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HC20 compensation system

Introduction

The Renishaw HC20 compensation system is designed as a replacement for the obsolete HC10 system.

Both the main HC20 unit and the remote PSU and data hub are dimensioned to be 'drop in' replacements for the equivalent HC10 system components.

HC20 has been designed to integrate Renishaw's proven single axis RCU10 compensation units within a single chassis unit. This minimises the rewiring of the existing HC10 installation.

The updated components and design of HC20 also delivers additional operational benefits over the original HC10 compensation system.

2-axis HC20 system

System overview

The HC20 system is available in a number of different axis options for which the details are available below:

- HC20 2-Axis System (A-8003-4565)
- HC20 3-Axis System (A-8003-4530)
- HC20 4-Axis System (A-8003-4540)

These systems consist of the following parts.

	2-Axis System (A-8003-4565)	3-Axis System (A-8003-4530)	4-Axis System (A-8003-4540)
HC20 2-Axis System	1 off	-	-
HC20 3-Axis System	-	1 off	-
HC20 4-Axis System	-	-	1 off
HC20 PSU	1 off	1 off	1 off
RCU-CS Software	1 off	1 off	1 off
Material temperature sensors	1 off	1 off	1 off
Air temperature sensors	2 off	3 off	4 off
Sensor cables	3 off	4 off	5 off
Sensor connector kit	3 off	4 off	5 off

System Components

The individual components of the system are described in detail below:

HC20 Compensation Unit

The HC20 compensation unit contains 2-4 single axis RCU10 compensation units. The type of RCU10 compensation unit that will be against each axis is shown below:

- Axis 1 - RCU10-PX-XX - RCU10 compensation unit with pressure sensor
- Axis 2 - RCU10-XX-XX - RCU10 compensation unit
- Axis 3 - RCU10-XX-XX - RCU10 compensation unit
- Axis 4 - RCU10-XX-XX - RCU10 compensation unit

Specifications for the individual compensation units are detailed in separate data sheets.

The HC20 compensation unit contains the main communication links between the machine controller and the laser encoder system and is a direct replacement for the previous HC10 unit. The dimensional envelope and mounting/attachment details have not been changed from HS10. A connection kit is provided (including serial USB converter) to allow connection to either RD20 or other PC.

PSU Unit

Part No: A-8003-4570

The HC20 PSU replaces the remote ‘data acquisition unit’ found in HC10 systems. The HC20 PSU acts as the communication hub for the (remote) axis 1 and 2 laser heads, air temperature sensors and material temperature sensor. The PSU is connected to the main HC20 compensation unit using the original HC10 system cables. The power supply is now a separate external unit for easy maintenance/ replacement.

RCU10 Configuration Software

Part No: RCU10-CS-XX

The HC20 compensation system uses RCU10 software to configure the HC20. It also allows the user to monitor laser signal strength and laser status while the machine is running.

Air Temperature Sensor

Part No: RCU10-AT-XX

The air sensor is used in applications that require environmental (air refractive index) compensation. The sensor contains a calibrated thermistor to monitor ambient air temperature in the range of 0˚C to 40˚C. The temperature reading is converted into a digital signal inside the sensor, which reduces susceptibility to noise when the reading is transmitted to the RCU10.

Material Temperature Sensor

Part No: RCU10-MT-XX

The material temperature sensor is used in applications that require scale, work-piece or machine structure compensation (temperature normalisation).
The sensor contains a calibrated thermistor to monitor material surface temperature in the range of 0˚C to 55˚C. The temperature reading is converted into a digital signal inside the sensor, which reduces susceptibility to noise when the reading is transmitted to the RCU10.

