

AC/DC Current And Voltage Type Intelligent Power Transducer, Temperature Transducer/Sensor/

Instruction For Use

▲ 1. Physical Interface And Functional Features:

- 1.1 Serial communication uses RS485.
- 1.2 The transmission mode is half-duplex asynchronous, with 1 start bit, 8 data bits, 1 stop bit, and no parity check.
- 1.3 The address is factory-default 01H, and the baud rate is default 9600bps.
- 1.4 In the bus devices, this sensor is a slave device, with current (or voltage) input, standard RS-485 digital interface output, achieving interconnection with computers or other upper computers, widely used in power, communication, transportation, environmental protection, petrochemical, steel and other fields, for detecting the current or voltage consumption of AC/DC equipment.
- 1.5 It adopts industrial-grade imported chips with professional algorithms, with high precision.
- 1.6 It has automatic thermal shutdown and ESD protection functions.
- 1.7 Multiple power supply options are available, including DC12V, DC15V, DC24V, 220V, etc.
- 1.8 Multiple installation methods are available, including standard rail installation, flat screw fixation, detachable open structure, PCB welding installation, etc.
- 1.9 It adopts new electromagnetic isolation and photoelectric isolation technologies, with low power consumption.
- 1.10 The average working time is greater than 100,000 hours, and the working environment temperature is -20°C to 80°C.
- 1.11 It supports special customization of input range, output type, and working power supply parameters.

▲ 2. Example Of Reading Data Command:

2.1 Single-Channel Input Transmitter COMMAND (Downstream Command)

A. Format For Sending Read Commands:

From Machine Address	Function Code	Data Start (H)	Data Start (L)	Number Of Data (H)	Number Of Data (L)	CRC-L	CRC-H
01H	03H	00H	0EH	00H	01H	E5H	C9H

RETURN (Return Information):

From Machine Address	Function Code	Data Data Length	Data H	Data L	CRC-L		CRC-H
01H	03H	02H	08H	CBH	FEH		13H

2.2 Dual-Channel Input Transmitter COMMAND (Downstream Command):

From Machine Address	Function Code	Data Start (H)	Data Start (L)	Number Of Data (H)	Number Of Data (L)	CRC-L	CRC-H
01H	03H	00H	0EH	00H	02H	E5H	C9H

RETURN (Return Information):

From Machine Address	Function Code	Data Data Length	Data 1H	Data 1L	Data 2H	Data 2L	CRC-L	CRC-H
01H	03H	04H	08H	CBH	FEH	13H	FEH	13H

2.3 Three-Input Transmitter COMMAND (Downstream Command):

From Machine Address	Function Code	Data Start (H)	Data Start (L)	Number Of Data (H)	Number Of Data (L)	CRC-L	CRC-H
01H	03H	00H	0EH	00H	03H	64H	08H

RETURN (Return Information):

From Machine Address	Function Code	Data Data Length	Data 1H	Data 1L	Data 2H	Data 2L	Data 3H	Data 3L	CRC-L	CRC-H
01H	03H	06H	08H	CBH	08H	CBH	08H	CBH	84H	96H

Explanation: For The Specified Range ≤ 300, Two Decimal Places Are Retained; For The Range > 300, One Decimal Place Is Retained.

▲ 3. Example Of Command For Modifying Address (Station Number) (Function Code 06): (The Slave Address Is Changed From The Current ADD1 To ADD2)

COMMAND (Downloading Command):

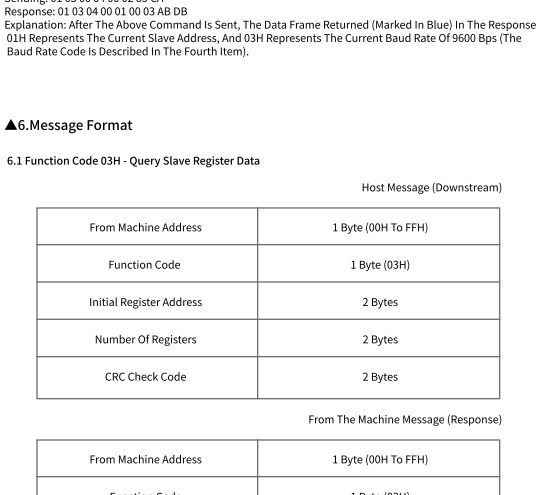
From Machine Address	Function Code	Initial Register Address		The Data Written Into The Register		CRC-L	CRC-H
01H (ADD1)	06H	00H	04H	00H	02H (ADD2)	49H	CAH

RETURN (Return Information):

From Machine Address	Function Code	Initial Register Address		The Data Written Into The Register		CRC-L	CRC-H
01H (ADD1)	06H	00H	04H	00H	02H (ADD2)	49H	CAH

