Multi-channel Circuit Metering System

BJ-MCM2401

MODBUS register map

Version：1.2

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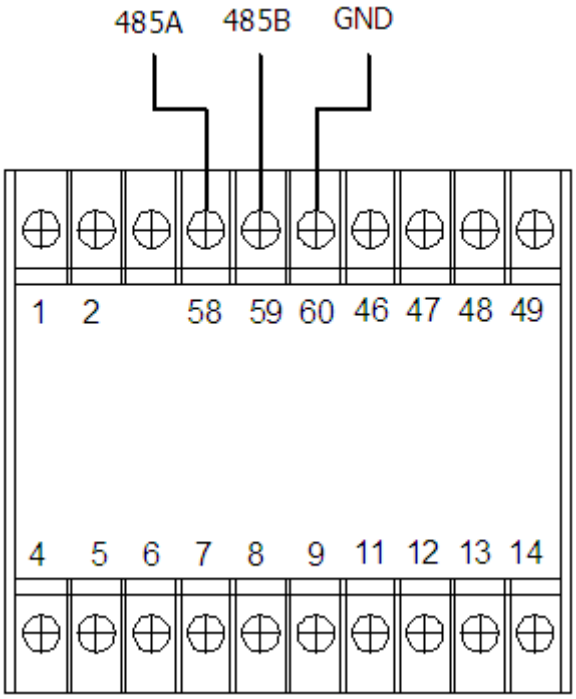
5. - COMMUNICATION PROTOCOL

5.1. - Connection for the RS485 BUS

The composition of the RS-485 cabling must be carried out with a meshed screen cable (minimum 3 wire), diameter of not less than 0.5mm^2, with a maximum distance of 1,200 m between the BJ194… and the master unit. This Bus may connect a maximum of 32 BJ194…



Note:

1. For communication with the master unit, customers can choose the RS-232 to RS-485 converter to use

2. Full range of BJ-… meter RS485 PIN number is 58,59,60

3. Due to product modifications or custom requirements, the interface pin place may be changed. For details, please refer to product label on the rear board

5.2. - MODBUS © protocol

Modbus RTU Frame Format:

Address code	**1 BYTE**	*Slave device address **1-247***
Function code	**1 BYTE**	*Indicates the function codes like read coils / inputs*
Data code	**4 BYTE**	*Starting address, high byte* *Starting address, low byte* *Number of registers, high byte* *Number of registers, low byte*
Error Check code	**2 BYTE**	*Cyclical Redundancy Check (**CRC**)*

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MODBUS FUNCTIONS

Code:	**Meaning:**	**Description:**
FUNCTION 03	Reading of n Words	*This function permits to read all the electrical parameters of the BJ194…series.*
FUNCTION 06	Preset single Registers	*Write value in to the relevant register*

5.3. - Register Map

5.3.1- Basic Power Data—Primary Side (Read only)

Address	Data	Byte mode		Instruction
0	CH1_U	float	2	Channel_1 Phase to Line Voltage, Unit: V
2	CH1_I	float	2	Channel_1 Current, Unit: A
4	CH1_P	float	2	Channel_1 active power, Unit: kW
6	CH1_Q	float	2	Channel_1 reactive power, Unit: kVar
8	CH1_S	float	2	Channel_1 apparent power, Unit: kVA
10	CH1_PF	float	2	Channel_1 Total power factor, 0~1.000
12	CH1_FR	float	2	Channel_1 Frequency, Unit:0.01Hz
14	CH1_EpZ+	float	2	Channel_1 positive active energy, Unit: kWh
16	CH1_EpZ-	float	2	Channel_1 negative active energy, Unit: kVarh
18	CH1_EqZ+	float	2	Channel_1 positive reactive energy, Unit: kVarh
20	CH1_EqZ-	float	2	Channel_1 negative reactive energy, Unit: kWh
22-42	CH2 parameter	float	2	Structure refer to Channel_1
44-64	CH3 parameter	float	2	
……	/	/	/	
242-262	CH12 parameter	float	2	

5.3.2- Meter status data, Read & Write (Disabled)

Address	Data	Byte mode		Instruction	Status
1200	Digital output	int	1	0: without act 1: active for trig	R
1202	Alarm	int	1	0: without alarm 1: Alarm trigged Bit 0~4 show Alarm_1~5 status	R
1203	DO working mode	int	1	0: Remote control 1: Related to Alarm_1 2: Related to Alarm_2 3: Related to Alarm_3 4: Related to Alarm_4 5: Related to Alarm_5 6: trig to closed 7: trig to opened	R/W
1204	DO time delay	int	1	In alarm mode: 0.0-999.9sec In remote control mode: 0 for Level output: other value for pulse width 0.1-999.9sec	R/W
1240	Wiring mode	int	1	0: 3P4W 1: 3P3W-2CT 2: 3P3W-3CT	R
1241	Voltage range	int	1	Unit: V	R
1242	Current range	int	1	Unit: mA	R
1243	PT ratio	int	1	Range: 1-9999	R
1244	CT of CH1	int	1	Range: 1-9999	R
1245	CT of CH2	int	1	Range: 1-9999	R
1246	CT of CH3	int	1	Range: 1-9999	R
1247	CT of CH4	int	1	Range: 1-9999	R

5.3.3 - Voltage harmonic (max 21th) , Read Only

Address	Data	Byte mode		Instruction
1300	THDU	int	1	Voltage THD, unit 0.1%
1301	TOHDU	int	1	Voltage odd harmonic total distortion, unit 0.1%
1302	TEHDU	int	1	Voltage even harmonic total distortion, unit 0.1%
…	/	/	/	Reserved
1310-1329	HU	int	1	Voltage harmonic ratio for 2 to 21th, unit 0.1%

5.3.4 - Current harmonic (max 21th), Read Only

Address	Data	Byte mode		Instruction
1400	THDI1	int	1	Channel_1 Current THD, unit 0.1%
1401	/	/	/	Reserved
1402	/	/	/	Reserved
1403	TOHDI1	int	1	Channel_1 Current odd harmonic total distortion, unit 0.1%
1404	/	/	/	Reserved
1405	/	/	/	Reserved
1406	TEHDI1	int	1	Channel_1 Current even harmonic total distortion, unit 0.1%
1407	/	/	/	Reserved
1408	/	/	/	Reserved
1410-1429	HI1	int	20	Channel_1 Current harmonic ratio for 2 to 21th, unit 0.1%
1430-1459	CH2 Harmonic	int	20	Structure refer to Channel_1
1460-1489	CH3 Harmonic	int	20	
……	/	//		
1730-1759	CH12 Harmonic	int	20	

5.3.5 – Special operation (Disabled)

Address	Data	Byte mode		Instruction	Status
3000	Reset energy counter	int	1	Send code 0x0A0A (DEC 2570) to clear all the energy counter	W