

Applications

- Press Machine
- Cutting Machine
- Injection Molding and Hot Press Machine
- High-risk applications that can lead to serious injury or death
- Safety devices in danger zone
- Robotic production line

Introduction

The ST series safety light curtains compliant with the latest international safety standards, in addition to ISO13849-1 PLe level and IEC62061 safety level SIL3 also meets the safety requirements of the international safety standards IEC61496-1 and IEC61496-2 TYPE 4 highest level, and tested and certified by a European third-party notified bodies. Its safety performance and Performance Level (PL) are suitable for safety-related functions of machinery such as Punching and Shearing Machines also comply with various safety regulations.

The ST series safety light curtains adopting the latest electronic and mechanical manufacturing process technologies, appearance heavy-duty construction, various type and standard meeting operator various security testing requirements



TD0401BT

Property

- Comply with international safety protection product series. Various type, 14mm、24mm、34mm、44mm detection capability.
- Detection zone(mm) 134mm~1964mm.
- Suitable for the simplified size design requirements of machinery, with high mechanical rigidity that eliminates the need for additional structural support, and excellent earthquake-resistant.
- Built-in automatic and manual reset functions. Equipped with a seven-segment display indicating the safety light curtains received signal strength.
- It can be combined with the STR4 multi-functional safety control module to configure various safety functions such as silent, fixed, and floating blanking.
- Calibration LED : It can be combined with status indicator and 7-segment display, overcome TYPE 4 safety light curtains calibration problem for most suitable installation.

ST-101	U	L	1	model: ST-1XX:(ODC)14mm ST-2XX:Detection Capability(ODC)24mm ST-3XX:Detection Capability(ODC)34mm ST-4XX:Detection Capability(ODC)44mm	3	Operating distance: Unlabeled = Rstandard range 0.3m~6m L= long range 4m~12m
1	2	3	2	Support Functions: Unlabeled = NO support function U= Support Silent Mode		

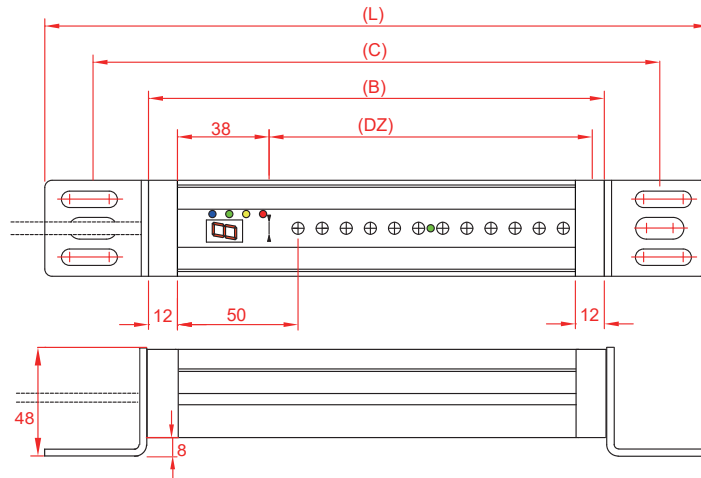
General Specifications

Number of beam	12 ~ 192	6 ~ 96	4 ~ 64	3 ~ 48
Detection capability	14mm	24mm	34mm	44mm
Detection zone	134 mm ~ 1934 mm	144 mm ~ 1944 mm	154 mm ~ 1954 mm	164 mm ~ 1964 mm
Operating distance	Rstandard range : 0.3m ~ 6m ; Long-distance(L) : 4m ~ 12m			
Response time	Depending on the model ; The longest is 28msec (Exclude relay switch time)			
Ambient temperature	0°C to +50°C			
IP rating	IP66(Ingress Protection)Ratings			
Status indicator	TX - Status indicator RX - OSSD ON (Green LED) . OSSD OFF (Red LED) . RX receiving status (Yellow LED)			
Power supply	24VDC ± 20%			
Power consumption	TX (Max. 500mA) RX (Max. 500mA + OSSD current consumption)			
Connector	Breakout Cable (M12 connector)			
Appearance	Aluminum, yellow powder coating			
Classification	IEC62061(SIL3) 、 ISO13849-1(PLe) 、 IEC61496-1 TYPE 4 、 IEC61496-2 TYPE 4			
Input mode	EDM, RESET, Synchronization input, 24VDC / 0V (GND)			
Output mode	OSSD1 & OSSD2 (24 VDC / 500mA Solid-state Electronic), Synchronization output			

