



Growatt C&I Solutions



SHENZHEN GROWATT NEW ENERGY CO.,LTD

GROWATT

Content



01

**Growatt Profile &
Market Trends**

02

Growatt Solutions

03

Global Reference

About Growatt

Fast growing new energy enterprise

► Leading brand, focus on string inverters



0.75-253kW
Capacity range



2,600,000+
Units shipped
totally



27+ GW
Capacity total
shipment



100+
Countries



1600+ Employees
400+ R&D



110+
Patents & Copyrights

Service and Global Presence



Dedicated to Becoming a Global Leader of Smart Energy Solutions

International Honors and Awards



EuPD Top brand
PV Inverters 2021

**IHS Markit Global Top 2
Residential PV Inverter Supplier**

**Global TOP 10 IHS/WoodMac
PV Inverter Supplier**

**IHS Markit Global Top 4
3-Phase String Inverter Supplier**

Market Trends

High Power Modules

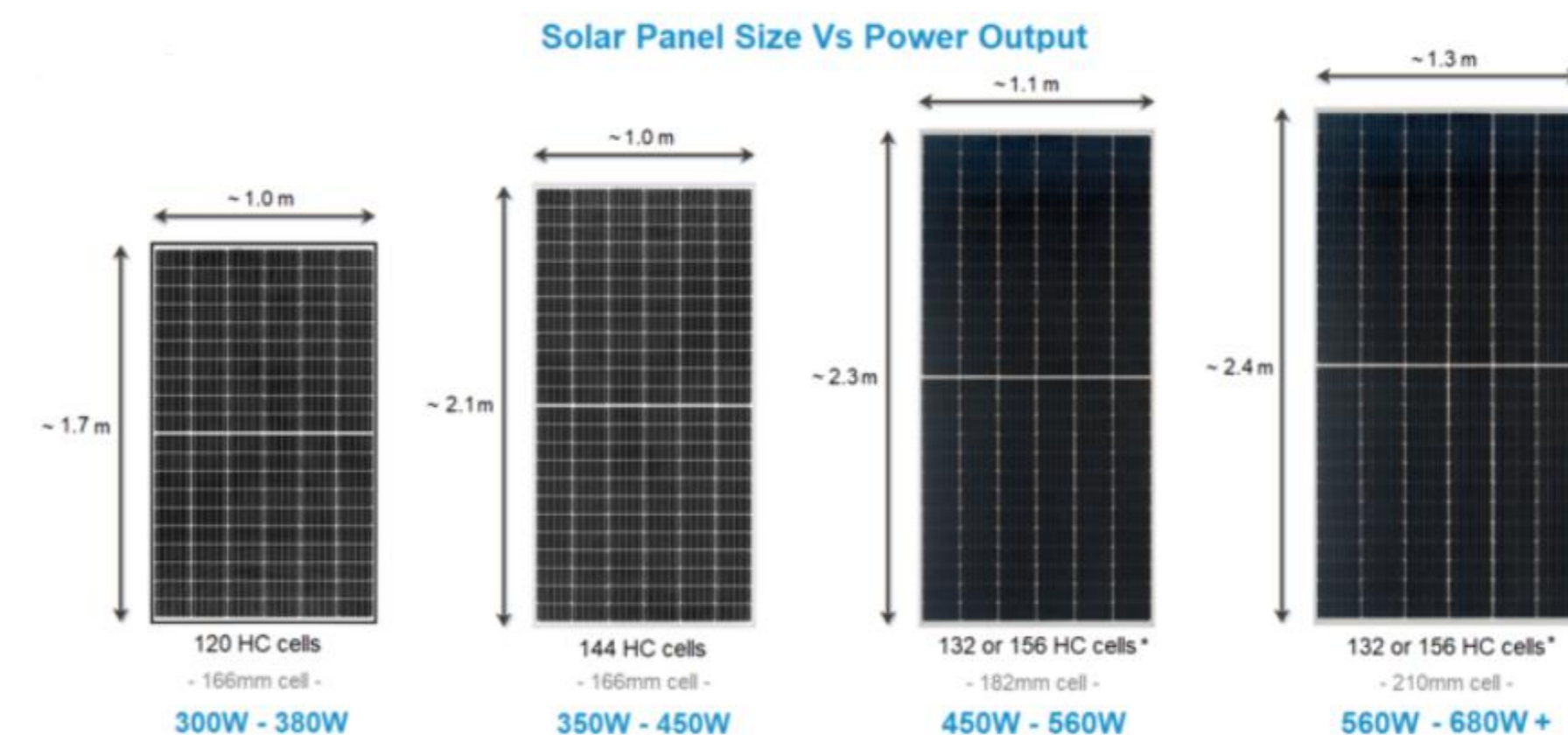
- Bi-facial extra energy from the backside +5-30%
- Longer life expectancy
- Increased string current $I_{mp} \geq 13A$
- Higher power modules 500W+ or even more



String inverters for C&I Applications

Core Value: Lowest LCOE

- **More Electricity:** multiple MPPTs, higher DC/AC ratio, lower mismatch loss, high efficiency ...
- **Safe and Reliable:** AFCI, PID, SPD ...
- **Lower BOS:** fuse free design, compatible with AI cable
- **Smart Management:** smart O&M, one-click diagnosis



Content



01

**Growatt Profile &
Market Trends**

02

Growatt Solutions

03

Global Reference

C&I PV Inverters

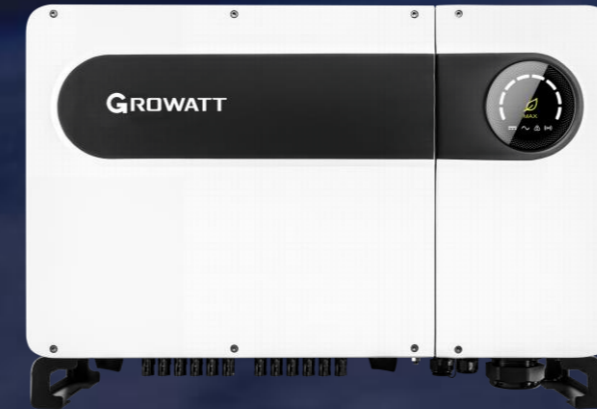
Commercial and Industrial



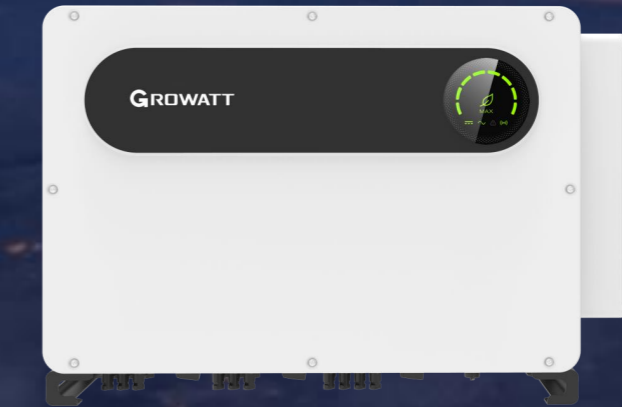
MID 15-20KTL3-X
(15/17/20kW)



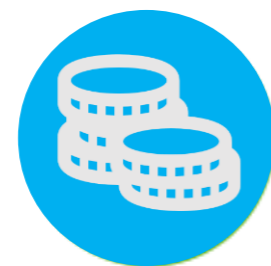
MID 25-40KTL3-X
(25/30/33/36/40/50kW)



MAX 50-80KTL3 LV
(50/60/70/80kW)



MAX 100-125KTL3-X LV
(100/110/120/125kW)



Optimal LCOE
Multiple MPPTs
Higher DC/AC Ratio
Support Bi-Facial Modules
.....



Safe & Reliable
Type II SPD, AFCI, Fuseless



Smart Maintenance
I/V curve scan
One-click diagnose
Online remote service

01

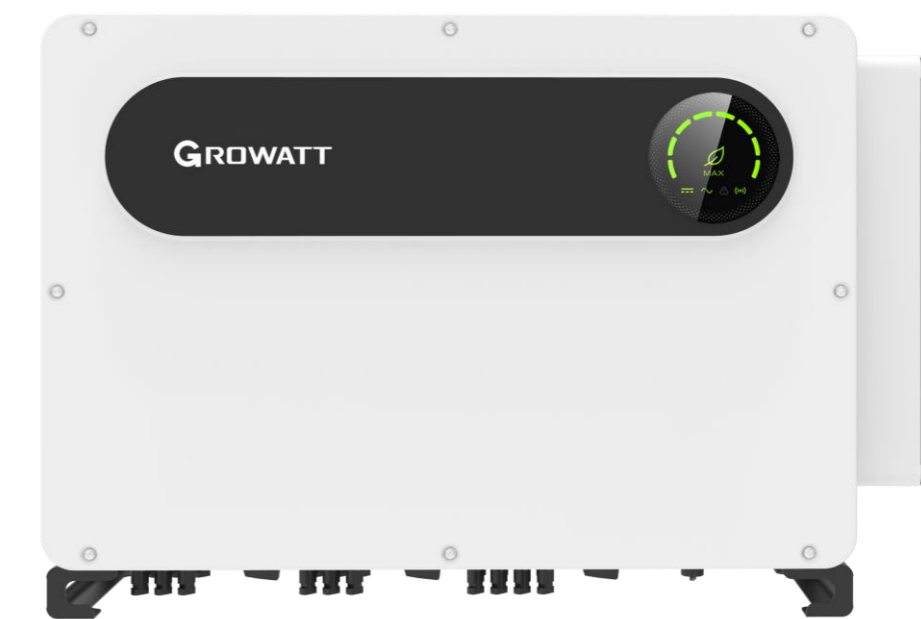
High Yields



Multiple MPPTs Design



50% loss for one MPPT of 10
 Lead to **5% loss**



MAX 100-125KTL3-X LV

- 10 MPP trackers, flexible configuration, reduce the loss of module mismatch
- Max 20 strings, higher DC/AC ratio capability, optimized the LCOE of system

