SAMSUNG SDI **SAMSUNG**

3.6 kWh „All-in-One(AIO)" Quick Guide

※ Specification of the product can be modified without any notice to customers to improve the system

Contents:

1. Required Preparations before the installation.

2. Battery Tray Assembly.

3. Connections and Configuration.

4. Install Setting

5. Operating Test

6. Installer Account

7. User Account

8. System Commissioning

9. Contact Information

Model : ELSR362-00001

10. Energy meter Install Instruction

※ This manual is for 3.6kW All-in-One product(ELSR362-00001) of Samsung SDI.
You can download the manuals for product from "Notice" in the monitoring web page.

1. Required Preparations before the installation

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※ The installation procedure, particularly the Battery Tray Assembly, shall be carried out by at least qualified technicians

Before installing the units, items specified below shall be observed:

Neither DC Disconnect switch nor AC Circuit Breaker are embedded inside the AIO. Those are mandatory parts that should be installed in installation step:

- AC Circuit Breaker : 230Vac, 32A, 10kA.
- DC Disconnect Switch : 650Vdc or more, 15A or more.

Energy meter selected from among those listed in Table 1 shall be prepared in advanced.

Internet connection via LAN cable shall be available.

For the AC connection, O-Ring crimped terminals are highly recommended.

Observe the minimum clearance on the installation spot (see fig. 1).

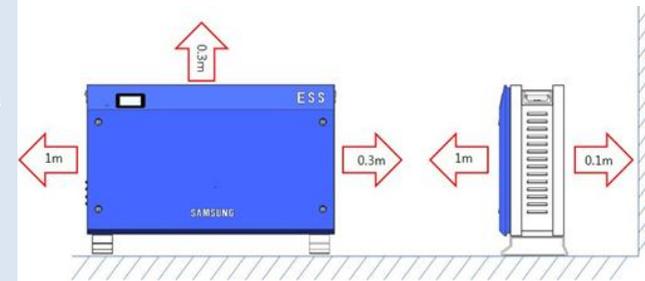**If possible, fix the AIO to the floor with the recommended screws. If not possible, apply other method to fix AIO.**

Fig1

Screw name	L	S	D	L1	Drill used	Drill depth (Min.)	Max. tensile capacity	Max. shear capacity
1/2(M12)	100	60	17	50	17	55(mm)	3,200(kgf)	3,400(kgf)

Fig2-Anchor Bolt Specificaiton

Packing List

Object	Part Name	Code No.	Quantity
A	INVERTER ASSY	SJ94-00108A	1
B	TRAY ASSY	ELPT362-00031	1
C	1. SCREW(M4xL16) 2. EXTENTION WIRE *3. EXTENTION WIRE 4. EXTENTION WIRE 5. CABLE TIE(A,B) 6. JUMPER WIRE	SJ81-01146 3901-000819 3901-000820 3901-000821 – 3901-000859	10 1 1 1 2 1
D	Quick Guide Manual	–	1

* 3. EXTENTION WIRE may not be needed depending on Battery Tray type.

A   B   C   D

Fig3-Packing List

ENG. Version
Revision Date : Dec 24th 2014

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1. Required Preparations before the installation

SAMSUNG SDI **SAMSUNG**
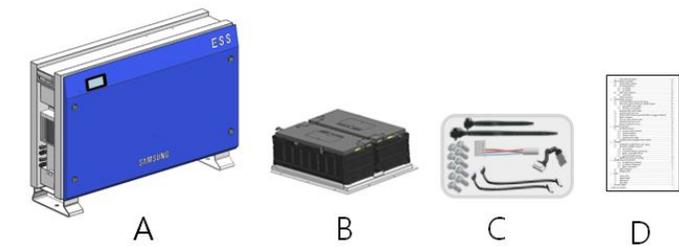
Mounting

A-1	Hammer Drill
A-2	Drill Bit (17mm,for Concrete)
A-3	Anchor Punch(Fig 2)
A-4	Hammer
A-5	Monkey Spanner
A-6	Phillips head driver (No. 2) for tray, side cover, grounding
A-7	Flat head driver for front cover knob, larger than 10mm
A-8	Moving equipment for AIO (Ex. Fork Lifter)

Connection

B-1	O-Ring terminal and Cover : 6-6 (6SQ wire, 6pi bolt hole)
B-2	Crimping tool of Ring terminal
B-3	Distribution Box of Grid
B-4	NFB : 230Vac/32A,10KA
B-5	Wire stripper
B-6	Drill : max torque(30Nm or more)
B-7	MC4 connector
B-8	Crimping tool of MC4
B-9	NFB/FUSE : 700Vdc/20A or more
B-10	Distribution Box of PV
B-11	Cable Crimping Crimper RJ45
B-12	Digital Meter
B-13	Electrical Scissors (for cable ties)

Other essential supplies

C-1	Digital Energy Meter (Table.1)
C-2	UTP(RJ45) LAN cable
C-3	RS232 extended cable
C-4	D0 to RS232 cable
C-5	S0 cable(It should be applied to twisted pair cable)
C-6	Laptop
C-7	Jumper Wire Connector supplied by Samsung.

B-1

B-2

B-11

C-2

C-7

1. Required Preparations before the installation

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Table 1. Reccommending Digital Energy Meter

No	Company	Model	Interface	Direction
1	EasyMeter	Q3DA1004	D0	Unidirection (*)
2	EasyMeter	Q3DA1024	D0	Bidirection
3		Q3DA1034	D0	Unidirection (*)
4	Hager Vertrie-bsgesellschaft	EHZ363ZA	D0	Bidirection
5	EMH Metering	eHZ-IW8E2A5L0EQ2P	D0	Bidirection
6		ED300L W2E8-0N-EL0-D2-0000002-F50/Q2	D0	Bidirection
7		eHZ-IW8E2A5WL0EQ2P	D0	Bidirection
8	EMU Elektronik	Professional 3/75	S0	Bidirection
9	CALRO GAVAZZI	EM24-DIN.AV9.3.X.02.X	S0	Bidirection

- The meters above are products supplied to Stark Company (Germany)
- (*) : It is not recommend because of unidirection type.

Table 2. PV generator

PV inverter connection data	Value	Unit
Max. input total power	6.6	kWp
Max. input power per string	3.3	kWp
Max. input voltage	550	Vdc
Min. input voltage/Initial input voltage	125/150	Vdc
MPPT voltage	125~500	Vdc
Max. input current per string	15	A
Number of independent MPPT trackers	2	EA

Table 3. AC specification

Grid connection data	Value	Unit
AC Nominal power	4.6	kW
AC Max. apparent power	5	kVA
Max. current	20	A
Max. allowed fuse protection current	32	A
AC Nominal voltage	230	Vac
AC Voltage range	184~264	Vac
AC grid frequency	50	Hz
Feed-in phases/ connection phases	1/1	-
Operating temperature	-10~40	°C
Storage temperature	-20~60	°C

