

# NC4 non-contact tool setting system

## High speed, non-contact, tool setting and breakage detection

The NC4 is a flexible laser system, with ultra-compact laser tool setting transmitter and receiver units that can be mounted on separate brackets, or as a single fixed unit. The NC4 allows fast, non-contact, tool setting and tool breakage detection on machines previously unsuitable for such applications.

The NC4+ F145 system offers excellent tool-to-tool accuracy and is suitable for applications using small diameter tools.

Non-contact tool setting systems can reduce tool setting times by up to 90% and reduce scrap caused by setting errors. Broken tool detection cycles enable reliable unmanned machining.

In addition to the innovative MicroHole™ protection system featured in all Renishaw's non-contact systems for machine tools, the NC4 benefits from PassiveSeal™, an additional failsafe sealing device, preventing contamination in the event of air supply failure.

Ideal for retrofitting, the NC4 offers fast set-up as there is no laser focal point to identify.

### Key benefits

#### Brings probing to small machines

At just 30 mm (1.18 in) diameter and 35 mm (1.38 in) high, NC4 meets the demand for probing on machines previously unsuitable for larger non-contact tool setting and tool breakage detection systems.

#### Fast, robust and repeatable

Dependent on system, separation distances and mounting, tools as small as 0.03 mm (0.0012 in) diameter\* can be measured at any selected point along the beam, and checked for breakage.

#### Flexible systems

Available as both fixed and separate systems, with a measuring length of 225 mm (8.86 in) (overall unit length of 300 mm (11.81 in)) on the fixed system, and up to 5 m on the separate system.

\* Dependent on system, separation and mounting



### Innovations

#### Ultra-compact design

Miniaturised electronics, and the compact protection system without a bulky shutter mechanism, makes the NC4 suitable for machines with limited space for probe fitment.

#### Environmental protection

In addition to its MicroHole™ technology, the NC4 also features PassiveSeal™ - an integrated failsafe device which maintains IPX8 protection 100% of the time, even if the air supply fails.

#### One system supports all separations

With generic transmitter and receiver units, and no focal point to identify, installing the separate NC4 system is simple and fast, making it ideal for retrofitting to existing machines.

## Specification

### Principal application

High precision, high speed, non-contact tool measurement and broken tool detection on vertical and horizontal machining centres

### Laser type

Class 2 Laser product. Visible red light <1 mW 670 nm. Conforms to 21 CFR 1040.10 except for deviations pursuant to Laser Notice 50 dated June 24, 2007) and to IEC 60825-1:2007.

### Laser beam alignment

**Separate system:** Various optional adjuster packs are available.

**Fixed system:** The unit is supplied with an adjustable mounting plate on the underside.

### Electrical connection arrangement

**Separate system:** Hardwired cable on the underside of unit.

**Fixed system:** Hardwired cable on the end of the unit. Other configurations are available on request

### Sealing

IPX8 (air on or off)

### Typical repeatability

±0.1 µm (0.000004 in) 2σ\*

### Specified repeatability

**NC4:** ± 1 µm (0.00004 in) 2σ at 1 m (3.28 ft) separation

**NC4+ F145:** ± 1 µm (0.00004 in) 2σ at 85 mm (3.35 in) separation

### Min tool Ø for setting

Ø0.03 mm (0.0012 in) or larger depending on system, separation and set-up

### Min tool Ø for breakage

Ø0.03 mm (0.0012 in) or larger depending on system, separation and set-up

### Power supply

120 mA @ 12 V, 70 mA @ 24 V

### Output signal

Two voltage-free, solid state relays (SSR). Each can be either normally-open or normally-closed (selectable via a switch). Current (max.) 50 mA, voltage (max.) ±50 V. The interface contains an auxiliary relay which can be used for switching the output between the NC4 and a spindle probe. This relay could also be used to control an air blast kit (not supplied).

### Temperature limit

**Storage** -10 °C to 70 °C (14 °F to 158 °F).

**Operating** 5 °C to 50 °C (41 °F to 122 °F).

### Life

Tested to >1 million on/off cycles.

### Pneumatic supply

Ø3 mm air pipe, 3 bar (43 psi) min., 6 bar (87 psi) max. The air supply to the NC4 must conform to ISO 8573-1: Class 1.7.2.

### Cable

2 twisted pairs, 2 individual cores plus screen. Each core 18/0.1 insulated. Ø6.0 mm (0.24 in) x 12.5 m (39.36 ft) long.

### Mounting

**Separate system:** 2 off M3 x 0.5 P fixing holes plus 2 off Ø2 mm (0.079 in) dowel holes

**Fixed system:** Single M10 (3/8 in) or M12 (1/2 in) fixing. Alternative fixing arrangements available

### Supply protection

Resettable fuses. Reset by removing power and cause of fault.

\* Dependent on system, separation and mounting



NC4 laser tool setter



NC4 compact checking a tool for breakage

## More information

For further details on the products mentioned in this flyer, please visit [www.renishaw.com/nc4](http://www.renishaw.com/nc4) or [www.renishaw.com/mtp](http://www.renishaw.com/mtp)

**For worldwide contact details please visit our main website at**  
[www.renishaw.com/contact](http://www.renishaw.com/contact)