

Industrial STS Series



PESS® Industrial STS Series

PESS Industrial STS Series

The PESS Industrial STS series are a required power quality solutions that transferring until megawatts in milliseconds to protect critical operations.

INTRODUCTION

PESS Industrial STS is an electrical device that switches quickly between the load and the power supply. When a problem occurs in the power supply sources, it switches by choosing the appropriate one from other sources and continues to feed the output loads without any delay during this transition.

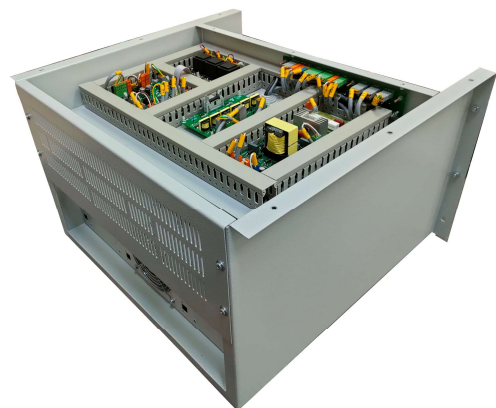
PESS Industrial STS family consists of STS_112, STS_113 or STS_332, STS_333. STS series was designed for use in the severe electrical and physical conditions commonly found in industrial environments and can be fully customized to specific technical requirements.

MAIN OPTIONS

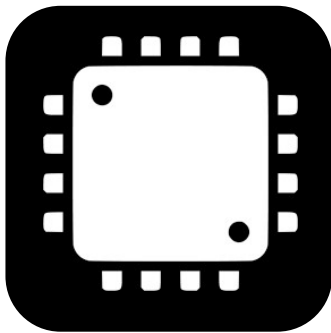
- ◆ Power Module type design for smaller powers.
- ◆ Optional one or three phase
- ◆ Easy maintenance thanks to modular design
- ◆ High speed DSP control
- ◆ Outstanding electrical performance
- ◆ Advanced MODBUS RS485 / TCP-IP communications
- ◆ User friendly 4*20 LCD or OPTIONAL 7" Touchscreen display

KEY FEATURES

- ◆ Dual redundant power supplies to control boards, for increased availability
- ◆ Redundant cooling and fan failure monitoring, for reliable operation
- ◆ High overload capability, for robust electrical design
- ◆ Maintenance switch, for hot swap maintainability
- ◆ Real-time SCR fault sensing, preventing fault propagation.

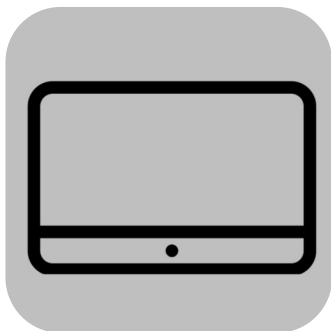


BENEFITS



FULL DIGITAL CONTROL

All PESS STS (BYPASS SCR) and system static switches are controlled by an industrial-grade CPU for excellent reliability. Thanks to control design PESS STS quickly switches between multiple electric sources make certain highest availability of sources to protect load sensitive applications.



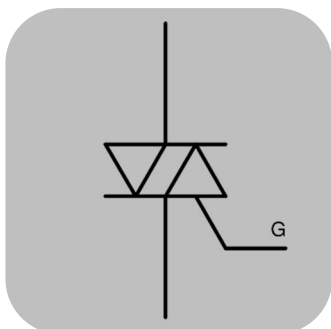
4*20 LCD SCREEN + LED INDICATORS

Traditional HMI, easy to read and confirm equipment operating status, convenient for daily management and general maintenance. The operating system can be used to view all input, output, load, and battery parameters, as well as STS status and alarms.



MODULAR DESIGN

PESS STS_112, STS_113, STS_332, STS_333 series come forward with their modular structure. PESS can design any power converter control circuit in one box.



PROLONGATION OF DEVICE LIFE

Thanks to the thyristors used in the PESS STS design, the optimal efficiency of the device and an prolongation in the life of the device are provided.