ST Series

Detection capability 14mm			Operating distance 0.3m to 6m (L mean 4m to 12m)			Detection capability 24mm			Operating distance 0.3m to 6m (L mean 4m to 12m)		
Model	Beams	Detection Zone (DZ)(mm)	Overall Length (B)(mm)	Install Length (C)(mm)	Assembly Length (L)(mm)	Model	Beams	Detection Zone (DZ)(mm)	Overall Length (B)(mm)	Install Length (C)(mm)	Assembly Length (L)(mm)
ST-101	12	134	189	238	275	ST-201	6	144	189	238	275
ST-102	24	254	309	358	395	ST-202	12	264	309	358	395
ST-103	36	374	429	478	515	ST-203	18	384	429	478	515
ST-104	48	494	549	598	635	ST-204	24	504	549	598	635
ST-105	60	614	669	718	755	ST-205	30	624	669	718	755
ST-106	72	734	789	838	875	ST-206	36	744	789	838	875
ST-107	84	854	909	958	995	ST-207	42	864	909	958	995
ST-108	96	974	1029	1078	1115	ST-208	48	984	1029	1078	1115
ST-109	108	1094	1149	1198	1235	ST-209	54	1104	1149	1198	1235
ST-110	120	1214	1269	1318	1355	ST-210	60	1224	1269	1318	1355
ST-111	132	1334	1389	1438	1475	ST-211	66	1344	1389	1438	1475
ST-112	144	1454	1509	1558	1595	ST-212	72	1464	1509	1558	1595
ST-113	156	1574	1629	1678	1715	ST-213	78	1584	1629	1678	1715
ST-114	168	1694	1749	1798	1835	ST-214	84	1704	1749	1798	1835
ST-115	180	1814	1869	1918	1955	ST-215	90	1824	1869	1918	1955
ST-116	192	1934	1989	2038	2075	ST-216	96	1944	1989	2038	2075

► ST Mute Function model annotation U Note:ST-103U ; long model range annotation L Note:ST-103L

**ST Series**

Detection capability 34mm			Operating distance 0.3m to 6m (L mean 4m to 12m)			Detection capability 44mm			Operating distance 0.3m to 6m (L mean 4m to 12m)		
Model	Beams	Detection Zone (DZ)(mm)	Overall Length (B)(mm)	Install Length (C)(mm)	Assembly Length (L)(mm)	Model	Beams	Detection Zone (DZ)(mm)	Overall Length (B)(mm)	Install Length (C)(mm)	Assembly Length (L)(mm)
ST-301	4	154	189	238	275	ST-401	3	164	189	238	275
ST-302	8	274	309	358	395	ST-402	6	284	309	358	395
ST-303	12	394	429	478	515	ST-403	9	404	429	478	515
ST-304	16	514	549	598	635	ST-404	12	524	549	598	635
ST-305	20	634	669	718	755	ST-405	15	644	669	718	755
ST-306	24	754	789	838	875	ST-406	18	764	789	838	875
ST-307	28	874	909	958	995	ST-407	21	884	909	958	995
ST-308	32	994	1029	1078	1115	ST-408	24	1004	1029	1078	1115
ST-309	36	1114	1149	1198	1235	ST-409	27	1124	1149	1198	1235
ST-310	40	1234	1269	1318	1355	ST-410	30	1244	1269	1318	1355
ST-311	44	1354	1389	1438	1475	ST-411	33	1364	1389	1438	1475
ST-312	48	1474	1509	1558	1595	ST-412	36	1484	1509	1558	1595
ST-313	52	1594	1629	1678	1715	ST-413	39	1604	1629	1678	1715
ST-314	56	1714	1749	1798	1835	ST-414	42	1724	1749	1798	1835
ST-315	60	1834	1869	1918	1955	ST-415	45	1844	1869	1918	1955
ST-316	64	1954	1989	2038	2075	ST-416	48	1964	1989	2038	2075

