APPROVAL [Signature] DATE				
MECH. DES. DATE				
ELECT. DES. DATE				
CHECKED DATE				
DRAWN G.D.L. DATE 1-5-79				
SIZE	CODE IDENT. NO.	DWG NO.	ISSUE	
B	82679	MR 238	Ø	
SCALE 1:1	SHEET OF			

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

METER, REFL. PWR

SCALE 1:1

SHEET OF

5

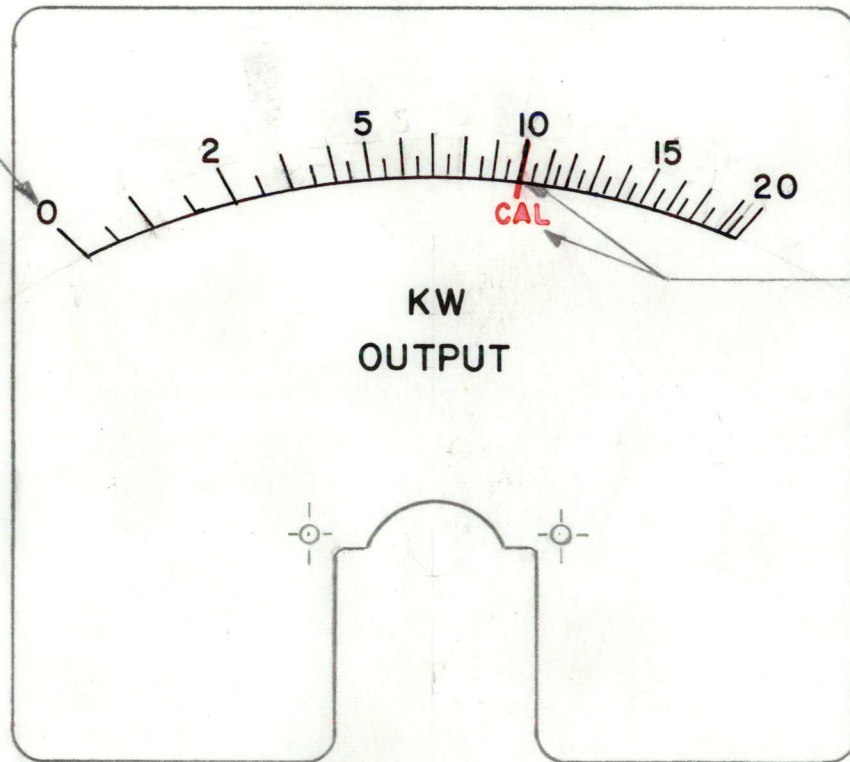
4

3

2

1

REVISIONS							
E.M.N. NO.	DRAFT	CHKD	ZONE	LTR	DESCRIPTION	DATE	APPROVED
	MAC			Ø	ORIGINAL RELEASE FOR PRODUCTION	9-6-79	ØB



ALL NUMERALS
CALIBRATION
POINTS, AND
BASE LINE ARE
IN BLACK

LOWER LETTERING
& CALIBRATION
POINT TO BE IN
RED

- NOTE:
1. ALL LINE WORK AND LETTERING TO BE BLACK AS SHOWN AND TO BE IN ACCORDANCE WITH API SPECS.
 2. DRAWING SHOWN FOR REF. ONLY.
 3. USED ON API METER STYLIS MODEL 1502-C-DC, 0-100 MICROAMP PIVOT AND JEWEL MOVEMENT $\pm 2\%$ OHMS RESISTANCE
 4. USE Blank meter face from MR213 and MARK as shown.

1	AX 789/MFT	MLP-20K
QTY / UNIT	MODEL USED ON	ASS'Y NO.
APPLICATION		
	CODE	

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UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES	DECIMALS .X \pm .05 .XX \pm .01 .XXX \pm .005	FRACTIONS 1/64 ANGLES 0° -30'	TOLS.
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MATERIAL	FINISH
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REQ'D	ITEM	PART NUMBER	DESCRIPTION	SYM.
LIST OF MATERIAL				
THE TECHNICAL MATERIEL CORP. MAMARONECK, NEW YORK				
METER, KW OUTPUT				
FINAL APPROVAL	ØB	DATE		
MECH. DES.		DATE		
ELECT. DES.		DATE		
CHECKED		DATE		
DRAWN	G.D.L.	DATE	1-5-79	
SIZE	CODE IDENT. NO.	DWG NO.	ISSUE	
B	82679	MR239	Ø	
SCALE	1:1	SHEET	OF	