EETARP
BENDER Group

ELECTRICAL SAFETY
POWER QUALITY
ENERGY MANAGEMENT

Eetarp GEM230-D/630-D/630-CT Training Slide | May 2021

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01 - PRODUCT INFORMATION

GEM230-D Single Phase Direct Connection Energy Meter

GEM230-D

- IEC 62053-21 / EN50470-1/3 MID Class B energy meter
- Single phase direct connection up to 100A
- Nominal voltage, Un 120V or 230Vac
- Operating voltage 80% ~ 120% of Un
- Maximum rate current, Imax 100A
- Overload 30 Imax for 0.01s
- AC voltage withstand 4kV for 1 minute
- Impulse voltage withstand 6KV for 1.2µseconds
- Operational frequency range 50 or 60Hz
- Internal power consumption ≤ 2W/10VA
- IP51(indoor) protection
- CAT II installation category
- RS485 Modbus RTU output
- 1000imp/kWh

01 - PRODUCT INFORMATION

GEM630-D Three Phase Direct Connection Energy Meter

GEM630-D-

- IEC 62053-21 / EN50470-1/3 MID Class B energy meter
- Three phase direct connection up to 100A
- Nominal voltage, Un 3x230/400Vac
- Operating voltage 80% ~ 120% of Un
- Maximum rate current, Imax 100A
- Overload 30 Imax for 0.01s
- AC voltage withstand 4kV for 1 minute
- Impulse voltage withstand 6KV for 1.2µseconds
- Operational frequency range 50 or 60Hz
- Internal power consumption ≤ 2W/10VA
- IP51(indoor) protection
- CAT III installation category
- RS485 Modbus RTU output
- 400imp/kWh

01 - PRODUCT INFORMATION

GEM630-CT Three Phase CT Operated Energy Meter

GEM630-CT

- IEC 62053-21 / EN50470-1/3 MID Class B energy meter
- Three phase CT operated / 333mV
- Nominal voltage, Un 3x230/400Vac
- Operating voltage 60% ~ 120% of Un
- Maximum rate current, Imax 333mV / 5A CT
- Overload 20 Imax for 0.01s
- AC voltage withstand 4kV for 1 minute
- Impulse voltage withstand 6KV for 1.2µseconds
- Operational frequency range 50 or 60Hz
- Internal power consumption ≤ 2W/10VA
- IP51(indoor) protection
- CAT III installation category
- RS485 Modbus RTU output
- 3200imp/kWh

02 – DEVICE CONNECTION

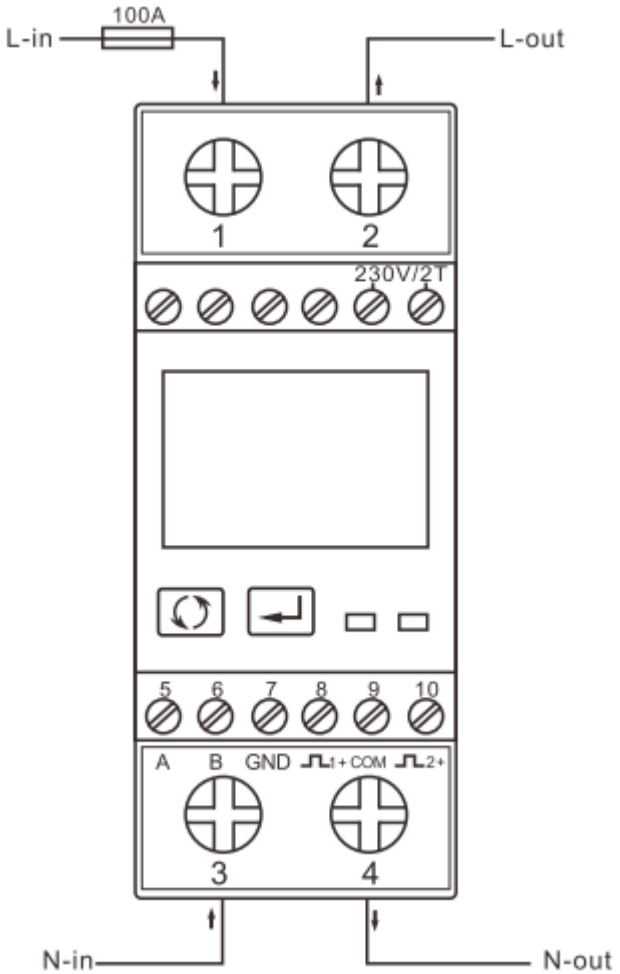
02 – DEVICE CONNECTION

GEM630-D-M

GEM230-D

GEM630-CT

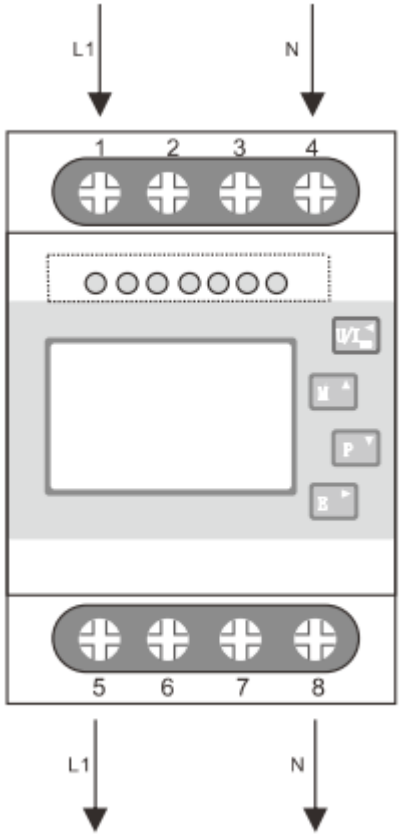
02 – DEVICE CONNECTION (GEM230-D)



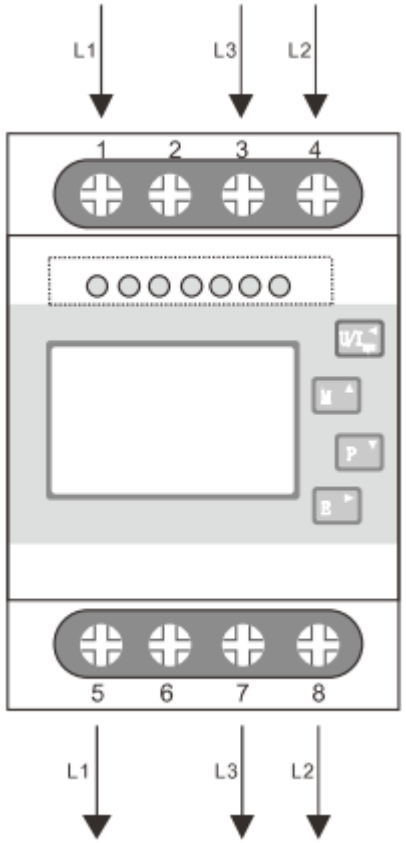
02 – DEVICE CONNECTION (GEM630-D)