► ST Mute Function model annotation U Note:ST-401U ; long model range annotation L Note:ST-401L

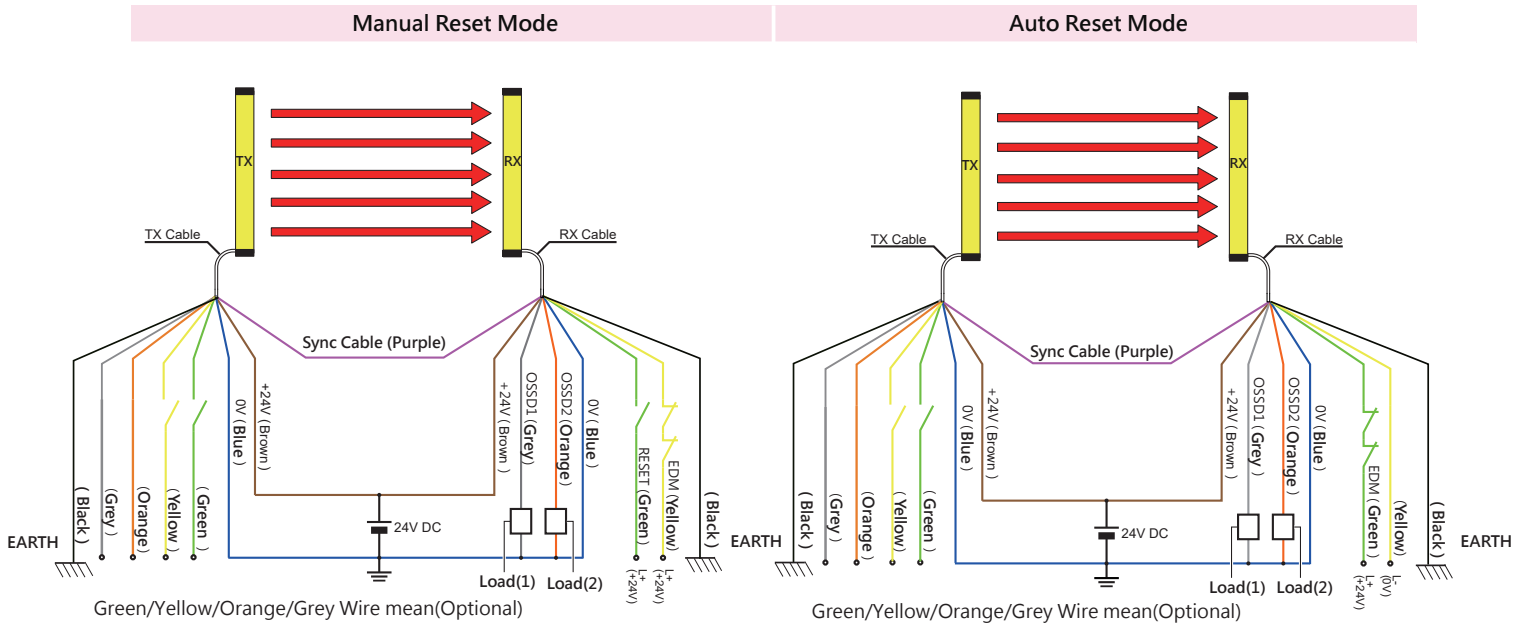
Electric Wiring

▶ Please refer to the installation manual for detailed.