2. Battery Tray Assembly(Ⅰ)

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Package Removal

1) Unpack the AIO from its package
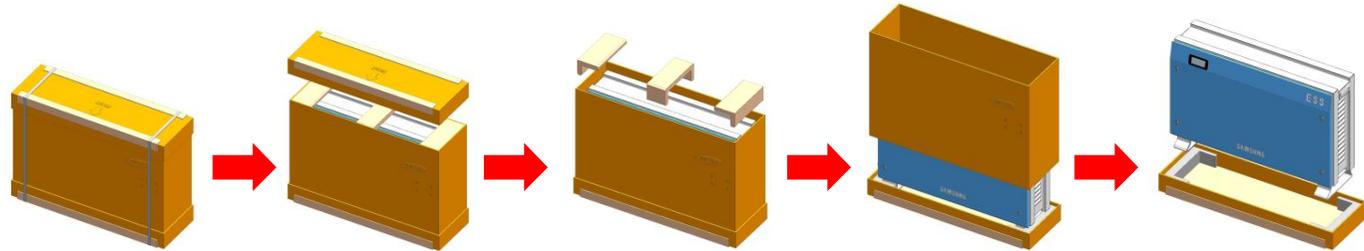
2) Unpack the Battery Tray from its package.
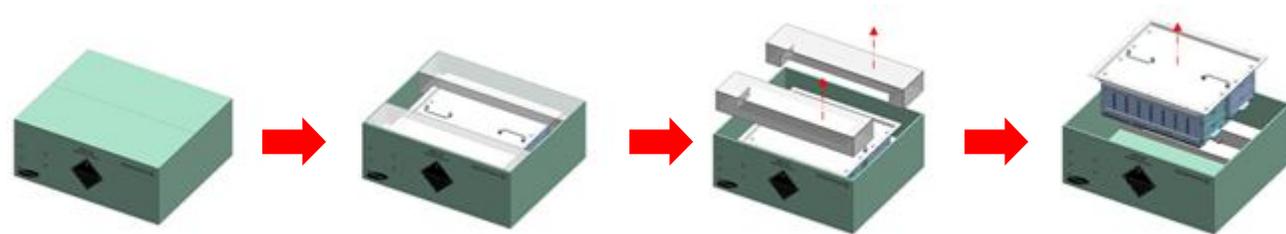
◈ Caution : At least two persons is required for handling of this Product. The tray weight is 42.65kg. Be careful of the position of the power cable

◈ Write Down the Battery Tray Serial Number (the middle one). This number will be used for installer remark.
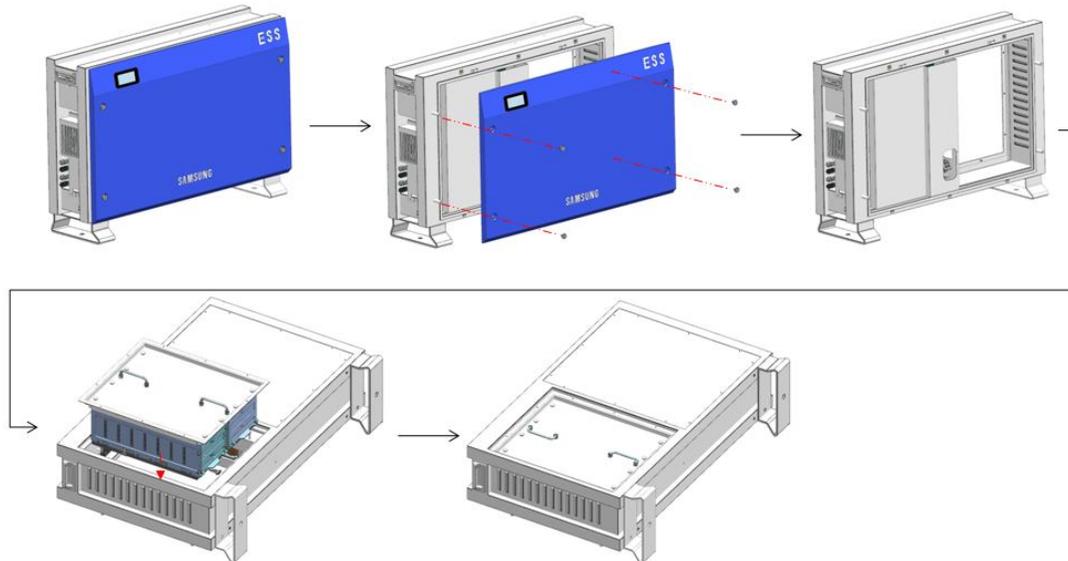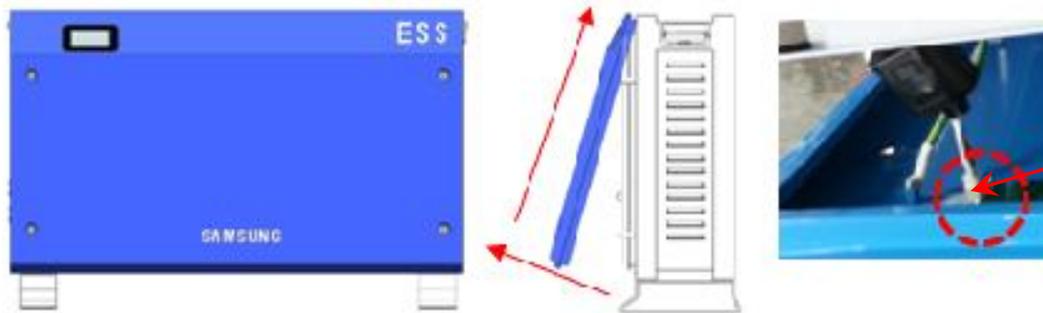
ex) ET361A14717****X

2. Battery Tray Assembly(Ⅱ）

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Battery Tray Assembly

1) Below is a simplified illustration for assembling the battery tray.
◈ Refer to 'Install Manual'.(Clause 5.3 ~ 5.5) for any detailed information.

2) After docking, fix the tray and main body by using screws.

◈ Caution : take care of the grounding and LCD cables connecting the cover and the AIO during installation!

2. Battery Tray Assembly(Ⅲ)

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Inner Wiring Connection

1) Connect the Voltage and Temperature measurement cables between BMS (on the top inside the enclosure) and Tray (4 connections).

2) Connect the power cables between PCS and Battery Tray.
  BATT-A : Connector on the BDC side
  BATT-B : Connector on the battery side
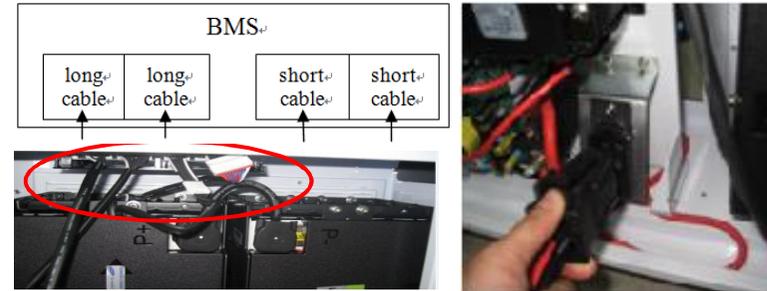
Closing the Front Case Cover

1) **Close the front case cover (enclosure), and then connect the ground cable and the LCD Display communication cable.**

2) **Fix the front cover by using screws.**

Mounting Instructions
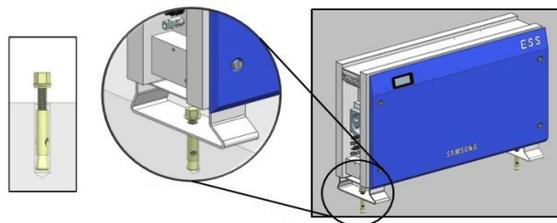
1) **Select the appropriate drill for drilling.**

2) **Remove dusts from the hole, and separate the nut and the washer to insert only the bolt and the cap.**

3) **Place the Product and assemble the washer and the nut to the bolt, and use the spanner to fasten the nut (7N·m).**

3. Connections and Configuration (I)

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Connect PV, and AC grid.

