FOX ESS

KH&KA SERIES

2024.03.07

FOX ESS

KA/KH SERIES

Single Phase AC power 7-10.5kW

KH - 7.0 / 8.0 / 9.0 / 10.0 / 10.5
KA - 7.0 / 8.0 / 9.0 / 10.0 / 10.5

High Performance

IP65 Rated

Battery Ready

Remote Monitoring

Easy Upgrade

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03 INSTALLATION

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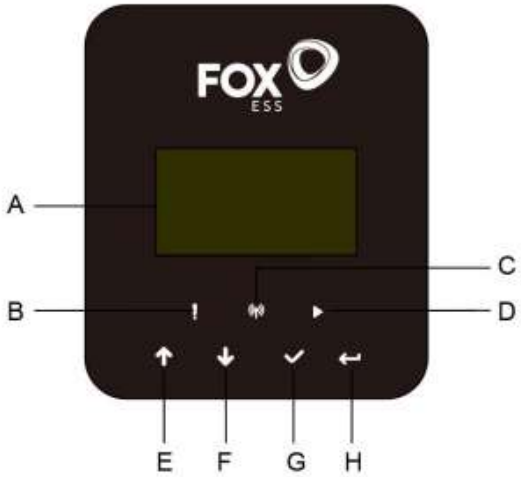
01

FOX ESS

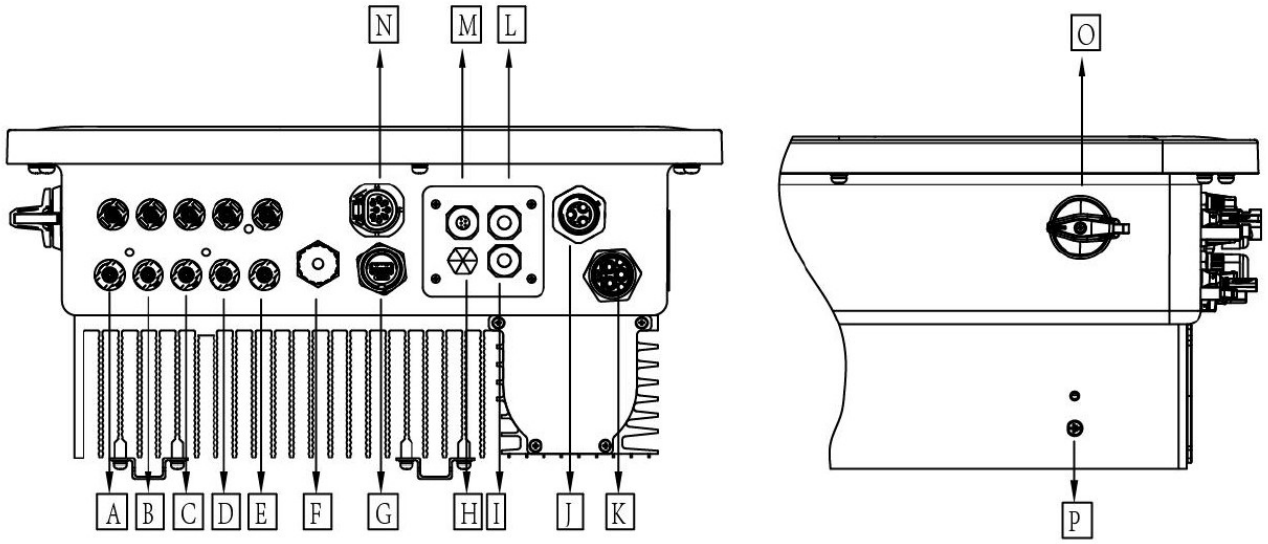
FEATURE

APPRAENCE



Object	Name	Function
A	LCD screen	Display the information of the inverter.
B	Indicator LED	Red: The inverter is in fault mode.
C		Blue: The inverter is normally connected to the battery.
D		Green: The inverter is in normal state.
E	Function button	Up button: Move cursor to upside or increase value.
F		Down button: Move cursor to downside or decrease value.
G		OK button: Confirm the selection.
H		Return button: Return the previous operation.

APPRAENCE



Item	Description	Item	Description
A	PV1	I	PARALLEL 1
B	PV2	J	EPS
C	PV3	K	GRID
D	PV4	L	PARALLEL 2
E	Battery Connector	M	DRM
F	BMS	N	Meter/CT/RS485
G	WiFi / 4G /USB	O	DC Switch
H	Waterproof Lock Valve	P	Grounding Screw

Dimension[mm]	450*527*208
Net/gross weight[KG]	29/33.5

02

FOX ESS

TECH paremeters

DATASHEET

Model	KH7	KH8	KH9	KH10	KH10.5
PV					
Max. recommended DC power [W]	10500	12000	13500	15000	15000
Max. DC voltage [V]	600	600	600	600	600
Nominal DC operating voltage [V]	360	360	360	360	360
Max. input current [A]	16/16/16*		16/16/16/16		
Max. short circuit current [A]	20/20/20		20/20/20/20		
MPPT voltage range [V]	80-500	80-500	80-500	80-500	80-500
Start-up voltage [V]	75	75	75	75	75
No. of MPP trackers	3	3	4	4	4
Strings per MPP tracker	1	1	1	1	1
Max. inverter backfeed current to the array	0				
DC disconnection switch	Optional				

DATASHEET

Battery	KH7 KA7	KH8 KA8	KH9 KA9	KH10 KA10	KH10.5 KA10.5
Battery Type	Li-Ion				
Battery voltage range [V]	85-450				
Recommended battery voltage [V]	300VDC				
Max. Charge/ discharge current [A]	50				
Communication interfaces	CAN/RS485				
Reverse connect protection	YES				

DATASHEET

Model	KH7 KA7	KH8 KA8	KH9 KA9	KH10 KA10	KH10.5 KA10.5
AC OUTPUT					
Nominal AC power [VA]	7000	8000	9000	10000	10500
Max. apparent AC power [VA]	7700	8800	9900	10500	10500
Rated grid voltage (AC voltage range) [V]	220/230/240 (180 to 270)				
Rated grid frequency [Hz]	50 / 60, ±5				
Nominal AC current [A]	30.4	34.8	39.1	43.5	45.7
Max. AC current [A]	33.5	38.3	43.0	45.7	47.7
Inrush current [A]	9.6A@50us				
Max. output fault current [A]	130A@10us				
Max. output over-current protection [A]	91.4				
Displacement power factor	0.8 leading to 0.8 lagging				
Total harmonic distortion(THDi, rated power)	<3%				

DATASHEET

AC INPUT					
Max. AC power [VA]	14000	16000	18000	18000	18000
Rated grid voltage (AC voltage range) [V]	220/230/240 (180 to 270)				
Rated grid frequency [Hz]	50 / 60, ±5				
Max. AC current [A]	60.9	69.6	78.3	78.3	78.3

Max output power: 18kW = 10.5KW+7.5KW
MAX CURR: 78.3A

DATASHEET

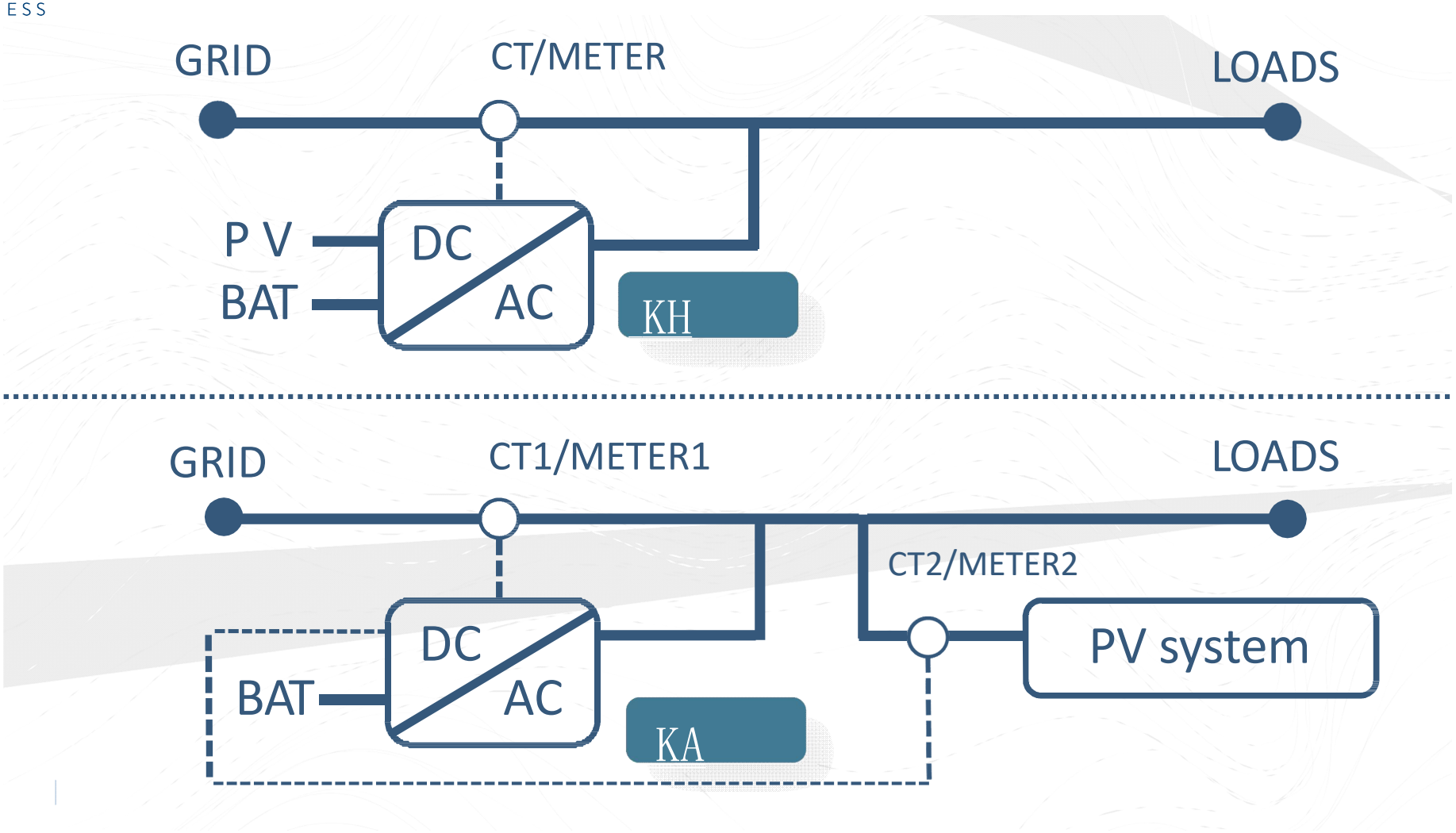
Model	KH7 KA7	KH8 KA8	KH9 KA9	KH10 KA10	KH10.5 KA10.5
EPS OUTPUT (WITH BATTERY)					
Max. apparent AC Power [VA]	7000	8000	9000	10000	10500
EPS rated voltage[V]	220/230/240				
EPS rated frequency[Hz]	50/60				
Max. EPS current [A]	31.8	36.4	40.9	45.5	47.7
EPS peak power [W]	10000, 60s		12000,60s		
Switch time [s]	<20ms				
Total harmonic distortion (THDv, linear Load)	<2%				
Parallel operation	Yes @max10PCS				

