



## High Performance Optical Pick-Up Unit

Permanent Fit Speed and Phase Measurement

**Designed by Aircraft Engineers for Aircraft Engineers**

### Description

The High Performance Optical Pick-Up Unit may be used to produce a 'one-per-rev' signal from a rotating component for timing and indexing purposes. It has been specifically designed as a permanent fit product which makes it perfect for aircraft on-board installations and is ideally suited for use on helicopter tail rotors and high speed transmission shafts.

The optical pick-up unit works by transmitting a beam of infrared light onto a target of reflective tape or reflective paint. An electrical pulse is produced each time the target comes into view. The interval between successive pulses may be measured to determine the shaft speed and the edge of the pulse may be used to determine a phase reference. The system is designed to meet the interface requirements of the AS5392 standard (formally RITA).

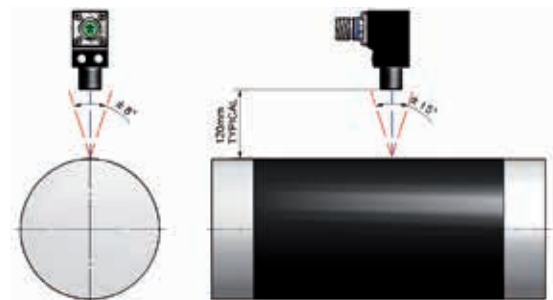
### Features

The system operates at high speeds over large sensing distances and with very high angular resolution. True TTL output is produced over the entire operating range which avoids the triggering problems associated with many other types of sensor.

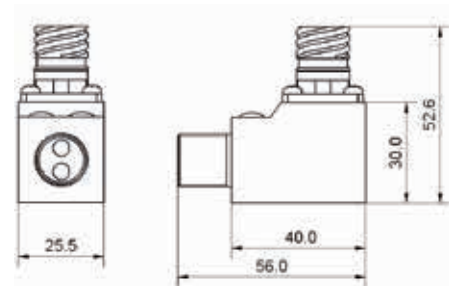
**High noise immunity:** The system utilises sophisticated pulse encoding techniques and automatic threshold control to reject interference from sunlight and reflections to produce a signal of high integrity and reliability.

**Automatic and dynamic adjustment:** There is no need for any adjustment by the operator or installer. Sensitivity is set automatically and changes dynamically in flight to cater for changes in ambient light and reflections.

**Reliability and robustness:** The rugged and sealed construction is specifically designed for aircraft installation to operate over a wide temperature range and to meet the appropriate sections of Mil-Std-810E, Def-Stan 59-41, BS.3G.100 and RTCA DO160C.



Typical Installation



Outline Drawing

### Technical Specification

|                             |  |
|-----------------------------|--|
| Sensing Speed Range         | 3 to 50,000 rpm (subject to min. target passing period of 50µs)  |
| Sensing Distance            | 20 to 1000 mm for reflective tape with 25x25 mm target<br>75 to 200 mm for reflective paint with 25x25 mm target |
| Timing resolution           | 0.25° (<6000 rpm), 7µs (>6000 rpm) @ 120 mm with reflective paint  |
| MTBF                        | 38,000 hours   |
| Operating temperature range | -40°C to +70°C   |
| Indicators                  | Green lamp in presence of power. Red lamp in presence of target.   |
| EMC                         | Def-Stan 59-41   |

### Electrical Specification

|                      |   |
|----------------------|---|
| Connectors           | MIL C 38999 Series III  |
| Electrical Interface | One TTL compatible output. One AS5392 (formally RITA) compatible switch output.           |
| Power supply         | +10 to +30V DC, at 100mA max. Reverse polarity protection.<br>Compliant with Mil-Std-704C |
| Isolation            | 10MΩ @ 100V (case to electronics)   |

### Physical Specification

|                      |  |
|----------------------|--|
| Size (LxWxD)         | 56 mm (Including stud) x 53 mm (excluding mating connector) x 25 mm      |
| Weight               | 110g MAX (including 2 locking nuts)                                      |
| Fixing               | 16 mm long stud concentric with the sensing elements with 5/8 UNF thread |
| Sealing              | DIN 40 050 IP65  |
| Helitune Part Number | 386020   |



Helitune's Quality Management System is certified to BS EN ISO9001:2008 and AS9100

This document is not contractual. Helitune maintain a policy of continuous product development and improvement. This specification may change without notice.

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