Example Of Modification:
For Instance: The Address 01 Is Changed To 02.
Sending: 01 06 00 04 00 02 49 CA
Response: 01 06 00 04 00 02 49 CA
Then The Original Address 01 Has Been Successfully Modified To 02. Note:

- 3.1. The Command ADD1 Represents The Original Address Number Of The Transmitter, While ADD2 Is The New Address Number To Be Changed. After Changing The Address, The Device Needs To Be Powered Off And Restarted For The Change To Take Effect.
- 3.2. The Default Factory Address Of The Sensor Is 01H. The Range For ADD1 And ADD2 Is 00 To FEH, Totaling 255 Addresses That Can Be Modified. It Is Important To Note That Users Must Not Change The Address To FFH.
- 3.3. If You Are Unsure Of The Current Address Of The Transmitter, You Can Use An Automatic Search Software To Locate The Current Address As Shown In The Following Figure:



▲ 4. Example Of Modifying The Baud Rate Command (Function Code 06): (Change The Baud Rate To 4800 Bps)

Explanation: COMMAND (Downloading Command):

From Machine Address	Function Code	Initial Register Address		The Data That Is About To Be Written Into The Register		CRC-L	CRC-H
01H	06H	00H	05H	00H	30H	99H	DFH

RETURN (Return Information):

From Machine Address	Function Code	Initial Register Address		The Data That Is About To Be Written Into The Register		CRC-L	CRC-H
01H	06H	00H	05H	00H	30H	99H	DFH

Example Of Modification:
For Instance: Change The Baud Rate From 9600 Bps To 4800 Bps
Send: 01 06 00 05 00 30 99 DF
Response: 01 06 00 05 00 30 99 DF
Then, Change The Original Baud Rate Of 9600 Bps To 38400 Bps. The Modification Takes Effect Upon Restart And Is Saved Upon Power Loss.

4.1 List Of Baud Rate Commands As Follows:

Baud Rate	1200	2400	4800	9600	19200	38400	57600	115200
Corresponding Code	0H	1H	2H	3H	4H	5H	6H	7H

▲ 5. Example Of Reading Transmitter Address And Baud Rate Command (Function Code 03)

COMMAND (Downloading Command):

From Machine Address	Function Code	Initial Register Address		Number Of Registers		CRC-L	CRC-H
01H	03H	00H	04H	00H	02H	85H	CAH

RETURN (Return Information):

						8: 256000	
	Reading And Writing	22	2	16-Bit Signed Integer	Verification Method	0: None 1: Odd parity 2: Even parity	
	Reading	23	2	32-Bit Integer	Upper Limit Value Of	-32768~32767	

Example Of Modification:
For Instance: Reading The Transmitter Address And Baud Rate
Sending: 01 03 00 04 00 02 85 CA
Response: 01 03 04 00 01 00 03 AB DB
Explanation: After The Above Command Is Sent, The Data Frame Returned (Marked In Blue) In The Response: 01H Represents The Current Slave Address, And 03H Represents The Current Baud Rate Of 9600 Bps (The Baud Rate Code Is Described In The Fourth Item).

▲ 6. Message Format

6.1 Function Code 03H - Query Slave Register Data

Host Message (Downstream)

From Machine Address	1 Byte (00H To FFH)
Function Code	1 Byte (03H)
Initial Register Address	2 Bytes
Number Of Registers	2 Bytes
CRC Check Code	2 Bytes

From The Machine Message (Response)

From Machine Address	1 Byte (00H To FFH)
Function Code	1 Byte (03H)
Number Of Bytes In Data Area	1 Byte
Data Area	2 * Register Digit Bytes Register Content
CRC Check Code	2 Bytes

6.2 Function Code 06H - Setting Data For Slave Unit

Host Message (Downstream)

From The Machine Address	1 Byte (00H To FFH)
Function Code	1 Byte (06H)
Register Address	2 Bytes
The Data Written Into The Register	The Number Of Bytes = 2 * The Number Of Registers
CRC Check Code	2 Bytes

From The Machine Message (Response)

From Machine Address	1 Byte (Data Written To The Register)
Function Code	1 Byte (06H)
Register Address	2 Bytes
Number Of Registers	2 Bytes
CRC Check Code	2 Bytes

