Data sheet
H-2000-2232-01-A

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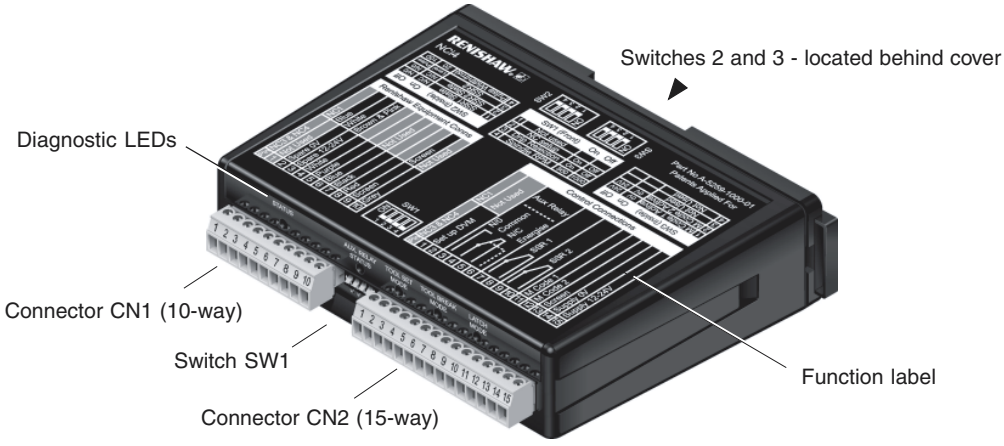
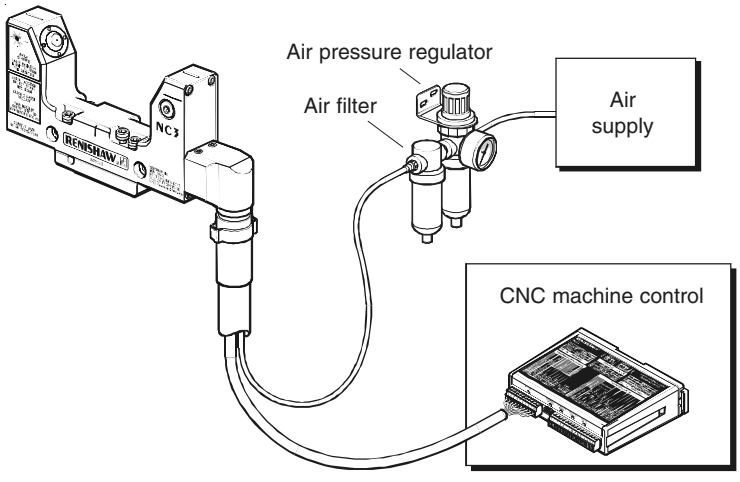
NCi-4 non-contact tool setting interface

The NCi-4 interface is used with Renishaw's NC1, NC3 or NC4 non-contact tool setting systems. It processes signals from the non-contact unit and converts them into a voltage-free solid state relay (SSR) output, for transmission to the CNC machine control. The NCi-4 features a drip rejection mode allowing it to filter out random drops of coolant without triggering the system.

NC1, NC2 and NC4 non-contact tool setting systems are for use on machining centres for high speed tool length and diameter measurement, and broken tool detection.



The NCi-4 interface should be installed in the CNC machine control cabinet. Where possible, site the unit away from potential sources of interference, such as transformers and motor controllers.



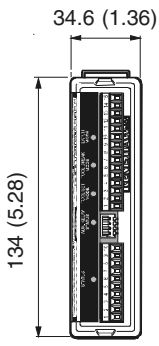
NCi-4 connected to a typical non-contact tool setting probe

