

## Segmentkoppler SC11EX-3G

## Weitere Unterlagen

Ergänzend zu diesem Dokument finden Sie im Internet unter [www.turck.com](http://www.turck.com) folgende Unterlagen:

- Datenblatt
- excom-Handbuch
- Konformitätserklärungen (aktuelle Version)
- Zulassungen

## Zu Ihrer Sicherheit

## Bestimmungsgemäße Verwendung

Der Segmentkoppler SC11EX-3G wandelt Standard-RS485-Signale in eigensichere RS485-IS-Signale um. Das Gerät unterstützt PROFIBUS-DP und Modbus-RTU-Protokolle. Die RS485-IS-Schnittstelle entspricht den Anforderungen des PROFIBUS-Leitfadens der PNO. Durch Zusammenschaltung mehrerer Segmentkoppler können Linien-, System- oder Device-Redundanz realisiert werden. Das Gerät ist zum Einsatz in Zone 2 und Zone 22 geeignet.

Jede andere Verwendung gilt als nicht bestimmungsgemäß. Für daraus resultierende Schäden übernimmt Turck keine Haftung.

## Allgemeine Sicherheitshinweise

- Nur fachlich geschultes Personal darf das Gerät montieren, installieren, betreiben, einstellen und instand halten.
- Das Gerät erfüllt die EMV-Anforderungen für den industriellen Bereich. Bei Einsatz in Wohnbereichen Maßnahmen treffen, um Funkstörungen zu vermeiden.
- Nur Geräte miteinander kombinieren, die durch ihre technischen Daten für den gemeinsamen Einsatz geeignet sind.
- Ausreichenden Potenzialausgleich in der Anlage sicherstellen. Gerät über den M5 × 1-Bolzen auf dem Gehäuse mit dem Potenzialausgleich verbinden.
- Gerät nur innerhalb der zulässigen Betriebs- und Umgebungsbedingungen einsetzen.

## Hinweise zum Ex-Schutz

- Nationale und internationale Vorschriften für den Explosionsschutz beachten.
- Bei Einsatz des Geräts in Ex-Kreisen muss der Anwender über Kenntnisse im Explosionsschutz (IEC/EN 60079-14 etc.) verfügen.
- Das Gerät nur innerhalb der zulässigen Betriebs- und Umgebungsbedingungen (siehe Zulassungsdaten und Auflagen durch die Ex-Zulassung) einsetzen.
- Gerät niemals an eigensichere Stromkreise anschließen, wenn es zuvor schon einmal an nicht eigensicheren Stromkreisen betrieben wurde.
- Leitungen und Klemmen mit eigensicheren Stromkreisen kennzeichnen. Bei farbiger Kennzeichnung hellblau verwenden. Leitungen von nicht eigensicheren Stromkreisen getrennt verlegen oder entsprechend isolieren (IEC/EN 60079-14).
- Nicht eigensichere Stromkreise nur trennen und verbinden, wenn keine Spannung anliegt.

Bei Einsatz in Zone 2 und Zone 22:

- Geräte in ein separat zugelassenes Gehäuse nach IEC/EN 60079-0 mit einer Schutzart mind. IP54 nach IEC/EN 60529 montieren.

## Produktbeschreibung

## Geräteübersicht

Siehe Abb. 1: Geräteansicht, Abb. 2: Abmessungen

## Funktionen und Betriebsarten

Der Segmentkoppler ist mit folgenden Schnittstellen ausgestattet:

- Standard-RS485-Schnittstelle
- Eigensichere RS485-IS-Schnittstelle

Bei der Übertragung von PROFIBUS-Telegrammen wird das Datentelegramm in Signalamplitude, Flankensteilheit und Bitbreite im Koppler regeneriert. PROFIBUS-DP-Telegramme mit gültigem Start-Delimiter werden weitergeleitet, ansonsten werden die Telegramme verworfen. Bei Modbus RTU und byteorientierten seriellen Datenströmen findet eine Aufbereitung der Bitbreite (Byte-Refresh) und Signalamplitude statt. Leitungsfehler (Drahtbruch/Kurzschluss) werden nicht von einem Segment in ein anderes übertragen. Dadurch ist ein störungsfreier Betrieb aller Segmente unabhängig voneinander möglich.

An den Koppler können bis zu 31 Busteilnehmer angeschlossen werden.

## Montieren

## ⚠ GEFAHR

Explosionsfähige Atmosphäre  
Explosion durch zündfähige Funken

Bei Einsatz im Ex-Bereich  
➤ Montage und Anschluss der Energieversorgung nur durchführen, wenn keine explosionsfähige Atmosphäre vorliegt.

