

Specification EARSS EVO 2.0EX **BASE** & EARSS EVO 2.0EX **HIGH OUTPUT** STEERING UNIT

Steering Unit Type →	EARSS EVO 2.0EX BASE Performances Low cogging for smooth operation - fast acceleration
Nominal supply voltage →	9 - 28VDC
Nominal continuous current →	6.0 A
Peak current →	12.5 A
Nominal torque & temp. range (max. continuous torque)→	6.5Nm @ 6.0 A (-20°to +70°C) higher temp. = derating
Peak torque →	13.0Nm (-20°to +70°C) higher temp. = derating (incremental motion cycle pulse duration 1.0s)
Virtual end stops	
Peak current 1.0s →	12.5 A (-20°to +70°C) higher temp. = derating
Torque resolution →	< 0.010Nm
Angular speed range →	-2000 to 2000°/s
Steering wheel self centering function speed →	155 r/min (24VDC)
Steering Unit Type →	EARSS EVO 2.0EX HIGH OUTPUT Performances Low cogging for smooth operation - fast acceleration
Nominal supply voltage →	9 - 28VDC
Nominal continuous current →	6.0 A
Peak current	12.5 A
Nominal torque & temp. range (max. continuous torque)→	13.0Nm @ 6.0 A (-20°to +70°C) higher temp. = derating
Peak torque →	26.0Nm (-20°to +70°C) higher temp. = derating (incremental motion cycle pulse duration 1.0s)
Virtual end stops	
Peak current 1.0s →	12.5 A (-20°to +70°C) higher temp. = derating
Torque resolution →	< 0.014Nm
Angular speed range →	-2000 to 2000°/s
Steering wheel self centering function speed →	80 r/min (24VDC)

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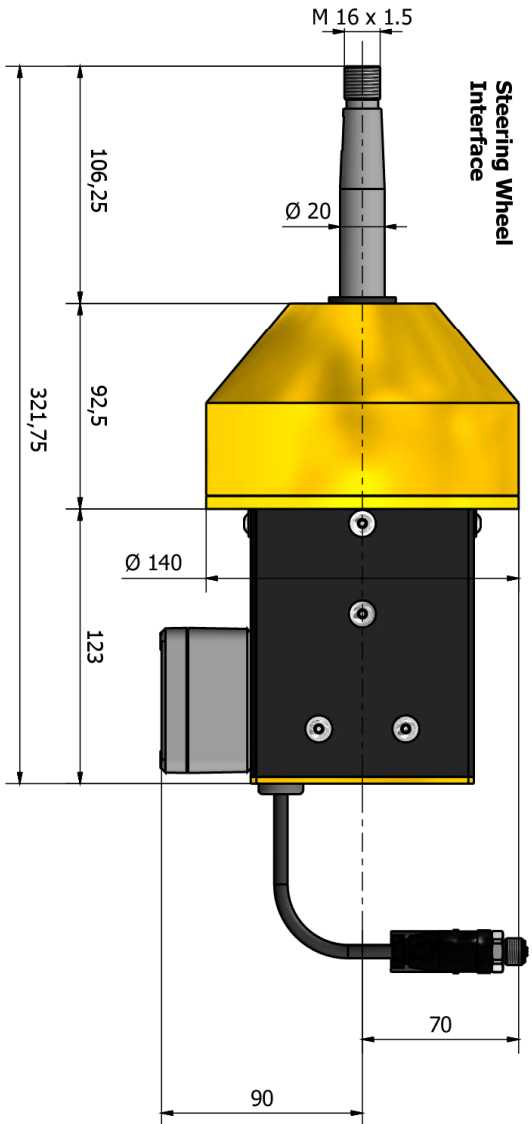
Weight & Dimensions - Mechanical Specifications	
Total weight (depending on version Base or HO) →	4.0 - 4.75Kg
Max. length without shaft → (Base version)	215.5mm
Standard shaft length (stainless steel AISI 316) →	106.25mm - options on request
Tilt shaft length (stainless steel AISI 316) →	66.0mm
Shaft diameter →	20.0mm - options on request
Standard shaft end and thread →	Cone k - 1:19,26 M16x1.5 - options on request
Max. axial load (dynamic) →	390N
Max. radial load (20mm from flange) →	3250N
Angular travel range →	± 675 degrees (mechanical end-stops 3.75 turns lock to lock)
Housing →	Hard anodized aluminium type EN AW-6082
Environmental Specification Mechanical loads ISO 16750-4, Climatic loads ABYC P-27	
Operational temperature range →	-20°C + 77°C - options on request
Humidity range →	0 to 90 % non - condensing at 25°C
Storage temp. →	-40°C to +100°C
Protection level →	IP67
Deutsch connectors DT06-4S & DeviceNet™ M12 male	IP67
Membrane for pressure equalisation →	GORE-TEX®
Salt spray corrosion resistance ASTM B117 →	300h

Absolute Position Steering Angle Sensor	
Nominal supply voltage →	12-24VDC
No "keep alive power" requirements	
Time delay ignition on and valid output signal →	< 200ms
Angular position - resolution →	0.1°
Accuracy →	± 2.0°
Angular speed range →	-2000 to 2000°/s
CAN Protocol →	SAE J1939
BAUD rates (command selectable) →	250 kbits/s - 500kbits/s
Update rate →	10ms
Zero position adjustment →	At every position trough CAN command
Number of CAN sensors →	2
Functional Safety	
S.M.A.R.T	BIST
Safe due to redundant operation and redundant power supply	
Incremental Encoder Data	
Counts per turn →	6400
Max. operating frequency (kHz)	500
2 Channels →	Line Driver RS 422
Number of encoders →	1

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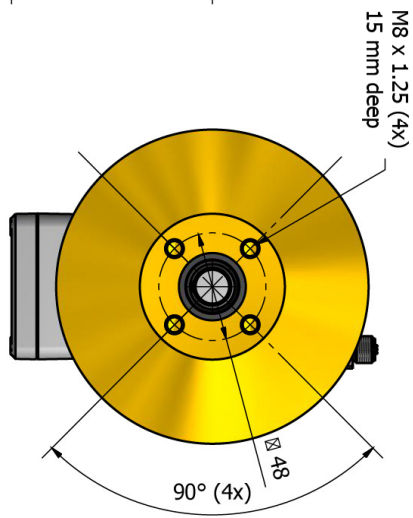
Embedded CANBus Real Force Feedback BLDC Motor Control Unit	
Functional Safety Performance up to SIL3 → PL e	
Protocol →	DS301
Profile →	DS402
Max. Baudrate →	1Mbit/s
CAN Specification →	2.0B
Galvanically isolated →	Yes
Vibration - operating conditions	Mechanical Shock - operating conditions
4G zero-peak, 20Hz to 2kHz	According to IEC 60068-2-27
MIL-VERSION (on request)	
20 Hz to 2kHz 14.6G	±20G; Half sine, 11 msec
Reliability MTTF	
> 500.000 Hours	
MIL-SPEC (on request)	Reliability MIL-HDBK-217F
SBW Technology - Real Force Feedback Software	
Parameter Setting = Virtual end stops, torque values, steering wheel self centering speed, self centering function etc.	
- On the Fly -	
Functional Safety	
S.M.A.R.T	BIST
No. of Safety Inputs (STO) EN 61800-5-2	2 (OPTIONAL)

EARRS EVO 2.0 EX DIMENSIONS & INTERFACES

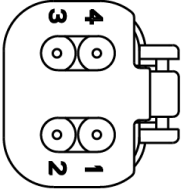


Steering Wheel
Interface

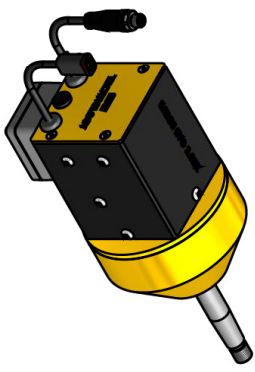
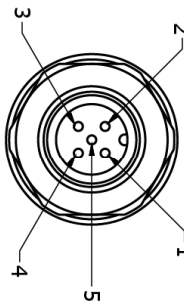
Vehicle Interface



Primary Connector



Secondary Connector

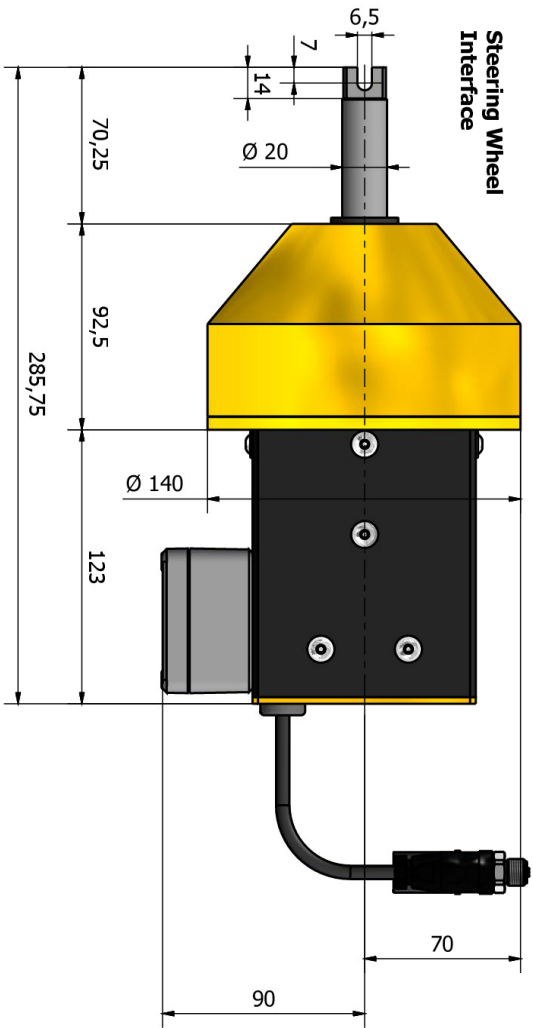


PIN DESCRIPTION AND COLOR CODE	
PRIMARY CONNECTOR	
PIN 1 POWER	RED
PIN 2 GND	BLACK
PIN 3 CAN HIGH	WHITE
PIN 4 CAN LOW	BLUE
CURRENT RATING CONNECTOR 13.0 Amps	

PIN DESCRIPTION AND COLOR CODE	
SECONDARY CONNECTOR	
PIN 1 SHIELD	BARE
PIN 2 POWER	RED
PIN 3 GND	BLACK
PIN 4 CAN HIGH	WHITE
PIN 5 CAN LOW	BLUE
CURRENT RATING CONNECTOR 4.0 Amps	

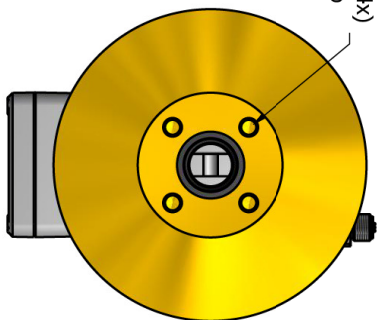
Descrizione : EARRS EVO 2.0 EX	
Materiale :	
TOLLERANZE	
Generali	ISO 2000
Centro Fori	ISO 2000
Fori	ISO 2000
Scala 1:2	Formato A3
Foglio 1 di 1	
Data 10 02 2016	
EARRS EVO 2.0 EX dimensions & interfaces	

EARSS EVO 2.0EX TILT DIMENSIONS & INTERFACES

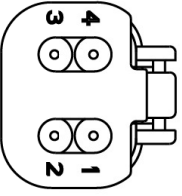


M8 x 1.25 (4x)
15 mm deep

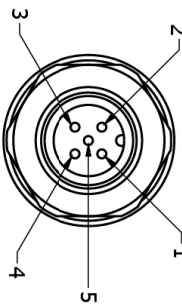
Vehicle Interface



Primary Connector



Secondary Connector



PIN DESCRIPTION AND COLOR CODE	
PRIMARY CONNECTOR	
PIN 1 POWER	RED
PIN 2 GND	BLACK
PIN 3 CAN HIGH	WHITE
PIN 4 CAN LOW	BLUE
CURRENT RATING CONNECTOR 13.0 Amps	

PIN DESCRIPTION AND COLOR CODE	
SECONDARY CONNECTOR	
PIN 1 SHIELD	BARE
PIN 2 POWER	RED
PIN 3 GND	BLACK
PIN 4 CAN HIGH	WHITE
PIN 5 CAN LOW	BLUE
CURRENT RATING CONNECTOR 4.0 Amps	

Descrizione : EARSS EVO 2.0 EX TILT
Materiale :

TOLLERANZE		Data	
Generali	±0.1	10 02 2016	
Centro Fori	±0.05		
Fori	±0.05		
Scala 1:2	Formato A3	Foglio 1 di 1	
EARSS EVO 2.0 EX TILT dimensions & interfaces			

