

TYPE EXAMINATION CERTIFICATE

Product or Protective Systems Intended for Use in Potentially Explosive Atmospheres

UKSI 2016:1107 (as amended)

1. **Type Examination Certificate Number:** ITS22UKEX0578X **Issue** 01
2. **Product:** Rack Mounted Controller - OnCore Compact
3. **Manufacturer:** Nexus Control LLC
4. **Address:** 1800 Nelson Road
Longmont, CO 80501-6324
USA
5. This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
6. Intertek Testing and Certification Limited, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of the products intended for use in potentially explosive atmospheres given in Schedule 1 of UKSI 2016:1107 (as amended).

The examination and test results are recorded in the confidential report 105396132DAL-002.
7. Compliance with the Essential Health and Safety Requirements has been assured by compliance with standards EN IEC 60079-0:2018, EN 60079-7:2015 +A1:2018 and EN 60079-15:2019 except in respect of those requirements referred to within item 14 of the Schedule
8. If the sign "X" is placed after the certificate number, it indicates that the product is subject to the special conditions of use specified in the Schedule to this certificate.
9. This Type Examination Certificate relates only to the design of the specified product and not to specific items subsequently manufactured.
10. The marking of the product shall include the following:



II 3 G

Ex ec nC IIC T4 Gc

-20°C ≤ Ta ≤ +50°C

Certification Officer:

Todd L. Relyea

Date:

17 July 2023

SCHEDULE:

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11. Description of Equipment or Protective System

This product is a controller system intended for installation in an end product enclosure. The design consists of several control boards stacked on each other and connected to a mountable frame which also includes a power supply and controller computer.

All modules listed below:

MPU55-CBACN, MPU70-CBBCN, MAI50-CBACN, MAI51-CBACN, MAI54-CBACN, MAO50-CBACN, MSP50-CBACN, MVP50-CBBCN, MDI50-CBACN, MDI53-CBACN, MDO53-CBACN. MHT50- CBACN, MHO50- CBACN.

MPU55-CBAUS, MPU70-CBBUS, MAI50-CBAUS, MAI50-EBAUS, MAI51-CBAUS, MAI51-EBAUS, MAI54-CBAUS, MAI54-EBAUS, MAO50-CBAUS, MAO50-EBAUS, MSP50-CBAUS, MSP50-EBAUS, MVP50-CBAUS, MVP50-EBAUS, MDI50-CBAUS, MDI50-EBAUS, MDI53-CBAUS, MDI53-EBAUS, MDO53-CBAUS, MDO53-EBAUS, MHT50- CBAUS, MHT50-EBAUS, MHO50- CBAUS MHO50-EBAUS.

Model Similarity:

The control modules MPU55 is an integrated stand-alone computers that run the application code and provides a universal control platform for the Nexus system, according to the firmware loaded on the controller.

MPU70 module is a new design of the MPU55 module with faster computing speed.

Each I/O module contains a processor circuit which is common to all Nexus I/O modules. The Nexus analog input modules MAI50, MAI53 and MAI54 contain a processor subsystem and an acquisition circuit specific to either temperature input function or any other analog input function.

The MHT50 is physically equivalent to the MAI50 board (just different firmware and name).

The Nexus analog output module MAO50 contains a processor subsystem and an acquisition circuit specific to the analog output function. Most analog output channels can provide current output with signal range from 4 to 20mA, while some can be configured for 1-5V dc output.

The MHO50 is physically equivalent to the MAO50 board (just different firmware and name).

The speed measurement module MSP50 contains a processor subsystem (MCU), a Field Programmable Gate Array (FPGA) and an acquisition & output circuit specifically for speed detection and protection function. The module can provide a number of speed input, mA/V analog inputs, discrete inputs and discrete outputs.

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The Nexus valve position control module MVP50 is an integrated I/O module specific for valve position control. The module has redundant input/output channels and on-board PID servo control loop.

The Nexus discrete input modules MDI50 and MDI53 contain a processor subsystem and an acquisition circuit specific to the digital input function.

The Nexus discrete output module MDO53 contains a processor subsystem and an acquisition circuit specific to the digital output function.

The blade modules are identical to the original modules with covers being removed.

Refer Appendix for more information.

Module Name	Haz , Panel Mount Module SAP part numbers	Haz , PCBA SAP part numbers	HAZ AREA PCB PART NUMBER	Description of use	input VOLTAGE (max)
MAI50	MAI50-CBACN MAI50-CBAUS MAI50-EBAUS	MAI50-BBACN	MAI50-ABACN	ma/V analog input module 16 channels	24VDC, 11.0W
MHT50	MHT50-CBACN MHT50-CBAUS MHT50-EBAUS	MHT50-BBACN	MHT50-ABACN	ma/V analog input module 16 channels	24VDC, 11.0W
MAI54	MAI54-CBACN MAI54-CBAUS MAI54-EBAUS	MAI54-BBACN	MAI54-ABACN	mA/V Analog Input Module 8 Channels with Individual ADC, fast sampling	24VDC, 9.2W
MAO50	MAO50-CBACN MAO50-CBAUS MAO50-EBAUS	MAO50-BBACN	MAO50-ABACN	mA/V analog output module 8 channels	24VDC, 6.55W
MHO50	MHO50-CBACN MHO50-CBAUS MHO50-EBAUS	MHO50-BBACN	MHO50-ABACN	mA/V analog output module 8 channels	24VDC, 6.55W

