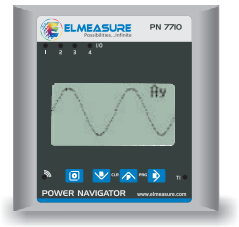
HIGH PROFILE MULTIFUNCTION METER

POWER NAVIGATOR | eNAVIGATOR | NAVIGATOR PLUS

User Friendly | Dynamic Communication | Load Manager







Measure, Monitor and Control

Basic, Power, Energy, Harmonics, K-factor and Unbalance.

Benefits

Multiple options like Demand/ Import Export / Harmonics.
Digital or Analog Input or Output.

Technology

Advanced circuitry for accurate measurements.

Applications

Demand Control, Import Export, Harmonics Measurement & Transformer Efficiency.



ELNET Energy Management System

Intertek 4007051

Contact for certification details

ELMEASURE™
Possibilities...Infinite

www.elmeasure.com

Features:

True RMS measurement.

Simultaneous sampling of Volts & Amps.

High / **low** recording -(VLL & VLN) V, A, Hz, W, VA, PF, VAr value storage with time stamp.

Field programmable - float/ little Endian / Big Endian.

Byte order option - Field Programmable Float / Little Endian / Big Endian data format.

Accuracy class 1.0 IEC 61036 / CBIP 88 (0.5 option).

User programmable **Password Protection**.

Auto-Scaling of Kilo, Mega and Giga decimal point.

Neutral Current (calculated) , RPM display.

Clearance and creepage distance meets UL- 61010.

Programmable starting current in % of 5A secondary. Default 0.4%.

Selectable VA measurement Vector / Arithmetic / Vector harmonics.

K-Factor V & A (all three phase).

Programmable parameter **update** rate 1sec. to 5sec. (Default 1sec.).

Programmable Auto scrolling time 1 sec. to 10 sec. (Default 5 sec.).

Dynamic communication - user selectable register map.

Programmable - Energy display counter based or resolution based.

Energy resetting @ 999999 kVAh × Multiplication factor.

Reverse lock, user programmable for positive energy accumulation. (Default: No lock)

Front LED pulse 10000 imp/kWh.

OLD register to store previously cleared energy & LH values.

% of unbalance V & A for all the phases.

THD for Voltage and Current (upto 31st).

Ampere hour (Ah) and **PF average** parameters.

Phase Angle measurement.

Optional Features EN, PN :

Digital outputs - 4 potential free contacts with programmable time delay. Hysteresis 1%. Trip time 1 to 180 sec. Programmable.

TOD option (Energy & Demand).

Pulse output (POP) on time 50-500 mS user programmable.

Analog / Digital I/p upto 2. Accuracy class 1% FS

Analog Output - Two independently programmable to 0-20 mA (or) 4-20 mA output, configurable to any VLL, A, F, W, PF, VA parameters.

Individual Harmonics upto **31**st level.

Datalogger - 1MB / 8MB optional (refer table 1).

Demand Controller with 1 Relay, 2 Relay & 4 Relay outputs.

RTC can be adjusted using external communication.

Upto 60A or 100A direct measurements using Hanging CT.

Dual port communication.

Demand **updation @ 1 sec**.

Ethernet / Zigbee communication.

Additional Features for PN

2 programmable parameters.

Phase wise Voltage & Current **Wave Forms**.

LCD 7 parameter display at a time, 7 digit energy.

Wave form communication through ELAudit Software.

Power save mode with Enable/Disable option.

Additional Features for NP 8300 / NP 8400T

Measurement range 1 : 600.

Individual Harmonics upto 51st level.

Modular construction Pluggable for - Dual Source, Individual Harmonics, IE, Demand monitor, Digital and Analog input/output, etc.

Sag / swell detection and storage - 50 occurrences with time stamp and percentage of Occurrences.

DLMS compatable

Wave form display.

