TCM-T3000

Power Quality Analyzer

Power by **IRHAJHUS**

Class Accuracy

U & I

Voltage & Current, Class 0.1

P & Q

Active & Reactive, Class 0.2

PF

Power Factor, Class 0.2

KWh

Active Energy, Class 0.2s

Standards

IEC 62586
Power Quality Measurement in Power Supply System

IEC 61557-12
Power metering and monitoring devices (PMD)

IEC 61000-4-2
Immunity to electrostatic discharge, Level 4

IEC 61000-4-3
Immunity to radio-frequency field, Level 3

IEC 61010-1
Double insulation 300V (CAT III)

Standards

IEC 61000-4-4

Immunity to electrical fast transients/bursts, Level 4

IEC 61000-4-5

Surge Immunity, Level 4

IEC 61000-4-8

Immunity to power frequency magnetic fields, Level 4

IEC 61000-4-30A

Precise power parameter measurement, energy metering, and power quality monitoring capabilities

Functions

Measuring and evaluation of the power quality analysis report.

Memory	Records	Transient
Up to 2 GB	Event & Waveform Recording	Voltage flicker, Sag & Swell

Features

01

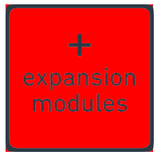
RS-485 Modbus-RTU communications
BPS-2400.....38400 up to 115200

02

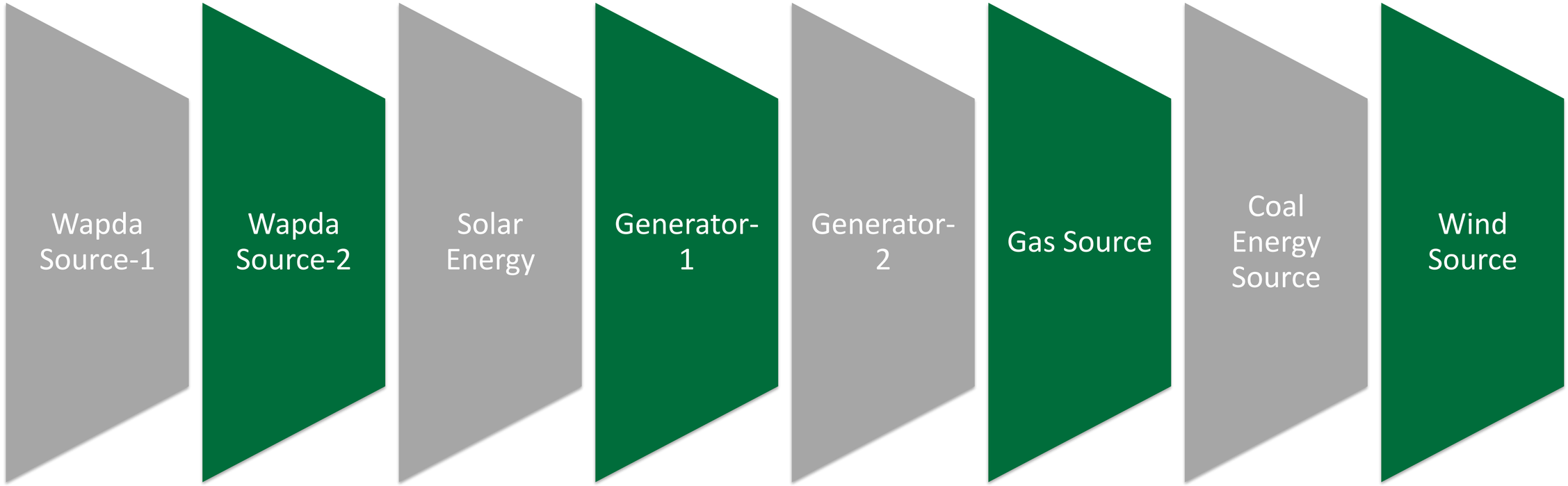
Digital transistor & Analogue outputs
Generation of impulses & Transducer

