

# YANKEE 1

## ABSOLUTE ENCODER

Yankee 1 is an electronic position sensor that interfaces with rotation elements and returns a signal according to the angular position.

Yankee 1 can be used in a variety of industrial sectors, from hoisting to automation, to meet any need in terms of registration and identification of modern production machines, wherever controls are needed, regardless of the nature of the mechanic system and of its complexity, and to reduce and unify the system of angular positioning sensors.

Forty years of experience in the sector of rotary limit switches have resulted into a project that combines state-of-the-art industrial electronics and precision mechanics.

### FEATURES

Every position of the shaft is associated with a single analogue signal which can be in voltage, in current or PWM. The measuring accuracy is guaranteed by 4096 points per revolution.

Yankee 1 is installed in Fox, Oscar and Top rotary limit switches to control multi-revolution rotors. The product is designed for easy assembly and wiring together with standard sets of cams.

### MATERIALS

Yankee 1 is made with top-quality materials and with the best components available on the market to guarantee long mechanical life, precision and repeat accuracy even in extreme conditions.

### POSSIBLE ASSEMBLIES

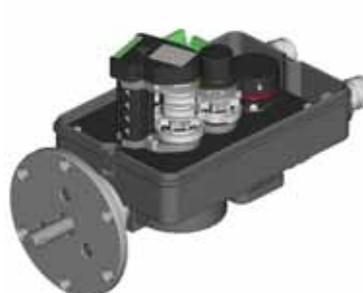
Fox



Oscar



Top



## STANDARDS - MARKINGS - HOMOLOGATIONS

- Conformity to Community Directives:

2004/108/CE: Electromagnetic Compatibility (EMC) Directive

2006/42/CE: Machinery Directive

- Conformity to Standards:

EN 61326 Electrical equipment for measurement, control and laboratory use - EMC requirements

EN 60529 Degrees of protection provided by enclosures

- Markings and homologations: **CE** (U pending)

## GENERAL TECHNICAL SPECIFICATIONS

- Storage ambient temperature: -40°C/+80°C

- Operational ambient temperature: -40°C/+80°C

- Protection degree: IP20

- Free rotation: 360°

- Maximum rotation speed: 800 rpm

- Markings and homologations: **CE** (U pending)

## ELECTRICAL SPECIFICATIONS

- Power supply:

12 ÷ 48 VDC

12 ÷ 48 Vac

- Protection against polarity inversion

- Absorption: 50 mA

- Analog Output (one of the three available, depending on the version):

Voltage 0÷10V

Current 4÷20mA

PWM 0÷100%

- Resolution: 12 bit

- Linearity: +/- 0.5°

- Max. hysteresis: 0.1°

- Setting Zero Point: through button/wire

- Signal increment direction:

CW (standard)

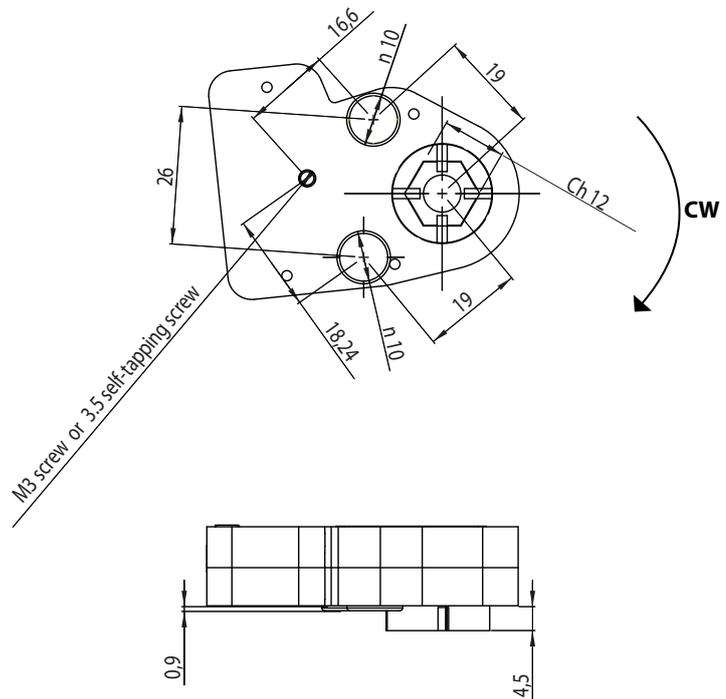
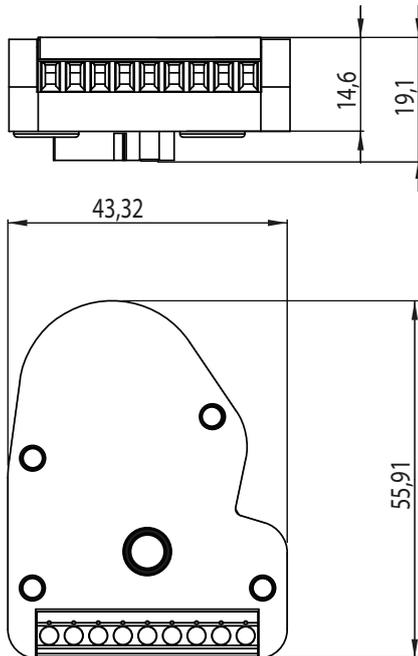
CCW (on request)

- Connections: terminal board

- Terminal wires: 0.14 mm<sup>2</sup> - 1.5 mm<sup>2</sup>

- Terminal tightening torque: 0.22 Nm - 0.25 Nm

## OVERALL DIMENSIONS (MM)



The data and the products illustrated in this brochure may be modified without notice. Under no circumstances can their description have a contractual value.



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DESCRIPTION	CODE
Yankee 1 - current output	PA01AA01
Yankee 1 - voltage output	PA01AB01
Yankee 1 - PWM output	PA01AC01

**USE AND MAINTENANCE INSTRUCTIONS**

*Yankee 1 is an electronic position sensor that is interfaced with rotation elements and returns a signal according to the angular position. Every position of the shaft is associated to an analog signal which can be in current, voltage or PWM, depending on the version.*

**Installation**

Fit the hexagonal shaft in the selected output bush (make sure the output is the one with the correct reduction ratio), fasten with the screw. When Yankee 1 is to be fixed on the cam set, mount the motion transferring ring on the hexagonal shaft, matching the slots of the two elements. The ring must enter its seat to the bottom, and it must not be higher than the hexagonal shaft. Afterwards, position the sensor on top of the cam set, so that the wings of the cam set enter into the slots of the motion transferring ring, then fix with the screw M3 supplied.

**Wiring**

To wire the switch, follow the diagram "Terminal Connections".

**Resetting**

After stopping the rotor in the ZERO position, remove the cover of the rotary limit switch and shortcircuit the wires on terminals 7 (GND) and 3 (Zero). When releasing the contact within 2 seconds, the output signal will be set on scale zero (0V or 4mA or 0%). (0V or 4mA or 0%).

If the contact is kept closed for longer than 2 seconds, the offset will be incremented with steps of 200mV or 0.32mA or 2% per second, until it gets to 5V or 12mA or 50%, then it returns to zero (0V or 4mA or 0%) and repeats the cycle.

Important: reset the device while power is on and the rotor is stopped in position.

**Use**

Once fixed in position, Yankee 1 is ready for wiring. Rotate the driving shaft of your equipment to make sure there is an output signal. Yankee 1 is now ready to return the rotor angular positioning signal.

**Maintenance**

Yankee 1 does not require periodic maintenance; simply carry out regular checks. It is important to regularly check that the anchoring points are stable and the cable is in perfect conditions. Make sure that the casing has not been damaged or badly dented; if necessary, remove and replace the part. Do not attempt to open it and repair it: by doing so you will alter the positioning geometry of critical components, with irreparable effects on its accuracy and reliability. Do not make holes or notches on the casing, as this may damage the internal logic and alter the IP protection degree. If you detect any mechanical or electronic failure, replace the part: DO NOT open the sensor under any circumstances as this would have irreparable effects on its efficiency. DO NOT oil and/or grease the shaft and rotating parts. Make sure you comply with the operating conditions listed in the technical documentation provided with the product.

**Warnings**

The installation of the sensor shall be carried out by expert and trained personnel. Wiring shall be properly done according to the current instructions. In case any component of the unit is modified, the validity of the markings and the guarantee on the equipment are annulled. Should any component need replacement, use original spare parts only.

TER declines all responsibility for damages caused by the improper use or installation of the equipment.

**Terminal Connections**

Terminal	Function	Value
9	Power Supply	VDC+: 12 ÷ 48 V
		Vac: 12 ÷ 48 V
8	Power Supply	VDC-: 0 V , Vac
7	Reference ground for signal output	GND
6	Analog Output (depending on the version)	V out 0 ÷ 10 V
		I out 4 ÷ 20 mA
		PWM out 0 ÷ 100 %
5	Not connected	
4	Not connected	
3	Zero	
2	Not connected	
1	Not connected	

