UNITED KINGDOM CONFORMITY ASSESSMENT

1 **UK TYPE EXAMINATION CERTIFICATE**

2 Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

3 Certificate Number: **CSAE 21UKEX1430X** Issue: **2**

4 Product: **The SI3 and SI4, Skilmatic Range of Electro-Hydraulic Control Modules**

5 Manufacturer: **Rotork UK Ltd.**

6 Address: 9 Brown Lane West
Holbeck
Leeds LS12 6BH
England

7 This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 CSA Group Testing UK Limited, Approved Body number 0518, in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations. The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018	EN 60079-1 :2014/COR1:2018	EN 60079-7:2015+A1:2018
EN ISO 80079-36:2016	EN ISO 80079-37:2016	

Except in respect of those requirements listed at Section 16 of the schedule to this certificate. The above standards may not appear on the UKAS Scope of Accreditation, but have been added through flexible scope of accreditation, which is available on request.

10 If the sign 'X' is placed after the certificate number, it indicates that the product is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This UK TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of this product shall be in accordance with Regulation 41 and include the following:

II 2G
Ex db ① h IIB T4 Gb IP66/68② or
Ex db ① h IIC T4 Gb IP66/68②
① *"eb" added on versions with increased safety terminal enclosure*
② *Only IP64 is endorsed by Sira on this certificate*
(-③°C to +④°C)
③*down to -50°C,* ④*up to 70°C (Configuration 1 – IIB & IIC)*
③*down to -50°C,* ④*up to 70°C (Configuration 2 – IIB)*
③*down to -20°C,* ④*up to 70°C (Configuration 2 – IIC)*

Name: M Halliwell

Title: Director of Operations

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13 **DESCRIPTION OF PRODUCT**

The SI3 and SI4, Skilmatic Range of Electro-Hydraulic Control Modules for use with either an optional Power Module or a suitably approved third party motor and hydraulic pump [Note 1], which can be instantaneously switched to increase or decrease the hydraulic pressure to a suitable spring return or double acting, linear or quarter-turn actuator.

The Control Module consists of an electrical and terminal enclosure, with a hydraulic manifold.

The electrical enclosure has been designed to meet the requirements of the flameproof type of protection, and is formed by the main centre housing, hydraulic manifold, electrical cover with a display window, indication cover and blanking covers or the optional Power Module, all of which form flameproof spigot joints with the centre housing. The electrical enclosure may contain the following equipment: user-interface PCB (incl. Bluetooth radio module) , control PCB, power PCB, adaptor PCB, transformer, solenoid valve coils/bodies, pressure transducer bodies, up to four mechanical or proximity limit switches and operating cams and up to four option PCB' s for ESD functions, device drivers or network communication.

The terminal enclosure connects to the electrical enclosure via the centre housing, their volumes being separated by a flameproof terminal bung. The flameproof terminal bung comprises a moulded plastic main body through which pass a number of terminals which are sealed in place with a potting compound. The terminal bung is secured in position by means of a circlip. In this form, the terminal enclosure meets the requirements of increased safety type of protection and only provides electrical field wiring terminations, all of which are at the terminal bung. However, the flameproof terminal bung may be replaced with a non-flameproof version, in which case the electrical and terminal compartments are considered as one flameproof enclosure closed by means of a cover, which connects to the centre housing by means of a tapered spigot flameproof joint.

Cable entry facilities are provided in the form of five threaded entries.

All external fasteners are stainless steel, grade A4-80 socket cap head screws.

There are two basic hydraulic manifold configurations providing different functionality depending on the number and type (normally open or normally closed), of solenoid valves and pressure transducers fitted.

Configuration 1
- Two solenoid valves and one pressure transducer.
- Three solenoid valves and one pressure transducer.

Configuration 2
- Three solenoid valves and two pressure transducers.
- Four solenoid valves and two pressure transducers.

Additional hydraulic manifold circuit configurations are permitted, provided the required functionality can be achieved using the basic manifold, solenoid and pressure transducer configurations 1 and 2 above.

