

INSTRUCTION MANUAL

Digital Panel Meter
Single Function Meter
VAF + PF
4110 LED Series



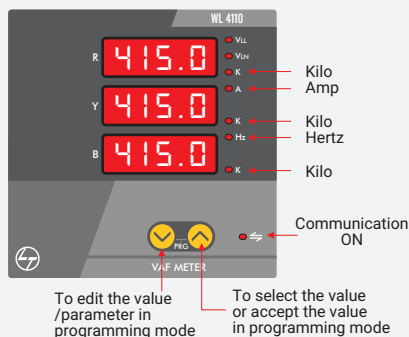
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During normal operation of this instrument, hazardous voltages are present at the rear terminals, which can cause injury or death. Installation, disconnection or removal of the meter should be carried out only by qualified, trained personnel, after de-energizing connected circuits. Improper installation, including improper grounding will void warranty. Product warranty void if seal is broken.


1.Features

- Site selectable for 3 phase 4 wire, 3 phase 3 wire, 1 phase
- Accuracy class 1 as per IEC 62053-21, class 0.5 as per IEC 62053-22
- True RMS measurement
- Password protection site selectable
- Auto and Manual scrolling
- Field programmable CT, PT ratio
- Site selectable 1A/5A
- Phase wise and average display of voltage and current as per applicable meter
- Inbuilt selector switch for 3 phase models
- Wide operating range of 80 to 300 V AC/DC auxiliary supply
- Suitable for 50/60 Hz

2. LED Indication


In a single screen following parameters can be seen in a page. This enables for quick decision making at a single glance. With Auto scrolling disabled mode, it can be frozen at any page.

Parameter							
Row 1	VLL(avg)	VLn(avg)	VLL(avg)	Vry	Vr	Ar	PF - R
Row 2	A(avg)	A(avg)	A(avg)	Vyb	Vy	Ay	PF - Y
Row 3	F	F	PF (total)	Vbr	Vb	Ab	PF - B

3. Technical Specification

Type of measurement	Type	3 Ph 4 W, 3 Ph 3 W, 1 Ph
Measurement accuracy		True RMS, 64 samples per cycle 1 sec update time, Class 1 as per IEC 62053-21 Class 0.5 as per IEC 62053-22
Display type and resolution	LED	4 digit
Measuring circuit	Input voltage	50 - 550 VLL
		PT Primary and Secondary user programmable for LT and HT applications
	Input current	Burden: 0.2VA max per phase
		-/5A and -/1A
Auxiliary circuit	Frequency	40 - 70 Hz
	Aux voltage	80 - 300VAC
	Aux burden	<5VA
	Freq range	40 - 70 Hz
Electrical requirements	Test of power consumption	as per IEC 62053-21
	Voltage dips & interrupts	as per IEC 62053-21
	Short time over current protection	10A max continuous, 20 times of In for 3 sec

Electro-magnetic compatibility (EMC)	Fast transients burst test	±4 kV as per IEC 61000-4-4
	Immunity to electrostatic discharge	±8 kV air discharge, ±6 kV contact discharge as per IEC 61000-4-2
	Radiated, radio-frequency, electromagnetic field immunity test	10 V/m as per 61000-4-3
	Immunity to electromagnetic HF fields through conducted lines	10 V/m as per IEC 61000-4-6
	Surge immunity test	±6 kV as per IEC 61000-4-5
	Rated power frequency magnetic fields	1 A/m as per IEC 61000-4-8
Insulation properties	Emission	Class B as per CISPR 22
	Impulse voltage test	±6 kV as per IEC 62052-11
	AC voltage test	4 kV double insulation as per IEC 62053-21
Operating conditions	Insulation resistance	500 V DC as per IS 13779
	Operating temperature	-10° C to +55° C
	Storage temperature	-25° C to +70° C
	Humidity	5% to 95% relative humidity non-condensing
Mechanical conditions	Recommended wire	2.5 sq mm
	Shock	As per standard IEC 60068-2
	Vibration	10 to 55 Hz, 0.15 mm amplitude
Safety	Casing	Plastic mould protected to IP51 from front side
	Measurement category	CAT III
	Pollution degree	2
Weight & dimensions	Protection	IP20 at terminals, IP51 on front
	Product weight	300 gms
	Bezel dimension (W X H X D)	96 x 96 x 58 mm
Certifications	Panel cutout	92 x 92 mm ^{+0.8} _{0.0}
		CE, RoHS



5. Programming Mode

5.1 Programming keys

- To select Edit Mode and save parameter
- DOWN to decrement value or parameter

5.2 General Programming Guide

- Press UP + DOWN to enter Setup Mode
 - Enter Password (default value 0000)
 - Blink indicates Edit Mode is ON
 - Press DOWN to decrement value 0/9/8/7/6/5/4/3/2/1
 - Press UP to move to the next digit till 4th digit
- If Password is correct, meter displays [L_r] & editing is possible
For Clear Mode move to step 5.2.1
For Programming Mode move to step 5.2.2

5.2.1. Clear Mode

- Press UP to select as [L_r] (to clear Amps High).
- Press UP. Display prompts to n (NO).
- Press Down to change to Y (YES).
- Press UP to clear.