Current and Voltage Terminals

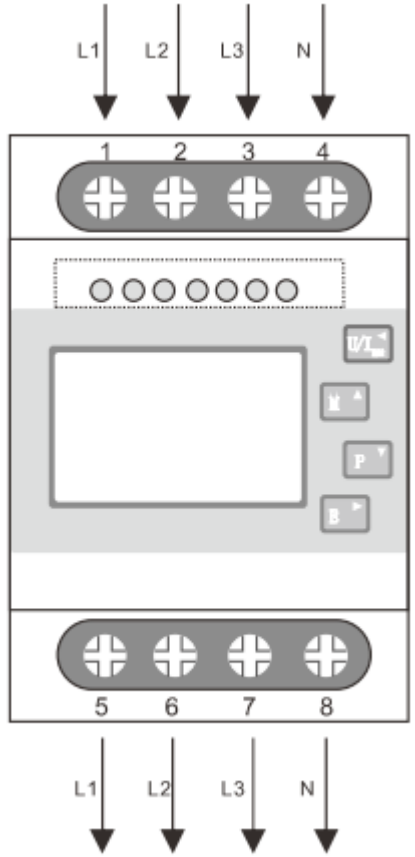
Single phase two wires



Three phase three wires

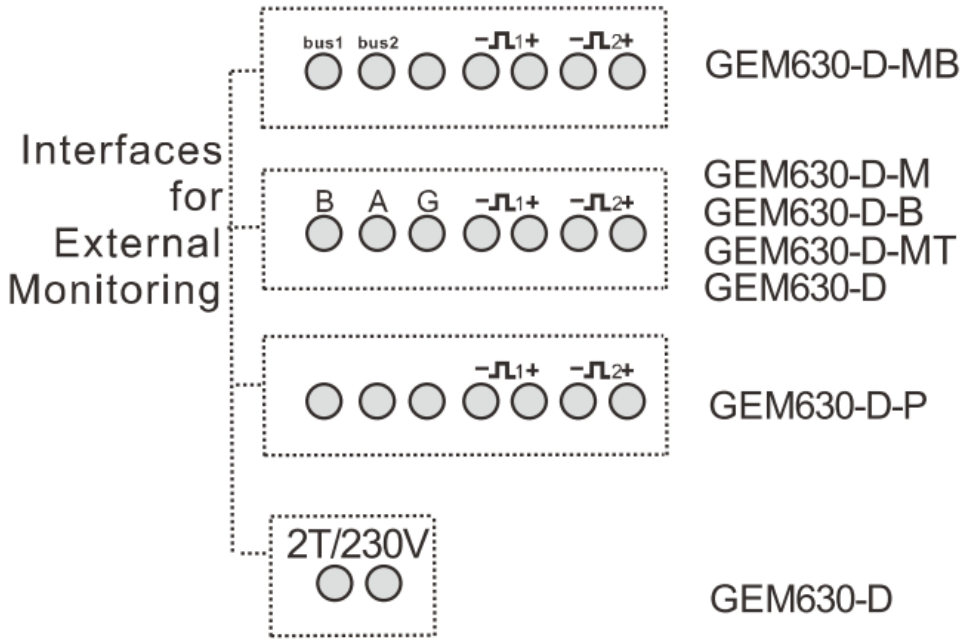


Three phase four wires



02 – DEVICE CONNECTION (GEM630-D-M)

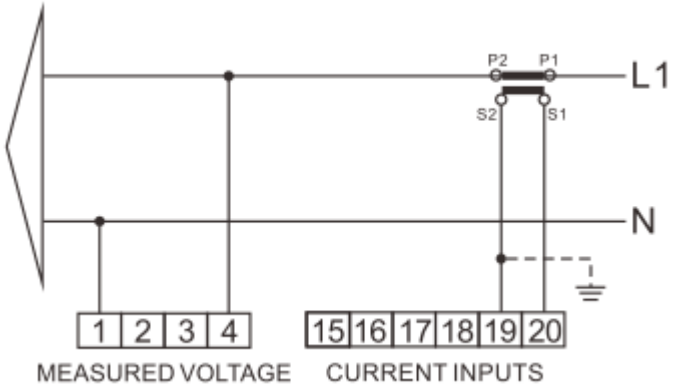
Other Terminals



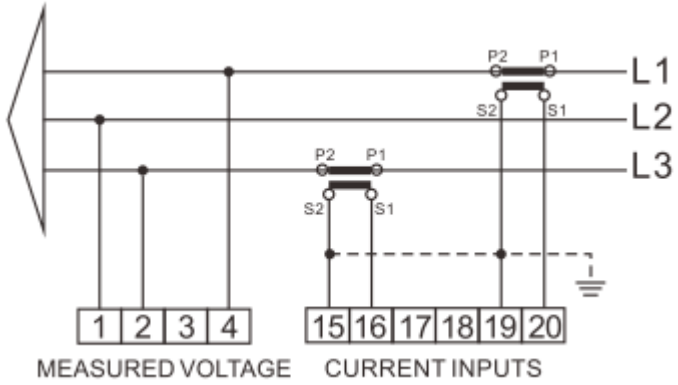
02 – DEVICE CONNECTION (GEM630-CT)

Current and Voltage Terminals

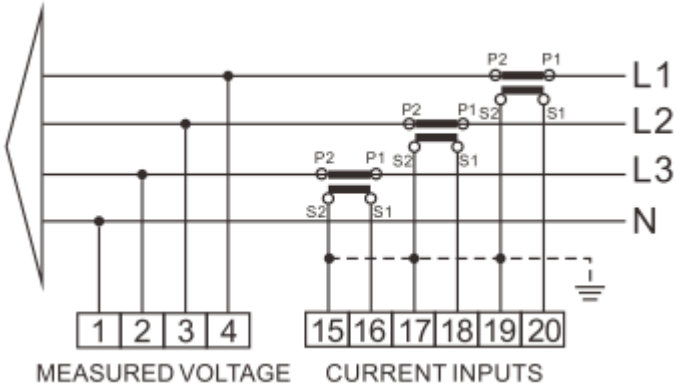
Single phase two wires



Three phase three wires



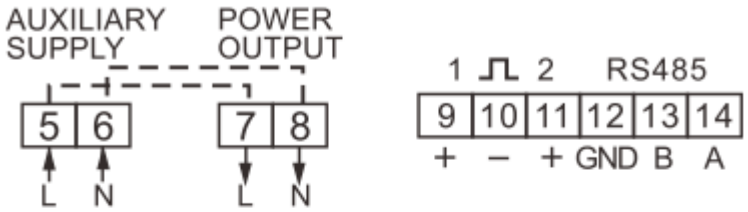
Three phase four wires



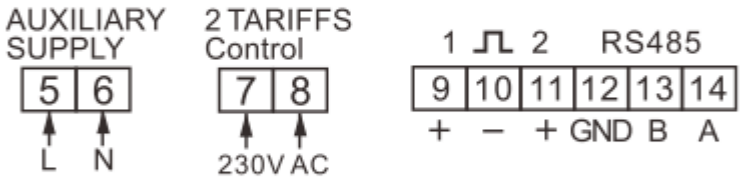
02 – DEVICE CONNECTION (GEM630-CT)

Other Terminals

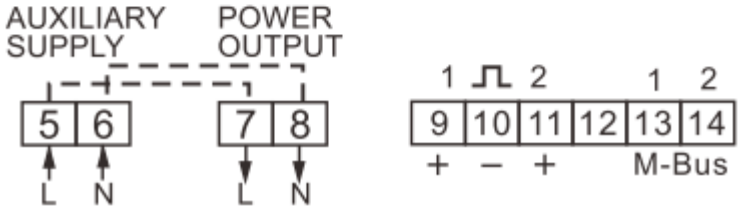
GEM630-CT-M



GEM630-CT



GEM630-CT-MB



03 – DEVICE SETUP

03 - BASIC DEVICE SETUP

GEM630-D-M

GEM230-D

GEM630-CT

03 – DEVICE SETUP (GEM230-D)