- Gerät auf einer Hutschiene (TH35) montieren.
- Seitlich zum benachbarten Gerät einen Abstand von  $\geq 5$  mm einhalten.
- M5 × 1-Bolzen („Case Ground“) auf dem Gerät mit dem Potenzialausgleich verbinden.

## Anschließen

## PROFIBUS-Schirm erden

Der Anwender kann je nach zu erwartenden Störeinflüssen und Installation zwischen kapazitiver und direkter (harter) Erdung auswählen. Die Schirme sind ab Werk kapazitiv auf Potenzialausgleich („Shield“) gelegt. Dazu sind Isolierscheiben zwischen den Schraubenköpfen (auf dem Gehäuse durch „Shield a“ und „Shield b“ gekennzeichnet) und dem Gehäuse gelegt.

- Direkte Erdung wählen: Schraube herausdrehen, Isolierscheibe entfernen und die Schraube wieder eindrehen.
- M5 × 1-Bolzen („Shield“) je nach Erdungskonzept mit separat ausgeführter FE- oder PE-Schiene verbinden.

## Segmentkoppler an den Feldbus anschließen

Die Feldbus-Schnittstelle ist als 9-polige SUB-D-Buchse ausgeführt.

- Gerät gemäß „Wiring diagram“ anschließen.

## Busteilnehmer anschließen

Zum Anschluss der Busteilnehmer über die RS485-IS-Schnittstelle steht eine 9-polige SUB-D-Buchse zur Verfügung.

- Gerät gemäß „Wiring diagram“ mit einem für Ex-Anwendungen zugelassenen PROFIBUS-SUB-D-Steckverbinder (z. B. D9T-RS485IS, ID 6890944) an den Feldbus anschließen.

## Segment Coupler SC11EX-3G

## Other documents

Besides this document, the following material can be found on the Internet at [www.turck.com](http://www.turck.com):

- Data sheet
- excom manual
- Declarations of conformity (current version)
- Approvals

## For your safety

## Intended use

Segment coupler SC11EX-3G converts standard RS485 signals into intrinsically safe RS485-IS signals. The device supports the PROFIBUS-DP and Modbus RTU protocols. The RS485-IS interface complies with the requirements of the PROFIBUS guidelines set by the PNO. Line, system or device redundancy can be implemented by connecting multiple segment couplers. The device is suitable for use in zone 2 and zone 22. Any other use is not in accordance with the intended use. Turck accepts no liability for any resulting damage.

## General safety instructions

- The device may only be mounted, installed, operated, configured and maintained by professionally trained personnel.
- The device meets the EMC requirements for industrial areas. When used in residential areas, take measures to prevent radio frequency interference.
- Only combine devices where the technical data indicates that they are suitable for joint use.
- Ensure that there is sufficient equipotential bond in the system. Connect the device to the equipotential bond via the M5 × 1 bolt on the housing.
- Only use the device within the permitted operating and ambient conditions.

## Notes on explosion protection

- Observe national and international regulations for explosion protection.
- When using the device in Ex circuits, the user must also have knowledge of explosion protection (IEC/EN 60079-14 etc.).
- Only use the device within the permissible operating and ambient conditions (see approval data and Ex approval requirements).
- Never connect the device to intrinsically safe circuits if it has been previously operated in non-intrinsically safe circuits.
- Label cables and terminals with intrinsically safe circuits. Use light blue if labeling in color. Lay cables from non-intrinsically safe circuits separately or isolate them accordingly (IEC/EN 60079-14).
- Only connect and disconnect non-intrinsically safe circuits if no voltage is applied.

Use of devices in zone 2 and zone 22:

- Mount the devices in a separately approved enclosure in accordance with IEC/EN 60079-0 with a degree of protection of at least IP54 as per IEC/EN 60529.

## Product description

## Device overview

See fig. 1: device view, fig. 2: dimensions

## Functions and operating modes

The segment coupler is provided with the following interfaces:

- Standard RS485 interface
- Intrinsically safe RS485-IS interface

When PROFIBUS telegrams are transmitted, the signal amplitude, edge steepness and bit width of the data telegram are regenerated in the coupler. PROFIBUS-DP telegrams with a valid start delimiter are forwarded; otherwise the telegrams are discarded. The bit width (byte refresh) and signal amplitude are processed for Modbus RTU and byte-oriented serial data flows.

Line faults (wire breaks and short circuits) are not transmitted between segments. All segments can thus be operated fault-free and independently of one another. Up to 31 bus nodes can be connected to the coupler.

## Installing

## ⚠ DANGER

Potentially explosive atmosphere  
Risk of explosion due to spark ignition

When used in the Ex area:  
➤ Only install and connect the power supply if there is no potentially explosive atmosphere present.

