JUPITER-6000K-H1 Technical Specification

For SUN2000-330KTL



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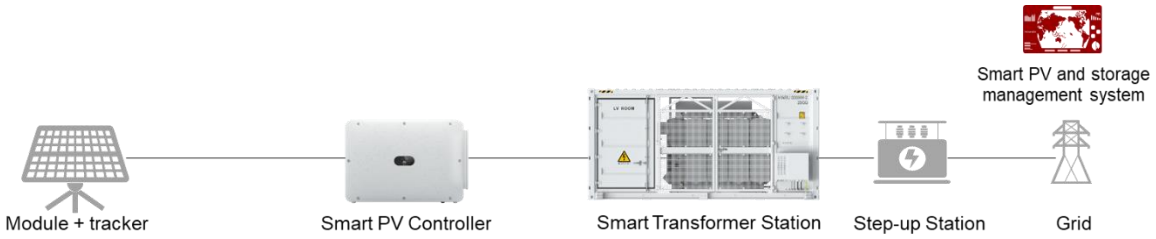
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1 Solution

Huawei FusionSolar smart PV solution dedicates to offering a leading and innovative solution, helping PV become the main energy source.

Huawei provides one-stop solution including smart transformer station, perfectly matching with Huawei smart PV controller.

The diagram of Huawei FusionSolar smart PV solution listed as below.



Note: Components in diagram above are not indicated to be within the scope of supply for this project.

2 Scope of Supply

Huawei JUPITER-6000K-H1 will provide the following equipment

- Container
- LV/MV transformer
- Ring main unit (RMU)
- Auxiliary transformer and auxiliary distribution board
- LV panel
- Internal cabling and other related accessories

3 Technical Details of JUPITER-6000K-H1

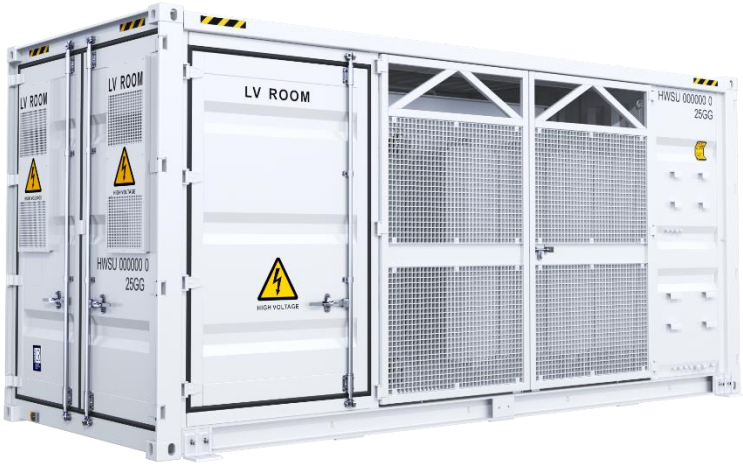
3.1 General Description of JUPITER-6000K-H1

JUPITER-6000K-H1 is a compact 20’ HC container that contains an outdoor transformer, RMU and LV panel. It enables a quick and reliable connection to the MV grids.

JUPITER-6000K-H1 has lower load loss and no-load loss in accordance with EN50588-1

Seismic level of Huawei STS can be seismic level 9. All internal equipment shall be well anchored to floor/ walls. Seismic loads of Huawei STS can be 0.3g horizontal acceleration and 0.15g vertical acceleration. Wind load of Huawei STS can be 52.4 m/s.

Also, the emergency stop button is located outside Huawei smart transformer station, and it function as stopping ACB in the LV panel and VCB in RMU in case of emergency for higher O&M safety.