◈ Electrical Connection Overview

3.6kWh All in One

Home Load   **Grid**

PV String 1   **PV String 2**

Distribution Box

Digital Energy Meter
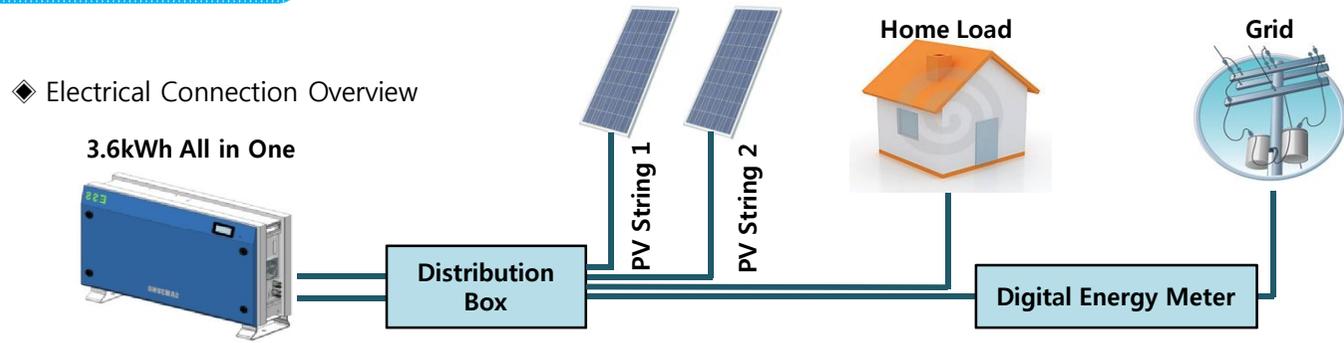
⚠ CAUTION

◈ The PV string 1 and the PV string 2 must be each connected.

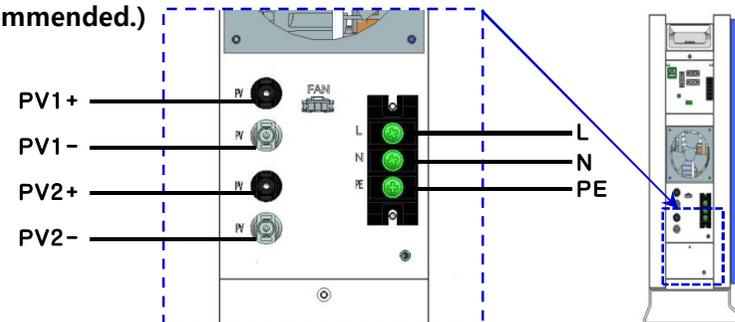◈ Do not change the PV string 1 and PV string 2 to parallel to be connected.

PV1+
PV1-
PV2+
PV2-

PV1+
PV1-
PV2+
PV2-
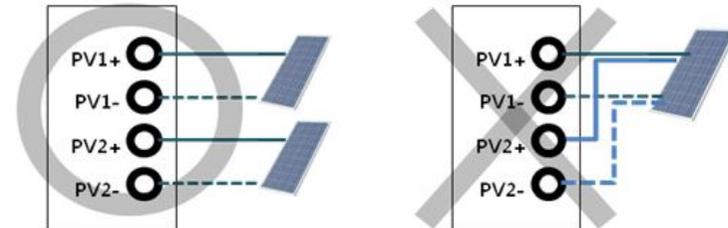
1) Connect the PV, AC line.(For the AC line an O-Ring terminal is recommended.)

PV connections

AC connections

PV1+
PV1-
PV2+
PV2-

PV   FAN

L
N
PE

L
N
PE

3. Connections and Configuration (Ⅱ)

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Connect Energy Meter

1) Connect Energy Meter

◈ Refer to the Figure below and the communication description in Chapter 6 to install the energy meter.
Use either one of the Digiter Energy Meter (Table 1.) in our list!
(Refer to install manual provieded by Manufacturer of the energy meter you chose)
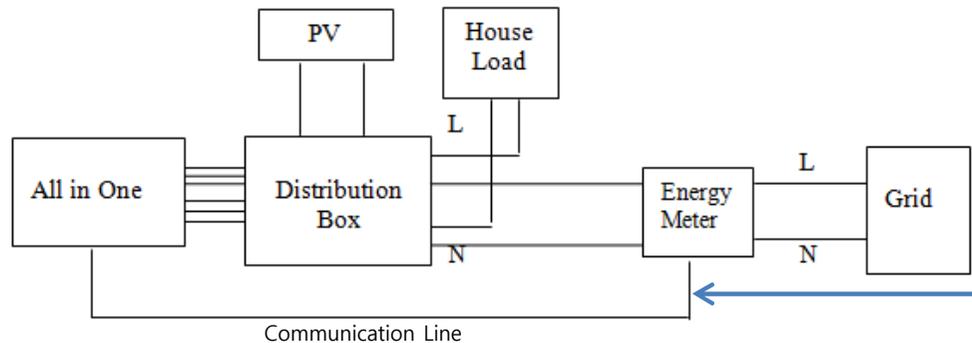
◈ The electrical cable connection and the communication lines of the energy meter. Depending on the product, there are a one-way meter and a two-way (bidirectional) meter, and for the one-way meter, two lines must be connected in series for use. For the two-way meter, one line can be used.

Communication Line

LAN
D0 (Fee-in, Purchase)
LAN
PCS S/M Server
D0-Bi/Feed-In
D0-Perchase
RS485-A
RS485-B
S0-(FDIN)
S0-(FDIN)
S0-(PUCH)
S0-(PUCH)
S0 (2x Feed-in, 2x Purchase)
Jumper connector
LED status
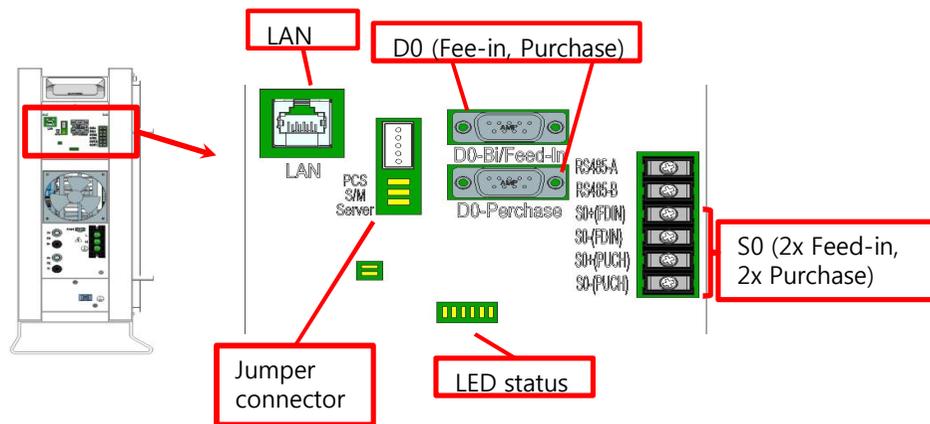
◈ **Must-do**
* S0 Meter case.
  Feed-in 2 wire must be connected to the S0(A).
  Purchase 2 wire must be connected to the S0(B).

