

Rotation Encoder to CAN Bus



ARM Processor with the 621 co-operative multi-tasking high-performance kernel



Two auxiliary digital inputs

High speed differential data interface

Set to zero position and reset factory zero

Dynamic CAN Packet Speed (faster packet rate while moving)

Part Number	AZEI-002-PA	Jo
	AZEI-002-PB	
	AZEI-002-PC	

Package			
Part Number	AZEI-002-PA	AZEI-002-PB	AZEI-002-PC
			
Length	4.3" (110 mm)	5.5" (139 mm)	4.5" (115 mm)
Height	2.2" (56 mm)	3.3" (83 mm)	1.7" (42 mm)
Depth	3.7" (95 mm)	2.2" (56 mm)	3.5" (90 mm)
Material	Cast Aluminum	Cast Aluminum	Mach Aluminum
Finishing	Vibra Finished	Vibra Finished	Anodized
Weight	360g	355g	400g
Environmental			
Operating / Storage Temp	-40°C to 85°C / -50°C to 85°C		
Electrical			
Voltage (Power)	6.5 - 38 VDC		
Threshold voltage	3.2 V+/-5%		
Input Resistance	20 KΩ		
Supported Encoders			
Brand	Zettlex IncOder	Netzer SSI Encoder	
Serial Format	SPI / SSI / ASI	SSI1 - SSI9 , SSI2&7, SSI6(CRC)	
Communication			
10 to 22 bits			
Data Sampling	10 to 22 bits		
Protocols	CAN / J1939		
Baud Rate	250 kBit/s		

AZEI-002 - J1939 Output

Source Address (SA): 0x11 (17)

Encoder Status

Transmission rate: 50 mS.
 Data Length: 8 bytes
 PDU format PF: 0xFF (255)
 PDU specific PS: 0x10 (16)
 Default priority: 7
 Parameter group number PGN: 0xFF10 (65296)

Start byte[bit] ¹	Length bits	Description	Format	Units	Value
0[0]	24	Absolute Encoder Position	byte 0 – MSB, byte 2 – LSB (Big Endian)	mDeg	0 ... 359999
3[0]	24	Rotation Speed	byte 3 – MSB, byte 5 – LSB (Big Endian)	mDeg/S	0 ... 2 ²⁴ - 1
6[0]	6	Controller State			Proprietary
6[6]	2	ZPD (Zero Point Default) ²			0 – Zero Point is set by user 1 – Zero Point is at Factory Default 2 – Error 3 – Not Applicable
7[0]	6	Status			0 – Startup/Default 1 - Position Reading Complete 2 - Zero Set Complete 3 - Zero Reset Complete 4 - Communication Parity Fault 5 - Position Invalid/Detection Fault 6 - Unsupported Request 62 - Encoder is not detected
7[6]	2	Unused			

¹ Data bytes in the message are numbered from 0 to 7

² For detailed description refer to Zettlex incOder documentation

Auxiliary Inputs Status

Transmission rate: On any input state change or 50 mS.
 Data Length: 8 bytes
 PDU format PF: 0xFF (255)
 PDU specific PS: 0x11 (17)
 Default priority: 7
 Parameter group number PGN: 0xFF11 (65297)

Start byte[bit] ¹	Length bits	Description	Format	Units	Value
0[0]	2	Input 0 (Sensor 1) state			0 – Off 1 – On 2 – Error 3 – Not Applicable
0[2]	2	Input 1 (Sensor 2) state			0 – Off 1 – On 2 – Error 3 – Not Applicable
0[4]	60	Unused			

¹ Data bytes in the message are numbered from 0 to 7

Zettlex incOder Zero Point Set & Reset

To prevent accidental modification of Zero Point (datum from which angle is measured) the unit should be “unlocked” before accepting the request. The procedure is described below:

1. Transmit first unlocking message:

PGN	SA	DATA							
		Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0xFF00	0x54	0x55	0x55	0x55	0x55	0x55	0x55	0x55	0x55

2. Transmit second unlocking message:

PGN	SA	DATA							
		Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0xFF00	0x54	0xAA	0xAA	0xAA	0xAA	0xAA	0xAA	0xAA	0xAA

3. Transmit the control request message:

PGN	SA	DATA							
		Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0xFF00	0x54	Command	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Command values:

1 – Zero Point Set

2 – Zero Point Reset

All three messages should be transmitted in sequence from the source address 0x54 (84) within one second time window or the timeout reset will occur. The command request will be also reset if any other message addressed to the unit interrupts it.

J1939 Glossary / Abbreviations

PDU Protocol Data Unit

PF Protocol Data Unit Format , 8-Bit Feld Identifier

PS Protocol Data Unit Specific, 8-Bit Feld Identifier

PGN Parameter Group Number

SA Source Address