Programmable Ratio AC Watt & Var Meters

Features

Programmable for PT & CT ratio
True power system design compliants:
ANSI-IEEE, IEC & VED standards
High over capability-assruing reliability
Effective display range of 5 to 4.5 digits
High accuracy of 0.5% & o.2%
Distorted waveform signal measurement
Display with super rate LED

Applied rules & standards

Measuring & conversion	IEC 688
Dielectric strength	IEC 688
Impulse/Surge test	ANSIc37.90/1989
	IEC 255-3 (1989)
Adaptability-power system	IEC 0110
Measuring reliability	VDE 3540

Description

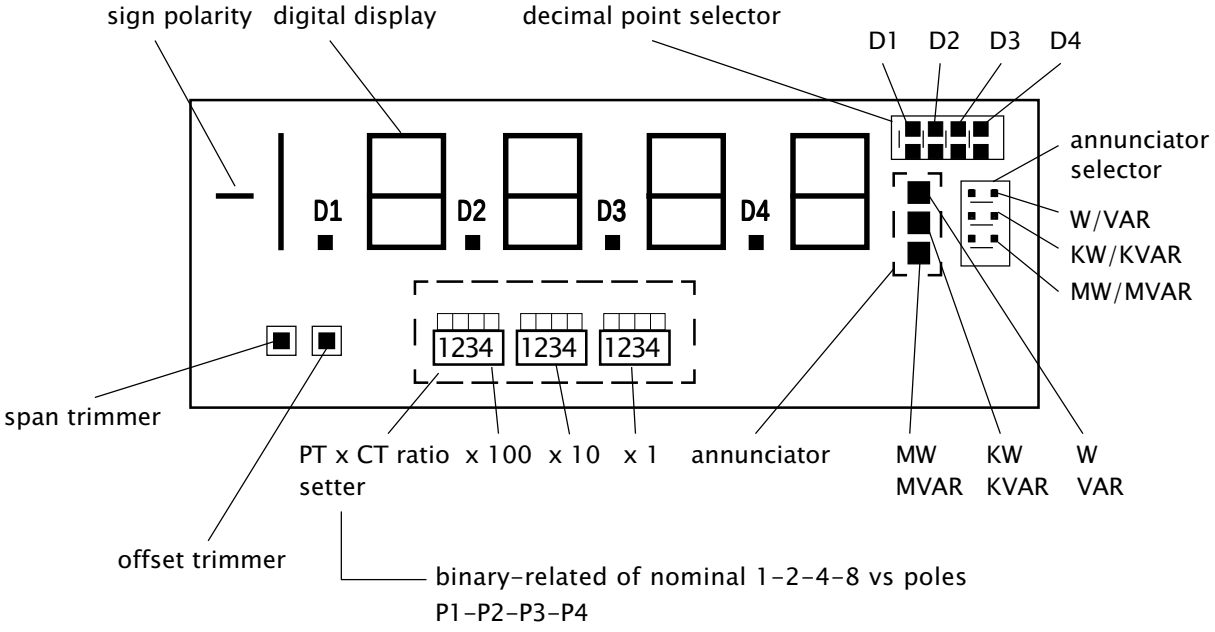
Model MWF & MKF series, programmable watt & var meters, are specially designed for solving many variables of CT & PT Ratio problems & having very convenient performance in measuring active & reactive power. The unit uses Time division multiplier principle of a very acurate converting untion & also of a real power detection, able to measure distorted input signeal.

The unit basically is a 4-1/2 digits design, under an efftive limitation for different phases & wires system the maximum defined reading ranges as following;

(1) 16000 counts-MWFZ/MWFZ2/MKFZ/MKFZ2/MWFQ/MWFQ2/MKFQ/MKFQ2 3 phase 4 wire system.
(2) 11000 counts-MWFY/MWFY2/MKFY/MKFY2 3 phase 4 wire system.
(3) 5500 counts-MWFX/MWFX2/MKFX/MKFX2 1 phase 2 wires system

The ratio setting for PT x CT ratio of a digital type, first 3 effective digits selection, fits over 99% application in all systems. With proper unit annunciator & decimal selection, the unit can get a required primary reading without any recalibration process.

The designed specification follows ANSI-IEEE & IEC, VDE standards providing full protection for surge intrusion & unusual input over, assuring reliable operating.



Specifications

Accuracy (23± 3°C)	0.5% fs or 20 cts. which ever great : MWFX, MWFY, MWFZ, MWFQ, MKFX, MKFY, MKFQ
	0.25% fs or 10 cts. which ever great : MWFX2, MWFY2, MWFZ2, MWFQ2, MKFY2, MKFZ2, MKFQ2
Stability	Temperature coefficient < 80 ppm per degree c,Long term draft<0.2% per year
Digits & counts	4-4.5 digits: maximum counts 5500-1Ø2w,11000-3Ø3w,16000-3Ø3W,system
Display	0.8" super rate LED
Response time	Sample rate 1 pf per sec typically,conversional time less 1 second
input over	current input: 3 x rating-continuous, 10 x rating-30 sec., 25 x rating -3 sec.
	Voltage input: maximum continuous 750 v or 1.5 rating which ever great
Frequency	50 or 60 ± 5Hz for Watt version
	50 or 60 Hz for var version(50/60 ± 0.5Hz -- less 0.002 change per 0.1 Hz change)
Creat factor	normally ≦ 3, MWF.. series only
Waveform	3rd 30% for watt version only
Dielectric strength	2.5 kvrms/ 1 minute, all terminals to reference ground (case)
	2 kvrms/ 1 minute, input terminals to power terminals
Surge test	ANSI c37.90/1989, IEC 255-3 (1989)
Impulse voltage	Impulse voltage 1.2x50 us 4 KV
	Oscillating wave 0.5 us-100 KHz 3KV or 1 MHz- 0.25 ms 2.5 KV
Operating condition	Operating temperature range -10 to 55°c, humidity 0-99% RH non-condensed
storage condition	-25 to 70°C, humidity 20-99% RH non-condensed
Ausiliary power	AC ± 15% < 6 VA, DC ± 20% < 6 watts