Input	
Available Inverters / PCS	SUN2000-330KTL
Maximum LV AC Inputs	22[1]
AC Power	6,600 kVA @40°C [2]
Rated Input Voltage	800 V
Max. Input Current at Nominal Voltage	2 * 2619.7 A
LV Main Switches	ACB (2900 A / 800 V / 3P, 2*1 pcs), MCCB (400 A / 800 V / 3P, 2*11 pcs)
Output	
Rated Output Voltage	34.5 kV
Frequency	60 Hz
Transformer Type	Oil-immersed, Conservator Type
Tappings	± 2 x 2.5%
Transformer Oil Type	Mineral Oil (PCB Free)
Transformer Vector Group	Dy11-y11
Minimum Peak Efficiency Index	99.514%
Transformer Load Losses	42.7 kW (+15%)
Transformer No-load Losses	6 kW (+15%)
Impedance	8.6% (+/- 10%)@ 6600 kVA
RMU Type	SF_6 Gas Insulated
RMU Transformer Protection Modules	MV Vacuum Circuit Breaker Modules
Auxiliary Transformer	50 kVA, Dyn11, 0.8/0.23 kV
Protection	
Transformer Monitoring & Protection	Oil level, oil temperature, oil pressure and buchholz
Protection Degree of MV & LV Room	IP 54
Internal Arcing Fault Classification of STS	IAC A 25 kA 1s
LV Overvoltage Protection	Type I+II
General	
Dimensions (W x H x D)	6,058 x 2,896 x 2,438 mm (20’ HC Container)
Weight	< 23 t
Operating Temperature Range	-25°C ~ 60°C [3]
Relative Humidity	0% ~ 95%

Max. Operating Altitude	1,000 m
LV & MV Room Cooling	Smart Cooling without Air-across for Higher Availability
Communication	Modbus TCP, Preconfigured with Smartlogger3000B
Applicable Standards	IEC 60076, IEC 62271-200, IEC 62271-202, EN 50588-1, IEC 61439-1

NOTE

[1] - One LV input for one smart PV controller

[2] - 6,600 kVA at Ambient temperature max./monthly (hottest month)/annual average (°C) 40 / 30 / 20

More detailed AC power of STS, please refer to the de-rating curve.

[3] - When ambient temperature ≥55°C, awning shall be equipped for STS on site by customer.

3.2 Warranty and Service

Standard warranty period for STS: 2 years

3.3 Container

JUPITER-6000K-H1 adopts the 20’ HC metal container. The container is made of weathering steel and more durable in use. The corresponding dimensions are as follows the container protection:

Item	Length [mm]	Width [mm]	Height [mm]
20’ HC Container	6,058	2,438	2,896

The container is secured to the concrete foundation using expansion bolts, thus preventing the container from horizontal vibration. The container is sealed on the foundation by cable inlet and fire-stop putty to ensure water resistance.

- Processing, treated and painted for C5-Medium Corrosion type
- Certificated by classification society, marine transportation supported
- Top & bottom corner lifting supported
- IP Protection of MV & LV Room: IP 54
- Reserved space for safety equipment (fire extinguisher, MV insulating gloves, MV insulating bench etc.)

- **Floor**

The floor and keel adopt weathering steel, and the floor is equipped with the following holes:

1. Cable entry: fire-stop putty to ensure sealing
2. Manhole

- **Rooftop**

Rooftop is made of 1.6mm weathering steel, and the double-sided coating is used to ensure anti-corrosion. The top and the container are fully welded to ensure waterproof.

- **Door**

All doors of the container are insulated by double-sided spraying of weathering steel. The door is open outward and has a handle and a windproof hook. The container door uses the EPDM rubber

strip for waterproof and dustproof, and the transformer door can be configured with locks, all devices can be removed without removing the door.

Surface treatment, container spraying requirements

- The exposed surface of the container is sprayed according to C5-Medium environments.
- The color of container steel floor paint is RAL7044, wall paint is RAL9003.

3.4 LV/MV Transformer

3.4.1 Transformer Data

LV / MV transformer in JUPITER-6000K-H1 is an oil-immersed conservator type transformer with lower transformer loss

Detailed technical specifications listed as below.