Specification

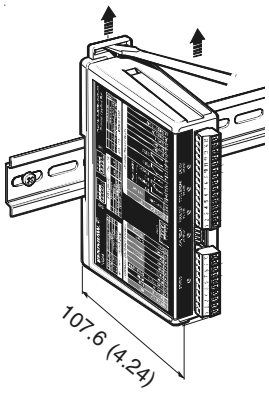
Principal application	The NCi-4 processes signals from the NC1, NC3 or NC4 and converts them into a voltage-free solid state relay (SSR) output, which is transmitted to the CNC machine control.
Dimensions	Compact size 134 mm x 107.6 mm x 34.6 mm (5.28 in x 4.24 in x 1.36 in).
Supply voltage	11 V to 30 V dc
Supply current	NC3 or NC4 connected: 120 mA @ 12 V, 70 mA @ 24 V NC1 connected: 300 mA @ 12 V, 130 mA @ 24 V
Output signal	Two voltage-free solid state relay (SSR) outputs configurable normally open or normally closed, one of which can be configured level or pulsed (pulse width can be 20 ms or 100 ms).
Auxiliary relay	Auxiliary relay for skip sharing with a spindle probe system or controlling the transmitter separately from the receiver. May alternatively be used to operate a remote LED or buzzer.
Temperature limit	Operating 5 °C to 50 °C (42 °F to 122 °F). Storage -10 °C to 70 °C (14 °F to 158 °F).
Life	Tested to >1 million on/off cycles.
Mounting	DIN rail. Alternative mounting using screws.
Supply protection	1.1 A resettable fuse. Reset by removing power and cause of fault.
Input/output protection	SSR outputs protected by 50 mA resettable fuse. Auxillary relay output protected by a 200 mA resettable fuse.
Response time	The system electronics will detect when the laser beam is blocked within 9 µs.
Diagnostic LEDs	Beam status, latch mode, high speed tool breakage detection mode, Auxiliary relay, tool setting mode.
Modes of operation	High speed tool breakage detection mode. Normal measurement mode. Latch mode - for profile checking and cutting edge checking. Drip rejection mode - rejects random drops of coolant falling through the beam.

Dimensions and mounting arrangement

dimensions mm (in)

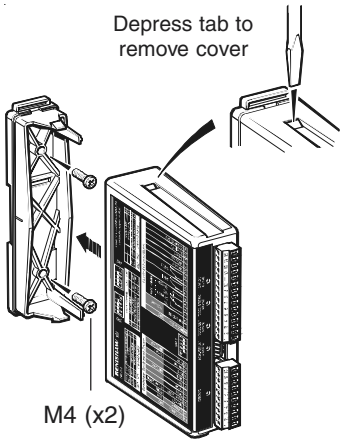


Lift sprung end plate, to attach NCi-4 to DIN rail



Standard DIN rail mounting

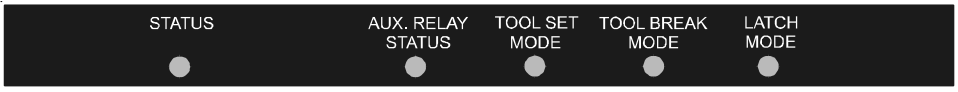
Depress tab to remove cover



Alternative mounting

Diagnostic LEDs

LEDs provide the operator with a visual indication of system status



Status LED (when used with NC3 or NC4)
Following a successful set up, the probe status LED indicates the status of the probe.

When the system is in the Set-up mode, the LED changes from red to amber to green as the beam voltage increases.

If the LED is amber after exiting from the set-up mode, this indicates that Set-up has not been successful and must be repeated.

Status LED (when used with NC1)

Green The probe is un-triggered
Red The probe is triggered

When the system is in the Set-up mode, the LED displays red.

Aux. relay status LED

Green Auxiliary relay energised
Not lit Auxiliary relay not energised

Tool set mode LED

Green Mode selected
Not lit Mode not selected

Tool break mode LED

This is the high-speed tool breakage mode.

Green Mode selected
Not lit Not selected

Latch mode LED

For profile checking and cutting edge setting.

Green Mode selected
Not lit Not selected

Status LED (when used with NC3 or NC4)

LED colour	Tool setting mode	High speed broken tool detection mode	Latch mode
Green/amber (flashing at 1 Hz)	The system operating voltage is too high. The system will continue to function but for optimum performance repeat the set-up and alignment procedure.	Not applicable	The output is not latched. The system operating voltage is too high. The system wil continue to function, but for optimum performance repeat the set-up and alignment procedures.
Green	The beam is clear. The probe is un-triggered.	Not applicable	The beam is clear. The output is not latched.
Amber	The beam is partially blocked ✶.	The output is not latched. The beam is blocked.	The output is not latched. The beam is blocked by a rotating tool ✶.
Red	The beam is blocked. The probe is triggered.	The output is latched. The tool is broken.	The output is latched.
No light	No power to the unit		

✶ If the laser beam is clear and the LED is amber, the system will continue to function, but for optimum performance maintenance is required.