PT x PC ration setting.....N

Nx = PT ration x CT ration

N = three (3) first effective digits of Nx

Example:	Nx(PT x CT)	N(ration setting)
	20	200
	36000	360

S1	S2	S3
1234	1234	1234
1248 x100	1248 x10	1248 x1

status on = enable

Reference selelction table VS input ranges

rated input range	annunciator selection	decimal point selection
1-9	Kw/Kvar	D2
10-99	Kw/Kvar	D3
100-999	Kw/Kvar	D4
1000-9999	Kw/Kvar	x
1-9	Mw/Mvar	D2
10-99	Mw/Mvar	D3
100-999	Mw/Mvar	D4
x: no decimal point selection		

Order from of Watt meters

System	Model	Class	Model	Class	Model	Class	Model	Class	
1 phase 2 wire	MWFX	0.5%	MWFX2	0.2%	MKFX	0.5%	MKFX2	0.2%	*.PT of V-V
3 phase 3 wire	MWFY	0.5%	MWFY2	0.2%	MKFY	0.5%	MKFY2	0.2%	connection
3 phase 4 wire	MWFZ	0.5%	MWFZ2	0.2%	MKFZ	0.5%	MKFZ2	0.2%	
3 phase 4 wire*	MWFQ	0.5%	MWFQ2	0.2%	MKFQ	0.5%	MKFQ2	0.2%	

Calibration

Model

Frame (mm)

144x72	D

Ausiliary power

AC110V & 220V	S
DC option 12V	1
DC option 24V	2
DC option 48V	3
DC option 125V	4

Input parameters

Voltage (PT ratio & direct ranges)		Current			Frequency	
P/S: line voltage/ line voltage MWFX / MWFY / MWFX2 / MWFY2 MKFX / MKFY / MKFX2 / MKFY2		CT ratio P/S	P / 5A	P / 1A		
3.30KV/110=3.45KV/115=3.60KV/120	AL	20A/S	A5	A1	50HZ	A
6.60KV/110=6.90KV/115=7.20KV/120	BL	25A/S	B5	B1	60HZ	B
11.0KV/110=11.5KV/115=12.0KV/120	CL	30A/S	C5	C1		
13.2KV/110=13.8KV/115=14.4KV/120	DL	40A/S	D5	D1		
22.0KV/110=23.0KV/115=24.0KV/120	EL	50A/S	E5	E1		
33.0KV/110=34.5KV/115=36.0KV/120	FL	60A/S	F5	F1		
66.0KV/110=69.0KV/115=72.0KV/120	GL	75A/S	G5	G1		
154KV/110=161KV/115=168KV/120	HL	80A/S	H5	H1		
330KV/110=345KV/115=360KV/120	I L	100A/S	I 5	I 1		
P/S: phase voltage/ phase voltage		150A/S	J 5	J 1		
MWFZ / MWFQ / MWFZ2 / MWFQ2		200A/S	K5	K1		
MKFZ / MKFQ / MKFZ2 / MKFQ2		300A/S	K5	L1		
3.30KV/110=3.45KV/115=3.60KV/120	AP	400A/S	L5	M1		
6.60KV/110=6.90KV/115=7.20KV/120	BP	500A/S	M5	N1		
11.0KV/110=11.5KV/115=12.0KV/120	CP	600A/S	O5	O1		
13.2KV/110=13.8KV/115=14.4KV/120	DP	750A/S	P5	P1		
22.0KV/110=23.0KV/115=24.0KV/120	EP	800A/S	Q5	Q1		
33.0KV/110=34.5KV/115=36.0KV/120	FP	1000A/S	R5	R1		
66.0KV/110=69.0KV/115=72.0KV/120	GP	1200A/S	S5	S1		
154KV/110=161KV/115=168KV/120	HP	1500A/S	T5	T1		
D=1/$\sqrt{3}$		1600A/S	U5	U1		
3.30KV/110D=3.45KV/115D=3.60KV/120D	AD	2000A/S	V5	V1		
6.60KV/110D=6.90KV/115D=7.20Kv/120D	BD	2400A/S	W5	W1		
11.0KV/110D=13.8KV/115D=14.4KV/120D	CD	2500A/S	X5	X1		
13.2KV/110D=13.8KV/115D=14.4KV/120D	DD	3000A/S	Y5	Y1		
22.0KV/110D=23.0KV/115D=24.0KV/120D	ED	3600A/S	Z5	Z1		
33.0KV/110D=34.5KV/115D=36.0KV/120D	FD					
66.0KV/110D=69.0KV/115D=72.0KV/120D	GD					
154KV/110D=161KV/115D=168KV/120D	HD					
Direct input 50-500V	V3					
Other specified ratio ranges	VY		AY			

Terminal connection..... Model MWF / MKF

Terminals 18 (+), 19 (–) for DC power option