Item	Parameter
Applicable Standard	IEC 60076, EN 50588-1
Type/Design Code	Oil-immersed Conservator type
Cooling Type	ONAN
Rated Power	6600 kVA@40°C
Output Voltage	34.5 kV
MV Insulation Level	LI 200 / AC 85 kV
DETC Tappings	± 2 x 2.5%
Low Voltage	0.8 kV
Low Voltage Insulation Level	LI-/AC10 kV
Rated Frequency / No. of Phases	60 Hz / 3
Transformer Phase Sequence	MV: 1U-1V-1W; LV1: 2U-2V-2W; LV2: 3U-3V-3W
Impedance	8.6% (+/- 10%)@ 6600 kVA
Impedance (MV-LV1&MV-LV2)	7%（0~+10%）@ 3300 kVA
Vectoring Group	Dy11-y11
PEI	99.514%
Rated Load Loss	42.7 kW (+15%)
Rated No-load Loss	6 kW (+15%)
Oil Type	Mineral Oil (PCB Free)
Winding Material	Al
Insulation Class	A
Average Temperature Rise Winding	65K

Item	Parameter
Oil Temperature Rise	60K
Painting Colour	RAL 9003
Weight	<16 t

3.4.2 Transformer Accessories and Signals

Transformer Accessories Included

- LV bushings: 6 pcs
- MV bushings: 3 pcs
- MV connectors: 3 pcs
- Off-load tap changer: 1 pcs
- Buchholz relay: 1 pcs
- Oil temperature indicator: 1 pcs
- Pressure relief valve: 1 pcs
- Oil level gauge: 1 pcs
- Dehydrating breather: 1 pcs
- Oil filling/ drain valve: 1 pcs
- Earthing terminal: 1 pcs

Transformer Signal Included

- Gas accumulation alarm: 1 pcs
- Flow of oil trip: 2 pcs
- Oil temperature alarm: 1 pcs
- Oil temperature trip: 2 pcs
- Oil temperature signal: 1 pcs
- Pressure relief trip: 2 pcs
- High oil level alarm: 1 pcs
- Low oil level alarm: 1 pcs

3.4.3 Incoming and Outgoing

The transformer is prefabricated inside Huawei STS JUPITER-6000K-H1 in the factory already, and the connection between transformer and LV panel and RMU is pre-connection and pretest at the factory.

Incoming: The transformer connects to LV room by copper busbar through the side of the transformer.

Outgoing: The transformer connects with the MV room by single core MV cable through the side of the transformer. Cable connection of transformer to RMU is copper core cable.

3.4.4 Suggestions on Building Oil Tray

Oil tray is used to receive the insulating oil of MV transformer in case of leakage, the volume of the oil tray is recommended to be 120% of the transformer oil volume. The total weight of JUPITER-6000K-H1 is no more than 23 t. and transformer oil are mineral oil, noncorrosive. And the volume of transformer oil is about 3850L (about 3.4t).

Oil tray is out of Huawei scope, and it is recommended to make concrete oil tray on site by EPC, thus better matching concrete foundation, quicker delivery and cost saving.

3.5 RMU

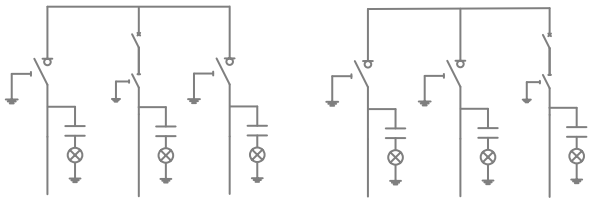
RMU is located inside MV room of STS container. Door handle of the MV room can be locked by padlock.

3.5.1 RMU Data

RMU inside STS is SF_6 gas insulated, all MV components are completely enclosed in stainless steel welded gas tank, to ensure the whole device not affected by external environment.

The RMU shall be composed of the following 3 units:

- One transformer unit: vacuumed circuit breaker equipped with 3 position switch (disconnector and earthing switch)
- One incoming unit: load breaker switch with earthing switch
- One outgoing unit: load breaker switch with earthing switch



Single Line Diagram of RMU CVC/CCV configuration

- The pressure relief direction is downward
- The bus bar is totally enclosed in SF_6 gas tank and maintenance free.
- The rated voltage of control and auxiliary circuit is AC 230V, close and trip circuits in circuit breaker cabinet are commonly protected by one MCB.
- 120 mm^2 copper ground bus bar is located in the bottom front of the cable compartment
- All the auxiliary signaling and control circuits are built with black fire-retardant wire, tested by IEC standard with a cross-section of 1.5 mm^2.
- The breaker shall be close by manual. When UPS equipped, the breaker supported close by remote.