Input · Output circuit	
(1)Power :	Vin +24V DC transmitter and receiver(Brown+24V · Blue 0V), we suggest using independently power module. It could avoid surging; Ferrite core installs in RX and case connects with Gnd.
(2)Output :	Two groups of transistor(PNP) signal output OSSD1 and OSSD2 ; DC+24V during light curtain normal operation(MAX 500mA).

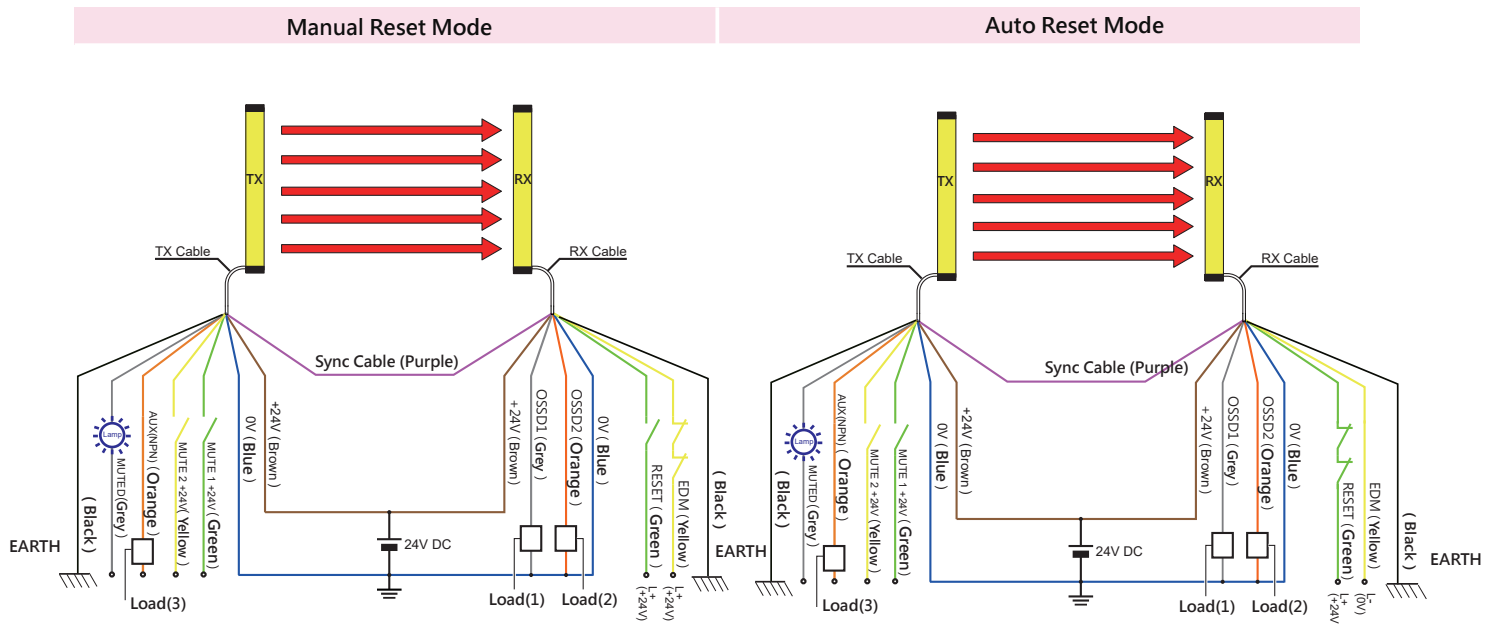
ST Series

▶ Please refer to the installation manual for detailed.



ST-U Series(Mute function)

▶ Please refer to the installation manual for detailed.