Buttons	Normal Mode	Setup Mode
	➢ Displays measured values: • Active Energy: Total kWh, T1 total kWh, T2 total kWh, Import kWh, Export kWh, Resettable kWh • Reactive Energy: Total kvarh, T1 total kVarh, T2 total kVarh, Import kVarh, Export kVarh, Resettable kVarh • Maximum Power Demand • Voltage • Current • Active Power • Reactive Power • Apparent Power • Power Factor • Frequency • Pulse Constant • Continuous running time	➢ "Left" or "Back" button ➢ Exit from the menu
		➢ Press 3s,for Set-up mode entry

03 – DEVICE SETUP (GEM230-D)

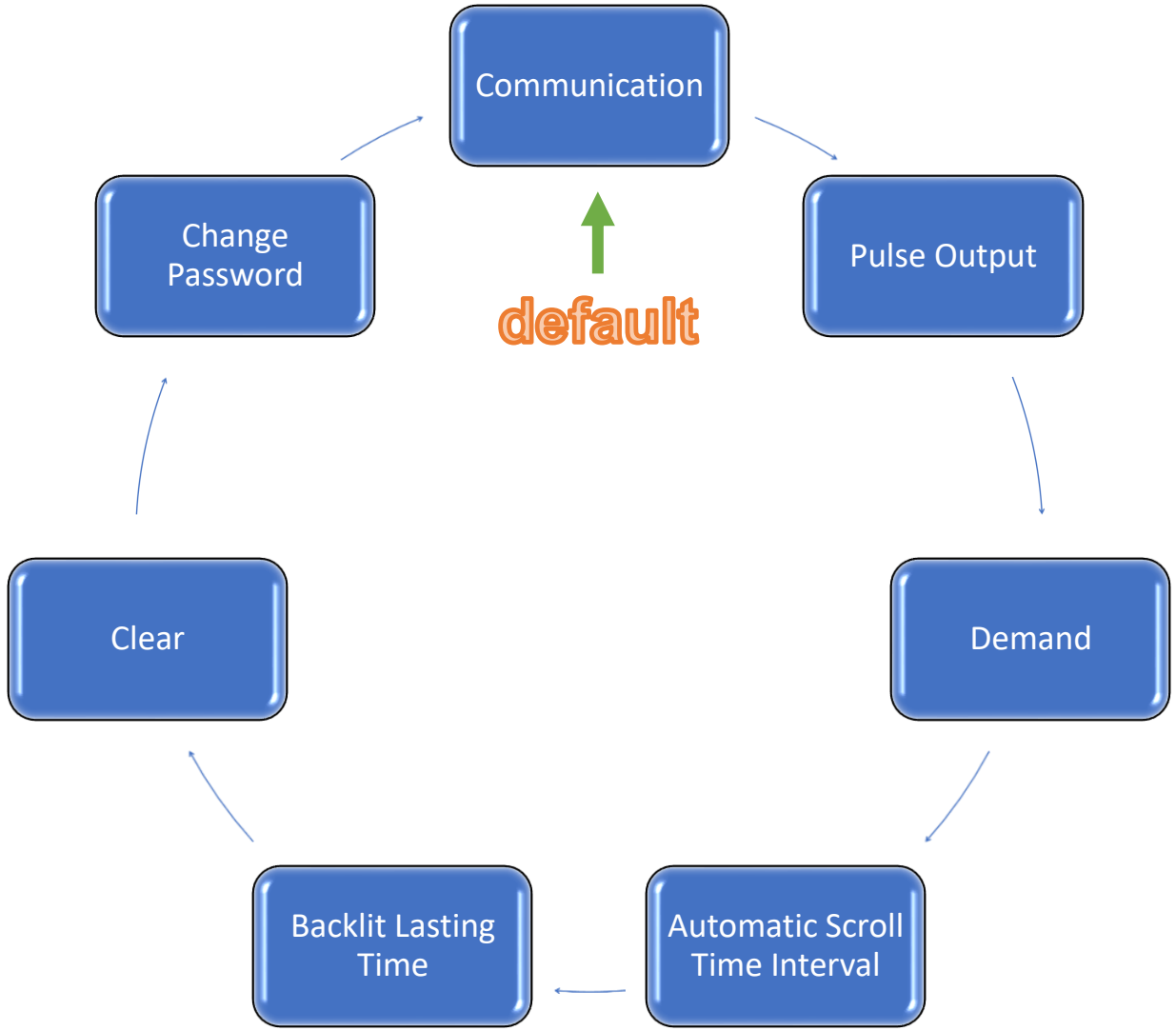
Setup Entry

- Press ↵ for 3 seconds
- Enter Password (Default: 1000)
- Press ↵ for 3 seconds to confirm entry

03 – DEVICE SETUP (GEM230-D)

General Menu

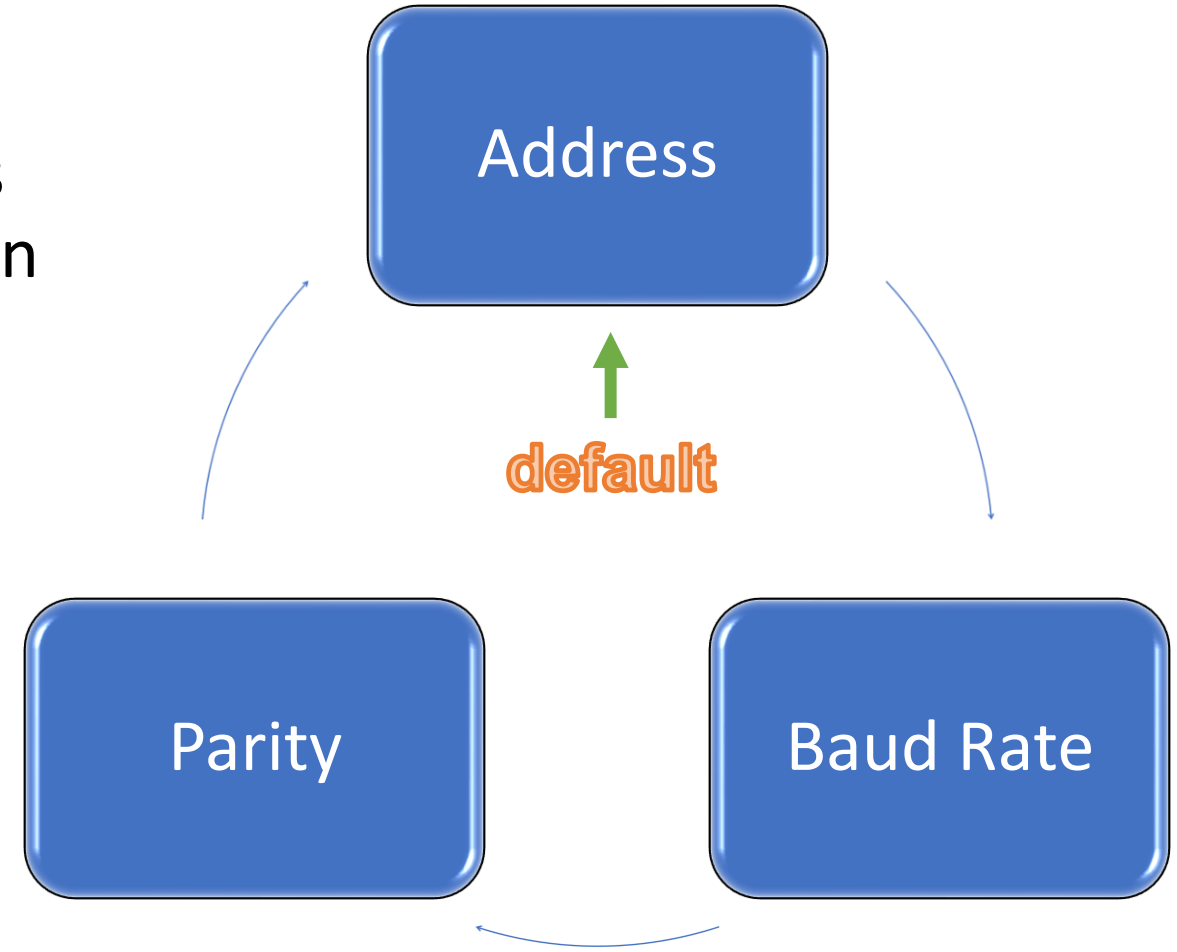
- Graphic depicts the categories available for configuration, in sequence
- Press ⟳ to change configuration category
- Press ↵ to confirm selection
- Press ⟳ to change configuration setting
- Press ↵ to confirm setting