* D0 Meter Case.
- Two way meter
  The meter cable must be connected to the D0-A.

-One way meter
  Feed-in Meter Cable must be connected to the D0-A.
  Purchase Meter Cable must be connected to the D0-B.

※ **Please refer to contents 10 (p.19~26) for details.**

3. Connections and Configuration (Ⅲ)

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Input of Installation Information

1) Set on your laptop
[Panel Control → Network and Sharing Center →
Change Adapter Settings → Local Area Connector →
Properties → Internet Protocol Version 4 (TCP/IP)]

IP address: 17.91.23.xx

Subnet mask: 255.255.224.0

Default gateway: 17.91.1.2

Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports
this capability. Otherwise, you need to ask your network administrator
for the appropriate IP settings.

○ Obtain an IP address automatically
● Use the following IP address:

IP address: 17 . 91 . 23 . 1
Subnet mask: 255 . 255 . 224 . 0
Default gateway: 17 . 91 . 1 . 2

---
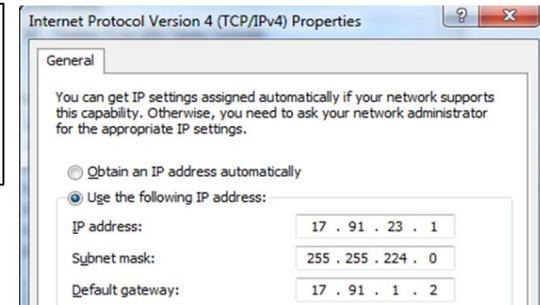
2) Connect the jumper to the connector.(* Install Jumper is required)
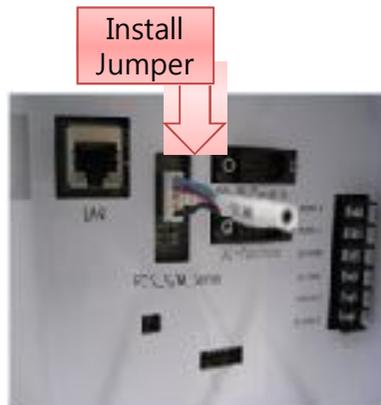
Install
Jumper

3) Connect LAN cable between the AIO and Laptop
4) Power On(AC grid turn On)
5) SIM(System Install Manager) access
   http://17.91.23.196:8000

4. Install Setting.

2)Tray Serial Number

1) Click here

3) Select the closest city to your location

4) Max power per String

5) Do NOT change!

6) Select a energy meter type: S0 or D0

7) If D0, select the relevant Feed-In and Purchase

8) If S0, Select the sample rate of the energy meter

9) Set the current local time and date

10) Click here

11) After clicking "SAVE and ReSTART" on the top of the window a message saying "*Wait for 1 Minute and press F5*" will appear→ follow the message

12) Click Operating Test

5. Operating Test.

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1) Turn on PV

2) Check "Check item list" is Ok.

3) Operating mode TEST
  * Grid-Charge test
      a) Select "1. Target Power" (ex: 0~1000W)
      b) Click "GRID-Charge" → Check the
         value of INV information Power.
         (The value could be different with
         Target Power) → Click "NOP(STOP)"

  * BAT-Discharge test
      a) Select "1. Target Power" (ex: 0~1000W)
      b) Click "BAT-Discharge" → Check the
         value of INV information Power.
         (The value could be different from
         Target Power) → Click "NOP(STOP)"

  * PV-Only test
      a) Select "1. Target Power" (4000W)
      b) Click "PV-Only" → Check the value
         of INV information Power.
         (The value could be different from
         Target Power) → Click "NOP(STOP)"

4) Once the Operating Test is done
   - Power OFF: AC grid and PV OFF.
   - Remove the jumper connector supplied by Samsung.
   - Disconnect the LAN Cable from your laptop and connect the AIO to the Internet Router.
   - Power ON: AC grid and PV ON

※ **Turn On Sequence : AC Breaker turn on → DC disconnect switch turn on.**
   Turn Off Sequence : DC disconnect switch turn off → AC Breaker turn off.
   The power on/off sequence must be carried out as above. Otherwise, an error(E903) may occur.
   Please turn off and on as a normal sequence when an error(E903) occurs.

6. Installer Account (I).

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How to add new AIO information

1) **Open your mobile browser**

2) **Input URL :**
 https://myess.samsungsdi.com/engineer/main.do **or**
 https://112.106.12.149/engineer/main.do.

3) **Input ID and password for engineers.**
   (New account can be provided by Wholesaler.)

4) **You can see the list of ESS**.

5) **Click the icon on the right to Add New ESS**
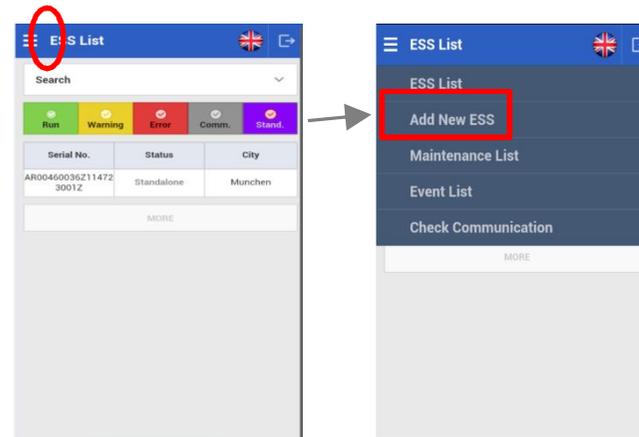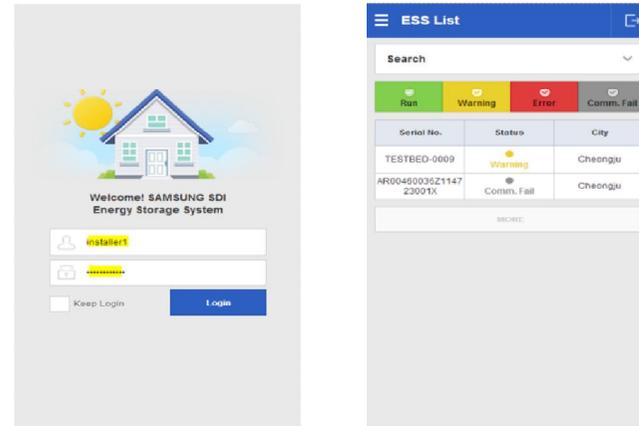
6. Installer Account (Ⅱ).

How to add new AIO information

6) Input AIO information, installation information and owner information.
7) Click "Submit" button.

8) If it is saved successfully, you can see a success message. It could take for 5~10 minutes to login.