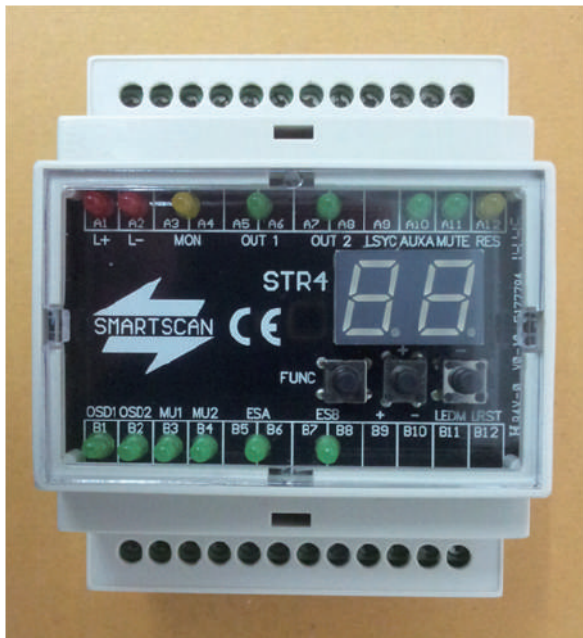


LED Status Indicator

► Please refer to the installation manual for detailed LED indicator mode.

Receiver (RX) status Indicator					
Seven-segment display			status Indicator		
mean			mean		
	function (1)	Provides real-time display of the infrared signal reception strength at the safety light curtain receiver, which can be used as a positioning reference to assist in the installation of the light curtain. Character display: 0 ~ 9, F; 0 and F indicates the minimum received signal.		OSSD	OSSD light red LED. Under normal working conditions,all light Blank Mask, OSSD light is off,OSSD1 and OSSD2 output is On. If the mask is obscured, OSSD light turns on.
				RESET	RESET light is yellow LED. RESET light turns on is automatic reset mode. Manual reset mode the mask is obscured when RESET light off, press reset switch RESET light turns on,at this time resume normal operation.
	function (2)	This displays the current operating status of the light curtain, providing a total of 6 sets of safety light curtain operating status codes to assist technicians in correctly installing the safety light curtain. For detailed code content and meaning, please refer to the product manual and other technical documents.		EDM	EDM light is green LED. When EDM Monitoring input status is EDM ON EDM light turns on, EDM when monitoring input status is EDM OFF, EDM the light goes out.
				MUTED	MUTED light is blue LED. MUTED Light turns on mean safety light curtain is MUTE. The safety light curtains suspend Object Detection function.

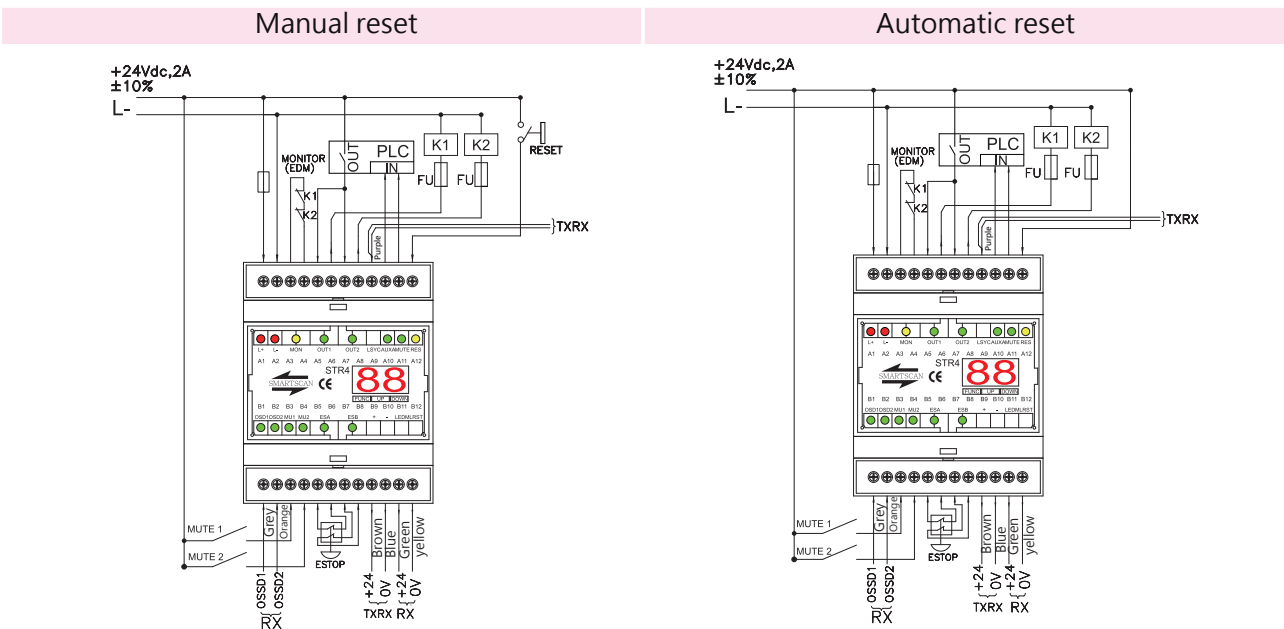
STR4 Multi-functional Safety Control Module