03 – DEVICE SETUP (GEM230-D)

i. Communication Setup

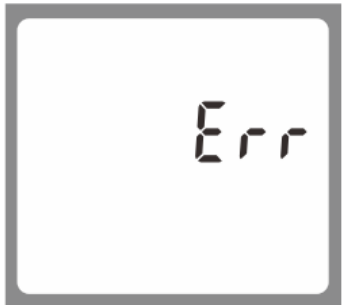
- Graphic depicts the categories available inside communication setting, in sequence



03 – DEVICE SETUP (GEM230-D)

i. (a) Communication - Meter Address

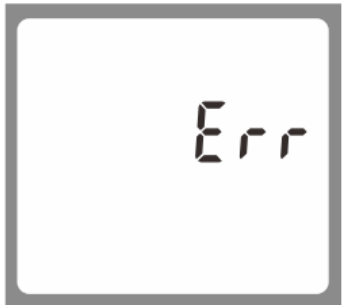
- Once Password is entered, **Meter Address** will be the default page
- Press ↵ the first digit starts flashing
- Press ⟳ to change meter address, range 001-247
- Press ↵ to confirm setting
- “Good” wording appears when setting is done correctly
- “Err” appears when then entered information is wrong, operation fails



03 – DEVICE SETUP (GEM230-D)

i. (b) Communication - Baud Rate

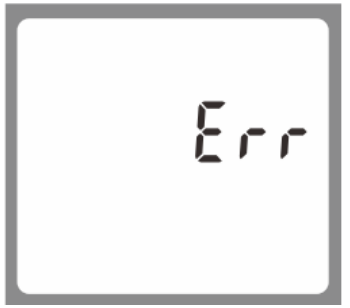
- Press ↵ till red part starts flashing
- Press ⟳ to change baud rate, range 1200, 2400, 4800 and 9600bps
- Press ↵ to confirm setting
- “Good” wording appears when setting is done correctly
- “Err” appears when then entered information is wrong, operation fails



03 – DEVICE SETUP (GEM230-D)

i. (c) Communication - Parity

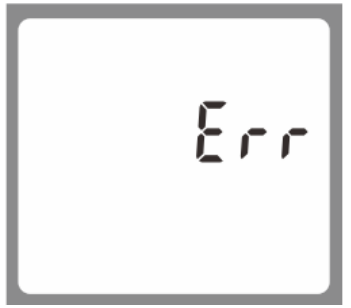
- Press ↵ till red part starts flashing
- Press ⟳ to change parity, option None, Even and Odd
- Press ↵ to confirm setting
- “Good” wording appears when setting is done correctly
- “Err” appears when then entered information is wrong, operation fails



03 – DEVICE SETUP (GEM230-D)

ii. (a) Pulse Output

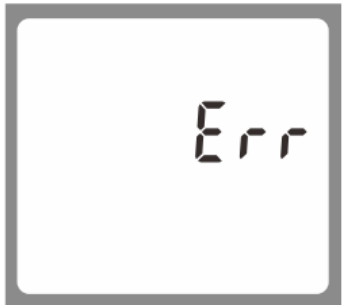
- Press ↵ till red part starts flashing
- Press ⟳ to change pulse output 1, option kWh, kVarh, Imported kWh, Exported kWh, Imported kVarh and Exported kVarh
- Press ↵ to confirm setting
- “Good” wording appears when setting is done correctly
- “Err” appears when then entered information is wrong, operation fails



03 – DEVICE SETUP (GEM230-D)

ii. (b) Pulse Constant

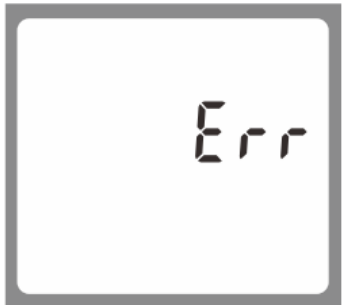
- Press ↵ till red part starts flashing
- Press ⟳ to change pulse constant, option 1000 / 100 / 10 / 1
- Press ↵ to confirm setting
- “Good” wording appears when setting is done correctly
- “Err” appears when then entered information is wrong, operation fails.



03 – DEVICE SETUP (GEM230-D)

ii. (c) Pulse Duration

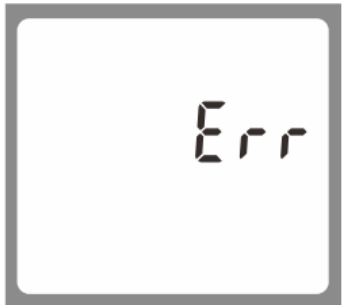
- Press ↵ till red part starts flashing
- Press ⟳ to change pulse duration, option 200ms / 100ms / 60ms
- Press ↵ to confirm setting
- “Good” wording appears when setting is done correctly
- “Err” appears when then entered information is wrong, operation fails



03 – DEVICE SETUP (GEM230-D)

iii. Demand Integration Time

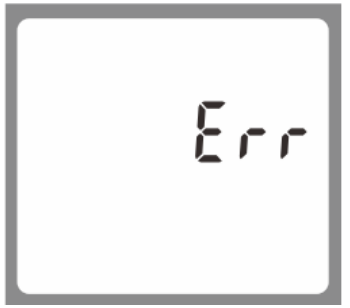
- Press ↵ till red part starts flashing
- Press ⟳ to change demand integration time, option off (0) / 5 / 10 / 15 / 30 / 60min
- Press ↵ to confirm setting
- “Good” wording appears when setting is done correctly
- “Err” appears when then entered information is wrong, operation fails



03 – DEVICE SETUP (GEM230-D)

iv. Automatic Scroll Time Interval

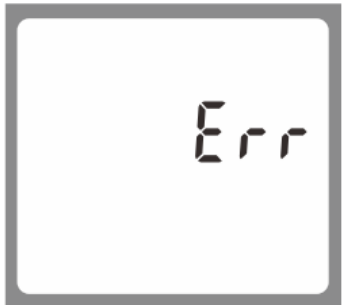
- Press ↵ till red part starts flashing
- Press ⟳ to enable and define automatic scroll time interval, range 0~30s
- Press ↵ to confirm setting
- “Good” wording appears when setting is done correctly
- “Err” appears when then entered information is wrong, operation fails



03 – DEVICE SETUP (GEM230-D)

v. Backlit Lasting Time

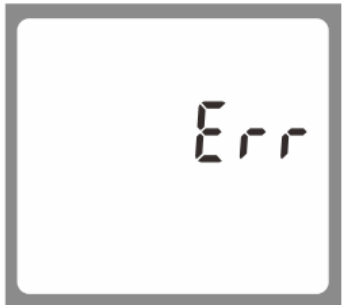
- Press ↵ till red part starts flashing
- Press ⟳ to enable and define backlit lasting time, option off (0) / 5 / 10 / 20 / 30 / 60mins
- Press ↵ to confirm setting
- “Good” wording appears when setting is done correctly
- “Err” appears when then entered information is wrong, operation fails