High Yields

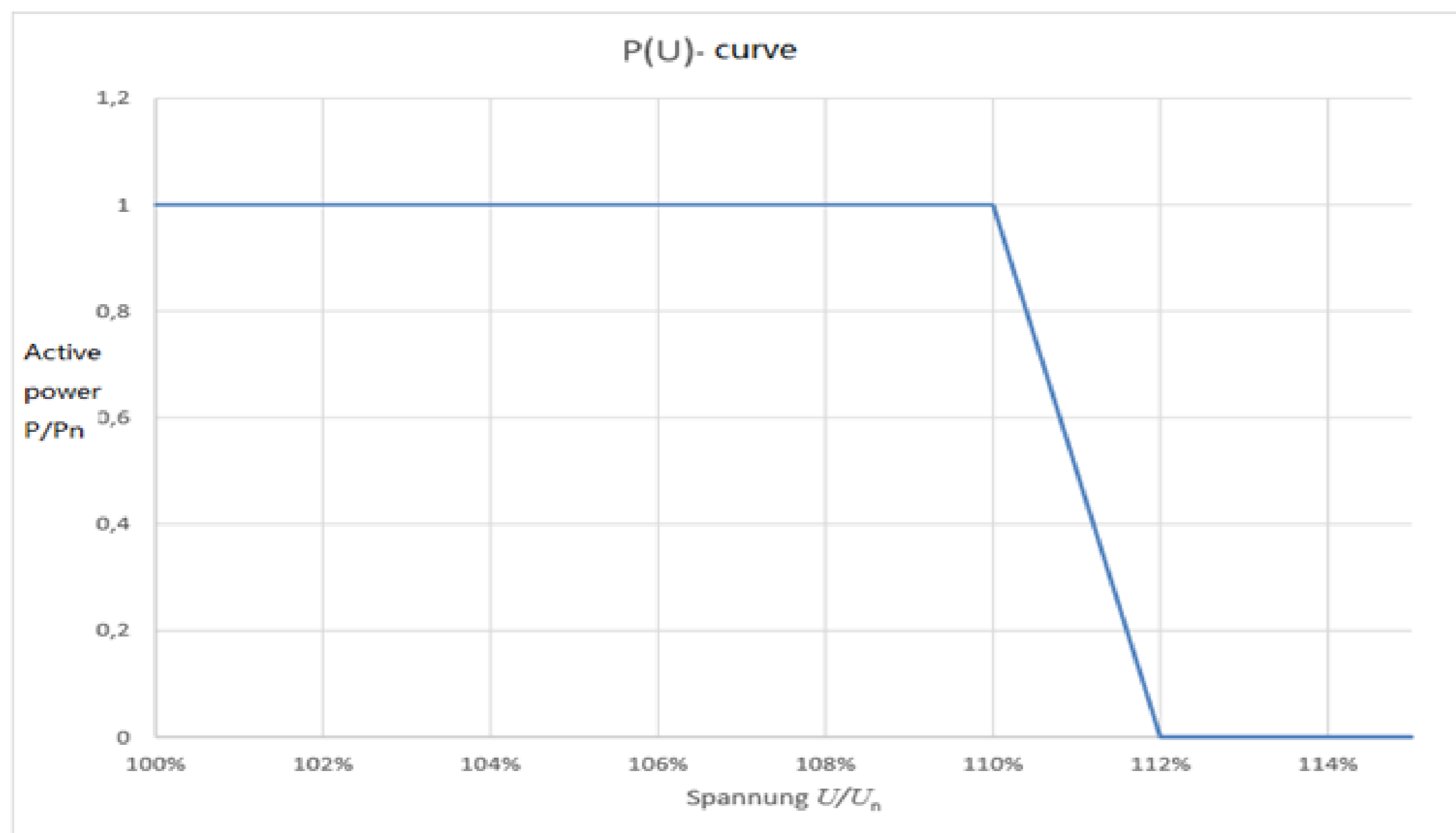
| Model | MID 15-20KTL3-X | MID 25-40KTL3-X | MAX 50-80KTL3-X | MAX 100-125KTL3-X |
|-----------------------------|-----------------|-----------------|-----------------|-------------------|
| MPPT/string number per MPPT | 2/2 | 3/2, 4/2 | 6/2, 7/2 | 10/2 |
| String Current | 13.5A | 13A | 13A | 16A |
| DC/AC Ratio | 1.5 | 1.5 | 1.5 | 1.5 |
| MPPT voltage range | 200V-1000V | 200V-1000V | 200V-1000V | 200V-1000V |

13-15A string current, perfect compatible with 166 and 182 panels, for example Jinko 440W new modules

Wide MPPT working range, longer working time and more generation power

Higher DC/AC Ratio

P(U) control



Avoid disconnection for more production

Avoid disconnection due to overvoltage protection
Inverter keep generating more power

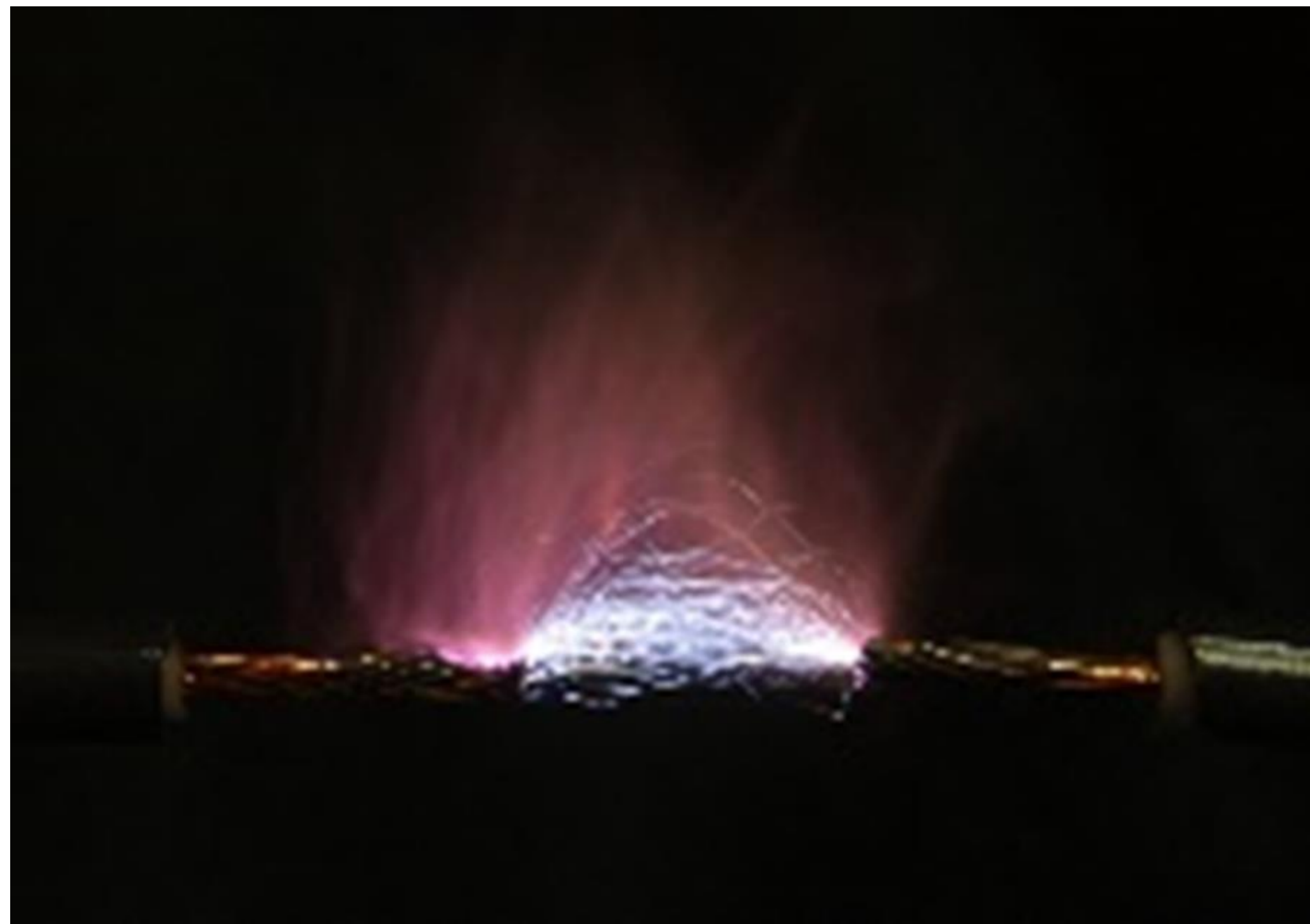
02

Safe & Reliable



Active Arcing Protection

AFCI -- Arc Fault Circuit Interrupter



Easy set and test via APP



Speedy arc protection
inverter shutdown in 2.5S



UL1699B: 2018 Certified

* AFCI function is as standard for three phase EU model, and optional for other models.

