

Renishaw CMM Products Division

Sales Bulletin

To:	CMM Engineers, Regional Sales, Inside Sales, CMM Retrofitters, CMM OEM's and Distributors	Bulletin #:	321
Title:	Technical information for: UCC T3-2, UCC T3 PLUS UCC S3, UCC T5 and SPA3	Date:	June 9, 2015

Summary:

This bulletin provides information on functionality and specification of the new CMM controller products from Renishaw. It also details changes to the kitting of the PH20 system. This bulletin supersedes all previous bulletins on PH20 and UCC T5.

- The new UCC T3-2, UCC T3 PLUS, UCC S3, UCC T5, and SPA3 products are detailed, with a comparison to the current solutions. In addition, there is a comparison of the MCU joysticks.
- To simplify the purchasing of a complete controller system there are a number of product related system kits which comprise all items needed for some typical CMM installations.
- Note that UCC T3-2, UCC T3 PLUS, UCC S3, UCC T5 and SPA3 carry a 2 year warranty as standard.


Renishaw's new UCC controller, and SPA servo power amp solutions...

Renishaw's UCC2-2 and UCC T3 controllers for DCC CMMs have been available for several years, and in that time they have provided great versatility in both touch-trigger probing and high-speed scanning applications. The SPAlite and SPA2-2 servo power amplifiers complemented the UCC2 capabilities to meet 3 and 4-axis CMM motion control requirements. These products, coupled with the MCU multi-functional hand control unit, have proved a highly successful solution for both brand new and retrofit machines.

In response to ever increasing market demand for the most effective CMM measurement solutions, Renishaw has introduced an exciting new range of UCC and SPA products designed to precisely fit industry needs. These will provide integrated systems with unrivalled user benefits. Accordingly, UCC T3 and SPAlite have been obsolete and the new UCC T3-2, UCC T3 PLUS, UCC S3, UCC T5 and SPA3 have been introduced.

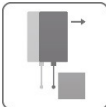
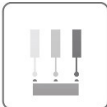
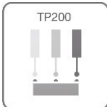


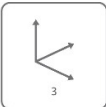

Product coverage is key to Renishaw's approach to making CMMs easier to use and more powerful than ever. The new UCC and SPA3 products provide optimised, high value platforms with excellent functionality to cover every situation from the most basic manual headed DCC CMM with touch-trigger probing (TTP) only, to the most sophisticated DCC machines with highly advanced REVO 5-axis scanning systems.

The following pages identify the main technical and functional features of the current and new products (listed in ascending capability):




UCC T3-2 (fixed or manual head machines)

- Built-in touch-trigger probe interfaces (TP20 and TP200)
- Ethernet connection to PC
- Throughput improvement of 40+% compared to UCC T3*
- Requires SPA3 to interface and power the machine; will not work with SPALite or SPA2-2
- The price of UCC T3-2 and SPA3 are the same as UCC T3
- Utilises an external PSU
- Cannot support PH9/PH10 or TEC
- Requires UCCsuite 4.7.2 or later
- See UCC kits 14,15,16

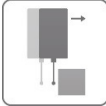
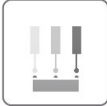
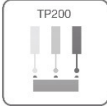



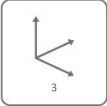

Serving the lower-end of the CMM market, UCC T3-2 is a cost-effective compact controller package providing touch-trigger probing only.

*The Ethernet communications and processor react and process moves and events faster.



UCC T3 PLUS (PH10 fitted machines)

- Built-in touch-trigger probe interfaces (TP20 and TP200)
- Ethernet connection to PC
- Built-in PH10 and PH10 PLUS support
- Built-in TEC support (up to 16 sensors)
- Requires SPA3 to interface and power the machine; will not work with SPALite or SPA2-2
- Throughput improvement of 40+% compared to UCC T3 or UCCLite-2 and matches throughput of UCC2-2*
- Requires UCCsuite 4.7 or later
- See UCC kits 6,7,8,9

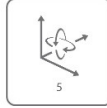
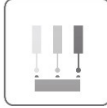
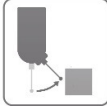
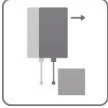
For the majority of the CMM market, UCC T3 PLUS is cost-effective compact controller package providing touch-trigger probing and PH10 support.

*The Ethernet communications and processor react and process moves and events faster.



