

## SPA3 installation guide

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# SPA3 installation guide

Documentation part number: H-1000-7566-04-A



## SPA3 installation guide

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# General information

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## 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, please contact your local waste disposal service or Renishaw distributor.

## Warranty

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.

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### Care of equipment

Renishaw probes and associated systems are precision tools used for obtaining precise measurements and must therefore be treated with care.

### Changes to Renishaw products

Renishaw reserves the right to improve, change or modify its hardware or software without incurring any obligations to make changes to Renishaw equipment previously sold.

### Company registration details

Renishaw plc. Registered in England and Wales. Company no: 1106260. Registered office: New Mills, Wotton-under-Edge, Gloucestershire, GL12 8JR, UK.

### Packaging

To aid end user recycling and disposal the materials used in the different components of the packaging are stated here:

Packaging component	Material	94/62/EC code	94/62/EC number
Outer box	Cardboard - 70% recycled content	PAP	20
Packing foam	Polyurethane	PU	7
Packing foam	Cross-linked polyethylene	LDPE	4
Plastic bags	Low density polyethylene bag	LDPE	4

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# Product compliance

## EU declaration of conformity

Contact Renishaw plc or visit [www.renishaw.com/EUCMM](http://www.renishaw.com/EUCMM) for the full EU declaration.

## EMC conformity

This equipment must be installed and used in accordance with this installation guide. This product is intended for industrial use only and should not be used in a residential area or connected to a low voltage power supply network which supplies buildings used for residential purposes.

## FCC (USA only)

### Information to user (47 CFR 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 you will be required to correct the interference at your own expense.

### Information to user (47 CFR 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.

### Equipment label (47 CFR 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.
2. This device must accept any interference received, including interference that may cause undesired operation.

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### 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](http://www.renishaw.com/REACH)

### China RoHS


Contact Renishaw plc or visit [www.renishaw.com/ChinaRoHSCMM](http://www.renishaw.com/ChinaRoHSCMM) for the full China RoHS tabulation.




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# Safety


 Where this symbol is displayed on the product the user must refer to the installation guide for information and safety advice.

If the equipment is used in a manner not specified by the manufacturer then the safety of the equipment may be impaired.


 **WARNING:** The SPA3 must be earthed. Earthing provisions for the complete machine is the responsibility of the OEM or installer.


 **WARNING:** The SPA3 must not be powered directly from the mains.  
 A single fault tolerant PSU approved to BS EN 60950-1:2006+A2:2013 (or current version) must be used, and connected to a supply incorporating a protective earth conductor.

 **WARNING:** SPA3 is isolated from the power supply by disconnection of the ac power connector from the external PSU. If any additional means of isolation is required, it must be specified and fitted by the machine manufacturer or the installer of the product. The isolator must be sited within easy reach of the CMM operator and comply with BS EN 61010-1:2010 (or current version) and any applicable national wiring regulations for the country of installation.

 **WARNING:** Maintenance should only be carried out after the machine has been isolated from the electrical supply, compressed air supply or other energy sources in accordance with the machine manufacturer's instructions.

## Machine safety

 **WARNING:** Switching off or isolating the SPA3 may NOT prevent unexpected machine movement. The user is advised to isolate the machine from the electricity supply, compressed air or other energy sources in accordance with the machine manufacturer's instructions before entering the danger zone or performing any maintenance operations.

 **CAUTION:** It is strongly recommended that the CMM manufacturer or retrofitter includes a periodic test of the emergency stop and if fitted, the associated reset switch in their maintenance instructions.

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# International safety instructions

## BG - ПРЕДУПРЕЖДЕНИЕ

Моля, обърнете на приложение 1 и прочетете инструкциите за безопасност на вашия собствен език, преди за разопаковате и монтирате този продукт.

## CZ - VÝSTRAHA

Před rozbalením a instalací tohoto výrobku si přečtěte bezpečnostní pokyny ve vlastním jazyce uvedené v příloze 1.

## DA - ADVARSEL

Læs sikkerhedsinstrukserne i Appendix 1 FØR udpakning og installation af dette produkt.

## DE - WARNHINWEIS

Bevor Sie dieses Produkt auspacken und installieren, konsultieren Sie bitte Anhang 1 und lesen Sie die Sicherheitshinweise in Ihrer Sprache.

## EL - ΠΡΟΕΙΔΟΠΟΙΗΣΗ

Γυρίστε στο Κεφάλαιο 1 και διαβάστε τις οδηγίες ασφαλείας στη δική σας γλώσσα προτού ανοίξετε αυτό το προϊόν για να το εγκαταστήσετε.

## EN - WARNING

Before unpacking and installing this product, please consult Appendix 1 and read the safety instructions in your language.

## ES - ADVERTENCIA

Consulte el apéndice 1 y lea las instrucciones de seguridad en su idioma antes de desempaquetar e instalar este producto.

## ET - HOIATUS

Palun vaadake 1. lisa ning lugege enne selle toote lahtipakkimist ja paigaldamist ohutusjuhend läbi.

## FI - VAROITUKSIA

Lue liitteessä 1 olevat omalla kielelläsi kirjoitetut turvaohjeet ennen tämän tuotteen pakkauksen avaamista ja asentamista.

## FR - AVERTISSEMENT

Consulter l'annexe 1 et les instructions de sécurité dans votre propre langue avant de débiller et d'installer ce produit.

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### GA - RABHADH

Téigh chuig aguisín 1 agus déan na treoracha sábháilteachta a léamh i do theanga féin le do thoil sula ndéantar an táirge seo a dhíphacáil agus a shuiteáil.

### HR - NAPOMENA

Prije nego što proizvod izvadite iz ambalaže i ugradite ga, otvorite Prilog 1 i pročitajte sigurnosne upute na svom jeziku.

### HU – FIGYELMEZTETÉS

A termék kicsomagolása és telepítése előtt olvassa el az 1. számú függelékben található, az Ön anyanyelvén hozzáférhető biztonsági utasításokat.

### IT - AVVISO

Prima di aprire ed installare questo prodotto, leggere le istruzioni di sicurezza nella vostra lingua riportate nell'Appendice 1.

### JA - 警告

この製品を箱から取り出し設置する前に、付録 1 に記載された安全性に関する注意書きをお読みください。

### LT – ĮSPĖJIMAS

Prieš išpakuodami ir įdiegdami produktą, turite grįžti prie 1 priedo ir perskaityti nurodymus dėl saugos savo kalba.

### LV – BRĪDINĀJUMS

Pirms šī izstrādājuma izsaiņošanas un uzstādīšanas izskatiet 1. pielikumā sniegtās drošības instrukcijas savā valodā.

### MT - TWISSIJA

Jekk jogħġbok mur f'appendiċi 1 u aqra l-istruzzjonijiet tas-sigurtà fil-lingwa tiegħek qabel ma toħroġ dan il-prodott mill-ippakkjar u tinstallah.

### NL - WAARSCHUWING

Ga naar appendix 1 en lees de veiligheidsinstructies in uw eigen taal, voordat u dit product uitpakt en installeert.

### PL - OSTRZEŻENIE

Przed rozpakowaniem i zainstalowaniem tego produktu prosimy o zapoznanie się z Dodatkiem 1 i przeczytanie zaleceń dotyczących bezpieczeństwa w danym języku.

### PT - ADVERTÊNCIA

Você deve retornar ao Anexo 1 e ler as instruções de segurança em seu idioma antes de desembalar e instalar este produto.



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### RO - AVERTISMENT

Înainte de a desface ambalajul și a instala acest produs, vă rugăm să căutați Anexa 1 și să citiți cu atenție instrucțiunile de siguranță, în limba română.

### SK - VÝSTRAHA

Pred rozbalením a inštaláciou tohto produktu si pozrite prílohu 1 a prečítajte si bezpečnostné pokyny vo vašom jazyku.

### SL - OPOZORILO

Preden izdelek vzamete iz embalaže in ga vgradite, odprite Prilogo 1 in preberite varnostna navodila v svojem jeziku.

### SV - VARNING

Gå till bilaga 1 och läs säkerhetsinstruktionerna på ditt eget språk innan du packar upp och installerar denna produkt.

### TW - 警告

在拆開和安裝本產品之前，請翻頁至附錄 1 閱讀母語的安全指示。

### 中文 — 警告

在拆包和安裝本產品之前，請翻到附錄1，閱讀中文版安全說明。

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# Environmental conditions

<b>Indoor use</b>	IP30* (BS EN60529:1992 or current version))
<b>Altitude</b>	Up to 2000 m
<b>Operating temperature</b>	+5 °C to +50 °C
<b>Storage temperature</b>	-25 °C to +70 °C
<b>Relative humidity</b>	80% maximum (non-condensing) for temperatures up to +31 °C Linear decrease to 50% at +40 °C
<b>Transient voltages</b>	Overvoltage category I
<b>Pollution degree</b>	2

\* It may be necessary to house SPA3 in a suitable electrical enclosure according to the installation's environmental conditions to obtain a higher IP rating.

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# System overview

SPA3 is a servo power amplifier with enhancements for higher power and category 2 E-STOP.

SPA3 can be used with UCC2, UCC2-2, UCC T3-2, UCC T3 PLUS, UCC S3, UCC T5 and UCC S5 and have different connection requirements.

The high power capability combined with a compact form enables use of the SPA3 across a wide range of machines.

The SPA3 CMM amplifier has the capability of:

- Powering three axes of a CMM
- Accepting input signals from air pressure, crash detection and all axis inner and outer travel limit switches (not connected when used with UCC2 / UCC2-2)
- Accepting two uncommitted general purpose input signals and generating one uncommitted general purpose output signal (not connected when used with UCC2 / UCC2-2)
- Directly supporting the TP1, TP2, TP6 and TP20 touch-trigger probes (not connected when used with UCC2 / UCC2-2)
- Providing a +24 V supply for use by the CMM switches (not connected when used with UCC2 / UCC2-2)
- The SPA3 supports the MCULite-2 joystick, it can also support the MCU5, MCU5-2, MCU W and MCU W-2 (not connected when used with UCC2 / UCC2-2)
- Providing power output of up to 800 W continuous and 960 W for up to 1 second
- Setting the voltage of each axis is independent allowing differing motor voltages to be used without damage
- Supporting dc motors in the range 12 V to 80 V and currents up to 9.5 A
- Supporting encoder / tachometer or linear encoders (torque mode) for velocity feedback
- Simulating linear power amplifier - drive outputs are free from switching edges eliminating noise from drive PWM, improving repeatability and reducing emissions
- Providing category 2 E-STOP

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# SPA3 installation software

The SPA3 is supported in UCCsuite version 4.4.6 software or later. The software can be obtained online at [www.renishaw.com/cmmsupport](http://www.renishaw.com/cmmsupport) or from your local Renishaw supplier. Follow the prompts to install the UCCserver software.



**CAUTION:** Do not power down the SPA3 when the parameters or firmware is being updated. This can cause an error that requires the unit to be returned to Renishaw.

## UCCassist-2

The Renishaw UCCassist-2 program is a utility to assist the engineer to install, commission and maintain a UCC controlled CMM.

Capabilities of the software include:

- Basic machine system diagnostics
- Operation with Renishaw's machine checking gauge, enabling the user to complete frequent volumetric accuracy tests to ensure the CMM is running within the specified operational tolerances
- Automated CMM error mapping routines, when used in conjunction with the Renishaw ML10 or XL80 laser systems

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# SPA3 system components

The part numbers of the SPA3 kits are:

Kit	Part number
SPA3 amplifier kit 1 comprising of:	A-5518-2550
SPA3 amplifier	A-5518-2500
PSU 600 W 48 V to 58 V (medium / large machines)	A-5518-0025
SPA3 for use with UCC2-2	A-5629-0100
SPA3	A-5629-0200
SPA3 5-axis	A-5629-0300
Accessories	Part number
PSU 600 W 48 V to 58 V (medium / large machines)	A-5518-0025
Connector kit	A-5518-0010
Bracket kit	A-5518-0005
E-STOP cable required for UCC2 or UCC2-2	A-5629-0090
SPA3 6-axis emergency stop cable	A-5623-0095

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# General wiring standards for the installation of the SPA3

To achieve reliable operation of the SPA3 plus UCC, the following should be observed:

- The PSU must be single fault tolerant, approved to EN60950-1 and must be connected to a supply incorporating a protective earth conductor (earthing provisions and residual fault protection for the complete machine are the responsibility of the OEM or installer)
- The system must be PAT tested before the equipment is powered
- All signal cables **MUST** be screened and all cable screens should be connected electrically to the cable connector's metal shells
- It is recommended that screens for motor cables should be connected to the shell on the SPA3 end and connected to the motor housing at the CMM end
- Signal cables such as tacho and scale cables should be connected to the SPA3 and have a cable shield that runs to the machine but is left unconnected at the machine end
- Please refer to appropriate product installation guides when installing other Renishaw components
- Supply and motor cables that are used to connect the SPA3 to the CMM (that are not data cables) must have a minimum cross section of 0.3 mm<sup>2</sup> (as specified in EN 60204-1 para.12.6.)
- SPA3 has a maximum voltage of 80 Vdc and peak current is 9.5 A (the actual peak current will be dependent on the size of the motor fitted and how hard it needs to be driven, so cable sizes need to be calculated by the system installer)
- All cable connectors should be secured to the SPA3 by the connector jack screws.

The power input to the SPA3 is via a 3W3 connector; refer to the [Connector and signals](#) section for more information.

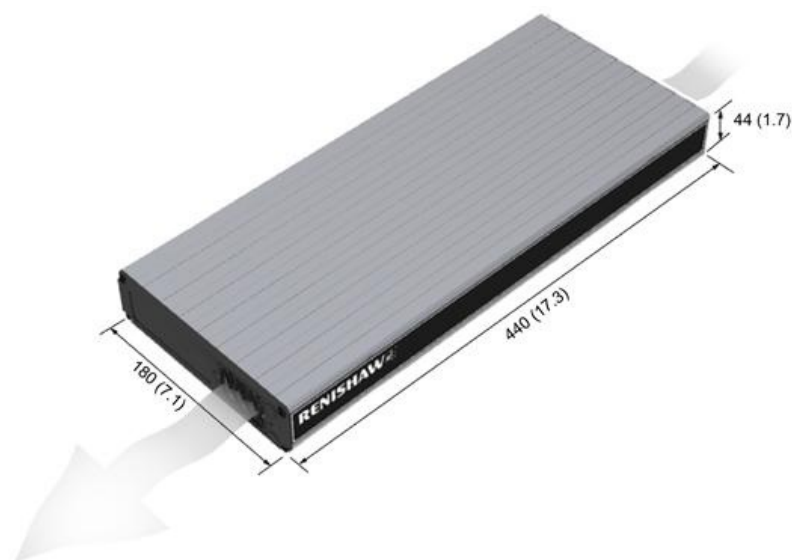
## SPA3 power requirements

The SPA3 amplifier requires 30 W of power to operate. This must be factored into the power supply used.