Features	Parameters	PN7700 EN8400	PN7700LM EN8400LM	PN7710 EN8410	PN7710DMC EN8410DMC	NP 8500
Basic						
Line to Neutral Voltage	VLN Avg,VR-N,VY-N,VB-N					
Line to Line Voltage	VLL Avg,VR-Y,VY-B,VB-R					
Line Current	AR, AY, AB, A, Avg					
Neutral Current Computed	AN					
Frequency, RPM (Generator application)	Hz, RPM					
V & A Phase Angle	VR, VY, VB, AR, AY, AB					
Unbalance V & A	% V, % A, VR, VY, VB, AR, AY, AB					
Power						
Active Power	W Total, WR, WY, WB					
Apparent Power	VA Total, VAR, VAY, VAB	VA Tot				
Reactive Power	VAr Total, VAr R, VAr Y, VAr B	VAR Tot				
Power Factor	PF Avg, PFR, PFY, PFB					
Energy / Integrated						
Active Energy (Wh)	Wh					
Apparent Energy (VAh)	VAh					
Reactive Energy (Varh), Ah, PF Avg	VArh-Ind, VArh-Cap, On.Hr Ah, PF Avg					
Load Hrs, No. of Interruption, Life Timer	LH, Intr					
Old (Energy, Load Hrs)	Old (Wh, VAh, VArh Ind/Cap, LH)					
Harmonics	PF, AVG, Ah					
Voltage THD	THD% VR, VY, VB					
Current THD	THD% AR, AY, AB					
K Factor	K Factor: VR, VY, VB, AR, AY, AB					
Events (High/Low)/ With time stamp						
Voltage VLL, VLN High/Low	VLL, VLN					
Current High/Low	A					
Frequency High/Low	Hz					
VA High/Low	VA					
W High/Low	W					
VAr High/Low	VAr					
Power Factor High/Low	PF					
Demand (Optional)*	*Programmable to any one of the below*					
Active Power (W)	Watt	Sliding 1 relay	Sliding window 2 relay	RTC Based	RTC Based 4 relay	RTC Based 4 relay
Apparent Power (VA)	VA					
Reactive Power (VAr)	VAr					
Current Average (A.Avg)	A Avg					
	Programmable sliding/ fixed window, block demand period, forcast/ step demand control					
Control Features (Optional)*	*Programmable*					
Digital Output (Up to 4 relay)	A.thd, v.thd, A Under/over (VLL, A, Hz) Over (W, VA, Wh)					Pluggable Option
Tripping time (1-180 sec)	Under (PF),Phase rev, Single Phase, Analog I/p1, Analog I/p2					
Analog Output / Analog Input	Up to 2 / Up to 2					Pluggable Option
Special Features (Optional)						
Data Logging with Time stamp (1MB/8MB Optional)	Refer Table 1					Pluggable Option
Received/Delivered (Import/Export)/Net	Wh, VAh, VArh Ind/Cap,{ PF.Avg, Ah } only Rec & Del , Lh	Wh, VAh				Pluggable Option
60A, 100A Direct measurement*	3 Phase (Hanging CT)					
Individual Harmonics	V & A		31st	31st	31st	51 st
Communication (Optional)*						
RS-485 or RS-232 (MODBUS) or Ethernet or Zigbee*	RS 232 / RS 485 / Ethernet / Zigbee					

Default — Optional feature - no restriction on combination of options

Restricted optional feature - Combination of all restricted options may not be possible in a single product

*IndicatesNonUL/ETLproducts

LM : Load Manager
DMC : Demand Controller



EN 8499

- Displays all energy (Wh, VAh or VArh Inductive, Capacitive) parameters.
- Received / Delivered (Import/Export) Energy option.
- Separate Load hours for Received, Delivered and Net.
- OLD register to store previously cleared energy values and load hours.
- Pulse output - Programmable pulse width of 50 mS to 500 mS (Optional).
- RS 485/232 Optional.

Note: This model can be customized for any parameters available in EN 8400LM

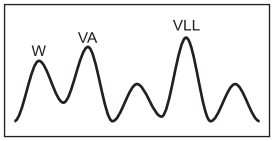
Key Unique Features

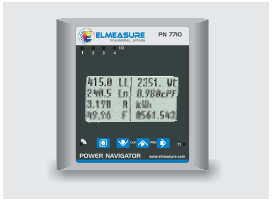
Demand Management :
Monitoring - Helps to visualise the demand profile during a billing cycle. Demand peaks with date & time can be identified in the meter as well as ElMeasure's ElNet software. The events can be studied and related with the production events such as starting of furnace or a large motor etc., and helps to decide on switching/staggering of loads etc.

Control - Enables user to program the threshold values of max demand and initiate ALARM/ CUT-OFF when the Forecast Demand/ Present Demand/ Max Demand surpasses the threshold values. This will help the user from exceeding the sanctioned demand and avoid causing a trip or paying huge penalty.

Additional Load - By this feature the user shall be able to decide to transfer the exact quantum of load from EB to DG or vice versa for economic power.

