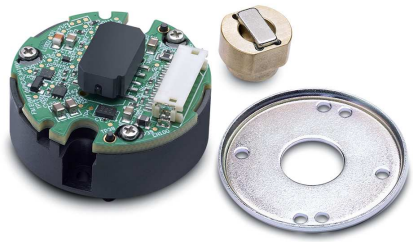
AAM 33 M
SSI - BISS - RS485
MULTITURN ABSOLUTE KIT ENCODER

MAIN FEATURES

Miniaturized multiturn absolute kit encoder for high end application. Thanks to high speed interfaces and high resolution it can be used in robotics, motor feedback and CNC machines.

- Magnetic sensor technology (Patented Energy Harvesting)
- 50 bit total resolution (18 bit single turn + 32 bit multiturn)
- Power supply up to +12 VDC with several serial interfaces
- Connector output
- Hub shaft M3 or M4
- Operating temperature -40° ... +115°C (-40° ... +239°F)



ORDERING CODE	AAM	33M	32 / 18	B	5	S	M3	X	LR	. 162

SERIES
multiturn absolute encoder AAM

MODEL
kit encoder size 33 mm 33M

MULTITURN RESOLUTION
bit 32

SINGLETURN RESOLUTION
bit 18

CODE TYPE
binary B

POWER SUPPLY
5 V DC 5
7 ... 12 V DC 7/12

ELECTRICAL INTERFACE
BiSS-C B
Serial Synchronous Interface - SSI S
RS-485 RS485

HUB SCREW
M3 screw M3
M4 screw M4

ENCLOSURE RATING
IP 00 X

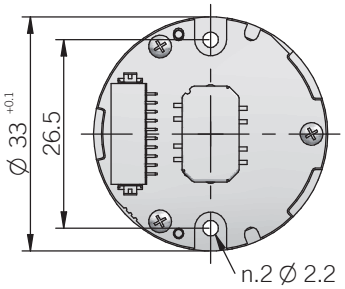
OUTPUT TYPE
radial connector LR

VARIANT
wihout mating connector 162

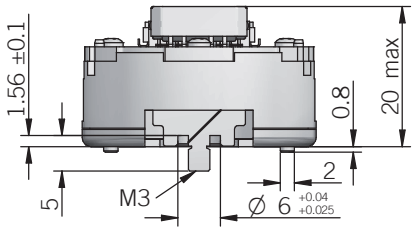
PRELIMINARY

1985 - 2015
eltra@eltra.it | www.eltra.it

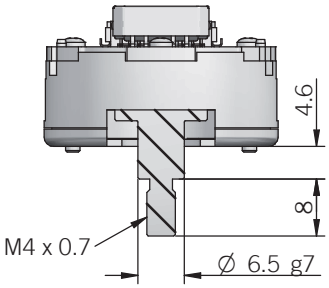
AAM 33 M



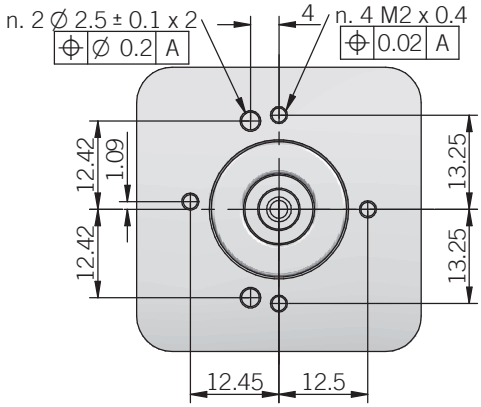
M3 SCREW



M4 SCREW

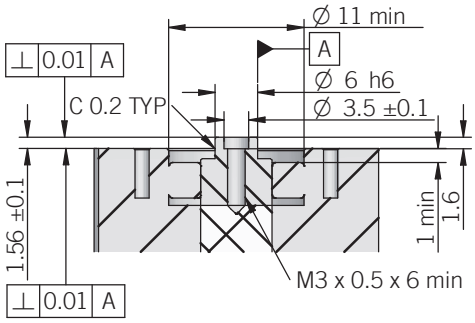


RECOMMENDED MOTOR INTERFACE FLANGE DESIGN

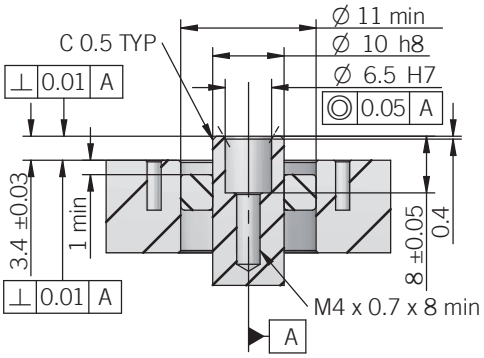


RECOMMENDED MOTOR SHAFT DESIGN

M3 SCREW



M4 SCREW



dimensions in mm, unless otherwise specified, all tolerances are within ±0.5 mm.
DO NOT USE FERRO-MAGNETIC SHAFT FOR THE MOTOR