03

4 Relay outputs & 4 Dry Contact
Generation of alarms

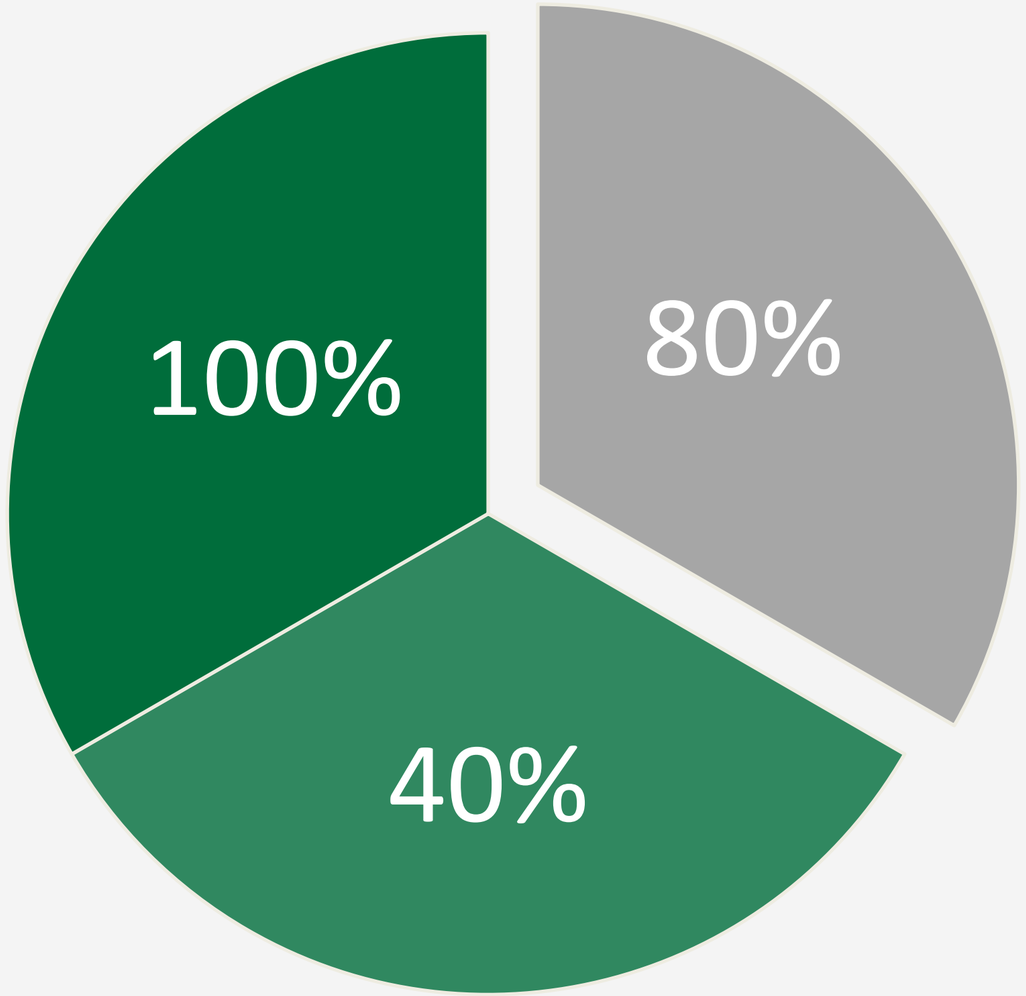


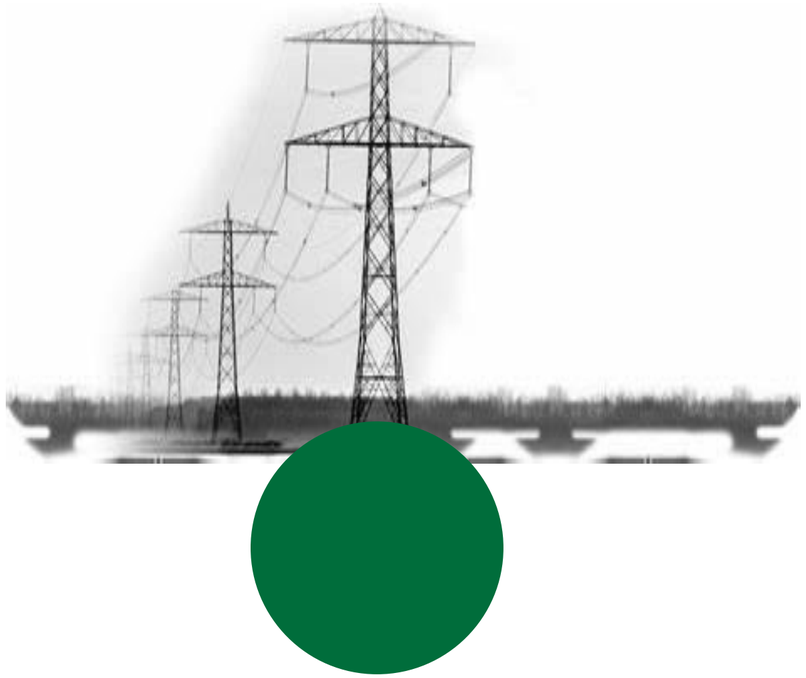
Up to 8 Tariff Energy



Load Percentage

- Efficiency Monitoring
- Preventing Overloading
- Optimizing Energy Usage
- Cost Management
- Load Balancing
- Enhanced System Design