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# Installation



## Mounting the SPA3

The SPA3 unit draws air from the right hand side when viewed from the front and expels air out of the left hand side. A minimum clearance gap of 10 mm is necessary between the sides of the unit and any potential obstruction. The dimensions shown on the above drawing are in mm (in).

## Fitting mounting brackets (optional)

**i** NOTE: The screws supplied with this kit are M5 × 6 mm countersink type.

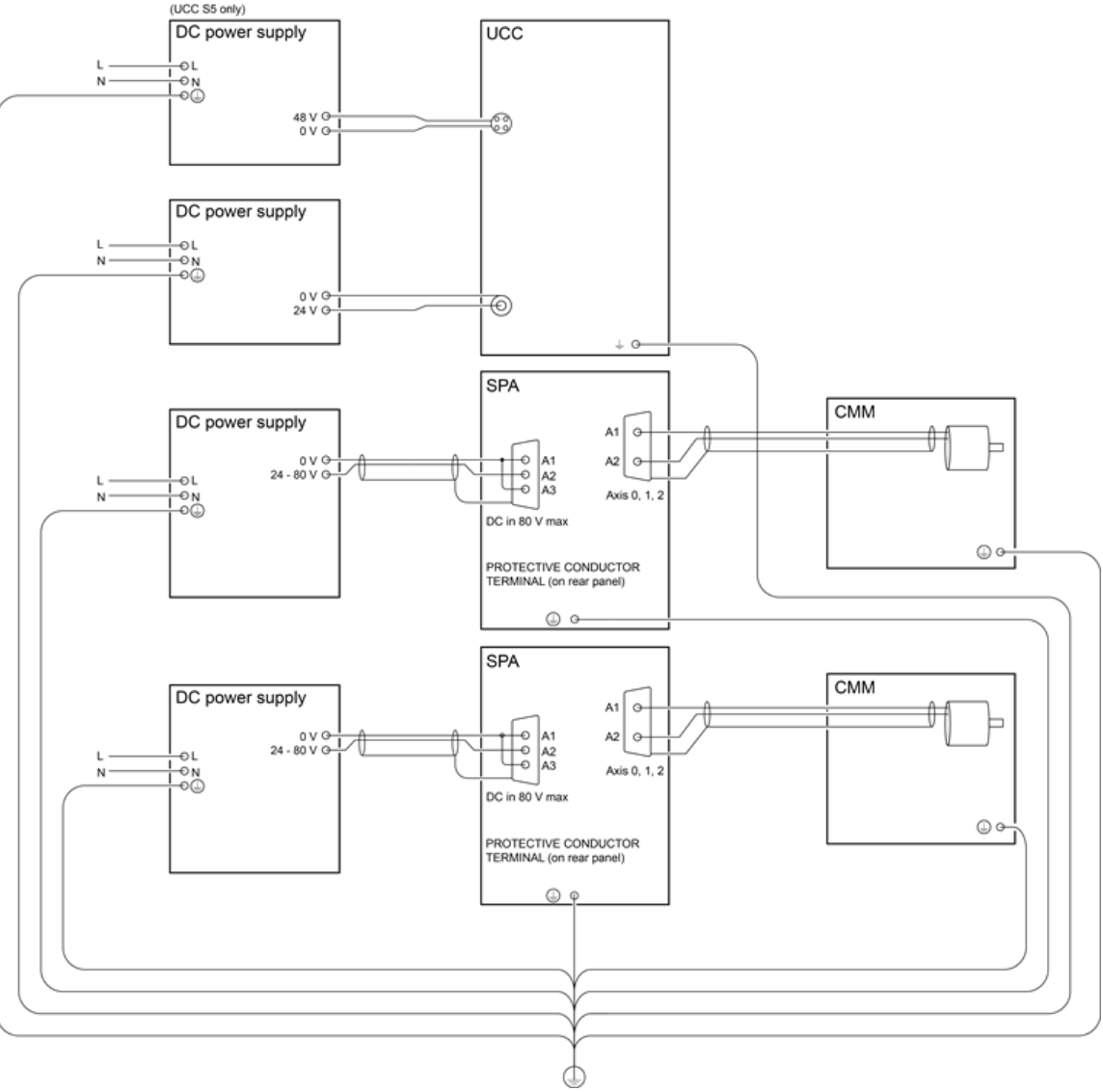


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# System connection

## Earth bonding scheme

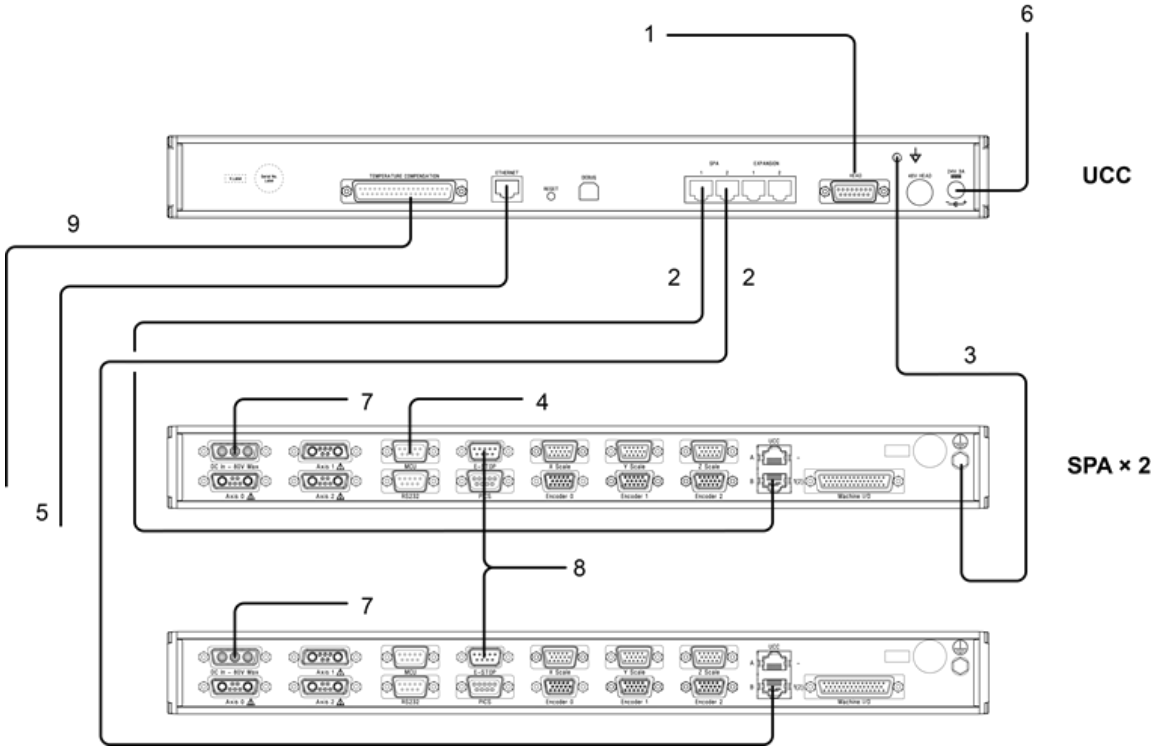




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## Installation for 4 - 6 axes



Key	Description	Key	Description
1	Head cable	6	24 V power supply (supplied)
2	CAT 5 300 mm cable (supplied)	7	25 V - 80 V power supply (not supplied)
3	16 / 0.2 mm earth connection	8	E-STOP link cable (supplied)
4	MCU connection	9	TEC input
5	CAT 5 ethernet cable (5 m cross-over cable supplied) to host PC		

The head and CMM system are operated through UCCserver which uses I++DME command protocol to communicate between the system application software and the UCC.

Full 5-axis scanning capability is achieved through interaction between the UCC, the head and the SPA3, to co-ordinate all the motion and metrology aspects across the three CMM axes and the two head axes.

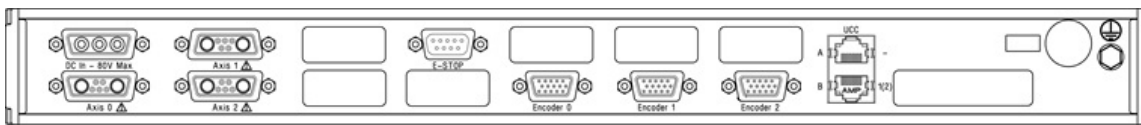
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# Connectors and signals for the SPA3

## Rear panel

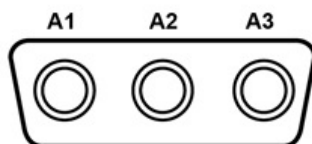
The connectors on the rear panel of the SPA3 controller enclosure (for use with UCC2 / UCC2-2) are shown below:



**NOTE:** Do not remove the blanking plugs when used in conjunction with UCC2 or UCC2-2.

## DC power in

3W3 socket. The SPA3 is powered from an external dc power source through this connector. This and all other connectors and shells can be purchased in a connector kit from Renishaw (part number A-5518-0010).



Pin no.	Function
A1	0 V
A2	24 V to 80 Vdc
A3	Reserved

## DC power specification

- Voltage 24 V to 80 Vdc
- Current input to 9.5 A

The SPA3 requires 30 W of power to support the controller functions integrated into the unit. This must be factored into the power supply used.

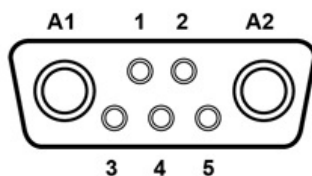
**CAUTION:** For ambient temperatures between 40 °C and 50 °C, the maximum output power should be 400 W. SPA3 is not recommended for use in ambient temperatures above 50 °C.

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# Axis0, Axis1 and Axis2 motor drive connectors (7w2 D socket)

Each motor connection is a 7W2 connector for connection of a CMM motor to the SPA3, as shown below:



Pin no.	Function
A1	Positive motor connection (default)
A2	Negative motor connection (default)
1	Positive tacho input (default)
2	* Negative tacho input
3	(tacho) screen
4	* Negative tacho input
5	(tacho) screen
Shell	Screen (motor)

The table shows the **default** polarity configurations for all pins.



\* **NOTE:** The motor and tacho polarities on the SPA3 are software configured during the installation process. The maximum tacho voltage is 100 V. If one terminal of the tacho is grounded the maximum voltage is reduced to 18 V. It is recommended that a differential tacho is used.



**CAUTION:** The SPA3 motor connections must be blanked off if not being used to prevent accidental contact which could result in an electric shock.

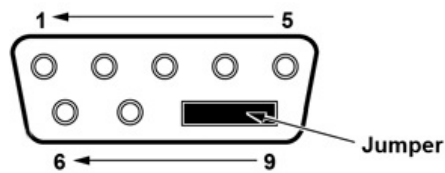
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# MCU connector (9-pin 'D' plug)

**i** **NOTE:** This connector is supplied pre-blanked for use with UCC2 or UCC2-2.

Remove the blanking plug AND jumper between pin 8 and 9 when installing with any other controller.



This is a 9-pin D-plug suitable for direct connection to the MCULite-2, MCU5, MCU5-2, MCU W or MCU W-2 joystick.

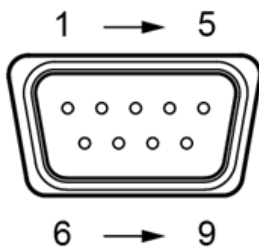
Pin no.	Function
1	Ground
2	RX_B
3	RX_A
4	TX_A
5	Reserved
6	+12 V
7	TX_B
8	E-STOP_B
9	E-STOP_A
Shell	Screen

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# E-STOP (9W 'D' plug)

The E-STOP connector is provided to allow connection of external emergency stop and reset switches into the SPA3. The machine manufacturer or product installer must perform a risk assessment (refer to BS EN ISO13849-1:2015 (or current version) para. 5.2.2.) to determine the requirements for emergency stopping and emergency switching off.



Pin number	Function
1	E-STOP A1
2	Not connected
3	0 V
4	E-STOP B1
5	E-STOP RESET A
6	E-STOP A2
7	E-STOP B2
8	Not connected
9	E-STOP RESET B



**NOTE:** The emergency stop function of the SPA3 can be used as part of a Performance Level B system as per BS EN ISO13849-1:2015 (or current version). To meet a higher performance level an external safety system must be fitted.


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### E-STOP electrical characteristics

A manual reset button (refer to BS EN ISO13849-1:2015 (or current version) para. 5.2.2.) shall be included in the emergency stop system when required by the user's risk assessment. A reset switch may be needed when there is limited visibility of the danger zone from the machine's control position.


Reset switches must be located with full visibility of the danger zone and shall be sited outside the danger zone.

 **NOTE:** If no additional emergency stop devices are to be added to the system then a bypass plug is required for the SPA3 emergency stop system to function.

All connections to the bypass plug shall be fitted by an electrically competent person and all wires are to be sleeved.

Any emergency stop device added to the E-STOP chain must have an electrical rating of at least 24 V 300 mA and meet the requirements of BS EN ISO 13850:2015 (or current version).

The emergency stop device shall have direct opening action with mechanical latching. The emergency stop devices shall comply with BS EN 60947-5-5:1998+A2:2017 (or current version).

 **CAUTION:** It is strongly recommended that the CMM manufacturer or retrofitter includes a periodic test of the emergency stop (and associated reset switch, if fitted) in the maintenance instructions.