Function list



| Model | MID 15-20KTL3-X | MID 25-40KTL3-X | MAX 50-80KTL3-X | MAX 100-125KTL3-X |
|---------------------|-----------------|-----------------|-----------------|-------------------|
| Type II SPD DC side | Yes | Yes | Yes | Yes |
| Type II SPD AC side | Yes | Yes | Yes | Yes |
| AFCI | Opt | Opt | Opt | Opt |
| IP degree | IP65 | IP66 | IP66 | IP66 |

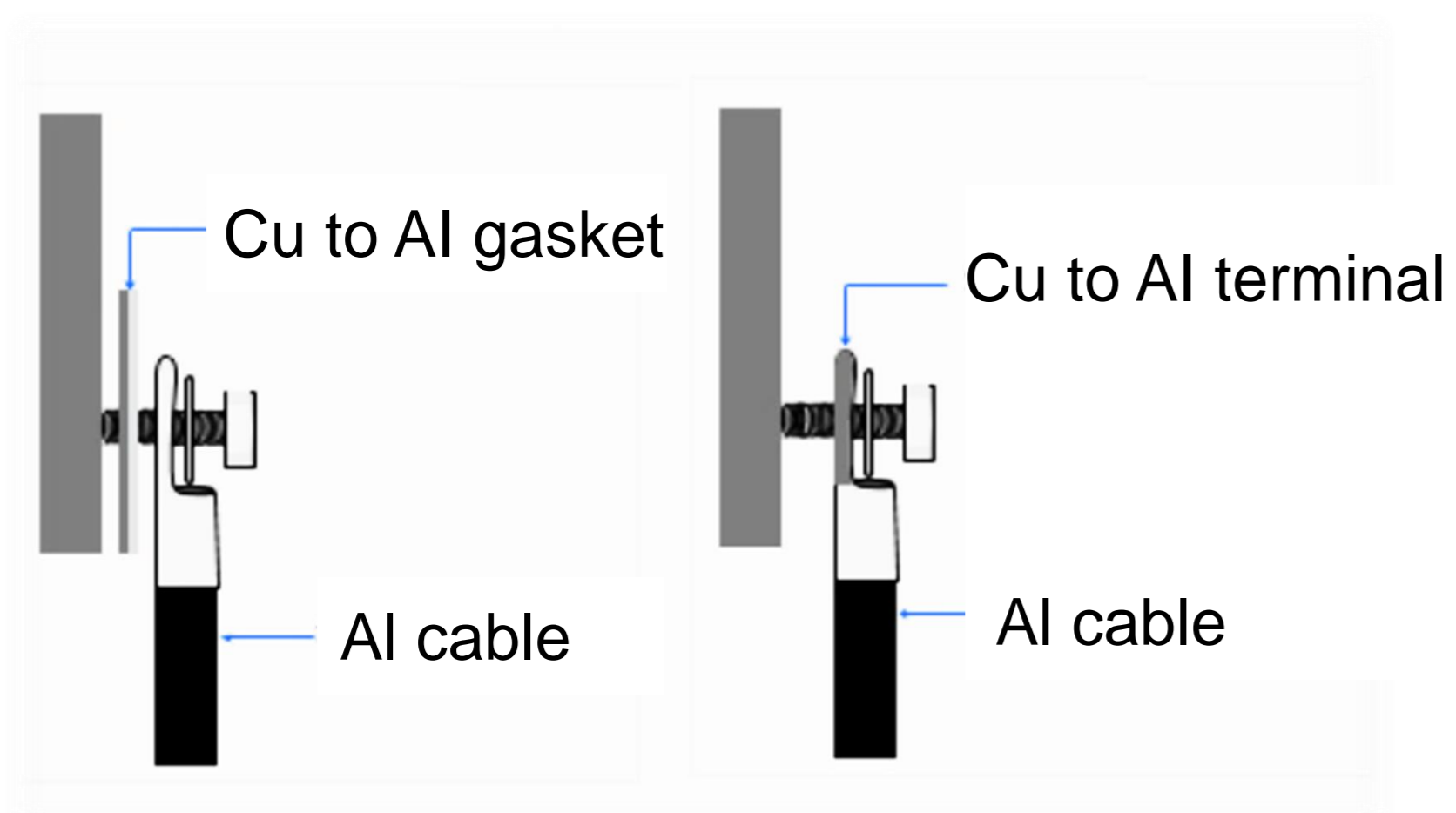
* AFCI function is as standard for three phase EU model, and optional for other area models.

03

Lower BOS



Compatible with Al and Cu AC cables



In large commercial projects, cables account up to 10% of the system cost, higher than inverters cost. Compatible with Al cable could reduce much BOS cost.

| Model | Max. AC cable size |
|----------------------|--------------------|
| MAX 70-80K TL3 LV | 95mm ² |
| MAX 100-125KTL3-X LV | 240mm ² |

High power modules compatible

High power PV modules lead to BOS cost savings

The new high-power solar panels 400W+ can reduce the system cost, but due to the high current puts new requirements for inverters.

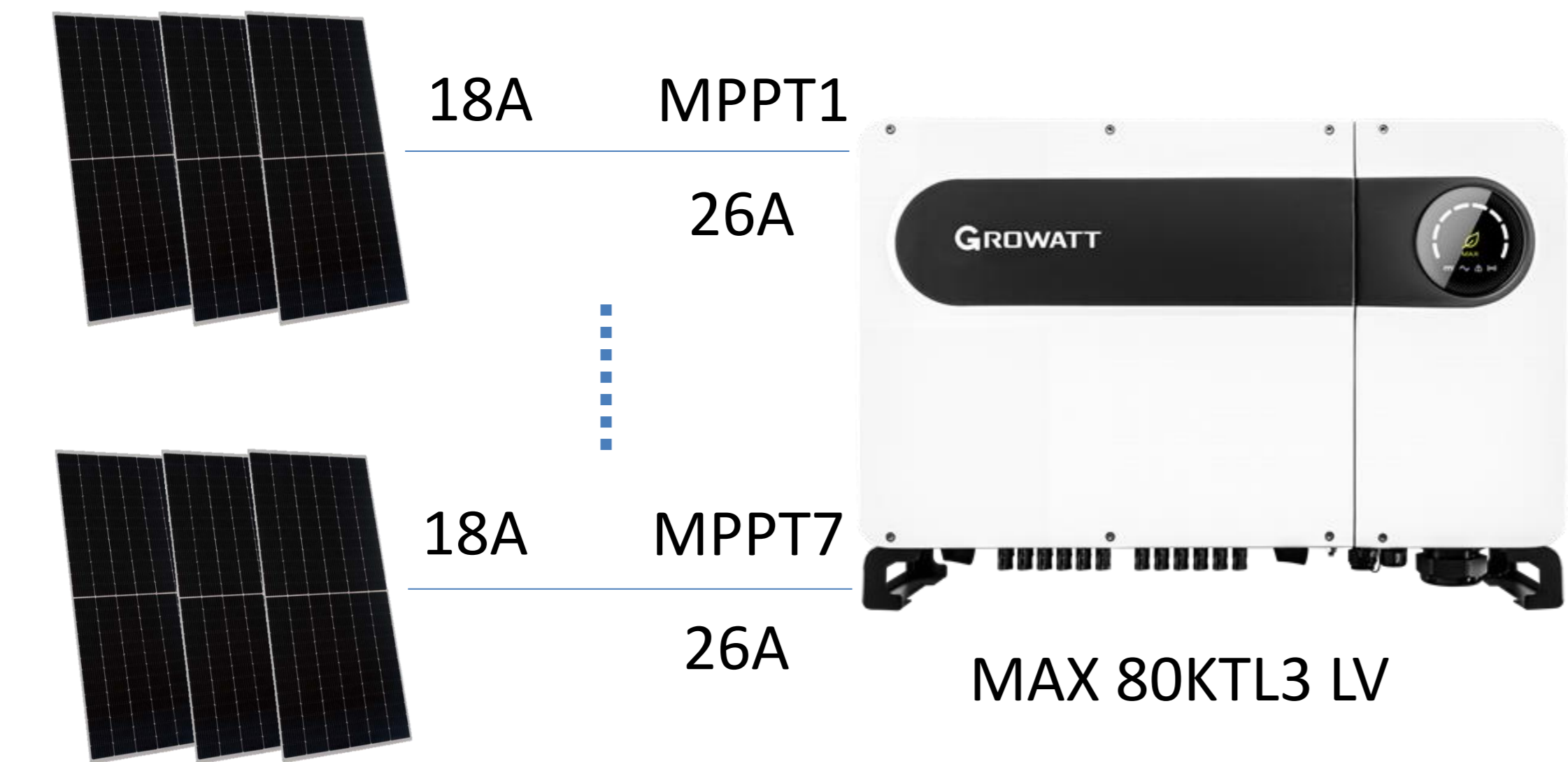
X Generation Inverters supports high power modules.