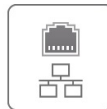
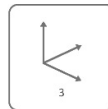
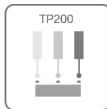
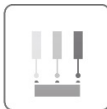
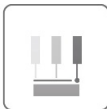
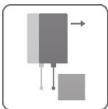
UCC T5 (PH20 systems)

- Unique and powerful 5-axis CMM controller specifically designed for use with PH20
- Built-in TEC interface (up to 16 sensors)
- Ethernet connection to PC
- Requires SPA3 to interface and power the machine - will not work with SPAlite or SPA2-2
- Requires UCCsuite 4.7 or later
- See PH20 kits 1,2,3



UCC S3 (PH10 and scanning machines)

- Built-in touch trigger probe interfaces (TP20 and TP200)
- Built-in SP25 and SP600 support
- Built-in PH10 and PH10 PLUS support
- Ethernet connection to PC
- Built-in TEC support (up to 16 sensors)
- Requires SPA3 to interface and power the machine - will not work with SPAlite or SPA2-2
- Throughput is the same as UCC2-2
- Requires UCCsuite 4.7 or later
- See UCC kits 10,11,12,13

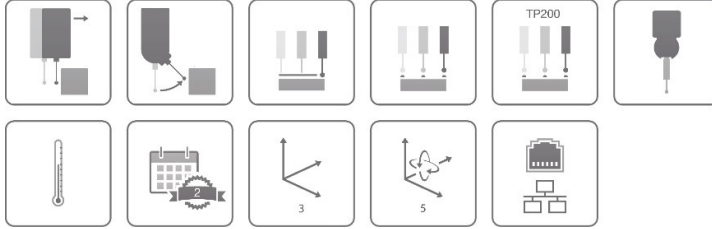


UCC S3 and SPA3 are suited to multi-axis CMMs using touch-trigger and/or scanning probes. It is significantly more cost effective than its predecessor UCC2-2.



UCC 2-2

- 4-axis DCC controller
- Built-in touch-trigger probe interfaces (TP20 and TP200)
- Ethernet connection to PC
- Supports - TP7, PH10, PH20, SP25M / SP600, SP80, REVO and TEC (up to 24 sensors) via additional interfaces or cards
- Requires SPAlite, SPA2-2 or SPA3 to power the machine



UCC2-2 will be used for REVO and SP80 applications.



SPA3

- 3-axis servo power amplifier
- Utilises an external power supply
- 1 U height
- Output voltage 24 V – 80 V (PSU dependant)
- Output power 800 W (PSU dependant)



SPA2-2

- 3-axis servo power amplifier
- Upgrade option to 4-axis
- 3 U height
- Output voltage 24 V - 60 V
- Input power 600 W

Will continue to be used for SP80 applications and for applications which require 4 axes.



SPA2-2 (6-axis)

- 3-axis servo power amplifier
- Powers REVO
- Upgrade option to 7-axis (5 machine + 2 REVO)
- 3 U height
- Output voltage 24 V - 60 V
- Input power 600 W



MCUlite-2

- Entry level 3-axis joystick



MCU 5

- Premium 3-axis joystick with display
- Available NOW but longer term will be replaced by the MCU 5-2
- Tap touch available from UCCsuite 4.8



MCU W

- Premium 3-axis joystick with display and wireless connection
- 30 m non line-of-sight range
- Eight hour battery life
- Handset battery re-charged if placed on the cradle
- Spare battery automatically re-charged in cradle
- Available NOW but longer term will be replaced by MCU W-2



MCU 5-2

- Premium 3-axis joystick with display
- New button icons
- New macro feature, one press measurement
- New tap touch feature
- Requires UCCsuite 4.9



MCU W-2

- Premium 3-axis joystick with display and wireless connection
- 30 m non line-of-sight range
- 10 hour battery life
- Handset battery re-charged if placed on the cradle
- Spare battery automatically re-charged in cradle
- New button icons
- New macro feature, one press measurement
- New tap touch feature
- Requires UCCsuite 4.9

The following table contains a comparison of the UCC controllers.

