SC2SSi - analog to digital SSi interpolator for absolute position Electric Encoders

Netzer
Precision Motion Sensors Ltd.

The Analog to SSI Interpolator- SC2SSi provides (SSi) conversion of the native analog signals to full rotation absolute position and Synchronous Serial interface.

The SC2SSi provides:

- Real time servo feedback
- Setup and Configuration via (RS-422 & NCP)
- Online monitoring
- BIT (build in tests)

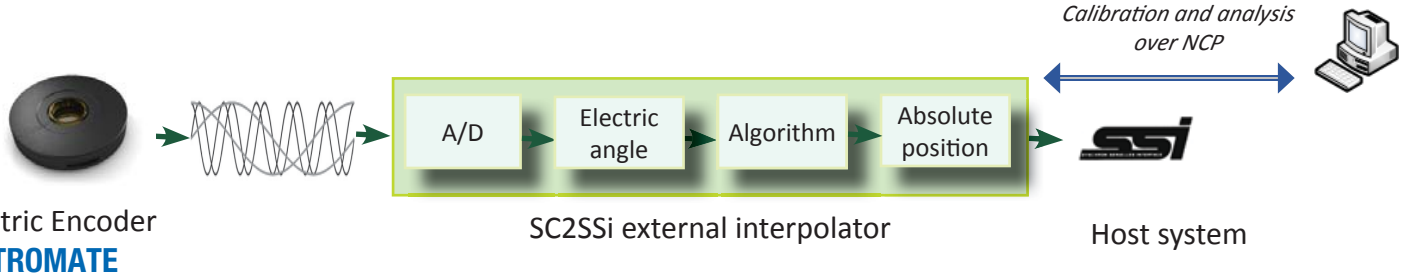
Electrical	
Supply voltage	5V ± 5% [3]
Interconnection (default)	250mm shielded cable AWG30 wires
Current consumption	~ 180 mA

The SSi transmits the absolute position data from the Electric Encoder™ in response to the controller clock pulses. The Electric Encoder™ and controller are linked by clock and data differential signal lines.

Environment- common to all types	
EMC	IEC 6100-6-2, IEC 6100-6-4
Operating temperature range	-40°C to +85°C
Relative humidity	<98 %- non condensing
Shock endurance	IEC 60068-2-27 100 g for 11 ms
Vibration endurance	IEC 60068-2-6 20 g 10 – 2000 Hz
Protection	IP 40

The final performance in terms of accuracy and resolution are according to the original characteristics of the Electric Encoder™ and the interpolator setup.

The digital SC2SSi interpolator provides advanced calibration and monitoring options using the NCP (Netzer Communication Protocol) and factory supplied software tools as the SSi explorer.



Electric Encoder

SC2SSi external interpolator

Host system

Digital - SSi Interface (absolute position)

Output signal parameters

Signal latency	~250 µSec
Output code	Binary
Serial output SSi	Differential RS-422
Clock SSi	Differential RS-422
Monoflop time	25 µSec
Clock Frequency	0.5 ÷ 2.5 MHz
Maximum payload	according to encoder