Information	Description
Serial No.*	.AIO number.(sticker on the enclosure)
Device Type	Select a type of ESS, e.g.)AIO is RES
Battery No.	Write serial number of battery
Product Model	Write model code of ESS e.g.) AIO is ELSR362-00001
Capacity	Write battery capacity, e.g.) AIO is 3.6
Building Type	Select a type of building
Building Name	Write building's name e.g.) JACK's HOME
Country	Select a country
City	Select a city which ESS is located
Address1	Write an address of location
Address2	Write an address of location
Utility Name	Select an utility for the customer
Tariff Name	Select a tariff for the customer
Installer Name	Write installer's name or company name
Installer Contact	Write install's contact or company contact
Installation Company	Write installer's company name
Installation Date	Select an installation date
Remark	Write a something important to remark
Owner Name	Write owner's name
Owner Contact	Write owner's contact
Owner Address	Write owner's address

RAW DATA
STATUS : Login Success
LOGDATE : 20140812031805
STATUSCD : 0
IP : 211.170.180.17
ESSUID : TESTBED-0009

7. User Account.

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On your browser:
 https://myess.samsungsdi.com
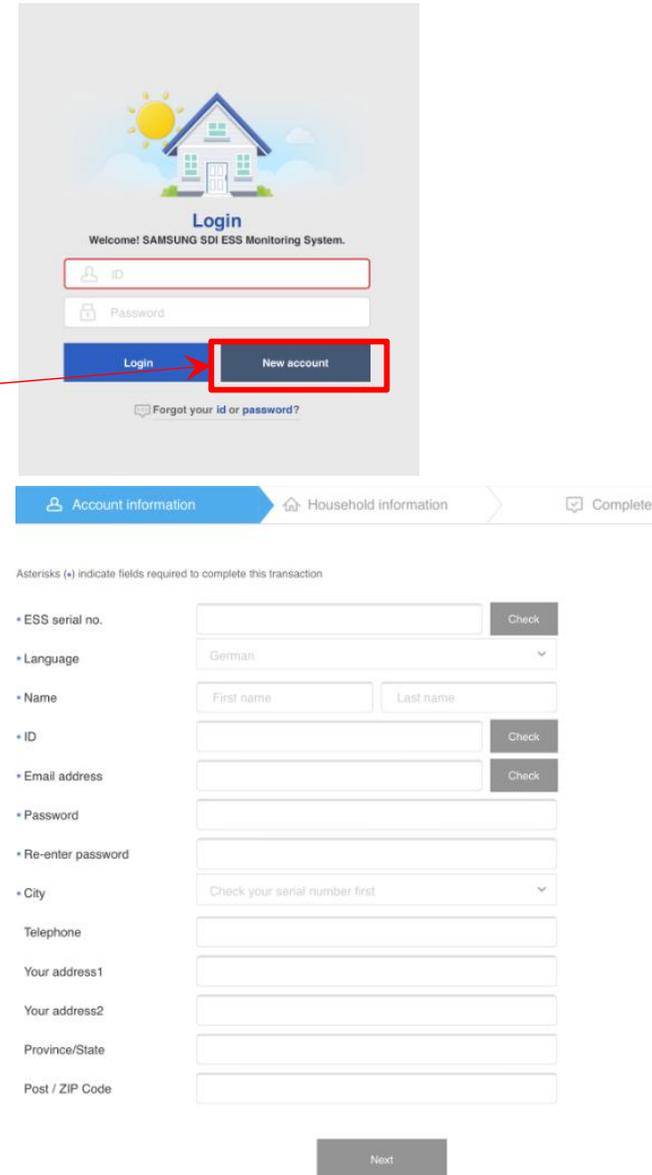
New Account

All the blanks marked with * shall be filled in.

Enter the AIO Serial Number

Click Check (there may appear red warnings or messages if either one of the necessary items to be filled in is missing)

Select the language

ID= username (check conditions. Username shall be longer than 6 characters...)
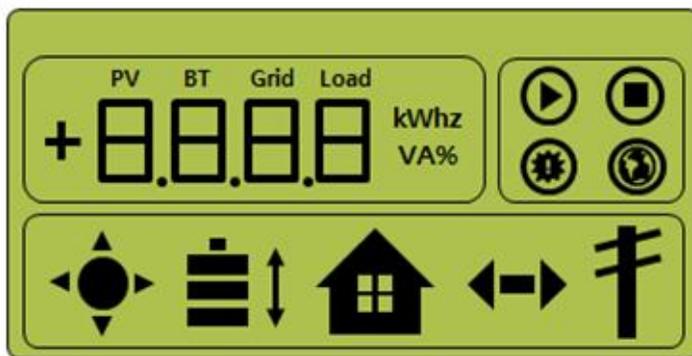
Email address

Password (twice)

Optional Info.

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8. System Commisioning (I)

◈ **There is a LCD display on the front cover where you can check the general operation and status of the AIO :**

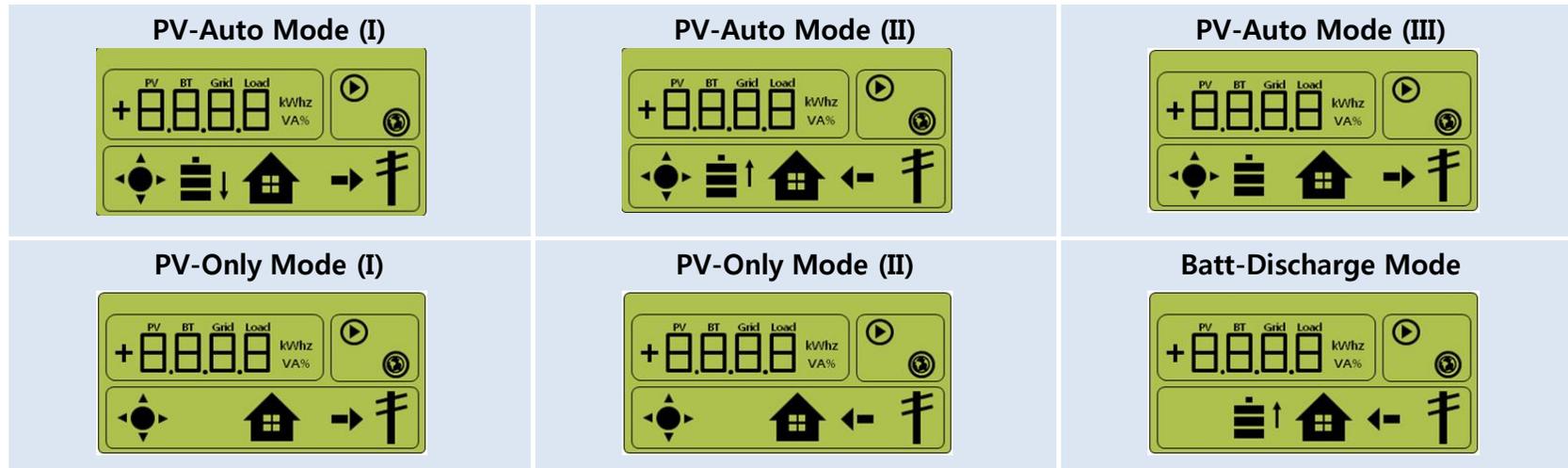|	
▶	Operating
■	Stand-by
☀	Error or A/S
🌐	Connected

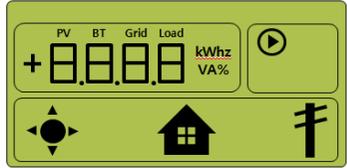|	
◄●►	PV Generation
🔋↕	Battery; Pointing up-> Batt is being discharged Pointing down-> Batt is being recharged
🏠	House load
🗼	Grid The arrow indicates whether the Product is feeding or purchasing

Here we can check the voltage, power, SOC or the current from the PV, Battery, Grid or the house comsumption.