- Mount the device on a DIN rail (TH35).
- Maintain a clearance of  $\geq 5$  mm from the side of the adjacent device.
- Connect the M5 × 1 bolt (“case ground“) on the device with the equipotential bond.

## Connection

## Grounding the PROFIBUS shield

The user can choose between capacitive and direct (hard) grounding, depending on the expected interference and the installation.

- The shields are placed capacitively on the equipotential bond (“shield“) ex works. This is done by placing insulating washers between the screw heads (marked on the housing as “Shield a“ and “Shield b“) and the housing.
- Selecting direct grounding: Undo the screw, remove the insulating washer and replace the screw.
- Connect the M5 × 1 bolt (“shield“) separately with the FE or PE rail, depending on the grounding concept.

## Connecting the segment couplers to the fieldbus

The fieldbus interface is designed as a 9-pin SUB-D female connector.

- Connect the device as shown in “Wiring diagram“.

## Connecting the bus nodes

A 9-pin SUB-D female connector is available for connecting the bus nodes via the RS485-IS interface.

- Connect the device to the fieldbus as shown in the “Wiring diagram“ using a PROFIBUS SUB-D connector approved for Ex applications (e.g. D9T-RS485IS, ID 6890944).

①

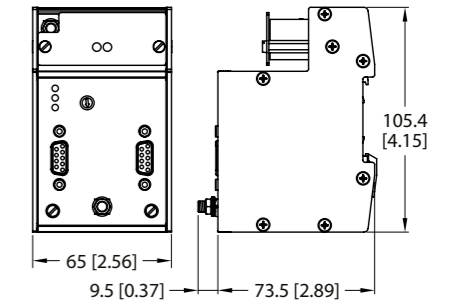


SC11EX-3G  
Segment Coupler  
Quick Start Guide  
Doc. no. 100002590

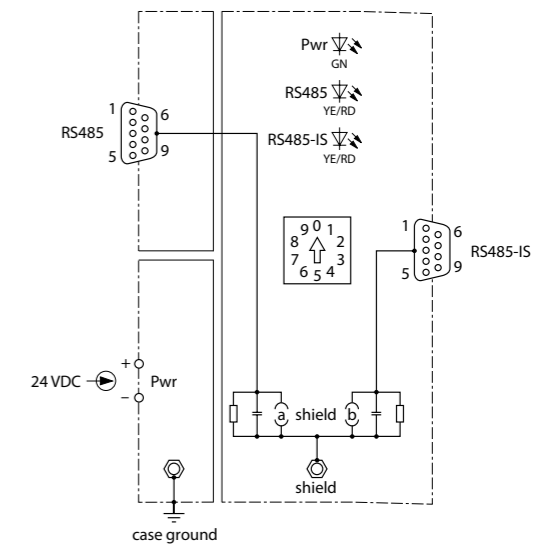
Additional information see



②



## Wiring diagram



Pin	Pin assignment	Wiring diagram
Pin 1	n. c.	5
Pin 2	n. c.	4
Pin 3	RxD/TxD-P	3
Pin 4	n. c.	2
Pin 5	DGND	1
Pin 6	VP	9
Pin 7	n. c.	8
Pin 8	RxD/TxD-N	7
Pin 9	n. c.	6
Case	PE/FE	

**DE** Kurzbetriebsanleitung**Versorgungsspannung anschließen**

Zum Anschluss der Versorgungsspannung verfügt das Gerät über eine 2-polige Ex e Schraubklemme.

- Gerät gemäß „Wiring diagram“ anschließen. Der max. Leitungsquerschnitt beträgt 2,5 mm<sup>2</sup>.

**Abschlusswiderstände zuschalten**

- Am Anfang und Ende jedes Segments Abschlusswiderstände zuschalten.

Der Busabschluss auf der eigensicheren Seite entspricht dem Leitfaden „RS485-IS“ (Doku-Nr. 2.262) der PROFIBUS-Nutzer-Organisation (PNO).

**In Betrieb nehmen**

Nach Anschluss der Leitungen und Aufschalten der Versorgungsspannung geht das Gerät automatisch in Betrieb.

**Betreiben****LED-Funktionen**

LED	Anzeige	Bedeutung
POWER	grün	Gerät betriebsbereit
RS485/	rot	Kommunikationsfehler
RS485-IS	gelb	Buskommunikation aktiv
	blinkt gelb	Suche nach Übertragungsrate
	aus	keine Kommunikation

**Einstellen**

Die Übertragungsrate wird bei PROFIBUS-DP automatisch vom Gerät erkannt. Für andere byteorientierte serielle Datenströme muss die Übertragungsrate über einen Drehschalter fest eingestellt werden.

