

FAQs for DigitAN



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This document supersedes all earlier versions.

CONTENTS

1. NOMENCLATURE	2
2. INSTALLATION	3
3. DISPLAY INDICATIONS.....	4
4. SET UP	5
5. SIM (SIMULATION) MODE	7
6. AUTO SCROLL	7
7. TURBO PARAMETERS (FAVOURITE PAGES)	8
8. INTEGRATORS.....	8
9. FEATURES.....	9
10. COMMUNICATION	11
11. GENERAL	12

1. NOMENCLATURE

Parameter	Description
V12, V23, V31	Line to line Voltages
V1, V2, V3	per phase voltages
A1, A2, A3	per phase currents
V LL	Average of line to line voltages
PF1, PF2, PF3	Power factor for each phase
V Ln	Average of line to neutral voltages
F	Frequency of the measurement circuit
L%1, L%2, L%3	Percentage of load per phase based on C.T. primary
A°1, A°2, A°3	Current phase angle per phase
unb	Percentage of unbalanced load of all three phase
RPm	Revolution per Minute (for DG application)
VA, W, VAR	3 phase power parameters total
VA1, VA2, VA3	Apparent power per phase
W1, W2, W3	Active power per phase
VAR1, VAR2, VAR3	Reactive power per phase
V%1, V%2, V%3	Voltage total harmonic distortion for each phase
A%1, A%2, A%3	Current total harmonic distortion for each phase
VA.d	VA demand
R.d	Rising demand
t.r	Time remaining
md	Maximum demand
Hr	On-hour at which the maximum demand has occurred
VAh	Volt – Ampere hours
Wh	Watt hours
VARh	VAR hours Inductive (with IE – capacitive)
-VARh	VAR hours Capacitive (with IE – inductive)
run.h	Total hours the load was ON
R.VAh	Volt-Ampere hours (export)
R.Wh	Watt-hours (export)
R.VAR	VAR-hours inductive (export)
-R.VAR	Negative VAR-hours capacitive (export)
R.run	The total hours the meter was run with reverse energy flow (export)
t.VAh	Total Volt-Ampere hours (Import + Export)
t.Wh	Total watt-hours (Import + Export)
t.VAR	Total VAR hours inductive (Import + Export)
-t.VAR	Total negative VAR hours inductive (Import + Export)
t.run	Total hours the meter was run with current input signals
On.h	Total hours the meter was ON. Accumulates if auxiliary supply is present
Intr	Auxiliary interruption. Accumulates the auxiliary interruptions
StAR, dltA	System configurations
thd	Total Harmonic Distortion

2. INSTALLATION

1. What are default settings of the meter and how change it?

If there is no instruction from the customer while ordering, meter will be dispatched with the following default settings.

SET parameter	Default value
SYS	StAR
V.PRI	415.0
V.SEC	415.0
A.PRI	5000
A.SEC	5.000
LAbl	123
VA.Fn	3d
d.SEL	Auto
d.PAR	VA
d.Prđ	15.00
bAUd	9600
Prty	EvN 1
Id	1.000
F.S ₀	100.0
O.F	Wh
POLE	4.000

2. How to change the meter set up?

During power on, keep the TURBO key (Earlier called as Favourite key) pressed continuously till meter display SET or See the chapter 4 on SETUP in DigitAN QSG to edit the setup or to clear the Integrators.

3. What are the wiring configurations possible in DigitAN?

STAR 4V3A and DELTA 3V2A which are selectable through the setup.

4. What is the meaning of Star and DltA in the setup table?

STAR means for STAR 3E, 4V3A (means for 3 phase 4 wire applications) and DltA means for DELTA 3E, 3V2A (for 3phase 3 wire applications). Star is also called Wye in some countries.

5. Can I use DigitAN for single phase applications?

Yes. Please follow the steps below.

1.) Programme the meter in for STAR mode.

However Voltage primary and secondary needs to be programmed as Line to Line.

2.) Connect the voltage and current inputs only to the V1 and A1 voltage and current terminals of the meter.