High Low Event Recording for V, A, Hz, VA, W, VAr, PF
Protection of 3 phase system against single phasing, low & high voltage, over load, highly lagging and leading PF, Hz etc. Power Navigator can trap such events for future reference.



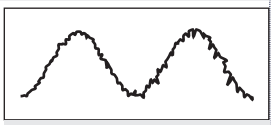


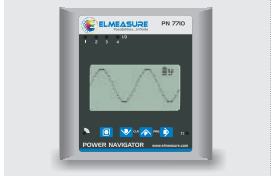
Identify, record unbalance voltage, currents and helps the user to identify the root cause. Unbalance over-burdens the electrical system and affects in the form of over loading of cables, motors and switchgear.

PF Management :
Lower the Avg PF higher the system inefficiency. So this enables the user to maintain a healthy PF level. The Digital output features can be used to initiate alarm when the Avg PF crosses the user programmed threshold values (Lead/ Lag).

Data Logging with Time Stamp:
The information is needed in all types of businesses to determine performance, quality, efficiency, cost reduction, fuel consumption monitoring and many other critical factors. This feature provides important and accurate data for analysis.

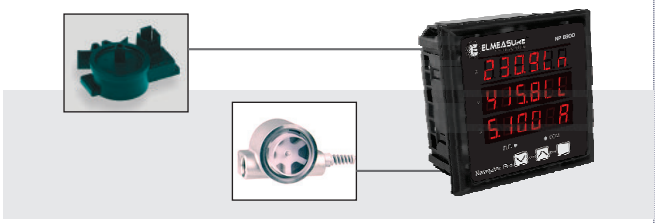
Harmonics up to 31st level for EN/PN, 51st Level for NP and THD :
Presence of THD will urge the user to identify the polluting loads and take necessary action to mitigate harmonics through an appropriate harmonic filter, save energy to improve plant & equipments efficiency.





Monitors Basic, Power & Energy Parameters :
Provides the complete spectrum of Electrical system and helps in study of load pattern.

Process Integration:
Integration of process parameters such as temperature, Oil level, RPM, Pressure etc. giving greater flexibility to monitor them along with electrical parameters.



Control Features:
4 user defined potential free Digital Output based on threshold setting for protection relay for any of Under/Over VLL, A, Hz Over (W, VA, Wh) Under (PF), Phase reversal, Single Phase, Analog input with programmable trip time to protect the equipments from electrical abnormalities.

Power Quality Check/Management:
Monitoring phase angle will help the user to identify the causes such as deterioration in the distribution transformers, cables & cable termination, presence of harmonics etc.

Cross Verification of Electricity Billing:
Helps the user to cross verify with the tariff meter and initiate suitable action if the values have a wide disparity.

Digital Outputs : (Up to 4 relay Outputs)

- 4 User defined potential free relay outputs based on threshold setting.
- Protection relay for any of Under/Over VLL, A, Hz Over (W, VA, Wh) Under (PF), Phase reversal, Single Phase, Analog inputs.
- Digital O/P parameters- A.Thd, V.Thd, rev.A, S1 phase, wh .revd, VA, W, under PF, under (Analog I/P 1 , Analog I/P 2, F, A, VLL), over (Analog Input 1, 2 , F, A, VLL)(A.thd, V thd), An In 1 & 2 (Under & Over), rev A, S1 .ph, wh.recd, PF, VA,W, (under & over) [F,A,VLL] also for RD models, wh.devd.
- Programmable trip time 1 to 180 sec to suit different load conditions.
- Rating of control relays: NO contact SPST 2A, 250 VAC / 30 VDC .

Typical Applications

- Automatic connection or disconnection of Gensets connected to common bus .
- Keep equipment in safe region.
- Protection of equipment from Under/ Over Voltage or Current or Frequency.
- Process control.
- Protection of 3 phase equipment from Single phase prevention, Over load etc.

