TSS Ultimate Remote Monitor

TSS Ultimate Remote Monitor is a cloud-based platform built on the latest techniques to proactively monitor, analyse and optimize the performance of your solar and hybrid energy system by ensuring high security to provide a safe, reliable and trustworthy solution. Data available from your TSS system is transferred via Ethernet or GSM to a cloud-based platform using a router with a WAN connection. Real-time data is stored inside the router and, when a connection is available, data is transferred to a secured web portal. This data can be visualized on the cloud-based platform and instant notifications and alarms can be received on a mobile phone and via e-mail.

- Ability to stream real time data upon opening live monitor. Provision to store and forward data in case of loss of connectivity.
- Receive instant notifications and alarms on a mobile phone and via e-mail when certain thresholds are triggered.
- Possibility to view historical data up to 7 years.
- Preferred interval can be chosen. High resolution of up to 20 samples per second.
- TSS systems are monitored through Modbus TCP/IP, with provision for other protocols, VPN connection, HTTP website porting and VNC access.
- Customized report on system performance for predictive and preventive maintenance.

TSS-DS-037-R02

TSS4U • Looyenbeemd 3a • 5652 BH Eindhoven • The Netherlands
Tel. +31 40 235 1702 • info@tss4u.com • www.tss4u.com • CoC 17156182

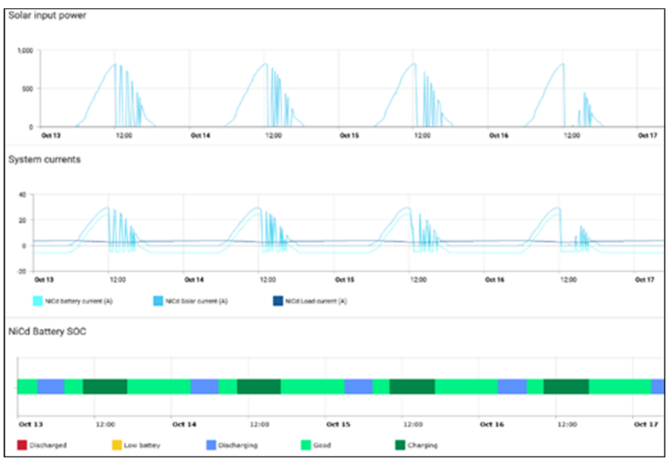
TSS Ultimate Remote Monitor

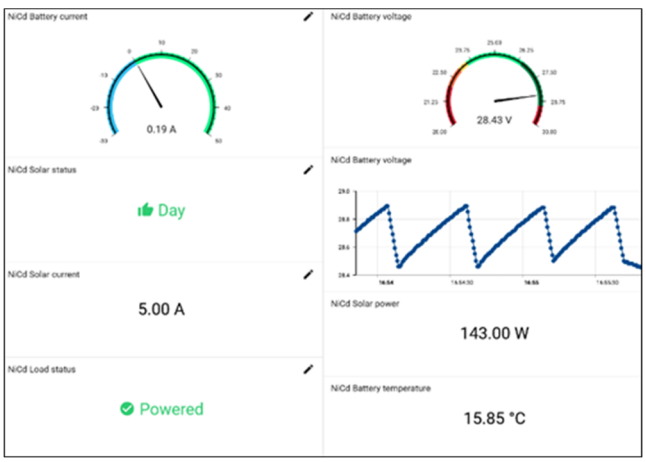
Electrical characteristics	
Supply voltage	9.6 – 28.8 Vdc
Power dissipation	5 W idle, 10 W max.

