

NC4 compact fixed range

New additions to the successful range of high performance non-contact systems

The NC4 laser based non-contact tool setter, designed specifically to be fitted to CNC machine tools, is a part of Renishaw's growing range of non-contact solutions for a wide variety of machining centres. Available as fixed and separate system variants, the NC4 incorporates the unique MicroHole™ protection system, as featured in all Renishaw non-contact products. In addition, the NC4 benefits from the innovative failsafe PassiveSeal™ which maintains IPX8 environmental protection rating, even if the air supply fails.

Now, Renishaw has added to the NC4 product range with a series of compact fixed systems. The F95, F115, F145, F230 and F300 compact NC4 series as well as the NC4+ F145 system, set new performance standards in a small package.

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

As with all NC4 systems, precision optics are supplied as standard, enabling this compact series to achieve un-surpassed performance in a unit particularly suited for small machines and machines where space is at a premium.



Key benefits

Fast, robust and highly repeatable

Tools as small as 0.03 mm (0.0012 in) diameter can be measured and detected at any selected point along the beam*. Repeatability can be as low as $\pm 0.1 \mu\text{m}$ (2σ)*. The stainless steel construction is sufficiently robust to withstand harsh machine tool environments.

Brings probing to small machines

The NC4 sets new standards for size. The units have a large measuring gap compared to the overall length making them ideal for very small machines, previously unsuitable for non-contact tool setting and tool breakage detection.

Ultra compact systems

The compact F95, F115, F145, F230 and F300 have measuring gaps of 23 mm, 55 mm, 85 mm, 170 mm and 240 mm respectively. The system measures just 30 mm wide x 77 mm high.

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.

System performance

As with all Renishaw NC4 systems, performance is improved through use of precision optics, supplied as standard.

Environmental protection

In addition to its MicroHole™ technology, the NC4 also features the field proven PassiveSeal™, ensuring IPX8 protection 100% of the time.

Ease of installation

In common with other models in the NC4 range, there is no focal point to identify, making installation faster and simpler, and bringing improved performance to existing machines.

* Dependent on system, separation and mounting

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Specification

Principal application

High precision, high speed non-contact tool measuring and broken tool detection on small 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

The unit is supplied with an adjustable mounting plate on the underside.

Electrical connection arrangement

Hardwired cable on the end of the unit. Other configurations available on request.

Sealing

IPX8 (air on or off).

Typical repeatability

$\pm 0.1 \mu\text{m}$ (0.000004 in) $2\sigma^*$

Specified repeatability

NC4: $\pm 1 \mu\text{m}$ (0.00004 in) (2σ) at 1 m (3.28 ft) separation
NC4+ F145: $\pm 1 \mu\text{m}$ (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

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 compact checking a tool for breakage



NC4+ F145

More information

For further details on the products mentioned in this flyer, please visit www.renishaw.com/nc4 or www.renishaw.com/mtp

For worldwide contact details please visit our main website at
www.renishaw.com/contact

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