3.) Here VLL average will show 2/3 of input voltage, VLn average will show 1/3 of input voltage and the current will show 1/3 of the current value. Ignore these Average Voltage and current parameters.

Refer only the V1, A1, W1, which are available at the right most page, which shows the per phase VLn, per phase A, per phase W etc.

6. How to check for wrong connections?

These steps are applicable for both Star and Delta systems.

1.) **If the current in any phase is reversed (instead of S1 to S2 the connection is S2 to S1),** Active power of W1, W2, W3 shows negative. Reverse the current inputs of the phase which shows the W negative.

2.) **For checking the System (Star or Delta) for the sequence of connection**

Connect all the Voltages and Auxiliary supply.

Connect the A1 and A3 currents. Switch ON the meter.

If the System is STAR then A2 current and power parameter will be zero, else if the System is Delta then A2 current and power parameter will display some value.

3.) If the **phase sequences between Voltage and Current terminals** are not sequential, then meter shows erratic readings. Refer ampere degrees of each phase for correction

FAQs for DigitAN

7. **When do I need to connect an external CT/PT?**
 External CT is required when the current to be measured is greater than 6A.
 An external PT is required when voltage greater than 600V.
8. **Is it possible to use DigitAN without CT application (i.e. load <5A in 415/440V applications 3 phase or single phase)?**
 Yes for input current upto 6 A maximum, the DigitAN meter can be used without connecting an external CT.
9. **What is the range for input current and voltage range for DigitAN?**
 Voltage (phase to phase): 80 to 600 V ac
 Current: 20 mA to 6 A ac
10. **What is the range for auxiliary supply for DigitAN?**
 Auxiliary supply voltage range: 44 to 300 V ac/dc

3. DISPLAY INDICATIONS

1. **How are KILO, MEGA and GIGA ranges shown?**

Range	7 segment Display	“K” LED	“M” LED
0.000 to 9999	Number	OFF	OFF
10×10^3 to 9999×10^3	Number	ON	OFF
10×10^6 to 9999×10^6	Number	OFF	ON
10×10^9 to 9999×10^9	Number	ON	ON

2. **How is Lead and Lag shown for the PF parameter?**

Check the Minus LED (“-” LED) to the left of the reading, between “K” LED and “M” LED.

Minus LED ON: PF is LEAD or

Minus LED OFF: PF is LAG

3. **What are VARh and -VARh under the IntG page?**

VARh shows Reactive Energy- Inductive.

-VARh shows Reactive Energy-Capacitive.

If you have the IE (Import Export) option, then

RVAR shows Reactive Energy-Inductive.

-RVAR shows Reactive Energy-Capacitive.

4. **How do I know which is parameter value currently displayed?**

Press any one of the 5 keys once; meter will display the parameter name of the current page under display.

Or

If none of the keys are pressed and if the auto scroll is also not enabled, then the meter repeatedly displays the current page parameter name (2sec) and value (8sec).

Or

If the auto scroll is enabled, then the meter will display the current parameter name (1sec) and value (4sec) and moves to the next page. See the QSG for more details on auto scroll.

5. **What is the purpose of LED’s (12 nos) on the right side of the display?**

These LED’s are provided to indicate the total load %age with respect to the CT secondary. This is bar graph where Each LED indicates 10% of load, to find the total load count all glowing LED’s in this bar graph and multiply the number of glowing LED’s * 10

Load Percentage	Bar Graph Display
Less than 10%	No LED's will glow
Above 10% and less than 50%	Only Green LED's will glow
Above 50% and less than 90%	Green and Amber LED's will glow
Above 90% and less than 120%	Green, Amber and Red LED's will glow
120% and above	All the LED's will glow

6. **Why 3 colors of LED's in the bar graph?**

FAQs for DigitAN

This is similar to a vehicle speedometer,

If the **load is below 50%** it is safe, which is indicated by the **green LED's**.

Loads between 50% and 90% are acceptable. (The user should ensure that the load does not exceed this and hence it is indicated using **amber LED's**).