Item	Parameter
Applicable Standards	IEC 62271-1/100/102/103/200
Insulation Type	SF_6
Rated Voltage	34.5 kV

Item	Parameter
Maximum Withstand Voltage	40.5 kV
Rated Current	600 A
Rated Frequency	60Hz
Rated Power-frequency Withstand Voltage (1min)	80/90 kV (Common Value/ Across the Isolation Distance)
Rated Lightning Impulse Withstand Voltage	185/215 kV (Common Value/ Across the Isolation Distance)
Rated Peak Withstand Current	65 kA
Rated Short-time Withstand current	25 kA / 1s
Internal Arcing Fault	IAC A FLR 25 kA / 1s
IP Protection of RMU	IP 3X
IP Protection of SF6 Gas Tank	IP 67
Relay Protection	50/51, 50N/51N, Inrush Blocking, Watchdog, 49T (External trip), FR
Gas Leakage Rate Per Year	<0.1%
Operating Temperature Range	-25°C ~+65°C [1]
Dimensions	≤ 1500 mm * ≤ 1000 mm * ≤2200 mm
Cabling Routine	Bottom in & out

NOTE

[1]- When ambient temperature ≥40°C, RMU shall reduce current for running.

3.5.2 Interlocking Procedures

RMU shall be equipped with standard RMU interlocking.
Also, STS shall be equipped with interlocking between STS for higher personnel safety and availability.
The interlocking procedures are descripted as below:

1) Standard RMU Interlocking

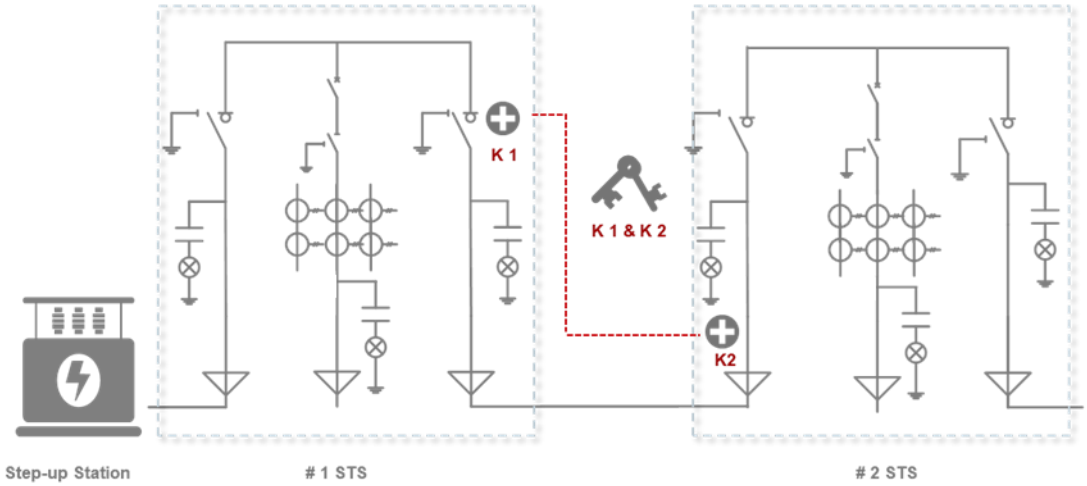
   The RMU meets the standard Interlocking procedure: the disconnector switch can be opened only when the circuit breaker is open; the disconnector switch can be closed only when the earthing switch is open; the earthing switch can be closed only when the disconnector switch is open; the door of cables cabinet can't be opened until the earthing switch closed; the earthing switch can be open only after the door of cables cabinet closed.

   All earthing switch of RMU are equipped with padlock to lock the earthing switch.