Function Description	
Main functions	manual reset / automatic reset
	Floating blanking optical axis setting
	Beam floating blanking optical axis setting
	mute reset time setting
Power supply	24VDC ± 10%
Current consumption	DC 300mA
Reaction time	30ms
External surveillance	Circuit Contacts
Dual-channel Emergency Stop	ESA/ESB
MUTE Input	MUTE 1/MUTE 2 Input 24 VDC
Auxiliary Output	No blanking safety light curtain 24V DC Output
Safety RELAY output	RELAY contact point NC*2
MUTE Output	MUTE Output 24V DC 500mA
Operating temperature	0°C to +50°C
IP Rating	IP40
Dimensions	70mm*58mm*90mm

► ST Series requires matching STR4 to use Floating and Beam floating blanking function.

STR4 Electric Connection



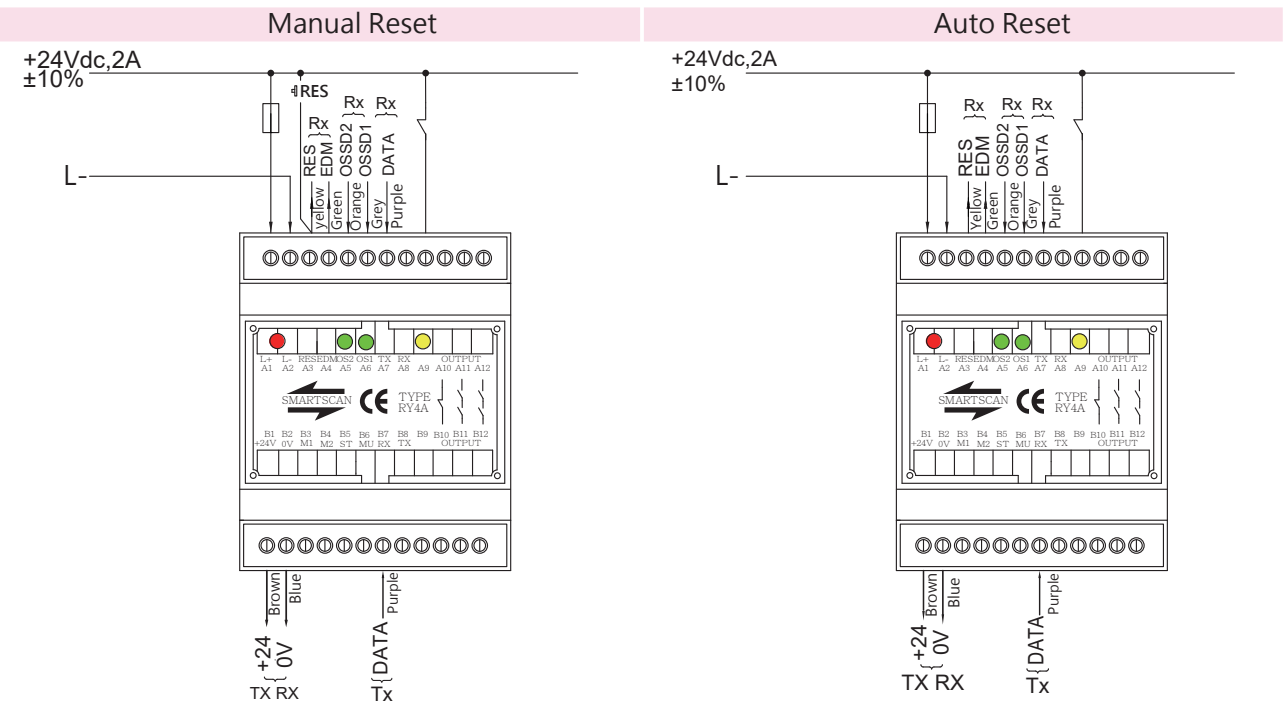
Ry4A Multi-functional Safety Control Module