03

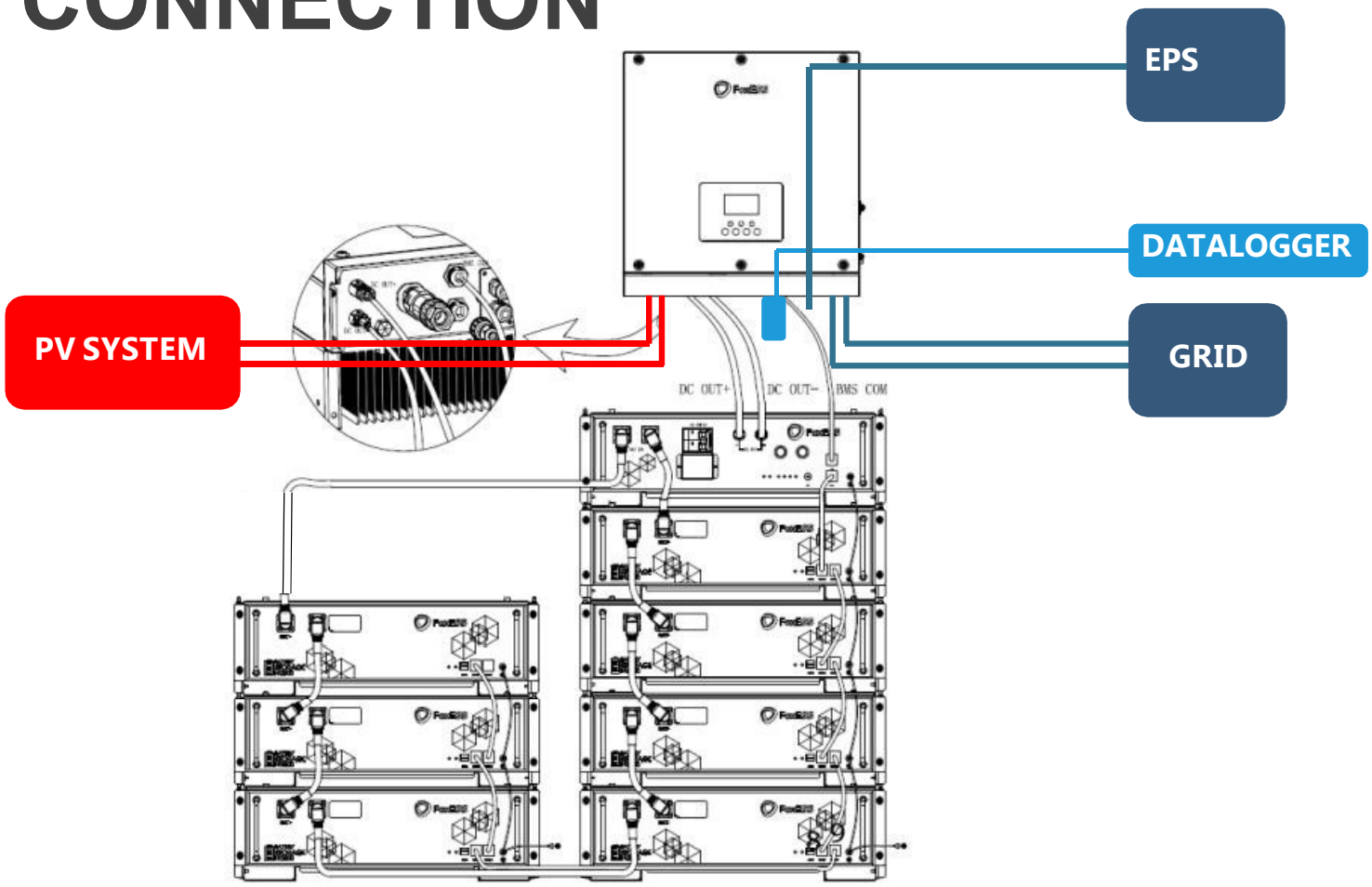
FOX ESS

QUICK INSTALLATION

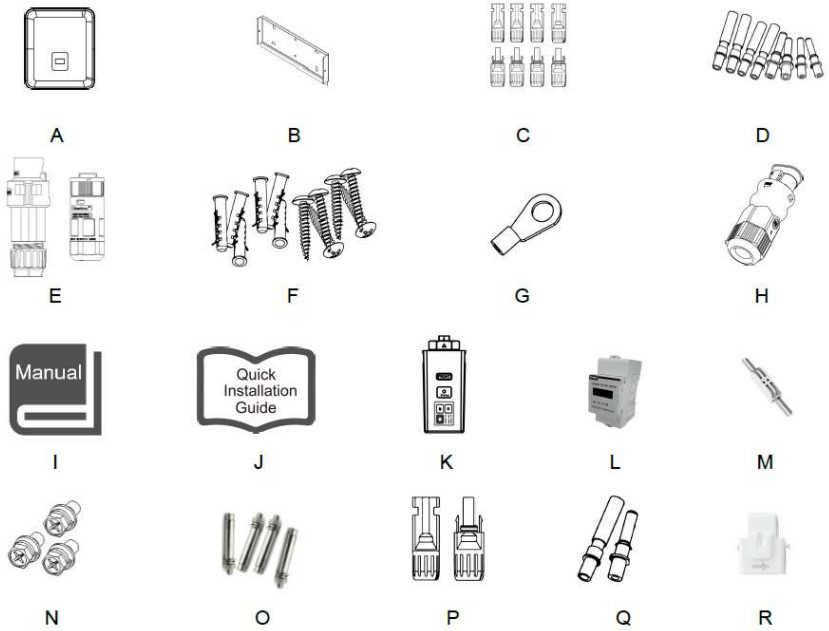
SCHEMATIC


GRID
CT/METER
LOADS
P V
BAT
DC
AC
KH
GRID
CT1/METER1
LOADS
CT2/METER2
BAT
DC
AC
KA
PV system

CONNECTION

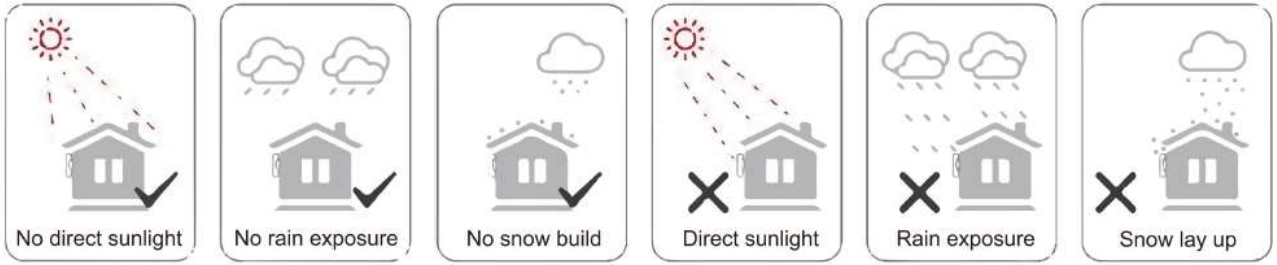


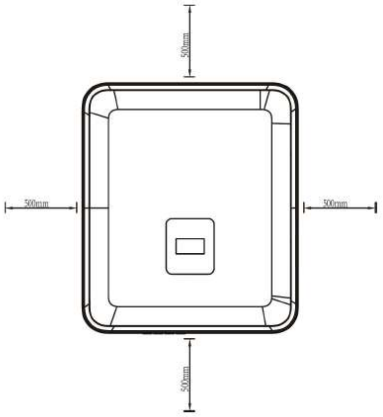
PACKING LIST



Object	QTY	Description	Object	QTY	Description
A	1	Inverter	J	1	Quick installation guide
B	1	Bracket	K	1	WIFIGPRS /LAN (OptionaL)
C	8	PV connectors(Only for KH)(4*positive, 4″negative)	L	1	Meter (Optional)
D	8	PV pin contacts(Only for KH)(4 positive,4’ negative)	M	1	CT extension connector
E	2	AC connectors	N	3	Hexagonal screws
F	6	Expansion tubes&Expansion screws	O	4	Expansion screws(For ground installation
G	1	Earth terminaL	P	2	Battery connectorslpositive , negative)
H	1	Communication connector	Q	2	Battery pin contacts1 ″ positive , 1 ″ negative)
I	1	Product manual	R	1	CT (with 10m cable)