PRELIMINARY

1985 - 2015
eltra@eltra.it | www.eltra.it

ELECTRICAL SPECIFICATIONS

Multiturn resolution	32 bit
Singleturn resolution	18 bit
Power supply[1]	5 = 4,5 ... 5,5 V DC 7/12 = 7 ... 12,5 V DC
Current consumption without load	90mA max (5V model) 75mA max (7/12V model)
Electrical interface[2]	SSI / BiSS: RS-422 RS-485 half duplex
Auxiliary inputs (RESET)	active high (+V DC) connect to GND if not used / RESET t_{min} 100 ms
Clock frequency	SSI: 100 kHz ... 1 MHz BiSS: 50 kHz ... 10 MHz RS-485: max 2,5 MHz
Code type	binary
SSI monostable time (Tm)	20 µs
SSI pause time (Tp)	21 µs
RS485 frame	10 bit/frame jitter 100 ns
Temperature sensor **BiSS / RS-485**	resolution 1° calculation time 100ms
Start-up time	< 1 s
Accuracy **with electrical correction**[3]	± 0,087° at +25°C (+77°F) ± 0,35° -40°C ... +115°C (-40° ... +239°F) / 12000 rpm
Electromagnetic compatibility	according to 2014/30/EC directive
RoHS	according to 2015/863/EU directive

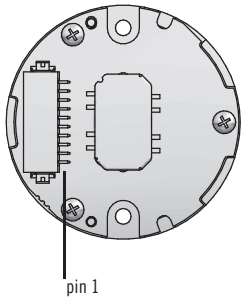
MECHANICAL SPECIFICATIONS

Hub screw	M3 or M4
Enclosure rating	IP 00 (IEC 60529)
Max rotation speed[4]	12000 rpm
Shock	200 G, 6 ms half sine (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Shaft material	brass EN-CW614N
Operating temperature[5]	-40° ... +115°C (-40° ... +239°F)
Storage temperature[5]	-40° ... +115°C (-40° ... +239°F)
Relative air humidity **non-condensing**	90% RH T=+60°C (+140°F)
Shaft radial play allowed	± 0,05 mm
Shaft axial play allowed	± 0,2 mm
Weight	100 g (3,53 oz)

[1] as measured at the transducer without cable influences
[2] for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
[3] under recommended magnetic shielding enclosure and calibration at ambient +25°C / +77°F
[4] encoder works reliably up till this permissible speed
[5] measured on the transducer flange

CONNECTIONS

Pin	SSI	BiSS C	RS-485
1	GROUND	GROUND	GROUND
2	+ V DC	+ V DC	+ V DC
3	CLOCK -	CLOCK (MA) -	/
4	CLOCK +	CLOCK (MA)+	/
5	DATA -	DATA (SLO) -	DATA-
6	DATA +	DATA (SLO) +	DATA+
7	UART RX[1]	/	/
8	UART TX[1]	/	/
9	RESET	/	/
10	GROUND	GROUND	GROUND

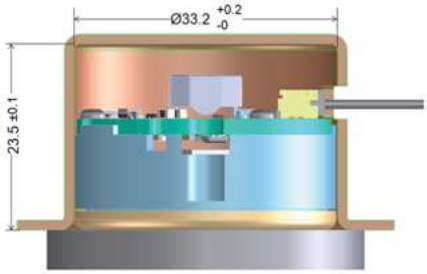


[1] used for calibration only

Recommended mating connector: Hirose Part No: DF13-10S-1.25C (CL No.536-0006-8) / Hirose (terminal pin for wire 26~30AWG): DF13-2630SCF (CL No.536-0300-5)

MAGNETIC SHIELD DESIGN GUIDELINES

In order to eliminate or minimize the influence of external magnetic field interference on encoder operation, use of shielding is mandatory.
A recommended design of shielding made of 1.2mm mild steel (SPCC) is given in figure below.



Shield requirements
Minuimun thickness: 1.2 mm / Material: ferro-magnetic

Note:
Please consider that external magnetic interference varies by the application and operating environment, a proper study of external magnetic field and appropriate shield design is needed.
Please directly contact our offices for technical assistance.

PRELIMINARY