8. System Commisioning (II)

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The EMS decides an appropriate operating mode or the energy flow in real-time.
Examples of operation modes: Refer to **'User Manual'.(Clause 4.1 , 7.2)** for more information in detail.
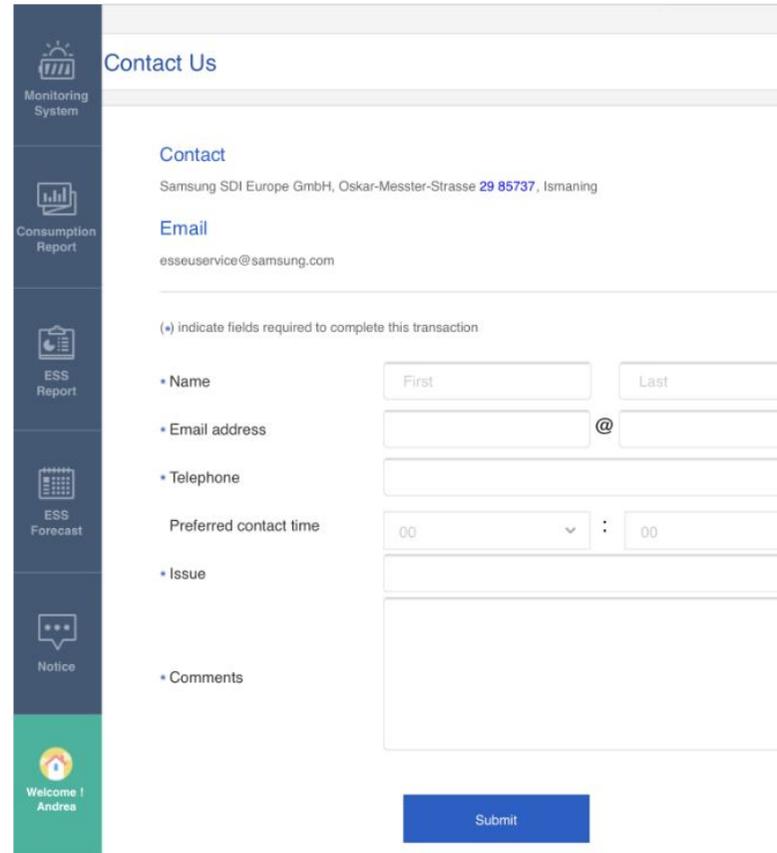
PV-Auto Mode (I)	PV-Auto Mode (II)	PV-Auto Mode (III)

PV-Only Mode (I)	PV-Only Mode (II)	Batt-Discharge Mode

Errors.

	ERROR checking status: If an ERR code appears on the display, please check the ERROR code at our website: **https://myess.samsungsdi.com** If there is no description available please contact our Customer Service (see page 17)
	When the All in One is disconnected from the energy meter or the power conversion system is disconnected from the EMS(energy management system), the All in One system enters into the **Stand-Alone Mode**. The system operates in a PV- only mode -> **Check the energy meter** (Operating Test, page 9).
LCD OFF	The display is OFF-> please check the power connection, AC and DC. Measure the voltage, if possible, at the AC and DC sources.

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9. Contact Information

Customer Service:
Samsung SDI Europe Gmbh
Oskar-Messter-Str. 29
85737 Ismaning
Germany
E-Mail : esseuservice@samsung.com

Or, you can send us a message on our website after log-in:

https://myess.samsungsdi.com

10. Energy Meter (Smart Meters) Install Instruction

SAMSUNG SDI **SAMSUNG**

	EM24	EMU
Maker	CARLO GAVAZZI	EMU Elektronik
Model Name	EM24-DIN.AV9.3.X.O2.X	Professional 3/75 (Stark-MBS)
Interface	S0	S0
Direction	Bidirection	Bidirection
Need Qty.	1 ea	1 ea
Change Setting when install	**Need**	Do not need
Calculation time (2000W) [(1)]	10~30 sec	10~20 sec

<EM24>

<EMU>
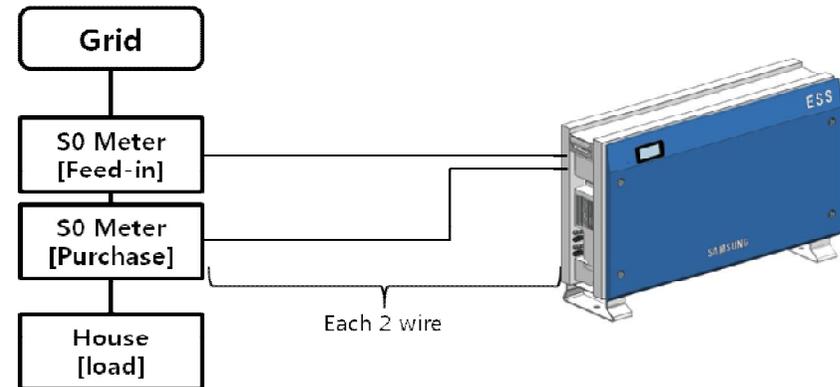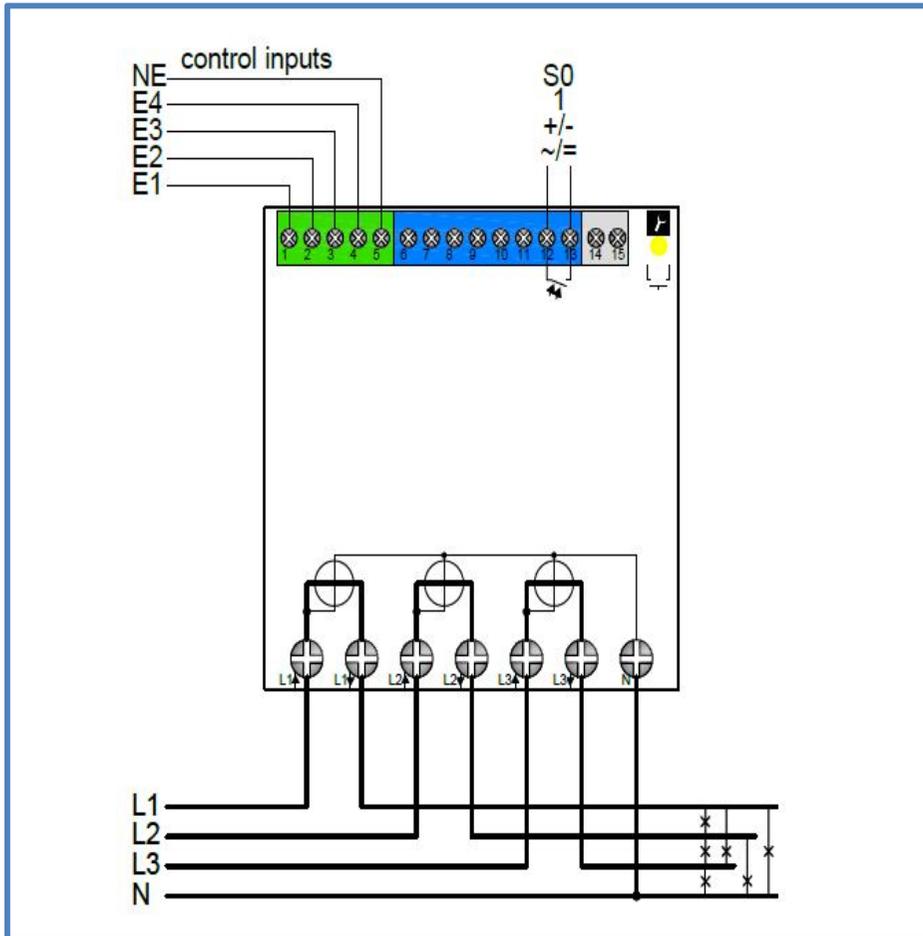
(1) Calculation time
-. Connect with AIO 3.6kWh System
-. It is taken time that
   AIO system calculate Power[W].
   When, Power Line is change to 2000W