Position Drehschalter	Übertragungsrate
0	automatische Erkennung
1	nicht belegt
2	nicht belegt
3	9,60 kbit/s
4	19,20 kbit/s
5	38,40 kbit/s
6	57,60 kbit/s
7	115,20 kbit/s
8	500 kbit/s
9	1,50 Mbit/s

Das Zeichenformat lautet:

1 Startbit/8 Databits/even parity/1 Stoppbit

## Certification data | Technical data

**Approvals and markings**

Approvals	
EPS 17 ATEX 1 167 X	Ex II 3 (2) G Ex ec ic [ib Gb] IIC T4 Gc Ex II (2) D [Ex ib Db] IIIC
CML 21 UKEX1623X	
IECEx EPS 17.0085 X	Ex ec ic [ib Gb] IIC T4 Gc [Ex ib Db] IIIC
FM21US0117X FM21CA0084X	인증서발급기관명: 한국산업안전보건공단 안전인증번호: 21-AV4BO-0218X, 21-AV4BO-0219X 안전한 사용을 위한 조건: 발급된 인증서 참조
	Class I Division 2, Groups A, B, C, D; T4 Class I, Zone 2, AEx ec ic [ib Gb] IIC T4 Gc; Entity - IS-2.500 Zone 21 [AEx ib Db] IIIC

Ambient temperature T<sub>amb</sub>: -40...+70 °C

**EN** Quick Start Guide**Connecting the power supply**

The device is provided with a 2-pin Ex e screw terminal for connecting the power supply.

- Connect the device as shown in the “Wiring diagram”. The max. cable cross-section is 2.5 mm<sup>2</sup>.

**Switching on terminating resistors**

- Terminating resistors must be switched on at the start and end of each segment.

The terminating resistor on the intrinsically safe end meets the “RS485-IS” guidelines (document no. 2.262) set out by the PROFIBUS User Organization (PNO).

**Commissioning**

The device automatically becomes operational once the cables are connected and the power supply is switched on.

**Operation****LEDs**

LED	Indication	Meaning
POWER	Green	Device is operational
RS485/	Red	Communication error
RS485-IS	Yellow	Bus communication active
	Yellow flashing	Searching for transmission rate
	Off	No communication

**Setting**

The transmission rate is automatically detected by the device when using PROFIBUS DP. For other byte-oriented serial data streams, the transmission rate must be adjusted via a rotary switch.

Rotary switch position	Transmission rate
0	Automatic detection
1	Not assigned
2	Not assigned
3	9.60 kbps
4	19.20 kbps
5	38.40 kbps
6	57.60 kbps
7	115.20 kbps
8	500 kbps
9	1.50 Mbps

The character format is:

1 start bit/8 data bits/even parity/1 stop bit

**Repair**

The device must not be repaired by the user. The device must be decommissioned if it is faulty. Observe our return acceptance conditions when returning the device to Turck.

**Disposal**

- The devices must be disposed of correctly and must not be included in general household garbage.

**Declarations of conformity**

**EU-Konformitätserklärung Nr.**  
**UK Declaration of Conformity No. 5305-3M**  
EU Declaration of Conformity No.:

**TURCK**

Wir / We Hans Turck GmbH & Co. KG  
Witzlebenstr. 7, 45472 Mülheim an der Ruhr, Germany

erklären in alleiniger Verantwortung, dass das Produkt  
declare under our sole responsibility that the product

**Segmentkoppler / Segment Coupler**

für das / for the: Remote – I/O – System excom

Typ / Type: **SC11Ex-3G**

ID: **100000550**

Ex-Kennzeichnung / Ex-marking:

Gas / gas Ⓜ II 3 (2) G Ex ec ic [ib Gb] IIC T4 Gc  
Staub / dust Ⓜ II (2) D [Ex ib Db] IIIC

auf die in der von uns in Verkehr gebrachten Ausführung sich diese Erklärung bezieht, den Anforderungen der folgenden EU-Richtlinien und den Anforderungen der folgenden UK- Statutory Instruments durch Einhaltung der folgenden harmonisierten / designierten Normen genügen:  
to which this declaration relates in the configuration placed on the market by us, are in conformity with the requirements of the following EU-directives and the requirements of the following UK Statutory Instruments by compliance with the following harmonized / designated standards:

**Richtlinie / Directive EMC** 2014 / 30 / EU 26. Feb. 2014

**EMC SI\* and part. sign. changes\*\*** SI 2016/1091

EN 61326-1:2013

**Richtlinie / Directive ATEX** 2014 / 34 / EU 26. Feb. 2014

**ATEX SI\* and part. sign. changes\*\*** SI 2016/1107

EN IEC 60079-0:2018

EN 60079-7:2015 / A1:2018

EN 60079-11:2012

**Richtlinie / Directive RoHS** 2011 / 65 / EU 08. Jun. 2011

**RoHS SI\* and part. sign. changes** SI 2012/3032 and SI 2019/188

EN IEC 63000:2018

\*: SI = Statutory Instrument

\*\* : SI 2019/696, SI 2020/1460

Weitere Normen, Bemerkungen / additional standards, remarks:

Die aufgeführten benannten Stellen haben die Konformitätsbewertung durchgeführt und Zertifikate ausgestellt:  
The listed notified bodies have carried out conformity assessment and issued certificates:

**EU-Baumusterprüfbescheinigung (Modul B)** / EU-type examination certificate (module B): **EPS 17 ATEX 1 167 X**

ausgestellt von / issued by: Bureau Veritas Product Services Germany GmbH, Kenn-Nr. / ID no.: 2004

Businesspark A96, 86842 Türkheim, Germany

**Zertifizierung des QS-Systems (Modul D)** / Certification of the QS-system (module D):

ausgestellt von / issued by: Physikalisch Technische Bundesanstalt, Kenn-Nr. / ID no.: 0102

Bundesallee 100, 38116 Braunschweig, Germany

**UK-Baumusterprüfbescheinigung (Modul B)** / UK-type examination certificate (module B): **CML 21 UKEX 1623X**

ausgestellt von / issued by: Eurofins E&E CML Limited, Kenn-Nr. / ID no.: 2503,

New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom

**UKCA QS- & UKEX Produktzertifizierung** / UKCA Quality Assurance Notification & UKEX product certification:

ausgestellt von / issued by: Eurofins E&E CML Limited, Kenn-Nr. / ID no.: 2503,

New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom

Mülheim, den 14.06.2022

*D. Barabas*  
i.V. O. Barabas, Zulassungsbeauftragter /  
Certification Representative

Ort und Datum der Ausstellung /  
Place and date of issue

Name, Funktion und Unterschrift des Befugten /  
Name, function and signature of authorized person

FM 7.3-12

09.11.21

## Coupleur de segments SC11EX-3G

## Documents supplémentaires

Sous [www.turck.com](http://www.turck.com), vous trouverez les documents suivants, qui contiennent des informations complémentaires à la présente notice :

- Fiche technique
- Manuel excom
- Déclarations de conformité (version actuelle)
- Homologations

## Pour votre sécurité

## Utilisation conforme

Le coupleur de segment SC11EX-3G convertit les signaux RS485 standard en signaux RS485-IS à sécurité intrinsèque. L'appareil prend en charge les protocoles PROFIBUS-DP et Modbus RTU. L'interface RS485-IS est conforme aux exigences des directives PROFIBUS définies par la PNO. Par l'interconnexion de plusieurs coupleurs de segments, il est possible de réaliser une redondance de ligne, de système ou d'appareil. L'appareil est conçu pour un fonctionnement en zone 2 et en zone 22.

Toute autre utilisation est considérée comme non conforme. La société Turck décline toute responsabilité en cas de dommages causés par une utilisation non conforme.

## Consignes de sécurité générales

- Seul un personnel qualifié est habilité à monter, installer, utiliser, configurer et entretenir l'appareil.
- L'appareil répond aux exigences CEM pour les zones industrielles. Lorsqu'il est utilisé dans des zones résidentielles, des mesures doivent être prises pour éviter les interférences des fréquences radio.
- Combinez uniquement les appareils dont les données techniques indiquent qu'ils sont adaptés à une utilisation conjointe.
- Assurez-vous que la liaison équipotentielle est suffisante dans le système. Raccordez l'appareil à la liaison équipotentielle à l'aide du boulon M5 x 1 sur le boîtier.
- Utilisez l'appareil uniquement dans les conditions ambiantes et de fonctionnement autorisées.

## Remarques sur la protection Ex

- Respectez les consignes nationales et internationales relatives à la protection contre les explosions.
- En cas d'utilisation de l'appareil dans des zones à risque d'explosion, vous devez en outre disposer des connaissances requises en matière de protection contre les explosions (CEI/EN 60079-14, etc.).
- Utilisez l'appareil uniquement dans les conditions ambiantes et de fonctionnement autorisées (voir données d'homologation et exigences des homologations Ex).
- Ne raccordez jamais l'appareil à des circuits électriques à sécurité intrinsèque s'il a déjà été utilisé sur des circuits à sécurité non intrinsèque.
- Identifiez les câbles et les bornes des circuits électriques à sécurité intrinsèque. Si vous utilisez une identification par code couleur, utilisez le bleu clair. Posez les câbles des circuits à sécurité non intrinsèque à l'écart ou isolez-les en conséquence (CEI/EN 60079-14).
- Les circuits à sécurité non intrinsèque doivent être séparés et raccordés uniquement lorsqu'aucune tension n'est présente.

