



String.Bloxx 116 EM 1000-1500V Modbus RTU register mapping

1 Related products

String.bloxx 116 EM 1000V

String.bloxx 116 EM 1500V

2 Protocol Description

Protocol: Modbus RTU

Speed: 1200 -38.4K Baud (see Register 30210) default 19k2

Format: 8n1, 8e1, 8o1 (see Register 30210) default 8n1

Byte Ordering: MSB

Word Ordering: LSB

Address Range: 1-254 (0 Broadcast Address)

Maximum Frame Length: 128 Bytes

Supported Function-Codes:

- 03: read register data (Single/Multiple Access)
- 04: read register data (Single/Multiple Access)
- 06: write to R/W register (Single Register Access)

Register Access: R = read only, R/W = read + write,

R/W+P = read + write + store permanently

3 Setup Modbus Address at the hardware device



The modbus address can be set via the two turning-switches. The right switch sets the one's, the left one sets the ten's.

Example: 1 2 = 12

Range: 1 – 99

Address 0: are both switches set to zero, address 247 will be set automatically



4 Register-Mapping

Register	Datatype	Channel (Description)	Values	Unit	R/W
30001	uint16	digital input 01 (main switch)	0,1 OFF,ON		R
30002	uint16	digital input 02 (1000VDC overvoltage protection)	0,1 NOK,OK		R
30005, 30006	float32	current 01	-4,50 ... +30,00	A	R
30007, 30008	float32	current 02	-4,50 ... +30,00	A	R
30009, 30010	float32	current 03	-4,50 ... +30,00	A	R
30011, 30012	float32	current 04	-4,50 ... +30,00	A	R
30013, 30014	float32	current 05	-4,50 ... +30,00	A	R
30015, 30016	float32	current 06	-4,50 ... +30,00	A	R
30017, 30018	float32	current 07	-4,50 ... +30,00	A	R
30019, 30020	float32	current 08	-4,50 ... +30,00	A	R
30021, 30022	float32	current 09	-4,50 ... +30,00	A	R
30023, 30024	float32	current 10	-4,50 ... +30,00	A	R
30025, 30026	float32	current 11	-4,50 ... +30,00	A	R
30027, 30028	float32	current 12	-4,50 ... +30,00	A	R
30029, 30030	float32	current 13	-4,50 ... +30,00	A	R
30031, 30032	float32	current 14	-4,50 ... +30,00	A	R
30033, 30034	float32	current 15	-4,50 ... +30,00	A	R
30035, 30036	float32	current 16	-4,50 ... +30,00	A	R
30037, 30038	float32	total current	-72 ... +480,00	A	R
30039, 30040	float32	voltage 01	0-1500,0	V	R
30041, 30042	float32	power		W	R
30043, 30044	float32	internal temperature	-20,0 +100,0	°C	R
30045, 30046	float32	temperature 2	-	°C	R
30051, 30052	uint32	firmware date	0xDDMMYYYY Example: 0x0405.07DB 04.05.2011		R
30053, 30054	uint32	software version	0xBMMNN Example: 0x1251.0100 V100.1251		R
30201	uint16	device identification	2021		R
30203	uint16	serial-number Low	14148		R/W
30204	uint16	serial-number High	4		R/W
30206	uint16	modbus address	1-254		R/W
30209	uint16	Response delay, [ms]	0 – 250ms		R/W P
30210	uint16	parity / baudrate, [bps]	values decimal: 0 – 5 -> 8n1 100 – 105 -> 8e1 200 – 205 -> 8o1 baudrates 0 100 200 = 1200, 1 101 201 = 2400, 2 102 202 = 4800, 3 103 203 = 9600, 4 104 204 = 19.2k, 5 105 205 = 38.4k, 6 106 206 = 57k, 7 107 207 = 115.2k, 4 = default		R/W P



5 Device Identifiers

- 2005: string.bloxx 108
- 2006: string.bloxx 116
- 2007: string.bloxx 208
- 2008: string.bloxx 124
- 2009: string.bloxx AIO 24/12
- 2010: string.bloxx 116 E
- 2011: string.bloxx 116 E 1500V
- 2012: string.bloxx 124 E
- 2013: string.bloxx 124 E 1500V
- 2014: string.bloxx 124 EM
- 2015: string.bloxx 124 EM 1500V
- 2016: z.bloxx 406
- 2017: z.bloxx 407 Temperatur
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- 2020: string.bloxx 116 EM
- 2021: string.bloxx 116 EM 1500V

6 High current measurement up to 50A

Using two inputs of the string.bloxx module allows for connection and measurement of high current PV strings (up to 50A). (Details described further down in this chapter “High current measurement up to 50A”)

Register 30405 to 30420:

Register	Datatype	Channel (Description)	Values	Unit	R/W
30405, 30406	float32	combined current IN1, IN2	-9,0 ... +60,00	A	R
30407, 30408	float32	combined current IN3, IN4	-9,0 ... +60,00	A	R
30409, 30410	float32	combined current IN5, IN6	-9,0 ... +60,00	A	R
30411, 30412	float32	combined current IN7, IN8	-9,0 ... +60,00	A	R
30413, 30414	float32	combined current IN9, IN10	-9,0 ... +60,00	A	R
30415, 30416	float32	combined current IN11, IN12	-9,0 ... +60,00	A	R
30417, 30418	float32	combined current IN13, IN14	-9,0 ... +60,00	A	R
30419, 30420	float32	combined current IN15, IN16	-9,0 ... +60,00	A	R

The combined current register allows for high current PV-strings (up to 50A, up to 8 high current strings on the 116EM version) to be measured. The input string is split onto two channels on the string.bloxx module. Each input is measured precisely and then two channels (IN1 and IN2, IN3 and IN4, ...) are added and stored in a separate “combined current” register to allow direct access to the current of the high current PV string. The data from this register can be used directly without further mathematical operations.

For better understanding see scheme below:

