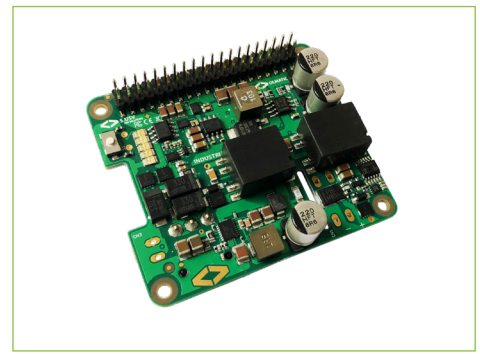


S.USV INDUSTRIAL
INTELLIGENT ENERGY MANAGEMENT MODULES
WITH UPS FUNCTION
FOR SINGLE BOARD COMPUTERS AND EMBEDDED SYSTEMS
THE KEY TO INTRODUCING IN THE INDUSTRY 4.0



PRODUCT DESCRIPTION

The S.USV industrial closes the gap between single-board computers/ embedded systems and Industry 4.0. The intelligent energy management module with uninterruptible power supply is equipped with the latest technology and designed for state-of-the-art industrial applications of your single-board computer and embedded systems.

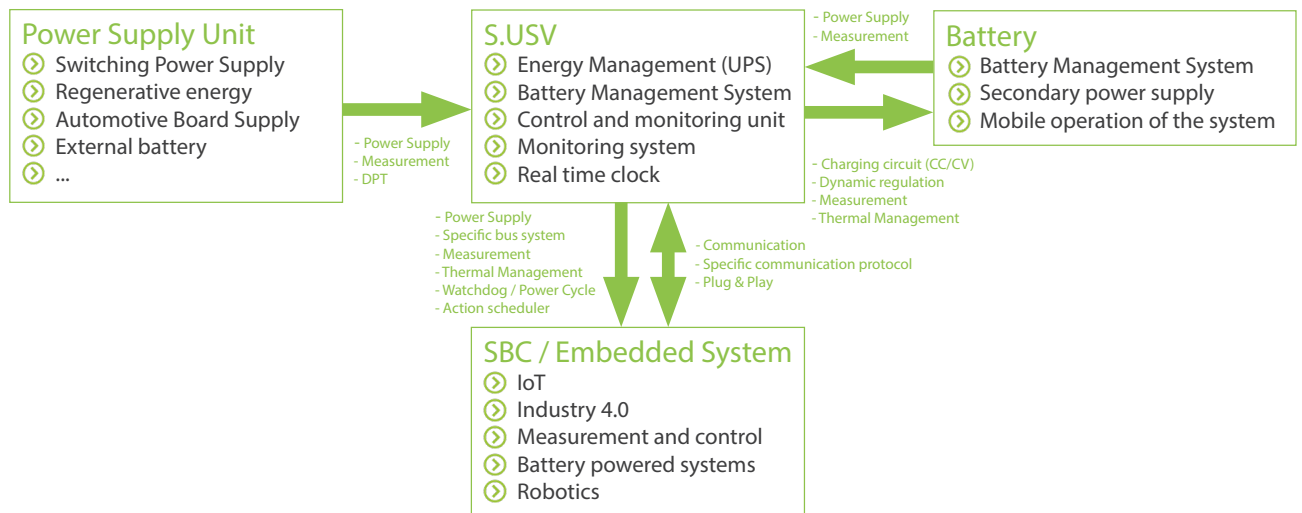
The S.USV industrial is also an intelligent power bank and can be operated purely by battery if required. The latest state-of-the-art LiPo accumulators, specially designed for the extended temperature range of the Industry, are used for this purpose. For the safety and guarantee of a stable and long service life, intelligent Battery-Management-Systems have been implemented, which in addition to the Thermal Management also provides a comprehensive Monitoring-System. The charging circuit is adapted and controlled in accordance with the available power via the active energy source.

The module is a fully functional plug & play solution. The implemented Monitoring-System carries out a continuous review of all relevant performance data in order to safely shut down the embedded system in case of misconduct and thus prevent data loss. Through the detailed analysis of the collected data, the system can be operated highly efficient and energy-saving. EcoSmart® - Energy Efficient: Energy-saving and environmentally friendly power supply through high efficiency across the entire load range and intelligent power management systems.