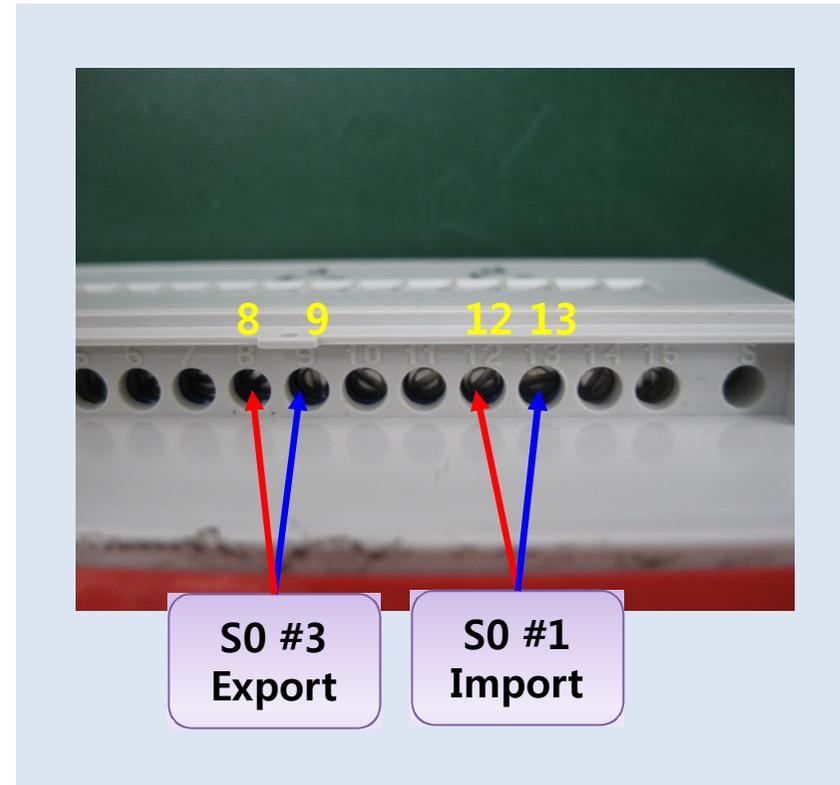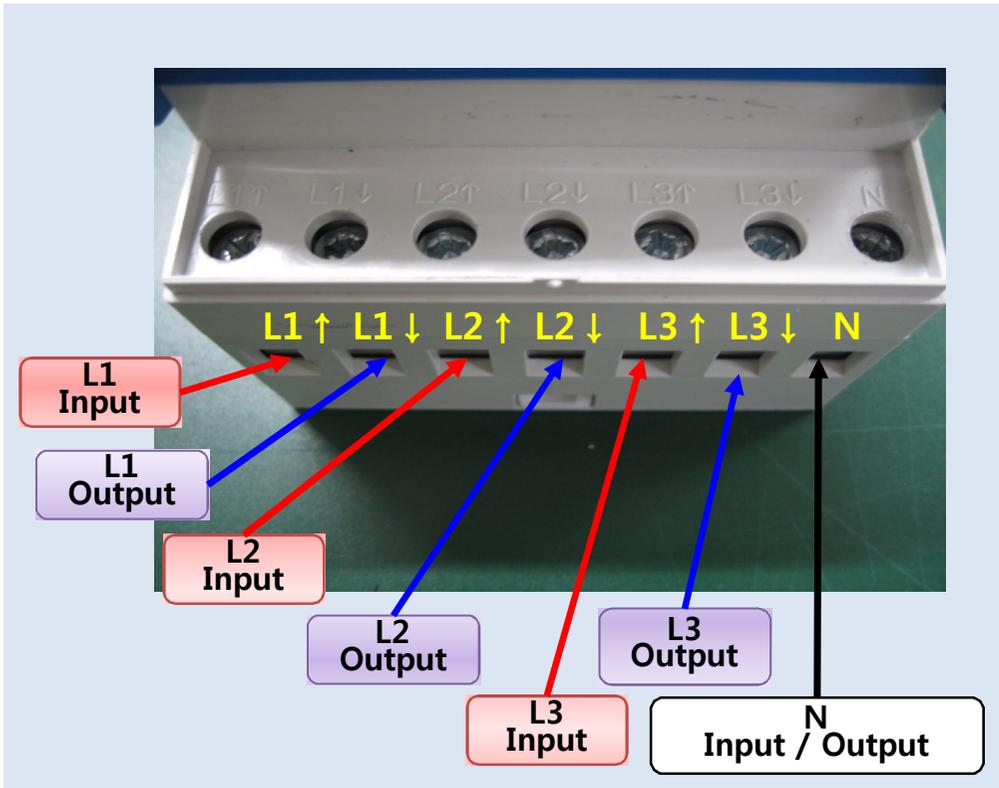# 10. Energy Meter (Smart Meters) Install Instruction (I)

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EMU, MBS Professional 3/75 M-Bus

Connection Diagram

10. Energy Meter (Smart Meters) Install Instruction (II)

SAMSUNG SDI   SAMSUNG
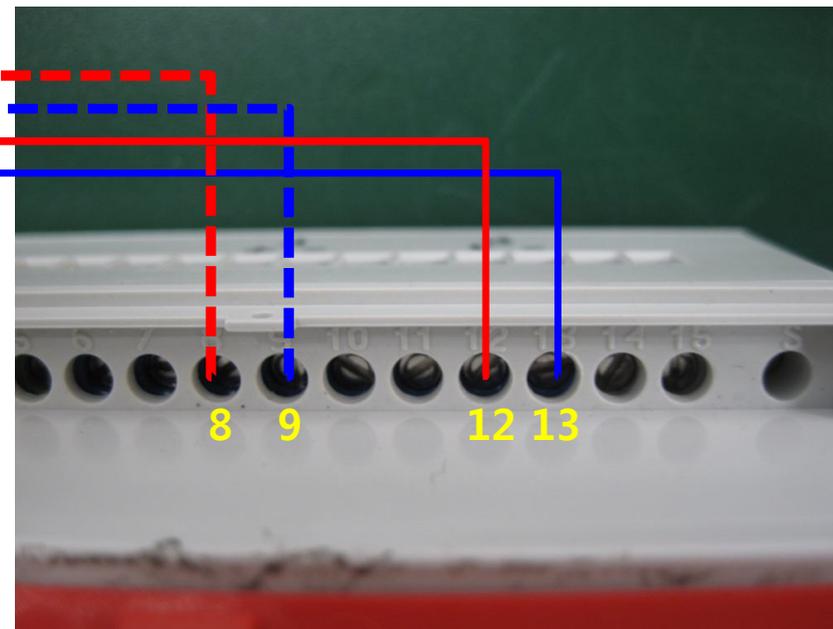
EMU, MBS Professional 3/75 M-Bus