Energy Display programmable for counter based or Resolution based

Multiplication factor for counter based energy mode							
Full Scale kW $3\sqrt{V}$ Pri LL x A Pri / 1000	0.4 to 4.0	4.01 to 40	40.1 to 400	400.1 to 4,000	4Mega to 40 M	40 M to 400 M	400 M to 4000 M
Multiplication Factor:	0.01	0.1	1.0	10	100	1000	10000
Unit of display	KWH			MWH			GWH

Energy Reset : 999999 kVAh × Multiplication Factor

Applicable Standards:

Test of insulation properties	IEC60060-1
Test of Accuracy requirements	IEC62052-11
Test of electrical requirements	IEC62052-11
Radio interference suppression	CISPR22
Fast transient burst test	IEC61000-4.4
Damped oscillatory waves immunity test	IEC61000-4.12
Test of immunity to electromagnetic RF fields	IEC61000-4.3
Test of immunity to conducted disturbances, Induced by radio-frequency fields	IEC61000-4.6
Test of immunity to electrostatic discharges	IEC61000-4.2
Surge immunity test	IEC61000-4.5
Test of the effect of the climatic environments	IEC60068-2
Mechanical tests	IEC60068-2
Test of protection against penetration of dust and water	IEC60529
Test of resistance to heat and fire	IEC60695-2
Safety standard	IEC61010–1

Safety and Environmental Specifications:

Safety: Designed to meet protection class III, pollution degree 2.
Protection against shock by double insulation.
Clearance and creepage meets UL 61010 safety standard.
Finger touch proof terminals to voltage and current connections.

Environment:

Operating temperature	-10°C to +55°C (14°F to 131°F)
Storage temperature	-25°C to +70°C (-13°F to 158°F)
Humidity	5% to 95% non condensing.
Protection index	IP 51 (IP 54 front option)
Recommended connecting wire	12 to 14 SWG with U type lug of 6.75 mm width max.

ECO Friendly Lead Free | **18 Months Warranty**

Optional Programmable Data Logging

1 Minute to 12 hours interval programmable. Data interval and parameter can be selected through RS485 communication.

Table 1

No of Parameters	No of Records 1MB	No of Records 8MB
1	121920	982080
2	81280	654720
4	48768	392839
9	24384	196416
14	16256	130944
29	8128	65472

Technical Specification:

Accuracy: Class 1 (Default) IEC 61036, IS 13779, CBIP 88 Class 0.5, 0.5S (Option), Class 0.2 optional.

Sensing/Measurement: True RMS, 1 Sec update time.
4 Quadrant Power & Energy (RD Option).

Input voltage: 4 Voltage inputs (VR, VY, VB, VN)
Programmable 110 or 415V LL Nominal (Range 80 to 520 VLL)
Primary Programmable up to 999 kV.
Burden: 0.2VA Max. per phase.

Input current: Current inputs (AR, AY, AB) 50mA - **6**A
(Field configurable 1A or 5A).
Primary Programmable up to 99 kA.
Overload: 10A max continuous, 50A max for 3 Sec
Burden: 0.2VA Max. per phase.

Aux-Supply (Control Power)
80 - 300V AC/DC, 40-70Hz, 48V DC (optional)
Burden: 4VA Max.

Display Type:
eNavigator: 10mm height bright red LED display
Power Navigator: 6mm height bright LCD graphical display.

Display Resolution: 4 digits for instantaneous,
Integrated: EN - 6 digits, PN - 7 digits.

CT PT Ratio Max: 2000 MVA Programmable.

Note : Additional error of 0.1%.

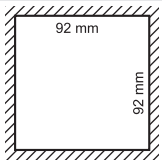
Communication:
RS485 serial channel connection, Industry standard Modbus RTU protocol (Optional: RS232 / Ethernet / Zigbee).
Baud rate: 2400 bps to 19200 bps. (Preferred 9600 bps)
Isolation: 2000 volts AC isolation for 1 minute between communication and other circuits.
Zigbee communication for NP 8500 (Range: 50 meter length)

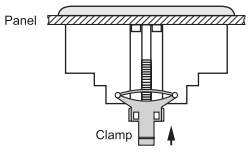
Weight:
Unpacked: 300 gms
Packed: 400 gms

Mechanical Specification:

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

Panel Cutout:
92^{+0}_{-2} x 92^{+0}_{-2} mm





Range of Products: | Building Energy Management System (BEMS) | EMS | Demand Controller | Multi function Meters | Load Manager | Electronic Energy Meters | Dual Energy Meter | Digital Panel Meters | ACCL | Net Metering | Smart Metering | Power Factor Controller | Intelligent Earth Leakage Relay | Aggregator | MCLM | SIO | Smart Plug | Power Distribution Unit | Control Relay Unit for PDU | Transducers | Power & Energy Transducers | RS485 to RS232/Ethernet/Optic Fiber Converter | RF Modem | GSM Modem |

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