Electrical parameters

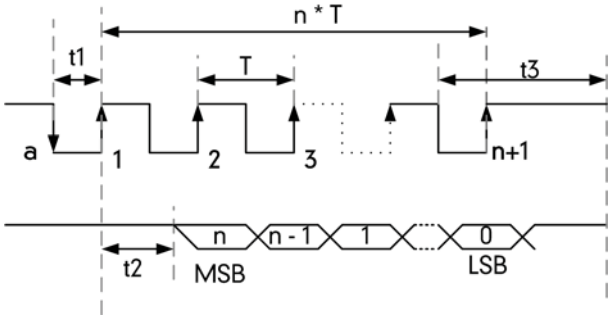
Current consumption	~ 180 mA

SSi- Wires color code

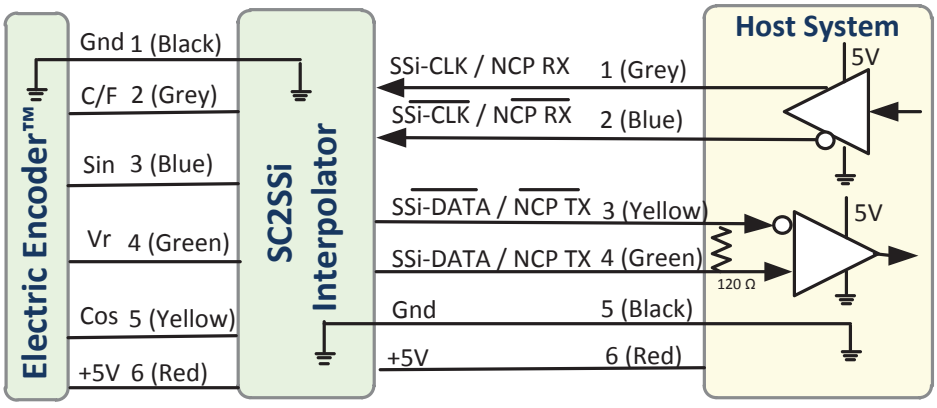
#	Name	Color	Function
1	Clock +	Grey	SSi Clock
2	Clock -	Blue	
3	Data -	Yellow	SSi Data
4	Data +	Green	
5	GND	Black	Ground
6	+5V	Red	Power supply

Synchronous Serial Interface (SSi) allows for serial transmission of absolute position data from the Electric Encoder™ responding to controller clock pulses. The Encoder and controller are linked by clock and data differential signal lines.

SSI data transmission timing diagram



		Recommendations
n	total number of data bits	
T	clock period (sec)	user defined
1/T	clock frequency 0.5 ÷ 2.5 MHz (user defined)	2.5 MHZ
t1	minimum time required for the encoder to freeze data and preset the shift registers before receiving the first rising edge to prompt the MSB	T/2
t2	data transmission delay (increases with cable length)	"0" on standard cable length
t3	equired delay to refresh position data between subsequent position	>25usec



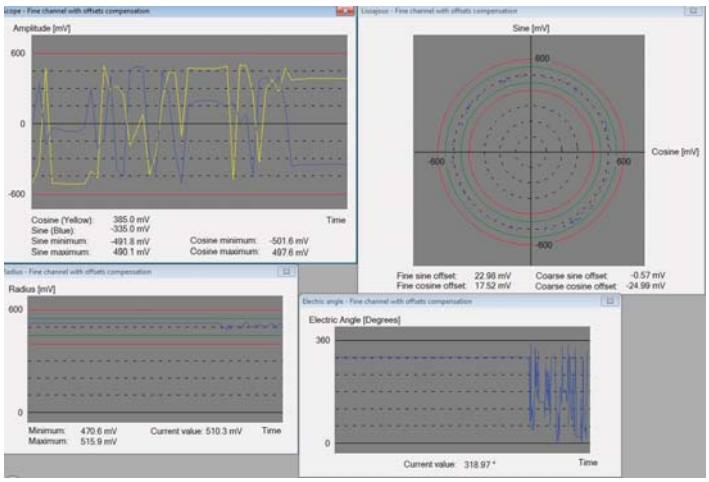
Digital - SSi Interface (absolute position)

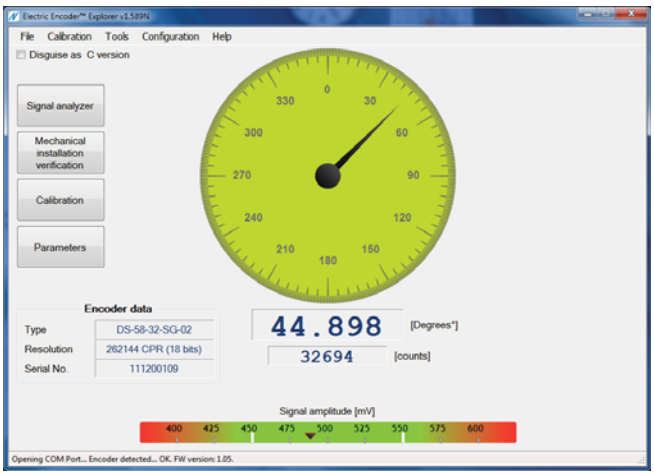
Software tools:

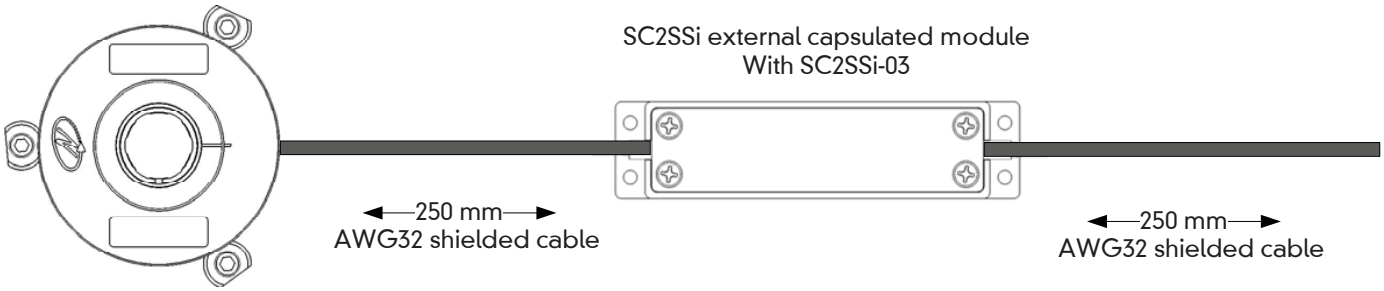
Advanced calibration and monitoring options available by using the Electric Encoder Explorer (factory supplied)using the NCP (Netzer Communication Protocol)

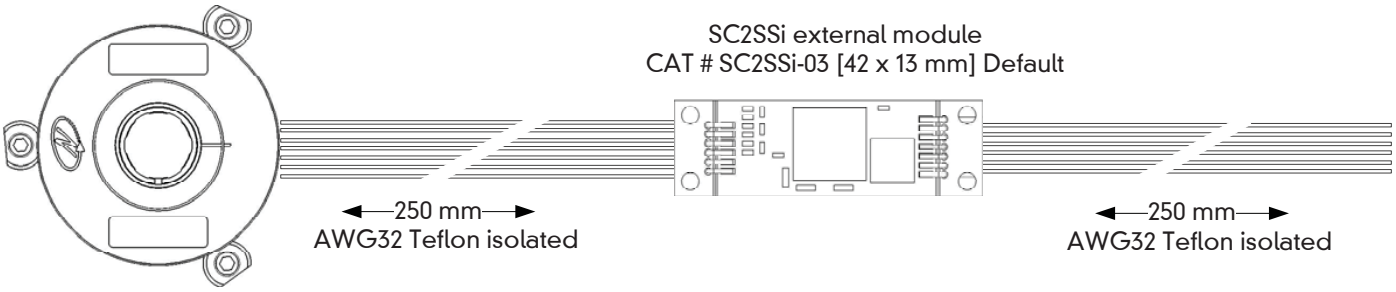
Calibration, built-in tests (BIT) and advanced setup.

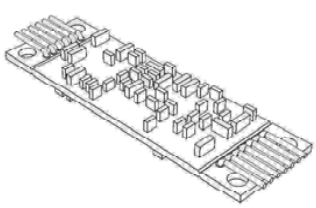
A. Proper mechanical mounting - setup and validation
B. Calibration , offsets , CAA and user defined “zero”.

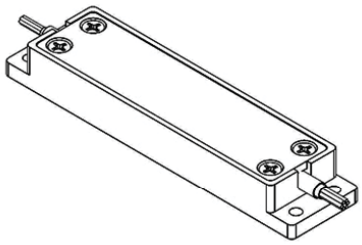












Ordering as stand alone part ,

Defoult delivery by Encoder CAT No.