The cost of photovoltaic modules accounts for more than 50% , reducing the number of strings and the number of modules high costs in BOS and transportation costs can be optimized



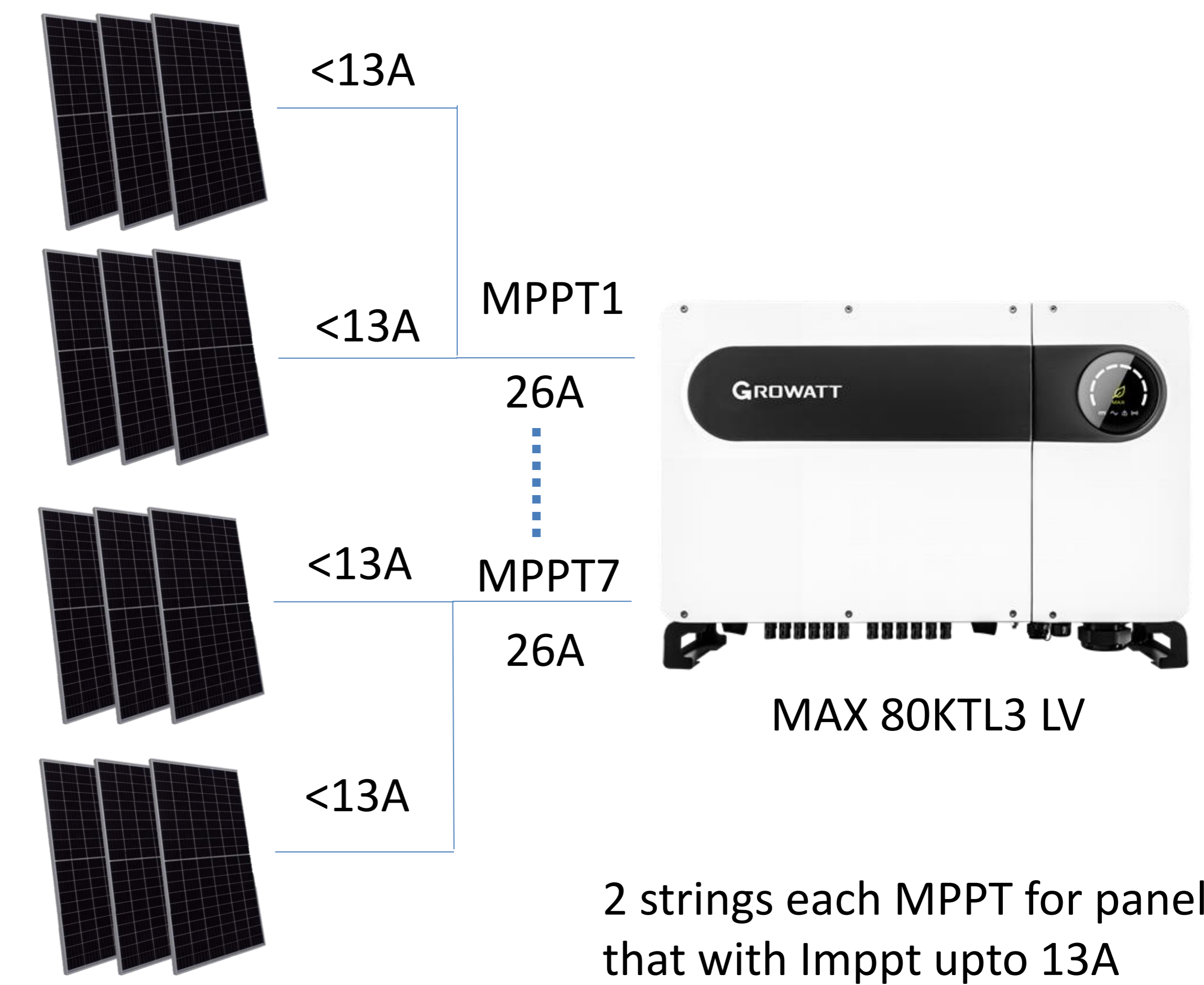
| Model | MID 15-20KTL3-X | MID 25-40KTL3-X | MAX 50-80KTL3-X | MAX 100-125KTL3-X |
|----------------|-----------------|-----------------|-----------------|-------------------|
| String Current | 13.5A | 13A | 13A | 16A |

Configuration with different panels



210mm PV panel

1 string each MPPT for panels that with up to 20A



166/182mm PV panel

2 strings each MPPT for panels that with Imppt upto 13A

04

Smart Management



Flexible Communication Options

USB Port

Monitoring: WiFi-X/ShineLink-X/Lan-X/GPRS-X/4G-X
Support online smart service
Local commission: USB-WiFi and USB FW upgrade