03 – DEVICE SETUP (GEM230-D)

vi. Clear

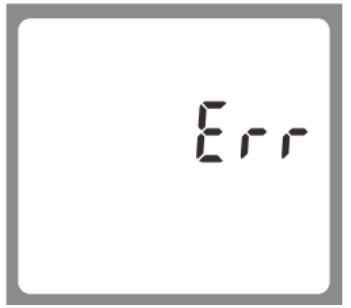
- Press ↵ till red part starts flashing
- Press ⟳ to reset maximum demand of active power or resettable energy
- Press ↵ to confirm setting
- “Good” wording appears when setting is done correctly
- “Err” appears when then entered information is wrong, operation fails



03 – DEVICE SETUP (GEM230-D)

vii. Change Password

- Press ↵ till red part starts flashing
- Press ⟳ to reset default password and configure new password
- Press ↵ to confirm setting
- “Good” wording appears when setting is done correctly
- “Err” appears when then entered information is wrong, operation fails



03 – DEVICE SETUP (GEM630-D-M)

Buttons	Normal Mode	Setup Mode
	➢ Displays voltage and current information of the selected system type (3p4w, 3p3w and 1p2w)	➢ “Left” or “Back” button ➢ Exit from the menu
	➢ Display power factor, frequency and maximum demand	➢ “Up” button
	➢ Display active power, reactive power and apparent power information of the selected system type	➢ “Down” button ➢ Reduce value when configure meter setting
	➢ Display total / import / export active or reactive energy information of the selected system type. ➢ Right side move	➢ Set-up mode entry ➢ Default password 1000 ➢ “Enter” or “Right” button

03 – DEVICE SETUP (GEM630-D-M)

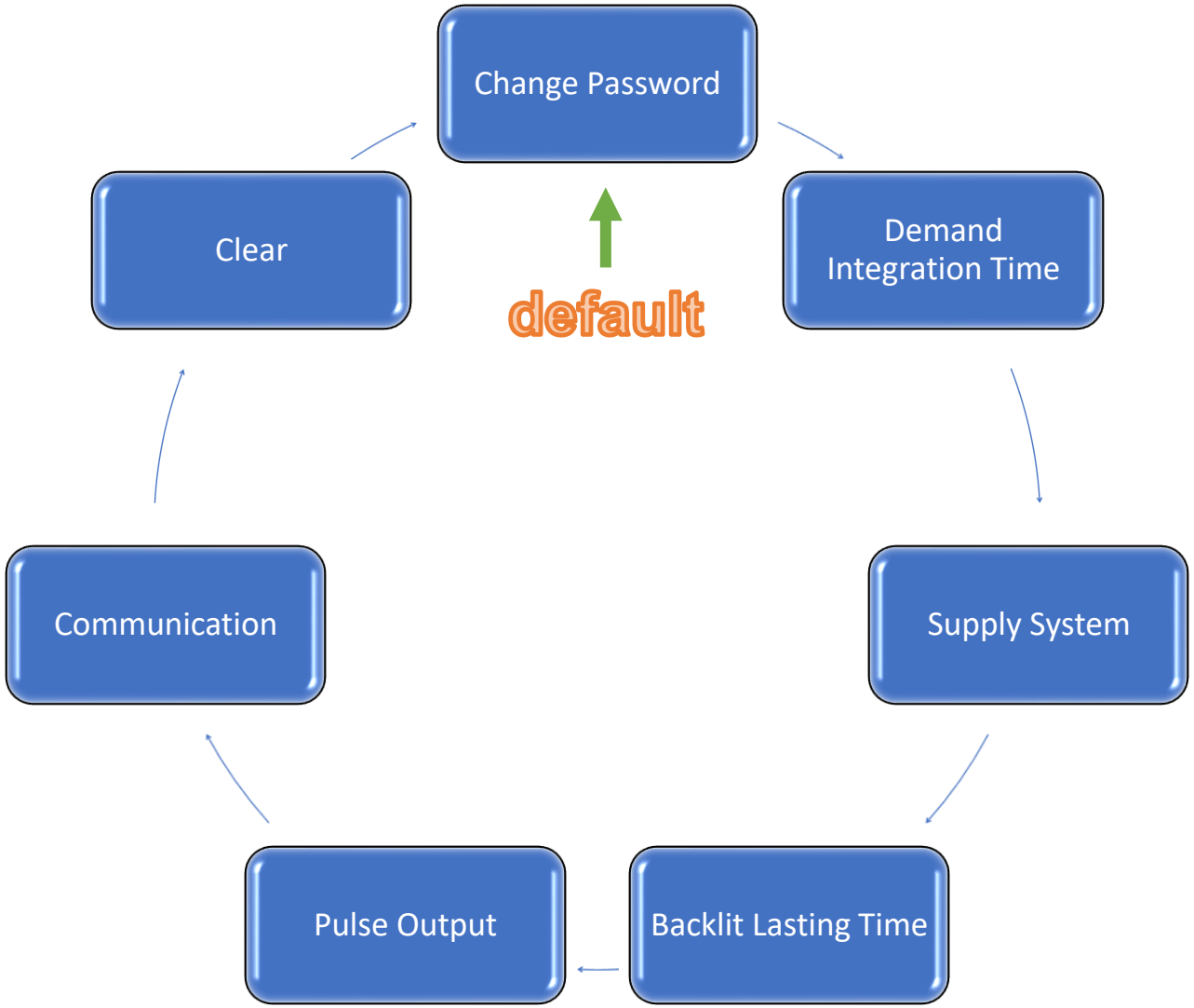
Setup Entry

- Press E for 3 seconds
- Use MD/PF/HZ and P to enter password (Default: 1000)
- Press E for 3 seconds to confirm entry
- If incorrect password is entered, “Err” wording will display

03 – DEVICE SETUP (GEM630-D-M)

General Menu

- Graphic depicts the categories available for configuration, in sequence
- Use MD/ PF/HZ and P to change configuration category
- Press E to confirm selection
- Use MD/ PF/HZ and P to change configuration setting
- Press E to confirm setting



03 – DEVICE SETUP (GEM630-D-M)

i. Change Password

- Press E to enter the change password routine and new password screen appears with first digit flashing
- Use MD/ PF/HZ and P to set first digit and press E to confirm the selection, the next digit will flash
- Repeat procedure for remaining 3 digits
- “SET” wording appears when new password is saved successfully

Step 1

Step 2

Step 3

Step 4

03 – DEVICE SETUP (GEM630-D-M)

ii. Demand Integration Time

- Press E to enter selection routine
- Use MD/ PF/HZ and P to change demand integration time, option off (0) / 5 / 10 / 15 / 30 / 60min
- Press E to confirm setting
- “SET” wording appears when new DIT is configured and saved successfully

Step 1

Step 2

Step 3

Step 4

03 – DEVICE SETUP (GEM630-D-M)

iii. Supply System

- Press E to enter selection routine
- Use MD/ PF/HZ and P to determine supply system mode, option 1P2(W), 3P3(W) and 3P4(W)
- Press E to confirm setting
- “SET” wording appears when new DIT is configured and saved successfully

Step 1

Step 2

Step 3

Step 4

03 – DEVICE SETUP (GEM630-D-M)