Load above 90% may exceed the sanctioned limit, which is dangerous and hence indicated using the red LED.

7. What are DIA1 and DIA2 under DIAG page?

DIA1

First 3 digits of 1st row display the unit id.

4th digit displays the status as given below.

r - Receiving the data.

t - Transmitting the data.

u - Wrong unit id.

o - Any one of the following error (parity, over run or framing error)

F - Wrong function which MODBUS does not supports.

A - Wrong address.

2nd row displays the baud rate of the communication.

3rd row displays parity and no of stop bits

DIA2 gives the information on the model no and the version no.

Also refer FAQ 3 in Section 11 (GENERAL) below for information on DIA1 to DIA7 pages.

4. SET UP

1. What is “PROG” page? How to edit the setup table and clear the integrator?

The steps to edit the set-up table and clear integrator are listed below:

- 1.) Enter into the HOME page (RmS). Press “UP” key once.
- 2.) Press the “LEFT” key once, CODE “Y” will be displayed.
- 3.) Enter the password 1000 to enter in the setup.
- 4.) See the EM 6400 QSG to edit the setup or to clear the Integrators.
- 5.) By pressing the TURBO key during the meter power-on it is possible to enter setup.

2. Can I restore the old setup parameter, while editing the set up?

Yes, two steps are explained below.

Partially edited set up parameter: While editing the parameter if you want to restore the old set up data press the “LEFT” key continuously up to the blinking the first digit then press the “LEFT” key once again it will resume the old setup data.

Or

Save changes Y/N: After completing the set up table edit, when you are coming out of the set up table if “Y” is selected then the set up will save the new changes else if “N” is selected set up will restore the values before entering the set up.

3. How to set CT and PT ratio?

Please refer the QSG.

4. Can I set my own password instead of 1000?

No. The password is always 1000, which is not editable.

5. What is LABL in the setup table?

The user can set the label as 123, AbC, rSt, Pqr and ryb, depending on the country and the requirement.

These labeling options are to satisfy the international standards or requirements. In India normally people use ryb. These are used for identifying the per phase parameters.

Example: If 123 is selected as label, then the phase wise current will be displayed as A1, A2, A3.

6. Explain d.Prd?

D.Prd stands for Demand Period, which is selectable by the user. In EM 6400 demand period is selectable ranging from 5 to 30minutes, in steps of 5minutes.

7. What is I.d?

FAQs for DigitAN



DigitAN has a unique address up to three digits long. This is known as the ID of the instrument and is represented by (I.d). The range of the instrument address is 1 to 247. This allows the user to communicate with up to 247 instruments on one COM port of the PC.

8. What does F.S⁰ stand for?

F.S⁰ allows the user to set required full scale in % of CT Primary. While setting up a new factory or commercial complexes the current transformer is selected keeping the future expansion in mind. I.e: CT primary rating may be much higher than the sanctioned load. This may be as high as 10 times the present load. For Ex if the CT ratio is 500/5A, but the sanctioned load is only 100A, meter will indicate just 20% (bar graph and % load) even if the load is 100A. User may not notice even if he is exceeding the sanctioned limit, which result in penalty from EB. With the programmable FS for the above condition the user can select the FS as 20% of CT primary (sanctioned load), so that the meter will show 100% when the load is 100A.

9. What does O.F represent?

O.F stands for the Overflow parameter, which is selectable through the set up. There are two options Wh (default) or VAh.

10. What does POLE mean?

This is required for calculating the generator RPM, user has to enter correct no of poles based on which the generator RPM is calculated.

11. What does Unbalance (Unb) mean?

This is a measure of unbalance between loads of 3phases.

12. What is Eun 1 in the setup table?

The 1st three letters shows the selected parity (Eun for even, odd for odd or no for no parity) and the last digit of the same row shows the selected stop bit of the communication.