Function Description	
Safety light curtain	Compatible C4, ST, T4 Series
Power supply	24VDC±10%
Rated Current	120mA
Safety RELAY Output	250V AC 7A
Reaction time	Less than 10ms
IP Rating	IP40
Safety level	GATEGORY 4 SIL 3
Relay mechanical life	10 ⁶ reps

► It can also be used with other types of Safety control module(P35~P36)

Ry4A Electric Connection



Accessories

Connection Cable

Connection Cable Types	
Direct Cable Out (standard Specification)	M12 Connector Communication Cable

Cable model	M12Connection Cable contents
ST-3M-180-RX	ST Series cable 3M(ReceiverRX)
ST-5M-180-RX	ST Series cable 5M(ReceiverRX)
ST-10M-180-RX	ST Series cable 10M(ReceiverRX)
ST-20M-180-RX	ST Series cable 20M(ReceiverRX)
ST-3M-180-TX	ST Series cable 3M(TransmitterTX)
ST-5M-180-TX	ST Series cable 5M(TransmitterTX)
ST-10M-180-TX	ST Series cable 10M(TransmitterTX)
ST-20M-180-TX	ST Series cable 20M(TransmitterTX)

Fixed bracket

TYPE 4 Safety Certification



Safenet Certification Services Ltd.
 Ducart Suite, Castletroy Park Commercial Campus, Limerick, V94 Y6FD, Ireland
 Tel: +353 61 50 2046 e-mail: office@safenetcs.ie Website: www.safenetcs.ie
 European Notified Body 2805

EC Type Examination Certificate

This is to certify that

Smartsan Taiwan Co., Ltd.

No. 7, Gongyequ 41st Road, Xitun District, Taichung City 407, Taiwan, R.O.C.

Has had a range of ST Light Curtains examined with regards to the Directive 2006/42/EC as amended.

In respect of the **ST-204U and ST-105UL**

Manufactured by:

Smartsan Taiwan Co., Ltd.

No. 7, Gongyequ 41st Road, Xitun District, Taichung City 407, Taiwan, R.O.C.

- The technical file contains all the relevant information.
- Having verified that the appropriate tests have been conducted.
 - The standards and transposed standards have been applied correctly.
 - The example representing series production of the item, complies with the essential health and safety requirements of the Directive 2006/42/EC as amended.
 - The technical file contains all the information required to include the models listed in the attached annex to this certificate.
 - The technical file also contains evidence of compliance with IEC 61496-1:2020 Type 4 and is suitable for applications regarding IEC 62061:2021+A1:2024 SIL 3 and ISO 13849-1:2023 PL.

Certificate Number: 7127120725

Date: 07/10/2025 Expiry Date: 07/10/2030

Signed for Safenet Certification Services Ltd.


 Peter McNicol
 Technical Manager


 Machinery Directive
 Number 2805

This Document remains the property of Safenet Certification Services Ltd. and will be returned to them if so requested. The client is required to request a review to ensure continued compliance of the machinery on a 5 yearly basis to check for changes in the state of the art and validity of the certificate. An INAB accredited certification body Reg. No. 6021.