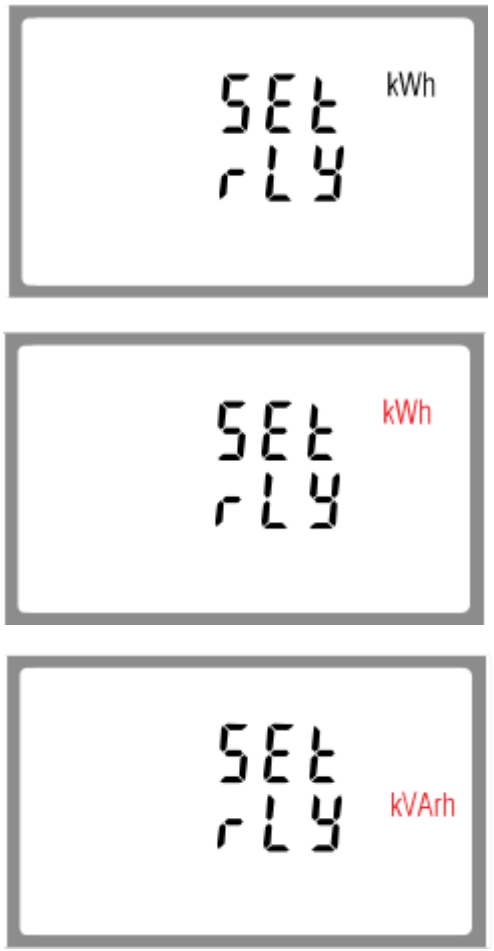
iv. Backlit Lasting Time

- Press E to enter selection routine
- Use MD/ PF/HZ and P to configure backlit lasting time, option 0 (always ON) / 5 / 10 / 30 / 60 / 120mins
- Press E to confirm setting
- “SET” wording appears when backlit lasting time is configured and saved successfully

03 – DEVICE SETUP (GEM630-D-M)

v. (a) Pulse Output

- Press E to enter selection routine
- Use MD/ PF/HZ and P to choose pulse output, option kWh, kVarh, Imported kWh, Exported kWh, Imported kVarh and Exported kVarh
- Press E to confirm setting
- “SET” wording appears when pulse output is configured and saved successfully



03 – DEVICE SETUP (GEM630-D-M)

v. (b) Pulse Rate

- Press E to enter selection routine
- Use MD/ PF/HZ and P to choose pulse rate, option dFt / 0.01 / 0.1 / 1 / 10 / 100 kWh/kVarh
- Press E to confirm setting
- “SET” wording appears when pulse rate is configured and saved successfully

03 – DEVICE SETUP (GEM630-D-M)

v. (c) Pulse Duration

- Press E to enter selection routine
- Use MD/ PF/HZ and P to change pulse duration, option200 / 100 / 60ms
- Press E to confirm setting
- “SET” wording appears when pulse duration is configured and saved successfully

03 – DEVICE SETUP (GEM630-D-M)

vi. (a) Communication - Meter Address

- Press E till the first digit starts flashing
- Use MD/ PF/HZ and P to change meter address, range 001-247
- Press E to confirm setting
- “SET” wording appears when new meter address is configured and saved successfully

03 – DEVICE SETUP (GEM630-D-M)

vi. (b) Communication – Baud Rate

- Press E till the baud rate starts flashing
- Use MD/ PF/HZ and P to change to desired baud rate setting
- Press E to confirm setting
- “SET” wording appears when new baud rate is configured and saved successfully

03 – DEVICE SETUP (GEM630-D-M)

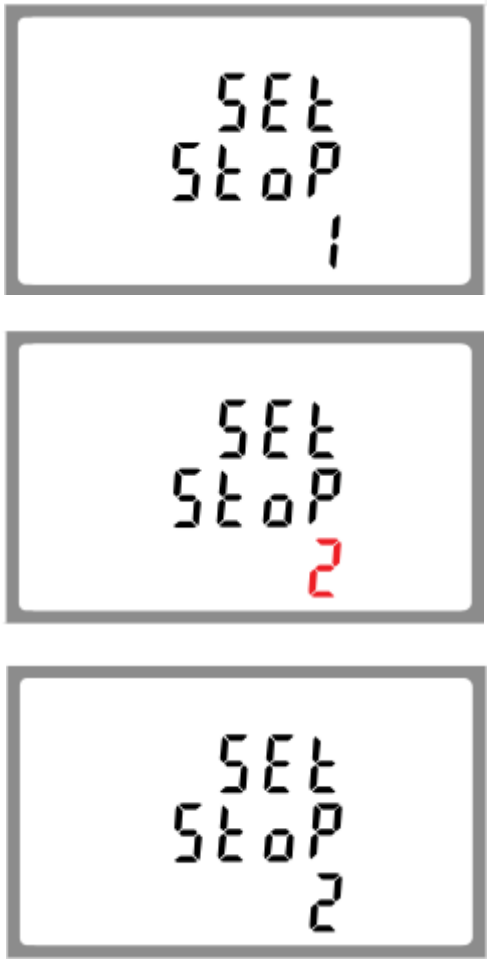
vi. (c) Communication – Parity

- Press E till the parity starts flashing
- Use MD/ PF/HZ and P to change to desired parity setting, option None, Even and Odd
- Press E to confirm setting
- “SET” wording appears when new baud rate is configured and saved successfully

03 – DEVICE SETUP (GEM630-D-M)

vi. (d) Communication – Stop Bit

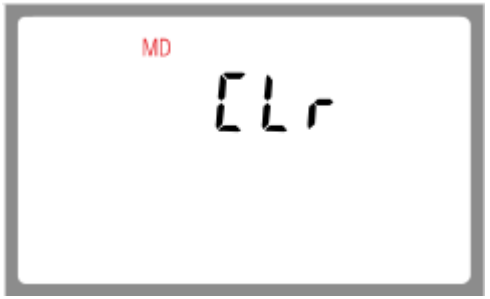
- Press E till the stop bit starts flashing
- Use MD/ PF/HZ and P to change to desired stop bit, option 1 or 2
- Press E to confirm setting
- “SET” wording appears when new stop bit is configured and saved successfully



03 – DEVICE SETUP (GEM630-D-M)

vii. Clear

- Press E till MD red wording starts flashing
- Press E to confirm setting
- “SET” wording appears when new stop bit is configured and saved successfully
- Only maximum demand value of current and voltage can be reset



03 – DEVICE SETUP (GEM630-CT)

Buttons	Normal Mode	Setup Mode
	➢ Displays voltage and current information of the selected system type (3p4w, 3p3w and 1p2w)	➢ “Left” or “Back” button ➢ Exit from the menu
	➢ Display power factor, frequency and maximum demand	➢ “Up” button
	➢ Display active power, reactive power and apparent power information of the selected system type	➢ “Down” button ➢ Reduce value when configure meter setting
	➢ Display total / import / export active or reactive energy information of the selected system type. ➢ Right side move	➢ Set-up mode entry ➢ Default password 1000 ➢ “Enter” or “Right” button

03 – DEVICE SETUP (GEM630-CT)

