

NC4+ Blue non-contact tool setting system



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Intended use

The NC4+ Blue is a laser-based non-contact tool setting system that provides high-speed, high-precision measurement of cutting tools on a machining centre under normal operating conditions.

Safety

Information to the user

In all applications involving the use of machine tools or CMMs, eye protection is recommended.

Information for the machine supplier/installer

It is the machine supplier's responsibility to ensure that the user is made aware of any hazards involved during operation, including those mentioned in Renishaw product literature, and to ensure that adequate guards and safety interlocks are provided.

Under certain circumstances, the probe signal may falsely indicate beam not blocked. Do not rely on probe signals to halt the movement of the machine.

Information to the equipment installer

All Renishaw equipment is designed to comply with the relevant EU and FCC regulatory requirements. It is the responsibility of the equipment installer to ensure that the following guidelines are adhered to, in order for the product to function in accordance with these regulations:

- any interface **MUST** be installed in a position away from any potential sources of electrical noise (for example, power transformers, servo drives);
- all 0 V/ground connections should be connected to the machine "star point" (the "star point" is a single point return for all equipment ground and screen cables). This is very important and failure to adhere to this can cause a potential difference between grounds;
- all screens must be connected as outlined in the user instructions;
- cables must not be routed alongside high current sources (for example, motor power supply cables), or be near high-speed data lines;
- cable lengths should always be kept to a minimum.

Equipment operation

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Warnings

Use of controls or adjustments or performance of procedures other than those specified within this publication may result in hazardous radiation exposure.

Switch off the power supply before carrying out maintenance on the NC4+ Blue system.

When using the NC4+ Blue system, basic safety precautions must always be followed to reduce the risk of fire, electric shock and personal injury, including the following:

- Read all instructions before operating this product.
- The device must only be installed and used by competent, trained personnel.
- Use eye protection to protect against mechanical hazards, coolant and swarf.
- Avoid inhalation of coolant vapour from the machine tool.
- Do not block the air exiting from the transmitter, receiver or air blast apertures.
- The sound power emitted by the air blast equipment can range from 70.3 dB at 3.0 bar (43.51 psi) to 78.2 dB at 6.0 bar (87.02 psi). It is the responsibility of the integrator to ensure a suitable noise assessment is performed when the equipment is put into use.
- Prevent direct exposure of the eyes to the laser beam. Ensure that the beam is not reflected into the eyes via any reflective surface.

Software and user information

For available software, see the *Probe software for machine tools – programs and features data sheet* (Renishaw part no. H-2000-2298). For more information, see www.renishaw.com.

Machine tool apps

Smartphone apps provide information at a user's fingertips in a simple, convenient format. Available globally in a wide range of languages, our free-of-charge apps give users the following information:

- | | |
|-------------|--|
| NC4 app | Configuration (including wiring), maintenance, troubleshooting of NC4 systems. |
| GoProbe app | Programming of Renishaw probing systems (including NC4). |



Renishaw apps are available in China via Baidu and Tencent.

On-machine apps can be seamlessly integrated with a wide range of CNC controllers. Apps are installed onto a Microsoft® Windows®-based CNC controller or a Windows tablet connected to the controller via Ethernet.

With touch interaction and intuitive design, smartphone and on-machine apps provide significant benefits to machine tool probe users.

For more information, visit www.renishaw.com/machinetoolapps.



Probe status LED function

Probe status LED	
Blocked beam / probe triggered	●
Partially blocked beam / probe untriggered	●
Unblocked beam / probe untriggered	●



For more information on these LED sequences and modes of operation, see the *NCA+ Blue non-contact tool setting system* installation and maintenance guide (Renishaw part no. H-6435-8501).

Laser safety and warning labels

Laser “On” and probe status LED (for more information, see the *NC4+ Blue non-contact tool setting system* installation and maintenance guide (Renishaw part no. H-6435-8501)).



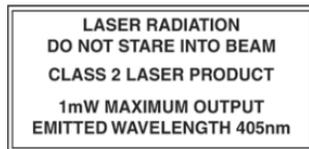
NOTE: Labels A and B are fitted to the transmitter unit only.

An adhesive warning label is provided for attachment outside the machine.

Label A

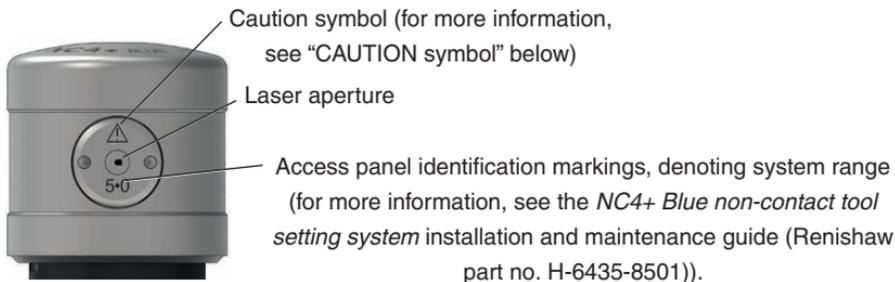


Label B



Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

Location of the laser aperture



CAUTION – Laser safety

The access panel is to be removed for service purposes only using the special tool supplied.