Sensor Cable Assembly (5m)

Part No: RCU10-TC-X5

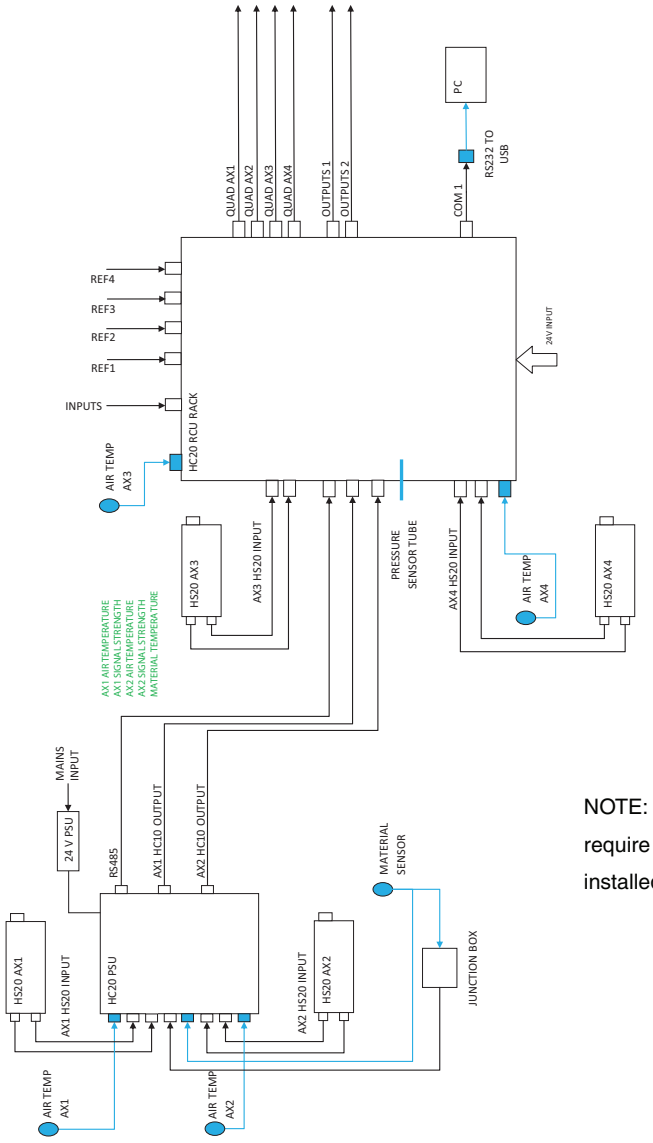
The sensor cable is required to connect the new style air and material sensors to the HC20 PSU and main compensation unit. In applications where more than five metres of cable are required sensor cables may be daisy chained. However, due to access restrictions when running cables, it may be preferable that a custom cable (without intermediate connectors) is used. This should be manufactured from the following specification cable.

- Max conductor size: 0.25mm^2 (24 awg)
- Cable O.D: 3.5mm - 5mm (0.14 in - 0.2 in)

Renishaw recommends the use of an overall shield and twisted pair wire cores for the data signals eg. Belden 88102.
A sensor connector kit (A-9904-1636) is available as an option for these applications.

Installation

An overview is given below.
Refer to the manual for more information.



NOTE: Only items in blue require new cabling to be installed

4-axis HC10 laser scale architecture

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About Renishaw

Renishaw is an established world leader in engineering technologies, with a strong history of innovation in product development and manufacturing. Since its formation in 1973, the company has supplied leading-edge products that increase process productivity, improve product quality and deliver cost-effective automation solutions.

A worldwide network of subsidiary companies and distributors provides exceptional service and support for its customers.

Products include:

- **Additive manufacturing, vacuum casting, and injection moulding technologies for design, prototyping, and production applications**
- **Advanced material technologies with a variety of applications in multiple fields**
- Dental CAD/CAM scanning and milling systems and supply of dental structures
- Encoder systems for high accuracy linear, angle and rotary position feedback
- Fixturing for CMMs (co-ordinate measuring machines) and gauging systems
- **Gauging systems for comparative measurement of machined parts**
- High speed laser measurement and surveying systems for use in extreme environments
- Laser and ballbar systems for performance measurement and calibration of machines
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- Probe systems and software for job set-up, tool setting and inspection on CNC machine tools
- Raman spectroscopy systems for non-destructive material analysis
- Sensor systems and software for measurement on CMMs
- Styli for CMM and machine tool probe applications

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