### Dual SPA3 installations

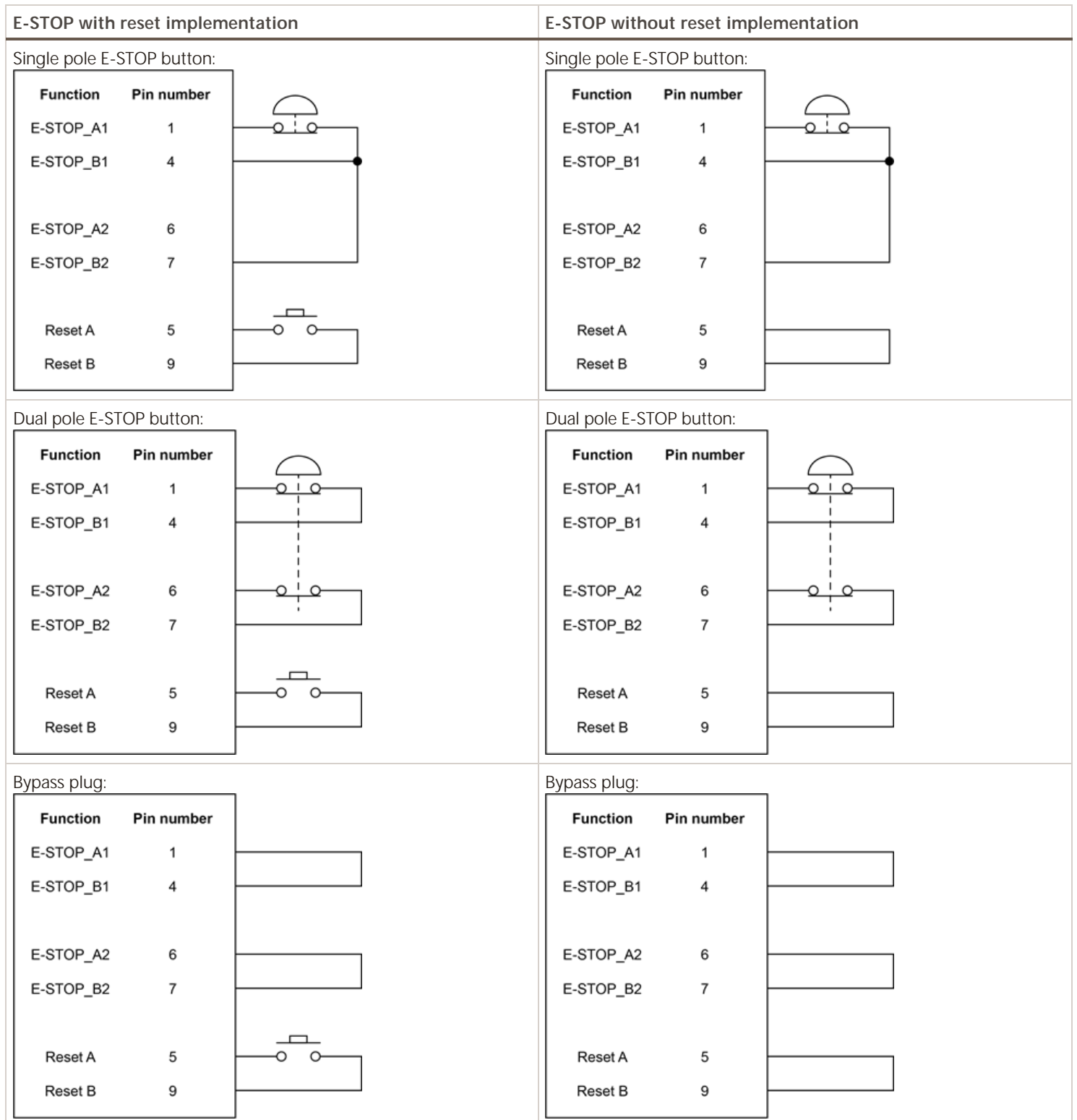
Dual SPA3 installations use the same connection above, however the installation requires a special emergency stop link cable (Renishaw part number A-5623-0095). This is supplied in the 6-axis SPA3 kit.

This cable allows the emergency stop system to operate both SPA3 units. The cable ends of this cable are marked with their function. The SPA3 containing the MCU must have the cable end marked 'master' plugged into its external E-STOP connector, whilst the cable end marked 'slave' must be connected to the other SPA3.

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There are six methods of implementing the external E-STOP circuit:



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# Serial comms: RS232 (9-pin 'D' plug)

This connector is reserved and supplied blanked. Contact Renishaw for further details.



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# PICS connector (9-pin 'D' socket)

The PICS connector is supplied pre-blanked for UCC2 applications - no connections required.

Information on PICS can be found on H-1000-5000

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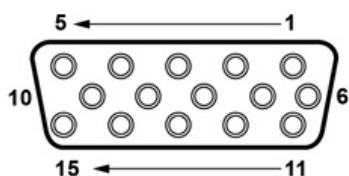
# Scale inputs (15-pin HDD socket)

These connectors are supplied pre-blanked for use with UCC2.

Remove blanking plugs for use with UCC T5 only.

These inputs are RS422 compatible scale inputs for each of the machine axes through the 15 W HDD connectors.

**i** **NOTE:** If the machine scale is of a different format (e.g. analogue, single ended) then this will require an external adaptor.



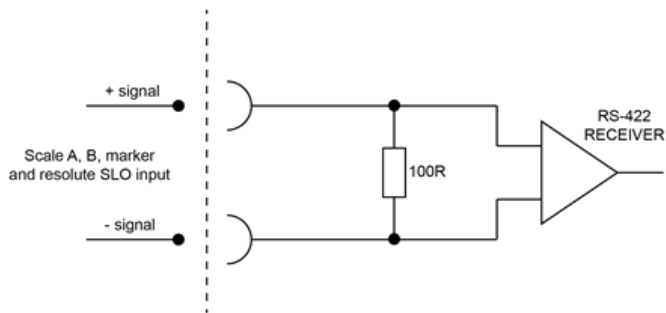
Pin no.	Function
1	External N/C
2	0 V supply
3	- Error
4	- Reference mark
5	- B signal
6	- A signal
7	+ 5.25 V supply
8	+ 5.25 V supply
9	0 V supply
10	Limit switch Q
11	+ Error / limit switch P
12	+ Reference mark
13	+ B signal
14	+ A signal
15	Inner screen
Shell	Outer screen

Scale supply voltage is 5.25 V at 350 mA from each read head connector. Scale quadrature signals with ideal waveforms and phase displacement with an edge rate of up to 40 MHz.

Scale input signals to be to EIA specification RS422.

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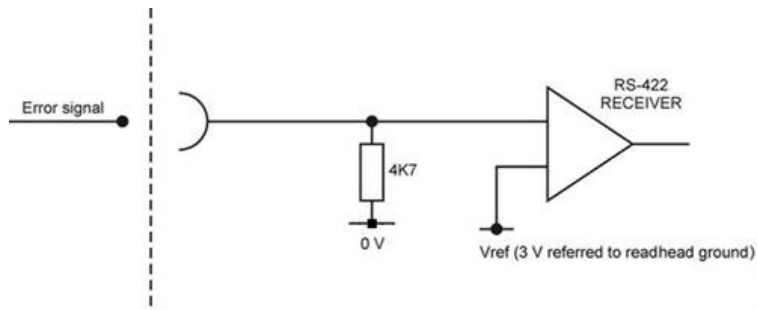


SPA3 input circuits for CMM read head – scale and reference mark inputs

## SPA3 error interface circuit

Supports the error signal as integrated to the Renishaw range of RGH24 read heads. If the error signal is not integrated into the connected read head then it is necessary to configure the connection as indicated below.

- -error (pin 3) link to 5.25 V (pin 7)

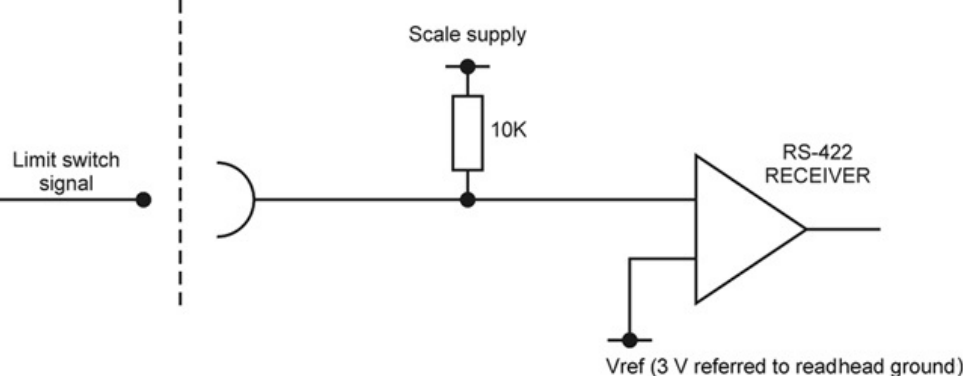


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## Limit switch interface circuit

Scale based limit switch error signals are as integrated to the Renishaw range of RGH24 readheads.

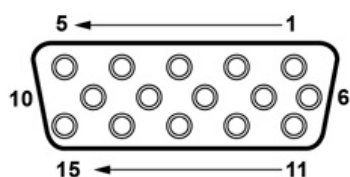


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# Encoder (15W HDD socket)

These inputs are for encoder based feedback systems for motor speed sensing. The high density 15-way 'D' sockets are designed to accept RS422 compliant signals.



Pin number	Function
1	Not connected
2	0 V supply
3	Not connected
4	Not connected
5	- B signal
6	- A signal
7	+ 5.25V supply
8	+ 5.25V supply
9	0 V supply
10	Not connected
11	Not connected
12	Not connected
13	+ B signal
14	+ A signal
15	0 V supply
Shell	Screen

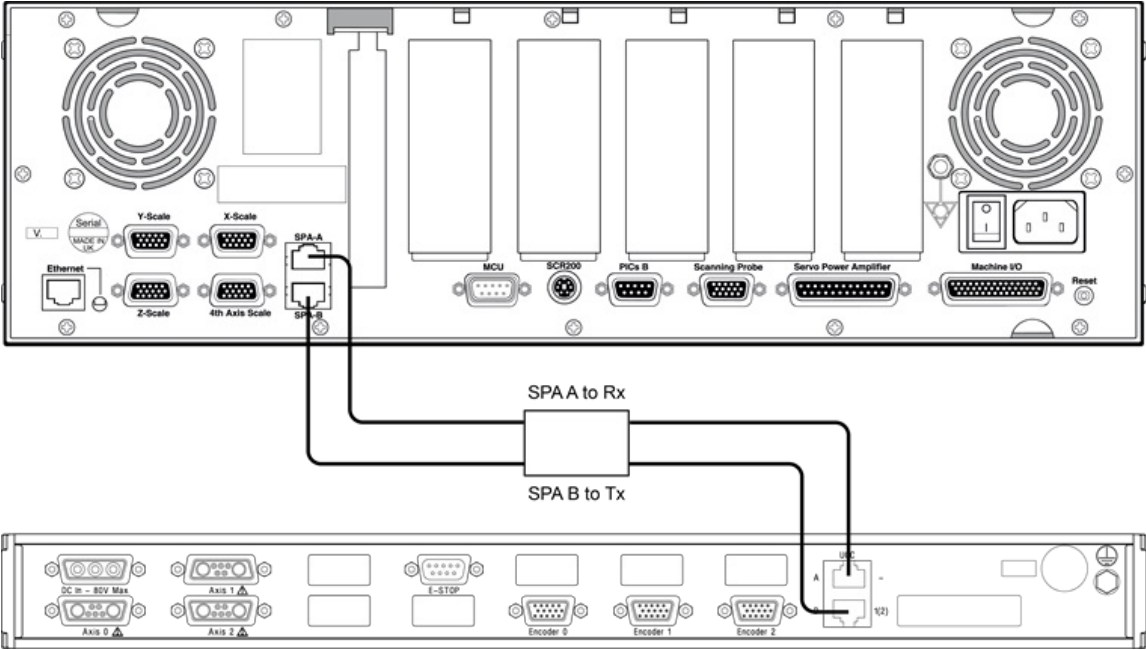
Supply 5.25 V at 350 mA from each encoder connector.

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## EXT SSC

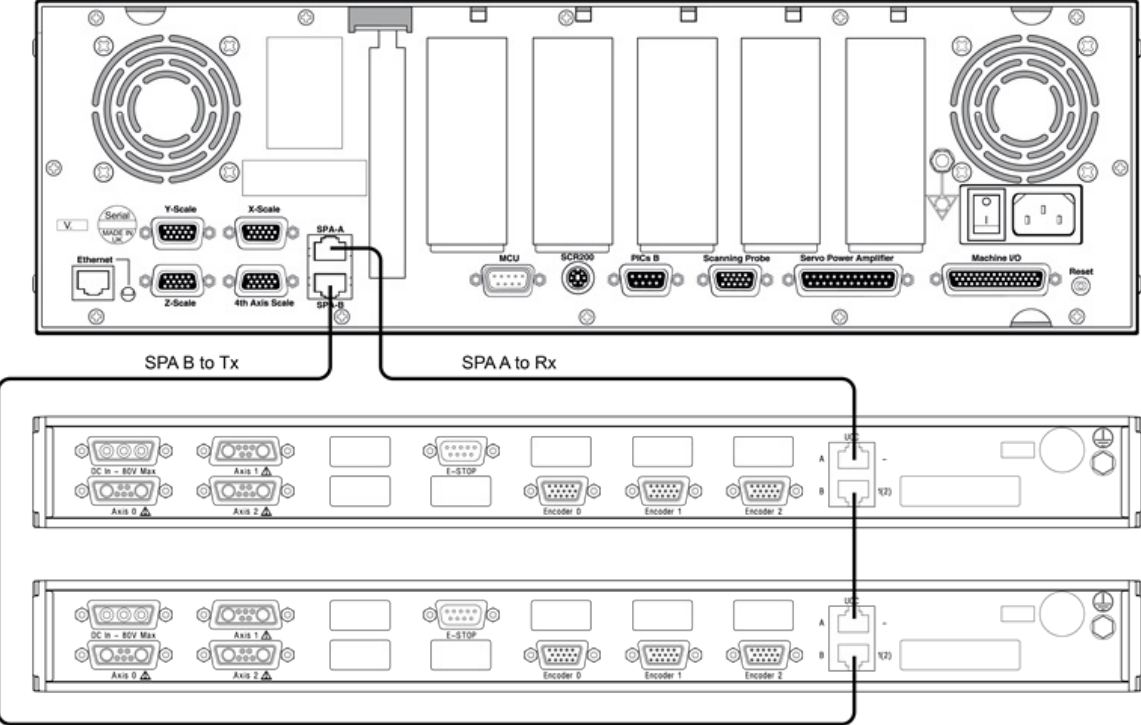
UCC2-2 and SPA3 unit interconnection (requires cable A-5629-0071)



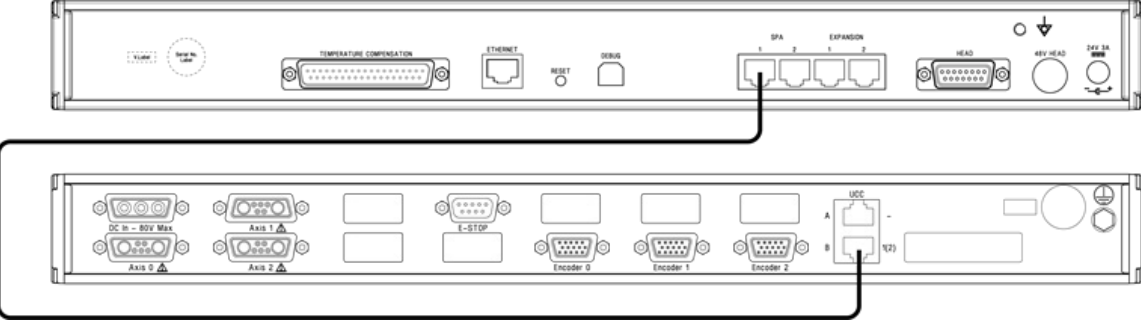
# SPA3 installation guide

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## UCC2-2 and two SPA3 units interconnection



## UCC and SPA3 interconnection



## SPA3 installation guide

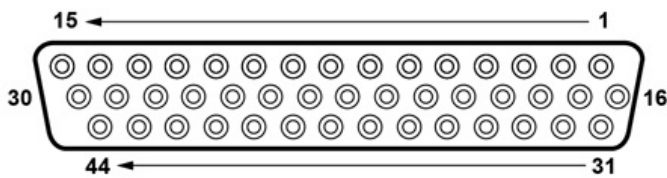
[www.renishaw.com](http://www.renishaw.com)

# Machine I/O (44W HDD socket)

This connector is not required when used in conjunction with a UCC2-2 and is supplied pre-blanked for use with UCC2-2.