For example, if the power supply to the systems falls below a specifically defined voltage threshold, the S.USV modules automatically switch to battery mode and maintain the functionality of the systems for a user-settable period of time, thereby bridge the power sink or shut down the systems safely in the event of a long-term power outage.

All these functions are automated. In addition, you have the option of checking and controlling all operating states or switching processes via software and specific bus systems.

BLOCK DIAGRAM



FUNCTION OVERVIEW

- Ⓢ HAT compliant energy management modules
- Ⓢ Plug & Play
- Ⓢ Bootloader for live firmware updates
- Ⓢ integrated Real Time Clock
- Ⓢ uninterruptible power supply
- Ⓢ start and operate purely on battery
- Ⓢ Monitoring system
- Ⓢ optional with LiPo/Li-Ion battery including configurable charging control (300mA / 500mA / 1000mA)
- Ⓢ Efficiency up to 91%
- Ⓢ Battery Management Controller
- Ⓢ Battery Management System
- Ⓢ Power input with extended voltage range (7-48V/5A)
- Ⓢ Protection Circuit: RPP, SCP, OLP, OCP, OVP, UVP, OTP, ODP, RCP
- Ⓢ Watchdog - Power cycle/Heartbeat functionality timed and event based on and off switching of the system - Action Scheduler
- Ⓢ Supply Switch (On/Off Button/File Safe Shutdown)
- Ⓢ LED status display
- Ⓢ Battery-Hot-Swap

TECHNICAL SPECIFICATION

Input voltage - Primary	+7-48V			
Input voltage - Backup line	+7-48V			
Performance specifications		primary	secondary (battery operation)	charging circuit
	Max. Input current	5A	-	-
	Max. Output current	5A	5A	1A
	Max. Output voltage	+5V	+5V	+3.7V
Power consumption	average <4W / max. 25W			
Efficiency	up to 91%			
Ripple	<50 mVss			
Protection Circuit	RPP, SCP, ICL, OLP, OCP, OVP, UVP, OTP, ODP, RCP			
Safety/EMC	EMC Directive 2014/30/EU, IEC 62368-1:2014, IEC 61140:2016			
Temperature range	-20°C to +75°C			
Dimensions	65x56,5x9,0mm (WxDxH)			

Battery example data (optionally available)	1300mAh - LiPo battery	
	Nominal voltage	3.7V
	Operating voltage	3.2 - 4.2V
	Capacity	1300mAh
	Internal impedance	≤150mΩ
	Constant charge/discharge current	1C/5C
	Working temperature	-20-75°C
	Connection cable	UL1571#28
	Connector	DF63-2S-3.96C
	Dimension	66,5 x 36 x 8,8 mm

larger capacities on request

S.USV - MODEL OVERVIEW / COMPARISON CHART

	<i>S.USV advanced</i>	S.USV industrial
Plug & Play	√	√
Starting process via battery (mobile)	√	√
Primary power supply/Output power	7-24 Volt/3500 mA	7-48 Volt/5000 mA
Secondary power supply/ Output power (battery operation)	5 Volt/3500 mA	5 Volt/5000 mA
Interfaces	I ² C, GPIO	I ² C, GPIO
ID EEPROM	√	√
Monitoring - System	√	√
OPTIONAL: LiPo - Battery (300 mAh)	√	√
OPTIONAL: LiPo - Battery (1300 mAh)	√	√
OPTIONAL: LiPo - Battery (3000 mAh)	√	√
OPTIONAL: LiPo - Battery customizable	√	√
OPTIONAL: Li-Ion - Battery customizable	√	√
Battery Management	√	√
Battery Monitoring	√	√
Real Time Clock	√	√
Supply Switch	√	√
Customizable	√	√
Extern-Voltage-Monitoring	x	√
Extended Protection Circuit	x	√
Watchdog	x	√
Power Cycle/Heartbeat	x	√
Automatic fan switching (optional)	x	√
Dimension	65x56,5x9,0mm (WxDxH)	65x56,5x9,0mm (WxDxH)