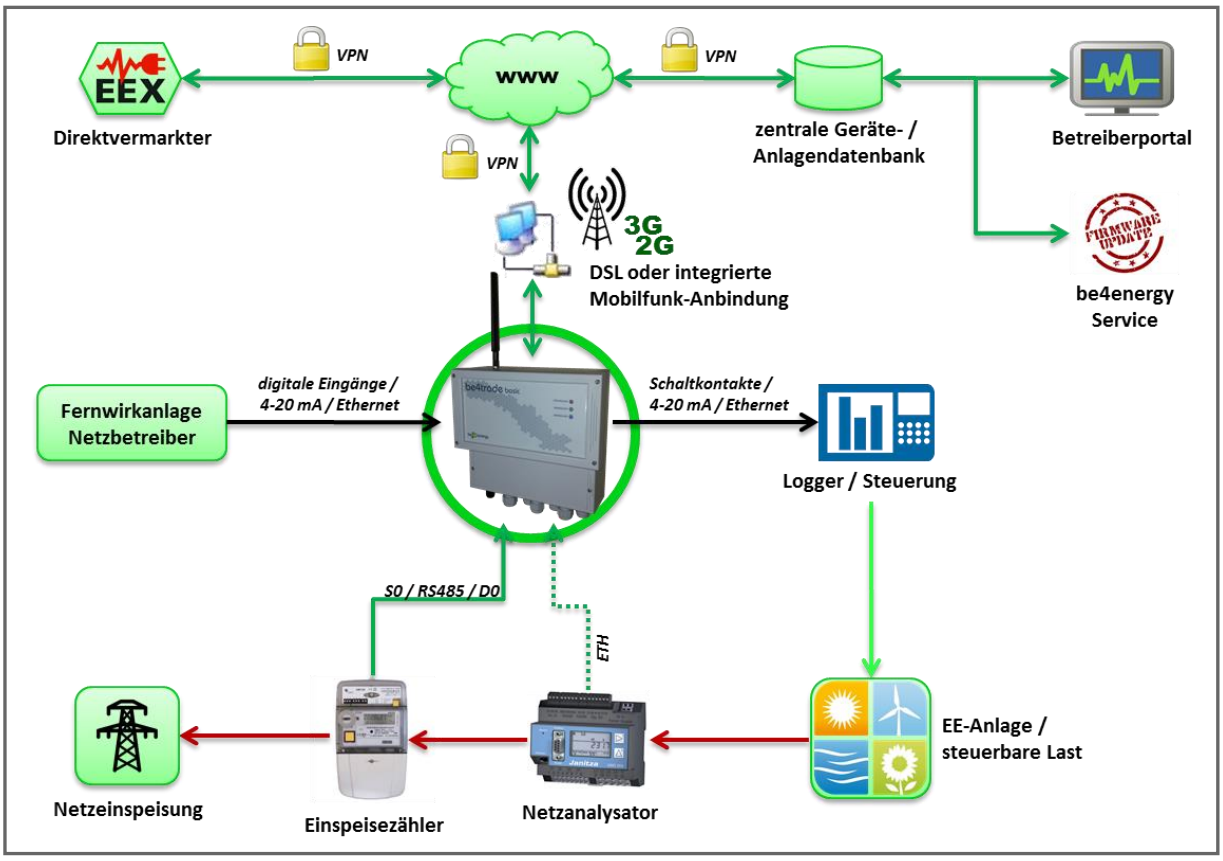
be4trade

Remote control technology for distributed and virtual power plants

The remote control solutions of the *be4trade series* comply with the current official requirements of the RES Act 2014 for remote controllability of renewable energy generators and additionally provide distributed power plants with flexibility for future marketing options of renewable energy.



System diagram of the remote control solution be4trade

Direktvermarkter= direct marketer; zentrale Geräte/Analogendatenbank = central device/plant database; DSL oder integrierte Mobilfink-Anbindung = DSL or integrated wireless connection; Fernwirkanlage = remote control unit; digitale Eingänge = digital inputs; Schaltkontakte = switch contacts; Logger/Steuerung = Logger/Control; Netzeinspeisung = Network supply/Grid feed-in; Einspeisezähler= feed-in meter; Netzanalysator = network analyzer; EE-Anlage/steuerbare Last = RE-Plant/Switchable loads

APPLICATIONS

Our three different device classes, which allow for diversification in functionality range, pricing and plant complexity, facilitate various applications of direct marketing (remote controllability obligation according to RES Act 2014). The remote meter read-out with the *be4trade remote* enables the flexible integration of distant and non-connectable meters. Complementary to each of our devices there is a matching software solution for simple configuration, notification and alarm management as well as pre-pooling of small scale plants right up to the marketing of balancing energy products.

be4energy GmbH | Köpenicker Str. 325 | Haus 11 | D-12555 Berlin
Telefon: +49 (0)30 6576 2450 | Fax: +49 (0)30 6576 2459
info@be4energy.com | www.be4energy.com

All remote control solutions of the *be4trade series* are developed specifically for deployment in the renewable energy fields of wind, photovoltaic, hydropower and biomass. Furthermore, combined heat and power plants, distributed energy storage devices and switchable loads, e.g. power2heat concepts, can be integrated using the remote control technology.

