



Encoder for functionally-safe motion

- Integrated safety functions for
 - Overspeed
 - Failsafe relay outputs to indicate active safety functions.
- Certified according to SIL2/PLd, cat. 3



Technical data

Operating temperature	-30°C...+70°C
Storage temperature	-30°C...+85°C
Shock [IEC 60068-2-27]	100 a/11 ms, 200 a/6 ms
Vibration [IEC 60068-2-64]	10 a RMS
Ingress protection class [IEC 60529]	IP66 and IP67
Weight	Approx. 3700 g

Mechanical specification

Shaft type	Ø14 mm solid shaft with key nut
Flange type	Euro-flange B10
Cover material	Anodized aluminium
Shaft material	Stainless steel
Shaft load max. (axial/radial)	100N/200N
Rotation speed max.	5000 rpm
Angular acceleration max	1000 rad/s ⁻²

Electrical specification

Power supply	18-30 Vdc (powered by a PELV - or SELV-system)
Power consumption	Max. 15W
Reverse polarity protected	Yes
Start-up delay	2 s
EMC Conformity	EN 61326-3-1 EN 61000-6-2 EN 61000-6-4
Max magnetic field strength	Max 300 A/m

System configuration

Model	985
Safety certification	IEC 61508: SIL2 EN 61800-5-2: SIL2 EN 62061: SILCL 2 EN ISO 13849: PLd, category 3
PFH [1/h]	$\leq 1 \times 10^{-7}$ failures/hour
Systematic capability	SC2
MTTF _d	1141 years
Diagnostic coverage (DC)	95%
Mission time (T _m)	20 years
Proof test interval	One year, test by power cycling

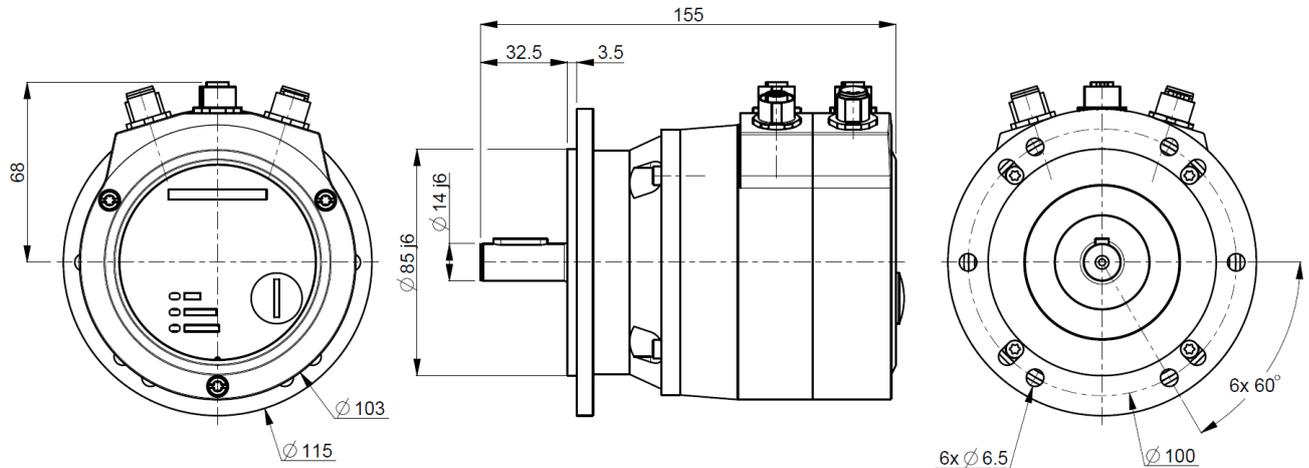
A-module specification

Interface	Ethernet
Protocol	PROFINET IO Conformance Class B (RT)
Supported profile	Encoder profile PNO No. 3162 V4.1
Baud rate	100 Mbit/s
IP address	Assigned dynamically via DCP
Position value resolution	19 bit singleturn + 12 bit multiturn
Code type	Binary
Supported functions	Preset, Scaling, Code sequence
Connection	3xM12 connectors (male 4-pin, 2x female 4-pin)

B-module specification

Safety functions	Safe overspeed
Safe relays	F-R01+ F-R02
Max. voltage	30 Vdc
Mechanical endurance	20 years
Electrical endurance	5x10 ⁵ operations at 30 Vdc/0.5 A resistive load
Max load continuous	200 mA
Max load inrush	500 mA (internal fuse protection)
Relay type	Normally open
<i>Digital inputs F-DI1 to F-DI3</i>	
Voltage range	18-30 Vdc
Current consumption	10 mA
Signal levels	According to IEC 61131-2, digital input type 2 High > 11V Low < 5V

Dimensions



A-Module Pin configuration

Function	Pin
M12-1: 4 pin male A-coded	
+E Volt	1
NC	2
0 Volt	3
NC	4
M12-2: 4 pin female D-coded	Port 1
Tx+	1
Rx+	2
Tx-	3
Rx-	4
M12-3: 4 pin female D-coded	Port 2
Tx+	1
Rx+	2
Tx-	3
Rx-	4

B-Module Pin configuration

Function	Pin
M12 – 4: 5pM12 female B-coded	
F-R01 – A	1
DO	2
F-R02 – A	3
DO_GND	4
NA	5
M12 – 5: 5pM12 female B-coded	
F-R01 – B	1
NA	2
F-R02 – B	3
NA	4
NA	5
M12 – 6: 5pM12 male B-coded	
F-DI1	1
F-DI2	2
F-DI3	3
F-DI_GND	4
NA	5

Ordering information

Part number
1216435-01

Model
FSI 9854883362

15 July 2019. Specifications can be changed without prior notice.