Connection Diagram

L1↑ L1↓ L2↑ L2↓ L3↑ L3↓ N

L1 Input
L1 Output
L2 Input
L2 Output
L3 Output
L3 Input
N Input / Output

8   9   12 13

S0 #3 Export
S0 #1 Import

10. Energy Meter (Smart Meters) Install Instruction (III)

SAMSUNG SDI **SAMSUNG**

EMU, MBS Professional 3/75 M-Bus

Connection Diagram

<ESS system side view>

ESS system	Smart Meter
S0+(FDIN)	8
S0-(FDIN)	9
S0+(PUCH)	12
S0-(PUCH)	13

8 9   12 13

<Meter side view>

10. Energy Meter (Smart Meters) Install Instruction (IV)

SAMSUNG SDI **SAMSUNG**
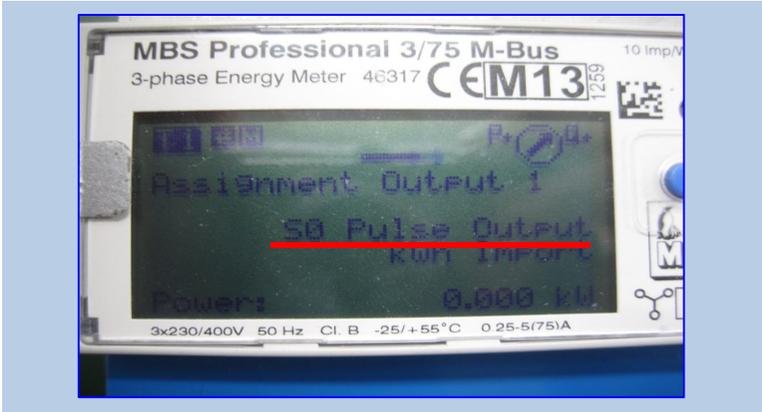
EMU, MBS Professional 3/75 M-Bus
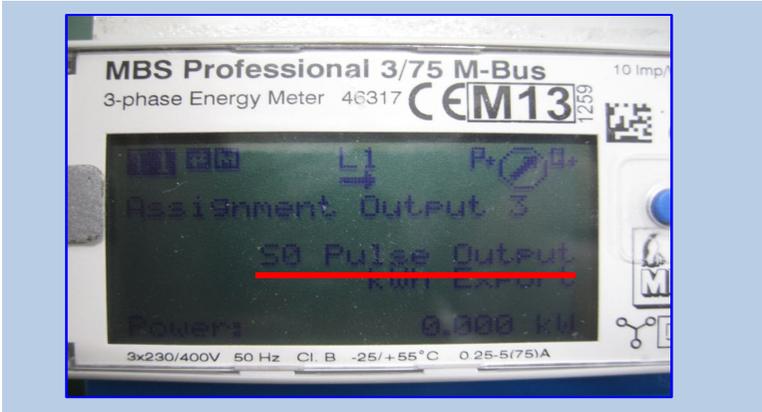
Setting

1. S0 Pulse Ratio: 1000.000 Impulse/kWh
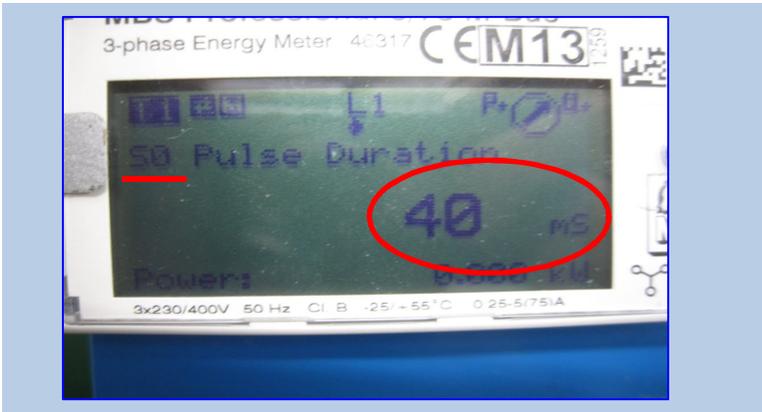
2. S0 Pulse Duration: 40 ms

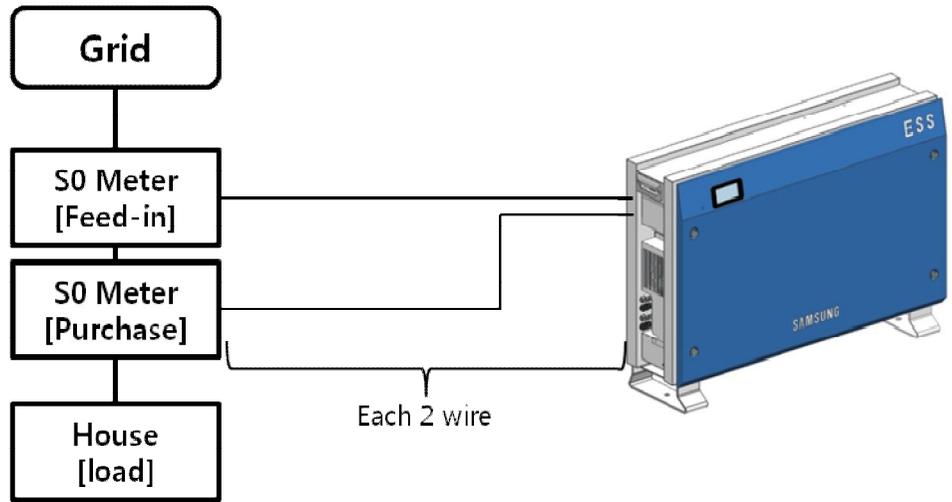3. Assignment Output 1:
   S0 Pulse Output (kWh Import)

4. Assignment Output 3:
   S0 Pulse Output (kWh Export)

※ **Please refer to the instruction manual to change information**

ENG. Version
Revision Date : Dec 24th 2014

10. Energy Meter (Smart Meters) Install Instruction (V)

SAMSUNG SDI   **SAMSUNG**

EM24, DIN AV9 3XO2X

Grid

S0 Meter [Feed-in]

S0 Meter [Purchase]

House [load]

Each 2 wire

ESS

SAMSUNG

<3.6kWh AIO System Side View>

PV 1

PV 2

FAN

L

N

ACG

Grid
N, L, L, L

House (Load)

10. Energy Meter (Smart Meters) Install Instruction (VI)

SAMSUNG SDI **SAMSUNG**

EM24, DIN AV9 3XO2X

Connection Diagram

ESS system	Meter	
S0+(FDIN)	32	Twisted wire
S0-(FDIN)	31	
S0+(PUCH)	42	Twisted wire
S0-(PUCH)	41	

<ESS System Side View>

<Meter side view>

10. Energy Meter (Smart Meters) Install Instruction (VII)

SAMSUNG SDI · SAMSUNG

EM24, DIN AV9 3XO2X

Setting : Meter datasheet   http://www.datasheet-gavazzi.com/pdf/UK/EM23DINDS.pdf

No	State	Display
1	**Application**	**F**
2	SELECTOR	1: 04, 2: 02, 3: 02, Loc: 04
3	**SYS**	**3P.n** (This means : 3 Phase unbalanced with neutral)
4	p int.ti	1
5	FiLtEr.S	2
6	fiLtEr.Co	4
7	**diG out1**	**PuLS, 0.001, 30, no**
8	**diG out2**	**nEG, 0.001, 30, no**
9	EnE t.rES	no

<Meter LCD view>

-. State : No. 7

-. State : No. 8