

REMOTE POWER CONTROL (RPC) – SOLAR POWER TRADING BLUE'LOG XC



Item no.: 557.122 – 557.129

Simple switch from the EEG acceptance fee to the market premium model by extending your monitoring system with the interface Remote Power Control (RPC)

LICENSE DESCRIPTION

Remote Power Control (RPC) can be used to remotely reduce the feed-in power of a PV system, e.g. for the purpose of solar power trading. This is done in parallel with the grid operator's feed-in management, without influencing its control commands. The controller interprets the control signals, e.g. from the energy trader, and forwards them to the PV system with priority. The smaller setpoint command value always has priority.

In addition, master data and measured values can be retrieved via RPC, such as the legally required data of the current actual feed-in for solar power trading

The Remote Power Control (RPC) license enables this function on the controller blue'Log XC.

FEATURES

- + Communication via Modbus TCP interface
- + Simple switch to solar power trading by using existing interfaces
- + Interface certified according to VDE-AR-N 4110 / 4120
- + Visualization and long-term archiving of the control measures in the logbook via meteocontrol's portal for remote monitoring VCOM (Virtual Control Room)
- + Certified plant controller and solar power trading interface combined in one device
- + Compatible with a wide range of energy traders
- + Encrypted communication in combination with the integrated OpenVPN Client

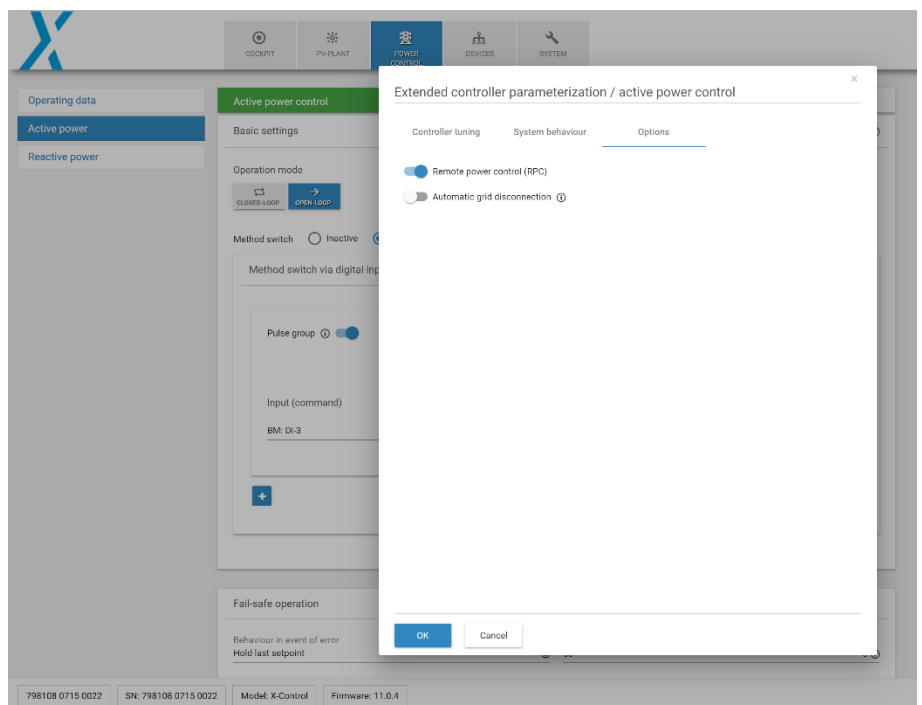
REQUIREMENTS

- + Controller blue'Log XC
- + Active power - / Feed-in management (Power Control) must be done by the controller blue'Log XC
- + Firmware \geq 6.0.2
- + License OpenVPN*
- + When using the license, the OpenVPN connection to the energy trader is established directly via the blue'Log. A VPN configuration in the router is therefore not necessary,
- + License Remote Power Control (RPC)*