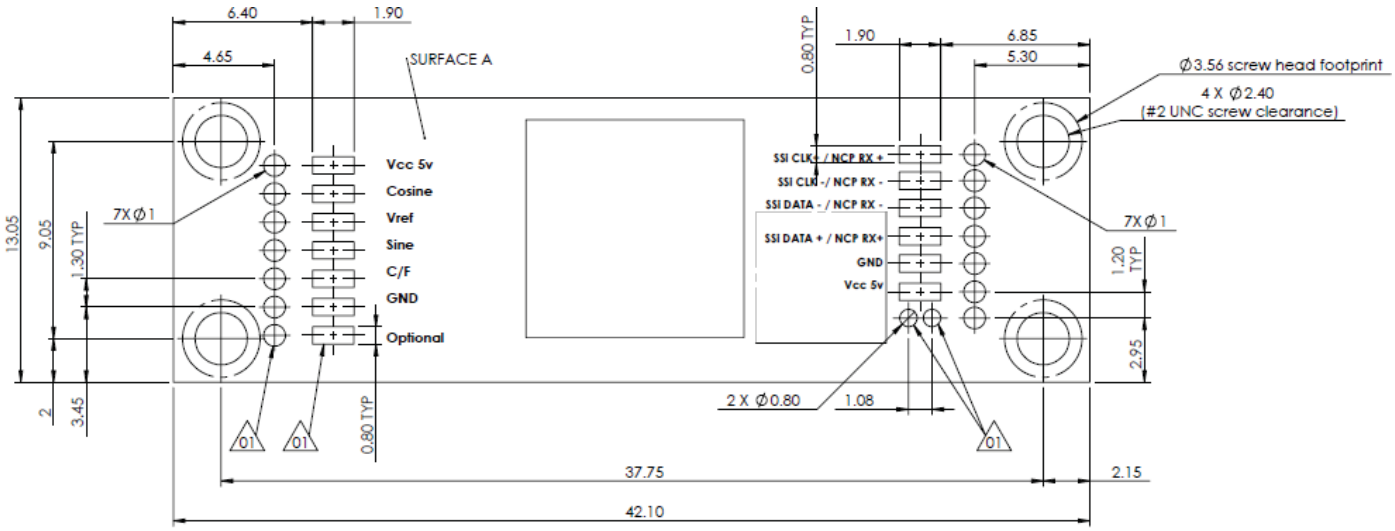
SC2SSI - 03 - H - C - xx

xx - reserved

0 - Loose wires AWG32 250 mm
S - shielded cable
C- Capsulated & shielded cable

Resolution Binary		
Code	Bit	CPR
F	17	131,072
G	18	262,144
H	19	524,288

Resolution Decimal		
Code	Bit	CPR
O	17	128,000
P	18	256,000
Q	19	512,000



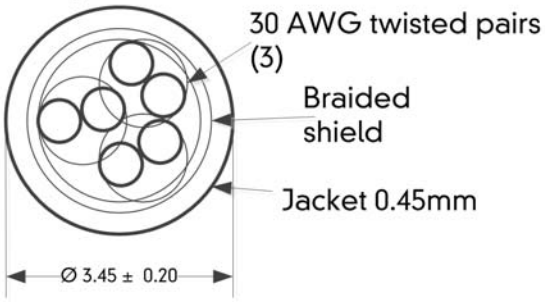
Cable: CB-00014

30 AWG twisted pair (3) :
2 (30 AWG 25/44 finned copper , 0.15 PFE to Ø0.6 ± 0.05 OD).

Cable:
Three 30 AWG twisted pairs.

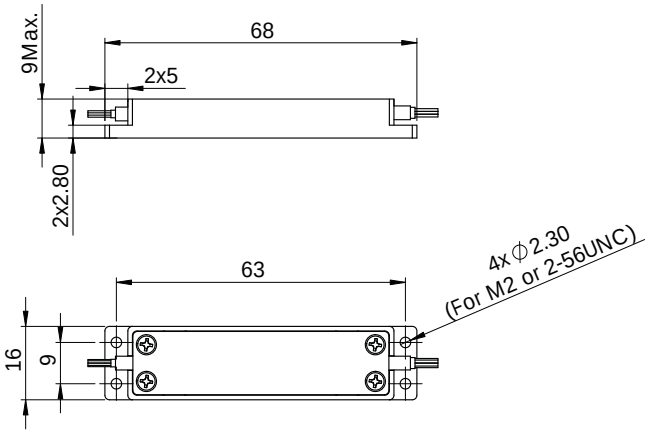
Braided shield:
Thinned copper braided 95% min. coverage.

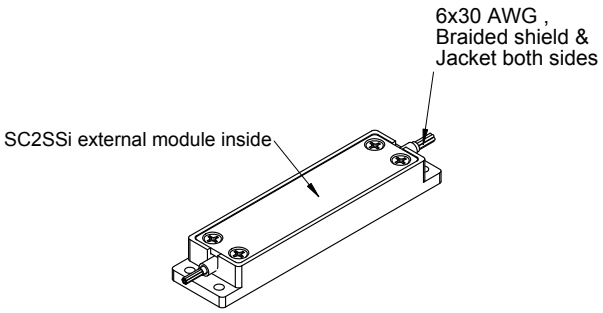
Jacket:
0.45 silicon rubber jacket to Ø3.45 ±0.2 OD



Pair #	Color
1	Red / Black
2	Gray / Blue
3	Green / Yellow

Metal capsule - optional :





Note :
1)All dimensions are in mm.

Title: SC to SSi ext converter metal enclosure	
Item No. : SC2SSi-0E	Version: 3.0