Utilisation des appareils en zone 2 et en zone 22 :

- Montez les appareils dans un boîtier séparé homologué conformément à la norme CEI/EN 60079-0 et avec un indice de protection IP54 minimum, conformément à la norme CEI/EN 60529.

## Description du produit

## Aperçu de l'appareil

Voir fig. 1 : Vue de l'appareil, fig. 2 : Dimensions

## Fonctions et modes de fonctionnement

Le coupleur de segment est doté des interfaces suivantes :

- Interface RS485 standard
  - Interface RS485-IS à sécurité intrinsèque
- Lors de la transmission de télégrammes PROFIBUS, le télégramme de données est régénéré dans le coupleur au niveau de l'amplitude de signaux, de la pente du signal et de la largeur de bit. Les télégrammes PROFIBUS-DP avec start-delimiter valable sont transmis, les autres télégrammes sont rejetés. Un traitement de la largeur de bit (« Byte Refresh ») et de l'amplitude du signal a lieu avec Modbus RTU et les flux de données sériels sur base d'octets.
- Les erreurs de ligne (ruptures de câble et courts-circuits) ne sont pas transmises entre les segments. Tous les segments peuvent ainsi fonctionner sans défaut et indépendamment l'un de l'autre.

Il est possible de raccorder jusqu'à 31 nœuds de bus à un coupleur.

## Installation

## ⚠ DANGER

Atmosphère présentant un risque d'explosion

## Explosion par étincelles inflammables

Utilisation en zone Ex :

- ▶ Assurez-vous que l'atmosphère ne présente pas de risque d'explosion avant d'installer et de raccorder l'alimentation électrique.
- ▶ Fixez l'appareil sur un rail DIN (TH35).
- ▶ Maintenez une distance d'au moins 5 mm par rapport aux autres appareils.
- ▶ Raccordez le boulon M5 x 1 (« case ground ») sur l'appareil à la liaison équipotentielle.

## Raccordement

## Mise à la terre du blindage PROFIBUS

L'utilisateur peut choisir entre une mise à la terre capacitive et directe (dure), en fonction de l'interférence attendue et de l'installation.

Les blindages sont placés capacitivement sur la liaison équipotentielle (« shield ») départ usine. Pour ce faire, placez des rondelles isolantes entre les têtes de vis (« Shield a » et « Shield b » sur le boîtier).

- ▶ Mise à la terre directe : Dévissez la vis, enlevez la rondelle isolante et remplacez la vis.
- ▶ Raccordez le boulon M5 x 1 (« shield ») séparément au rail FE ou PE, selon le concept de mise à la terre.

## Raccordez les coupleurs de segments au bus de terrain

L'interface de bus de terrain est un connecteur SUB-D femelle à 9 broches.

- ▶ Raccordez l'appareil conformément au schéma de câblage (« Wiring diagram »).

## Raccordement des nœuds de bus

Un connecteur SUB-D femelle à 9 broches est disponible pour raccorder les nœuds de bus via l'interface RS485-IS.

- ▶ Raccordez l'appareil au bus de terrain selon le schéma de câblage (« Wiring diagram ») à l'aide d'un connecteur SUB-D PROFIBUS homologué pour les applications Ex (par ex. D9T-RS485IS, ID 6890944).

## Acoplador de segmento SC11EX-3G

## Outros documentos

Além deste documento, o seguinte material pode ser encontrado na Internet em [www.turck.com](http://www.turck.com):

- Folha de dados
- Manual excom
- Declarações de conformidade (versão atual)
- Homologações

## Para sua segurança

## Finalidade de uso

O acoplador de segmento SC11EX-3G converte os sinais RS485 padrão em sinais RS485-IS intrinsecamente seguros. Este dispositivo suporta os protocolos PROFIBUS-DP e Modbus RTU. A interface RS485-IS cumpre com as exigências das diretrizes PROFIBUS definidas pela PNO. Redundâncias de linha, sistema ou dispositivo podem ser implementadas com a conexão de vários acopladores de segmento. O dispositivo é adequado para o uso na Zona 2 e na Zona 22.

Qualquer outro uso está fora de concordância com o uso pretendido. A Turck se exime de qualquer responsabilidade por danos resultantes.