2) External interlocking between STS

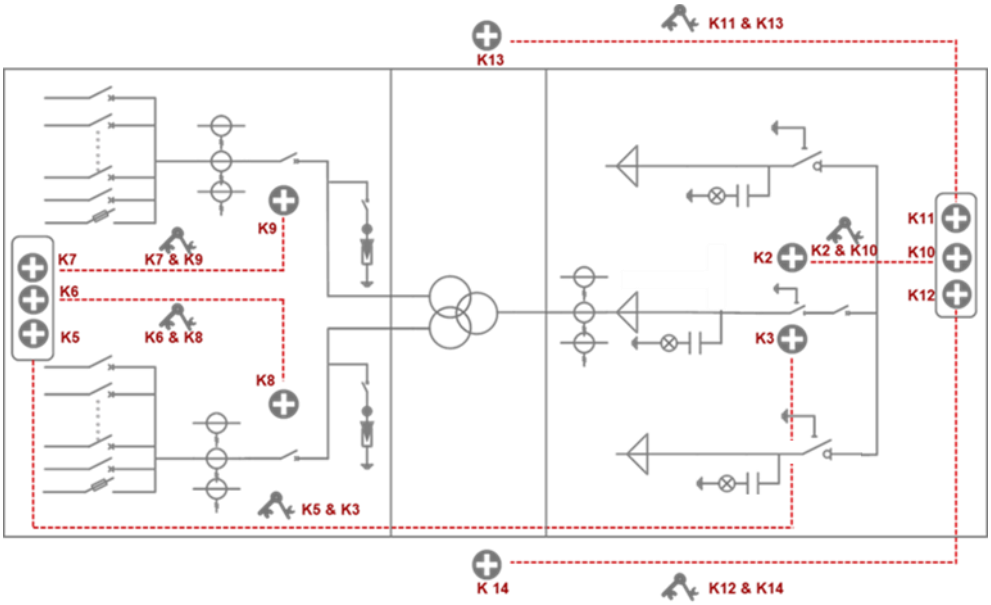
   The external interlocking between STS adopts the rigorous mechanical interlocking procedures. The mechanical interlocking procedures are rigorous, thus preventing error operating onsite. Also, via the mechanical interlocking, it is simple design and there is no need for extra power supply to mechanical lock.

The interlocking procedures are descripted as below:



- K1: mechanical lock for cable incoming unit of #1 STS. To obtain key K1 only when earthing switch closed.
- K2: mechanical lock for cable outgoing unit of #2 STS. To obtain key K2 only when the unit door closed.
- Keys of K1 and K2 shall be tied together with key ring that can't be separated at will onsite.

3) Internal interlocking within STS



- K8 & K9: mechanical lock for ACB of LV panel. To obtain key K8 and K9 only when the ACB open.
- K3: mechanical lock for disconnector switch inside transformer unit of RMU. To open disconnecor switch only with key K3. To obtain key K3 only when all ACB open
- K2: mechanical lock for earthing switch inside transformer unit of RMU. To obtain key K2 only when earthing switch closed.

- K13 & K14: mechanical lock for transformer room of STS. To open transformer room for maintenance only with key K13 & K14 which can be obtained only when the earthing switch of VCB unit closed, and ACB and VCB open
- Keys of K7 and K9 tied together with key ring. Keys of K6 and K8 tied together with key ring.
- K5 & K6 & K7: mechanical lock exchange box. To obtain key K5 only when key K6 and K7 inserted.
- K10 & K11 & K12: mechanical lock exchange box. To obtain key K11 & K12 only when K10 inserted.

3.5.3 RMU Cabling

- RMU is equipped with MV bushings: EN50181 Type C.
- The cable terminals for RMU transformer unit: T-type terminals that meet the IEC 60502 standard. The cable terminal is prefabricated in the factory and is fully shielded and fully insulated.
- Normally, the RMU supports 2 row three-core/single-core cable armored copper/aluminum core cable equipped with corresponding cable clamps. The RMU support 2 rows of three-core cable ranging from 70 mm^2 ~ 300 mm^2（cable diameter≤120mm）, or 2 rows of single-core cable ranging from 70 mm^2 ~ 630 mm^2（cable diameter≤70mm）.
- The cable terminals for incoming and outgoing unit shall be of European standard and comply with IEC 60502. The cable terminals for incoming and outgoing unit are out of scope of Huawei, and customer or EPC is responsible for T-type terminals.
- The bottom sealing plate should be arranged with two rows of cable inlet and outlet holes from front to back and pressure relief hole.

3.5.4 Quality System

The manufacturer's quality system is completely satisfied with the ISO 9001 standard, environmental management system is completely satisfied with ISO 14001, both these are certified by a third party Official Independent Organization.

