



## UNITED KINGDOM CONFORMITY ASSESSMENT

### 1 UK TYPE EXAMINATION CERTIFICATE

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

3 Certificate Number: CSAE 21UKEX1206X Issue: 2

4 Product: SE Series Explosion-Proof Spring Return Actuators, models SE-500----, SE-1300----, SE-2000----, SE-2600----

5 Manufacturer: Sun Yeh Electrical Ind. Co., Ltd.

6 Address: No. 68 Lane 854, Sec. 1, Shatian Road,  
Dadu District,  
Taichung City, 432403  
Taiwan

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      EN 60079-31:2014  
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:

For SE series utilized with non-electrical gear box



II 2GD  
Ex db h IIB T4 Gb  
Ex tb h IIIC T130°C Db  
Ta = -30°C to +70°C

For SE series without utilizing non-electrical gear box



II 2GD  
Ex db IIB T4 Gb  
Ex tb IIIC T130°C Db  
Ta = -30°C to +70°C

Name: Michelle Halliwell

Title: Director of Operations



Certificate No. CSAE 21UKEX1206X  
CSA Group Testing UK Ltd., Unit 6 Hawarden Industrial Park, Hawarden, CH5 3US, UK

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QD-1599 Issue 5 (2023-09-11)



## SCHEDULE

### UK TYPE EXAMINATION CERTIFICATE

CSAE 21UKEX1206X  
Issue 2

#### 13 DESCRIPTION OF PRODUCT

The SE Series Explosion-Proof Spring Return Actuator comprises an aluminium flameproof enclosure, containing a motor and associated electronics which drive a carbon steel transmission shaft via a mechanical transmitting unit. A rotating handle may be used to manually drive the mechanical transmitting unit when the equipment is unpowered which can be removed from the mechanical circuit to prevent movement of the handle when the motor is driven. Screws and Spring washer are made from stainless steel (SUS304). The enclosure is made from aluminium (ADC10).

The non-electrical equipment ignition hazard assessment is applied to the gear box and rotating handle of manual override only.

Within the flameproof enclosure is a double rack and pinion arrangement driven by the transmission shaft. Each rack is supported by a pair of springs, such that when power to the equipment is lost the actuator will be driven back to its original position.

The flameproof enclosure has a mechanical indicator at the upper end to show the position of the actuator valve which can be viewed through a cemented toughened glass window.

The internal motor winding contains a bimetallic strip for thermal protection, which is set to operate at 125°C. The motor is provided with class F insulation.

The equipment is rated as IP68 (7 metres for 72 hours), which is maintained by O-ring seals in each joint and oil seals in the interface between the main housing and transmission/drive handle shafts.

The flameproof housing features two threaded cable entries, which may be NPT3/4", NPT1/2", M20x1.5 or M25x1.5. Each cable entry is supplied by the manufacturer with a proprietary stainless steel blanking plug which may be replaced by the end user with suitably certified and rated flameproof cable entry devices.

Model Nomenclature:

SE-X1-X2-X3-X4-X5

S – Spring Return Actuator

E – Explosion Proof

X1 – Torque (Nm)

X2 – Voltage:

D24 – 24 VDC

24 – 24 VAC

100 – 100 VAC

120 – 110-120 VAC

200 – 200 VAC

220 – 220-240 VAC

380 – 380 VAC

440 – 440 VAC

X3 – Direction of Rotation:

- CW – Clockwise

- CCW – Counter Clockwise

X4 – Control Method:

- T – Two Position

- M – Modulating

- F – Floating

X5 – Manual Override:



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QD-1599 Issue 5 (2023-09-11)

Page 2 of 4



## SCHEDULE

### UK TYPE EXAMINATION CERTIFICATE

CSAE 21UKEX1206X  
Issue 2

- Y – With Manual Override
- N – Without Manual Override

**Variation 1** - This variation introduced the following change:

- i. To include a non-electrical gear box of manual override function and together with hand wheel to Models SE Series. The manual override shall be used during the power shortage.
- ii. To add non-electrical equipment standards EN ISO 80079-36:2016, EN ISO 80079-37:2016.
- iii. To add stainless steel material to screws and spring washer to non-electrical gear box of manual override function.

**Variation 2** - This variation introduced the following change:

- i. Postal code change from 43244 to 432403.
- ii. Warning plate change YIELD STRESS value from " $\geq 700\text{MPa}$ " to " $\geq 450\text{MPa}$ ".
- iii. For the middle plate, adjust the accuracy for outside dimension from  $\varnothing 166(-0.1$  to  $-0.05)$  into  $\varnothing 166(-0.15$  to  $+0.08)$ .
- iv. Adjust the accuracy for the drive shaft from  $\varnothing 10(-0.02$  to  $+0)$  into  $\varnothing 10(-0.04$  to  $+0)$ .
- v. Change the outer length for End Cap from 100 mm to 99 mm.
- vi. To separate Certification Codes with/without non-electrical gear box.