INSTALLATION

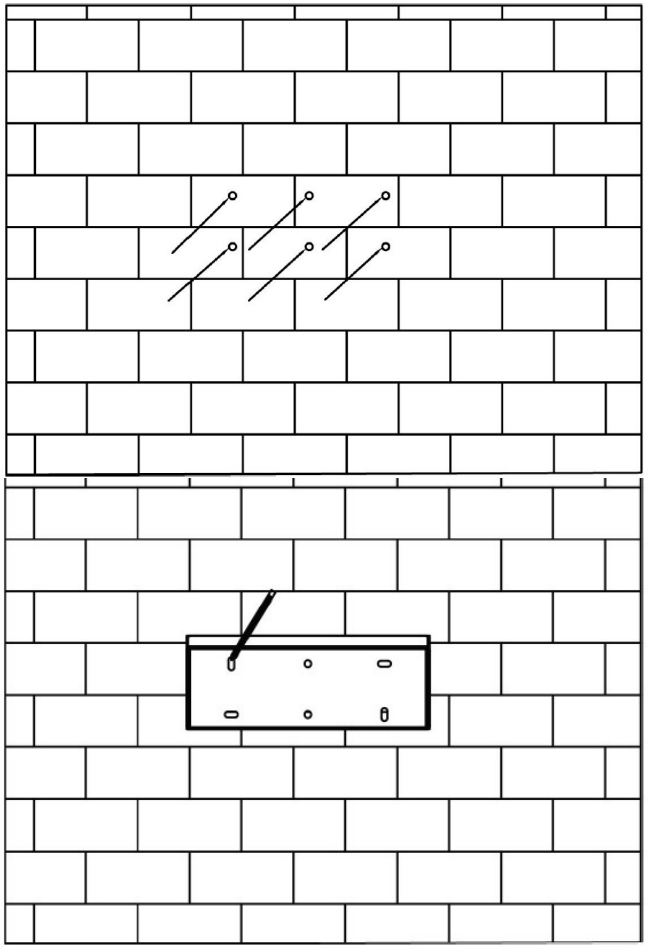


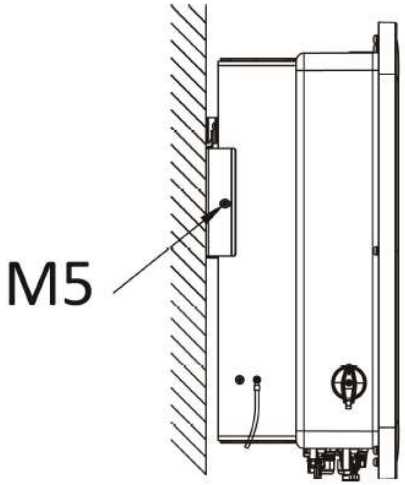


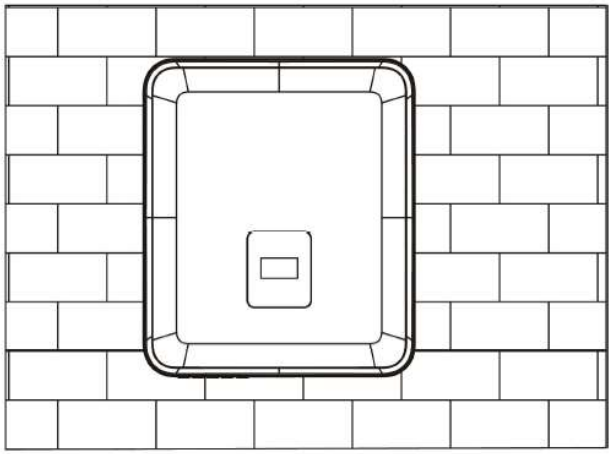
Position	Min Distance
Left	500mm
Right	500mm
Top	500mm
Bottom	500mm

- Not in direct sunlight
- Not in areas where highly flammable materials are stored
- Not in potential explosive areas
- Not in the cool air directly .
- Not near the television antenna or antenna cable
- Not higher than altitude of about 2000m above sea level
- Not in environment of precipitation or humidity (> 95 %)
- Under good ventilation condition
- The ambient temperature in the range of-25'c to + 60C
- The slope of the wall should be within + 5
- Please avoid direct sunlight , rain exposure , snow laying up during installation and operation

INSTALLATION



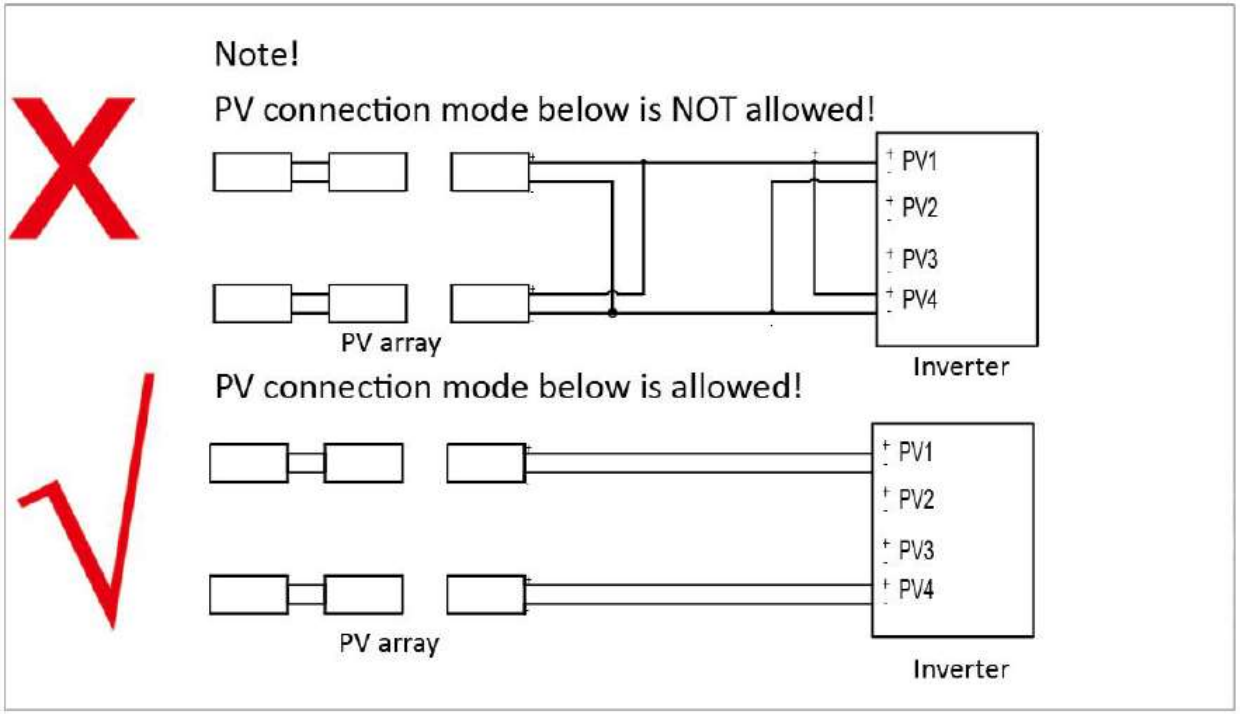




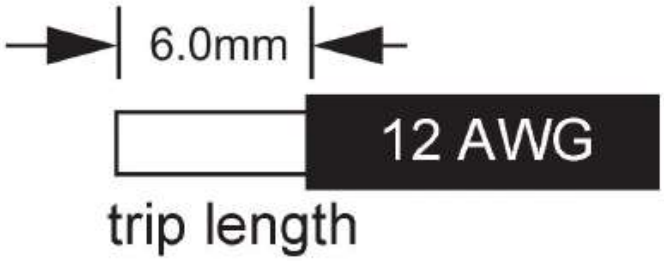
INSTALLATION

PV Connection

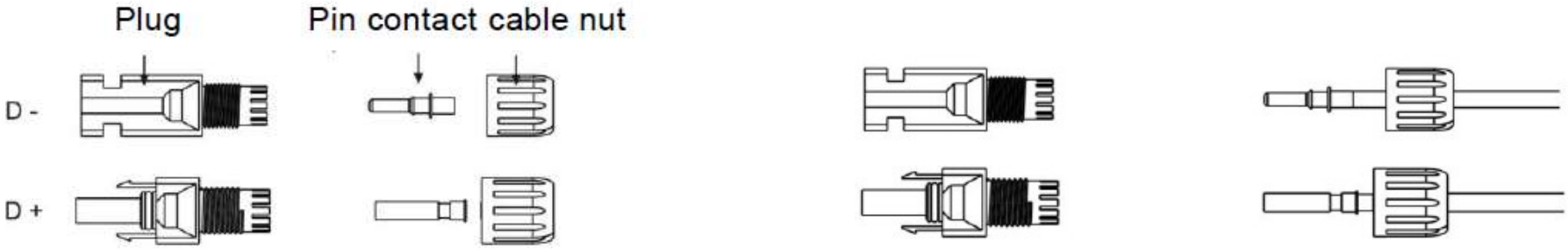
- 4 MPPT
- 1 string per MPPT
- 600V maximum PV voltage
- 16 A PV current