Function / specification	UCC T3-2	UCC T3 PLUS	UCC S3	UCC T5	UCC2-2
Configured for direct CNC controlled (DCC) CMMs	■	■	■	■	■
Processor type	1.6 GHz Intel Atom	1.6 GHz Intel Atom	1.6 GHz Intel Atom	1.6 GHz Intel Atom	1.6 GHz Intel Atom
Number of CMM axes controlled	3	3	3	3	4 (XYZ + 1 additional axis)
Configurable additional axis (rotary table, dual scale, dual drive)	Second SPA3 required *	Second SPA3 required *	Second SPA3 required *	Second SPA3 required *	Further axes by additional cards
Suitable hand control unit	MCUlite-2, MCU5, MCU5-2 MCU W MCU W-2	MCUlite-2, MCU5, MCU5-2 MCU W MCU W-2	MCUlite-2, MCU5, MCU5-2 MCU W MCU W-2	MCUlite-2, MCU5, MCU5-2 MCU W MCU W-2	MCUlite-2, MCU5, MCU5-2 MCU W MCU W-2
SPA (servo power amp) compatibility	SPA3	SPA3	SPA3	SPA3	SPA3, SPALite, SPA2-2
Analogue SPA output ±10 V	-	-	-	-	■
Digital SPA control output	■	■	■	■	■
Communications link with PC	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet
PC operating system compatibility	XP pro, Windows 7, Windows 8	XP pro, Windows 7, Windows 8	XP pro, Windows 7, Windows 8	XP pro, Windows 7, Windows 8	XP pro, Windows 7, Windows 8
Servo loop time	0.5 ms	0.5 ms	0.5 ms	0.5 ms	0.5 ms
Touch-trigger probing (TTP) function	■	■	■	■	■
TP200 / SCR200 interface	■	■	■	-	■
SP600 interface	-	-	■	-	■
SP25M interface	-	-	■	-	■
SP80 interface	-	-	-	-	By interface card
PH10 interface	-	■	■	-	By interface card
PH20 interface	-	-	-	■	By interface card
REVO interface	-	-	-	-	By interface card
Temperature sensor inputs	-	16	16	16	24 by interface card
Renishaw UCCserver (I++ DME)	■	■	■	■	■
Common UCC software integration	■	■	■	■	■
Compatible with existing daughter cards	-	-	-	-	■
Maximum real time scanning data rate	-	-	2,000 points/s	-	2,000 points/s
Integral AC power supply	-	-	-	-	■
External DC power supply	■	■	■	■	-
Digital scale input: RS422 - Renishaw	■	■	■	■	■
Analogue scale input	By external interface	By external interface	By external interface	By external interface	By external interface
Uncommitted CMM I/O	2 inputs + 1 output	2 inputs + 1 output	2 inputs + 1 output	2 inputs + 1 output	6 input + 7 outputs
Power available for I/O	24 V at 1 A	24 V at 1 A	24 V at 1 A	24 V at 1 A	24 V at 1 A
I/O specification	User configurable Active HIGH or LOW Voltage range 5 V to 24 V	User configurable Active HIGH or LOW Voltage range 5 V to 24 V	User configurable Active HIGH or LOW Voltage range 5 V to 24 V	User configurable Active HIGH or LOW Voltage range 5 V to 24 V	User configurable Active HIGH or LOW Voltage range 5V to 24V
Outer and inner limit switch compliant	■	■	■	■	■
Soft limit compliant	■	■	■	■	■
CMM volumetric error map function	■	■	■	■	■
Renishaw UCCassist compatible	■	■	■	■	■
Dimensions					
Width	440 mm (19 in enclosure)	440 mm (19 in enclosure)	440 mm (19 in enclosure)	440 mm (19 in enclosure)	435 mm (19 in enclosure)
Height	44 mm (1U)	44 mm (1U)	44 mm (1U)	44 mm (1U)	127 mm (3U)
Depth	180 mm	180 mm	180 mm	180 mm	330 mm
Weight	2.1 kg (4 lb 10 oz)	2.6 kg (5 lb 12 oz)	2.6 kg (5 lb 12 oz)	2.1 kg (4 lb 10 oz)	8 kg (17 lb 10 oz) – without cables and option boards

SPALite is now obsolete and has been detailed for comparison purposes only.

	SPALite	SPA2-2 (3-axis)	SPA3
UCC controller compatibility	UCC2-2	UCC2-2	UCC2-2, UCC T3-2, UCC T3 PLUS, UCC S3, UCC T5,
Servo amplifier channels	3	3	3
Additional servo amplifier channels	-	1 (UCC2-2 systems only)	-
Total output power	250 W	600 W	960 W max. (PSU dependent)
Maximum continuous power per channel	120 W	300 W	800 W (PSU dependent)
Peak power per channel (dependent on application)	240 W	600 W	960 W (PSU dependent)
Amplifier output (motor) voltage	24 V to 48 V variable	12 V to 60 V variable	12 V to 80 V variable
Amplifier current	0 A to 5 A programmable	0 A to 10 A programmable	0 A to 10 A programmable
E-STOP and contactor circuits included	■	■	-
Emergency stop compatibility	Category 'B' E-STOP	Category '2' E-STOP	Category '2' E-STOP
Tuning method	Digital	Digital	Digital
DC brushed motor compatibility	■	■	■
Tacho motor velocity feedback	■	■	■
Tacholeless velocity feedback	■	■	■
Encoder velocity feedback	■	■	■
AC power supply	Integral	Integral	External
Power supply - input	85 V to 265 V ac, 47 Hz to 63 Hz, 250 W	85 V to 132 V ac, 170 V to 264 V ac, 47 Hz to 63 Hz, 600 W	PSU dependent
Environment - storage	-10 °C to +70 °C (+14 °F to +158 °F)	-10 °C to +70 °C (+14 °F to +158 °F)	-10 °C to +70 °C (+14 °F to +158 °F)
Environment - operation	+10 °C to +50 °C (+50 °F to +122 °F) local to UCC	+10 °C to +50 °C (+50 °F to +122 °F) local to UCC	+5 °C to +50 °C (+41 °F to +122 °F) local to UCC
Dimensions:			
Width	435 mm (19 in enclosure)	435 mm (19 in enclosure)	440 mm (19 in enclosure)
Height	2U (85 mm)	3U (127 mm)	1U (44 mm)
Depth	330 mm	330 mm	180 mm
Weight	5.5 kg (12 lb 2 oz)	9.48 kg (20 lb 14 oz) (maximum - 7-axis system)	2.84 kg (6 lb 4 oz)