Before removing the panel, switch off electrical power to the transmitter unit to avoid exposure to the laser beam.



CAUTION symbol

The caution symbol on the access panel denotes the following:

CAUTION – Class 3R Laser radiation when open. Avoid direct eye exposure.

This text is not included on the access panel due to the limited space available.

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Unless you and Renishaw have agreed and signed a separate written agreement, the equipment and/or software are sold subject to the Renishaw Standard Terms and Conditions supplied with such equipment and/or software, or available on request from your local Renishaw office.

Renishaw warrants its equipment and software for a limited period (as set out in the Standard Terms and Conditions), provided that they are installed and used exactly as defined in associated Renishaw documentation. You should consult these Standard Terms and Conditions to find out the full details of your warranty.

Equipment and/or software purchased by you from a third-party supplier is subject to separate terms and conditions supplied with such equipment and/or software. You should contact your third-party supplier for details.

China RoHS

For more information, on China RoHS visit:

www.renishaw.com/mtpchinaroHS

REACH regulation

Information required by Article 33(1) of Regulation (EC) No 1907/2006 ("REACH") relating to products containing substances of very high concern (SVHCs) is available at:

www.renishaw.com/REACH

Disposal of waste electrical and electronic equipment (WEEE)



The use of this symbol on Renishaw products and/or accompanying documentation indicates that the product should not be mixed with general household waste upon disposal. It is the responsibility of the end user to dispose of this product at a designated collection point for waste electrical and electronic equipment (WEEE) to enable reuse or recycling. Correct disposal of this product will help to save valuable resources and prevent potential negative effects on the environment. For more information, contact your local waste disposal service or Renishaw distributor.

EU declaration of conformity



Renishaw plc hereby declares that the NC4+ Blue non-contact tool setting system is in compliance with the essential requirements and other relevant provisions of:

- the applicable EU directives
- the relevant statutory instruments under UK law

The full text of the declaration of conformity is available at:
www.renishaw.com/mtpdoc

FCC Information to user (USA only)

47 CFR Section 15.19

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

47 CFR Section 15.21

The user is cautioned that any changes or modifications not expressly approved by Renishaw plc or authorised representative could void the user's authority to operate the equipment.

47 CFR Section 15.105

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

ICES Information to user (Canada only)

This ISM device complies with Canadian ICES-001.

Cet appareil ISM est conforme à la norme ICES-001 du Canada.

Patents

Features of the NC4+ Blue non-contact tool setting system and features of similar products are the subject of one or more of the following patents and/or patent applications:

CN 100394139

WO 2020/074866

EP 1502699

US 7312433

JP 4520240

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安全须知

用户须知

在所有涉及使用机床的应用中，建议采取保护眼睛的措施。

机床供应商/安装商须知

机床制造商有责任确保用户了解操作中存在的任何危险，包括雷尼绍产品说明书中所述的危险，并确保提供充分的防护装置和安全联动装置。

在某些情况下，测头信号可能错误指示测头已复位状态。切勿单凭测头信号来停止机床运动。

设备安装商须知

雷尼绍所有设备的设计均符合相关的EU和FCC监管要求。为使产品按照这些规定工作，设备安装商有责任保证遵守以下指导原则：

- 任何接口的安装位置**必须**远离任何潜在的电噪声源，如变压器、伺服系统驱动装置等；
- 所有0伏/接地连接都应当连接到机床接地终端上（“接地终端”是所有设备地线和屏蔽电缆的单个回路）。这一点非常重要，不遵守此规定会造成接地之间存在电位差；
- 所有屏蔽装置都必须按使用说明书中所述进行连接；
- 电缆线路不得与机电电源电缆等 high 电流源并行或靠近高速数据传输线；
- 电缆长度应始终保持最短。

设备操作

如果设备使用方式与制造商要求的方式不符，设备提供的保护功能可能会减弱。

警告

在使用、调整控制元件或者执行操作时，若不按照本出版物所述的步骤进行，可能会导致接触有害辐射。

关闭电源后，方可在NC4系统上进行维护工作。

在使用NC4系统时，必须严格遵循基本的安全防范措施，以降低火灾、电击和人身伤害的风险。包括以下安全措施：

- 操作本产品之前请阅读所有使用说明。
- 本装置只能由接受过培训的专业人员安装和使用。
- 使用护目用具，预防机械伤害及冷却液和切屑污染。
- 避免吸入机床上的冷却液蒸汽。
- 请勿阻塞发射器、接收器或吹气系统的光孔气源。
- 吹气设备发出的声功率范围从3.0 bar时的70.3 dB到6.0 bar时的78.2 dB。集成商有责任确保在设备投入使用之前执行适当的噪音评估。
- 请勿直视激光束。确保光束不会经任何反射表面反射到眼睛里。

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