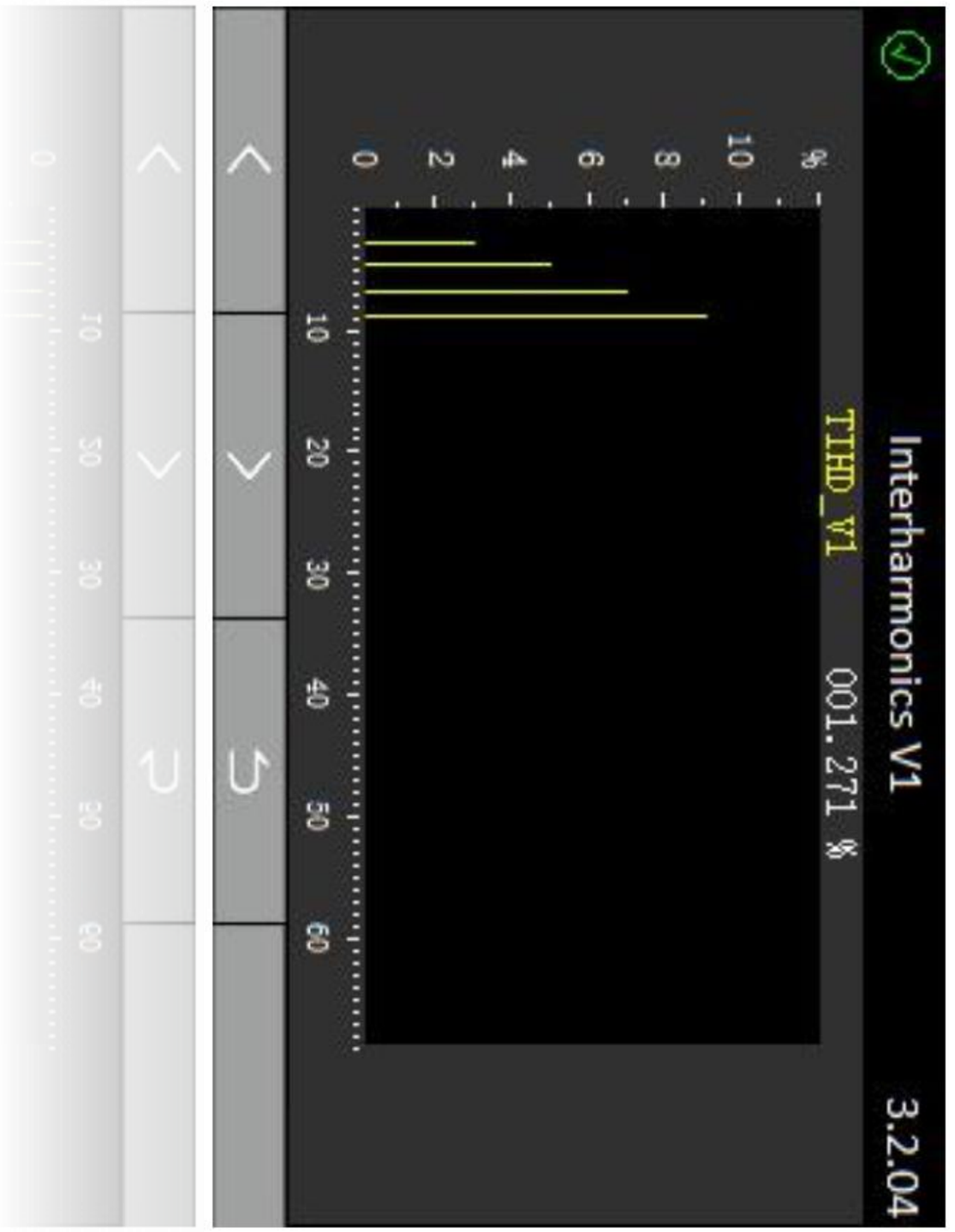




POWER QUALITY OF GRID

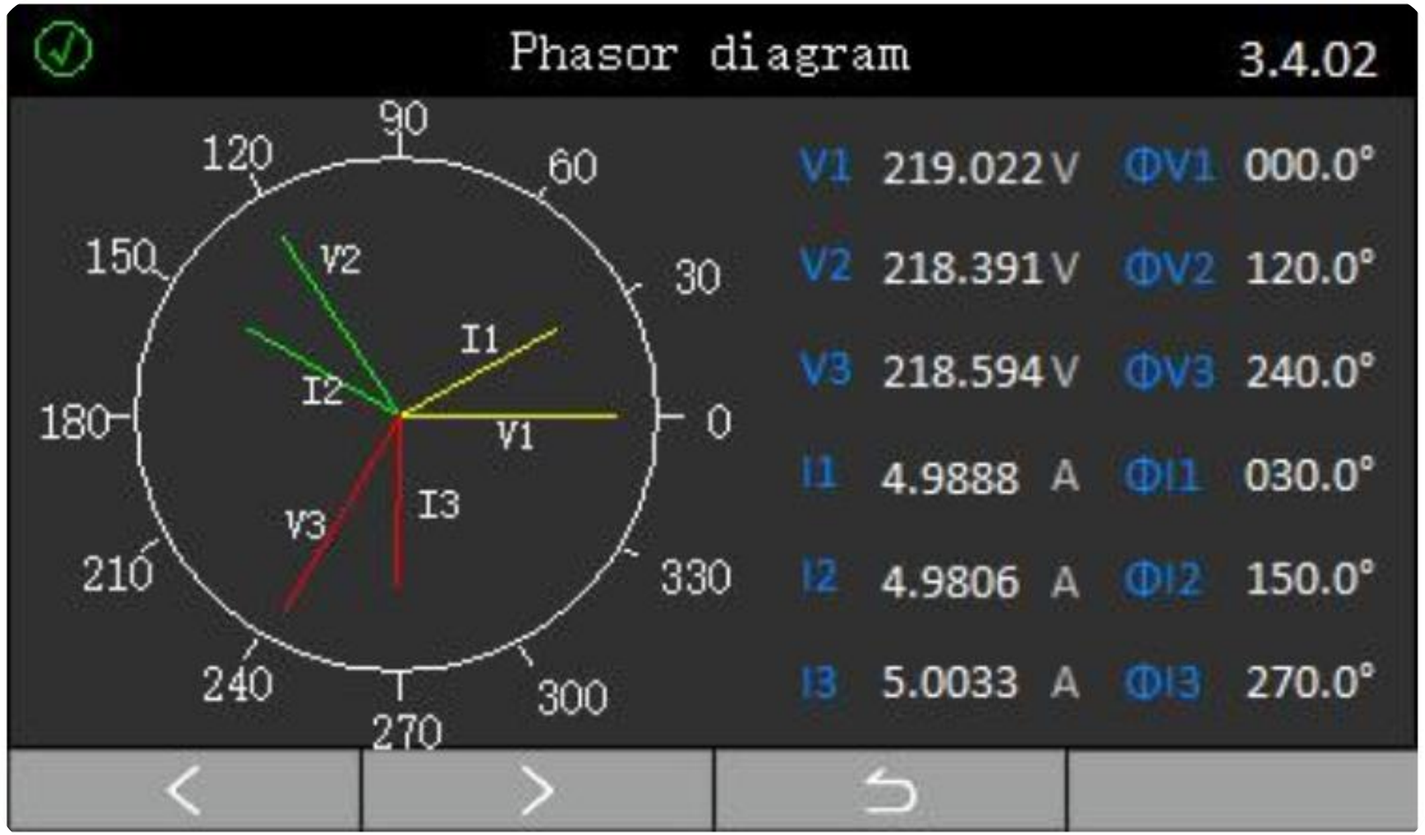
This **TCM-T3000** can monitor and analyze the power quality of the grid and measure the positive, negative, zero sequence components and unbalance factor.