General specifications	
Operating temperature	-20°C to 65°C
Storage temperature	-20°C to 65°C
Ethernet ports	4 LAN, 1 WAN
USB port	USB 2.0
Processor	MIPS 800 MHz
Mounting	DIN rail
Certifications	CE, cULus listing, FCC verification, ANATEL, NBTC
Standards	IEC 60950-1:2006 + A1:2009 + A2:2013 UL 60950-1 CSA C22.2 No. 60950-1-07

Additional data	
Protocols	FDD-LTE TDD-LTE WCDMA
Protocols (optional)	GSM/GPRS/EDGE – 850, 900, 1800, 1900 MHz
GSM antenna (optional)	External on top of enclosure or solar module support
SIM size (GSM version)	2FF (standard SIM card)
FCC ID (GSM version)	XMR201903EG25G
Router Ethernet article no.	IX2400
Router Ethernet + 4G article no.	IX2405

Dimensions and weight	
Dimensions L x W x H	116 x 28 x 95 mm (excl. DIN rail clip)
Weight	310 gram





TSS Remote Monitoring Solutions

As Solar Energy Systems need to reliably power loads 24/7 it is crucial to be aware of the systems' health and performance. With the use of remote monitoring even the most remote systems can be checked at your convenience and the performance data can be used for preventive maintenance programs. TSS provide four solutions for existing as well as new Solar Energy Systems:

1) Basic: Direct LAN connection
2) Advanced: Direct LAN connection with a Σ-Ahr Graphic Data Manager
3) Custom: WAN (Internet) and other protocols
4) Ultimate: In the cloud solution

1) Basic: Direct LAN connection

Any TSS Solar Energy System equipped with a Σ-Ahr Controller, real-time data can be transferred to a control room via the standard Modbus TCP/IP LAN connection on the Σ-Ahr controller. This Modbus TCP/IP connection will typically contain the following parameters:

Description	Conditions
Battery low voltage alarm	Battery voltage < 23.6V (*)
Battery low low voltage alarm	Battery voltage < 23.0V (*)
Solar array failure alarm	No solar array current for more than 24hrs
Load disconnected alarm	Battery voltage < 23.0V or > 30.5V (*)
Common fault alarm	<project dependent>
Communication failure alarm	Controller communication failure
Battery voltage	0-30V (*)
Battery current	(***)
Battery state of charge (SOC)	0-100%
Battery temperature	0-55°C
Minimum solar array current (**)	(***)
Maximum solar array current (**)	(***)
Solar array current (total)	(***)
Minimum solar array voltage (**)	(***)
Maximum solar array voltage (**)	(***)
Load current	(***)
Essential load current	(***)
Essential load power	(***)
Non-essential load current	(***)
Non-essential load power	(***)

(*) Applicable for a 24V lead acid system. Other parameters can be made available on request
(**) Minimum and maximum determined from all array inputs
(***) This value is project dependent as quantity of Σ-Ahr Extension units and required load current can differ

TSS4U • Looyenbeemd 3a • 5652 BH Eindhoven • The Netherlands
Tel. +31 40 235 1702 • info@tss4u.com • www.tss4u.com • CoC 17156182

TSS Remote Monitoring Solutions

2) Advanced: Direct LAN connection with a Σ-Ahr Graphic Data Manager

If your TSS Solar Energy System is also equipped with the Σ-Ahr Graphic Data Manager, real-time data is available, and the data is also logged. Data is stored every 5 minutes in the Σ-Ahr Graphic Data Manager. This data can be transferred to a control room via the ftp-protocol. By adding a Ethernet TCP/IP Switch in the control box you will get access to both the direct LAN connection from the Σ-Ahr Controller as well as logged historical data from the Σ-Ahr Graphic Data Manager.

Ethernet TCP/IP switch

3) Custom: WAN (Internet) and other protocols

If the basic or advanced solution does not completely suit your needs, LAN (Local) can be converted to WAN (Internet) using a modem or router. The Modbus protocol can be converted to your preferred protocol, e.g. SNMP.

Modems and routers

4) Ultimate: In the cloud solution

Instead of a direct LAN connection TSS can also provide a cloud solution, on new and existing systems, where data from the Σ-Ahr Controller is transferred to a cloud-based platform via a router with a WAN and GSM connection. The real-time data is stored inside the router and, if there's a GSM connection available, the data is transferred to a secured web portal. The data can be visualized on the platform and notifications and alarms can be received on a mobile phone and via e-mail.

The cloud environment can be fully configured and customised graphically, user friendly and no coding.

TSS cloud based router