- ISO 9001-2015 Quality management system
- ISO 14001-2015 Environmental management system
- OHSAS 18001:2007 Occupational health & safety management system

Note: The manufacturer of RMU are all Huawei qualified suppliers. All the RMU are with IEC type test report. The manufacturer can’t be designated.

3.6 LV Panel

The LV room of JUPITER-6000K-H1 contains 2 LV panels.

The protection level of LV panel is IP20 and the segregation of LV panel is form 2b.

Normally, The LV room supports LV cable of three core70 mm^2 ~ 300mm^2（cable diameter≤ 77mm）/single core cable 70 mm^2 ~ 400mm^2 （cable diameter≤35mm）armored copper / aluminum core cable.

And key component list of LV panel listed as below:

Item	Parameter	Qty.	Remark
ACB	ACB4000-2900A,3P 800V, I_{cu}=I_{cs}= 50 kA @800Vac	2	Fixed type

Item	Parameter	Qty.	Remark
SPD	Type I+II: Lightning surge current I_{imp} ≥ 12.5 kA (10/350 μs),I_n≥ 20 kA (8/20 μs), 3+1 U_c:680V	2	For LV main circuit
CT	3000/5 800V, accuracy class 0.2S	6	
MCCB	I_n=400A I_{cu}=50kA@800Vac I_{cs} =35 kA @800Vac[1]	22	no RCD
MCCB	I_n=250A I_{cu}=50kA@800Vac I_{cs} =35 kA @800Vac[1]	2	2 pcs for SPD; no RCD
MCCB	I_n=63A I_{cu}=50kA@800Vac I_{cs} =35 kA @800Vac	1	For Auxiliary transformer without RCD
Fuse+ Fuse switch	800Vac-32A	2	For SmartACU
Measurement & Control Device	Integration of STS internal status, alarm and control signals; measurement of LV voltage, current, frequency, active and reactive energy	1	

NOTE

[1]- MCCB thermo-adjustable (0.8-0.9-1.0) I_n, and default setting from factory is 0.8I_n; MCCB magnet-adjustable (5-6-7-8-9-10) In, and default setting from factory is 5I_n.

The manufacturer of LV components are all Huawei qualified suppliers and can't be designated.

3.7 Auxiliary Equipment

3.7.1 Auxiliary Transformer

The dedicated auxiliary transformer inside JUPITER-6000K-H1 provides LV power supply for auxiliary services.

The auxiliary transformer shall be 50 kVA three phase dry type transformer, key parameters are listed below:

Item	Parameter
Applicable Standards	IEC60076-11
Type/Design Code	Dry Type
Cooling Type	AN
Rated Power	50 kVA
Input Voltage	800 V
Load Voltage	132 V /230 V
Rated Frequency / No. of Phases	60 Hz / 3
Impedance Voltage	4%
Connecting Symbol	Dyn11
Rated Load Loss	1500 W
Rated No-load Loss	200 W
Voltage Withstand Test	AC: 3 kV / 1min
Insulation Material	H

3.7.2 Auxiliary Distribution Board

Huawei STS offer the 50kVA auxiliary transformer and offer auxiliary power supply for the other equipment on site. The auxiliary distribution board is equipped inside STS for the auxiliary power supply. Besides the circuits required for the internal auxiliary power supplies of the STS, Huawei reserves MCB for the external power supply in PV plant.

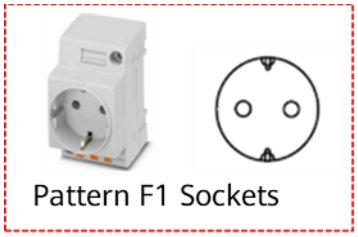
- 1 pcs 3P+N/4P 40A MCB, equipped with 1 pcs 160A/4P type A 300mA molded case leakage circuit breaker

- 1 pcs 3P+N/4P 6A MCB

- 4 pcs 2P B6A MCB, equipped with 300 mA residual current protection module

Also, Huawei STS offers 2 sockets with type A 30mA RCD. For easy maintenance, the sockets are located inside STS and the sockets are 1 pcs pattern B1 and 1 pcs pattern F1. The picture below shall be offered as a reference for the socket pattern.