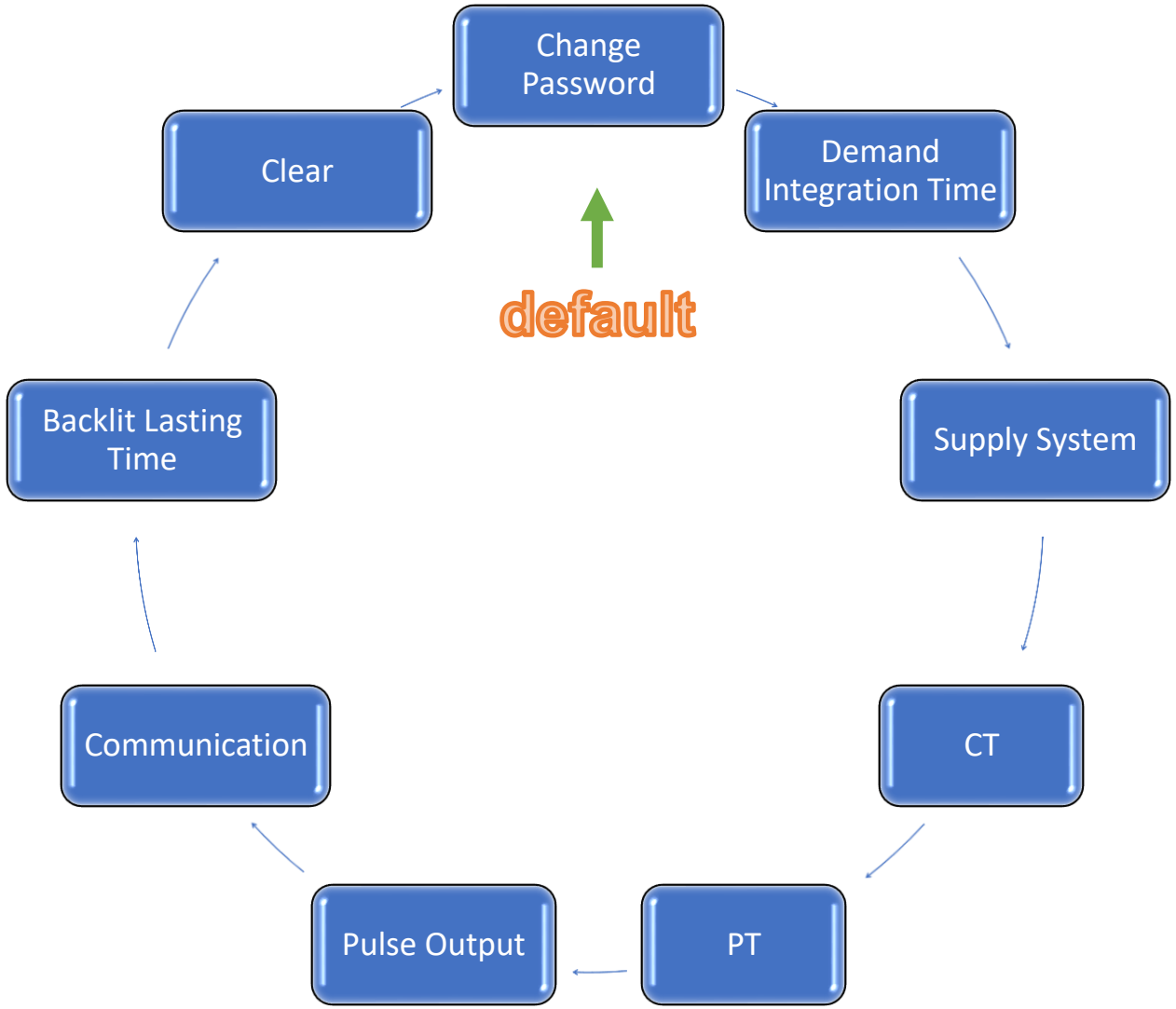
Setup Entry

- Press E for 3 seconds
- Use MD/ PF/HZ and P to enter password (Default: 1000)
- Press E for 3 seconds to confirm entry
- If incorrect password is entered, “Err” wording will display

03 – DEVICE SETUP (GEM630-CT)

General Menu

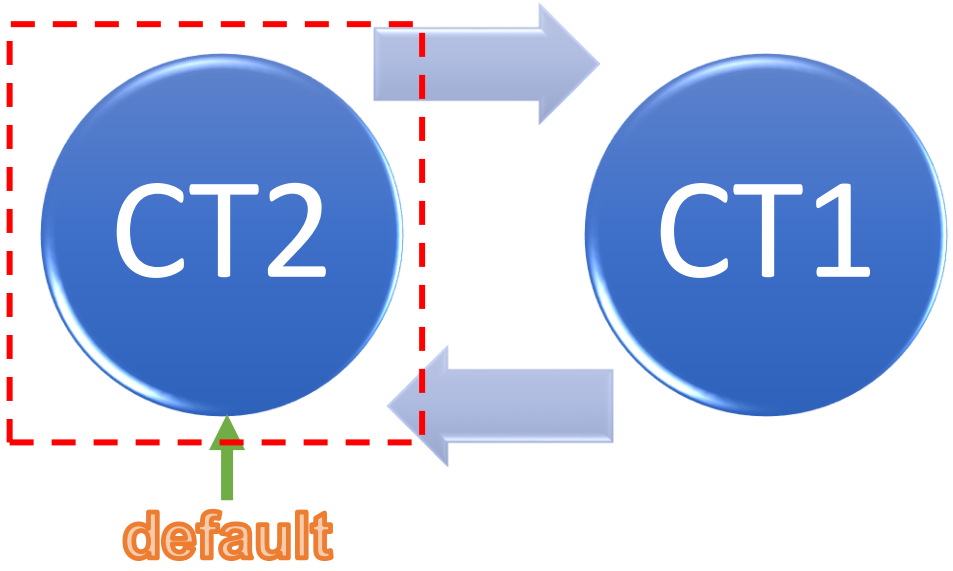
- Graphic depicts the categories available for configuration, in sequence
- Use MD/ PF/HZ and P to change configuration category
- Press E to confirm selection
- Use MD/ PF/HZ and P to change configuration setting
- Press E to confirm setting
- All same as GEM630-D except CT & PT setting

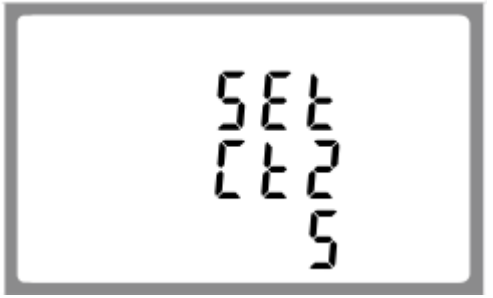


03 – DEVICE SETUP (GEM630-CT)

iv. (a) Current Transformer (CT) – CT2

- Graphic depicts the categories available inside CT, in sequence
- CT2 secondary current input
- Use MD/ PF/HZ and P to choose the CT2 setting, either 5A or 1A
- Press E to confirm setting
- "SET" wording appears when new stop bit is configured and saved successfully