The hydraulic circuits are separated from the electrical enclosure by threaded flameproof joints between the solenoid valve and pressure transducer bodies and the hydraulic manifold, which connects to the main centre housing by a flameproof tapered spigot joint to form part of the flameproof electrical enclosure.

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The optional Power Module consists of a motor enclosure and hydraulic fluid reservoir which also contains the hydraulic pump, the motor enclosure and reservoir are connected by the motor/pump housing. The motor enclosure contains a motor fitted with thermal protection devices and connects to the motor/pump housing by means of a flameproof cylindrical spigot joint. The motor shaft forms a cylindrical flameproof joint through the motor pump housing and connects to the hydraulic pump in the reservoir via an Oldham coupling. The hydraulic pump is not considered a source of ignition and the reservoir is not considered as part of the flameproof enclosure.

When the optional Power Module is mounted locally the electrical and motor enclosures are separated by a potted line bush that forms a cylindrical flameproof joint with the motor pump housing. When the Power Module is remotely mounted or a third party motor and pump is used [Note 1]the connection is via additional cable entries in the blanking covers fitted with suitably approved cable entry devices.

The following basic configurations are included.

The table below shows the possible build arrangements for each model:

Model No.	Manifold Configuration	Power Module (Local)	Power Module (Remote)	Third Party Motor / Pump
SI3	1	Yes	No	No
SI3	1	No	Yes	No
SI3	1	No	No	Yes
SI4	1	Yes	No	No
SI4	1	No	Yes	No
SI4	1	No	No	Yes
SI4	2	Yes	No	No
SI4	2	No	Yes	No
SI4	2	No	No	Yes

Note 1: The utilisation of or a third party motor and hydraulic pump is outside the scope of this approval.

Incorporated amendments:

The product description includes the following applicable amendments, only amendments directly applicable to UKCA certification have been included in this list.

i. The introduction of alternative motor types for the 24 Vdc, single phase and three phase versions.
ii. Modifications to the 'k' and 'm' dimensions associated with the motor shaft flamepaths.
iii. Introduction of the alternate DC motor cover, part number 10164.
iv. Introduction of the Type SI4 Skilmatic Range of Electro-Hydraulic Control Modules.
v. Amend the type designation of the SI 3.3 to Type SI 3 Skilmatic Range of Electro-Hydraulic Control Modules, and the Condition of Manufacture were amended to recognise the new designations.
vi. The introduction of amended flamepath dimension for gas group IIB applications.
vii. Addition of an alternative terminal cover P/N 100561 manufactured in aluminium alloy BS 1490 LM25TF.
viii. Introduce additional exemptions from routine overpressure testing.

ix. Clarification of requirements relating to fastener strength, leading to the introduction of related Specific Conditions of Use, and Conditions of Manufacture.
x. Correction to tabulated Routine Test requirements as required.
xi. To introduce the following alternative part numbers for manifold configuration 1:
- 2024948-C1 is an alternative to HPU-1343-C1
- 2024948-C2 is an alternative to HPU-1343-C2

xii. Addition of alternate pressure transducers - 2058621, 2058815, 2059497 & 2059498.
xiii. Addition of an alternate manifold indication shaft - 2043957.

Variation 1 - This variation introduced the following changes:

i. To align the UKCA certificate as per SIRA 15ATEX1119X, Issue 8.
ii. To update the documents accordingly.

Variation 2 - This variation introduced the following changes:

i. Addition of Alternative indication covers (blank and with Beacon).
ii. Addition of Alternative Centre housing.
iii. Addition of Alternative Motor/Pump Housing.
iv. Addition of Alternative Solenoid valve body variant.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Reports and Certificate History

Issue	Date	Report number	Comment
0	24 August 2022	R80095518A	The release of the prime certificate.
1	08 December 2022	R80146129A	The introduction of Variation 1.
2	24 January 2024	R80195528A	The introduction of Variation 2.