13. What is 3d and Arithmetic in VA function and which is best under what conditions?

VA function display in the setup table	Formula	Other names	Which one?
3d (default)	$kVA_{3D} = \sqrt{\sum W^2 + \sum VAR^2 + \sum D^2}$ where D = Distortion Power per IEEE 100	U , Apparent , Vectors	Best all round
Arth		Arithmetic , scalar	Good under Low unbalance

14. How to terminate the setup table editing using TURBO (earlier called as FAVOURITE) key?

The TURBO key can be used for terminating from setup table editing mode as explained below.

Example: The current CT primary settings is 5000, and the user need to change it to 6000, the following steps alone can be used

- 1.) Press the Right key 5 will blink.
- 2.) Change to "6" by using UP or DOWN key and "6" is still blinking.
- 3.) Press the TURBO key, "6" stop blinking and sets the value as 6000.
- 4.) Save the value by pressing the left key.

Where as in earlier versions after editing the 1st digit, the user had to navigate up to the last digit of the row by using right key and terminate the editing.

15. Is it possible to reset all the set parameters at once?

No. The user can edit the set parameters one at a time by entering into the setup mode.

16. Is there any pre-set maximum time duration for storage of user set parameters?

No. Set parameters can be changed only by editing.

17. What happens in case of a power failure while editing the set up parameters?

The last saved values before interruption will be present. The meter display goes to RmS on restoration of power.

18. What happens if the set parameters are changed after the meter is connected to a load?

FAQs for DigitAN



Meter continues measurement as per the new set-up values.

19. **How to select the set-up parameter to be edited?**

The steps involved in selecting the set-up parameter for editing are as below:

20. **Is AUTO SCROLL possible among the set parameter display pages?**

No. AUTO SCROLL is not possible among set parameters.

5. SIM (simulation) MODE

1. **What is SIM mode and why it is required?**

Simulation mode is provided for the purpose of demonstration of the features of the meter and in exhibition displays. In this mode user can see the functioning of the meter without any input signals, meter shows fixed Frequency, voltage and current and 0.5PF. Power and Energy parameters calculated based on this V (240VLN), A (5000A) and PF (-0.5) are displayed.

2. **How to enter into SIM mode for Demo?**

Power up the meter with left key pressed, it will go to "SIM" page.

Now press the right key to enter into SIM RmS mode, further navigation is same as the normal mode.

3. **How to come out of SIM mode?**

Please follow the steps below:

1.) Move to the home page "RmS" by pressing the TURBO key (Earlier called as Favourite key) repeatedly – up to 8 times.

2.) Press "UP" key once to see "PROG".

3.) Press the "LEFT" key to enter the PROG Menu. Meter displays code "Y".

4.) Press the left key 4 times to enter the password (1000). Meter displays SIM.

5.) Press the down key until you reach the display page "RUN".

6.) Press the right key to enter RUN mode.

7.) Then press the down key once to return to RmS. Meter is now in the normal (RUN) mode.

NOTE: The mode can be changed only through the PROG Menu. Switching off will not change the mode, since switching off is often used to show the incrementing "Number of Interruptions" in the Integrator.

4. **How to confirm whether the meter is in SIM or RUN mode?**

In the SIM mode, meter does not display the actual value. It always displays fixed unchanging values.

Example: V= 415VLL, 240VLN, A=5000A, PF =-0.5, Frequency= 50Hz and the Power and Energy parameters are derived from this.

In the RUN (normal) mode meter displays the actual measured values based on the input signals.

5. **Is it possible to edit set parameters in SIM mode? Will this affect the displayed values in SIM mode?**

Yes the setup can be edited in SIM mode and the values displayed in SIM mode are updated as per the edited setup.

6. AUTO SCROLL

1. **How to enable the auto scrolling?**

There are 3 modes of auto scroll.

1.) **Scrolling with in the level.**

Keep pressing the down key for at least 3 seconds, the parameter name will be scrolled within the level (Refer QSG) and when the key is released meter will display "Auto" for a moment, which means the auto scrolling is enabled.

2.) **Scrolling within the page.**

Keep pressing the UP key for at least 3 seconds, the parameter name will be scrolled within the page and when the key is released "Auto" meter will display "Auto" for a moment, which means the auto scrolling is enabled. Here also the auto scroll is similar to the earlier one (down key). But within the page.