MODES OF OPERATIONS

PREFERRED SOURCE MODE

The source desired to feed the loads is selected as preferred source mode on the LCD screen of PESS STS. It is transferred to one of the other sources in a short time so that the desired values in the selected source decrease or in case of any failure, the load is fed. When the values in the source return to normal or the fault is cleared, the load will automatically be transferred back to the priority line.

USER TRANSFER

Transfer to other sources will be provided with the help of the transfer the source button on the LCD of PESS STS. During this transfer, the voltage, current and frequency values of other sources are checked and if the values are not within the acceptable tolerance level, the transfer is not performed and the command is canceled in order to protect the load. In case of a possible phase difference between sources, this command waits until the phase difference reaches the adjusted parameter value.

SHORT CIRCUIT CONDITION

When a short circuit is detected in the output by the PESS STS control system, the system is quickly shut down in order to prevent this short circuit from being transferred to other power sources.

The instantaneous short-circuit threshold level can be defined by the user. In line with this determined value, when the voltage is at an acceptable level and the current value falls below the threshold, the PESS STS will prevent the transfer in a short time and automatically reset itself.

MAINTENANCE BYPASS

PESS STS has a maintenance bypass mode to feed critical loads while performing internal maintenance on the device. In maintenance bypass mode, there is one mechanical lock for each line. These locks prevent the simultaneous shutdown and ensure that the loads continue to be fed safely.

MODES OF OPERATIONS

SYNCRONIZATION FAILURE

This error is received if the source and the output frequency are not the same. In order to protect the load, the source with the output frequency value is determined. The source with the appropriate frequency value is selected in a short time and the supply of the load is transferred to the most suitable source.

INPUT BREAKER

If the current and voltage value is different from the desired value, this warning is given. In such a case, the PESS STS opens the input breaker to protect the load and the source is disabled. It then selects the most appropriate source and transmission.

BY-PASS BREAKER

In case of an error or thyristor breakdown in the electronic boards, the source continues to feed the load uncontrollably. When this event happens, the user decides to transfer to other sources.

SCR FAILURE

If thyristors fail, PESS STS gives this error. In this case, the loads are not energized from this source and the most appropriate one from other sources is selected and the load continues to be fed.