Remove blanking plugs for use with all other controllers.

The 44-way (high-density) socket provides connection for the CMM I/O.





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Pin no.	Function	Description
1	+24 Vdc	Supply provided for use on CMM switched
2	Air	Output to control an air solenoid
3	X brake	Output to control the X brake
4	Y brake	Output to control the Y brake
5	Z brake	Output to control the Z brake
6	Output 0	General purpose output signal
7 to 12	Reserved	
13	Input 0	General purpose input signal
14	Input 1	General purpose input signal
15 to 19		
20	De-clutch	CMM de-clutch signal
21	Reserved	
22	Low air	Low air pressure switch input
23	Crash	Crash detector switch input
24	Reserved	
25	X axis outer limit	CMM X axis limit switch input
26	- X axis outer limit	CMM X axis limit switch input
27	Y axis outer limit	CMM Y axis limit switch input
28	-Y axis outer limit	CMM Y axis limit switch input
29	Z axis outer limit	CMM Z axis limit switch input
30	-Z axis outer limit	CMM Z axis limit switch input
31	X axis inner limit	CMM X axis limit switch input
32	-X axis inner limit	CMM X axis limit switch input
33	Y axis inner limit	CMM Y axis limit switch input
34	-Y axis inner limit	CMM Y axis limit switch input
35	Z axis inner limit	CMM Z axis limit switch input
36	-Z axis inner limit	CMM Z axis limit switch input
37	24 V return (0 V)	Common reference line for input and output signals
38 to 43	Reserved	
44	24 V return (0V)	Common reference line for input and output signals
Shell	Screen	

+24 Vdc

+24 Vdc limited to 1 A.

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### Air

An active low signal to engage an air solenoid.

### Brakes

These outputs (pins 3, 4 and 5) are used to disengage the CMM axis brakes if fitted. These outputs become active as soon as the CMM servos are engaged. During the commissioning process it is possible to invert the output from the brake connections from an active low signal to an active high.

### General purpose output

It is an open collector pulled down to the 0 V line via an NPN transistor when activated. It is suitable for driving devices in the range 5 V to 24 V with a maximum output current of 200 mA. If the output is not required then it should be left open circuit. The output is protected for excess voltage and over current within the controller.

### Switched inputs

Two uncommitted inputs are provided. Each input is activated by being pulled down to the 0 V. The inputs are not opto isolated and are pulled up to 24 V via a 10 kohm resistor. These inputs can accept signal levels in the range of +5 V to +48 V, and need to be pulled below 1 V to signify a change in state.

### De-clutch

This input on pin 20 should be pulled down to the 0 V return line, to signal to the controller that the CMM's drives are mechanically connected to the moving elements of the machine (i.e. in their normal condition). The input should be open circuit, or held high, when the CMM has been temporarily "de-clutched" from the drive motors to allow manual positioning. The servo system will not drive the motors in this condition and will resume control at the machine's current position when the signal goes low.

### Low air pressure

The low air pressure signal should be connected to a suitable air pressure switch. This input is monitored by the controller and when activated will remove power from the motors by causing a system fatal fault. During the commissioning process it is possible to invert this signal from an active low signal to an active high. If this capability is not required for integration to the system then it should be connected to the 0 V.

### Crash

The crash signal is used to inform the SPA3 of a collision of the mechanical structure of the machine. Typically this is a sensor that is fitted to the end of the CMM quill and if activated will remove power from the motors by causing a system fatal fault.

During the commissioning process it is possible to invert this signal from an active low signal to an active high. If this capability is not required for integration to the system then it should be connected to the 0 V.

### Limit switches

The SPA3 controller supports both inner and outer limit switches for each of machine axes. During the commissioning process it is possible to invert this signal from an active low signal to an active high. If this capability is not required for integration to the system then it should be connected to the 0 V.

## SPA3 installation guide

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### Inner limit switches

If an inner limit is activated the SPA3 system will perform a maximum movement de-acceleration in all axes to a stop and then perform a controlled axis back-off in the opposite direction, as if a trigger event occurred.

### Outer limit switches

If an outer limit is activated the SPA3 system will immediately disengage all servo power to the machine drives. Recovery of this error is only possible by removing the outer limit switch activation (i.e. by moving the machine off of the switch).

### 0 V (24 V return)

This is the 0 V reference for all of the I/O signals.

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# Maintenance

**i** **NOTE:** There are no user serviceable parts inside this unit.

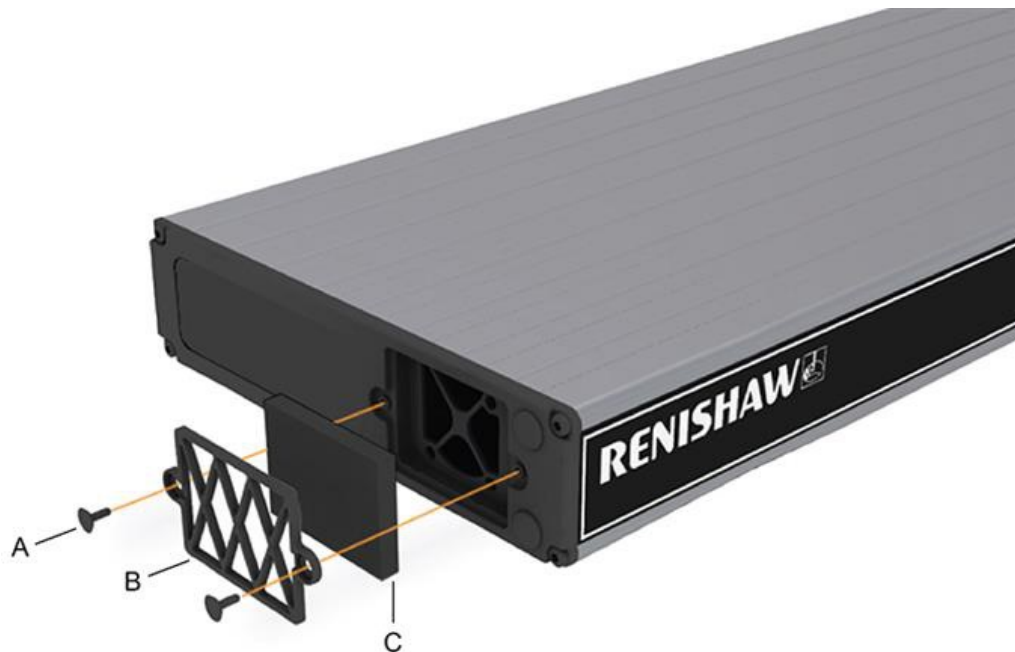
## Filter replacement

The SPA3 has a positive air flow within its enclosure for cooling purposes. This system has a replaceable filter to protect it from the ingress of dust. The machine operator should check the condition of this filter on a regular basis. It is recommended that this filter is removed and checked / replaced as necessary during the machine installer or retrofitter's regular maintenance routine.

## Exchanging / removing the air filter

The following procedure is recommended when exchanging / removing the air filter:

- Remove power from the controller
- Remove the 19 inch rack mounting brackets (if fitted) by removing the two fixing screws
- Pull both the filter retaining clips away from the unit, this should permit the external filter cover to be pulled away
- Remove the filter material from the filter recess (replacement part number of filter is A-5518-0011)
- Replace the filter using the reverse of the method given above.



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# Troubleshooting

## Fatal faults

The SPA3 monitors internal operational functions. If any of these reach a defined level where the system believes it is dangerous to operate a fatal fault will be applied.

When a fatal fault is detected it is not possible to engage the servo system. There may be other faults that prevent the CMM from engaging.

Reported fatal fault	Possible cause
Emergency stop	Emergency stop system activated Internal failure of servo power amplifier
Air pressure	Air pressure low
Crash	Crash switch activated
Scale failure	Scale readhead failed Scale "mis-count" Scale not connected
Overspeed	The position demand has exceeded an internal defined limit Failure of a tacho feedback Incorrect scale resolution

## Over temperature shutdown

The SPA3 unit is designed for continuous power of up to 800 W. The unit will allow a supply current consumption of up to 12 A, which at 80 V is 960 W for a short period of time (1 second).

If this is sustained for a prolonged period, or the unit is not used in an adequate environment (such as one with poor ventilation or high ambient temperature) the unit will disengage the motors to protect itself. An over temperature warning will be reported to UCCserver.

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### SPA3 visual diagnostics



A visual indication of the system status is provided by three LEDs on the front panel, providing assistance in diagnosing and rectifying system faults.

### LED status key

		Description	
		LED on	
		Red flash	
		Green flash	
		Alternating green and red flash	
		LED off	
		Any condition	
Servo status	Probe seated	Error	Description
			No power to SPA3
			UCC2 connected, waiting for download, or not connected to a controller
			E-STOP active, or power amp has a fault
			UCC connected, waiting for download, or download failed
			Amps not engaged and no amp fault
			Amps engaged
			Dynamic braking

# Appendix 1 - International safety statements

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# BG - Безопасност



Когато върху продукта е показан този символ, потребителят трябва да направи справка с ръководството за инсталиране, за да получи информация и съвети относно безопасността.

Ако оборудването се използва по начин, който не е указан от производителя, тогава оборудването може да не е достатъчно безопасно.



**ПРЕДУПРЕЖДЕНИЕ:** SPA3 трябва да се заземи. Осигуряването на условия за заземяване на комплектната машина е отговорност на производителя на оригиналното оборудване или монтажника.



**ПРЕДУПРЕЖДЕНИЕ:** SPA3 не трябва да се захранва директно от електрическата мрежа. Трябва да се използва захранващо устройство, толерантно към единични грешки, одобрено по стандарт BS EN 60950-1:2006+A2:2013 (или текущата версия), и да се свърже към захранване, включващо проводник за защитно заземяване.



**ПРЕДУПРЕЖДЕНИЕ:** SPA3 се изключва от електрозахранването чрез откачване на захранващия съединител IEC от външното захранващо устройство. Ако се изисква допълнително средство за изолация, то трябва да бъде посочено и монтирано от производителя на машината или монтажника на продукта. Изолаторът трябва да е разположен така, че операторът на CMM да има лесен достъп до него и да отговаря на стандарт BS EN 61010-1:2010 (или на текущата версия) и на всяка приложима нормативна уредба за опроводяване в страната на монтажа.



**ПРЕДУПРЕЖДЕНИЕ:** Поддръжката трябва да се извършва само след като машината е изолирана от електрическото захранване, подаването на състен въздух или други източници на енергия в съответствие с инструкциите на производителя на машината.

## Безопасност на машината



**ПРЕДУПРЕЖДЕНИЕ:** Изключването или изолирането на SPA3 HE може да предотврати неочаквано движение машина. На потребителя се препоръчва да изолира устройството от електрозахранването, източника на състен въздух или други източници на енергия в съответствие с инструкциите на производителя на машината, преди навлизане в опасната зона или извършване на някакви дейности по поддръжка.




**ВНИМАНИЕ:** Силно се препоръчва CMM производителя или извършващия модернизацията да включат в техните инструкции за поддръжка периодичен тест на аварийния стоп, и ако има монтиран, на свързания нулиращ превключвател.




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# CZ - Bezpečnost

 Pokud je na výrobku zobrazen tento symbol, musí uživatel vyhledat informace a bezpečnostní doporučení v instalační příručce.

Pokud je zařízení používáno způsobem, který není specifikován výrobcem, může dojít ke snížení bezpečnosti zařízením.


 **UPOZORNĚNÍ:** Systém SPA3 musí být uzemněný. Za zajištění uzemnění celého stroje odpovídá výrobce OEM nebo ten, kdo ho instaluje.


 **UPOZORNĚNÍ:** Systém SPA3 nesmí být napájen přímo z elektrického rozvodu. Je nezbytné použít jeden zdroj napájení (PSU) odolný proti výpadkům, který splňuje normu BS EN 60950-1:2006+A2:2013 (nebo aktuální verzi). PSU musí být připojen ke zdroji, který je vybaven ochranným uzemňovacím vodičem.

 **UPOZORNĚNÍ:** Systém SPA3 se odpojuje od zdroje napájení stejnosměrným proudem odpojením napájecího konektoru z externího PSU. Další požadované prostředky pro odpojení přívodu musí specifikovat a připojovat výrobce zařízení nebo ten, kdo zařízení instaluje. Odpojovací prvek musí být umístěn ve snadném dosahu obsluhy souřadnicového měřicího stroje a splňovat normu BS EN 61010-1:2010 (nebo aktuální verzi) a všechny příslušné státní předpisy pro zapojení platné v zemi instalace.