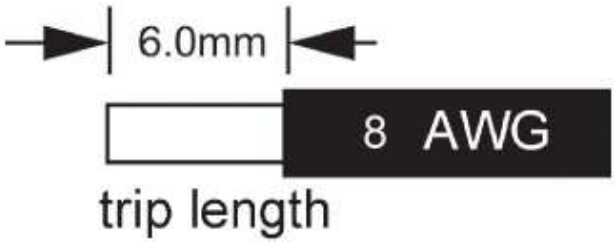
PV WIRING



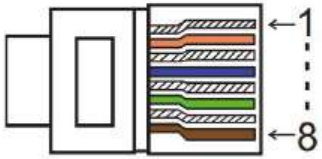
Choose 12AWG wire to connect the PV module



BATTERY WIRING



Choose 8AWG wire to connect the battery



CAT 5E/6/6E…
RJ45 PLUG

PIN	1	2	3	4	5	6	7	8
Definition	GND	GND	BMS-485B	BMS-CANL	BMS-CANH	BMS-CANH	BMS-CANL	BMS-485A

GRID WIRING

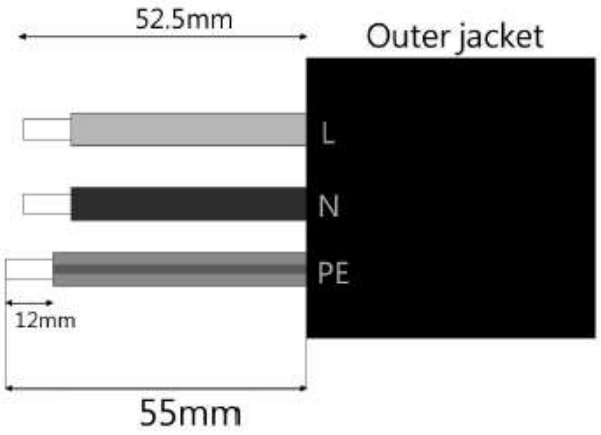
Power[KW]	7.0	8.0	9.0	10.0	10.5
Cable(ongrid)	13.0mm²	13.0mm²	13.0mm²	13.0mm²	13.0mm²
Cable(EPS)	8mm²	8mm²	8mm²	8mm²	8mm²
Micro-Breaker	100A	100A	100A	100A	100A

If you don't use the EPS function, the wiring conduct core section can use 8-10mm².
At the same time you can choose 63A Micro-breaker.

If you use the EPS function, the wiring conduct core section should be 13mm². At the same time you can choose 100A Micro-breaker.

A micro-breaker for max output over-current protection device shall be installed between inverter and grid, and the current of the protection device is referred to the table above, any load should not be connected with inverter directly.

GRID WIRING



L: Brown/Red Wire

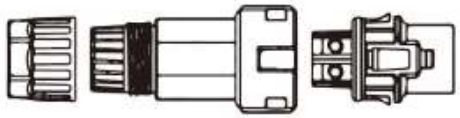
N: Blue/Black Wire

PE: Yellow & Green Wire

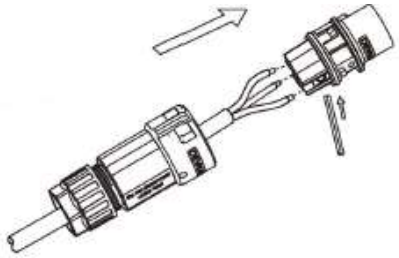
Note: Please refer to local cable type and color for actual installation