PESS STS

Industrial Static Transfer Switch

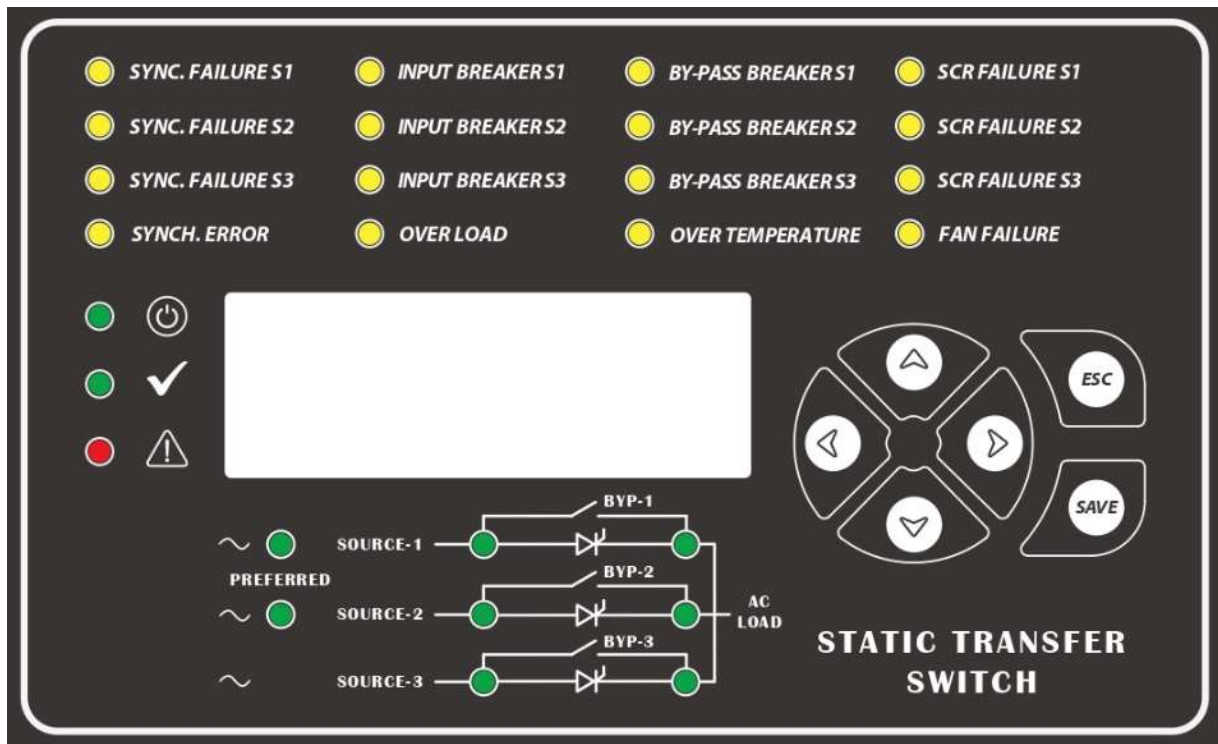
MONITORING & COMMUNICATION & CONTROL

GENERAL

PESS STS Series, incorporates the necessary controls, instruments and indicators to allow the operator to monitor the system status and performance, as well as take appropriate action

CONTROL PANEL












The control panel contains: LED-backlight LCD with 4 lines x 20 columns. 6 Buttons to navigate LCD menus. 24 Indication LED to get any status, critical or failure information of system. Customer can select to use 7" Touchscreen TFT panel as OPTION.



PESS STS is produced according to customer request with two-sources or three-sources design options. Thanks to its three sourced design, generator line or renewable energy line can be used as a third source. Thanks to renewable energy, a more economical and environmentally friendly device is obtained.

PSS STS

Industrial Static Transfer Switch

EXAMPLE-1	FIRST SOURCE GRID	
	SECOND SOURCE UPS	
	THIRD SOURCE GENERATOR diesel	
EXAMPLE-2	FIRST SOURCE SOLAR INVERTER	
	SECOND SOURCE GRID	
	THIRD SOURCE GENERATOR diesel	
EXAMPLE-3	FIRST SOURCE UPS-1 without bypass	
	SECOND SOURCE UPS -2 without bypass	
	THIRD SOURCE GRID as a bypass source	
EXAMPLE-4	FIRST SOURCE UPS-1 with bypass	
	THIRD SOURCE UPS-2 with bypass	

PESS STS

Industrial Static Transfer Switch

STS Series Cabinet Technical Specifications

STS UNITS (1 or 3 phases)

60A-1250A

Nominal voltage (1ph)		220-230-240				
Nominal voltage (3ph)	(V)	380 – 400 – 415				
Default	(V)	380				
Input voltage tolerance	(%)	+30, -40				
Input phases		1+N (1ph) / 3+N (3ph)				
Number of poles		1 (1ph) / 3-4 (3ph)				
Nominal frequency (Hz) [selectable]	(Hz)	50/60				
Frequency tolerance (%) (user definable)	(Hz)	±5%				
Nominal Current	(A)	160	250	400	600	1250
Efficiency at Pn	(%)	≥99				
Overload capacity						
-For 10 minutes	(%)	125	125	125	125	125
-For 1 minute	(%)	150	150	150	150	150
-For 10 seconds	(%)	200	200	200	200	200
-For 1 second	(%)	300	300	300	300	300
Transfer Mode		Break-Before-Make Switching (No source overlap)				
Transfer Time		CBEMA – ITIC				
-Worst condition zero voltage source failure	(ms)	≤5				
-Typical zero voltage source failure	(ms)	≤4				
Static Switch Fault detector (Open and Closed SCR)		Yes				
Ventilation		Natural or Forced with FAN, It depends on power rating				
Cable entry		Bottom				
Operating temperature	(°C)	-10 - 40				
Acoustic noise	(dBA)	<60				
EMC Compatibility		IEC /EN 62310-2 Class C3				
Safety		IEC/EN 62310-1				
Frame color	(RAL scale)	7035				
Protection degree		IP20				