 **UPOZORNĚNÍ:** Údržbu lze provádět pouze po odpojení stroje od přívodu elektrického napájení, přívodu stlačeného vzduchu nebo jiných zdrojů energie v souladu s pokyny výrobce stroje.

## Bezpečnost stroje

 **UPOZORNĚNÍ:** Vypnutí nebo odpojení systému SPA3 NEMUSÍ zabránit nečekanému pohybu stroje. Uživatelé se doporučuje odpojit stroj od elektrického napájení, přívodu stlačeného vzduchu nebo jiných zdrojů energie v souladu s pokyny výrobce stroje dříve, než vstoupí do nebezpečného prostoru nebo bude provádět jakékoliv činnosti údržby.

 **UPOZORNĚNÍ:** Důrazně doporučujeme, aby výrobce souřadnicového měřicího stroje nebo firma zabývající se dodatečnou montáží zahrnuli pravidelný test nouzového zastavení a aby zmínili příslušné resetovací tlačítko (je-li k dispozici) ve svých pokynech pro údržbu.

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# DA - Sikkerhed



Når dette symbol vises på produktet, skal brugeren rådføre sig med installationsvejledningen for at få oplysninger og sikkerhedsanvisninger.

Hvis udstyret anvendes på en måde, som ikke er specificeret af producenten, kan udstyrets sikkerhed blive forringet.



**ADVARSEL:** SPA3 skal have jordforbindelse. Ansvaret for bestemmelserne om jordforbindelse for hele maskinen ligger hos OEM eller installatør.



**ADVARSEL:** SPA3 må ikke tilføres strøm direkte fra netstrømforsyningen. En enkelt fejltolerant PSU, som er godkendt i henhold til BS EN 60950-1:2006+A2:2013 (eller aktuel version), skal anvendes og forbindes med en forsyning, der inkorporerer en beskyttende jordledning.



**ADVARSEL:** Strømforsyningen til SPA3 isoleres ved at tage AC-strømkablet ud af den eksterne PSU. Hvis der kræves yderligere måder at isolere strømforsyningen på, skal de være specificeret og monteret af maskinproducenten eller installatøren af produktet. Afbryderen skal være placeret, så CMM-operatøren nemt kan nå den, og den skal overholde BS EN 61010-1:2010 (eller aktuel version) og eventuelle andre relevante nationale regulativer for ledningsføring i det land, hvor installationen foretages.



**ADVARSEL:** Vedligeholdelse må kun udføres, når maskinen er isoleret fra elforsyningen, tryklufttilførslen eller andre energikilder i overensstemmelse med maskinproducentens anvisninger.

## Maskinsikkerhed



**ADVARSEL:** Slukning eller isolation af SPA3 forhindrer muligvis IKKE uventet bevægelse af maskinen. Det anbefales at brugeren isolerer maskinen fra elforsyningen, tryklufttilførslen eller andre energikilder i overensstemmelse med maskinproducentens anvisninger, før vedkommende går ind i en farezone eller udfører nogen form for vedligeholdelse.



**FORSIGTIG:** Det anbefales på det kraftigste, at CMM-producenten eller den, der eftermonterer, inkluderer periodisk test af nødstopet og, hvis monteret, den tilknyttede nulstillingskontakt i vedligeholdelsesanvisningerne.

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# DE - Sicherheitshinweise



Wenn dieses Symbol auf dem Produkt abgebildet ist, muss der Anwender die Informationen und Sicherheitshinweise des Benutzerhandbuchs beachten.

Eine von den vom Hersteller vorgegebenen Verwendungszwecken abweichende Nutzung könnte die Sicherheit des Geräts beeinträchtigen.



**WARNHINWEIS:** Der SPA3 muss geerdet sein. Für die Erdung der kompletten Maschine ist der Maschinenhersteller bzw. Installationstechniker verantwortlich.



**WARNHINWEIS:** Der SPA3 darf nicht direkt über das Netz betrieben werden. Es muss ein nach DIN EN 60950-1:2006+A2:2013 (bzw. aktuelle Version) zugelassenes, ausfallsicheres, fehlertolerantes Netzteil verwendet werden, das an eine Versorgung mit Schutzleiter angeschlossen ist.



**WARNHINWEIS:** Der SPA3 wird durch Lösen des Stromkabels am externen Netzteil von der Stromversorgung getrennt. Wird eine weitere Abschaltmöglichkeit benötigt, ist diese zu spezifizieren und vom Maschinenhersteller oder Installationstechniker für das Produkt einzubauen. Der Trennschalter muss für den Bediener leicht erreichbar sein und die Bestimmungen laut DIN EN IEC 61010-1:2010 (bzw. aktuelle Version) sowie auch alle anderen gültigen nationalen Verdrahtungsvorschriften im Installationsland erfüllen.



**WARNHINWEIS:** Vor der Durchführung von Wartungsarbeiten ist das KMG von der Stromversorgung, der Druckluftversorgung oder anderen Energiequellen gemäß der Herstelleranweisung zu trennen.

## Maschinensicherheit



**WARNHINWEIS:** Das Abschalten des SPA3 oder Trennen von der Spannungsversorgung ist KEIN Schutz vor unerwarteten Maschinenbewegungen. Der Bediener sollte, gemäß der Herstelleranweisung, die Stromversorgung, Druckluft und andere Energiequellen der Maschine trennen, bevor er die Gefahrenzone betritt bzw. Wartungsarbeiten durchführt.




**ACHTUNG:** Es wird dringend empfohlen, dass der KMG-Hersteller oder Nachrüstbetrieb eine regelmäßige Überprüfung der Notaus-Vorrichtung und des zugehörigen Reset-Schalters (falls vorhanden) in ihren Wartungsanweisungen vorsehen.


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# ΕΛ - Ασφάλεια


 Για όποιο σημείο εμφανίζεται αυτό το σύμβολο επάνω στο προϊόν, ο χρήστης πρέπει να ανατρέχει στον οδηγό εγκατάστασης για πληροφορίες και για συμβουλές ασφαλείας.

Εάν ο εξοπλισμός χρησιμοποιείται με τρόπο μη προδιαγεγραμμένο από τον κατασκευαστή, τότε η ασφάλεια του εξοπλισμού πιθανώς να παρεμποδίζεται.


 **ΠΡΟΕΙΔΟΠΟΙΗΣΗ:** Το SPA3 δεν πρέπει να τροφοδοτείται απευθείας από το δίκτυο. Πρέπει να χρησιμοποιείται ένα μόνο ανθεκτικό σε σφάλματα PSU εγκεκριμένο σύμφωνα με το πρότυπο BS EN 60950-1: 2006 + A2: 2013 (ή τρέχουσα έκδοση) και να είναι συνδεδεμένο σε μια τροφοδοσία που περιλαμβάνει προστατευτικό αγωγό γείωσης.


 **ΠΡΟΣΟΧΗ:** Η παροχή γείωσης για ολόκληρο το μηχάνημα είναι ευθύνη του Κατασκευαστή αρχικού εξοπλισμού ή του εγκαταστάτη.

 **ΠΡΟΕΙΔΟΠΟΙΗΣΗ:** Το SPA3 απομονώνεται από την παροχή ισχύος με αποσύνδεση του φινιρίσματος παροχής εναλλασσομένου ρεύματος από το εξωτερικό τροφοδοτικό. Εάν απαιτούνται οποιαδήποτε συμπληρωματικά μέσα απομόνωσης, πρέπει αυτά να καθοριστούν και να τοποθετηθούν από τον κατασκευαστή της μηχανής ή από τον εγκαταστάτη του προϊόντος. Ο απομονωτής πρέπει να βρίσκεται σε σημείο εύκολα προσβάσιμο από το χειριστή του CMM και να συμμορφώνεται με το πρότυπο BS EN 61010-1:2010 (ή την τρέχουσα έκδοση) και με οποιουδήποτε εφαρμοζόμενους εθνικούς κανονισμούς καλωδιώσεων για τη χώρα εγκατάστασης.

 **ΠΡΟΕΙΔΟΠΟΙΗΣΗ:** Η συντήρηση πρέπει να πραγματοποιείται μόνο μετά την απομόνωση του μηχανήματος από την ηλεκτρική παροχή, την παροχή πεπιεσμένου αέρα ή άλλες πηγές ενέργειας σύμφωνα με τις οδηγίες του κατασκευαστή του μηχανήματος.

## Ασφάλεια μηχανήματος


 **ΠΡΟΕΙΔΟΠΟΙΗΣΗ:** Η διακοπή ή απομόνωση του SPA3 ΔΕΝ μπορεί να εμποδίσει μη αναμενόμενη κίνηση του μηχανήματος. Συνιστάται στο χρήστη να απομονώνει το μηχάνημα από την ηλεκτρική τροφοδοσία, τον συμπιεσμένο αέρα ή άλλες πηγές ενέργειας σύμφωνα με τις οδηγίες του κατασκευαστή μηχανήματος, προτού εισέλθει στην επικίνδυνη ζώνη ή προτού διεξάγει οποιεσδήποτε εργασίες συντήρησης.

 **ΠΡΟΣΟΧΗ:** Συστήνεται αυστηρά ο κατασκευαστής ή η επιχείρηση μετεξοπλισμού του CMM να περιλαμβάνουν στις οδηγίες συντήρησης έναν περιοδικό έλεγχο του συστήματος σταματήματος έκτακτης ανάγκης και του αντίστοιχου διακόπτη ρύθμισης εάν έχει τοποθετηθεί.


## SPA3 installation guide


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# EN - Safety


 Where this symbol is displayed on the product the user must refer to the installation guide for information and safety advice.

If the equipment is used in a manner not specified by the manufacturer then the safety of the equipment may be impaired.


 **WARNING:** The SPA3 must be earthed. Earthing provisions for the complete machine is the responsibility of the OEM or installer.


 **WARNING:** The SPA3 must not be powered directly from the mains.  
A single fault tolerant PSU approved to BS EN 60950-1:2006+A2:2013 (or current version) must be used, and connected to a supply incorporating a protective earth conductor.

 **WARNING:** SPA3 is isolated from the power supply by disconnection of the ac power connector from the external PSU. If any additional means of isolation is required, it must be specified and fitted by the machine manufacturer or the installer of the product. The isolator must be sited within easy reach of the CMM operator and comply with BS EN 61010-1:2010 (or current version) and any applicable national wiring regulations for the country of installation.

 **WARNING:** Maintenance should only be carried out after the machine has been isolated from the electrical supply, compressed air supply or other energy sources in accordance with the machine manufacturer's instructions.

## Machine safety


 **WARNING:** Switching off or isolating the SPA3 may NOT prevent unexpected machine movement. The user is advised to isolate the machine from the electricity supply, compressed air or other energy sources in accordance with the machine manufacturer's instructions before entering the danger zone or performing any maintenance operations.

 **CAUTION:** It is strongly recommended that the CMM manufacturer or retrofitter includes a periodic test of the emergency stop and if fitted, the associated reset switch in their maintenance instructions.


## SPA3 installation guide


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# ES - Seguridad


 Si aparece este símbolo en el producto, el usuario deberá consultar la guía de instalación para obtener más información y consejos sobre seguridad.

Si no se cumplen las indicaciones especificadas por el fabricante para la utilización del equipo, la seguridad de este puede verse afectada.


 **ADVERTENCIA:** El SPA3 debe estar conectado a tierra. Las conexiones de toma a tierra necesarias para toda la máquina son responsabilidad del fabricante de la máquina o el instalador.


 **ADVERTENCIA:** El SPA3 no debe estar conectado directamente a la toma eléctrica. Se debe utilizar una única PSU tolerante a fallos, según la norma BS EN 60950-1:2006+A2:2013 (o su versión actual), que se debe conectar a una toma de protección a tierra.

 **ADVERTENCIA:** El SPA3 se aísla de la fuente de alimentación desconectando el conector de alimentación de CA de la FDA externa. Si es necesario algún otro método de aislamiento adicional, debe especificarse e instalarse por el fabricante de la máquina o el instalador del producto. El aislante se colocará en un punto de fácil acceso para el operario de la MMC y debe cumplir la norma BS EN 61010-1:2010 (o su versión actual) y las regulaciones de cableado correspondientes al país de la instalación.

 **ADVERTENCIA:** El mantenimiento solo se debe llevar a cabo una vez que la máquina se haya aislado del suministro eléctrico o de aire comprimido, o de otras fuentes de energía, conforme a las instrucciones del fabricante.

## Seguridad de la máquina

 **ADVERTENCIA:** Apagar o aislar el SPA3 NO evita necesariamente un movimiento imprevisto de la máquina. Para evitar movimientos imprevistos, el operario deberá desconectar la máquina de la toma eléctrica, el aire comprimido o cualquier otra fuente de energía, según las instrucciones del fabricante, antes de acceder a zonas peligrosas o realizar operaciones de mantenimiento.

 **PRECAUCIÓN:** Se recomienda encarecidamente que el fabricante o el técnico de retrofit de la MMC incluya pruebas periódicas de parada de emergencia y, si está instalado, del interruptor de reinicio correspondiente en las instrucciones de mantenimiento.

## SPA3 installation guide

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# ET - Ohutus



Kui seadmel on kujutatud see sümbol, peab kasutaja lugema paigaldusjuhendit, et saada infot ja nõu turvalise käsitlemise kohta.

Kui seadet kasutatakse viisil, mida tootja ei ole ette näinud, võib seadme ohutus väheneda.



**HOIATUS!** SPA3 tuleb maandada. Maandamisvõimaluste loomine masinale tervikuna on seadmete tootja või paigaldaja kohustus.



**HOIATUS!** SPA3 ei tohi toita otse vooluvõrgust.

Tuleb kasutada ühte rikketaluvat PSU-d, mis on heaks kiidetud standardi BS EN 60950-1:2006+A2:2013 (või praeguse versiooni) järgi, ja mis on ühendatud maandatud toitekaabliga.



**HOIATUS!** SPA3 isoleeritakse toiteallikast vahelduvvoolu toitepistikku välisest toiteallikast lahtiühendamise abil. Kui esineb vajadus lisaisoleerimisviiside järele, tuleb need määratleda ja paigaldada masina tootjal või toote paigaldajal. Isolaator peab asuma koordinaatmõõtemasina operaatorile kergelt ligipääsetavas kohas ja olema kooskõlas standardiga BS EN 61010-1:2010 (või praegune versioon) ning teiste juhtmestikke puudutavate kohalduvate riiklike eeskirjadega.