3.) **TURBO Parameters (Favourite pages earlier) auto scroll**

Keep pressing the TURBO key (Earlier called FAVOURITE key) for at least 3 seconds, the parameter name will be scrolled as per the FAVOURITE page sequence(ref QSG) and when the key is released

“Auto” will be displayed for a moment, which means the auto scroll of the TURBO parameters is enabled. It will start scrolling through the all the TURBO parameters.

2. **How to disable the auto scroll?**
Auto scroll can be disabled by pressing any one of the 5 keys or by interrupting the control power (auxiliary power).
3. **What is the time duration between the display of two consecutive parameters in auto scroll?**
The time duration between parameter to parameter display in the auto scroll is 5 seconds (Parameter name is displayed for 1 second + the corresponding value for 4 seconds).

7. TURBO PARAMETERS (FAVOURITE PAGES)

1. **What are TURBO parameters?**
TURBO parameters (earlier known as called as FAVOURITE parameters) are a list of commonly used pages, which are pre-set in EM6400, which can be accessed using the TURBO key (earlier called as FAVOURITE key) in the following sequence. RmS, 'VLL,A,PF' 'VLn,A,F' 'VA,W,VAR' 'VA,W,PF' 'PF1,PF2,PF3' 'V%1,V%2,V%3' 'A%1,A%2,A%3' 'VAd, Rd, Tr' 'Md.hr' VAh Wh **R.VAh R.Wh t.VAh and t.Wh** .
The **BOLD** parameters above are optional and are available only with selected models.
2. **What parameters can be viewed using the TURBO key in EM6400?**
Totally 16 pre-set pages are available (8 pages are optional and based on the models selected). Refer the FAQ 1 above for TURBO parameters in EM6400 model.
3. **What parameters can be viewed using the TURBO key in EM6434?**
Totally 6 pre-set pages namely RmS, 'VA, W, VAR' 'VA, W, PF' 'PF1, PF2, PF3' VAh and Wh.
4. **What parameters can be viewed using the TURBO key in EM 6459?**
RmS, 'VLL, A, PF' 'VLn, A, F'.
5. **How to enable TURBO (known as FAVOURITE earlier) auto scroll?**
Keep pressing the TURBO key for at least 3 seconds, the parameter name will be scrolled as per the FAVOURITE page sequence (ref QSG) as mentioned. Thereafter, when the key is released, “AUTO” will be displayed and auto scroll of the TURBO parameters is enabled.
6. **How to enter into Home page (RmS) if the user struck any where in the navigation (except setup and CLR mode)?**
Press the TURBO key continuously till it reaches the RmS page.
7. **Can I set my own TURBO parameters (known as FAVOURITE pages earlier)?**
No the TURBO parameters are pre-set for each model and cannot be defined by the user.

8. INTEGRATORS

1. **Which parameter is responsible for Integrator reset?**
By default, the Integrators are reset when the value of Wh reaches the maximum allowable reading (Refer FAQ 2 below). However, the user can select VAh as the Overflow parameter by editing the SETUP
2. **When does the integrator reset?**
Integrator reset (Overflow) is based on CT ratio* PT ratio, which is generally called as Power ratio. The following table shows the Power ratio and the corresponding maximum reading for Wh/VAh. If the user – selected parameter VAh or Wh(default) reaches the limit given below with respect to the corresponding power ratio, all the values stored in the integrator will reset to zero (clears to zero).

PT Ratio x CT Ratio	Max Reading Wh/VAh
1 to 1.999	9999K
2 to 1000.999	9999M
Greater than 1001	9999G

3. **When does the number of interruptions (Intr) accumulate?**

FAQs for DigitAN



No of interruption accumulate only with the Auxiliary interruption. If the meter Aux is connected to the UPS or if there is no power interruption then the no of interruption may be zero always.