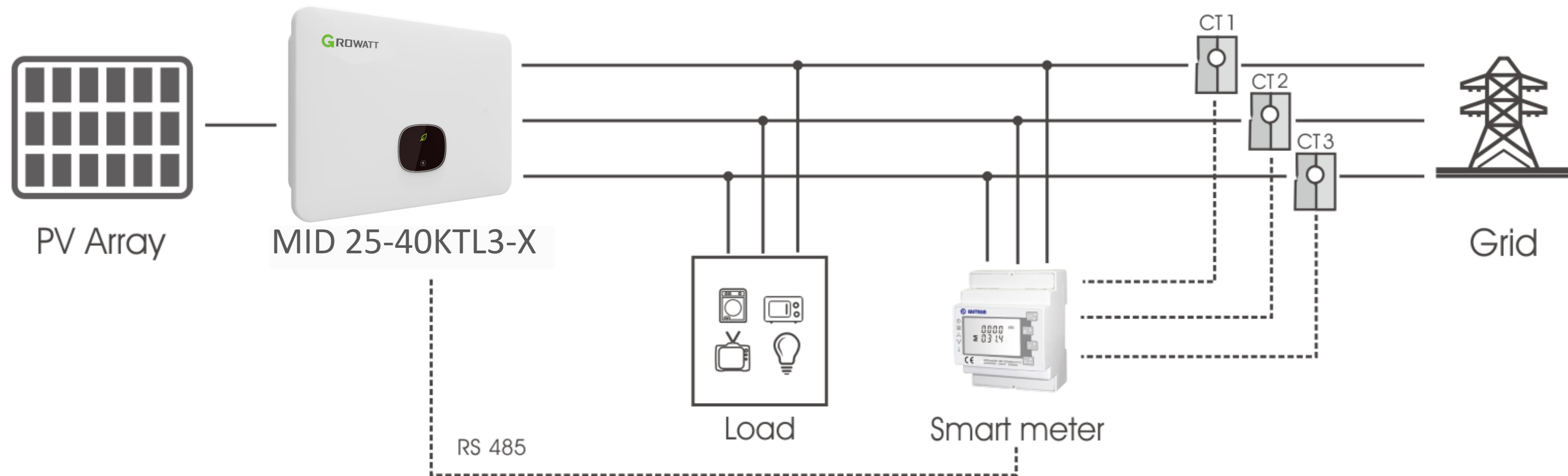
COM Port

ShineMaster/Meter/Ripple control/DRM/
Third party monitoring



COM USB

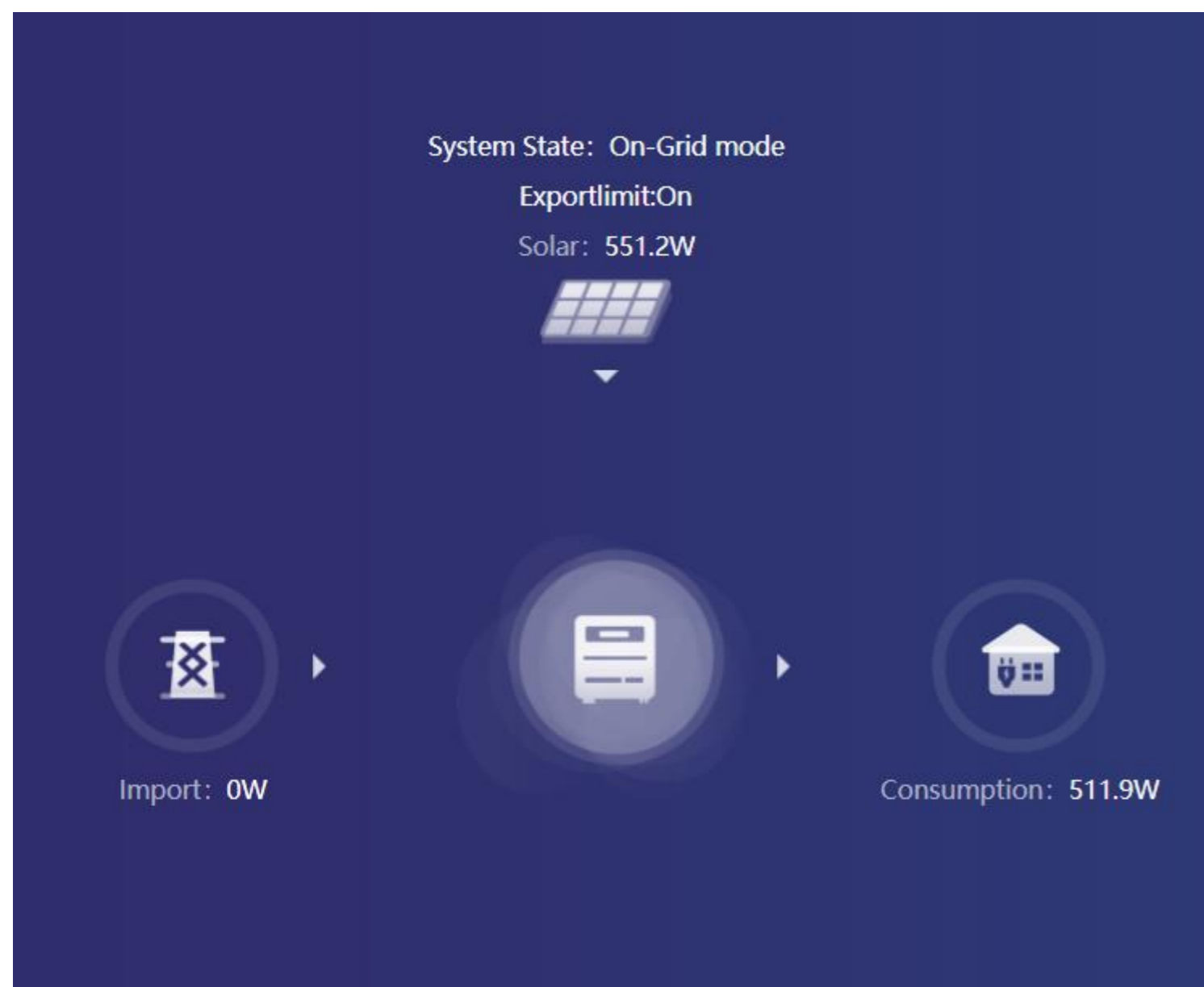
Dynamic Export Limitation



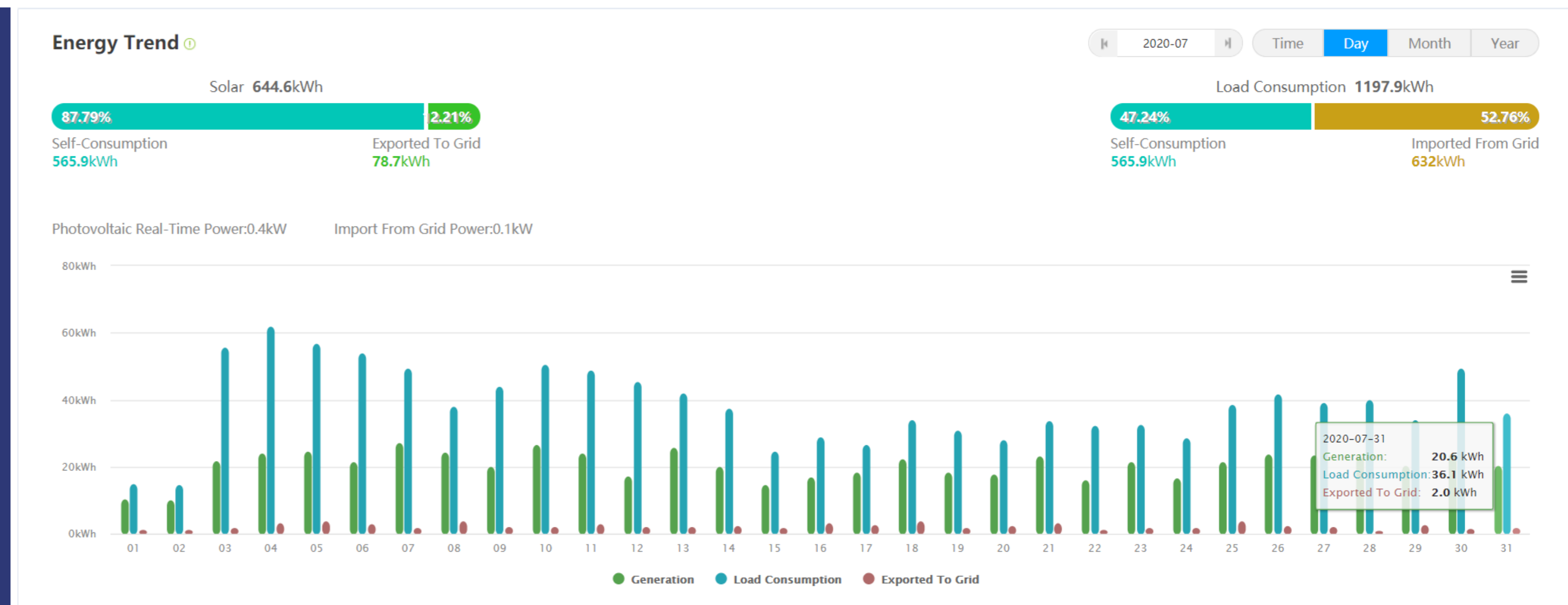
- Growatt Smart Meter is required
- CT meter makes the installation more easier
- Direct connection meter optional

24H Self-consumption Monitoring*

Growatt Smart Meter and monitoring device are required.



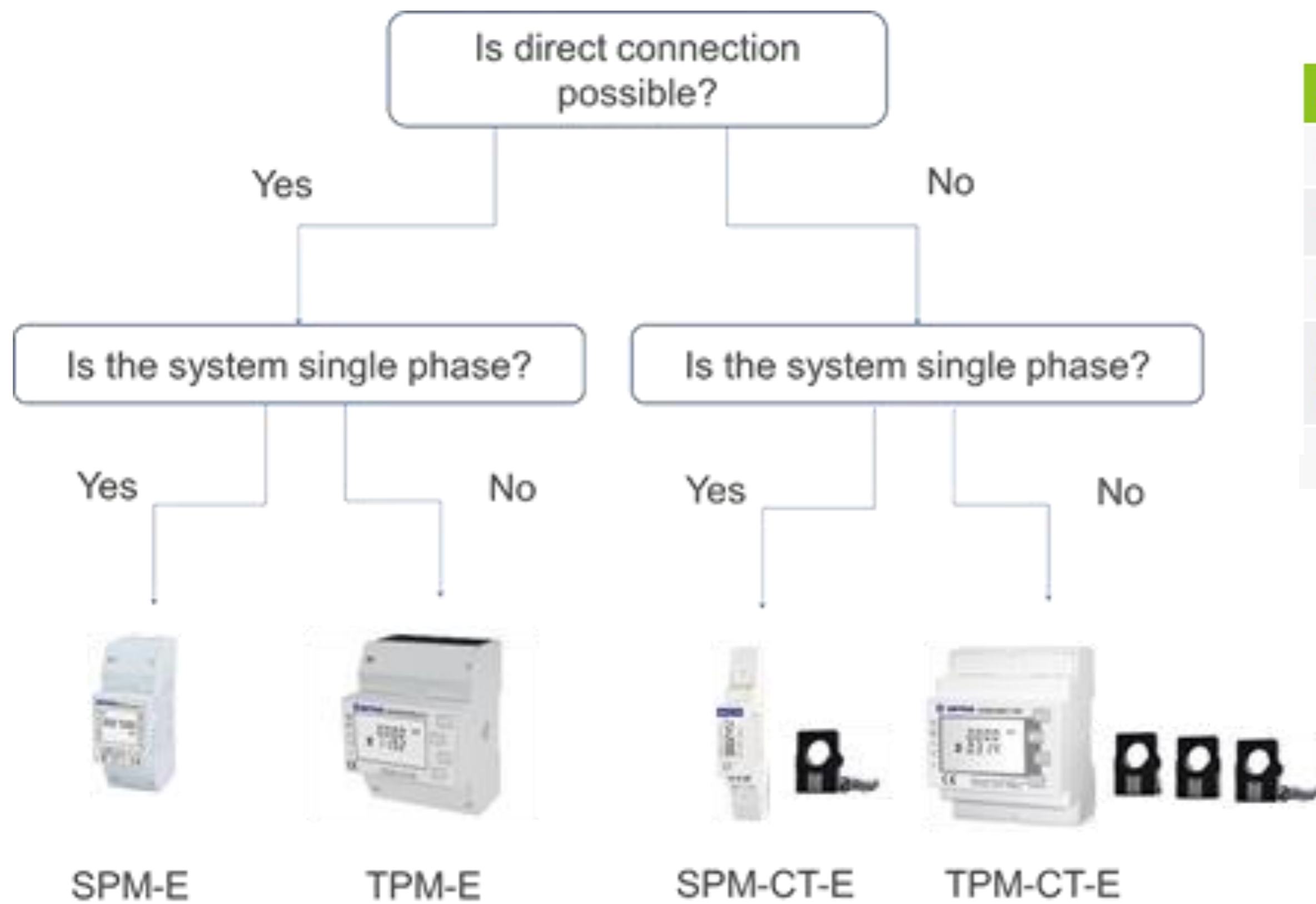
System Overview



Self-consumption Data

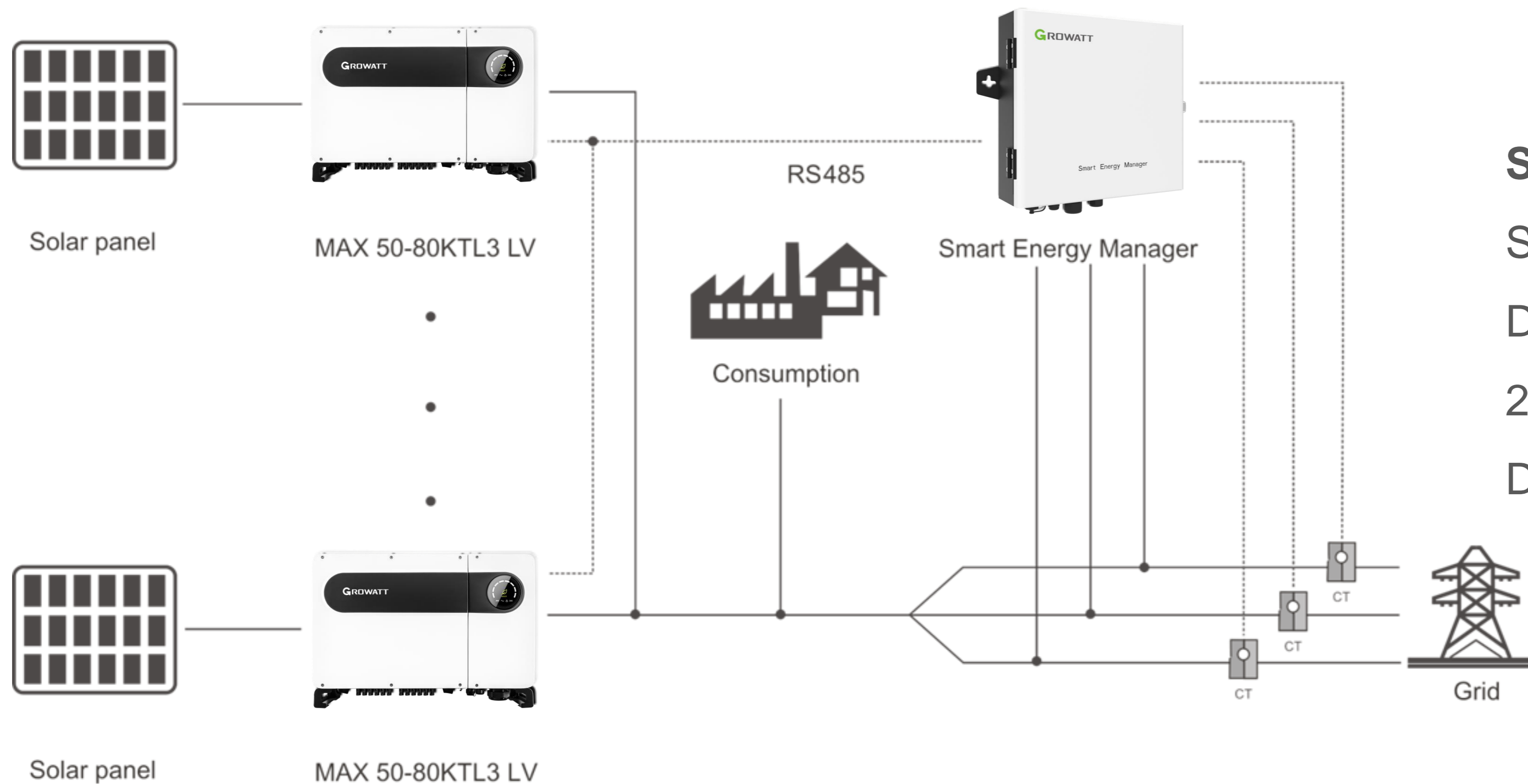
* Function ready in Q3 2021 for MOD and MID