**HOIATUS!** Hooldust tohib teha alles pärast seda, kui masin on vastavalt masina tootja juhiste elektr-, suruõhu- või muudest energiaallikatest lahti ühendatud.

## Masina ohutus



**HOIATUS!** SPA3 väljalülitamine või isoleerimine EI pruugi masina ootamatut liikumist ära hoida. Kasutajal soovitatakse isoleerida masin vooluvarustusest, suruõhust või teistest energiaallikatest masina tootja juhendi kohaselt enne, kui sisenetakse ohutsooni või asutakse tegema hooldustoiminguid.




**ETTEVAATUST!** On rangelt soovitatav, et koordinaatmõõtemasina tootja või modifitseerija lisaks hooldusjuhendisse regulaarse hädaseiskamise ja olemasolul sellega seotud lähtestuslüli kontrolli.


## SPA3 installation guide


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# FI - Turvallisuutta


 Kun tuotteessa näkyy tämä symboli, käyttäjän tulee tutustua asennusoppaassa esittäviin lisätietoihin ja turvallisuusohjeisiin.

Jos laitetta käytetään valmistajan ohjeista poikkeavalla tavalla, sen turvallisuus voi olla puutteellinen.


 **VAROITUS:** SPA3 on maadoitettava. Koko koneen maadoituksen toteuttaminen on OEM-valmistajan tai asentajan vastuulla.


 **VAROITUS:** SPA3:n virta ei saa tulla suoraan verkkovirtalähteestä. Sen kanssa on käytettävä yhtä vikasietoista BS EN 60950-1:2006+A2:2013 -standardin (tai uusimman version) mukaista PSU-yksikköä, ja se on kytkettävä suojamaadoitusjohtimella varustettuun virtalähteeseen.

 **VAROITUS:** SPA3 eristetään virransyötöstä irrottamalla vaihtovirtaliitin ulkoisesta virransyötöstä. Jos ylimääräisiä eristyskeinoja tarvitaan, tuotteen valmistajan tai asentajan on määritettävä ne ja asennettava ne koneeseen. Eristyskytkin on sijoitettava BS EN 61010-1:2010 -standardin (tai uusimman version) ja asennuspaikalla voimassa olevien sähköteknisten asennusohjeiden mukaisesti sellaiseen paikkaan, jossa se on helposti CMM-käyttäjän ulottuvilla.

 **VAROITUS:** Huolto tulee suorittaa vasta sen jälkeen, kun kone on eristetty sähkövirtalähteestä, paineilmalähteestä ja muista energialähteistä koneen valmistajan ohjeiden mukaisesti.

## Koneen turvallisuus

 **VAROITUS:** SPA3-ohjaimen kytkeminen pois päältä tai eristäminen EI välttämättä estä odottamattomia koneen liikkeitä. Käyttäjää kehoitetaan eristämään kone sähkövirtalähteestä, paineilmalähteestä ja muista energialähteistä koneen valmistajan ohjeiden mukaisesti ennen kulkemista vaaralliselle alueelle tai huoltotehtävien suorittamista.

 **VAROITUS:** On erittäin suositeltavaa, että CMM-valmistaja tai jälkiasentaja sisällyttää hätäpysäytinten ja mahdollisesti asennettujen nollauskytkinten säännöllisen testauksen huolto-ohjeisiinsa.



## SPA3 installation guide

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# FR - Sécurité



Lorsque ce symbole est affiché sur le produit, vous devez consulter le manuel d'installation qui contient des informations et des conseils de sécurité.

Si l'équipement est utilisé d'une façon contre-indiquée par le constructeur, la sécurité du matériel peut alors être compromise.



**AVERTISSEMENT** : Le SPA3 doit être mis à la terre. Il incombe à l'équipementier ou à l'installateur de prévoir une mise à la terre de toute la machine.



**AVERTISSEMENT** : Le SPA3 ne doit pas être directement alimenté sur secteur. Un bloc d'alimentation présentant une tolérance à un défaut unique, homologué suivant la norme BS EN 60950-1:2006+A2:2013 (ou sa version actuelle) doit être utilisé et branché sur une alimentation intégrant un conducteur de terre.



**AVERTISSEMENT** : Le SPA3 est coupé de l'alimentation par déconnexion du c.a. du bloc d'alimentation extérieur. Si un moyen complémentaire de sectionnement est nécessaire, celui-ci devra être spécifié et installé par le constructeur de la machine ou l'installateur du produit. L'opérateur MMT doit pouvoir accéder facilement à ce sectionneur qui doit être conforme à la norme BS EN 61010-1:2010 (ou sa version actuelle) ainsi qu'à toute autre réglementation nationale de câblage en vigueur dans le pays d'installation.



**AVERTISSEMENT** : Les interventions de maintenance ne peuvent avoir lieu qu'après avoir isolé la machine de l'alimentation électrique, de l'alimentation en air comprimé ou de toute autre source d'énergie, conformément aux instructions du constructeur de la machine.

## Sécurité machine



**AVERTISSEMENT** : Mettre le SPA3 hors tension ou l'isoler N'EXCLUE PAS des mouvements inattendus de la machine. Il est conseillé à l'utilisateur d'isoler celle-ci des alimentations électrique, d'air comprimé et d'autres sources d'énergie conformément aux instructions du constructeur de la machine avant de pénétrer dans la zone de danger ou de réaliser des opérations de maintenance.




**AVERTISSEMENT** : Il est fortement recommandé au constructeur de MMT ou à l'agent de retrofit d'inclure dans ses instructions de maintenance un test périodique de l'arrêt d'urgence et, s'il est installé, du bouton de réinitialisation associé.


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# GA - Sábháilteacht


 Nuair a thaispeántar an tsiombail seo ar an táirge, ní mór d'úsáideoir an táirge féachaint ar an treoir suiteála chun eolas agus comhairle sábháilteachta a fháil.

Má úsáidtear an trealamh ar bhealach nach bhfuil mionsonraithe ag an déantúsóir, d'fhéadfadh sábháilteacht an trealaimh bheith lagaithe.


 **RABHADH:** Ní mór don SPA3 a bheith talmhaithe. Tá an OEM nó an suiteálaí freagrach as soláthraithe talmhaithe don mheaisín iomlán.


 **RABHADH:** Ní ceadmhach don SPA3 soláthar cumhachta a fháil go díreach ón phríomhlíonra. Ní mór PSU aonair lochtlamhálach atá ceadaithe de réir BS EN 60950-1:2006+A2:2013 (nó leagan reatha) a úsáid agus a nascadh le soláthar a chuimsíonn seoltóir talún cosantach.

 **RABHADH:** Is féidir SPA3 a aonrú ón soláthar cumhachta tríd an nascóir cumhachta AC a dhínascadh den PSU seachtrach. Má tá aon mhodhanna aonraithe breise riachtanach, ní mór do dhéantúsóir an mheaisín nó suiteálaí an táirge é a mhionsonrú agus a shuiteáil. Ní mór an t-aonraitheoir a shuiteáil cóngarach don oibritheoir CMM agus é i gcomhlíonadh le BS EN 61010-1:2010 (nó leis an leagan reatha) agus le haon rialacháin náisiúnta sreangaithe atá i bhfeidhm sa tír ina suiteáiltear é.

 **RABHADH:** Níor cheart cothabháil a dhéanamh ach amháin tar éis an meaisín a bheith aonraithe ón soláthar leictreach, ón soláthar aeir comhbhrúite nó ó fhoinsí fuinnimh eile de réir threoracha déantúsóir an mheaisín.

## Sábháilteacht mheaisín

 **RABHADH:** Tá seans ann NACH gcoiscfeadh gluaiseacht an mheaisín gan choinne tríd an SPA3 a mhúchadh nó a aonrú. Moltar don úsáideoir an meaisín a aonrú ón soláthar leictreachais, ó aer comhbhrúite nó ó fhoinsí fuinnimh eile de réir threoracha ó dhéantúsóir an mheaisín sula dtéitear isteach sa chrios guaise nó sula ndéantar aon oibriúcháin chothabhála.

 **AIRE:** Moltar go láidir do dhéantúsóir an CMM nó don té a aiseisteíonn an CMM tástáil thréimhsiúil ar an stop éigeandála, agus ar an lasc athshocraithe a théann leis, más ann di, a áireamh sna threoracha cothabhála.

## SPA3 installation guide

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# HR - Sigurnost



Tamo gdje je na proizvodu prikazan ovaj simbol, korisnik mora proučiti instalacijski vodič radi informacija i sigurnosnih savjeta.

Ako se oprema upotrebljava na način koji se razlikuje od onoga koji navodi proizvođač, sigurnost opreme može se narušiti.

**UPOZORENJE:** Uređaj SPA3 mora biti uzemljen. Izvođenje uzemljenja za cijeli stroj u nadležnosti je OEM-a ili instalatera.

**UPOZORENJE:** Uređaj SPA3 ne smije se napajati izravno iz električne mreže. PSU mora biti tolerantan na jednostruki kvar, odobren prema normi BS EN 60950-1:2006+A2:2013 (ili trenutnoj verziji) te mora biti priključen u utičnicu sa zaštitnim uzemljenjem.

**UPOZORENJE:** SPA3 se izolira od napajanja isključivanjem priključka izmjenične struje iz vanjskog PSU. Ako je potrebna neka dodatna izolacija, mora je navesti i izvesti proizvođač stroja ili instalater proizvoda. Izolator mora biti smješten tako da bude lako dostupan CMM operateru i usklađen s normom BS EN 61010-1:2010 (ili trenutnom verzijom) te svim primjenjivim nacionalnim propisima u vezi s ožičenjem u državi u kojoj se instalira.

**UPOZORENJE:** Održavanje se smije provoditi tek nakon što je stroj izoliran od električnog napajanja, dovoda komprimiranog zraka ili drugih izvora energije u skladu s uputama proizvođača stroja.

## Sigurnost stroja

**UPOZORENJE:** Isključenje ili izolacija uređaja SPA3 NE može spriječiti neočekivane pokrete stroja. Korisniku se savjetuje da prije ulaska u zonu opasnosti ili izvođenja radova održavanja stroj izolira od električnog napajanja, dovoda komprimiranog zraka ili drugih izvora energije u skladu s uputama proizvođača stroja.

**OPREZ:** Strogo se preporučuje da proizvođač CMM stroja ili izvođač retrofita u upute za održavanje uključi periodično testiranje sigurnosnog zaustavljanja te, ako je ugrađen, prekidača za resetiranje.

## SPA3 installation guide

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# HU - Biztonság



Amikor ezt a szimbólumot látja a terméken, akkor kérjük, tekintse meg a telepítési útmutatót további információkért és biztonsági ajánlásokért.

Ha a készüléket a gyártó által előírt módtól eltérő módon használják, akkor a készülék által nyújtott védelem csökkenhet.



**FIGYELMEZTETÉS:** Az SPA3 készüléket le kell földelni. A földelési előírások követése az eredetiberendezés-gyártó vagy a telepítést végző szakember felelőssége.



**FIGYELMEZTETÉS:** Az SPA3 készülék áramellátását közvetlenül a hálózatról kell biztosítani. Egyetlen, a BS EN 60950-1:2006+A2:2013 szabvány (vagy annak aktuális változata) alapján jóváhagyott hibatűrő tápegységet (PSU-t) kell használni és csatlakoztatni a tápellátáshoz védő földelővezeték beépítésével.



**FIGYELMEZTETÉS:** Az SPA3 készülék tápellátásról való leválasztása a váltóáramú tápcsatlakozó külső tápegységről (PSU) való leválasztásával történik. Ha egyéb leválasztásra lenne szükség, akkor azt a gép gyártójának vagy a termék beszerelőjének kell meghatározni és beszerelnie. A leválasztónak a CMM kezelője számára könnyen hozzáférhető helyen kell lennie, és meg kell felelnie a BS EN 61010-1:2010 szabványban (vagy annak aktuális változatában) foglalt előírásoknak, illetve a területileg érvényes villamos bekötési szabályoknak.



**FIGYELMEZTETÉS:** A karbantartást kizárólag azután lehet elvégezni, hogy a gépet a gép gyártójának utasításai szerint leválasztották az elektromos hálózatról, a sűrítettlevegő-ellátásáról vagy az egyéb energiaforrásokról.

## Gépbiztonság



**FIGYELMEZTETÉS:** Az SPA3 készülék kikapcsolása vagy leválasztása NEM feltétlenül akadályozza meg a gép váratlan mozgását. A felhasználónak le kell választania a gépet az áramforrásról, a sűrítettlevegő-ellátásról és az egyéb energiaforrásokról a berendezés gyártójának előírásai szerint, mielőtt belépne a veszélyes területekre, illetve bármilyen karbantartási munkát végezne.




**FIGYELEM:** Kifejezetten javasoljuk, hogy a koordináta-mérőgép gyártója vagy az utólagos felszerelést végző kivitelező írja elő a vészleállító berendezés, illetve (amennyiben van ilyen) a hozzá tartozó visszaállító kapcsoló rendszeres ellenőrzését az általa összeállított karbantartási utasításokban.


## SPA3 installation guide


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# IT - Sicurezza


 Se questo simbolo è riportato sul prodotto, consultare il manuale dell'utente per ottenere informazioni e consigli su un utilizzo sicuro.

Il grado di protezione normalmente fornito sui dispositivi potrebbe essere reso meno efficace in caso di utilizzo non conforme a quanto specificato dal produttore.


 **AVVISO:** SPA3 deve essere messo a terra. La responsabilità di eseguire la messa a terra dell'intera macchina è a carico dell'OEM o dell'installatore.


 **AVVISO:** ISPA3 non deve essere collegato direttamente alla rete elettrica. Deve essere utilizzato un alimentatore conforme allo standard BS EN 60950-1:2006+A2:2013 (o versione vigente), a prova di guasto e collegato ad una rete dotata di un conduttore a terra protettivo.

 **AVVISO:** SPA3 viene isolato elettricamente scollegando il connettore dall'alimentare esterno. Nel caso in cui fossero necessari ulteriori dispositivi di isolamento, sarà necessario specificare tale esigenza e richiedere al produttore della macchina o all'installatore di provvedere in tale senso. Il dispositivo di isolamento dovrà essere posizionato in un punto facilmente accessibile all'operatore CMM e dovrà risultare conforme allo standard BS EN 61010-1:2010 (o versione vigente) e a tutte le normative nazionali sui cablaggi in vigore nel paese di installazione.

 **AVVISO:** qualsiasi operazione di manutenzione deve essere eseguita soltanto dopo che la macchina è stata scollegata dalla rete di alimentazione, dall'aria compressa o da altre fonti di energia, in conformità alle istruzioni del produttore.

