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PG/PDU/V3/0915

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PROGRAMMING GUIDE
PDU

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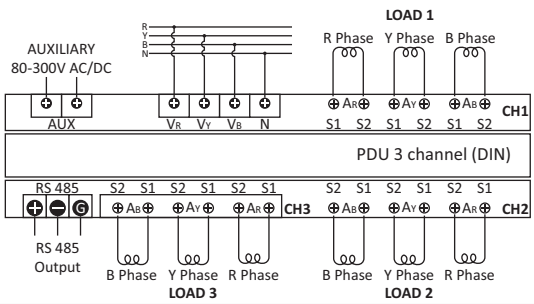
1. FEATURES

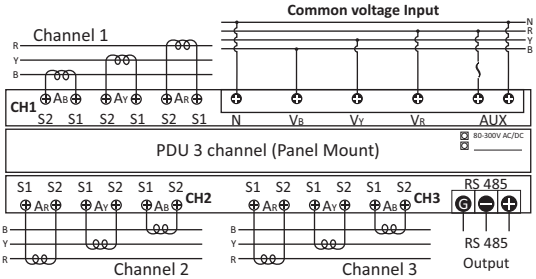
- STAR (Wye)/ DELTA Programmable
- Universal Auxiliary (80 - 300 VAC / DC) supply
- PT & CT ratio programmable including secondary
- "OLD" Register for storing Cleared Energy
- 6 digits 1 Row display with Auto scaling & Auto Scrolling
- User configurable (Editable) password
- Clearance & Creepage distance meets IEC standard
- Compact size and Weight
- Universal Voltage Input (50 - 550 VAC) and Current Secondary (0.05A to 6A)

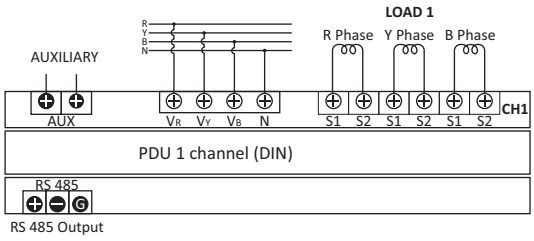
2. UNIQUE FEATURES

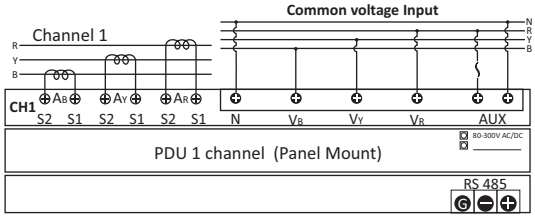
- True RMS measurements
- Simultaneous sampling of volts & amps
- Best parameters grouping & bright displays
- Upgradable to higher versions
- Auto-scaling of kilo, mega, & giga decimal point
- 3 channel current and single channel voltage input

3. WIRING DIAGRAM - PDU - Star Connection(3E) 3 Phase 4 Wire system









4. KEY FUNCTIONS

Key	In SET (Programming) mode	In RUN (Measurement) mode
Right/UP	To select the value and accept the value (it act as a Right key in programming mode)	Channel Selection. (Applicable for 3 channel PDU)
DOWN	To edit the value/system types downward in edit mode and scroll through the parameters.	To scroll pages in downward direction to look at different parameters.

5. ENTERING CONFIGURATION (SETUP) MODE

To configure the setup parameters in PDU meter through front panel keys, the following steps can be followed.

Step	Actions	Display Reads	Range/Options/Comments
1	Press DOWN & RIGHT keys together to enter SETUP	CLr.SEt.	
2	Press DOWN key	0000PW (Password) Display 0000PW (PW means Password) is displayed with first digit "0" blinking.	
3	Press DOWN key to decrement the first digit to "9" sequentially come to digit "1"	1000PW PASSWORD = 1000 (default/factory set).	If any other password is already set press RIGHT and DOWN key to set the right password
4	Press RIGHT key four times to accept the password.	CLEAr	
	Press DOWN key for SETUP Mode Press RIGHT key for CLEAR Mode		
5	Press DOWN key	415.0P.P. (PT Primary) (415.00 -default/factory set)	Range:100V to 999kV
6	Press RIGHT key to set the PT primary value	415.0P.P. First digit blinking can be edited using DOWN key.	