3.7.3 Auxiliary Connections

The auxiliary connections shall be flexible and stranded, with the following minimum sections:

- 2.5 mm^2 for the current transformers (CT)
- 1.5 mm^2 for the control circuits
- Each conductor shall include a numbered ring corresponding to the number on the terminal and functional diagram; the wires inside STS for the various utilities shall be identified:
  - LV bus bar color: Black with labels L1/L2/L3
  - Ground circuit: Yellow-Green
  - Auxiliary circuit for internal utilities: Black with labels

3.8 Accessories

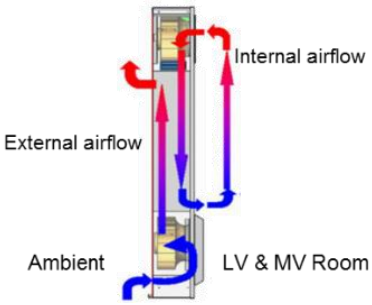
3.8.1 Internal Cabling

All the internal cabling within the STS are prefabricated and pretested at the factory, including busbar between LV panel and transformer, MV cable between transformer and RMU, communication cable and grounding cables. No further cabling work for internal connection is needed.

3.8.2 Ventilation System

Compared with traditional air-forced cooling solution via fans and filters, Huawei STS adopt the optimal cooling design: no air-cross convection. The LV and MV room of STS are equipped with heat exchanger for heat dissipation. (The LV room is equipped with 2 heat exchangers, and MV room is equipped with 1 heat exchanger.)

The cooling operating principle is below:



From the operating principle of heat exchanger above, we can see that the internal components are isolated from the external ambient environments by aluminum alloy layer. Also, such design can guarantee the high availability of the internal component. Furthermore, there is no air-cross between inside and outside air and no need for quick-wear parts – filters, thus for easy maintenance.

Also, to prevent sky radiation, the ceilings of STS MV/LV room are designed with thermal insulation layer.

Huawei STS has pass thermal simulation through thermal platform by Huawei dedicated thermal engineering team.

3.8.3 Anti-rodent System

Huawei STS provides the cable inlet and fire-stop putty for incoming and outing cable sealing, ensuring that MV room and LV room is IP54.

3.8.4 Human Presence Detection System

Huawei STS is equipped with limit switch. When the door open, the digital signal shall be output and sent to Huawei SmartACU, and then to the remote management system.

3.8.5 Lighting System

Huawei STS is equipped with internal light system, and MV&LV room shall include a general lighting system designed with ceiling lamps (IP20).

3.8.6 Smoke Detection System

Huawei STS is equipped with smoke detection system, and both MV and LV room are equipped with smoke detection sensors. When the smoke detection sensor detects an abnormality, it will send a signal to Huawei SmartACU.

3.9 Communications

As STS facilitating the monitoring and communication, Huawei STS support real time monitoring of transformer, RMU and LV panel, 0.2% high precision sensor of LV electricity parameters and remote control of MV circuit breaker and LV ACB.

All the smart signals of STS (status and protection signals, high precision analog signals etc.) aggregates in the measurement and control device in the STS LV panel, and then transmitted via RS485 cable to Huawei SmartACU. Then all the signals can be transmitted to customer's SCADA or other the management system via the Modbus-TCP protocol by Huawei SmartACU.

For more detailed signals for STS, please refer to < Modbus Signals of Huawei STS>.

4 Tests

4.1 Standard Routine Test

The following tests shall be performed as routine tests for Huawei STS. Any other tests required by customer has price impact and affect the delivery timeline.

Transformer Routine Tests	**Standards**
Visual inspection test	IEC 60076
Measurement of winding resistance test	IEC 60076
Measurement of voltage ratio and check of phase displacement	IEC 60076
Measurement of short-circuit impedance and load loss test	IEC 60076
Measurement of no-load loss and current at 100% of rated voltage	IEC 60076
Applied voltage test	IEC 60076
Induced voltage withstand test(IVW)	IEC 60076
Leak testing with pressure for liquid-immersed transformers (tightness test)	IEC 60076
Insulation oil test	IEC 60076
RMU Routine Tests	**Standards**
Visual inspection test	IEC 62271-200
Main circuit power frequency withstand test	IEC 62271-200
Dielectric test on auxiliary and control circuits	IEC 62271-200
Resistance measurement test of the main circuit	IEC 62271-200
Tightness test	IEC 62271-200
Smart Transformer Station Routine Tests	**Standards**
General inspection test	IEC 62271-202
Ground resistance measurement test	IEC 62271-202
Insulation inspection test	IEC 62271-202
Power frequency withstand voltage test	IEC 62271-202
Mechanical operation test	IEC 62271-202
Electrical operation test	IEC 62271-202