INSTALLATION

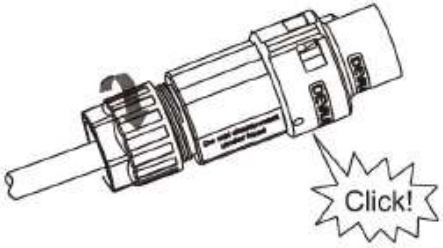
Grid Port



Connector

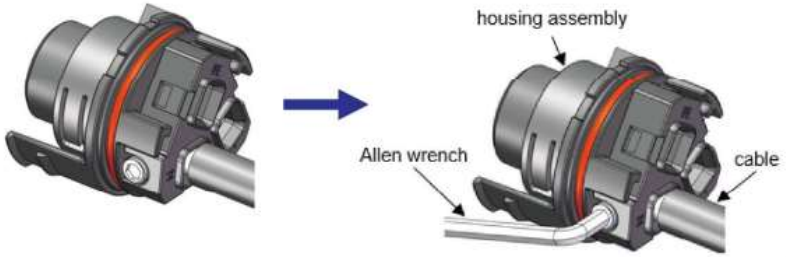


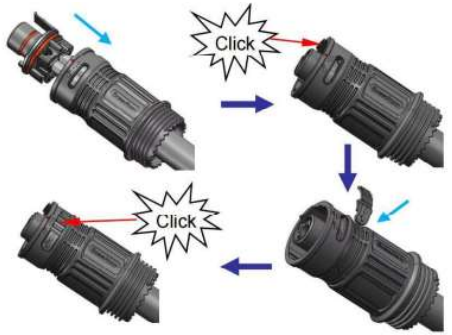
Wiring



Secure locking

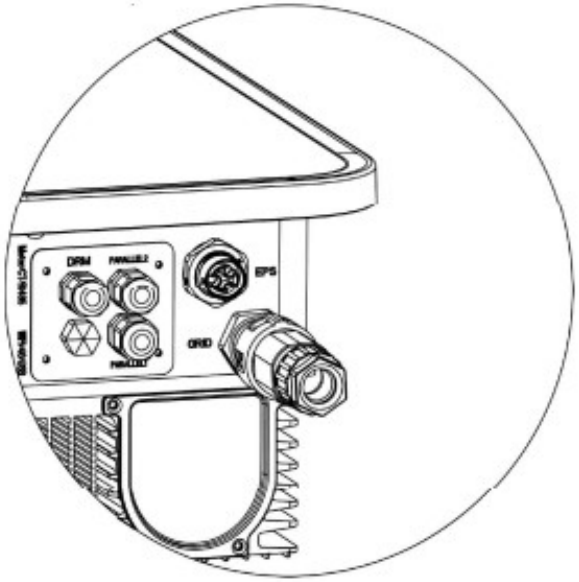
EPS Port





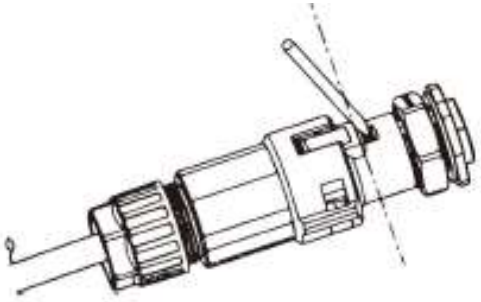
INSTALLATION

Grid Port

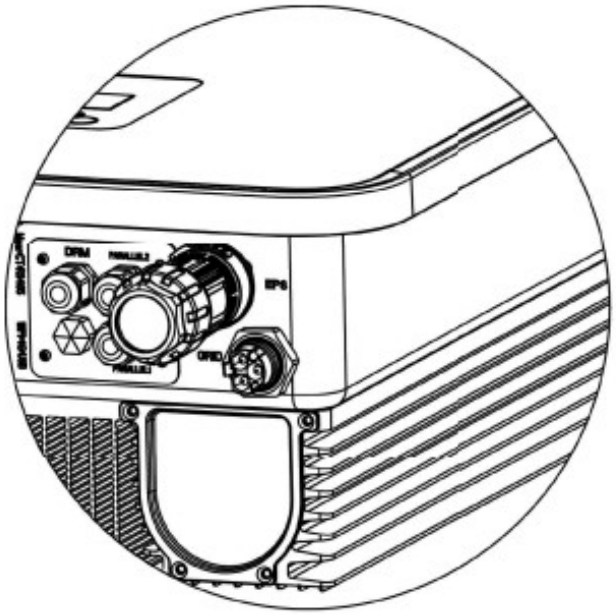


Inverter Connection

Removal

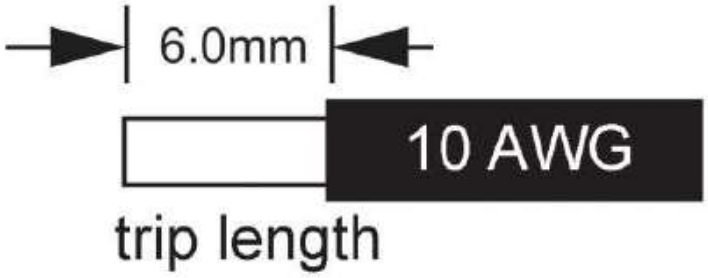


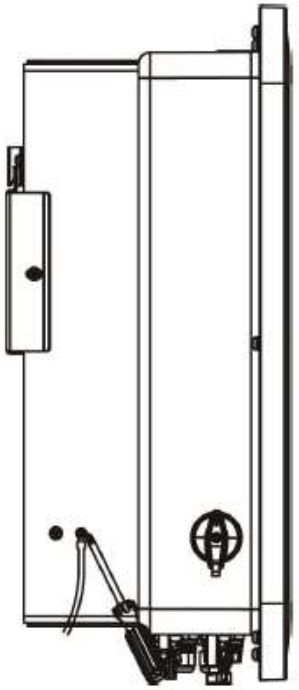
EPS Port



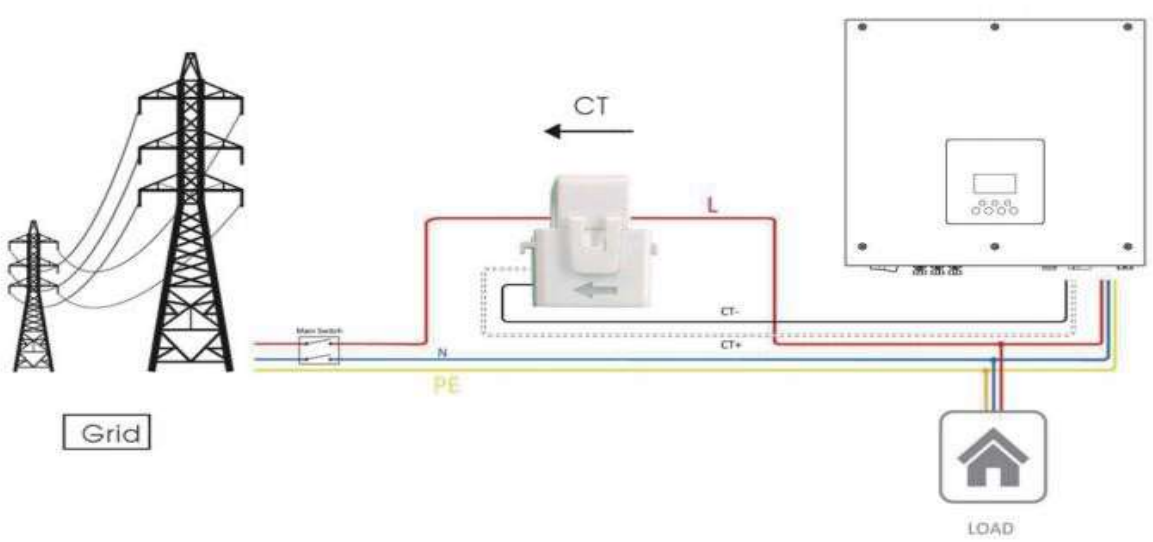
GROUNDING

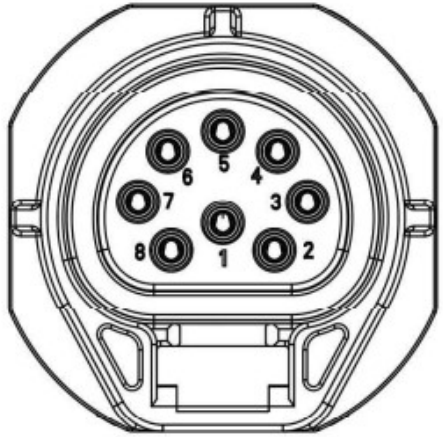
Ensure that the inverter is grounded





CT WIRING

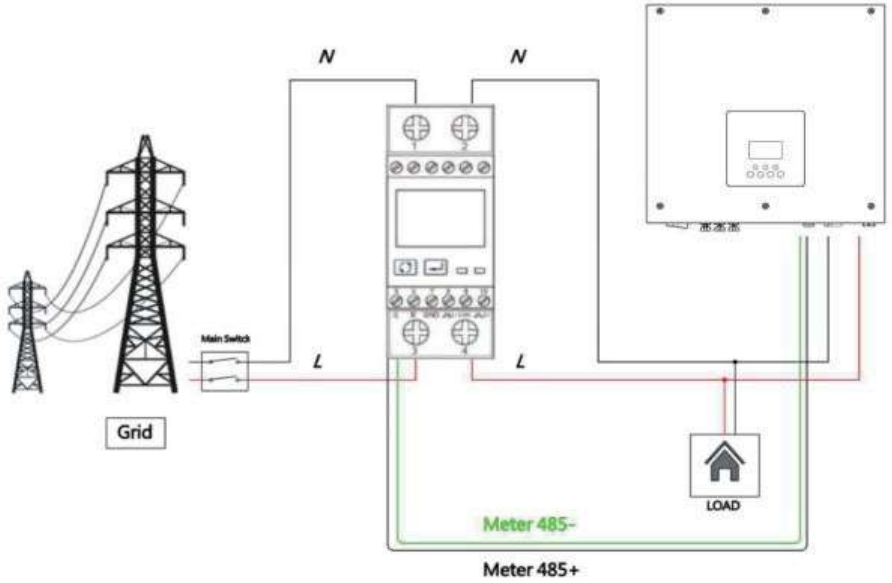




PIN	1	2	3	4	5	6	7	8
Definition	Meter485A	Meter485B	485B	485A	CT2+	CT2-	CT1-	CT1+

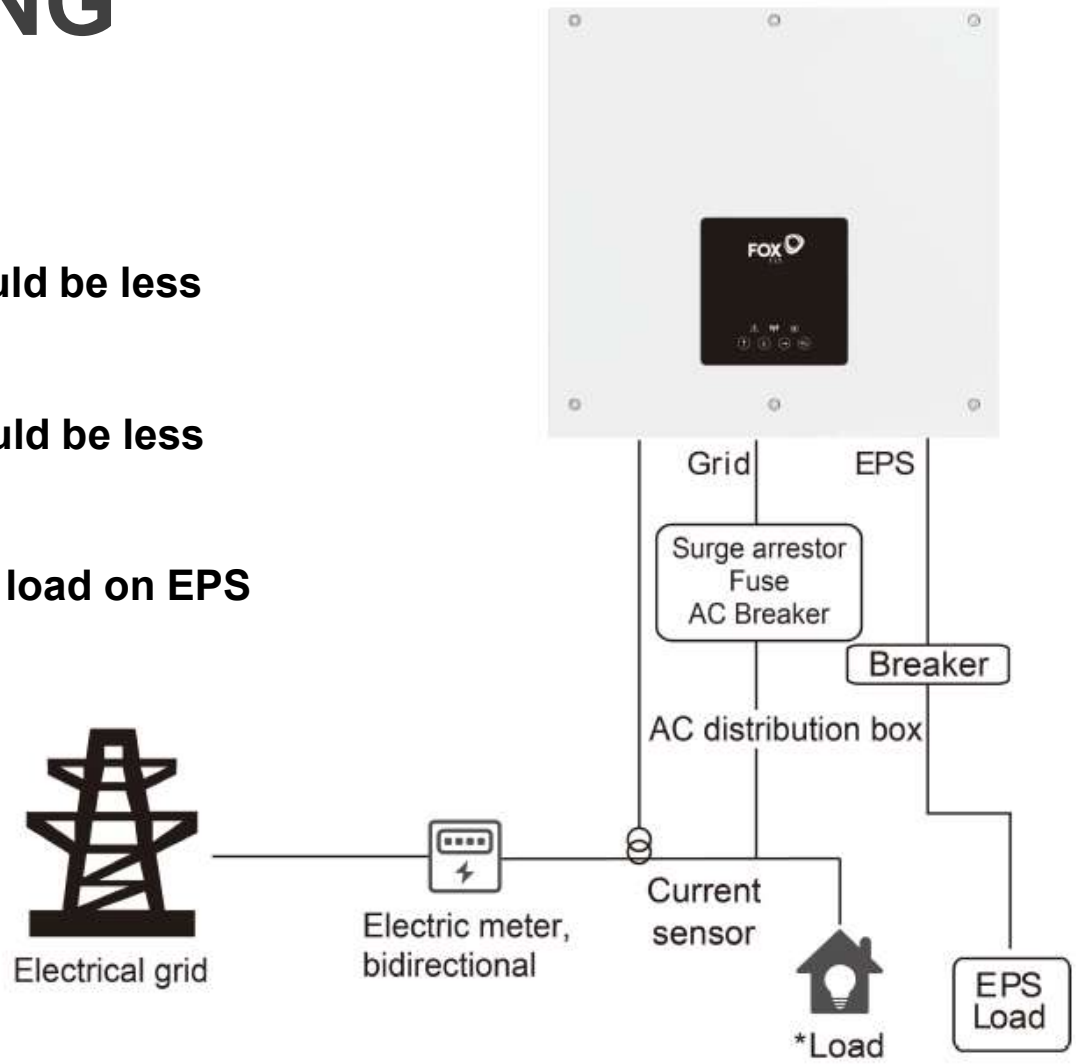
METER WIRING

Compipatible Meter type:
DDSU666(CHINT)
SDM230(EASTRON)



EPS WIRING

- **On-grid mode: EPS load should be less than bypass power**
- **Off-grid mode: EPS load should be less than maximum EPS power**
- **Not recommending inductive load on EPS**