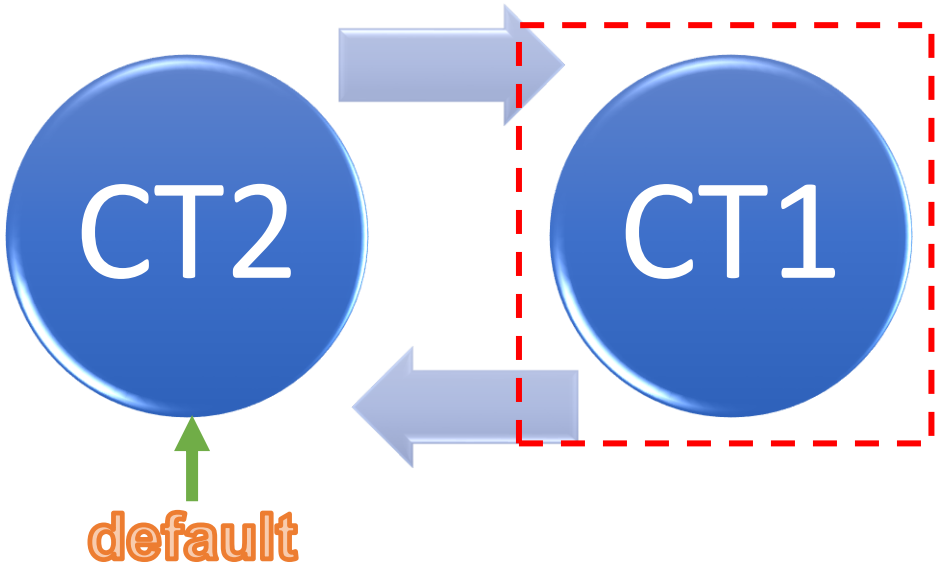




03 – DEVICE SETUP (GEM630-CT)

iv. (b) Current Transformer (CT) – CT1

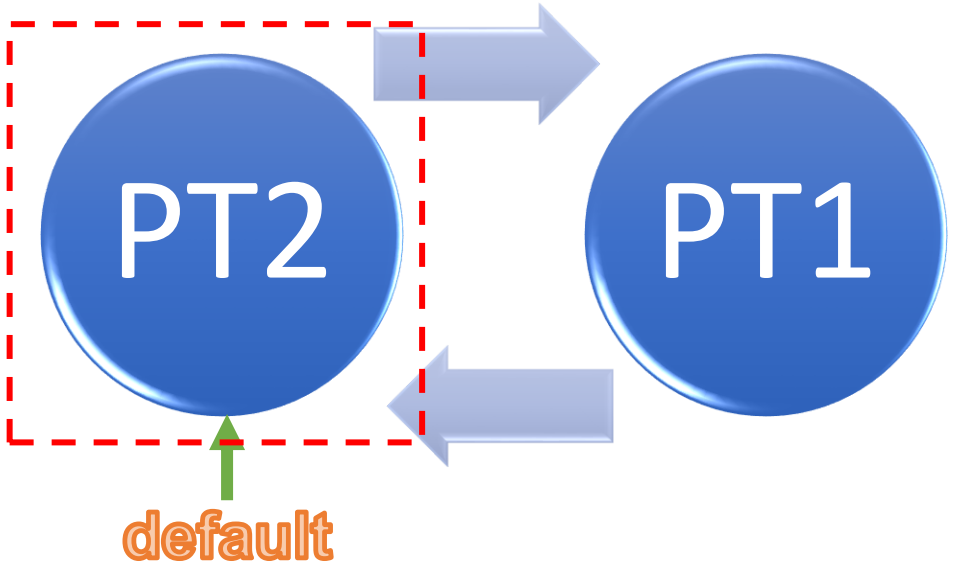
- Use MD/ PF/HZ and P to set CT ratio, range form 0001 to 9999
- For example, if using a 1000/5A current transformer, CT rate should be configured as 200
- Press E to confirm setting
- “SET” wording appears when new stop bit is configured and saved successfully
- Note for MID version of GEM630-CT, only one chance is given to set the CT ratio



03 – DEVICE SETUP (GEM630-CT)

v. (a) Voltage Transformer (PT) – PT2

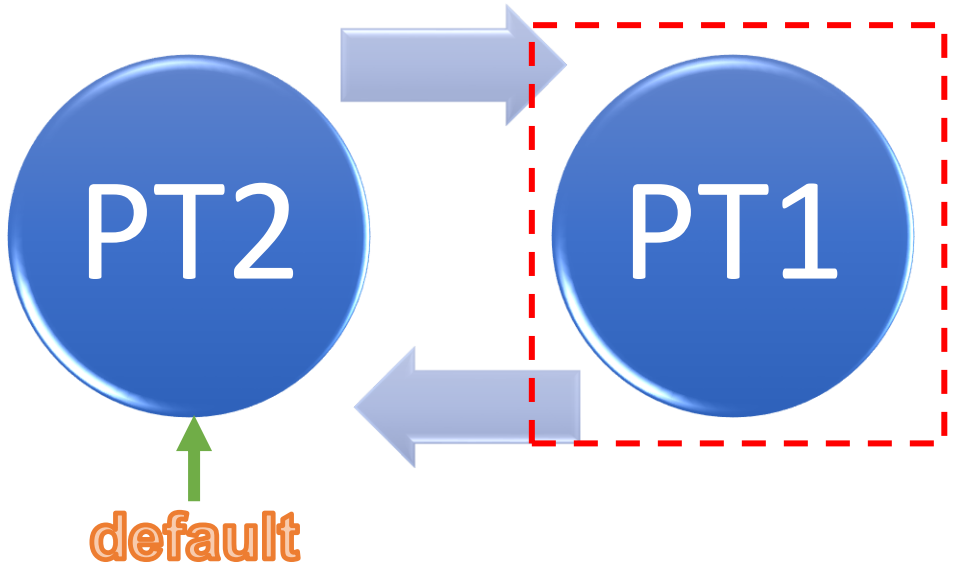
- Graphic depicts the categories available inside PT, in sequence
- PT2 secondary voltage input
- Use MD/ PF/HZ and P to choose the PT2 setting, range 100 to 500V
- Press E to confirm setting
- “SET” wording appears when new stop bit is configured and saved successfully



03 – DEVICE SETUP (GEM630-CT)

v. (b) Voltage Transformer (PT) – PT1

- Use MD/ PF/HZ and P to set PT ratio, range form 0001 to 9999
- For example, if set the ratio to be 100, it means the primary voltage equals secondary voltage x100
- Press E to confirm setting
- “SET” wording appears when new stop bit is configured and saved successfully



04 – FREQUENTLY ASKED QUESTIONS

04 – FREQUENTLY ASKED QESTIONS

GEM630-D

GEM230-D

GEM630-CT

05 – FREQUENCY ASK QUESTIONS

1) What is the different between GEM230-D, GEM630-CT and GEM630-D-M?

GEM230-D – Suitable for Single Phase, direct connection up to 100A

GEM630-D-M - Suitable for three Phase, direct connection up to 100A

GEM630-CT - Suitable for three Phase, CT connection 1/5A

2) How many CTs required for GEM630-CT for 3 phase 4 wires or 3 phase 3 wires application?

3 CTs required and the neutral current will be automatically calculated by the power meter

3) What is the accuracy of GEM series meter

It comply with MID class B standard

4) Is GEM series meter come with memory for data logging?

No, the power meter only come with memory for recording accumulated energy and maximum demand.

Data logging function is not available on GEM series meter

5) What is the sampling rate of GEM series meter ?

The sampling rate of power meter is 32 sample/cycle which equivalent to 1.6kHz

6) How many GEM series meter can be daisy chain in 1 looping?

Theoretically is 32nos but recommend to be <20nos.

05 – FREQUENCY ASK QUESTIONS

7) What is the maximum length RS485 communication cables for GEM series meter ?

Theoretically is 1200 meters.

8) Why BMS / PMS cannot read GEM series meter reading?

Recommend to use Modscan software to connect to the power meter and read the data directly to confirm the connection and meter functionality

https://www.youtube.com/watch?v=STBX1Nc2I0s

9) Can I replace the power meter without shutdown the load?

GEM 630-CT - It is possible but please do take note that voltage signal's fuses need to be pull out and CT secondary signals need to be short link. Whenever possible, we still recommend to replace the meter with system shutdown.

GEM 630-D & GEM230-D – Shutdown is mandatory.

THANK YOU

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