4.2 Factory Acceptance Test (FAT)

The standard routine test of transformer and STS shall be witnessed as Factory Acceptance Test (FAT) by customer. If FAT witness required, this shall be informed to Huawei and shall be charged accordingly during ordering time.

All the price associated to Travel, Lodging, visa charges and any other charges are incurred by Customer.

Concerning the long product delivery period of RMU components, Huawei shall provide the RMU factory test report and 3rd party certificates to customer review instead of RMU FAT witness.

4.3 Site Acceptance Test (SAT)

At site, the customer or EPC shall be responsible for the site acceptance test. Huawei can provide the basic FAT test data as a support.

5 Applicable Standards

Design requirement and references for Huawei STS is listed as below:

- **Smart Transformer Station**

IEC 62271-202	High-voltage switchgear and control gear - Part 202: High voltage/low voltage prefabricated substation
IEC 60529	Degrees of protection provided by enclosures (IP Code)

- **Transformers**

EN 50588-1	MV Transformer Station
IEC 60076-1	Power transformer-Part_1:General
IEC 60076-2	Power transformers-Part 2: Temperature rise for liquid-immersed transformers
IEC 60076-3	Power transformers - Part 3: Insulation levels, dielectric tests and external clearances in air
IEC 60076-5	Power transformers - Part 5: Ability to withstand short circuit
IEC 60076-10	Power transformers - Part 10: Determination of sound levels
IEC 60076-11	Power transformers - Part 11: Dry-type transformers
IEC 60296	Fluids for electro technical applications - Unused mineral insulating oils for transformers and switchgear

- **RMU**

IEC 62271-200	High-voltage switchgear and control gear - Part 200: AC metal-enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV
IEC 62271-1	High-voltage switchgear and controlgear - Part 1: Common specifications
IEC 62271-100	High-voltage switchgear and controlgear - Part 100: Alternating current-
IEC 62271-102	High-voltage switchgear and controlgear - Part 102: Alternating current disconnectors and earthing switch
IEC 62271-103	High-voltage switchgear and controlgear - Part 103: Switches for rated voltages above 1 kV and less than 52 kV

- **LV panels**

IEC 61439-1	Low-voltage switchgear and control gear assemblies, Part 1: General
IEC 61439-2	Low-voltage switchgear and control gear assemblies- Part 2: Power switchgear and control gear assemblies
IEC 60947-2	Low-voltage switchgear and control gear, Part 2: Circuit-breakers
IEC 61643-11	Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test

- **LV and MV Cables**

IEC 60227-1	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V
IEC 60502-1	Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1,2 kV) up to 30 kV (Um = 36 kV))
EN 50575	Power, control and communication cables - cables for general applications in construction works subject to reaction to fire requirements
EN 60332-1-2	Tests on electric and optical fiber cables under fire conditions - Part 1-2

6 Exclusive Items

Any technical requirements beyond the technical specification listed above will need to be renegotiated. And any change in technical specification will have cost implication and will be charged accordingly.

Routine tests of the product shall be executed according to relevant IEC standards. Any type-, or special tests or 3rd party certificates are excluded in the technical specification. In case any type-, special, new or repeated tests or certificates are required, they will be charged separately.

7 Abbreviations and Acronyms

In this document, Huawei abbreviations and acronyms

Abbreviations	Acronyms
ACB	Air Circuit Breaker
CT	Current Transformer
LV	Low Voltage
MV	Medium Voltage
MCCB	Molded-case Circuit Breaker
MCB	Miniature Circuit Breaker
PT	Voltage Transformer
RMU	Ring Main Unit
STS	Smart Transformer Station
SPD	Surge Protection Device

Abbreviations	Acronyms
TR	Transformer