4. **When does the Run.h accumulate?**
Run.h is a measurement of load (Amp) ON time. It starts accumulating, only if the Amp is greater than 30mA in any one of the phases. It does not accumulate when the Amp is less than 30mA, even if the voltage is present.
5. **When does the On.h accumulate?**
On.h just measures the total duration for which meter is on irrespective of the presence of input signals or not. If the Auxiliary supply is present On.h will begin to accumulate.
6. **Under what conditions integrator (kVARh, kWh, kVARh and -kVARh) does not update?**
EM6400 has in built reverse lock. In star mode two or all the phases of current is connected in the reverse direction the integrator may not accumulate. In the delta mode if any one of the phase current is in the reverse direction then the integrator may not accumulate. In short, if the total power is negative, then the integrator (IntG) parameters do not accumulate.
Note: If both the import and export energy are to be measured, then choose the model with IE option.
7. **Does On.h reset with auxiliary power interruption?**
No. The count in On.h stops with auxiliary power interruption and continues from the previous value once power is restored.
8. **Are any stored values reset with power interruption?**
Only the Intr gets incremented with each power interruption.
9. **What happens to t.run when only voltage circuit is energized and no current through current circuit?**
t.run works only on the current in the current circuit and hence is not incremented when there is no current in current circuit.
10. **What happens when the Integrator is cleared?**
When Integrator is cleared, both the IntG and md registers are cleared to zero. The data available in IntG registers is stored in Old register.
11. **What happens when md is cleared?**
When md is cleared only the data in md register is cleared. The IntG registers are unaffected if md is cleared.
12. **Is it possible to reset Intr to zero by the user?**
Intr is a count of the number of interruptions to the auxiliary supply and reset to zero whenever the integrators are cleared

9. FEATURES

1. **What are the various Models and Options available?**
EM 6400
EM 6400 + Demand
EM 6400 + IE
EM 6400 + Demand + IE

2. **What is the difference in the Demand parameter between EM 3000 and EM6400?**

S.No	EM3000	EM6400
1	Demand interval is selectable in steps of 1 min (1 to 30 min)	Demand interval is selectable through setup in steps of 5 min (5, 10,15,20,25 and 30).
2	Sliding window (Auto), Fixed window (RTC, User) can be selected through setup table.	Auto (sliding window) / User (Fixed window) can be selected through setup table. RTC sync is not commonly used and is not available.
3	Demand can be calculated for VA or W parameter, which can be selected through the setup table.	Same as EM3000
4	When the Aux supply is OFF the demand starts from the corresponding data in Auto and RTC demand. User demand starts from zero.	When the meter Auxiliary supply is OFF the demand (both sliding and fixed) starts from zero.
5	Demand update is every 15seconds	Same as EM3000
6	Demand control is possible with EM 3460.	Only demand monitor is possible with EM 6400. Demand Control is not possible and No predictive demand.
7	Time of occurrence for the Maximum Demand is real time i.e. HH: MM:SS and DD: MM: YYYY.	The time of occurrence for the Maximum Demand is on hrs of the system, since there is no RTC.
8	CLR Maximum Demand 1. Maximum Demand in version 5 can be cleared from the front panel CLR key while viewing the demand (not in auto mode) independent of integrator. 2. Even though integrator reset will clear Max demand, profile will be available, in which H1 and L1 of the demand can be referred. 3. Auto reset is optional.	CLR the Maximum Demand : 1. Maximum demand can be cleared independently through the CLR function in the setup mode. 2. When the Integrator is cleared, Maximum Demand also clears. Because the time of occurrence is based on the On.h 3. Auto reset option not available.

3. **Does EM 6400 have the IE option?**

IE is an optional feature available with EM6400.