EPS WIRING

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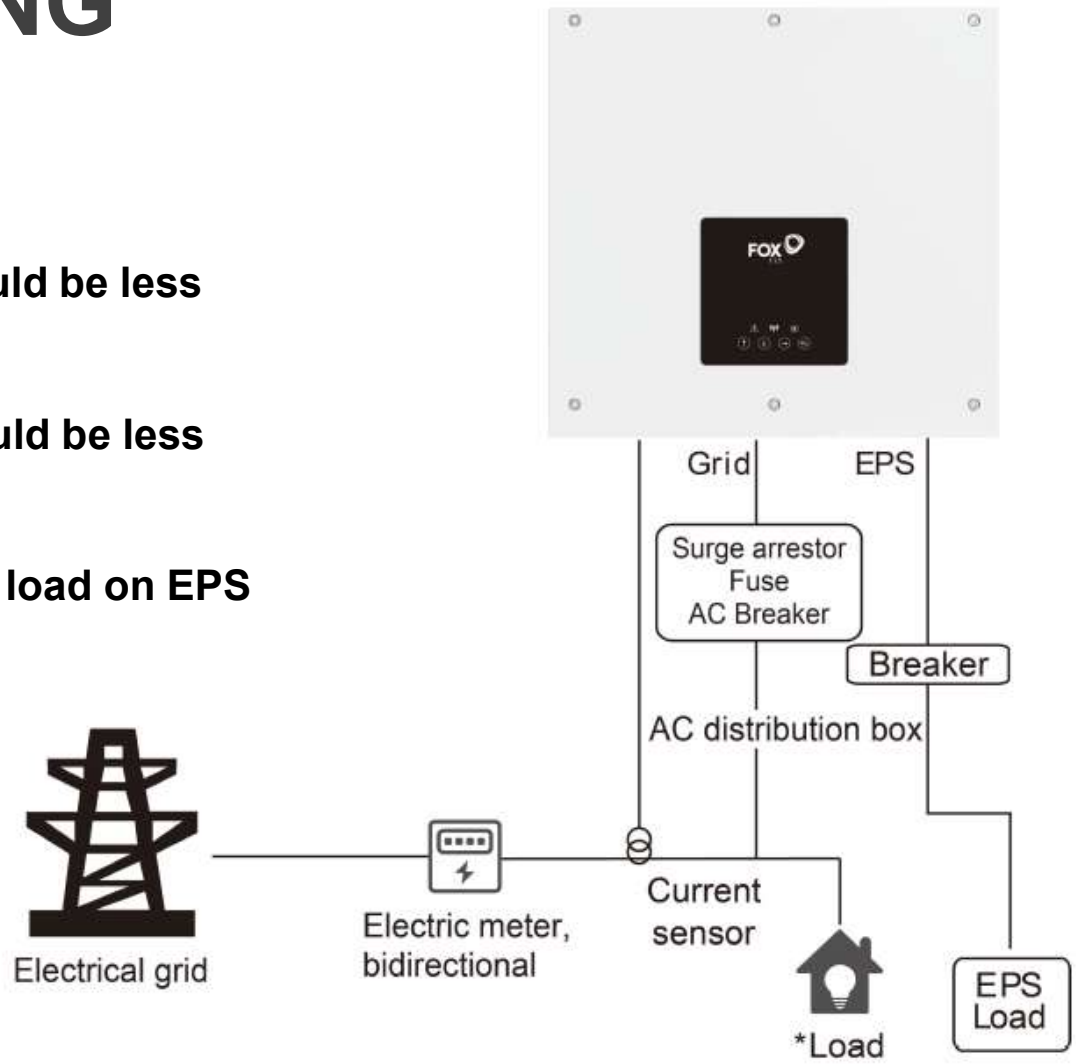
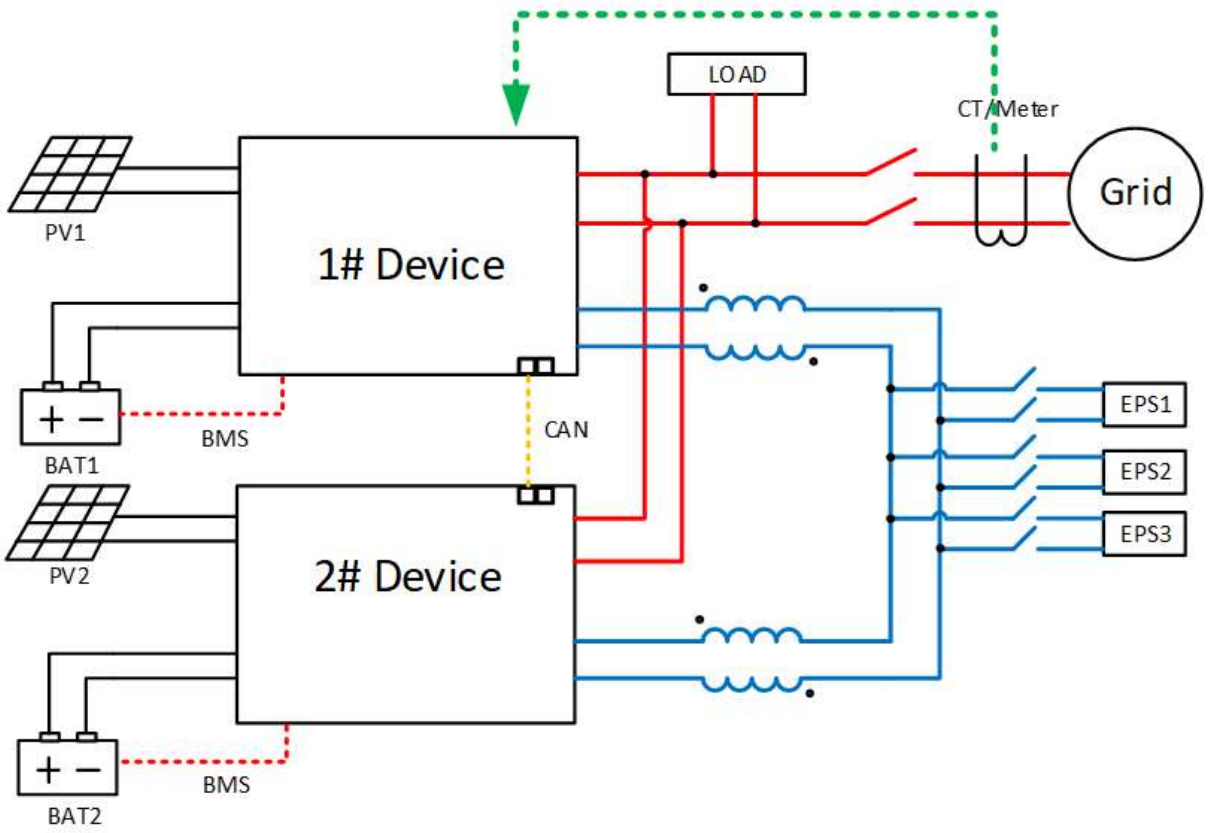


INSTALLATION



Typical wiring of parallel connecting

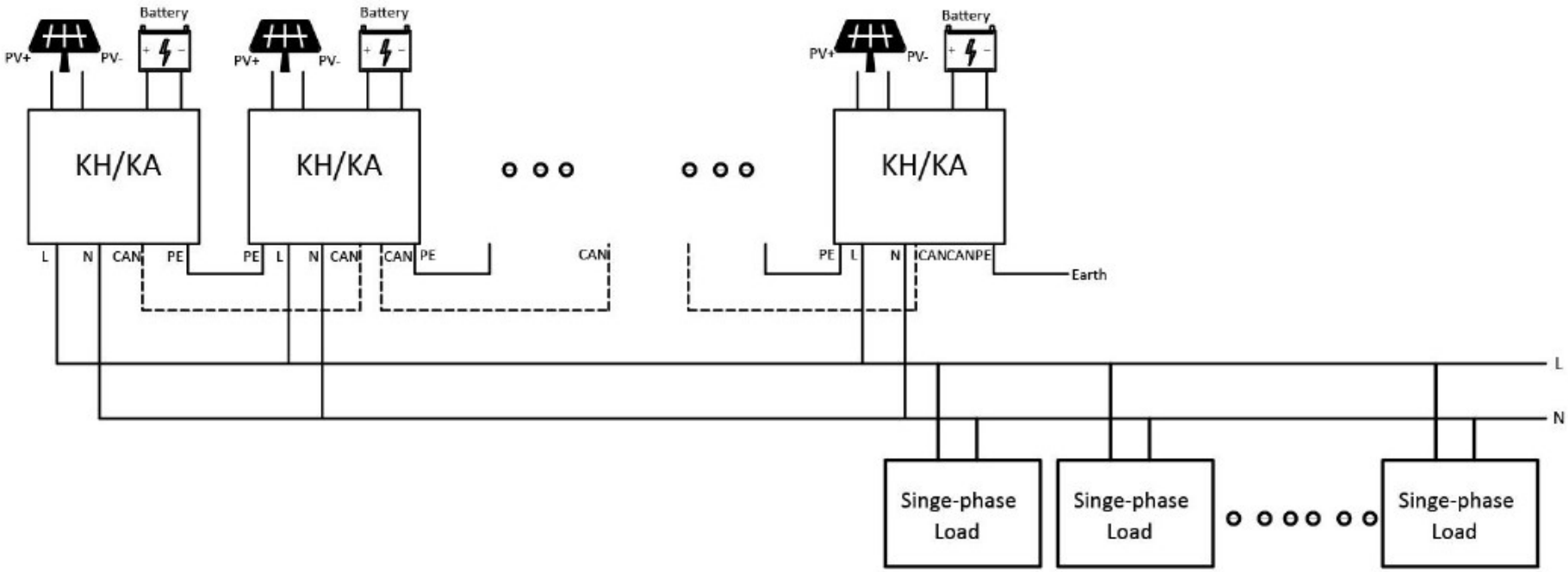
Two parallel devices only need one CT/meter connected to any one, and three parallel devices need to be configured with CT with larger range