Safenet Certification Services Ltd.
 Ducart Suite, Castletroy Park Commercial Campus, Limerick, V94 Y6FD, Ireland
 Tel: +353 61 50 2046 e-mail: office@safenetcs.ie Website: www.safenetcs.ie
 European Notified Body 2805

EC Type Examination Certificate

Annex Certificate 7127120725

Models included:

ST series, 14mm ODC light curtains:
 ST-101, ST-102, ST-103, ST-104, ST-105, ST-106, ST-107, ST-108, ST-109, ST-110, ST-111, ST-112, ST-113, ST-114, ST-115, ST-116.

ST-101L, ST-102L, ST-103L, ST-104L, ST-105L, ST-106L, ST-107L, ST-108L, ST-109L, ST-110L, ST-111L, ST-112L, ST-113L, ST-114L, ST-115L, ST-116L.

ST-101U, ST-102U, ST-103U, ST-104U, ST-105U, ST-106U, ST-107U, ST-108U, ST-109U, ST-110U, ST-111U, ST-112U, ST-113U, ST-114U, ST-115U, ST-116U.

ST-101UL, ST-102UL, ST-103UL, ST-104UL, ST-105UL, ST-106UL, ST-107UL, ST-108UL, ST-109UL, ST-110UL, ST-111UL, ST-112UL, ST-113UL, ST-114UL, ST-115UL, ST-116UL.

ST series, 24mm ODC light curtains:
 ST-201, ST-202, ST-203, ST-204, ST-205, ST-206, ST-207, ST-208, ST-209, ST-210, ST-211, ST-212, ST-213, ST-214, ST-215, ST-216.

ST-201L, ST-202L, ST-203L, ST-204L, ST-205L, ST-206L, ST-207L, ST-208L, ST-209L, ST-210L, ST-211L, ST-212L, ST-213L, ST-214L, ST-215L, ST-216L.

ST series, 24mm ODC light curtains:
 ST-201U, ST-202U, ST-203U, ST-204U, ST-205U, ST-206U, ST-207U, ST-208U, ST-209U, ST-210U, ST-211U, ST-212U, ST-213U, ST-214U, ST-215U, ST-216U.

ST-201UL, ST-202UL, ST-203UL, ST-204UL, ST-205UL, ST-206UL, ST-207UL, ST-208UL, ST-209UL, ST-210UL, ST-211UL, ST-212UL, ST-213UL, ST-214UL, ST-215UL, ST-216UL.

ST series, 34mm ODC light curtains:
 ST-301, ST-302, ST-303, ST-304, ST-305, ST-306, ST-307, ST-308, ST-309, ST-310, ST-311, ST-312, ST-313, ST-314, ST-315, ST-316.

ST-301L, ST-302L, ST-303L, ST-304L, ST-305L, ST-306L, ST-307L, ST-308L, ST-309L, ST-310L, ST-311L, ST-312L, ST-313L, ST-314L, ST-315L, ST-316L.

ST-301U, ST-302U, ST-303U, ST-304U, ST-305U, ST-306U, ST-307U, ST-308U, ST-309U, ST-310U, ST-311U, ST-312U, ST-313U, ST-314U, ST-315U, ST-316U.

ST-301UL, ST-302UL, ST-303UL, ST-304UL, ST-305UL, ST-306UL, ST-307UL, ST-308UL, ST-309UL, ST-310UL, ST-311UL, ST-312UL, ST-313UL, ST-314UL, ST-315UL, ST-316UL.


 Machinery Directive
 Number 2805

This Document remains the property of Safenet Certification Services Ltd. and will be returned to them if so requested. The client is required to request a review to ensure continued compliance of the machinery on a 5 yearly basis to check for changes in the state of the art and validity of the certificate. An INAB accredited certification body Reg. No. 6021.

ST Series matching GCM-STR4 applied to Bending Machine(Press Brake)

► Please contact with Smartsan TW.



► Installation of new machines



► Improvement instance of retrofit



► GCM-STR4 Controller