

Power plant controller with power guard function

SPV RM

The SPV RM controller is a device designed for comprehensive management of the operation of photovoltaic farms and other sources of distributed generation. It combines the functions of a telemechanical controller, data concentrator, communication module and regulator of the facility's operating parameters.

Basic tasks

- **Telemechanical controller:** Enables remote reading of signals from the facility and transmission of control commands, such as reading the position status of switches and their remote control.
- **Data concentrator:** Collects information from subordinate devices and input/output modules and makes it available to superior devices, which allows for efficient data management.
- **Communication module:** Ensures connectivity between devices and the monitoring system via a built-in LTE/HSPA+/GSM mobile network modem and an Ethernet port. This enables flexible and secure communication.
- **Source operating parameter adjustment:** Controls active (P) and reactive (Q) power for up to four generating installations by directly managing the source or physically disconnecting individual sources from the distribution network.

Area of application

The SPV RM controller is used in a variety of distributed generation installations, such as:

- **Photovoltaic farms:** Enables the effective management of solar panels, controlling the operating parameters of the generating source through connection with data loggers, analysers and protection automation.
- **Wind turbines:** Allows monitoring and control of the turbines, ensuring optimal use of the generated energy.
- **Biogas installations:** Enables control and regulation of the operating parameters of biogas generators, adapting their operation to the current needs of the network.
- **„Zero export” industrial installations:** Protects against the export of power to the distribution grid by regulating the volume of the power generated by the photovoltaic installation based on the measurement of the value and direction of the energy flow at the grid connection point.



Functionalities and features:

- **Active power control:** The controller smoothly regulates the active power of generating sources via generating unit controllers equipped with a digital interface, most often with the MODBUS/RTU protocol.
- **Operation of multiple generation sources:** In the case of installations with multiple sources, the active power is distributed according to the programmed order for the purpose of limiting the generated power. The adaptive power distribution correction function allows the power setting of the other fixed sources to be increased automatically in the event of insufficient power generation of certain sources.
- **Emergency source disconnection:** In a situation where the generating units do not allow for power regulation or the power exported to the grid exceeds the set limit, the controller can disconnect the generating sources from the grid in a programmed order - until the exported power drops below the limit.
- **Remote diagnostics and parameterisation:** Enables remote diagnostics, parameterisation as well as software and configuration exchange, which allows for effective system management without the need for physical presence on site.
- **Secure communication:** The controller is equipped with a built-in HTTP/HTTPS server, SSHv2 server and SNMPv1/2c/3 agent. Authentication of network services takes place via digital X.509 certificates to ensure a high level of communication security.
- **Certification:** The SPV RM is included in the list of certified equipment of PTPIREE, meeting the requirements of the Grid Code, NC RfG and IRIESD of all distribution system operators.

Technical parameters

Power supply	Supply voltage	12 – 24 V DC
	Output voltage	12 V DC max. 50 mA
	Power consumption	≤ 5 W
Modem	Frequency bands	FDD LTE: 700/800/900/1800/2100/2600 MHz WCDMA (3G): 900/2100 MHz GSM (2G): 900/1800 MHz
	Data transmission modes	LTE/HSPA+/UMTS/EDGE/GSM
	SIM card slot	2 x mini-SIM (2FF)
	Antenna connector	SMA
Connectivity	Communication interface	1 x Ethernet with RJ45 socket 1 x RS-485/RS-422 with RJ45 socket 1 x RS-232/RS-485/RS-422 with RJ45 socket 4 x RS-232/RS-485/RS-422 with RJ45 socket
	Communication with SSiN	DNP 3.0/TCP IEC 60870-5-104
	Communication with external devices	MODBUS/RTU MODBUS/TCP IEC 60870-5-103
	Signalling inputs and outputs	16 signalling inputs 6 signalling outputs
Housing	Dimensions	99 x 90 x 114 mm
	Weight	180 g
	Material	PA 6.6 (flammability class V0 acc. to UL 94) in RAL 7035 (light grey)
	Mounting method	on TS-35 rail
	Work area	closed
	Protection class in accordance with EN 60529	IP20

The SPV RM is designed and manufactured in accordance with the guidelines of the 73/23/EEC (LVD) and 89/336 (EMC) directives. In addition, the SPV RM was designed in accordance with PN-EN 50091-2 and PN-EN 61010-1:2011

Dimensions