EPS output parallel connection requires increasing current sharing reactance to suppress common mode circulating current, which can be realized in the machine later

Multiple parallel CAN wires are connected by one by one

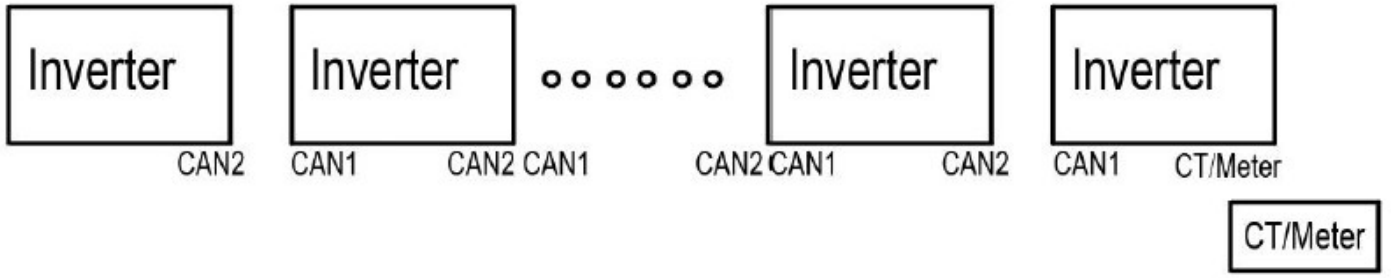
Setting parallel can ID and can number Screen

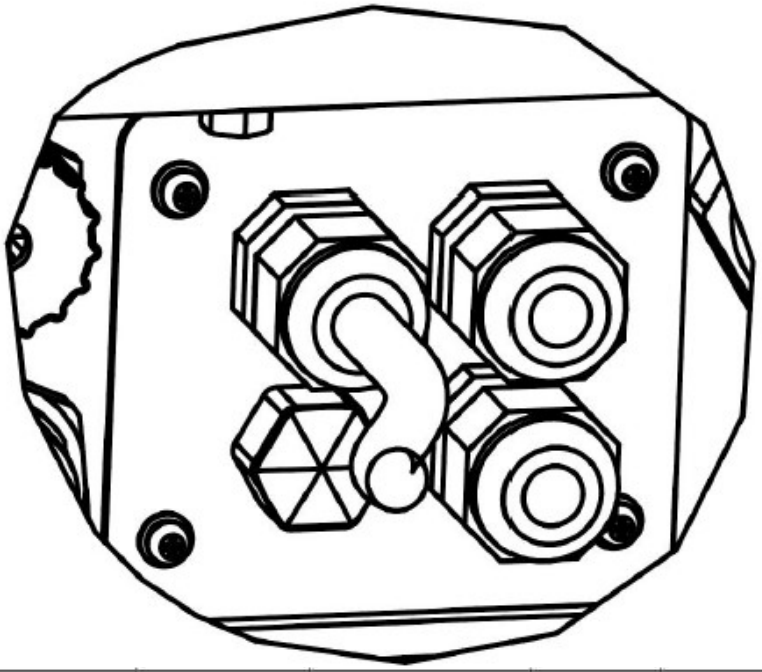
PARALLEL CONNECTION



WIRING AND LCD SETTING

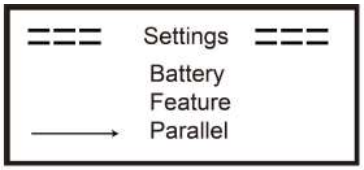
CAN-CAN connected hand by hand And CT/Meter



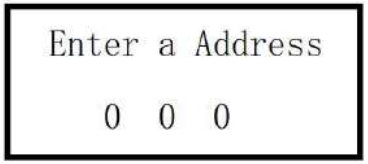


PIN	1	2	3	4	5	6	7	8
Parallel 1	E_STOP	GND_COM	/	Parallel_CANL	Parallel_CANH	/	GND_COM	GENE RATOR
Parallel 2	E_STOP	GND_COM	/	Parallel_CANL	Parallel_CANH	/	GND_COM	GENE RATOR

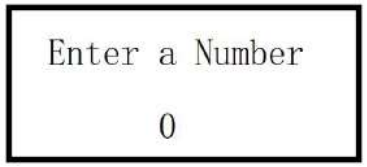
WIRING AND LCD SETTING



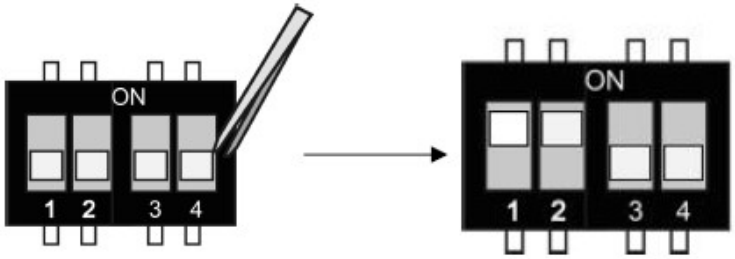
Set the address ID first and then parallel number.



Address range is 1-249.