4. **What is the difference between I/E feature of EM3000 and EM6400?**

S.No	EM3000	EM6400
1	Import and Export is based on the total power parameters i.e. If total W and VAR is in the export side, energy will accumulate in the export side. Example: $W_r=1200$, $W_y=-1200$, $W_b=1200$ then $W_t=1200$ $VAR_r=10$, $VAR_y=-8$, $VAR_b=-6$, $VAR_t=-4$ which lies in 4 th quadrant. So energy will accumulate in the Import side.	Same as EM3000
2	Induction and capacitive option is not available in EM3000 EM3000 doesn't have separate inductive and capacitive VARh. Only net VARh is available.	KVARh inductive total will be the addition of 1st and 3rd quadrant kVARh. KVARh capacitive will be addition of 2nd and 4th quadrant kVARh.
3	No separate run.h for Import and Export, only total (Import + Export) is available.	Separate run.h for the Import and Export, i.e. when the meter is in the import separate run.h is accumulated and when the meter is in the Export separate run.h will be accumulated. Total run.h is calculated by the addition of import run.h and export run.h.
4	Over range indication (-HI-) is not required for EM 3000, because if any of the overflow parameters, including VAh total crosses the overflow limit meter overflows.	If the meter Import VAh is 9998G and the Export VAh is 9998G, the total VAh will be 19996G. Even though eLAN will transmit the correct value, this is out of range for the display. So it will be displayed as HI-. But this is an extreme condition, not found in practice.

FAQs for DigitAN

5. **Does EM 6400 measure THD for V and A?**
EM 6400 with THD measurements for V (V%1, V%2, V%3) and A (A%1, A%2, A%3) is an ordering option. Please specify clearly at the time of ordering if you require this feature. However, these are only INTRODUCTORY FEATURES.
6. **How many parameters are there in THD block?**
THD (Line to neutral) block has 6 parameters. THD per phase V and A
There are two pages for THD in the display.
V% gives the percentage of voltage (L-n) THD in V1, V2 and V3 phase
A% gives the percentage of current (L) THD in A1, A2 and A3 phase.
7. **Does EM 6400 give the percentage of individual harmonics?**
No, individual harmonics are not measured in EM 6400. Only per phase V (V1, V2, V3) and A (A1, A2, A3) total harmonic distortion are available.
8. **What is the unit of THD value displayed or how is the THD calculated?**
THD values displayed are in terms of percentage of rms value of the respective voltage and current phases. Not in terms of fundamental.
9. **What does Maximum demand time mean?**
Maximum demand time indicates the on-hour of the meter at which the maximum demand had occurred. To know the correct time of occurrence of maximum demand, it is important to connect uninterrupted power supply across auxiliary terminals.
10. **Is it possible to reset all the stored values at once?**
Yes. Clearing the integrator allows the user to reset all the saved IntG parameters.
11. **When are the Old values saved?**
Values from IntG are saved in Old register in case
 - Integrator is cleared (IntG Clear)
 - Overflow of Wh/VAh parameters
 - Reset of Integrator
12. **List the parameters whose old values get saved when IntG is cleared?**
The IntG values getting stored in Old are: Wh, VAh, VARh, -VARh.

10. COMMUNICATION

1. **Can the meter be connected to the communication network?**
Yes. DigitAN can be connected to the network through RS485 port.
2. **What is the communication protocol for DigitAN?**
Communication protocol is MODBUS RTU.
3. **What is the meaning of Compatible Linear Map?**
The compatible linear map starts from address 3900. All the parameters available in this block can be read individually or as a block.
4. **How many parameters can be read in the single query from the compatible block?**
The user can configure any number of parameters in between 1 and 50.
5. **What will happen if any non available block is queried?**
If any other non available block is queried, meter will transmit zero.
6. **Are all the parameters displayed by the meter available for communication?**
Yes, except the DiaG pages and the set up block.
7. **Where can I get the Address Map?**
NOTE: All queries related to Address Map to be transferred to EMS Group at CONZERV.

11. GENERAL

1. How can we find the meter constant?

This is not applicable for EM 6000 series products.

Meter constant is just a relation between the blinking rate of the POP LED and energy consumption (display reading).

For **Example:** 1000 impulses/ kWh. Generally manufacturers provide POP LED which blink faster than the display / counter update and it is useful where the display is mechanical (impulse or stepper) counter. But in case of EM 6400, meters displays instantaneous V, A and Power parameters along with energy parameters. Using this we can easily calculate the accuracy of any parameter. So there is no need of any POP LED and hence there is no meter constant.