Meter solution



| Model | SPM-E | TPM-E | SPM-CT-E | TPM-CT-E |
|--------------------------------|----------------|-----------------|----------|----------------|
| Connection | 1P2W | 3P4W | 1P2W | 3P4W |
| Voltage range (L-N) | 176~276V | 100~289V | 176~284V | 100-289V |
| Current | 10A (max.100A) | 10A (max.100A) | 40mA | 40mA |
| Max. RS485 communication range | 100m | 100m | 100m | 100m |
| CT | | | 1CT 100A | 3CTs 100A/250A |

Multiple Inverters Solution



SEM

System monitoring

Dynamic export limitation

24h self-consumption monitoring

Dynamic PF control

- SEM can control max.32pcs inverters

Flexible Monitoring Options



ShineLAN-X

ShineWiFi-X/4G-X

ShineLink-X

ShineMaster (LAN/4G)

Smart Energy Manager (LAN)

- Storage data max 90 days
- Plug & Play
- Up to 100m

- Storage data max 90 days
- Up to 50m
- Support remote service
- Supports 2G,3G,4G (4G-X)

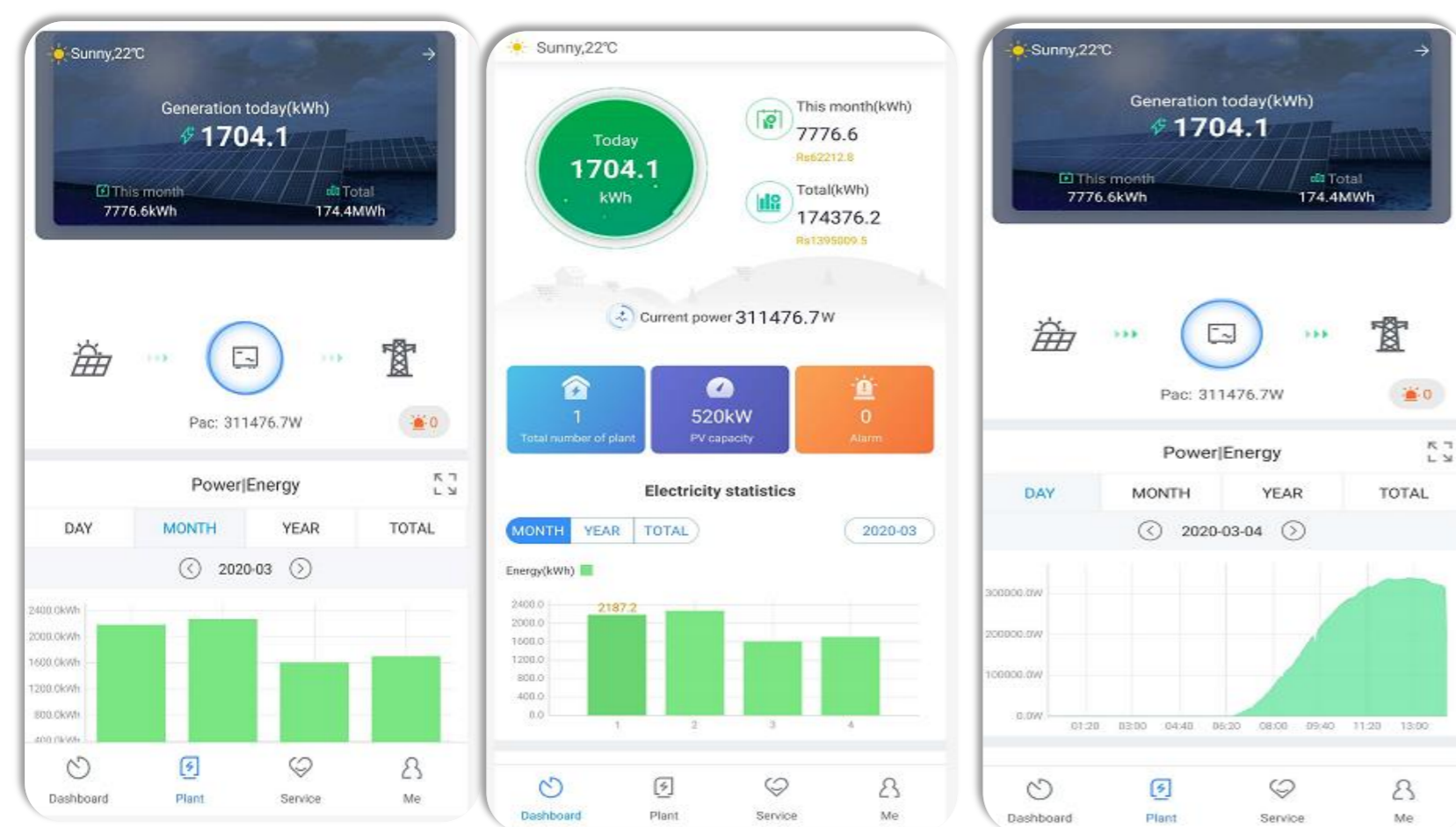
- Monitoring up to 8 inverters
- Storage data max 90 days
- Up to 100m
- Automatically acquire IP Support remote service
- RF communication

- Monitoring 64 inverters
- Up to 500m communication
- Export limitation option
- Automatically acquire IP address
- Support remote service
- Supports 2G,3G,4G (4G)

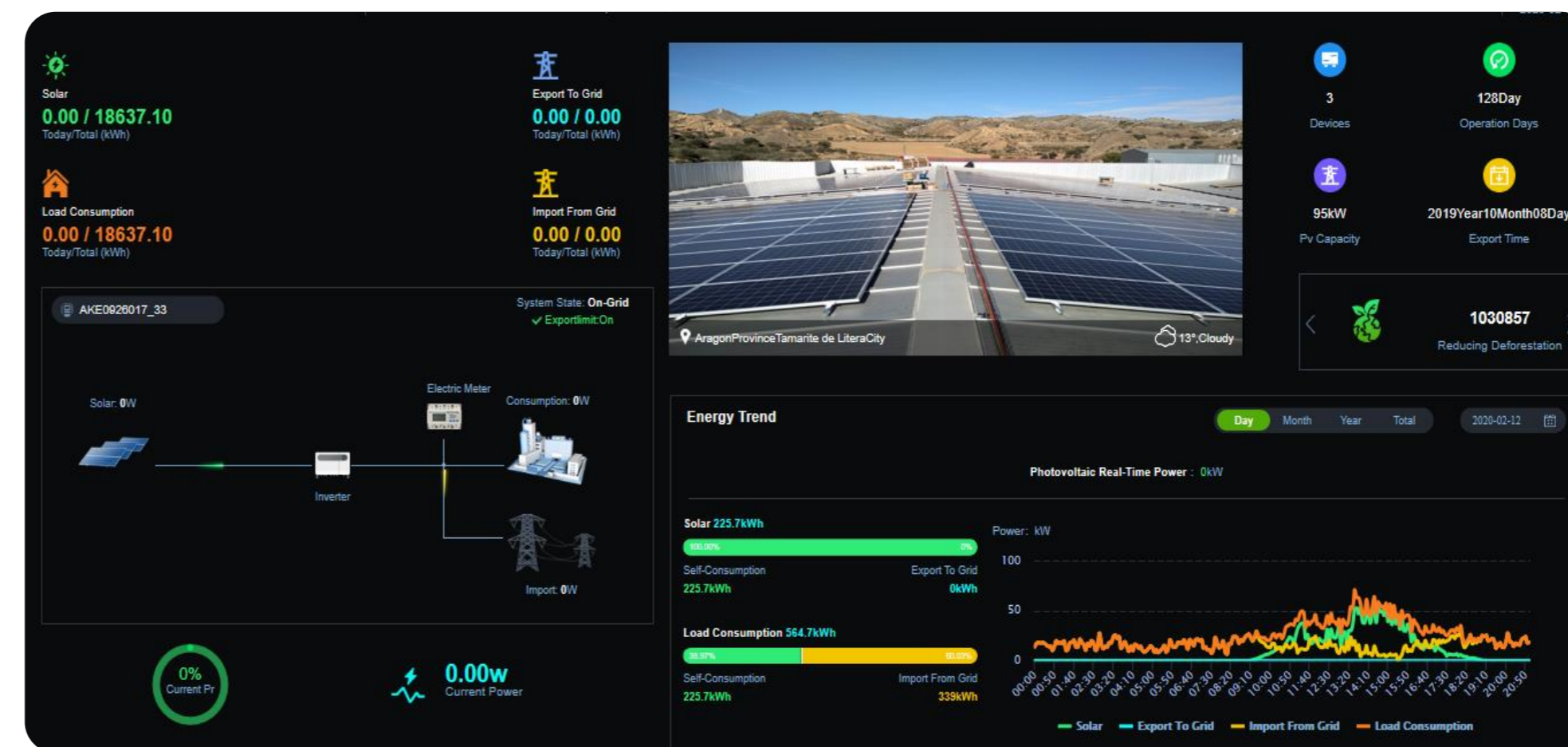
- All Shinemaster functions
- CTs and meter included
- Different CTs sizes
- Self consumption monitoring
- Real time system diagram
- All in one box