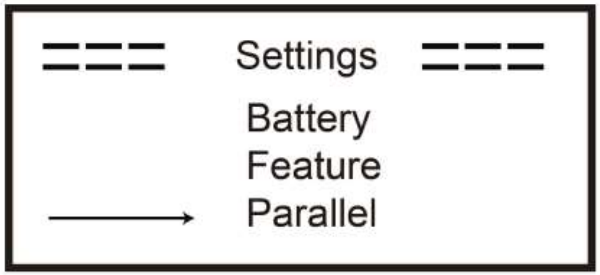


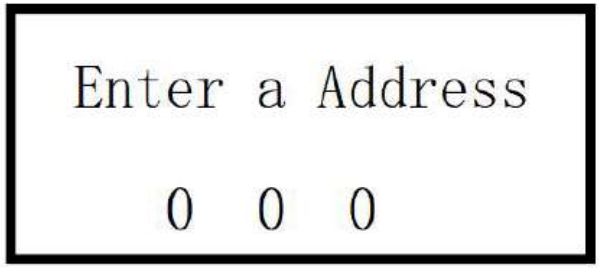
Number: 2-8

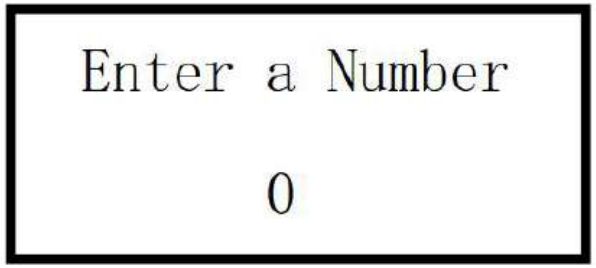


- DIP switch is required on the inverter with meter/CT conneciton

HOW TO EXIST







If one inverter wants to exit from parallel system.
Set the id and number to 0

04

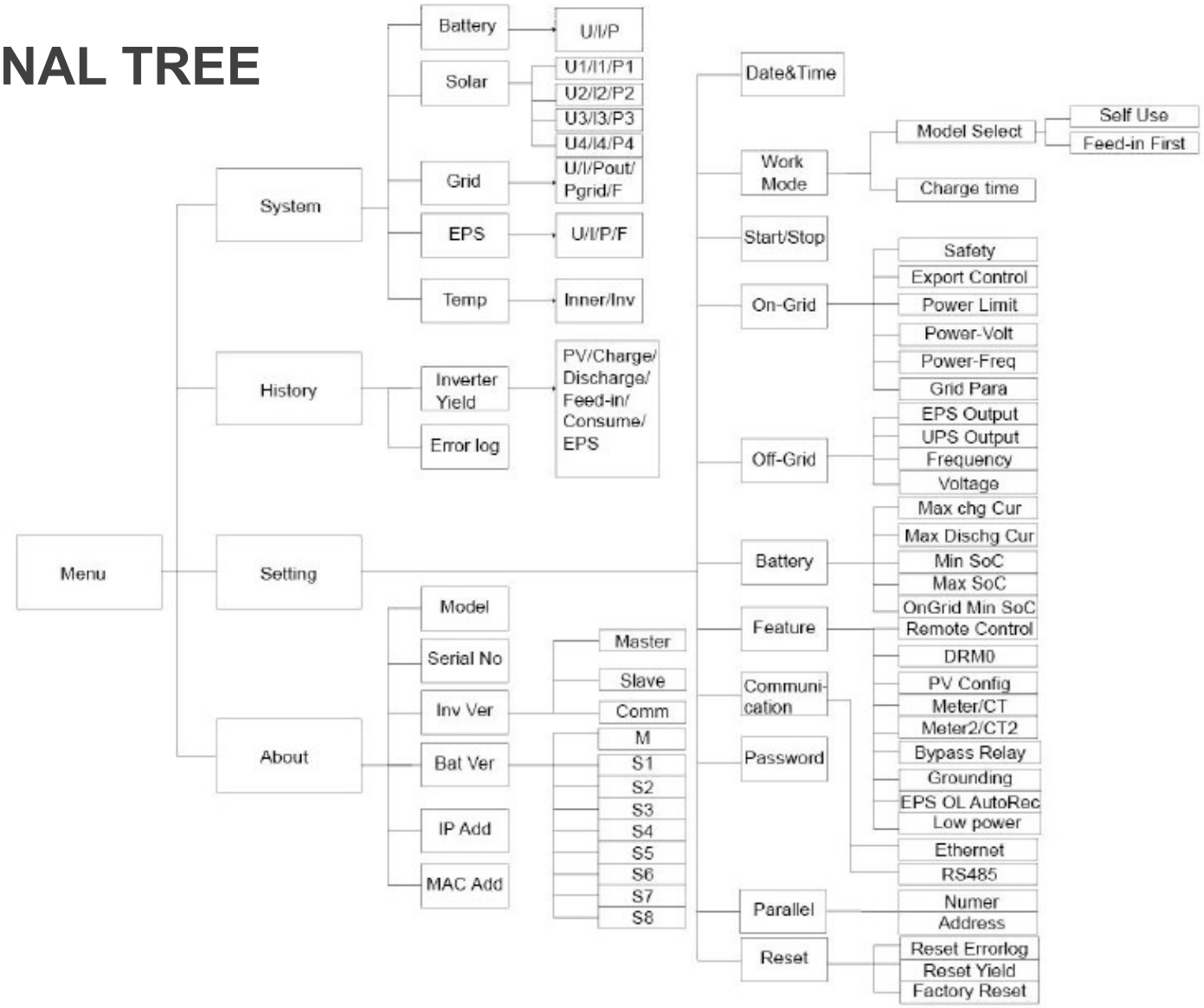
FOX ESS

WORK MODE AND FUNCTION

WOKE MODE

Woke modes	Priority	Description
Self-use (with PV power)	load > battery > grid	Energy produced by the PV system is used to optimize self-consumption . The excess energy is used to charge the batter ieslen exported to gird
Self-use (without PV power)	load > battery > grid	PV supplied , battery will dischargegrid will supply power when the battery capacity is not enoug
Feed in piority	load > grid >battery	In the case of the external generator , the power generated will be usedto supply the local loads firstly , then export to the public grid . Theredundant power will charge the battery
Force time use	battery>load>grid (when charging) load>battery>grid (when discharging)	This mode applies the area that has electricity price between peak and valley. User can use off-peak electricity to charge the battery. The charging and discharging time can be set flexibly, and it also allows to choose whether charge from the grid or not.
EPS MODE		When the grid is off , system will supply emergency power from PV orbattery to supply the home loads

FUNCTIONAL TREE



COMMON ERROR LIST

Common Site Error Code (More in the manual)	Description & Solution
Grid Lost/Volt/Freq Fault	Grid is lost/voltage or Frequency out of range System will reconnect if the utility is back to normal.
Bat Volt Fault	Battery voltage fault. Check if the battery input voltage is within the normal range.
Iso Fault	The isolation is failed. Please check if the insulation of electric wires is damaged. Wait for a while to check if back to normal.
Ground Fault	The ground connection is failed. Check the voltage of neutral and PE. Check AC wiring. Disconnect PV, grid and battery, then reconnect.
Meter Lost Fault	The communication between meter and energy station is interrupted. Check if the communication cable between meter and energy station is correctly.
BMS Lost	The communication between BMS and energy station is interrupted. Check if the communication cable between BMS and energy station is correctly and well connected.

ACCESSORY

MONITORING DATALOGGER

SMART WIFI

SMART GPRS

SMART LAN

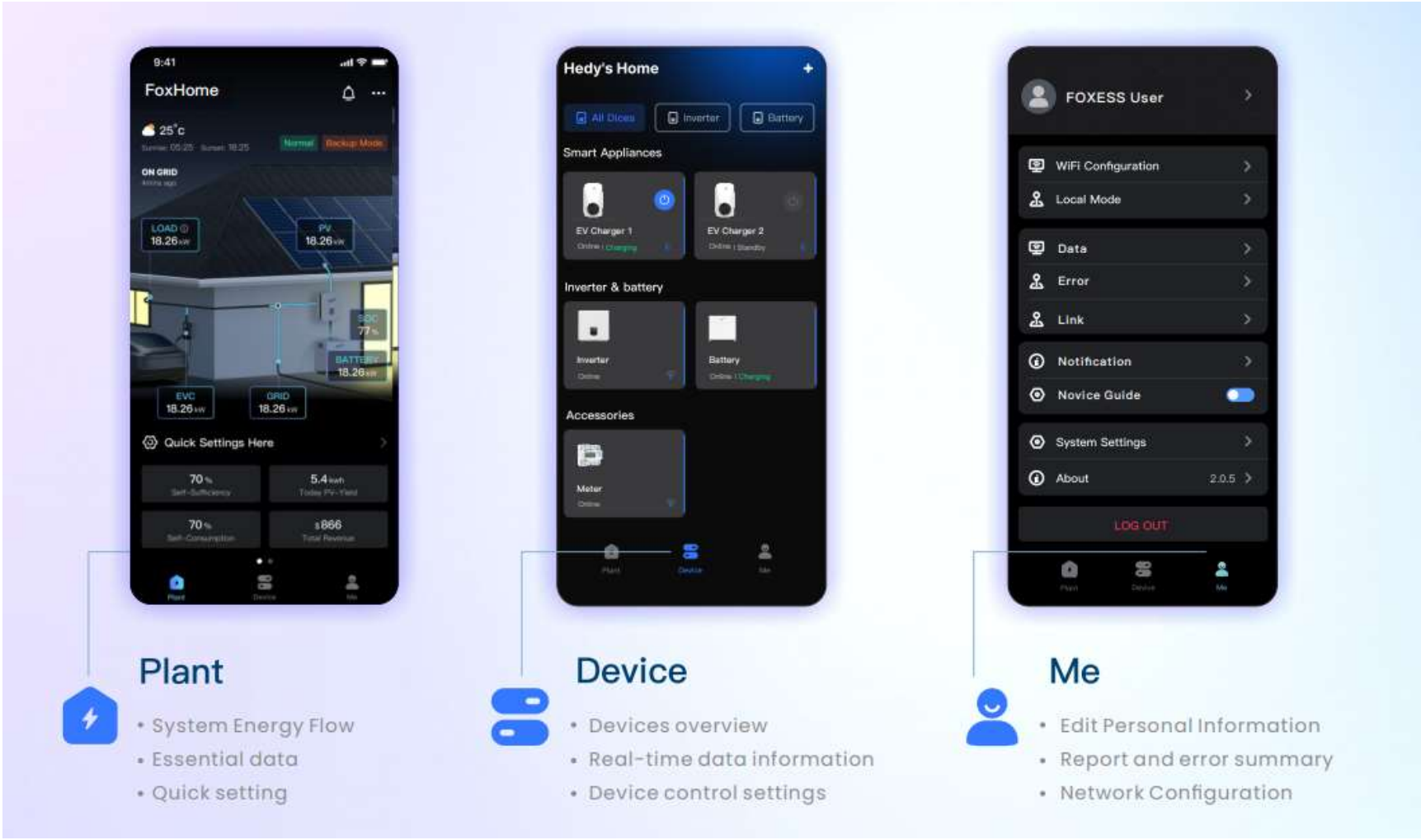
SMART 4G

Meter/CT

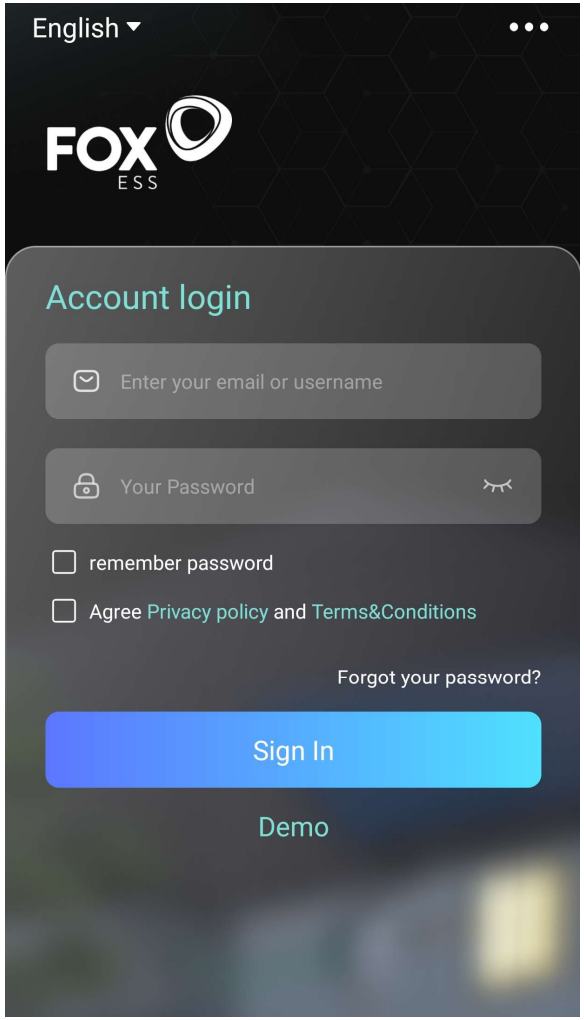
Meter model	Factory	Current	Frequency
SDM230-Modbus	EASTRON	0.5%	0.2%
DDSU666	CHINT	1%	1%

CT model	Factory	Ratio
CTSA016	YUANXING	100A/33.33mA
EICT-120K-T1000C	ELECMAT	120A/40mA

MONITORING FoxApp 2.0



MONITORING FoxApp 2.0



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THANKS