be4unity

PV Plant Manager integrating Monitoring, Control, Remote Access, and Communication

PV Plant Manager

PV plant manager of the be4unity series combine all features that are necessary for the operation and monitoring of state of the art pv power plants, including broad band mobile communication access, plant control, and remote access solutions:

- data logger for inverters, sensors, etc.
- plant controller for grid control schemes
- industrial LTE mobile communication
- VPN router
- remote dispatcher access
- remote maintenance access

Data Logger

For vendor-independent monitoring of system components such as inverters, radiation and climate sensors, string level monitoring, switchgear, energy meters and power analyzers the be4unity series provides a number of modular, extendable and configurable interfaces. With the open data export interface be4data the acquired system data can be sent to any monitoring provider for storage, processing and visualization. Likewise, the inclusion in the vendor-independent monitoring portal be4vision is possible for operation monitoring as well as for reporting and plant management. So you stay informed around the clock about yield, technical availability, errors and alarm information and optimize the operation of your assets.

Plant Controller

The be4unity device series feature active and reactive power control capabilities in open control loop schemes for simple active power dispatching and integrated closed loop control functions for more complex requirements of active and reactive power control by network operators via remote control or characteristic curve setups. Network operator set point commands can be received online through digital contacts, analogue current loops (4-20 mA) or digital protocol interfaces (Modbus, IEC 60870-5-10x) and feedback on system status, functions and switchgear received default values can be given back to the network operator.

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DATA COMMUNICATION

An industrial grade LTE / UMTS cellular data communication unit is integrated in all devices of the be4unity series to ensure secure, high-performance and highly available data connection of the plant. Alternatively the PV plant manager communicates also over existing internet connections in the local network. Especially in combination with the optional VPN router encrypted and certified communication channels through closed and open networks (intranets, internet) can be established. This allows providing secure remote maintenance channels for customers and technical management teams into the system and to individual devices (inverters, data server, surveillance camera, etc.) as well as VPN channels for network operators, dispatchers or direct marketing applications.

MONITORING AND SERVICE PLATFORM

On request be4unity series devices send high-resolution operational data of all connected equipment into the professional monitoring and service web portal be4vision. Additionally plants with existing data loggers and third-party data infrastructure can be integrated in this vendor-independent monitoring platform solution. This provides end users, electricians, technical operation teams as well as investors with all the tools for the efficient management and reporting of their plant portfolio, faster fault detection and service resource planning.

SYSTEM SOLUTIONS

With a modular hardware approach and continuous software development the be4unity platform allows for flexible and highly adaptive system solutions regarding grid or market integration, power control requirements, hybrid generator system control and distributed energy system monitoring.

Complex plant structures can be set up with several cross-linked data loggers, a central system controller and a system router. Our additional offers of hardware interfaces, sensors, outdoor high gain cellular antennas, power analyzers, housing for outdoor use, the planning of overall solutions, as well as project design and installation services help to design technically advanced, cost-effective and readily available solutions for your renewable installations and power plants.

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FEATURES			
Data Logger	●	●	●
LTE Cellular Modem	●	●	●
VPN Router	○	●	●
Remote Dispatching	○	●	●
Plant Control (open loop, active power)	●	●	●
Plant Control (full featured)	○	○	●
INTERFACES			
Digital Inputs (DI)	4	4	4 / 9 (1)
Relay Outputs (DO)	4	4	4 / 9 (1)
Impulse Counter (II)	1	1	1
4-20 mA Current Loop Input (AI)	-	-	1 (1)
4-20 mA Current Loop Output (AO)	-	-	1 (1)
Ethernet	1	1	1
USB	1	1	1
RS-485	1	2	2 / 5 (1)
RS-422	-	1	1 / 2 (1)
WLAN	0	1	1
LTE / UMTS Cellular Modem	1	1	1
Antenna Connector	2	2	2
24 Vdc Power Supply Input	1	1	1
SCOPE OF DELIVERY / ACCESSORIES			
24 Vdc Wall Plug Power Supply	●	●	●
LTE / UMTS Cellular Antenna	●	●	●
Outdoor High Gain Cellular Antenna	○	○	○
M2M SIM Card	○	○	○
Grid Analyzer (Ethernet)	-	-	○
Cabling Set (Cables, Clamps)	○	○	○
Outdoor Enclosure	○	○	○
DATA COMMUNICATION			
Interfaces	10/100 Mbit/s Ethernet, WLAN		
LTE Cellular Modem	supports LTE, HSDPA+, UMTS, EDGE, GPRS Mini-SIM card holder 2 x 1 SMA MIMO antenna connector		
VPN Client	up to 3 VPN connections, OpenVPN 2.3.10, TLSv1.2		
DATA LOGGER			
Inverters	see list of compatible inverter models		
Energy Counter / Grid Analyzer	impulse counter (up to 100 impulses per second) Janitza UMG 104 / UMG 604 generic: Modbus RTU / TCP interfaces		
Irradiance / Temperature Sensors	analog: 0 – 100 mV, 0 – 10 V, 4 – 20 mA digital: Modbus RTU / TCP		
Number of Devices	no limit (depending on control requirements for devices at one communication interface)		
Data Resolution	1 minute, mean values		

● integrated / ○ optional / - not available

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PLANT CONTROLLER	
Active Power Limiting Set Point Interface	analog: digital input channels, 4-20 mA digital: Modbus, IEC 60870-5-10X(2)
Active Power Limiting Feedback	analog: digital input channels, 4-20 mA digital: Modbus, IEC 60870-5-10X(2)
Active Power Control	closed loop, digital controller, measurement of grid parameters at grid connection point
Reactive Power / Power Factor Control	set point interfaces: analog: digital input channels, 4-20 mA digital: Modbus, IEC 60870-5-10X(2) closed loop, digital controller, measurement of grid parameters at grid connection point
Reactive Power Set Point Feedback	analog: digital input channels, 4-20 mA digital: Modbus, IEC 60870-5-10X(2)
Characteristic Curves	cos-phi(P), Q(U) configurable, online activation of different types via digital input signals possible, others on demand
HOUSING	
Material	ABS, plastic material
Color	light gray
Dimensions (W x H x D)	233 x 400 x 98 mm (incl. cable glands and antennas)
Mounting	wall fastening
Protection Degree	IP 44
AMBIENT CONDITIONS	
Storage Temperature	-20 … +60 °C
Operating Temperature	-20 … +50 °C
Humidity	0 ... 95% relative humidity (noncondensing)
POWER SUPPLY	
Protection Class	III
Power Supply	24 V dc (±10%)
Power Consumption	15 W (max.)

(1) Additional digital input contacts and relay channels (up to 9 input, 9 output channels) or upgrade with additional serial interfaces possible (5 x RS-485 or 2 x RS-422).

(2) project dependent, available upon request

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