PESS STS

Industrial Static Transfer Switch

PESS STS UNITS

PESS STS CABINET (60A TO 1250A)

Nominal voltage Default		(V) (V)	380-415 380
Phase difference Default			±30° ±10°
Over Voltage Critical Limit (RMS)Default	(%) (%)		+5,+20 +13
Over Voltage Fatal Limit (RMS)Default	(%) (%)		+20,+30 +20
Under Voltage Critical Limit (RMS)Default	(%) (%)		-5,-35 -13
Under Voltage Fatal Limit (RMS)Default	(%) (%)		-35,-40 -35
Instant Short Circuit Overload ThresholdDefault			1 - 5In 3In
Asynchronous transfer delay timeDefault	(ms) (ms)		0 – 1000 10
Re- Transfer Time Default	(sec) (sec)		5 - 36000 30
Manual Transfer Timeout EnableDefault			ON / OFF
Manual Transfer TimeoutDefault	(min) (min)		1 - 600 30
Neutral transfer modeDefault			MBB or BBM (configurable) MBB

OPTIONS

VARIOUS CURRENT VALUE

Top Cable Entry for 60 A, 100 A, 160 A, 250 A, 400 A, 600A and 1250A PESS STS. This factory fitted option will allow cable access from the top involving a side extension to the main cabinet.

CUSTOMER INTERFACE BOARD

It shall be possible to add four volt free digital input/outputs to the UPS by adding an additional board. PESS STS designs the board interface at the request of the users and offers the LCD screen as a touch pad to the customer option.

RELAY PCB & DRY CONTACT

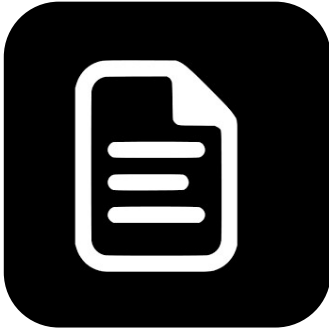
Product has a relay-PCB that is including 8 relays output terminals and RS485 communication output terminal. There are 8 units free alarm contacts with automation type products. The warning LEDs' situations, that are on the communication PCB, LCD panel and communication interface, can be monitored via these free contacts. Each free contact has two outputs; one is normally open, other is normally closed. Each free contact can be programmed to any LED indication on front LCD panel or common of any three LEDs through communication interface via Modbus-RS485. Technical data's, default relay alarms and relay. PCB layout are shown below.

GALVANIC ISOLATION

Potential difference in devices operating at high voltages creates harmful DC and unwanted AC currents to flow to other parts. This creates dangerous working conditions and harmful situations. In these circumstances galvanic isolation is needed.

Optionally, transformers are placed in the cabinet of the PESS STS to provide galvanic isolation at its input and output. Transformers working in harmony with SCR increase the reliability of the device by protecting it in human operations, and also increase the operating efficiency of the device by improving its noise immunity.

CONTENT SUPPORT



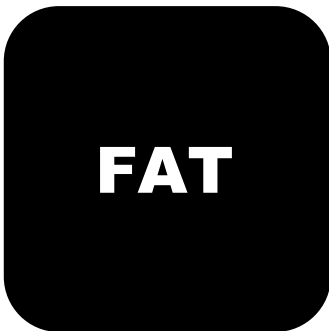
WHITE PAPER

All PESS products have a white paper which explains how customer to produce their own power cabinet using PESS power electronic control modules.



USER MANUEL

All PESS products have a user manual that detailed information about operations, installation, operations, settings, maintenance and trouble shouting to help our costumer.



FACTORY ACCEPTANCE TEST (FAT)

Its main purpose is to debug any errors and document the results of the testing at the factory prior to shipment. Both the buyer and manufacturer benefit from this testing because it assures that the equipment meets its contractual specifications and any issues can be debugged before arriving in the customers hands.



WEB SITE

All PESS products portfolio, user manuel, white paper , software applications, presentations and services of products located on <https://www.pesspower.com/tr>



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