Please see Renishaw NC4 installation and maintenance guide, Part no H-2000-5230 for suggested actions.

Renishaw plc
New Mills, Wotton-under-Edge,
Gloucestershire GL12 8JR
United Kingdom

T +44 (0)1453 524524
F +44 (0)1453 524901
E uk@renishaw.com
www.renishaw.com

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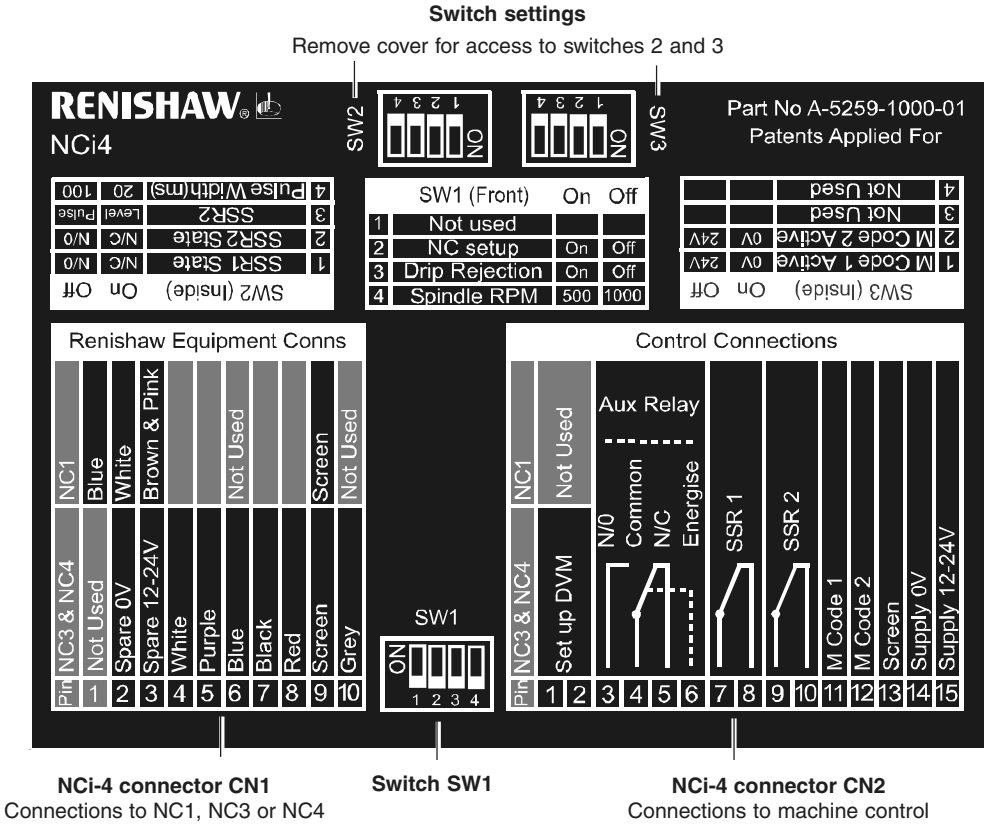
Electrical connections A full set of wiring diagrams is available in the NCi-4 installation manual H-2000-5236



NCi-4 connector CN1
Connections to NC1, NC3 or NC4

Switch SW1

NCi-4 connector CN2
Connections to machine control

Parts list - Please quote the Part no. when ordering equipment.

Type	Part no.	Description
NCi-4 interface	A-5259-1000	NCi-4 interface and box with DIN rail mounting and two terminal blocks
NCi-4 terminal block (10-way)	P-CN25-1053	10-way socket terminal for NCi-4 interface
NCi-4 terminal block (15-way)	P-CN25-0009	15-way socket terminal for NCi-4 interface
PSU3 power supply unit	—	PSU3 power supply unit - see Data sheet Part no. H-2000-2200

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H-2000-2232-01-A

Issued 11.03 Part no. H-2000-2232-01-A