Measurement Harmonic distortion up to 51st order



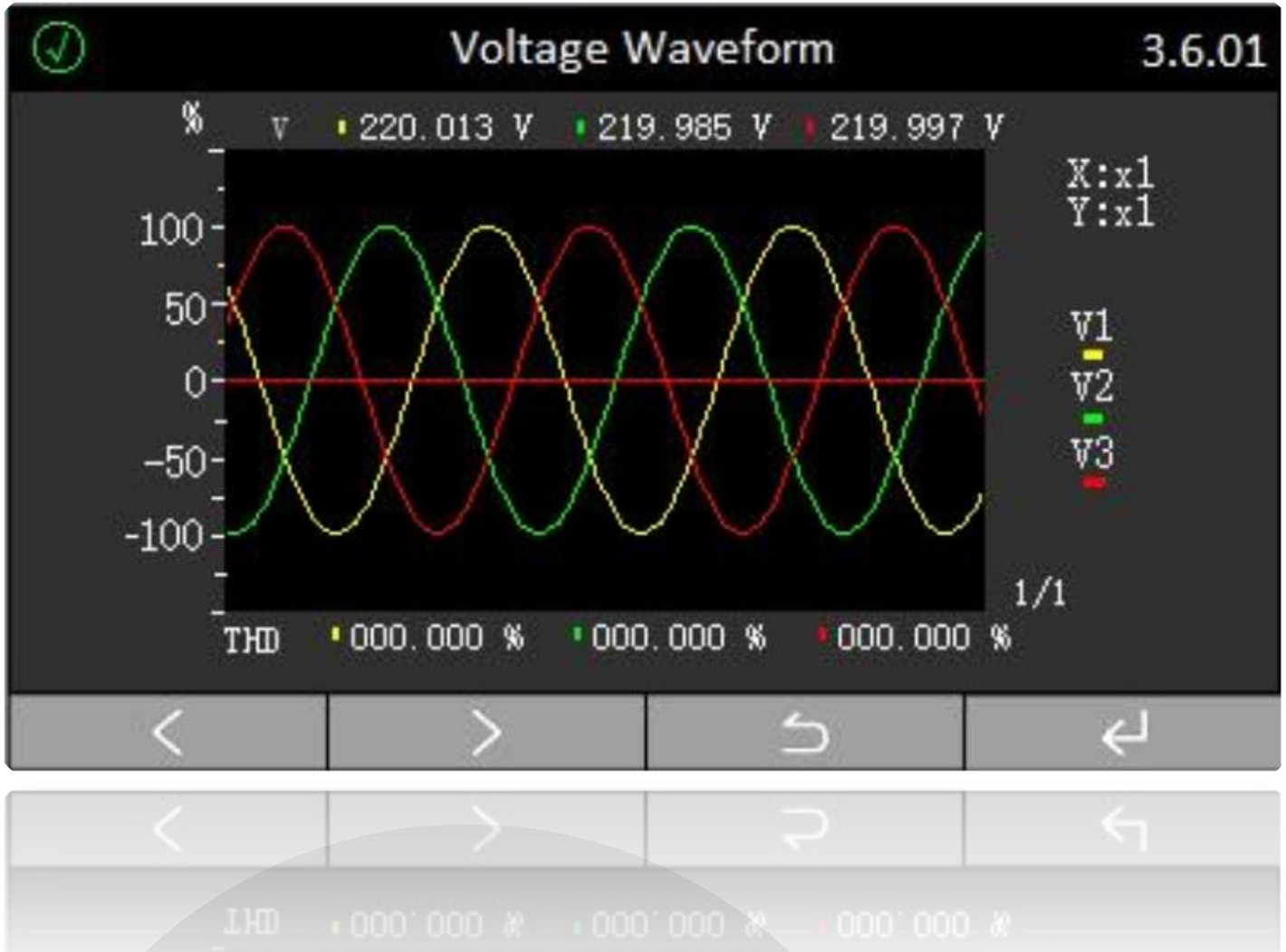
Phasor Diagram

Phasor diagrams are graphical tools that show the phase correlations between voltages and currents in three-phase systems. In these diagrams, each phase voltage or current is depicted as a vector (phasor), with magnitude and direction proportional to the waveform's amplitude and phase angle.