7	Press RIGHT key to accept the edited value for first digit.	4 1 5.0 P.P. Second digit blinking, can be edited using DOWN key. Press RIGHT key to accept the edited value. Continue the same method till fourth digit.	
8	Press RIGHT key	4 1 5.0 P.P. Decimal point blinking. Can be set at appropriate location using DOWN key. Ascertain the correct scale (Kilo/Mega/Giga) is selected. Press RIGHT key to accept the edited value.	Eg: To set 11.00kV Set first four digits (1100) as explained above. Use DOWN key to place decimal point at appropriate location.
9	Press DOWN key	4 15.0 P.S (PT Secondary) (415.0 - default / factory set) Repeat steps 5-8 to change the settings.	Range: 50V to 550V. If value set is above this limit, display returns to the maximum PT sec value
10	Press DOWN key	5.000 P. 1. (Channel-1 CT Primary) (5.000 -default/factory set) Repeat steps 5-8 to change the settings.	Program Range for CT Primary: 0.5A to 99kA
11	Press DOWN key	5.000 S. 1. (Channel-1 CT Secondary) (5.000 -default/factory set) Repeat steps 5-8 to change the settings.	Range: 0.5A to 6A. If value set is above this limit, it returns to the maximum CT sec value.
12*	Press DOWN key	5.000 P.2. (Channel-2 CT Primary) (5.000 -default/factory set) Repeat steps 5-8 to change the settings.	Program Range for CT Primary: 0.5A to 99kA
13*	Press DOWN key	5.000 S.2. (Channel-2 CT Secondary) (5.000 -default/factory set) Repeat steps 5-8 to change the settings.	Range: 0.5A to 6A. If value set is above this limit, it returns to the maximum CT sec value.
14*	Press DOWN key	5.000 P.3. (Channel-3 CT Primary) (5.000 -default/factory set) Repeat steps 5-8 to change the settings.	Program Range for CT Primary: 0.5A to 99kA
15*	Press DOWN key	5.000 S.3. (Channel-3 CT Secondary) (5.000 -default/factory set) Repeat steps 5-8 to change the settings.	Range: 0.5A to 6A. If value set is above this limit, it returns to the maximum CT sec value.
16	Press DOWN key	UECHUA VEC.H UA method of VA selection	Arithmetic (Arit), Vector harmonics (UEC.H). Arithmatic (Arit) can be selected using RIGHT/ DOWN key.
17	Press DOWN key	9600.bA. 9600. bA (baud rate). Communication speed. (9600 -default/factory set)	Defines the baud rate. Option : 1200,2400, 4800, 9600, 19.20k
18	Press DOWN key	EUEnPr (Parity)	EUEn / odd / no - parity internal communication error check
19	Press DOWN key	1.000d.I.	Defines the (ID) communication identification number. Option: 1-247
20	Press DOWN key	no. rL. Reverse Lock	Option: NO/YES If Yes(blocks energy accumulation incase the CT polarity is reversed) Can change the option using RIGHT & DOWN keys.
21	Press DOWN key	----PU (Password user definable). **CAUTION:** Memorize the password. Use the same password for next time. Instrument will reject other passwords.	Range: 1000 -9999. If password is forgotten the meter has to be reset and recalibrated at Elecon factory only.
22	Press DOWN key	rESOEn	Energy value format i.e., the energy accumulated in the meter to be displayed in resolution (default) or counter format CAUTION: In counter mode energy accumulation is visible depending on load.
23	Press DOWN key	0.400S.A (Starting Current)	Starting current value to be displayed in the meter Range: (0.2 to 10% of FS)
24	Press DOWN key	1.000U.r. (Update rate)	Displays Option for updating the value of electrical parameter. Range: 1 to 5 Seconds
25	Press DOWN key	5.000A.S. 5.000 A.S.(Auto Scroll rate)	Display increment during auto scroll. Range: 1 to 10 Seconds
26	Press DOWN key	SAUE Y SAVE Y with "Y" blinking	If "n"(no) is selected then Meter enters into RUN mode without memorizing any edited Values in the setup
27	Press DOWN key	0.000LL	

Once the required parameter is programmed press the DOWN key continuously till it reaches SAVE page.