## 14 DESCRIPTIVE DOCUMENTS

### 14.1 Drawings

Refer to Certificate Annexe.

### 14.2 Associated Reports and Certificate History

0	09 August 2021	R80081220B	The release of the prime certificate.
1	15 December 2022	R80112648A	The introduction of variation 1
2	12 January 2024	R80190147A	The introduction of variation 2.

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

15.1 The flamepaths in this equipment are different to the standard dimensions given in EN 60079-1. If specific Flamepath dimensions are required then the manufacturer (OEM) must be contacted.

15.2 Caution - Use fasteners with yield stress  $\geq 450\text{MPa}$ .

## 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 Each unit shall withstand an overpressure test according to IEC 60079-1 clause 16, at a pressure no less than those listed below for a period of at least ten seconds. The test shall be considered as satisfactory



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QD-1599 Issue 5 (2023-09-11)

Page 3 of 4



## SCHEDULE

### UK TYPE EXAMINATION CERTIFICATE

CSAE 21UKEX1206X

Issue 2

if on completion the enclosure has suffered no permanent deformation or damage affecting the type of protection.

- For SE-500- - - - : The static overpressure test is not less than 9 bar.
- For SE-1300- - - - : The static overpressure test is not less than 10 bar.
- For SE-2000 and SE-2600- - - - : The static overpressure test is not less than 12 bar.

17.3 IEC 60079-1:2014, Cl.16 and Cl.15.2.3.2 Routine testing and acceptance criteria applied to all Models.

Test conditions as below:

Applied Model Series	Routine test value (MPa)	Test Duration (Second)
SE-500	$\geq 0.9$	$\geq 10$
SE-1300	$\geq 1.0$	
SE-2000, SE-2600	$\geq 1.2$	

Note: Equivalent unit and value may be applied as long as actual value meet above criteria.



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QD-1599 Issue 5 (2023-09-11)

Page 4 of 4



## Certificate Annexe

Certificate Number: CSAE 21UKEX1206X

Product: SE Series Explosion-Proof Spring Return Actuators, models SE-500----, SE-1300----, SE-2000----, SE-2600----

Manufacturer: Sun Yeh Electrical Ind. Co., Ltd.

### Issue 0

Drawing	Sheets	Rev.	Date (Stamp)	Title
Ex 10075	1 to 3	2	10 Jun 20	Explosion proof spring return actuator
Ex 10076	1 to 3	2	10 Jun 20	Explosion proof spring return actuator
Ex 10077	1 to 3	2	10 Jun 20	Explosion proof spring return actuator
Ex 20210-1	1 of 1	1	16 Jan 15	Main housing (NPT ¾")
Ex 20210-2	1 of 1	1	16 Jan 15	Main housing (NPT ½")
Ex 20210-3	1 of 1	1	16 Jan 15	Main housing (M25)
Ex 20210-4	1 of 1	1	16 Jan 15	Main housing (M20)
Ex 20211	1 of 1	2	05 Mar 19	Top Cover
Ex 20229-1	1 of 1	1	16 Jan 15	Main housing (NPT ¾")
Ex 20229-2	1 of 1	1	16 Jan 15	Main housing (NPT ½")
Ex 20229-3	1 of 1	1	16 Jan 15	Main housing (M25)
Ex 20229-4	1 of 1	1	16 Jan 15	Main housing (M20)
Ex 20230	1 of 1	2	05 Mar 19	Top Cover
Ex 20231	1 of 1	1	16 Jan 15	Plate
Ex 20246-1	1 of 1	1	16 Jan 15	Main housing (NPT ¾")
Ex 20246-2	1 of 1	1	16 Jan 15	Main housing (NPT ½")
Ex 20246-3	1 of 1	1	16 Jan 15	Main housing (M25)
Ex 20246-4	1 of 1	1	16 Jan 15	Main housing (M20)
Ex 20247	1 of 1	2	05 Mar 19	Top Cover
Ex 20248	1 of 1	1	16 Jan 15	Plate
Ex 20251-1	1 of 1	1	11 Sep 16	Main Housing (NPT¾")
Ex 20251-2	1 of 1	1	11 Sep 16	Main Housing (NPT½")
Ex 20251-3	1 of 1	1	11 Sep 16	Main Housing (M25)
Ex 20251-4	1 of 1	1	11 Sep 16	Main Housing (M20)
Ex 20252-1	1 of 1	1	11 Sep 16	Main Housing (NPT¾")
Ex 20252-2	1 of 1	1	11 Sep 16	Main Housing (NPT½")
Ex 20252-3	1 of 1	1	11 Sep 16	Main Housing (M25)
Ex 20252-4	1 of 1	1	11 Sep 16	Main Housing (M20)
Ex 20253-1	1 of 1	1	11 Sep 16	Main Housing (NPT¾")
Ex 20253-2	1 of 1	1	11 Sep 16	Main Housing (NPT½")
Ex 20253-3	1 of 1	1	11 Sep 16	Main Housing (M25)
Ex 20253-4	1 of 1	1	11 Sep 16	Main Housing (M20)
Ex 30512	1 of 1	1	16 Jan 15	Transmission shaft
Ex 30514	1 of 1	1	16 Jan 15	Plate
Ex 30515	1 of 1	1	16 Jan 15	End cap
Ex 30591	1 of 1	1	16 Jan 15	End cap
Ex 30592	1 of 1	1	16 Jan 15	Buffer fixed plate





## Certificate Annexe

Certificate Number: CSAE 21UKEX1206X

Product: SE Series Explosion-Proof Spring Return Actuators, models SE-500----, SE-1300----, SE-2000----, SE-2600----

Manufacturer: Sun Yeh Electrical Ind. Co., Ltd.