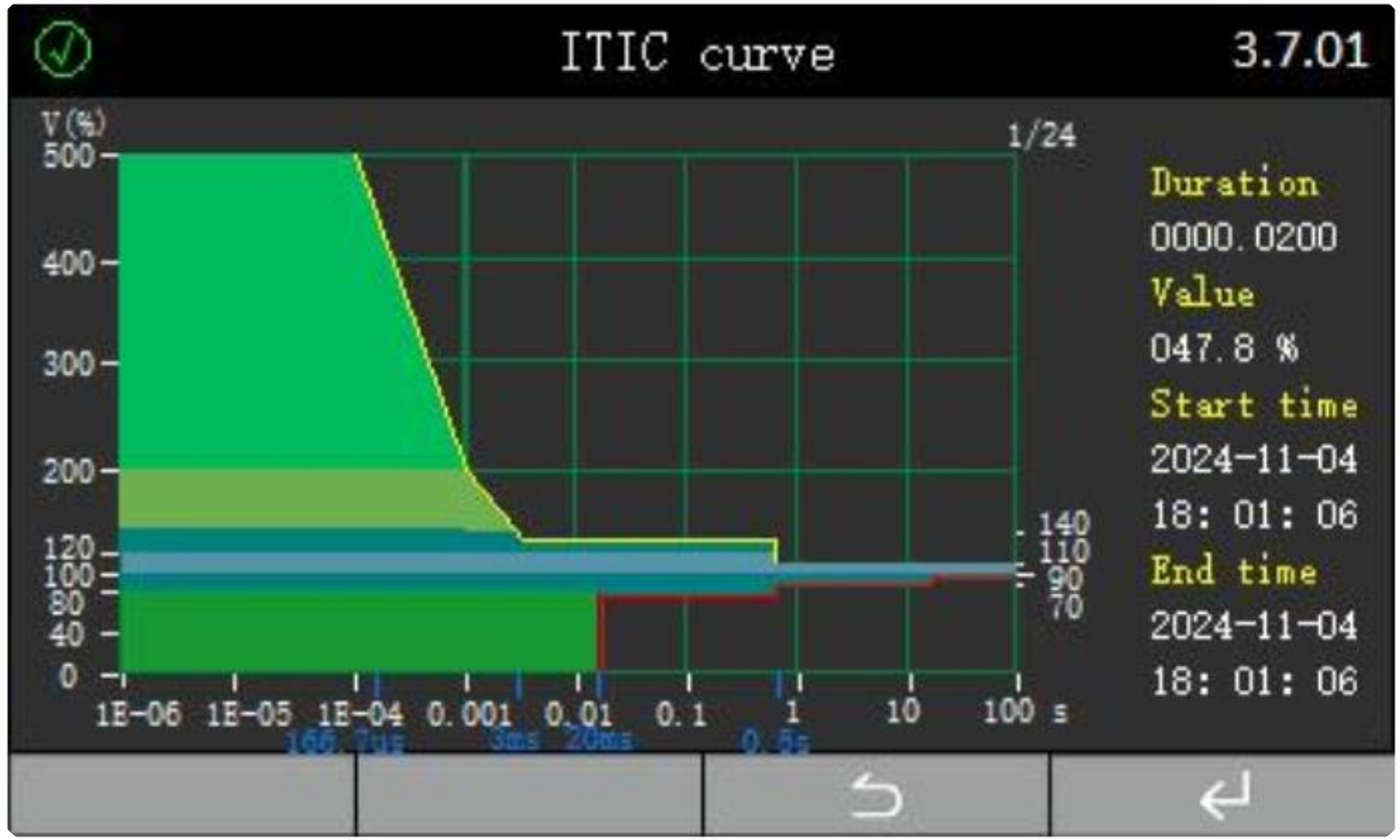
Voltage & Current **Waveform**

This **TCM-T3000** can monitor and analyze the Voltage and current waveforms for the better understanding the power quality and distortion.