An average of a minimum of 10 continuous display values needs to be taken for correct measurement of instantaneous parameters.

2. What is the benefit of instantaneous parameters over meter constant (POP)?

Generally, POP is provided to check the Accuracy of the meters with mechanical display. In this method approximately 400 pulses are counted and compared with respect to the reference meter pulse. Large number of pulses is required in this method to reduce the measurement error, i.e. 1/4th of accuracy. Higher the impulse / kWh, faster is the test. Mostly the tariff meters are with mechanical displays and the test benches at electricity boards do not have a very stable source. So the Electricity Board insists on the POP LED on every meter for the purpose of testing.

In the case of DigitAN, we can see the instantaneous parameter updating every second. This will directly show the accuracy of parameter and very useful for testing both at laboratory as well as in the field.

Average of 10 display readings will give the correct accuracy. But using the POP is both time consuming and may not give the correct information under all the conditions.

Example: For meter constant 1600 (1600 pulses per kW):

At 100% load, measurement time for 400 pulse is 400/1600 hours = 15minutes as against 5 to 10 seconds in the case of ELF.

At 25% load, measurement time for 400 pulse is = 60minutes as against 5 to 10 seconds in the case of ELF.

At field it is not possible to check the accuracy of meter using the POP.

3. What is the purpose of DIAG pages?

S.No	DIAG	Available in EM6400
1	Communication unit id	Available in DIAG1 – Row1. This row is used to display the communication status also.
2	Communication baud rate	Available in DIAG1 – Row2.
3	Communication parity and stop bit.	Available in DIAG1 – Row3.
4	Model no	Available in DIAG2 – Row1
5	Version no	Available in DIAG2 – Row2 and 3
6	Display scanning	Available in DIAG3 to test the LEDs
7	No of times blocks fails to read	Available in Diag4 – Row1
8	No of times 1 st block failed to read	Available in Diag4 – Row2
9	No of times 2 nd block failed to read	Available in Diag4 – Row3
10	Check Sum	Available in Diag5 – Row1
11	Time taken for parameter calculation from 756 ms to x	Available in Diag5 – Row2
12	Time taken for navigation max -750 ms to y	Available in Diag5 – Row3
13	Integrator Reset mode : <ul style="list-style-type: none"> • 1 for manual clear. • 2 for overflow according to the CT and PT ratio. • 3 for Due to the internal error. 	Available in DAIG6 – Row1.
14	If overflow due to which parameter : <ul style="list-style-type: none"> • 1 for VAh forward. • 2 for Wh forward. • 3 for VARh inductive forward. • 4 for VARh capacitive forward. • 5 for VAh Reverse. • 6 for Wh Reverse. 	Available in DAIG6 – Row2.

FAQs for DigitAN



	<ul style="list-style-type: none"> • 7 for VARh inductive Reverse. • 8 for VARh capacitive Reverse. 	
15	Value at which the overflow occurred.	Available in DAIG6 – Row3.
16	Element selected in the setup table.	Available in DAIG7 – Row1.
17	VA Arithmetic or 3D selected in the setup table	Available in DAIG7 – Row2.
18	Label selected in the setup table.	Available in DAIG7 – Row3.

DIAG 4 and 5 are for internal QA purpose.

4. **Does this meter function when connected with other meters?**

Yes DigitAN can be used along with other meters (Connect the input currents in series and input voltages in parallel with the other meters).

5. **What does DIAG stand for?**

DIAG stands for diagnostic pages. Refer FAQ 3 above for details contents of DIAG pages.

6. **Can the user edit the values in the DIAG pages?**

The values in DIAG pages cannot be edited by the user.

7. **What are the climatic conditions under which EM6400 can function without any failure or error?**

Temperature range for operation of DigitAN	– 10 to 60 °C, (14 to 140 °F)
Temperature range for storage of DigitAN	– 25 to 70 °C, (-13 to 158 °F)
Humidity	Below 5% to 95%, non-condensing

-----End of the document-----