*NOTE: Step 12-15 is applicable for 3 channel only

5. 1 The List of parameters can be configured and the range is given below

Sl.No.	Parameter	Default setup	Range / Options
1	Connection mode (EL)	3P.4W	3P.4W/3P.3W/1P.2W/1P.3W
2	PT Primary (P.P)	415.0	100V- 999kV
3	PT Secondary (P.S)	415.0	50V - 550V
4	CT Primary (P1, P2, P3)	5.000	0.5A - 99kA
5	CT Secondary (S1, S2, S3)	5.000	0.5A - 6A
6	VA selection (UA)	VEC.HAr	Arith (Arithmetic) / Vector/ vec.H (vector harmonics)
7	Baud rate (bA)	9600	1200 to 19.2k
8	Parity (Pr)	Even	Even/ Odd/ no
9	Device Id (d.I.)	1.000	1.000 to 247.0
10	Password (PW)	1000	1000 to 9999
11	StArt.A (S.A)	0.400	0.2 to 10 % of FS
12	Display update time (U.r.)	1.000	1 to 5 seconds
13	Display increment time during auto scroll (A.S.)	5.000	1 to 10 seconds

6. Selection of Channels:

PDU 5110-D/P consists of three Current Channels which are indicated by the LED 1 2 3 on the Front Panel. Each channel can be selected by pressing the UP key.

7. Enabling and disabling of Auto scrolling:

Enabling auto scrolling: Press Down key continuously for 5 seconds or until display shows **EnAbLE** for scrolling. Display starts to scroll pages in downward direction for the set Auto scroll time and different parameters can be viewed for the selected Channel.
Disabling auto scrolling: Press any key (UP/DOWN) display show **dISAbL** and returns to normal mode.

8. Display of Parameters:

Display	Meaning	Display	Meaning
LL	Voltage line to line	Yb.	Voltage YB Phase
Ln	Voltage line to Neutral	br	Voltage BR Phase
F	Frequency	r	R phase
A	Current	Y	Y phase
y	Watts Total	b	B Phase
S	Total VA	U	Voltage
PF/o	Power Factor	d	Device ID
ry	Voltage RY Phase		

9. LED INDICATION

LED Status	Meaning
KILO – ON	Kilo
MEGA – ON	Mega
KILO & MEGA – ON	Giga
KILO & MEGA – OFF	Direct reading
)))	Communication ON
Minus (-) ON	Lag/Minus
Minus (-) OFF	Lead/Plus
1, 2, 3	Channel 1, Channel 2, Channel 3
R, Y, B	R Phase, Y Phase, B Phase
OLD	Old Values
Wh	Watt Hours
LH	Load Hours

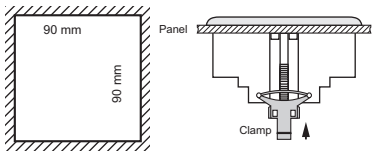
10. Communication Register Map:

This Communication map is for PDU. All the parameters declared in the communication map are either float or unsigned long and follows the standard Modbus RTU protocol.

Sl.No	Parameter	Data type	Address		
			Channel 1	Channel 2	Channel 3
1	Watts Total)	float	4101	4199	4297
2	Watts R phase	float	4103	4201	4299
3	Watts Y phase	float	4105	4203	4301
4	Watts B phase	float	4107	4205	4303
5	PF Ave. (Inst.)	float	4109	4207	4305
6	PF R phase	float	4111	4209	4307
7	PF Y phase	float	4113	4211	4309
8	PF B phase	float	4115	4213	4311
9	VLL average	float	4117	4215	4313
10	Vry phase	float	4119	4217	4315
11	Vyb phase	float	4121	4219	4317
12	Vbr phase	float	4123	4221	4319
13	VLN average	float	4125	4223	4321
14	V R phase	float	4127	4225	4323
15	V Y phase	float	4129	4227	4325
16	V B phase	float	4131	4229	4327
17	Current Total	float	4133	4231	4329
18	Current R phase	float	4135	4233	4331
19	Current Y phase	float	4137	4235	4333
20	Current B phase	float	4139	4237	4335
21	Frequency	float	4141	4239	4337
22	Wh Received	float	4143	4241	4339
23	R-Phase Wh	float	4145	4243	4341
24	Y-Phase Wh	float	4147	4245	4343
25	B-Phase Wh	float	4149	4247	4345
26	Load hour	Unsigned Long	4151	4249	4347
27	R-Phase load hour	Unsigned Long	4153	4251	4349
28	Y-Phase load hour	Unsigned Long	4155	4253	4351
29	B-Phase load hour	Unsigned Long	4157	4255	4353
30	VA total	float	4167	4265	4363
31	VA R phase total	float	4169	4267	4365
32	VA Y phase total	float	4171	4269	4367
33	VA B phase total	float	4173	4271	4369

Note: Channel 2 and channel 3 applicable for PDU 5110-D/P

12. Mechanical Specification:

Dimension Bezel:
96 x 96 mm (Depth 50mm behind Bezel)

Panel Cutout:
90^{+2}_{-0} x 90^{+2}_{-0} mm