- **Overview of license item numbers*:**

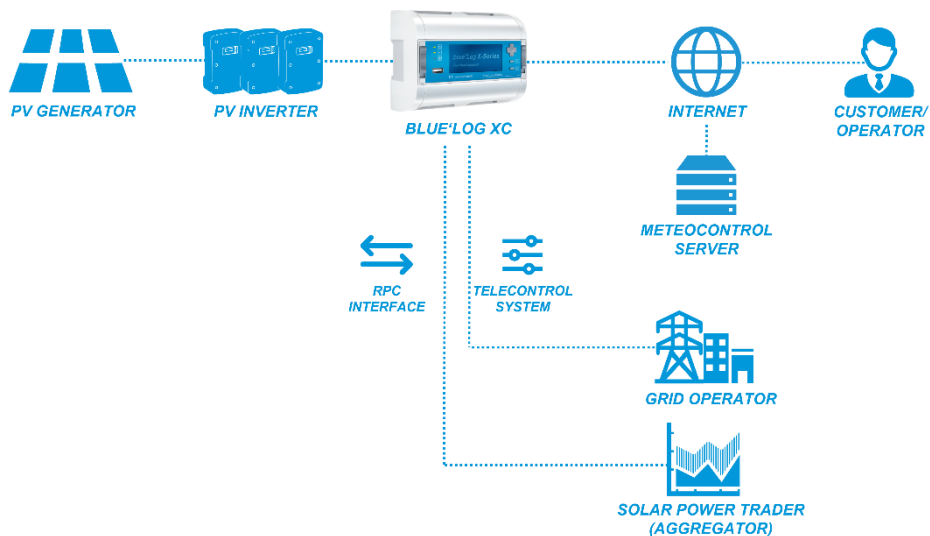
- 557.122 License Remote Power Control (RPC) \leq 200 kWp blue'Log XC
- 557.123 License Remote Power Control (RPC) \leq 1 MWp blue'Log XC
- 557.124 License Remote Power Control (RPC) \leq 3 MWp blue'Log XC
- 557.125 License Remote Power Control (RPC) \leq 5 MWp blue'Log XC
- 557.126 License Remote Power Control (RPC) \leq 10 MWp blue'Log XC
- 557.127 License Remote Power Control (RPC) \leq 20 MWp blue'Log XC
- 557.128 License Remote Power Control (RPC) \leq 50 MWp blue'Log XC
- 557.129 License Remote Power Control (RPC) \leq 100 MWp blue'Log XC
- 557.131 License Remote Power Control (RPC) Utility blue'Log XC

- + Configuration is done in the menu **Power Control > Active power > Extended controller parameterization > Options**



* The license is linked to a specific device. When ordering, please provide the 14-digit hardware serial number of the controller blue'Log XC.

COMMUNICATION SCHEME



VPN ENCRYPTED COMMUNICATION

An additional VPN router is not necessary for the secured VPN data transmission to the energy trader. You only need the license OpenVPN to unlock the integrated OpenVPN client from blue'Log XC.

- + 557.005 License OpenVPN blue'Log XM/XC

We will provide gladly the required VPN certificates for you if needed

- + 428.098 Certificate for solar power trading system

MODBUS SPECIFICATION

Communication parameter

- + Slave-Adresse (Client-ID): 10
- + Port: 502
- + Delay: 1.000 ms

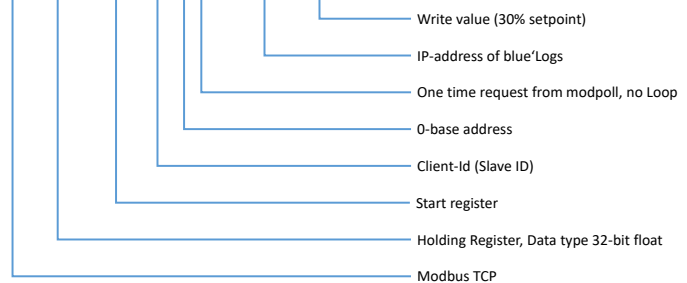
General register definition

- + Missing values int: 0x80000000 | float: 0x7fc00000
- + Read values: Function Code 03 - Read Holding Registers
- + Write values: Function Code 16 - Preset Multiple Registers
- + Register and Byte order
 - The word order is low register before high register (Little-Endian)
 - The byte order is high byte before low byte (Big-Endian) → 0xCCDDAABB

