Connecting RLS AksIM-2 Encoders with BISS-C interface to Servosila SC-25 Brushless Motor Controllers
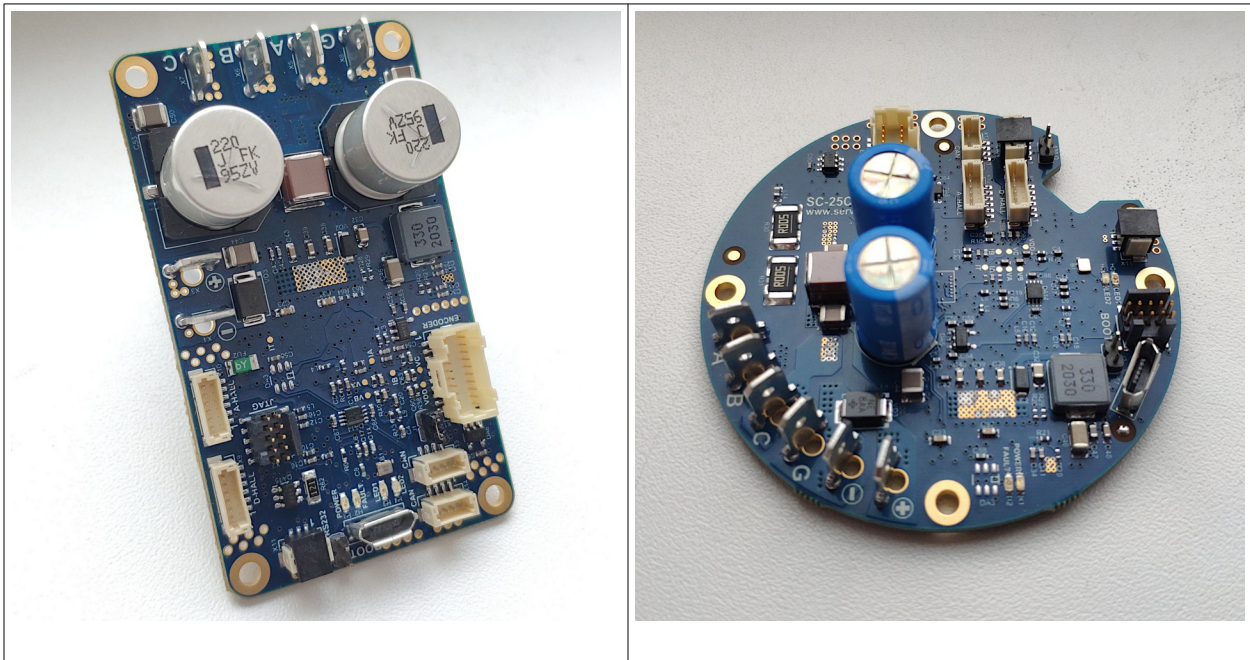
Technical Note

Revision A

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Introduction

This technical note is written in regards to RLS AksIM-2 magnetic absolute encoder with a BISS-C interface.

RELEVANT PART NUMBERS:
MB064DCC20BDNT00 (encoder read head, a 20bit encoder)
MRA064BC040DSE00 (magnetic ring)

The encoder's output rate has been found fast enough to be used for servo, direct drive and field-oriented control (FOC commutation) purposes.

BISS-C interface

When making a cable, refer to the datasheets of both devices to match SSI pins of the corresponding connectors.

SSI/BISS-C interface: configuration settings

The following configuration settings of the SSI/BISS-C interface of Servosila SC-25 controllers have been found to work well with the given model of RLS AksIM-2 magnetic absolute encoder.

Configuration Parameter	Value	Units	Power Cycle
Command & Telemetry	Configuration	Oscilloscope	
Payload: Viscous Damping Constant	0.0000999999975	Nm/Hz	
Payload: Moment of Inertia (Rotor and Payload)	0.0000023	kg*m2	
Hall Sensors	0	0 or 1	
Motor Encoder	0	-	Power Cycle
Servo Encoder	2	-	Power Cycle
Gearbox: Reduction Ratio	1	-	
› Control Laws			
› Features			
› Work Zone			
› Brake			
› Fault Management			
› Peripheral: Hall Sensors			
› Peripheral: Quadrature Encoder			
⌄ Peripheral: SSI/BISS-C Encoder			
counts per revolution	1048576	counts	Power Cycle
encoder bias vs. electrical position	0	counts	
inverted installation	0	0 or 1	
request frequency: divider	4	-	Power Cycle
clock frequency: divider	89	-	Power Cycle
clock polarity	1	0 or 1	Power Cycle
clock phase	1	0 or 1	Power Cycle
total number of bits in packet	45	-	Power Cycle
POSITION field: start bit	17	-	
POSITION field: length	20	-	
POSITION field: is inverted	0	0 or 1	
CRC field: is used	1	0 or 1	
CRC field: start bit	39	-	
CRC field: length	6	-	
CRC field: is inverted	1	0 or 1	
CRC input: start bit	17	-	
CRC input: length	22	-	
CRC input: is inverted	0	0 or 1	
ERROR bit: is used	1	0 or 1	
ERROR bit: bit position	37	-	
ERROR bit: is inverted	1	0 or 1	
WARN bit: is used	1	0 or 1	
WARN bit: bit position	38	-	
WARN bit: is inverted	1	0 or 1	
› Peripheral: SPI Encoder			

Servo drives designed around SERVOSILA SC-25C brushless motor controllers

YouTube: http://www.youtube.com/user/servosila

www.servosila.com/en/motion-control