SECURITY

The data transmission security of the remote control solution is ensured by the standardized, remotely maintainable and encrypted transmission via virtual network technology (VPN) – also over public networks. The system relies on technologies and processes recommended by the German Federal Office for Information Security.

The grid operator has permanent access to the controllability of the plant. The plant constantly complies with the lower of the active power demands from the grid operator or the marketer. The grid operator can access the plant also during a lack of power supply (bypass function for digital and analog interfaces).

Monitoring

Every be4trade system provides grid operators with an easy-to-operate configuration interface. Moreover, notifications about control events, status messages and control reports via email can be configured. Connections to existing monitoring systems are offered via a FTP-Push of the devices to corresponding monitoring service providers.

For plant operators with extended RE-portfolio or electricity marketers with multiple remote control end points we offer access to a web portal, which supports the operation, verification of controllability, resource planning and the accounting of entire portfolios.

Sustainability

The be4trade series platform is designed with modular hardware concepts and iterative/agile software development, which allows future developments in the marketing of distributed energy systems to be integrated easily:

- Extensible hardware interfaces
- Upgradeable environmental and climate sensors/sensor technology
- Easily maintainable through software updates in the field
- Software applications for pooling of small scale plants
- Provision/development of services in reactive power and capacity markets
- Plant control for grid operators and marketers through a smart-meter-gateway

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Cost optimization

We bear in mind your business/economic efficiency and we wish not only to distribute reasonably priced devices but also to offer attractive overall solutions. Contact us, so that we can prepare a suitable offer for your power plants.

Request for proposal under: *www.be4energy.com/angebotsanfrage.html*

be4trade	remote	mini	basic	expert
INTERFACES				
digital inputs (DI)	-	4	4	4
Digital outputs (DO)	-	4	4	4
Impulse/pulse counter input (II)	1	1	1	1
Current loop input (AI)	-	-	-	1
Current loop output (AO)	-	-	-	1
Ethernet	1	1	1	1
USB	1	1	1	1
RS485	1	-	1	1
2G/3G[(1)] Wireless data modem	1	1	1	1
External antenna connection	1	1	1	1
Voltage supply 24V externally	1	1	1	1
REMOTE CONNECTION				
Open-VPN (Client)	●	●	●	●
MODBUS TCP	-	●	●	●
MODBUS RTU	-	-	-	●
IEC 60870-5-104	-	●	●	●
IEC 61850-7-420	-	-	-	o [(2)]
Temporal resolution (average values)	5 / 1 min	5 min	5 min	1 min
METER CONNECTION				
Optical probe (USB)	●	●	●	●
Impulse interface S0 (II)	●	●	●	●
MODBUS TCP (ETH)	●	●	●	●
OBIS (RS485)	o	-	-	o
PV-Data logger [(3)]	-	●	●	●
FUNCTIONS				
NSM / Feed-in management by grid operator	-	●	●	●
Curtailment/regulation through remote control access	-	●	●	●
Convey feed-in power	●	●	●	●
Fail-safe grid operator access	-	o	o	●
Device configuration (web interface)	●	●	●	●
Internet gateway for plant monitoring	o	o	o	●
SERVICES				
Device portal	-	o	o	o
Design/Engineering of the plant integration	o	o	o	o
Installation and commissioning	o	o	o	o
Plant controller test	o	o	o	o

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ACCESSORIES / DELIVERY CONTENT				
Optical meter probe	○	○	○	○
Transformer (via ETH)	○	-	-	○
M2M SIM-card	○	○	○	○
Mobile antenna	●	●	●	●
External directional antenna	○	○	○	○
24V power supply	●	●	●	●

● integrated / ○ optional / - not available

be4trade	remote	mini	basic	expert
HOUSING				
Material	Plastic, ABS			
Color	Light grey			
Dimensions (W x H x D) in mm	233 x 400 x 98 (incl. cable glands and antenna)			
Mounting	Wall			
Degree of protection	IP 44			
ENVIRONMENTAL CONDITIONS				
Storage temperature	-20 … +60 °C			
Operating temperature	-20 … +50 °C			
Air humidity	0 ... 95% rel. humidity (non-condensing)			
SUPPLY				
Protection class	III			
Voltage supply	24 V dc (±10%)			
Power consumption (max.)	10 W	10 W	10 W	12 W

(1) Upgrade to LTE possible

(2) Available on request

(3) Data logger connected via Ethernet. Supports so far: Solar data systems SolarLog, meteocontrol web'log, SMA Webbox, skytron energy skylog

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