If password is incorrect, meter will display next parameter but cannot be edited

5.2.2. Programming Mode

- Press DOWN to enter Programming Mode
- Blink indicates Edit Mode is ON
- Press DOWN to decrement values or to select from available options
- Press UP to accept the value of the parameter
- Press DOWN to edit next parameters till end after the configuration of last parameter display screen will prompt "SAVE", Display reads "Y" (YES)
- Press DOWN to change to "(NO)"
- Press UP to save.

5.3. Display

415.0 Row 1 : Value

P.P.r1 Row 2 : Parameter

Programming Parameter	Default	Option/Range
Config [C_onF] Defines the power system configuration.	3P 4W	3P 4W 3P 3W 1 Phase
PT Primary [P.P.r1]	415	100V-999kv To set 33kV Set first four digits (3300) as explained above press UP/DOWN key to place decimal point at appropriate location. LED K will indicate Kilo.

PT Secondary [P.S.E.L]	415.0	50V to 550V
CT Primary [C.P.r1]	5.000	0.5A - 99kA
CT Secondary [C.S.E.F]	5.000	0.5A - 6A
*Digital Output 1 [d1.P.r]	disable	disable, Wh, Under/Over - PF, V, A, F
* Threshold value 1 [d1.th]	1000	0000-999.9 M
* Digital Output 2 [d2.P.r]	disable	disable, Wh, Under/Over - PF V, A, F
* Threshold value 2 [d2.th]	1000	0000-999.9 M
* Digital Output Delay [d.d.E.L]	3.000	1-180 sec
Baud Rate [B.R.U.D]	9600	2400, 4800, 9600 19.2k
Parity [P.r.L.Y]	Even	Even/Odd/none
Slave Id [S.L.I.d]	1.000	1 to 247
PASSWORD [P.w.d]	0000	0000 to 9999
No of Poles(For rpm) [P.O.L.S]	4.000	2 to 28

*Options for select product variants

5.4. Enabling & Disabling Auto Scrolling:

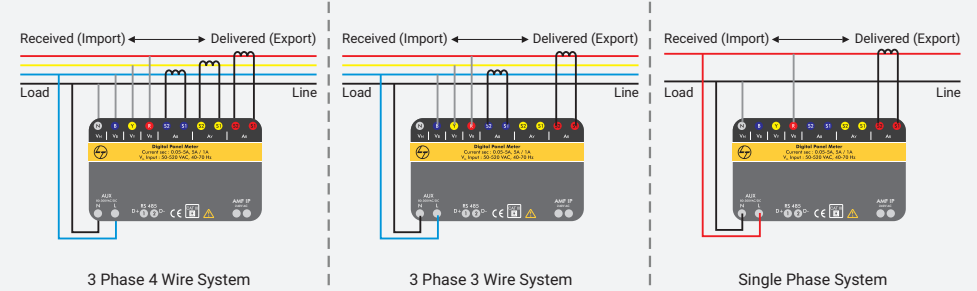
Press DOWN for 6 sec
Display Shows: EnBL.Auto
Again press DOWN for 6 sec
Display Shows: dSbL.Auto

6. Memory Map

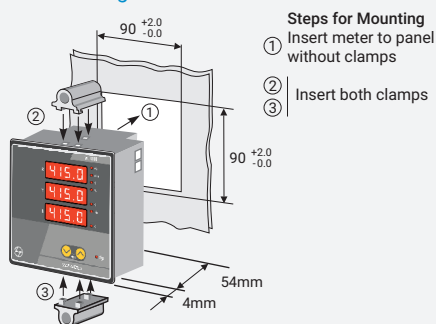
Address	Parameter	Data type
40117	PF Avg. (inst)	float
40119	PF R phase	float
40121	PF Y phase	float
40123	PF B phase	float
40133	VLL average	float
40135	VRV Phase	float
40137	VYB Phase	float
40139	VBR phase	float
40141	VLN average	float
40143	V R phase	float

Address	Parameter	Data type
40145	V Y phase	float
40147	V B phase	float
40149	Current total	float
40151	Current R phase	float
40153	Current Y phase	float
40155	Current B phase	float
40157	Frequency	float
40183	High current	float
40215	RPM	float

7. Wiring Diagram



8. Mounting Dimensions



9. Troubleshooting

- Meter display does not turn ON.
 - Check that there is power supply applied on Aux supply terminals.
 - Check fuse connection (Use fuse connection of specified ratings).
- Data displayed / reading incorrect.
 - Check that CT /PT ratios are properly set.
 - Check if proper configuration mode 3P4W, 3P3W, 1Phase is correctly set.
- Pt reading are incorrect / Active Power reading is negative.
 - CT connections may be reversed, check and correct CT connection.
 - Check voltage and current phases are connected in proper sequence.
- RS485 communication does not work.
 - Check baud rate & parity maintained in the connected computers is same as Meter.
 - Memory mapping in software is correct.
 - Check device ID of meter is Unique & properly maintained.
 - Check converter is working properly.

In case of complaint please contact
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