## Sicurezza della macchina

 **AVVISO:** lo spegnimento di SPA3 o la disconnessione dall'alimentazione NON garantisce l'assenza di spostamenti imprevisti della macchina. Prima di accedere alla zona di pericolo o di eseguire operazioni di manutenzione, si consiglia di scollegare la macchina, oltre che dall'alimentazione elettrica, anche dall'aria compressa o da altre fonti di energia, in conformità alle istruzioni del produttore.

 **AVVERTENZA:** si consiglia caldamente di chiedere al produttore della CMM o a chi si occupa del retrofit di includere nel piano di manutenzione un test periodico dell'arresto di emergenza e del relativo switch (se installato).

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# JA - 安全性



製品にこの記号が貼り付けられている場合は、取付ガイドの情報と安全に関する情報を参照してください。

本製品をメーカーが指定する方法以外で使用した場合、本製品の安全性が損なわれることがあります。



**警告:** SPA3 はアースに接続する必要があります。機械一式のアースの確保は、OEM または取付業者の責任に委ねられます。



**警告:** SPA3 は主電源から直接電源を取らないようにしてください。  
BS EN 60950-1:2006+A2:2013(または最新版)に準拠した 1 台の安定化 PSU を使用し、保護アースのある電源に接続してください。



**警告:** SPA3 は、外付け PSU からの AC 電源コネクタを外すことで電源供給を停止することができます。別途、電源供給の切断が必要な場合は、機械メーカーまたは取付業者が実施してください。ブレーカーは、CMM オペレータが簡単にアクセスできる場所に設置し、BS EN 61010-1:2010(または最新版)および各国で定められている配線に関する規則に則り設置してください。



**警告:** 機械メーカーの指示に従って電源、圧縮エア、その他のエネルギー源から機械を切断した後でのみ、メンテナンスを実施してください。

## 機械の安全性



**警告:** SPA3 のスイッチを切ったり、電源を切断しても、機械が予期せず動くことがあります。ユーザーには、危険領域に入るか、メンテナンス作業を行う前に、電源、圧縮エア、その他のエネルギー源から機械を切断することが推奨されます。



**注意:** CMM メーカーまたは取付業者には、緊急停止システムと、対応するリセットスイッチが取り付けられている場合は、リセットスイッチの定期的なテストをメンテナンス手順に含めることが強く推奨されます。

## SPA3 installation guide

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# LT - Sauga



Kai ant gaminio rodomas šis simbolis, naudotojas privalo informacijos ir saugos rekomendacijų ieškoti įrengimo vadove.

Jei įranga naudojama ne taip, kaip nurodo gamintojas, gali sumažėti įrangos saugumas.



**ĮSPĖJIMAS:** SPA3 turi būti įžemintas. Atsakomybė dėl viso įrenginio įžeminimo tenka originalios įrangos gamintojui arba montuotojui.



**ĮSPĖJIMAS:** SPA3 neturi būti prijungtas tiesiai prie elektros lizdo. Reikia naudoti atskirą triktims atsparų PSU, patvirtintą pagal BS EN 60950-1:2006+A2:2013 (arba naujesnę versiją), prijungiant įrenginį prie elektros tinklo per apsauginį jungiklį su įžeminimu.



**ĮSPĖJIMAS:** atjungus kintamosios srovės maitinimo jungtį nuo išorinio maitinimo bloko (PSU), SPA3 yra izoliuotas nuo maitinimo. Jei reikia papildomų atskyrimo priemonių, jas turi nurodyti ir sumontuoti įrenginio gamintojas arba gaminio montuotojas. Skyriklis turi būti lengvai pasiekiamas koordinatinės matavimo mašinos operatoriui ir turi atitikti BS EN 61010-1:2010 (arba naujesnę versiją) bei kitas valstybės, kurioje montuojama mašina, elektros laidų instaliacijos taisykles.



**ĮSPĖJIMAS:** techninė priežiūra turi būti atliekama po to, kai įrenginys yra izoliuojamas nuo elektros tinklo, suspausto oro tiekimo tinklo ar kitų energijos šaltinių pagal įrenginio gamintojo instrukcijas.

## Įrenginio sauga



**ĮSPĖJIMAS:** išjungus arba izoliavus SPA3, gali NEPAVYKTI išvengti netikėto įrenginio pajudėjimo. Naudotojui patariama pagal įrenginio gamintojo nurodymus izoliuoti įrenginį nuo elektros tinklo, suspausto oro arba kitų energijos šaltinių, paskui galima saugiai patekti į pavojaus zoną arba atlikti bet kokius techninės priežiūros darbus.



**ATSARGIAI!** labai rekomenduotina, kad CMM gamintojas arba modifikuotojas į savo techninės priežiūros instrukcijas įtrauktų periodinį avarinio sustabdymo sistemos testą ir susijusio paleidimo iš naujo jungiklio (jeigu toks yra) testą.

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# LV - Drošība



Ja uz izstrādājuma ir redzams šis simbols, lietotājam jāizlasa uzstādīšanas pamācībā norādītā informācija un padomi par drošību.

Ja iekārtu lieto neatbilstīgi ražotāja norādēm, iekārtas drošums var mazināties.



**BRĪDINĀJUMS:** SPA3 jāieņemē. Par pareizu visas iekārtas iezemēšanu ir atbildīgs tās ražotājs vai uzstādītājs.



**BRĪDINĀJUMS:** SPA3 nedrīkst darbināt tieši no barošanas tīkla.

Jāizmanto bojājumpieciešams nepārtrauktās barošanas avots, kas apstiprināts saskaņā ar standarta BS EN 60950-1:2006+A2:2013 (vai pašreizējās versijas) prasībām, un tam jābūt pievienotam strāvas padevei ar aizsargzemējuma vadu.



**BRĪDINĀJUMS:** SPA3 no strāvas padeves iespējams atvienot, atvienojot maiņstrāvas savienotāju no ārējā barošanas avota. Ja nepieciešami papildu atvienošanas līdzekļi, tie ir jānorāda un jānodrošina iekārtas ražotājam vai izstrādājuma uzstādītājam. Izolatoram jābūt novietotam tā, lai tas būtu viegli pieejams koordinēto mērīšanas mašīnu operatoram un atbilstu BS EN 61010-1:2010 (vai pašreizējās versijas) prasībām un jebkuriem saistītajiem uzstādīšanas valsts elektrotehniskajiem noteikumiem.



**BRĪDINĀJUMS:** apkope jāveic pēc tam, kad iekārta ir atvienota no strāvas padeves, saspiesta gaisa padeves vai citiem enerģijas avotiem saskaņā ar iekārtas ražotāja instrukcijām.

## Ierīces drošība



**BRĪDINĀJUMS:** SPA3 izslēgšana vai atvienošana NEGARANTĒ to, ka ierīce neveiks neparedzētu kustību. Pirms ieiet paaugstinātās bīstamības zonā vai uzsākt apkopes darbus, lietotājam ieteicams saskaņā ar ražotāja instrukcijām atvienot ierīci no strāvas padeves, saspiesta gaisa vai citiem enerģijas avotiem.



**UZMANĪBU!** Koordinēto mērīšanas mašīnu ražotājam vai modernizēšanas speciālistam stingri ieteicams atbilstīgi apkopes instrukcijai regulāri pārbaudīt ārkārtas apturēšanas sistēmu un ar to saistīto atiestatīšanas slēdzi (ja uzstādīts).



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# MT - Sigurtà



Kull fejn jintwera dan is-simbolu fuq il-prodott, l-utent irid jirreferi għall-gwida tal-utent u l-gwida dwar l-installazzjoni għal informazzjoni u pariri dwar is-sigurtà.

Jekk it-tagħmir jintuza b'mod li ma jkunx speċifikat mill-manifattur, il-protezzjoni pprovduta mit-tagħmir tista' titnaqqas.



**TWISSIJA:** SPA3 irid jiġi ertjat. Il-provvedimenti tal-earthing għall-magna sħiħa huma r-responsabbiltà tal-OEM jew tal-installatur.



**TWISSIJA:** L-iSPA3 irid jingħata d-dawl direttament mill-mejns. PSU uniku b'tolleranza ta' errur approvat skont BS EN 60950-1:2006+A2:2013 (jew verżjoni attwali) għandu jintuza, u jiġi mqabbd għal provvista li tinkorpora konduttur protettiv tal-ert.



**TWISSIJA:** SPA3 jiġi iżolat mill-provvista tad-dawl billi tiskonnettja l-konnettur tal-provvista tad-dawl AC mill-PSU estern. Jekk kwalunkwe mezz addizzjonali ta' iżolament ikun meħtieġ, dan irid jiġi speċifikat u installat mill-manifattur tal-magna jew mill-installatur tal-prodott. L-iżolatur irid jitpoġġa fejn ikun jista' jintlaħaq faċilment mill-operatur tas-CMM u jrid ikun konformi ma' BS EN 61010-1:2010 (jew verżjoni attwali) u ma' kwalunkwe regolamenti nazzjonali applikabbli dwar il-wiring għall-pajjiż fejn ikun qed jiġi installat.



**TWISSIJA:** Il-manutenzjoni trid issir wara li l-magna tkun ġiet iżolata mill-provvista tad-dawl, il-provvista t'arja kompressa jew sorsi oħra ta' enerġija b'konformità mal-istruzzjonijiet tal-produuttur tal-magna.

## Sigurtà tal-magna



**TWISSIJA:** Li titfi jew li tizola l-SPA3 jista' MA jipprevenix moviment mhux mistenni tal-magna. Hu rakkomandat li l-utent jizola l-magna mill-provvista tad-dawl, minn arja kkompressata jew minn sorsi oħrajn ta' enerġija skont l-istruzzjonijiet tal-manifattur tal-magna qabel ma jidhul fiż-żona ta' periklu jew qabel ma jwettaq kwalunkwe xogħol ta' manutenzjoni.



**ATTENZJONI:** Hu rakkomandat bil-qawwa li l-manifattur tas-CMM jew tar-retrofitter jinkludi test perjodiku ta' waqfien ta' emerġenza u jekk ikun fihom, ir-reset switch fl-istruzzjonijiet tagħhom tal-manutenzjoni.

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# NL - Veiligheid



Wanneer dit symbool zich op het product bevindt, dient de gebruiker de installatiegids te raadplegen voor informatie en veiligheidsadvies.

Gebruik van deze apparatuur op een manier die de fabrikant niet voorgeschreven heeft, kan de veiligheid van de apparatuur beperken.



**WAARSCHUWING:** De SPA3 moet worden geaard. Voor aardingsvoorzieningen voor de gehele machine is de OEM of installateur verantwoordelijk.



**WAARSCHUWING:** De SPA3 mag niet rechtstreeks op het lichtnet worden aangesloten. Er moet een voedingseenheid worden gebruikt met een enkele fouttolerantie die is goedgekeurd volgens BS EN 60950-1:2006+A2:2013 (of de huidige versie), en deze moet worden aangesloten op een voeding met een aardingsgeleider.



**WAARSCHUWING:** De SPA3 wordt van de stroom afgesloten door de wisselstroomconnector los te koppelen van de externe voedingseenheid. Als nog een extra manier van afsluiten gevraagd wordt, dan moet die gespecificeerd en geplaatst worden door de machinefabrikant of de monteur van het product. De afsluitvoorziening moet ruim binnen het bereik van de CMM-operator aangebracht worden en voldoen aan BS EN 61010-1:2010 (of huidige versie) en de andere elektrische regels die gelden in het land van plaatsing.



**WAARSCHUWING:** Onderhoud mag alleen worden uitgevoerd nadat de machine is geïsoleerd van de elektrische voeding, persluchttoevoer of andere energiebronnen volgens de instructies van de machinefabrikant.

## Machinerveiligheid



**WAARSCHUWING:** De SPA3 uitschakelen of afsluiten is GEEN garantie tegen onverwachte machinebewegingen. De gebruiker wordt geadviseerd om de machine volgens de instructies van de machinefabrikant af te sluiten van de voedingsspanning, perslucht en andere energiebronnen, en pas daarna gevaarlijke gebieden te betreden of onderhoud te verrichten.




**WAARSCHUWING:** Voor de CMM-fabrikant of installateur is het sterk aan te raden om in zijn onderhoudsinstructies een periodieke test op te nemen van de noodstop en, indien aangebracht, de resetschakelaar daarvan.


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# PL - Bezpieczeństwo


 Jeżeli symbol ten znajduje się na produkcie, należy zapoznać się z podręcznikiem instalacji, aby uzyskać informacje i porady dotyczące bezpieczeństwa.

Jeżeli sprzęt jest użytkowany w inny sposób, niż określił to producent, działanie zabezpieczeń sprzętu może być ograniczone.


 **OSTRZEŻENIE:** Należy uziemić SPA3. Za zapewnienie warunków uziemienia całej maszyny jest odpowiedzialny producent maszyny lub instalator.


 **OSTRZEŻENIE:** SPA3 nie może być zasilany bezpośrednio ze złącza głównego. Należy używać zewnętrznego zasilacza przystosowanego do użytku w warunkach pojedynczej awarii, zgodnego z wymaganiami normy BS EN 60950-1:2006+A2:2013 (lub jej najnowszej wersji) i podłączonego do zasilania wraz z ochronnym przewodem uziemiającym.

 **OSTRZEŻENIE:** Sterownik SPA3 jest izolowany od zasilania poprzez odłączenie złącza zasilania sieciowego od zewnętrznego zasilacza. Gdy wymagane są jakiegokolwiek dodatkowe środki ochrony, ich dane techniczne muszą być określone i muszą one być zainstalowane przez producenta maszyny lub instalatora produktu. Wyłącznik musi być umieszczony w taki sposób, aby zapewniać operatorowi CMM (współrzędnościowa maszyna pomiarowa) łatwy dostęp do niego oraz musi spełniać wymagania normy BS EN 61010-1:2010 (lub jej najnowszej wersji) i wszelkich przepisów dotyczących okablowania, jakie obowiązują w kraju instalacji.

 **OSTRZEŻENIE:** Konserwację należy przeprowadzać tylko po odłączeniu maszyny od zasilania elektrycznego, sprężonego powietrza lub innych źródeł energii, zgodnie z instrukcjami producenta maszyny.