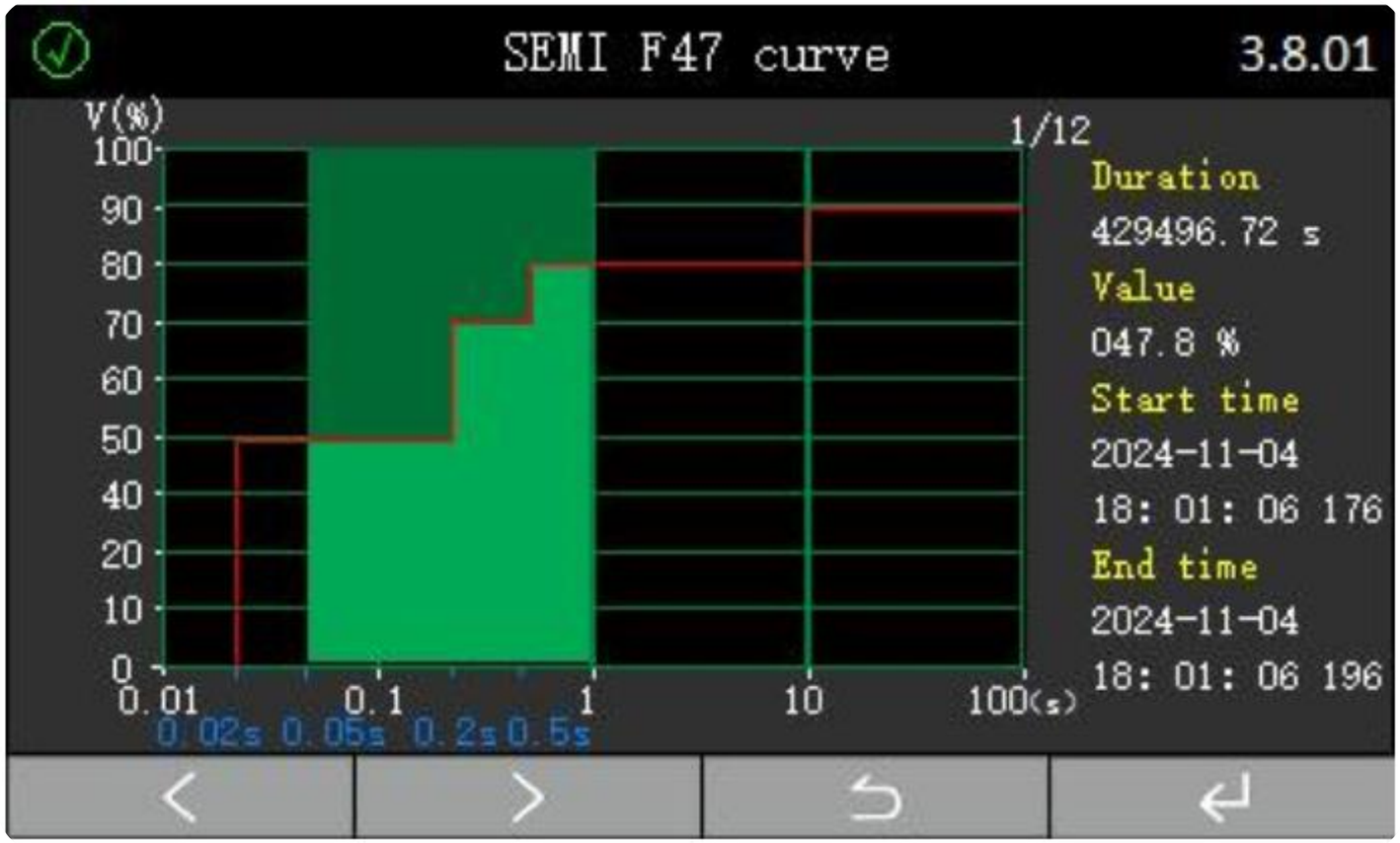
ITIC Curve

The ITIC curve specify the ability of equipment to withstand power supply's voltage disturbances. The horizontal axis represent the duration of transient voltage event, and the vertical axis represents the voltage percentage. The upper curve represents the tolerance of equipment to voltage swells, and the lower curve represents the tolerance of equipment to voltage dips.



SEMI F47 Curve

The horizontal axis represent the duration of transient voltage event, and the vertical axis represents the voltage percentage. The specification stipulates the tolerance time of equipment to voltage dips. The area above red solid line represents that the equipment must ensure normal continuous running under such interference



Voltage Swell, Dip & Interruption

- **Voltage Swell:** Under power-frequency conditions, the root-mean-square value of voltage rises to 1.1-1.8 times of rated voltage.
- **Voltage dip:** Under power-frequency conditions, the root-mean-square value of voltage drops to 0.1...0.9 times of rated voltage.
- **Voltage Interruption:** Under power-frequency conditions, the root-mean-square value of voltage drops below 0.1 times of rated voltage for not more than 1min.

Also Provide Following Function

- ❑ Split-phase voltage swell, dip and interruption events.
- ❑ Occurrence and end time, duration and extreme values during voltage swell, dip and interruption events.
- ❑ Waveform recordings of voltage swell, dip and interruption events.

The device provides the following relevant parameter Setup:

- ❑ Event enable setting.
- ❑ Selection and setting of data sources for event.
- ❑ Setup for event threshold, hysteresis and determination of occurrence duration.