## Instruções gerais de segurança

- O dispositivo só pode ser montado, instalado, operado, configurado e mantido por pessoal profissionalmente treinado.
- O dispositivo atende aos requisitos de EMC para a área industrial. Havendo uso em áreas residenciais, tome medidas para evitar interferência por frequência de rádio.
- Somente combine dispositivos quando dados técnicos indicarem que são adequados para uso conjunto.
- Deve existir uma ligação equipotencial suficiente no sistema. Conecte o dispositivo à ligação equipotencial por meio do parafuso M5 x 1 na estrutura.
- Só use o dispositivo dentro das condições de operação e do ambiente.

## Notas de proteção contra explosão

- Observe os regulamentos nacionais e internacionais para proteção contra explosão.
- Ao usar o dispositivo em circuitos Ex, o usuário deverá ter conhecimento prático sobre proteção contra explosões (IEC/EN 60079-14, etc.).
- Use o dispositivo somente em condições ambientais e de operação permitidas (consulte os dados de homologação Ex).
- Nunca conecte o dispositivo a circuitos intrinsecamente seguros se ele tiver sido operado em circuitos que não sejam intrinsecamente seguros.
- Identifique os cabos e terminais com circuitos intrinsecamente seguros. Se fizer a identificação por cores, use azul-claro. Coloque os cabos de circuitos não intrinsecamente seguros separadamente ou isole-os adequadamente (IEC/EN 60079-14).
- Somente desconecte e conecte circuitos elétricos não intrinsecamente seguros se não houver tensão aplicada.

## Descrição do produto

## Visão geral do produto

Veja a fig. 1: Visão do dispositivo, fig. 2: Dimensões

## Funções e modos de operação

O acoplador de segmento é fornecido com as seguintes interfaces:

- Interface RS485 padrão
- Interface intrinsecamente segura RS485-IS

Quando telegramas PROFIBUS são transmitidos, a amplitude do sinal, inclinação de borda e largura de bit do telegrama de dados são regeneradas no acoplador. Telegramas PROFIBUS-DP com um delimitador de início válido são encaminhados. Caso contrário, os telegramas são descartados. A largura de bits (atualização de bytes) e a amplitude de sinal são processadas para os fluxos de dados seriais de Modbus RTU e orientados por bytes.

As falhas de linha (quebras de fios e curtos-circuitos) não são transmitidas entre segmentos. Assim, todos os segmentos podem ser operados sem problemas e de forma independente. Podem ser conectados até 31 nós de barramento ao acoplador.

## Instalação

## ⚠ PERIGO

Atmosferas explosivas

## Risco de explosão em virtude de faíscas inflamáveis

Quando usado na área Ex:

- ▶ Instale e conecte a fonte de energia somente se a atmosfera não for explosiva.

- ▶ Monte o dispositivo em um trilho DIN (TH35).
- ▶ Mantenha uma folga de  $\geq 5$  mm da lateral do dispositivo adjacente.
- ▶ Conecte o parafuso M5 x 1 ("aterramento de invólucro") no dispositivo com a ligação equipotencial.

## Conexão

## Aterramento da blindagem PROFIBUS

O usuário pode escolher entre aterramento capacitivo e aterramento direto (duro), de acordo com a interferência antecipada e com a instalação.

As blindagens são colocadas de modo capacitivo na ligação equipotencial ("blindagem") em fábrica. Isso é feito pela colocação de arruelas de isolamento entre as cabeças dos parafusos (marcadas na estrutura como "Blindagem a" e "Blindagem b") e a estrutura.

- ▶ Seleção de aterramento direto: Solte o parafuso, remova a arruela de isolamento e substitua o parafuso.
- ▶ Conecte o parafuso M5 x 1 ("blindagem") separadamente com o trilho FE ou PE, dependendo do conceito de aterramento.

## Conexão dos acopladores de segmento ao fieldbus

A interface fieldbus é projetada como um conector fêmea SUB-D de 9 pinos.

- ▶ Conecte o dispositivo conforme mostrado no "Wiring diagram".

## Conexão dos nós do barramento

Um conector fêmea SUB-D de 9 pinos está disponível para conectar os nós do barramento por meio da interface RS485-IS.

- ▶ Conecte o dispositivo ao fieldbus conforme o "DWiring diagram" com um conector PROFIBUS-SUB-D homologado para aplicações Ex (por exemplo, D9T-RS485IS, ID 6890944).