Write of 30% setpoint command for Remote Power control

Following write command is built with the open source tool modpoll

```
modpoll -m tcp -t4:float -r 5000 -a 10 -1 192.168.30.162 30
```



WRITE AND READ VALUES

Address	Data type ¹⁾	Designation	Description	Unit	Value range
5000	float 32	PPC_P_SET_RPC_REL	Setpoint command via Remote Power Control	%	-10.000.00 ... 125.000 % ²⁾
Register 5002 to 5005 are reserved but it is possible to write / read them since Firmware 16.0.4					
5006	float 32	PPC_RPC_VALID_TIME	Valid time of setpoint command	min	1 ... 255 min (Default: 10 min)
5008	float 32	PPC_RPC_WATCHDOG	Watchdog register	-	-

- If the setpoint is written to register 5000, it remains valid for the valid time (register 5006)
- A further setpoint command resets the expiration timer and the setpoint command is active again for the valid time (register 5006)
- Alternatively, register 5008 (watchdog) can be written instead of sending a new setpoint command to reset the expiration timer
- In case a new value gets written into register 5006 this will reset the expiration timer
- If the watchdog register is written after the valid time has expired, the setpoint remains invalid and a new setpoint command must be set

¹⁾ Little Endian, byte swapped.

²⁾ Write values between 100.000 ... 125.000 % from firmware 15.1.8. Write values between -10.000.000 ... 0 % from firmware 23.2.11.

READ VALUES

Address	Data type ¹⁾	Designation	Description	Unit	Value range
0	float 32	PPC_P_AC_INV	Sum of actual inverter active power	W	0... 1,000,000,000.000 W
2	float 32	PPC_P_AC	Actual active power	W	Value from power analyzer ¹⁴⁾
4	float 32	PPC_P_SET_REL	Actual valid active power setpoint	%	-10,000.000 ... 125.000 % ³⁾
6	float 32	PPC_P_SET_GRIDOP_REL	Relative active power setpoint (grid operator)	%	-10,000.000 ... 125.000 % ³⁾
8	float 32	PPC_P_SET_RPC_REL	Relative active power setpoint (3rd party, e.g. Energy trader)	%	-10,000.000 ... 125.000 % ³⁾
10	float 32	PPC_P_AC_GRIDOP_MAX	Maximum active power at power limitation (grid operator) ⁴⁾	W	0... 1,000,000,000.000 W
12	float 32	PPC_P_AC_RPC_MAX	Maximum active power at power limitation (3rd party) ⁵⁾	W	0... 1,000,000,000.000 W
14	float 32	PPC_P_SET_MODUS	Actual active power setpoint mode ⁶⁾	-	0: No configuration found 1: Fixed value method without interface (continuous limitation) 2: Fixed value method via DI 3: Fixed value method via AI 4: Fixed value method via Modbus 5: Remote Power Control (RPC) 100: LFSM-O ⁷⁾ 101: LFSM-U ⁸⁾ 102: FSM ⁹⁾ 200: Fail-safe operation (last valid setpoint) 201: Fail-safe operation (default setpoint) 202: Fail-safe operation (system fallback setpoint) 203: Fail-safe operation (Automatic grid disconnection)
16	float 32	PPC_P_SET_LFSMO_REL	Relative active power setpoint (LFSM-O)	%	
18	float 32	PPC_P_SET_LFSMU_REL	Relative active power setpoint (LFSM-U)	%	
20	float 32	PPC_GHI	Actual global irradiation ¹⁰⁾	W/m ²	
22	float 32	PPC_T_AMBIENT	Actual ambient temperature ¹¹⁾	°C	
24	float 32	PPC_P_AC_AVAIL	Available active power ⁹⁾	W	
26	float 32	PPC_Q_AC_AVAIL	Available reactive power ⁹⁾	Var	
28	float 32	PPC_INV_INST	Number of installed inverters ¹²⁾	-	
30	float 32	PPC_INV_AVAIL	Number of active inverters ¹³⁾	-	

³⁾ Read values between 100.000 ... 125.000 % from firmware 15.1.8. Read values between -10.000.000 ... 0 % from firmware 23.2.11.