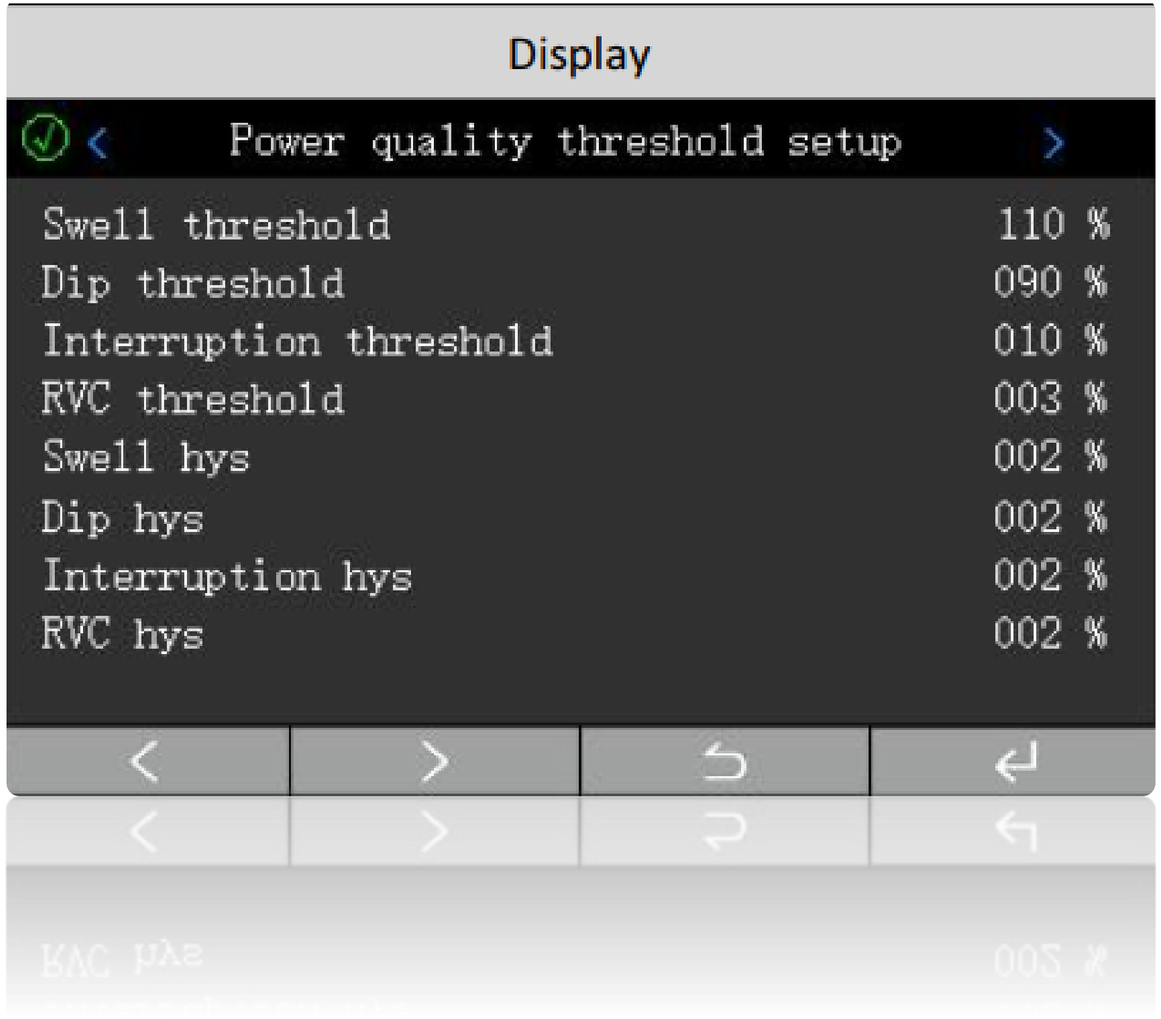
Demand

This device can provide present period demand, previous period demand, maximum demand, maximum demand of present month, maximum demand of previous month and maximum demand of past 2 months, and two calculation methods, i.e. sliding block and fixed block, and the relevant setup can be made through communication.

The device can measure basic demand values, including 6 fixed demand values (I1,I2,I3,P,Q,S) and 10 optional demand values.

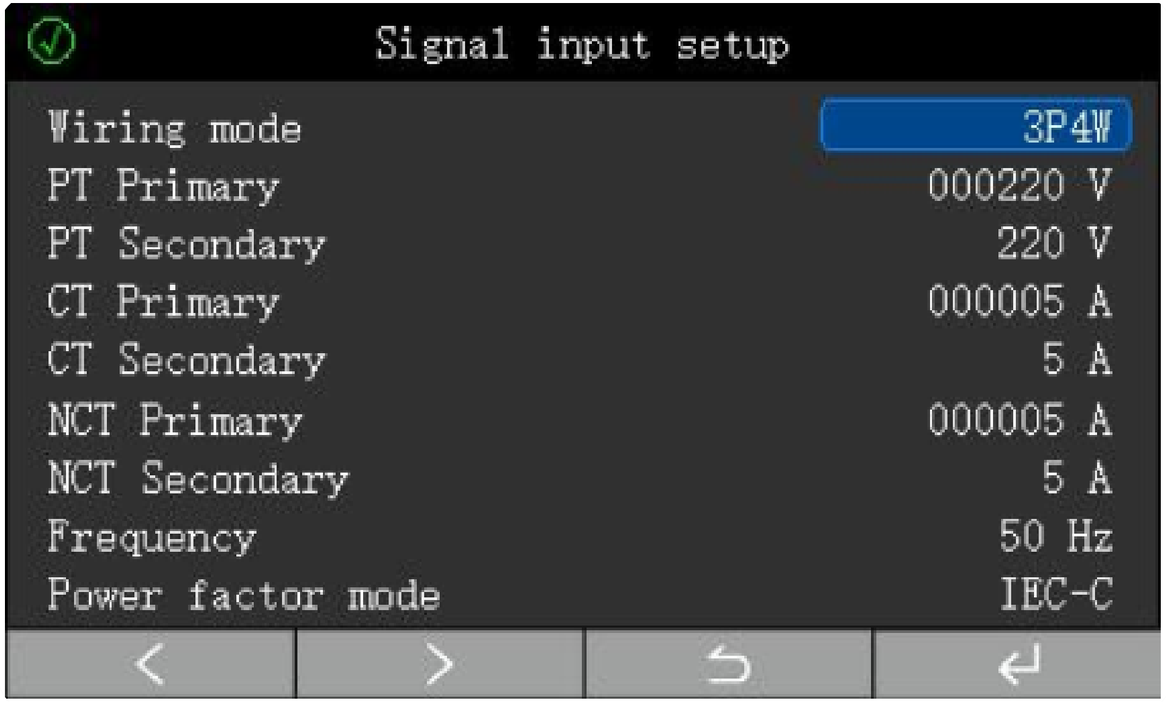
Mode	Sliding Time	Period Factor	Max/Min interval
Sliding Block / Fixed Block	1 min------60 min	1t------30t	Historical 1/5/15/30/60/1440 min

Power Quality Threshold



Swell threshold	**100...180%**
Dip threshold	0...-100%
Interruption threshold	0...100%
RVC threshold	1...6%
well hysteresis	0...10%
Dip hysteresis	0...10%
Interruption hysteresis	0...10%
RVC hysteresis	0...3%
Mains signaling voltage frequency	50.0...2575.0Hz
Main signaling voltage threshold	0.3...100%

Input Signal Setup



Wiring mode	3P3W/3P4W
PT Primary 1	1...999999V
PT Secondary	1...600V
CT Primary	1...999999A
CT Secondary	1...6A
NCT Primary	1...999999A
NCT Secondary	1...6A
Frequency	50Hz/60Hz
Power factor mode	IEC-C/IEEE-C/IEC-P

Alarm

The device can provide independent alarms with enable, limit, hysteresis, and delay time. When an alarm is triggered, the register value of the alarm state of the communication address table will be updated accordingly. The alarm item includes voltage, current, power, THD etc.

