SmartGen

MAKING CONTROL SMARTER

AIN8Z

ANALOG INPUT MODULE

CANBUS COMMUNICATION PROTOCOL

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CONTENT

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Table 1 Software Version

Date	Version	Content
2024-04-11	1.0	Original release.

1 DESCRIPTION

The protocol describes the definition of AIN8Z module CAN port communication data frame to help users collect data and execute control command.

2 INSTRUCTION OF PROTOCOL AND DIP SWITCH

The protocol employs the 29-bit identifier (ID) of CAN extended frame, and the baud rate is 250kbps.

The module address can be set by the Switch 1 of DIP switch (12-side: 1, ON-side: 2). The BOOT mode can be set by the Switch 2 DIP switch (12-side: Non-BOOT mode, ON-side: BOOT mode). See detail in Table 2.

Table 2 DIP Switch Setting

DIP Switch Setting		
Function	Module Address	BOOT Mode
DIP Switch No.	1	2
Meaning of DIP Switch ON/OFF	OFF-side: 1	OFF-side: Non-BOOT Mode
	ON-side: 2	ON-side: BOOT Mode
NOTE: BOOT mode is for software update only, please be careful when operation!		

3 THE DEFINITION OF CAN FRAME

3.1 MODULE UPLOADS DATA TO MASTER CONTROLLER

3.1.1 formation_1：【ID: 0x18000800+0x10*add】

Table 3 Module Data Frame 1

Transmit: Module	Receive: Master Controller	Frame Format: Extended Frame	
ID： 0x18000800+0x10*add (When module address is set as 1, add=0; When module address is set as 2, add=1)			
Length			
8			
Data			
BYTE	Data Name	Ratio	Valid Value/Remark
0	Sensor 1 Data (Low 8 Bits)	Resistance: 0.1 Current: 0.01 Voltage: 0.01	Unit Resistance: Ω Current: mA Voltage: V
1	Sensor 1 Data (High 8 Bits)		
2	Sensor 2 Data (Low 8 Bits)	Resistance: 0.1 Current: 0.01 Voltage: 0.01	Unit Resistance: Ω Current: mA Voltage: V
3	Sensor 2 Data (High 8 Bits)		
4	Sensor 3 Data (Low 8 Bits)	Resistance: 0.1 Current: 0.01	Unit Resistance: Ω

5	Sensor 3 Data (High 8 Bits)	Voltage: 0.01	Current: mA Voltage: V
6	Sensor 4 Data (Low 8 Bits)	Resistance: 0.1 Current: 0.01 Voltage: 0.01	Unit Resistance: Ω Current: mA Voltage: V
7	Sensor 4 Data (High 8 Bits)		

3.1.2 formation_2：【ID: 0x18000801+0x10*add】

Table 4 Module Data Frame 2

Transmit: Module	Receive: Master Controller	Frame Format: Extended Frame	
ID：0x18000801+0x10*add			
Length			
8			
Data			
BYTE	Data Name	Ratio	Valid Value/Remark
0	Sensor 5 Data (Low 8 Bits)	Resistance: 0.1 Current: 0.01 Voltage: 0.01	Unit Resistance: Ω Current: mA Voltage: V
1	Sensor 5 Data (High 8 Bits)		
2	Sensor 6 Data (Low 8 Bits)	Resistance: 0.1 Current: 0.01 Voltage: 0.01	Unit Resistance: Ω Current: mA Voltage: V
3	Sensor 6 Data (High 8 Bits)		
4	Sensor 7 Data (Low 8 Bits)	Resistance: 0.1 Current: 0.01 Voltage: 0.01	Unit Resistance: Ω Current: mA Voltage: V
5	Sensor 7 Data (High 8 Bits)		
6	Sensor 8 Data (Low 8 Bits)	Resistance: 0.1 Current: 0.01 Voltage: 0.01	Unit Resistance: Ω Current: mA Voltage: V
7	Sensor 8 Data (High 8 Bits)		

3.2 MASTER CONTROLLER SENDS COMMAND TO MODULE

Table 5 Master Controller Command Frame

Transmit: Master Controller	Receive: Module	Frame Format: Extended Frame	Transmission Period: None
ID： 0x18000850+0x10*add (When module address is set as 1, add=0; When module address is set as 2, add=1)			
Length			
8			
Data			

BYTE	Data Name	Ratio	Valid Value/Remark
0	Sensor 1 Type	1	0: Resistance Type, 1: Current Type, 2: Voltage Type
1	Sensor 2 Type	1	0: Resistance Type, 1: Current Type, 2: Voltage Type
2	Sensor 3 Type	1	0: Resistance Type, 1: Current Type, 2: Voltage Type
3	Sensor 4 Type	1	0: Resistance Type, 1: Current Type, 2: Voltage Type
4	Sensor 5 Type	1	0: Resistance Type, 1: Current Type, 2: Voltage Type

5	Sensor 6 Type	1	0: Resistance Type, 1: Current Type, 2: Voltage Type
6	Sensor 7 Type	1	0: Resistance Type, 1: Current Type, 2: Voltage Type
7	Sensor 8 Type	1	0: Resistance Type, 1: Current Type, 2: Voltage Type

4 SOLUTIONS FOR COMMUNICATION FAILURE

1) Check the module wiring connection is correct or not;
2) Check the setting of CAN communication baud rate is correct or not;
3) It is recommended to download third-party communication test software to verify whether the communication is normal, such as CANTest.