IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx PTB 22.0001X**

Certificate history:
Issue 0 (2022-01-28)

Status: **Current**

Issue No: 1

Date of Issue: 2025-01-24

Applicant: **R. STAHL Schaltgeräte GmbH**
Am Bahnhof 30
74638 Waldenburg
Germany

Equipment: **CPU Module, type 9442/32-10-****

Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking: Ex ib [ia Ga] [ib Gb] IIC T4 Gb or
[Ex ia Da][Ex ib Db] IIIC

Approved for issue on behalf of the IECEx Certification Body: **Dr.-Ing. Martin Thedens**

Position: **Head of Department "Explosion Protection in Sensor Technology and Instrumentation"**

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
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Certificate issued by:

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

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Manufacturing locations: **R. STAHL Schaltgeräte GmbH**
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This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

DE/PTB/ExTR22.0001/01

Quality Assessment Report:

DE/BVS/QAR10.0002/20

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The CPU Module, type 9442/32-10-** is one of the basic modules of the Remote I/O-System, type IS1 / IS1+ and serves as the communication unit. It receives signals from the I/O-Modules (on the BusRail) and transmits them to the Process Logic Controller (PLC) or other communication partners using associated interfaces. The equipment is supplied from an intrinsically safe circuit provided by the Power Module. Two intrinsically safe circuits are used for communication with system-modules plugged onto the Socket or the BusRail. Signal transmission to the PLC or other communication partners is carried out via Ethernet, RS485 or USB interfaces which are designed to types of protection Intrinsic Safety “Ex ia” or “Ex ib”.

For further information reference is made to the annex.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. Inside the hazardous area the CPU Module, type 9442/32-10-** shall be installed into an enclosure that corresponds to an acknowledged type of protection according to EN 60079-0 and that provides a minimum degree of protection of IP 54 according to EN 60529.
2. Outside the hazardous area the CPU Module, type 9442/32-10-* shall be installed into an enclosure that provides a minimum degree of protection of IP 54 according to EN 60529 or inside an area having a maximum pollution degree 2 / overvoltage category III.
3. The CPU Module, type 9442/32-10-* shall only be operated with the Socket of type 9496/32-0*-00. Two CPU-Modules are permitted as a maximum in one Remote I/O-system, type IS1 / IS1+.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Introduction of an alternative variant with extended flash memory
- Temperature measurement of the new variant
- Adaptation of the type code to the new variant
- Adaptation of the specific conditions of use to the new type code
- Correction of the operating instructions regarding the intended use according to the marking
- Adaptation of the operating instructions, the type label and the safety-relevant description to the changes made

Annex:

CoCA22.0001X-01_1.pdf

Applicant: R.STAHL Schaltgeräte GmbH

Electrical Apparatus: CPU Module, type 9442/32-10-**

Description of equipment

In addition to the Power Module, type 9445/3*-12 and the Socket of type 9496/3*-0*-00 and 9496/3*-0*-00 which are separately certified, the CPU Module, type 9442/32-10-** is one of the basic modules of the Remote I/O-System, type IS1 / IS1+. The CPU Module is plugged into one of the 3 resp. 4 slots on the socket and bolted by a screw and it is hence electrically connected to the Power Module and other system modules which are connected to the sockets or to the BusRail, type 9494/**-** that is also separately certified. The CPU Module serves as a communication unit. It receives signals from the I/O-Modules (on the BusRail) and transmits them to the Process Logic Controller (PLC) or other communication partners using associated interfaces. The equipment is supplied from an intrinsically safe circuit provided by the Power Module. Two intrinsically safe circuits are used for communication with system-modules plugged onto the Socket or the BusRail. Signal transmission to the PLC or other communication partners is carried out via Ethernet, RS485 or USB interfaces which are designed to types of protection Intrinsic Safety “Ex ia” or “Ex ib”.
The electronic circuitry is arranged on two PCB´s which are mounted onto a metal carrier. This assembly is installed in a plastic enclosure.
The CPU Module, type 9442/32-10-** is intended for the installation in areas requiring equipment of category 3, 2 or in the safe area.

The permissible range of the ambient temperature depends on the installation as follows:

Ta = - 40 °C ... + 75 °C	when socket is mounted on a DIN-mounting rail (BusRail) and bolted onto a carrier plate
Ta = - 40 °C ... + 65 °C	when socket is mounted on a DIN-mounting rail (BusRail) without carrier plate

Electrical data

Intrinsically safe circuits:

The intrinsically safe circuits are considered system-internal circuits if the CPU-Module is plugged into the associated socket and bolted as intended.

Supply circuit Slot connector V100, pins A ... D	type of protection Intrinsic Safety Ex ia IIC Maximum values: U_i = 26.2 V I_i = 0.446 A P_i = 11.7 W
Sense-line Slot connector V100, pins E, F	type of protection Intrinsic Safety Ex ia IIC Maximum values: $U_i = U_o$ = 26.2 V I_o = 2.7 mA

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BusRail signal Slot connector V100, pins K, L	type of protection Intrinsic Safety Ex ia IIC Maximum values: $U_i = U_o = 6.6$ V $I_o = 98$ mA (linear characteristic) L_i negligibly low C_i negligibly low
Backplane signal Slot connector V100, pins S ... AJ	type of protection Intrinsic Safety Ex ia IIC Maximum values: $U_i = U_o = 5$ V $I_i = 2$ A $I_o = 84$ mA (linear characteristic) L_i negligibly low $C_i = 2.5$ µF

The intrinsically safe circuits are safely electrically isolated from each other and from the non-intrinsically safe circuits up to a peak value of the nominal voltage of 60 V. The intrinsically safe supply circuit and the intrinsically safe Sense-line are electrically interconnected.

Intrinsically safe data circuits:

RS485-interface X1 D-Sub 9-pin connector	type of protection Intrinsic Safety [Ex ia Ga] IIC and [Ex ia Da] IIIC $U_o = 4.2$ V DC $I_o = 149$ mA $U_i = \pm 4.2$ V L_i negligibly low C_i negligibly low
Ethernet-interfaces X2P1 and X2P2 RJ 45 connector	type of protection Intrinsic Safety [Ex ia Ga] IIC and [Ex ia Da] IIIC $U_o = 5$ V $I_o = 425$ mA $U_i = 5$ V $L_i = 200$ nH C_i negligibly low Standard: 100Base TX IS Transfer rate: 10/100 Mbit/s, auto negotiation
USB-interface X3 USB 2.0 Typ A connector	type of protection Intrinsic Safety [Ex ib Gb] IIC and [Ex ib Db] IIIC $U_o = 5.55$ V DC $I_o = 687$ mA DC (rectangular characteristic) $P_o = 2$ W L_i negligibly low $C_i = 1{,}6$ µF

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The following tables show the combinations of L_o and C_o for the connection to the USB interface in the respective gas group. The internal capacitance C_i is already taken into account. The maximum values for L_o and C_o are highlighted in grey.

For IIC:

L_o [µH]	150	100	50	20	10	5	2	1
C_o [µF]	0.5	1.5	3.4	6.6	10.4	16.4	38.4	52.4

For IIB / IIIC:

L_o [µH]	610	500	200	100	50	20	10	5	2
C_o [µF]	6.3	8.3	17.4	26.4	38.4	66.4	118.4	288.4	998.4

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