- SEM can control max.32pcs inverters

Monitoring Portal



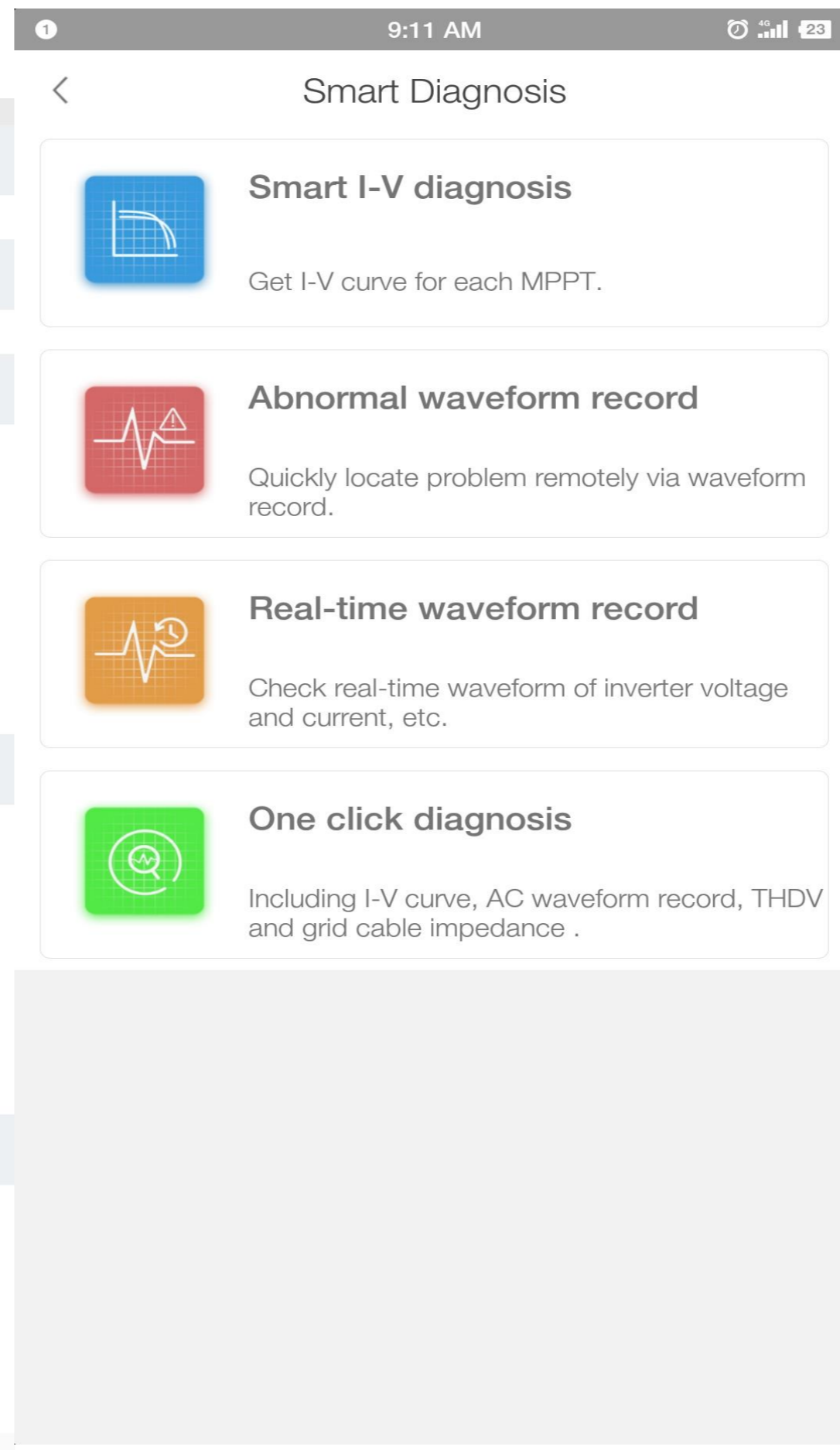
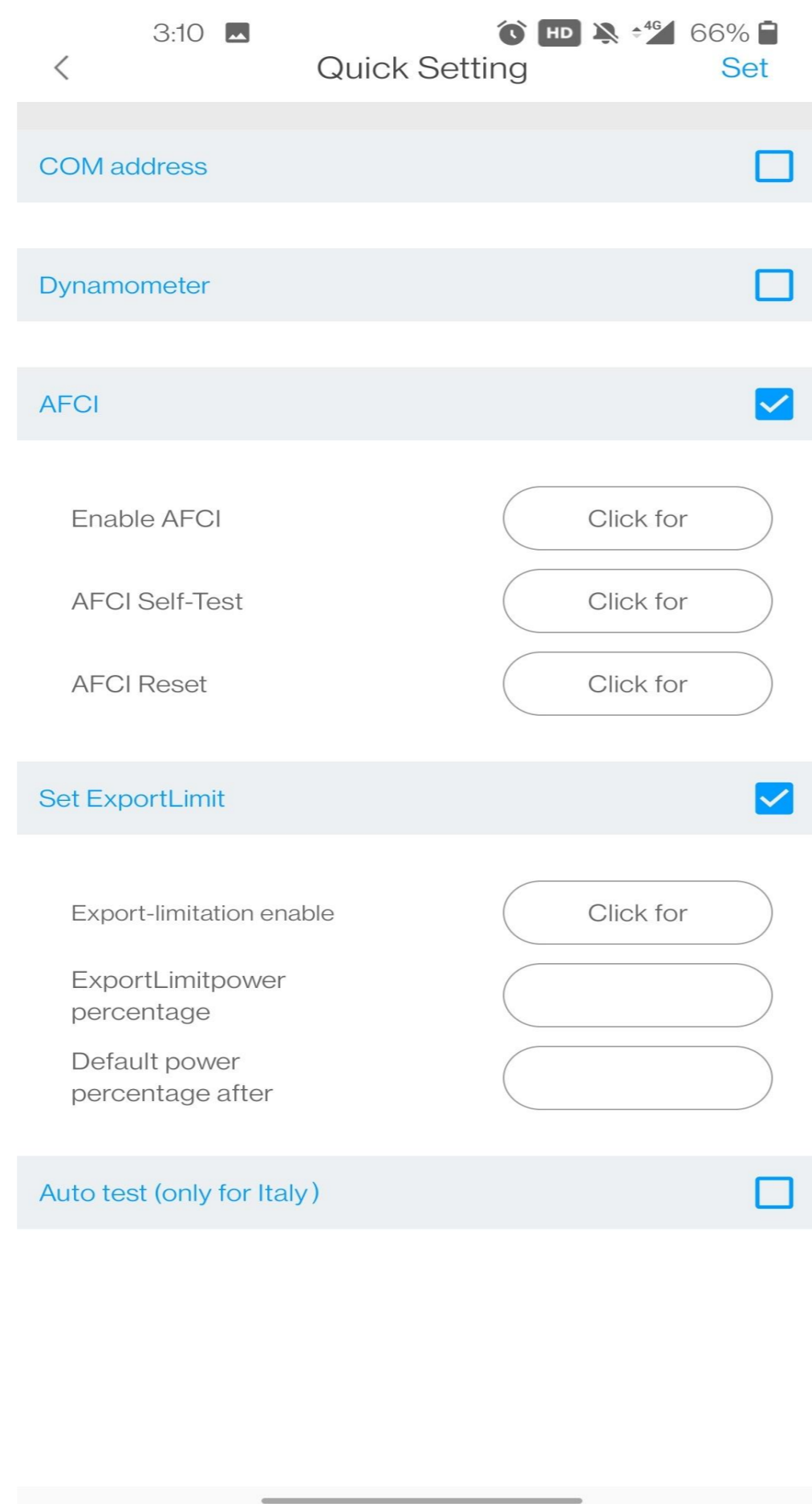
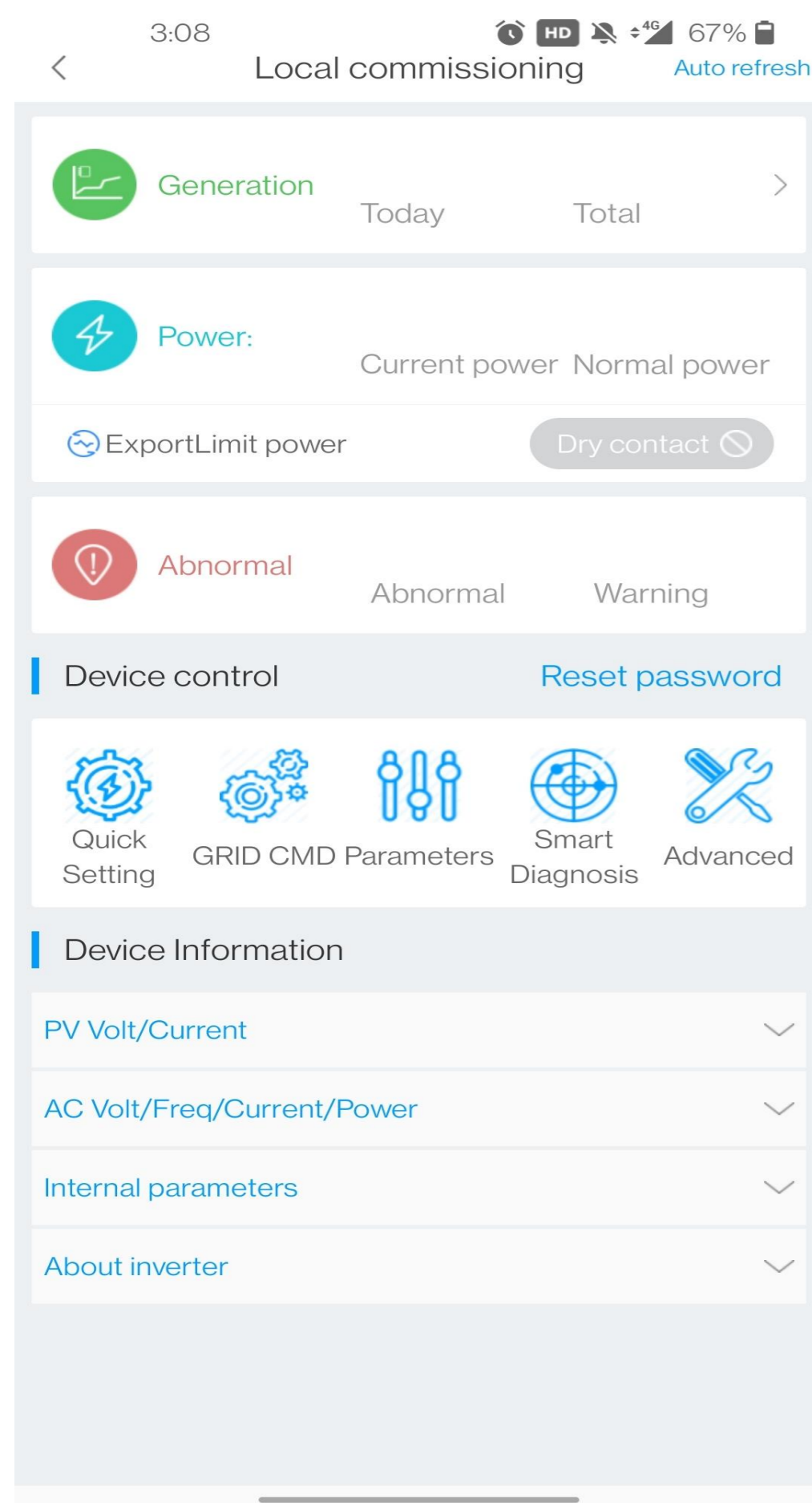
ShinePhone APP