▲ 7. Register Explanation

Function Code	Attribute	Address	Byte Count	Data Type	Name	Content And Examples	Factory Settings
03/04	Read-Only	14	2	16-Bit Signed Integer	Output Value Of Range Change In Channel 1	After the range is changed, it is a 16-bit signed data. Please note that during the setting of the upper and lower limits, they should not exceed the range of -32768 to 32767.	
	Read-Only	15	2	16-Bit Signed Integer	Output Value Of Range Change In Channel 2	After the range is changed, it is a 16-bit signed data. Please note that during the setting of the upper and lower limits, they should not exceed the range of -32768 to 32767.	
	Read-Only	16	2	16-Bit Signed Integer	Output Value Of Range Change In Channel 3	After the range is changed, it is a 16-bit signed data. Please note that during the setting of the upper and lower limits, they should not exceed the range of -32768 to 32767.	
	Reading And Writing	05	2	16-Bit Signed Integer	Baud Rate	0: 1200 1: 2400 2: 4800 3: 9600 4: 19200 5: 38400 6: 57600 7: 115200 8: 256000	03
	Reading And Writing	22	2	16-Bit Signed Integer	Verification Method	0: None 1: Odd parity 2: Even parity	
03/04 06/16	Reading And Writing	23	2	32-Bit Floating-Point Type's Lower 16 Bits	Upper Limit Value Of Range Change For Channel 1	-32768~32767	
	Reading And Writing	24	2	32-Bit Floating-Point 16-Bit High-Re Solution	Upper Limit Value Of Range Change For Channel 1		
	Reading And Writing	25	2	32-Bit Floating-Point Type's Lower 16 Bits	Lower Limit Value Of The Lower Range Of Channel 1 For Range Transformation	-32768~32767	
	Reading And Writing	26	2	32-Bit Floating-Point 16-Bit High-Re Solution	Upper Limit Value Of The Lower Limit For Range Change In Channel 1		
	Reading And Writing	27	2	32-Bit Floating-Point Type's Lower 16 Bits	Upper Limit Value Of Range Change For Channel 2	-32768~32767	
	Reading And Writing	28	2	32-Bit Floating-Point 16-Bit High-Re Solution	Upper Limit Value Of Range Change For Channel 2		
	Reading And Writing	29	2	32-Bit Floating-Point Type's Lower 16 Bits	Lower Limit Value Of The Lower Range Of Channel 2 During Range Transformation		
	Reading And Writing	30	2	32-Bit Floating-Point 16-Bit High-Re Solution	Lower Limit Value Of The Lower Range Of Channel 2 During Range Transformation		
	Reading And Writing	31	2	32-Bit Floating-Point Type's Lower 16 Bits	Upper Limit Value Of Range Change For Channel 3	-32768~32767	
	Reading And Writing	32	2	32-Bit Floating-Point 16-Bit High-Re Solution	Upper Limit Value Of Range Change For Channel 3		
	Reading And Writing	33	2	32-Bit Floating-Point Type's Lower 16 Bits	Lower Limit Value Of The Lower Range Of Channel 3 For Range Conversion	-32768~32767	
	Reading And Writing	34	2	32-Bit Floating-Point 16-Bit High-Re Solution	Lower Limit Value Of Range Change For Channel 3 Is High.		
	Reading And Writing	37	2	32-Bit Floating-Point Type's Lower 16 Bits	Channel 1 Channel Ratio Value Low Position		
	Reading And Writing	38	2	32-Bit Floating-Point 16-Bit High-Re Solution	Channel 1 Channel Ratio Value Is High.		
	Reading And Writing	39	2	32-Bit Floating-Point Type's Lower 16 Bits	Channel 1 Channel Offset Value Low Byte		
	Reading And Writing	40	2	32-Bit Floating-Point 16-Bit High-Re Solution	Channel 1 Channel Offset Value High Byte		
	Reading And Writing	41	2	32-Bit Floating-Point Type's Lower 16 Bits	Channel 2 Channel Ratio Value Low Position		
	Reading And Writing	42	2	32-Bit Floating-Point 16-Bit High-Re Solution	Channel 2 Channel Ratio Value Is High.		
	Reading And Writing	43	2	32-Bit Floating-Point Type's Lower 16 Bits	Channel 2 Channel Offset Value Low Byte		
	Reading And Writing	44	2	32-Bit Floating-Point 16-Bit High-Re Solution	Channel 2 Channel Offset Value High Byte		
	Reading And Writing	45	2	32-Bit Floating-Point Type's Lower 16 Bits	Channel 3 Channel Ratio Value Low Position		
	Reading And Writing	46	2	32-Bit Floating-Point 16-Bit High-Re Solution	Channel 3 Channel Ratio Value Is High.		
	Reading And Writing	47	2	32-Bit Floating-Point Type's Lower 16 Bits	Channel 3 Channel Offset Value Low Byte		
	Reading And Writing	48	2	32-Bit Floating-Point 16-Bit High-Re Solution	Channel 3 Channel Offset Value High Byte		

Read Data Instruction: 01 03 00 0E 00 01 E5 C9

Read Baud Rate And Address Command: 01 03 00 04 00 02 85 CA

Modify Address Instruction: 01 06 00 04 00 01 09 CB - This Will Take Effect.

Modify Baud Rate Command: 01 06 00 05 00 01 58 0B - Power Off And Restart Is Required.