## Bezpieczeństwo maszyny


 **OSTRZEŻENIE:** Wyłączenie lub odizolowanie sterownika SPA3 może NIE zapobiec nieoczekiwanym ruchom maszyny. Zaleca się, aby przed wejściem do strefy niebezpiecznej lub wykonaniem jakichkolwiek czynności konserwacyjnych użytkownik odizolował maszynę od zasilania prądem elektrycznym, sprężonym powietrzem bądź od innych źródeł energii, zgodnie z zaleceniami producenta maszyny.

 **PRZESTROGA:** Zaleca się, aby producent lub firma montująca maszynę, załączył w swoich procedurach konserwacji okresowy test systemu awaryjnego i, jeśli zamontowano, przycisku reset.


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# PT - Segurança


 Onde este símbolo é apresentado no produto, o utilizador deve consultar o guia de instalação para obter informações e dicas de segurança.

Se o equipamento for utilizado de uma maneira não indicada pelo fabricante, a segurança do equipamento pode ficar comprometida.


 **AVISO:** O SPA3 deve ser ligado à terra. As disposições da ligação à terra para a máquina no seu âmbito são da responsabilidade do OEM ou do instalador.


 **AVISO:** O SPA3 não deve ser ligado a partir da rede elétrica. Deve ser utilizada uma PSU tolerante a uma única falha aprovada pela BS EN 60950-1:2006+A2:2013 (ou equivalente atual) e ligada a uma fonte que incorpore um condutor de proteção terra.

 **AVISO:** O SPA3 é isolado da fonte de alimentação ai desligar o conector de alimentação CA da PSU fornecida. Se forem necessários meios adicionais de isolamento, devem ser especificados e instalados pelo fabricante da máquina ou pelo instalador do produto. O isolador deve ser instalado num local fácil de alcançar pelo operador de CMM e cumprir a norma BS EN 61010-1:2010 (ou equivalente atual) e com os regulamentos de ligação nacionais aplicáveis no país de instalação.

 **AVISO:** A manutenção deve apenas ser realizada após a máquina ter sido isolada da fonte de alimentação elétrica, fornecimento de ar comprimido ou de outras fontes de energia, de acordo com as instruções do fabricante da máquina.

## Segurança da máquina

 **AVISO:** Desligar ou isolar o SPA3 pode NÃO impedir o movimento inesperado da máquina. É aconselhado ao utilizador que isole a máquina da fonte de alimentação elétrico, ar comprimido ou outras fontes de energia, de acordo com as instruções do fabricante da máquina antes de entrar na zona de perigo ou de realizar quaisquer operações de manutenção.

 **ATENÇÃO:** É fortemente recomendado que o fabricante de CMM ou o responsável pelo reequipamento inclua um teste periódico da interrupção de emergência e, se instalado, o interruptor de reinício associado nas suas instruções de manutenção.

## SPA3 installation guide

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# RO - Instrucțiuni de siguranță



În cazul în care acest simbol este afișat pe produs, utilizatorul trebuie să consulte ghidul de instalare pentru informații și recomandări de securitate.

Dacă echipamentul este folosit în alte condiții decât cele specificate de producător, nivelul de siguranță oferit de echipament poate fi diminuat.



**AVERTISMENT:** SPA3 trebuie să fie împământat. Împământarea întregii mașini este responsabilitatea OEM sau a instalatorului.



**AVERTISMENT:** SPA3 nu trebuie alimentat direct de la rețea.

Trebuie utilizată o singură sursă de alimentare tolerantă la erori omologată conform cu BS EN 60950-1:2006+A2:2013 (sau versiunea curentă); aceasta trebuie conectată la o alimentare care include un conductor de împământare de protecție.



**AVERTISMENT:** SPA3 este izolat de sursa de alimentare prin decuplarea conectorului de alimentare cu curent alternativ de la sursa externă. Dacă sunt necesare mijloace suplimentare de izolare, acestea trebuie specificate și montate de către producătorul sau instalatorul produsului. Echipamentul de izolare trebuie poziționat la îndemâna operatorului și trebuie să corespundă normei BS EN 61010-1:2010 (sau versiunea curentă), precum și reglementărilor naționale de cablare aplicabile în țara de instalare.



**AVERTISMENT:** Întreținerea trebuie efectuată numai după ce mașina a fost izolată față de alimentarea electrică, alimentarea cu aer comprimat sau alte surse de energie în conformitate cu instrucțiunile producătorului.

## Recomandări de siguranță



**AVERTISMENT:** Oprirea sau izolarea dispozitivului SPA3 NU împiedică mișcările neprevăzute ale mașinii. Utilizatorul i se recomandă deconectarea mașinii de la sursa de energie electrică, sursa de aer comprimat și alte surse de energie, în conformitate cu instrucțiunile producătorului, înainte de a pătrunde în zona periculoasă sau de a efectua orice lucrări de întreținere.




**ATENȚIE:** Se recomandă ca producătorul CMM sau cel care reabilitează sistemul să includă o testare periodică a opririi de urgență și dacă este instalat, o testare a butonului de resetare asociat în instrucțiunile de întreținere.


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# SK - Bezpečnosť


 Ak je uvedený na výrobku tento symbol, používateľ si musí prečítať informácie a bezpečnostné odporúčania v inštaláčnej a používateľskej príručke.

Ak sa zariadenie používa spôsobom, ktorý nešpecifikoval výrobca, môže to negatívne ovplyvniť ochranu poskytovanú zariadením.


 **VÝSTRAHA:** Prístroj SPA3 musí byť uzemnený. Uzemnenie celého prístroja je zodpovednosťou pôvodného výrobcu zariadenia (OEM) alebo firmy vykonávajúcej inštaláciu.


 **VÝSTRAHA:** Prístroj SPA3 musí byť pripojený k zdroju priamo zo zásuvky. Musí sa použiť tolerancia voči jednoduchej poruche PSU schválená podľa BS EN 60950-1:2006+A2:2013 (alebo aktuálna verzia) a pripojenie k napájaniu musí obsahovať ochranný uzemňovací vodič.

 **VÝSTRAHA:** Prístroj SPA3 je izolovaný od sieťového napájania odpojením sieťového konektora z externého zdroja napájania. Aj sú nutné akékoľvek dodatočné izolujúce zariadenia, musí ich stanoviť a dodať výrobca alebo montér tohto produktu. Izolátor musí byť umiestnený tak, aby bol ľahko dostupný pre pracovníka obsluhujúceho súradnicový merací prístroj (CMM) a musí spĺňať normu BS EN 61010-1:2010 (alebo aktuálnu verziu) a všetky príslušné národné predpisy týkajúce sa káblových rozvodov platné v krajine inštalácie.

 **VÝSTRAHA:** Údržba sa smie vykonávať len vtedy, ak bol prístroj izolovaný od elektrického napájania, rozvodu stlačeného vzduchu alebo iných zdrojov energie v súlade s inštrukciami výrobcu prístroja.

## Bezpečnosť prístroja

 **VÝSTRAHA:** Vypnutie alebo izolácia zariadenia SPA3 NEMUSÍ zabrániť neočakávanému pohybu prístroja. Pred vstupom do nebezpečnej zóny alebo pred vykonaním ľubovoľných údržbových postupov sa používateľovi odporúča izolovať prístroj od zdroja elektrickej energie, stlačeného vzduchu alebo iných zdrojov energie v súlade s pokynmi výrobcu prístroja.

 **UPOZORNENIE:** Dôrazne sa odporúča, aby výrobca súradnicového meracieho prístroja (CMM) alebo firma vykonávajúca jeho inštaláciu zahrnuli do ich údržbových pokynov pravidelné testovanie núdzového vypnutia a príslušného resetovacieho spínača, ak je namontovaný.

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# SL - Varnost



Če je na izdelku nameščen ta simbol, mora uporabnik upoštevati informacije in nasvete glede varnosti v navodilih za namestitev.

Drugačna uporaba opreme, kot jo je predpisal proizvajalec, lahko poslabša varnost opreme.



**OPOZORILO:** SPA3 je treba ozemljiti. Ozemljitev celotnega stroja je odgovornost proizvajalca originalne opreme ali inštalaterja.



**OPOZORILO:** SPA3 se ne sme napajati neposredno iz električnega omrežja.

Uporabiti je treba napajalnik, ki je odporen na posamične napake in odobren skladno s standardom BS EN 60950-1:2006+A2:2013 (ali trenutno veljavno različico), ter ga povezati z napajanjem, ki vključuje zaščitni ozemljitveni vodnik.



**OPOZORILO:** SPA3 se od vira napajanja loči z odklopom napajalnega priključka iz zunanega napajalnika. Če so potrebni dodatni ukrepi za ločevanje, jih mora zasnovati in vgraditi proizvajalec stroja ali inštalater izdelka. Ločilno sredstvo mora biti nameščeno v doseg operatorja KMS in mora biti skladno s standardom BS EN 61010-1:2010 (ali trenutno veljavno različico) ter z vsemi veljavnimi državnimi predpisi o električnih napeljavah v državi inštalacije.



**OPOZORILO:** Vzdrževanje se lahko izvaja šele, ko je stroj ločen od električnega napajanja, dovajanja stisnjenega zraka ali drugih virov energije v skladu z navodili proizvajalca stroja.

## Varnost stroja



**OPOZORILO:** Izklop ali ločitev naprave SPA3 morda NE bo preprečila nepričakovanih premikov stroja. Uporabniku priporočamo, naj loči stroj od virov električnega napajanja, stisnjenega zraka in drugih virov energije v skladu z navodili proizvajalca stroja, preden vstopi v nevarno območje ali se loti vzdrževalnih del.



**POZOR:** Priporočamo, da proizvajalec KMS ali izvajalec naknadne vgradnje v navodilih za vzdrževanje predvidi tudi redne preskuse zaustavitve v sili in stikala za ponastavitev, če je vgrajeno.

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# SV - Säkerhet



När den här symbolen visas på produkten måste användaren läsa i användarhandboken för att få information och råd om säkerheten.

Om utrustningen används på ett sätt som tillverkaren inte har avsett kan utrustningens säkerhet försämrats.



**WARNING:** SPA3 måste vara jordad. Hela maskinen måste jordas – detta ansvar åligger återförsäljaren eller installatören.



**WARNING:** SPA3 får inte drivas direkt från elnätet.

En strömadapter med enkelfeltolerans som är godkänd enligt SS-EN 60950-1:2006 + A2:2013 (eller aktuell version) måste användas och anslutas till en elförsörjning med skyddande jordledare.



**WARNING:** För att koppla ur SPA3 från strömförsörjningen drar du ur kontakten på den externa strömadaptern. Om det krävs andra metoder för att bryta strömmen måste maskintillverkaren eller installatören specificera och montera dessa. Brytaren måste sitta så att koordinatmätmaskinens operatör enkelt kan komma åt den. Den ska följa SS-EN 61010-1:2010 (eller aktuell version) och andra tillämpliga nationella regler för elinstallation i det land där installationen sker.



**WARNING:** Underhåll får endast utföras efter att maskinen har kopplats bort från elförsörjningen, tryckluftsförsörjningen eller andra energikällor i enlighet med maskintillverkarens anvisningar.

## Maskinsäkerhet



**WARNING:** Även om SPA3 stängs av eller kopplas ur så KAN ÄNDÅ oväntade maskinrörelser uppstå. Användaren rekommenderas att bryta strömmen, tryckluften och andra energikällor till maskinen i enlighet med maskintillverkarens anvisningar, innan någon person går in i riskzonen eller utför något underhåll.



**SE UPP:** Vi rekommenderar starkt att tillverkaren eller eftermonteraren av koordinatmätmaskiner inkluderar ett periodiskt test av nödstoppet samt eventuellt tillhörande återställningsknapp i sina underhållsinstruktioner.



## SPA3 installation guide

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# TW - 安全



產品上若標有此符號，使用者必須參閱安裝指南，瞭解相關資訊與安全須知。

如果裝置使用方式與製造商要求的方式不符，則裝置提供的保護功能可能會減弱。



**警告：**SPA3 必須接地。OEM 或安裝人員應負責整個機器的接地措施。



**警告：**SPA3切勿直接從主電源供電。

必須使用經BS EN 60950-1:2006+A2:2013(或當前版本)批准的單一不斷電電源供應器，並將其連接到包含保護性接地導體的電源。



**警告：**可以透過斷開外部電源供應器的交流電源接頭來切斷 SPA3 的電源。如果需要其他隔離措施，必須由機器製造商或產品安裝人員指定及安裝。隔離物必須設置在 CMM 操作員可及之處，並符合 BS EN 61010-1:2010 (或當前版本) 的標準與安裝國家適用的國家線路法規。



**警告：**僅應在按照機器製造商的指示將機器與供電、壓縮空氣供應或其他能源隔離之後，才能進行維護。

## 機器安全性



**警告：**關閉或隔離 SPA3 並無法防止不可預期的機器移動。建議使用者在進入危險區或執行任何維護作業前，先依據機器製造商的指示，隔離機器的供電、壓縮空氣或其他能源。



**警告：**強烈建議 CMM 製造商或改裝人員納入緊急停止的定期測試，若已納入，相關人員可在維護指示中重設開關。

## SPA3 installation guide

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# ZH - 安全须知



如果产品上显示此符号，用户必须参见“安装指南”，了解相关信息和安全建议。

如果设备使用方式与制造商要求的方式不符，则可能会损害设备的安全性能。



**警告:** SPA3 必须布置地线。整台机器的地线布置由 OEM 或安装服务商负责。



**警告:** SPA3 不能直接由主电源供电。  
必须使用符合 BS EN 60950-1:2006+A2:2013(或当前版本)标准的单个容错电源装置，并连接到带有保护性接地导体的电源上。



**警告:** 可以通过断开外部电源装置的交流电源接头来切断 SPA3 的电源。如果需要任何形式的额外绝缘隔离措施，必须由设备制造商或产品安装人员指定并安装。隔离器必须位于 CMM 操作人员易于操作的位置，并且符合 BS EN 61010-1:2010(或当前版本)和设备安装所在国适用的国家布线标准规定。



**警告:** 只有在按照机器制造商的说明断开机器电源、压缩气源或其他能源来源以后才能进行维护。

## 机器安全须知



**警告:** 关闭或隔离 SPA3 也许不能防止机器意外移动。建议用户在进入危险区域或执行任何维护操作前，须按照机器制造商的说明断开机器电源、压缩气源或其他能量来源。



**小心:** 强烈建议坐标测量机制造商或改造商在其维护说明中包含对急停安全系统进行定期测试和相关复位开关(如安装)的内容。

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