



Effective PV Monitoring requires constant, solid and traceable PV Plant monitoring data in order to determine actual performance and fulfil owner/investor expectations.

Operators are interested to identify errors and losses in a reliable way to trigger appropriate actions for maximizing energy harvest during the total system lifetime.

The “Q.reader” is a data logger which can make the logging and control of all required PV plant information: string level (current, voltage), inverter data, meteorological data from weather stations, grid measurements and other state variables (switch gear, transformer status). At the same time, it also acts as the power controller for the grid operator.

This accurate data acquisition and control concept is inverter independent and gives feedback about losses due to inverter malfunction, soiling, shading, PV Module degradation etc. .

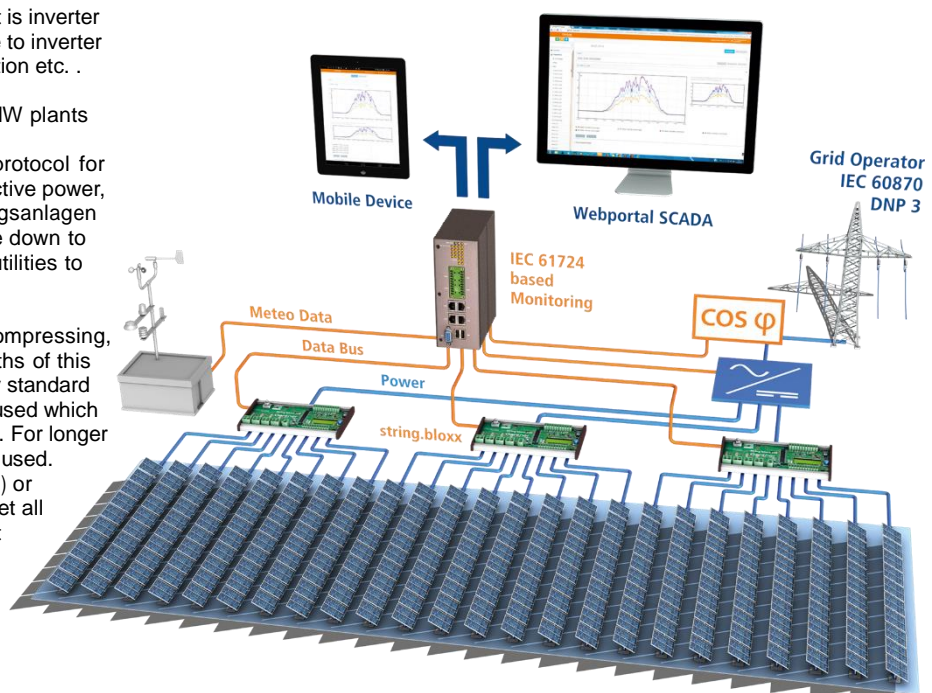
The Linux based platform can control up to 100MW plants with just one controller and fulfils all international requirements as the IEC 60870 (communication protocol for supervisory control and data acquisition) for reactive power, ramp rates, etc. or Germany’s BDEW (“Erzeugungsanlagen im Mittelspannungsnetz”). Data collection can be down to one second or more, which is often required by utilities to zoom for grid impacts tests.

Signal conditioning, data storage and transfer, compressing, and communication in many ways are the strengths of this flexible data solution. For communication industry standard Modbus protocols for easy and fast integration is used which enables reliable data exchange within the network. For longer communication distances fiber optic technology is used. Data transfer is possible by cable (Ethernet/ LAN) or wireless (GPRS/3G or 4G, WiFi) – the loggers meet all standard security requirements (SSL) with lowest power consumption.

The data acquisition system grows with the requirements and distributed Q.series measurement modules can be integrated at any time.

### Key features:

- **Data logger with integrated Plant control for reactive power, ramp rates etc.**  
Up to 100MW of logging and control per device  
Control according to IEC 60870 (communication protocol for supervisory control and data acquisition)
- **Analog and digital inputs and outputs via Q.series I/O modules**  
24 bit resolution, sample rate 0.1 s up to 24 h
- **4 x RS485 fieldbus interface**  
Up to 115,2 kbps
- **Ethernet interface for configuration and data transfer**  
TCP/IP, UDP, FTP Server and FTP Client functionality  
Configurable functions
- **Grid interaction**  
based on IEC 60870, DNP 3
- **Connectivity**  
Protocols from all leading inverter manufacturers are integrated I/O devices (e.g. weather stations, medium voltage parameters)
- **Data memory with individual logging interval**  
8GB flash  
0.1 s up to 24 h, individual per channel
- **Configurable monitoring**  
with auto-alarming via e-mail or SMS  
local arithmetic functions
- Direct link to the **gantner.webportal** for **worldwide data access**
- Operating system Linux





## Q.reader central

### Performance Monitoring and Control

<b>Data logging and control</b>	
Logging interval	0.1 s up to 24 h individual per channel with local arithmetic functions
Data memory	8GB industrial flash
Grid control, interaction	IEC60870, DNP 3, others
Operating system	Linux
<b>Communication Interface</b>	
RS485	4
Ethernet TCP/IP	2
Protocols	Modbus-RTU, Modbus TCP, inverter protocols
Number of devices on the bus	max. 250
Data Transfer	FTP Server and FTP Client functionality
Data format	Selectable (e.g. csv, json)
SCADA Integration	via OPC-Server
Connection	0.25 mm <sup>2</sup> - 1.5 mm <sup>2</sup> push-in spring-cage connection
<b>Power Supply</b>	
Power supply	10 up to 30 VDC, overvoltage and overload protection
Power consumption	approx. 6 W
<b>Environmental</b>	
Operating temperature	-10 °C up to +55 °C
Storage temperature	-40 °C up to +85 °C
Relative humidity	5 % up to 95 % at 50 °C, non-condensing
<b>Mechanical</b>	
Case	Aluminum
Dimensions (L x H x D)	(69.1 x 169.5 x 127) mm
Weight	approx. 1700 g
Mounting	DIN rail mounting (EN 50022)

#### Warm Up Time

All declarations are valid after a warm up time of 45 minutes.

Valid from January 2015. Specification subject to change without prior notice.  
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