15 SPECIFIC CONDITIONS OF USE (denoted by X after the certificate number)

15.1 This equipment shall be installed such that the risk of impact to the window is low.

15.2 This equipment includes some external non-metallic parts, including the outer protective coating. The user shall therefore ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.

15.3 The equipment utilises A4-80 fasteners, if these are changed they shall only be replaced by A4-80 fasteners.

15.4 With reference to clause 5.1 of EN 60079-1:2014 - The flamepaths associated with this equipment are not to be repaired.

15.5 When covers are removed and replaced, all cover securing fasteners must be tightened to 20 to 22 Nm.

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16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS (REGULATIONS SCHEDULE 1)**

In addition to the Essential Health and Safety Requirements covered by the standards listed in Section 9, all other requirements are demonstrated in the relevant reports.

17 **PRODUCTION CONTROL**

17.1 Holders of this certificate are required to comply with production control requirements defined in Schedule 3A, as applicable, and CSA Group Testing UK Regulations for Certificate Holders.

17.2 All cover securing fasteners to be tightened to between 20 and 22 Nm.

17.3 When the terminal enclosure is intended to conform with the requirements of increased safety type of protection, the following electrical strength tests shall be applied to the termination facilities for at least 60 s and no more than 63 s as required by EN 60079-7 clause 6.1:

Test Voltage Applied Between	AC Test Voltage	DC Test Voltage
Test between mains terminals and enclosure	2200 V_{RMS}	3100 Vdc
Test between mains terminals and secondary terminals	2200 V_{RMS}	3100 Vdc
Test between secondary terminals and enclosure	1500 V_{RMS}	2100 Vdc

17.4 For 24 VDC equipment, the above test may be conducted with the DC power board located in the flame-proof electrical enclosure disconnected from the terminal bung.

17.5 The equipment requires a combination of routine overpressure tests and batch overpressure tests in accordance with the tables listed in the following drawings for the design option and ambient temperature range stated. In all cases the pressure shall be maintained for at least 10 seconds as required by EN 60079-1:2014, Clause 16. There shall be no permanent deformation, damage to the enclosure, or leakage.

For Main electrical and terminal enclosures (Control module):
Drawing: 2031357 Rev. 13-2, Tables 7 to 29.

For Power module (Motor module)
Drawing: HPU-A1111 Rev. 15-2

Certificate Annexe

Certificate Number: **CSAE 21UKEX1430X**

Product: **The SI3 and SI4, Skilmatic Range of Electro-Hydraulic Control Modules**

Manufacturer: **Rotork UK Ltd.**

Issue 0

Drawing	Sheets	Rev.	Date (Stamp)	Title
HPU-A1324	1 of 1	02	13 Aug 15	Certification Drawing, Assembly Configurations (SI 3.3/4)
2023399	1 of 1	0-0	20 May 19	Procedure, loom transfer bush potting
RS 308	1 to 2	9	20 May 19	Potting procedure for CENELEC and ATEX term blocks / mtr looms / rhs loom
RS 448	1 to 2	1	20 May 19	Window bonding procedure
HPU – A1111	1 to 4	12-0	04 Aug 21	Certification Drawing, Power Module, ATEX & IECEx
2031357	1 to 17	11-0	06 Oct 21	SI3 & SI4 ATEX/IECEx CONTROL MODULE
2060731	1 of 1	0-0	25 Mar 22	SI3 & SI4, UKCA LABELS

Issue 1

Drawing	Sheets	Rev.	Date (Stamp)	Title
2031357	1 to 17	12-0	30 May 22	SI3 & SI4 ATEX/IECEx CONTROL MODULE
HPU-A1111	1 to 4	14-0	30 May 22	Certification Drawing, Power Module, ATEX & IECEx

Issue 2

Drawing	Sheets	Rev.	Date (Stamp)	Title
2031357	1 to 21	13-2	20 Oct 23	SI3 & SI4 ATEX/IECEx Control Module
HPU-A1111	1 to 5	15-2	20 Oct 23	Certification Drawing, Power Module, ATEX/IECEx