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MSP50	MSP50-CBACN MSP50-CBAUS MSP50-EBAUS	MSP50-BBACN	MSP50-ABACN	Speed Measurement and protection module	24VDC, 7.6W
MVP50	MVP50-CBACN MVP50-CBAUS MVP50-EBAUS	MVP50-BBACN	MVP50-ABACN	Valve position control module	24VDC, 11.0 W
MDI50	MDI50-CBACN MDI50-CBAUS MDI50-EBAUS	MDI50-BBACN	MDI50-ABACN	Digital input module 32 channels	24VDC, 8.5W
MDI53	MDI53-CBACN MDI53-CBAUS MDI53-EBAUS	MDI53-BBACN	MDI53-ABACN	digital module 16 channels 24VDC/48VDC/125VDC	112.5-137.5 VDC, 6.2W wetting
MDO53	MDO53-CBACN MDO53-CBAUS MDO53-EBAUS	MDO53-BBACN	MDO53-ABACN	digital output module 16 AC relay channels	Supply: 24Vdc, 11.0W Load: 8A/30VDC
MAI51	MAI51-CBACN MAI51-CBAUS MAI51-EBAUS	MAI51-BBACN	MAI51-ABACN	TC/RTD analog input module 16 channels	24VDC, 1.8W
MPU55	MPU55-CBACN MPU55-CBAUS	MPU55-BBACN	MPU55-ABACN	Controller Module	24VDC, 7.2W
MPU70	MPU70-CBBCN MPU70-CBBUS	MPU70-BBBCN	MPU70-ABBCN	Controller Module	input: 24 VDC, 28.0 W

12. Report Number

Intertek Report: 105396132DAL-002 Dated: 07/11/2023.

13. Conditions of Certification

- (a). Special Conditions of Use
- Equipment shall be installed in an Ex certified tool secured enclosure which provides a minimum ingress protection of IP54.

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- The equipment must be mounted horizontally in a chassis within the enclosure.
 - The maximum surface temperature measured according to test conducted per Clause 26.5.1 EN 60079-0 Standard was 95.69°C. End user must verify that the enclosure in which this equipment is installed is suitably rated for service per this temperature.
 - In case of d.c. voltage supply for the power supply, a suitable line-side fuse has to be used.
- (b). Conditions of Manufacture - Routine Tests
- A routine electric strength test will be required between the input pins and the enclosure of each IO modules per IEC 60079-7:2017, Clause 7.1. A test voltage of 500V r.m.s. or 700VDC is to be applied for 60s and no breakdown of insulation or separation shall occur. Alternatively, a test shall be carried out at 1.2 times the test voltage, but maintained for at least 100 ms.

14. Essential Health and Safety Requirements (EHSRs)

The relevant Essential Health and Safety Requirements (EHSRs) affected by this variation have been identified and assessed in Intertek Report: 105396132DAL-002 Dated: 07/11/2023.

15. Drawings and Documents

Title:	Drawing No.:	Rev. Level:	Date:
*ONCORE COMPACT, IO RACK W/ SIMPLEX CTRL & PWR	152M8430	D	2023-06-15
*ONCORE SYSTEM WIRING COMPACT CONTROL SYSTEM	152M8446	C	2023-06-15
*MODULE-LEVEL ASSEMBLY DRAWING	152M8447	E	2023-06-15
*Nexus OnCore Compact Control System ATEX/IECEX/UL/CAN/UKEx Manual Addendum	NCM10103	-	June 2023

16. Details of Certificate changes

- Adding below blade IO modules:

MAI50-EBAUS MAI50, Compact Blade IO, Front, HA

MAI54-EBAUS MAI54, Compact Blade IO, Front, HA

MAI51-EBAUS MAI51, Compact Blade IO, Front, HA

MAO50-EBAUS MAO50, Compact Blade IO, Front, HA

MHT50-EBAUS MHT50, Compact Blade IO, Front, HA

MHO50-EBAUS MHO50, Compact Blade IO, Front, HA

MDI50-EBAUS MDI50, Compact Blade IO, Front, HA

MDI53-EBAUS MDI53, Compact Blade IO, Front, HA

MDO53-EBAUS MDO53, Compact Blade IO, Front, HA

MSP50-EBAUS MSP50, Compact Blade IO, Front, HA

MVP50-EBAUS MVP50, Compact Blade IO, Front, HA

- Adding MPU70 module as an alternative to MPU55 controller

- Removing below special condition of use:

- Controller shall not be subject to input power variation and shall always be powered at 24VDC +/- 2% (or +/- 0.5 VDC).