⁴⁾ $PPC_P_AV \times PPC_P_SET_GRIDOP_REL$ ($P_{AV} = 1.000.000$ W, $PPC_P_SET_GRIDOP_REL = 50$ % \rightarrow $PPC_P_AC_GRIDOP_MAX = 500.000$ W).

⁵⁾ $PPC_P_AV \times PPC_P_SET_RPC_REL$ ($P_{AV} = 1.000.000$ W, $PPC_P_SET_RPC_REL = 60$ % \rightarrow $PPC_P_AC_RPC_MAX = 600.000$ W).

⁶⁾ From Firmware 16.0.4

⁷⁾ From Firmware 17.0.11

⁸⁾ From Firmware 19.2.10

⁹⁾ From Firmware 25.0.13

¹⁰⁾ From Firmware 23.0.8

¹¹⁾ From Firmware 23.0.8

¹²⁾ From firmware 29.0.9

¹³⁾ From firmware 29.0.9

Register 32 to 99 are reserved					
Address	Data type ¹⁾	Designation	Description	Unit	Value range
100	int 32	PPC_P_AC_INV	Sum of actual inverter active power	W	0... 1,000,000,000.000 W
102	int 32	PPC_P_AC	Actual active power	W	Value from power analyzer ¹⁴⁾
104	int 32	PPC_P_SET_REL	Actual valid active power setpoint	%	-10,000.000 ... 125.000 % ³⁾
106	int 32	PPC_P_SET_GRIDOP_REL	Relative active power setpoint (grid operator)	%	-10,000.000 ... 125.000 % ³⁾
108	int 32	PPC_P_SET_RPC_REL	Relative active power setpoint (3rd party, e.g. Energy trader)	%	-10,000.000 ... 125.000 % ³⁾
110	int 32	PPC_P_AC_GRIDOP_MAX	Maximum active power at power limitation (grid operator) ⁴⁾	W	0... 1,000,000,000.000 W
112	int 32	PPC_P_AC_RPC_MAX	Maximum active power at power limitation (3rd party) ⁵⁾	W	0... 1,000,000,000.000 W
114	int 32	PPC_P_SET_MODUS	Actual active power setpoint mode ⁶⁾	-	0: No configuration found 1: Fixed value method without interface (continuous limitation) 2: Fixed value method via DI 3: Fixed value method via AI 4: Fixed value method via Modbus 5: Remote Power Control (RPC) 100: LFSM-O ⁷⁾ 101: LFSM-U ⁸⁾ 102: FSM ⁹⁾ 200: Fail-safe operation (last valid setpoint) 201: Fail-safe operation (default setpoint) 202: Fail-safe operation (system fallback setpoint) 203: Fail-safe operation (Automatic grid disconnection)
116	int 32	PPC_P_SET_LFSMO_REL	Relative active power setpoint (LFSM-O)	%	
118	int 32	PPC_P_SET_LFSMU_REL	Relative active power setpoint (LFSM-U)	%	
120	int 32	PPC_GHI	Actual global irradiation ¹⁰⁾	W/m ²	
122	int 32	PPC_T_AMBIENT	Actual ambient temperature ¹¹⁾	°C	
124	int 32	PPC_P_AC_AVAIL	Available active power ⁹⁾	W	
126	int 32	PPC_Q_AC_AVAIL	Available reactive power ⁹⁾	Var	
128	int 32	PPC_INV_INST	Number of installed inverters ¹²⁾	-	
130	int 32	PPC_INV_AVAIL	Number of active inverters ¹³⁾	-	
Register 132 to 3999 are reserved					
4000	float 32	PPC_P_AV	Agreed connected active power P _{AV}	W	0... 1,000,000,000.000 W

Further information: www.meteocontrol.com

¹⁴⁾ Negative values = import, positive values = export.