The following table compares the joysticks.

	MCUlite-2	MCU5	MCU W	MCU5-2	MCU W-2
Display window	-	■	■	■	■
Fast slow button	■	On paddle	On paddle	On paddle	On paddle
Programmable function keys	2	4	4	4	4
Axis locks	■	■	■	■	■
Engage / re engage	■	■	■	■	■
Disable probe	■	■	■	■	■
Take point / delete point	■	■	■	■	■
Speed override	■	■	■	■	■
Operate rotary table	-	■	■	■	■
Run/step program	-	■	■	-	-
Move in part CS	-	■	■	■	■
Soft stop facility	-	■	■	■	■
Wireless operation	-	-	■	-	■
Battery life	-	-	8 hours	-	10 hours
Move in stylus CS	-	Via menu	Via menu	■	■
Macro cycles	-	-	-	■	■
Orbital mode	-	UCCsuite 4.8 Via menu	UCCsuite 4.8 Via menu	■	■
Tap touch	UCCsuite 4.8	UCCsuite 4.8	UCCsuite 4.8	■	■

Part numbers:

New PH20 system kits

The new PH20 kitting allows PH20 systems to be purchased using just two part numbers (PH20 system kit + MCU joystick)

The new PH20 system kits contain a PH20 head, a UCC T5 controller and SPA3 amplifier

PH20 system kit 1	A-5518-1091	PH20 head, UCCT5 controller, SPA3, 48 V to 58 V PSU
PH20 system kit 2	A-5518-1092	PH20 head, UCCT5 controller, SPA3, no PSU

The kits above do not contain an MCU joystick; please order the version required separately. Please contact your local office for an up-to-date PH20 system quote.

The following part numbers will be obsoleted on the 1st September 2015

Product description	Part number	Contents
PH20 controller kit 3	A-5518-1030	UCC T5 controller, SPA3, 48 V – 58 V PSU
PH20 controller kit 4	A-5518-1035	UCC T5 controller, SPA3
PH20 controller kit 5 – 4-axis	A-5518-1037	UCC T5 controller, 2 x SPA3, 2 x 48 V – 58 V PSU

New UCC controller kits and accessories

The table below details only the recent new additions to the product range. For details of the full range of products please contact your local Renishaw office. More product information can also be found at the Renishaw CMM knowledgebase link at Renishaw.com

UCC T3 PLUS kit 6	A-5518-1060	UCC T3 PLUS controller, SPA3, 48 V - 58 V PSU, MCUlite-2
UCC T3 PLUS kit 7	A-5518-1063	UCC T3 PLUS controller, SPA3
UCC T3 PLUS kit 8	A-5518-1065	UCC T3 PLUS controller, SPA3, MCUlite-2
UCC T3 PLUS kit 9	A-5518-1067	UCC T3 PLUS controller, 2 × SPA3, 2 × 48 V - 58 V PSU, MCUlite-2

UCC S3 kit 10	A-5518-1070	UCC S3 controller, SPA3, 48 V - 58 V PSU, MCUlite-2
UCC S3 kit 11	A-5518-1073	UCC S3 controller, SPA3
UCC S3 kit 12	A-5518-1075	UCC S3 controller, SPA3, MCUlite-2
UCC S3 kit 13	A-5518-1077	UCC S3 controller, 2 × SPA3, 2 × 48 V - 58 V PSU, MCUlite-2

UCC T3-2 controller kit 14	A-5518-1080	UCC T3-2 controller, SPA3 48 V – 58 V PSU, MCUlite-2
UCC T3-2 controller kit 15	A-5518-1083	UCC T3-2 controller, SPA3
UCC T3-2 controller kit 16	A-5518-1085	UCC T3-2 controller, SPA3, MCUlite-2

UCC TEC kit 9	A-5518-1600	1 × work piece sensor, 6-axis sensors, 37 W connector
48 V - 58 V PSU	A-5518-0025	48 V - 58 V PSU for use with SPA3