Drawing	Sheets	Rev.	Date (Stamp)	Title
Ex 30593	1 of 1	1	16 Jan 15	End cap
Ex 30594	1 of 1	1	16 Jan 15	Transmission shaft
Ex 30619	1 of 1	1	16 Jan 15	End cap
Ex 30620	1 of 1	1	16 Jan 15	End cap
Ex 30621	1 of 1	1	16 Jan 15	Transmission shaft
Ex 30640	1 of 1	1	16 Jan 15	Bracket
Ex 40784	1 of 1	1	16 Jan 15	End cap
Ex 40785	1 of 1	1	16 Jan 15	Buffer fixed plate
Ex 40786	1 of 1	1	16 Jan 15	Glass window fixed sheet (iron)
Ex 40787	1 of 1	1	16 Jan 15	Plastics gasket
Ex 40788	1 of 1	1	16 Jan 15	Nameplate
Ex 40789	1 of 1	2	05 Mar 19	Nameplate
Ex 40790	1 of 1	1	16 Jan 15	PE label for ground
Ex 40804-1	1 of 1	4	05 Mar 19	Ex plug (NPT 3/4")
Ex 40804-2	1 of 1	4	05 Mar 19	Ex plug (NPT 1/2")
Ex 40804-3	1 of 1	1	16 Jan 15	Ex plug (M25)
Ex 40804-4	1 of 1	1	16 Jan 15	Ex plug (M20)
Ex 40980	1 of 1	2	05 Mar 19	Nameplate
Ex 41570	1 of 1	1	16 Jan 15	Glass window
QW-10-10	1 to 11	2	05 Mar 19	Explosion-proof Spring-Return and Quarter-Turn actuator adhesive instruction
Ex 42383	1 of 1	6	27 Jul 21	Nameplate

### Issue 1

Drawing	Sheets	Rev.	Date (Stamp)	Title
Ex 20672-1/2	1 to 2	1	15 Sep 22	Manual Override for SE series
Ex 20673-1/2	1 to 2	1	15 Sep 22	Manual Override for SE series
Ex 20674-2/2	1 to 2	1	15 Sep 22	Manual Override for SE series
Ex 42383	1 of 1	1	15 Sep 22	Nameplate

### Issue 2

Drawing	Sheets	Rev.	Date (Stamp)	Title
Ex10075	1 to 3	3	20 Dec 23	SE-500 Series Explosion-proof Spring Return Actuator Assembly Drawing
Ex10076	1 to 3	3	20 Dec 23	SE-1300 Series Explosion-proof Spring Return Actuator Assembly Drawing
Ex10077	1 to 3	3	20 Dec 23	SE-2000, SE-2600 Series Explosion-proof Spring Return Actuator Assembly Drawing



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QD-1599 Issue 5 (2023-09-11)

Page 2 of 3



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Manufacturer: Sun Yeh Electrical Ind. Co., Ltd.

Drawing	Sheets	Rev.	Date (Stamp)	Title
Ex42383	1 of 1	8	25 Dec 23	SE Series Explosion-proof Spring Return Actuator Nameplate (With non-electrical gear box)
Ex44784	1 of 1	1	25 Dec 23	SE Series Explosion-proof Spring Return Actuator Nameplate (Without non-electrical gear box)
Ex40980	1 to 1	3	20 Dec 23	SE-500 Series Explosion-proof Spring Return Actuator Warning label
Ex40789	1 to 1	3	20 Dec 23	SE-500 Series Explosion-proof Spring Return Actuator Warning label-without manual Override
Ex30512	1 to 1	2	20 Dec 23	SE-500 Series Explosion-proof Spring Return Actuator Transmission shaft
Ex30514	1 to 1	2	20 Dec 23	SE-500 Series Explosion-proof Spring Return Actuator Plate
Ex30515	1 to 1	2	20 Dec 23	SE-500 Series Explosion-proof Spring Return Actuator End cap
Ex30594	1 of 1	2	20 Dec 23	SE-1300 Series Explosion-proof Spring Return Actuator Transmission shaft
Ex30621	1 to 1	2	20 Dec 23	SE-2000, 2600 Series Explosion-proof Spring Return Actuator Transmission shaft
RD20130620003	1 to 5	C	26 Dec 23	SE Series Explosion-proof Spring Return Actuator Product Description