C&I ShineServer

- Plant information
- Device management
- Generation display
- Remote O&M
- Easy to set-up plant
- Fault display
- Device status monitoring
- Online service

Local commissioning with USB-WiFi

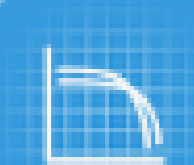


USB-WiFi+ShinePhone
Make it more easier for local
commissioning

For example:
Turn on/off AFCI
Turn on/off export limitation
I/V curve scanning

Online Smart Diagnosis

MAX diagnosis ×



Smart I-V diagnosis
Get I-V curve for each MPPT?



Fault waveform record
Quickly locate problem remotely via waveform record?



Real-time waveform record
Check real-time waveform of inverter voltage and current, etc?



One click diagnosis
Including I-V curve, AC waveform record, THDV and grid cable impedance

Smart I-V diagnosis

I-V curve

P-V curve

Last update time: --

Export current data

MPPT(Voc,Isc)

- 1
- 2
- 3
- 4
- 5
- 6
-

- Smart I-V diagnosis
- Fault waveform record
- Real-time waveform record

Smart Maintenance

Fast and easy, saving cost and time, peace in mind.



Configuration via APP

USB-WiFi+ShinePhone App

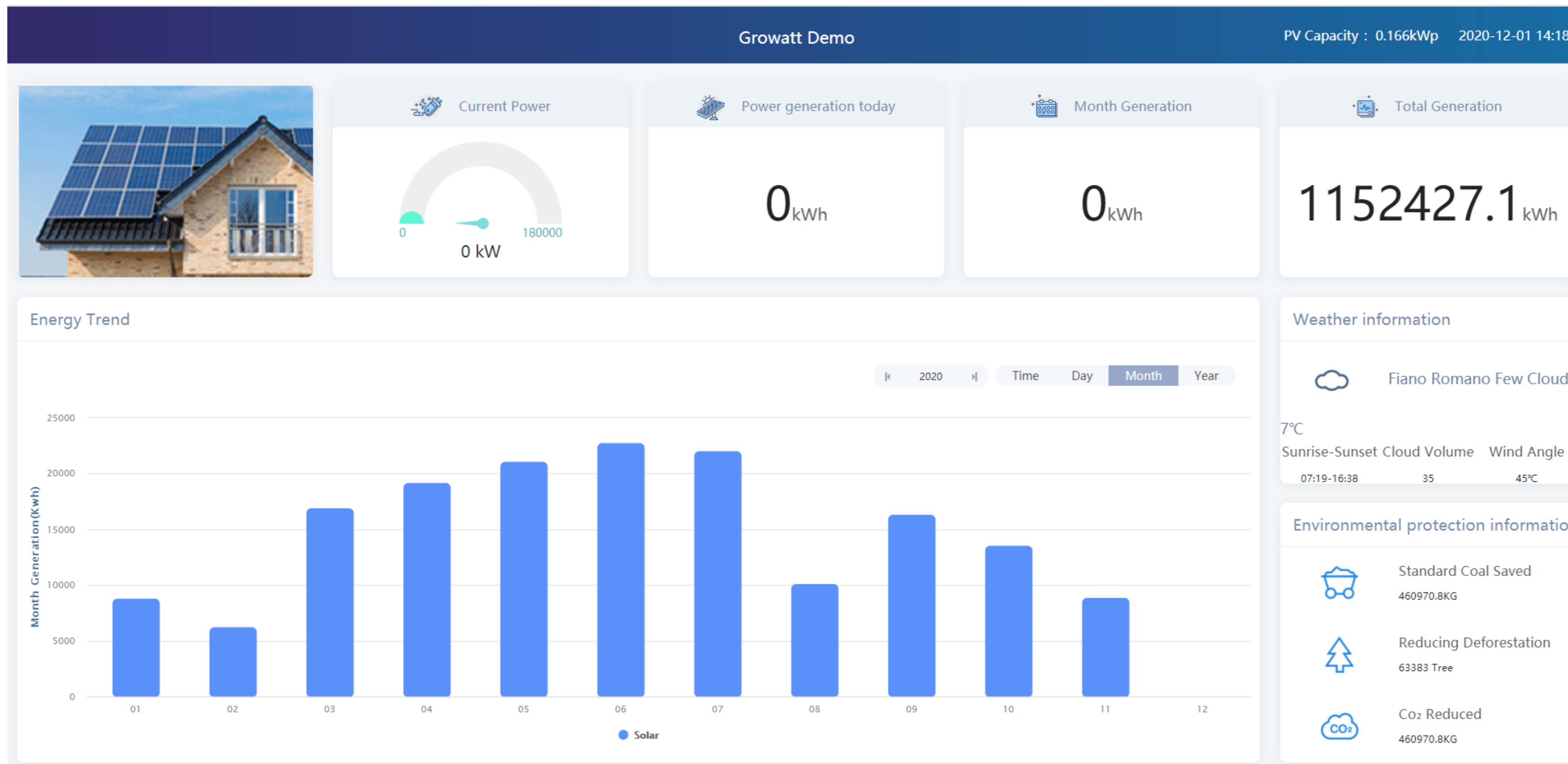
Online Smart Service

Remote Firmware upgrade

Remote diagnose and configuration

Plant Show page

Create a show page of your PV plant on a big screen.



Content



01

**Growatt Profile &
Market Trends**

02

Growatt Solutions

03

Global Reference

Project Reference



500KW Solar Rooftop, Netherlands

MAX 60KTL3 LV x 8 Units



500KW Solar Rooftop, Netherlands



MAX 60KTL3 LV x 8 Units



1MW Solar Rooftop Netherlands

— — —
Growatt 15pcs MAX 60KTL3 LV



1.2MW C&I Rooftop Project in Switzerland

Growatt 40000TL3-NS, Growatt 30000TL3-S



3MW Ground Mounted Project in Vietnam

MAX 80KTL3 LV *36pcs



5MW Ground Solar Plant in Ukraine

MAX 50KTL3 LV*100



100MW Foxconn Hill Solar Farm



► **Growatt 40000TL3-NS**
Henan, China

Thanks!



www.ginverter.com



Copyright© SHENZHEN GROWATT NEW ENERGY CO.,LTD

All Rights Reserved. The information contained in this document is only for reference purpose and subject to change by company officials.