Measuring Parameters

Phase-neutral voltage	Active Power	Reactive Power	Active Power Demand	Current	Neutral current
L1 voltage & current THD	L2 voltage & current THD	L3 voltage & current THD	Apparent Power	Maxi. Voltage Demand	Mini. Current & Voltage
Active Energy consumption	Active Energy Generation	Reactive Energy Consumption	Reactive Energy Generation	Maxi. Power Factor	Maxi. Active Power

Measuring Parameters

Phase-Phase Voltage	Maxi. Current Demand	Apparent Power Demand	Apparent Power Demand	Power Factor	Maxi. Current & Voltage
Maxi. Active Power	Mini. voltage THD	Maxi. current THD	Maxi. current THD	Total Maxi. Frequency	Mini. Active Power
Present Current Demand	Present Active Power Demand	Present Active Power Demand	Present Apparent Power Demand	Maxi. Power Factor	Maxi. Active Power

Measuring Parameters

- Overload & Underload Alarms
- Voltage flicker, Sag, Swell & Interruption
- Phase Angle of Current
- Phase Angle of Voltage
- Current Imbalance
- Voltage Imbalance

Applications

01

Data
Acquisition

02

Energy
Management

03

Remote Power
Monitoring

Applications

04

- Smart Building

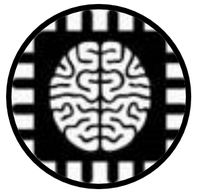
05

- Industrial and Mining Enterprises

06

- Public Facilities

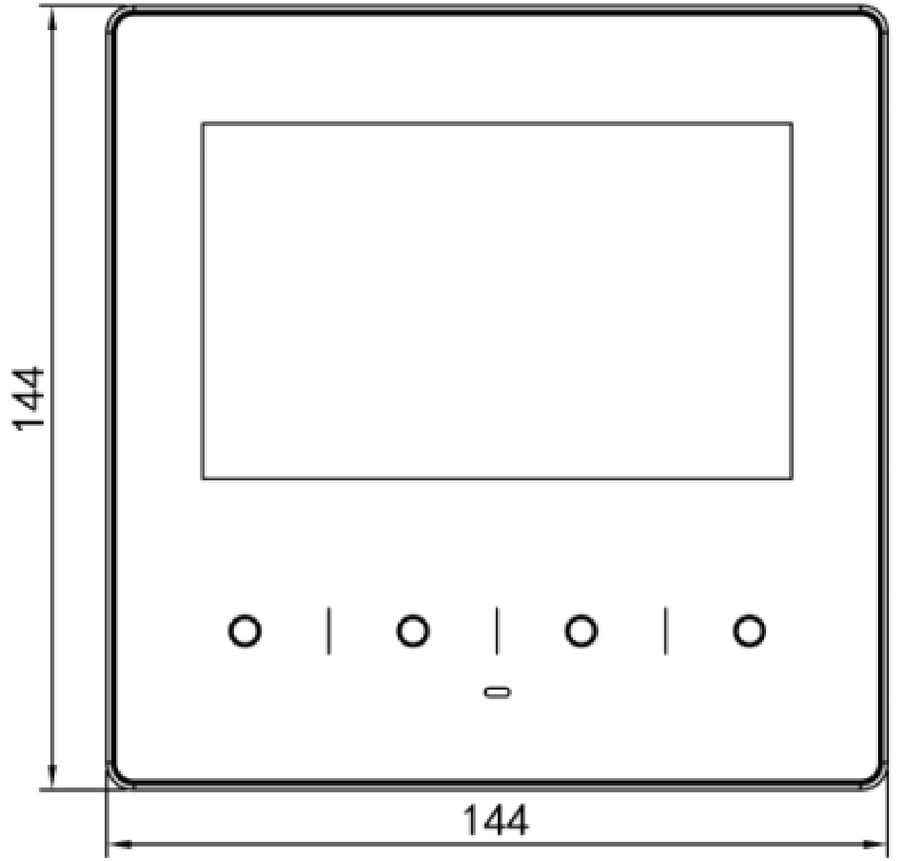
07

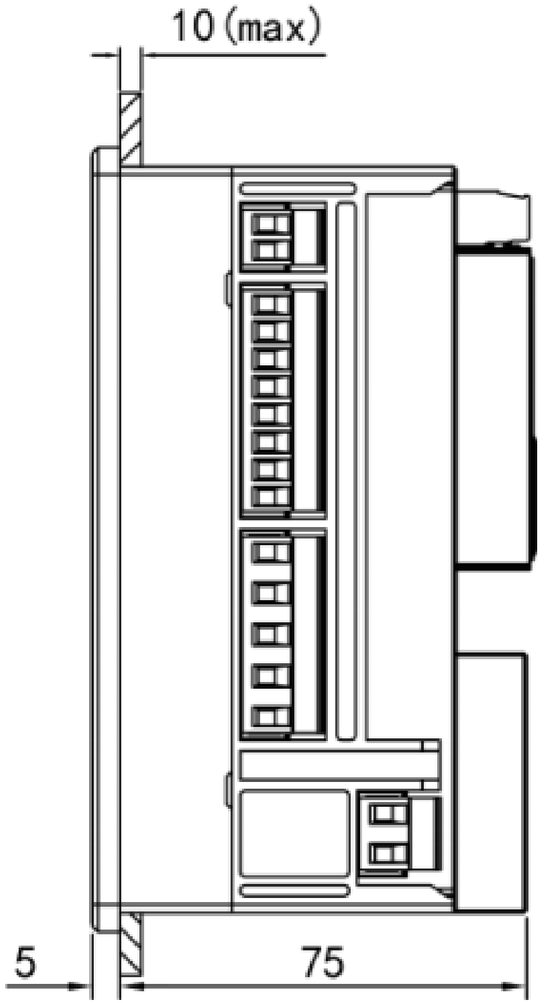


- Intelligent Device

Dimensions

- Given dimensions are in **mm**





Thank You

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