①

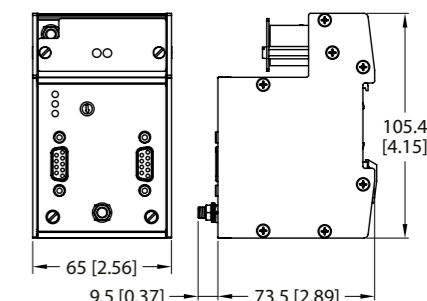


SC11EX-3G  
Segment Coupler  
Quick Start Guide  
Doc. no. 100002590

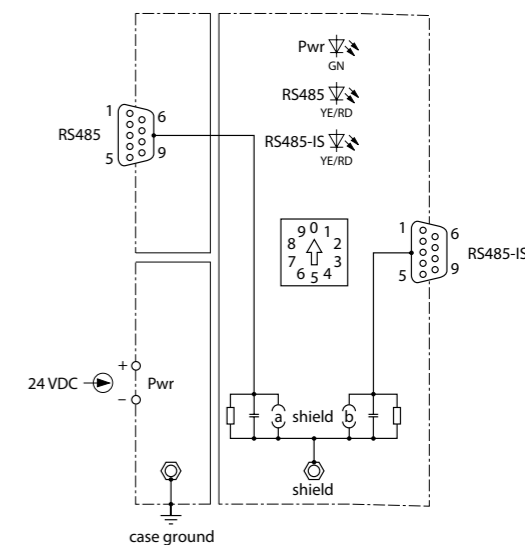
Additional information see



②



## Wiring diagram



Pin	Pin assignment	Wiring diagram
Pin 1	n. c.	5 4 3 2 1
Pin 2	n. c.	
Pin 3	RxD/TxD-P	○ ○ ○ ○ ○
Pin 4	n. c.	○ ○ ○ ○
Pin 5	DGND	
Pin 6	VP	9 8 7 6
Pin 7	n. c.	
Pin 8	RxD/TxD-N	
Pin 9	n. c.	
Case	PE/FE	

**FR** Guide d'utilisation rapide

**Raccordement de l'alimentation**

L'appareil dispose d'une borne à vis Ex e à 2 broches pour raccorder l'alimentation.

- Raccordez l'appareil conformément au schéma de câblage (« Wiring diagram »). La section de câble max. est de 2,5 mm<sup>2</sup>.

**Activation des résistances de terminaison**

- Les résistances de terminaison doivent être activées au début et à la fin de chaque segment.

La résistance de terminaison sur l'extrémité à sécurité intrinsèque est conforme aux directives « RS485-IS » (n° de document 2.262) définies par l'organisation d'utilisateurs PROFIBUS (PNO).

**Mise en service**

L'appareil est automatiquement opérationnel après raccordement des câbles et activation de la tension d'alimentation.

**Fonctionnement**

LED	Indication	Signification
POWER	Vert	L'appareil est opérationnel
RS485/	Rouge	Erreur de communication
RS485-IS	Jaune	Communication par bus active
	Jaune clignote	Recherche de la vitesse de transmission
	Eteinte	Pas de communication

**Réglages**

La vitesse de transmission est automatiquement détectée par l'appareil en cas d'utilisation de PROFIBUS DP. Pour les autres flux de données sériels sur base d'octets, la vitesse de transmission doit être réglée à l'aide d'un commutateur rotatif.

Position du commutateur rotatif	Vitesse de transmission
0	Reconnaissance automatique
1	Non affecté
2	Non affecté
3	9,60 kbit/s
4	19,20 kbit/s
5	38,40 kbit/s
6	57,60 kbit/s
7	115,20 kbit/s
8	500 kbit/s
9	1,50 Mbit/s

Le format des caractères est le suivant :

1 bit de départ/8 bits de données/parité paire/1 bit d'arrêt

**Réparation**

L'appareil ne peut pas être réparé par l'utilisateur. En cas de dysfonctionnement, mettez l'appareil hors tension. En cas de retour à Turck, veuillez respecter les conditions de reprise.

**Mise au rebut**

Les appareils doivent être mis au rebut de manière appropriée et ne peuvent être éliminés avec les ordures ménagères.

**PT** Guia de Inicialização Rápida

**Conexão da fonte de alimentação**

O dispositivo é fornecido com um terminal aparafusado Ex e de 2 pinos para conexão da fonte de alimentação.

- Conecte o dispositivo conforme mostrado no "Wiring diagram". A seção transversal máxima do cabo é de 2,5 mm<sup>2</sup>.

**Ligar resistores de terminação**

- Os resistores terminais devem ser ligados no início e no final de cada segmento.

O resistor de terminação na extremidade intrinsecamente segura atende as diretrizes "RS485-IS" (documento n° 2.262) definidas pela organização de usuários do PROFIBUS (PNO).

**Comissionamento**

Assim que os cabos forem conectados e a alimentação de energia for ligada, o dispositivo automaticamente se torna operacional.

**Operação**

LED	Indicação	Significado
POWER	Verde	O dispositivo está em funcionamento
RS485/	Vermelho	Erro de comunicação
RS485-IS	Amarelo	Comunicação do barramento ativa
	Amarelo intermitente	Buscando a taxa de transmissão
	Desligado	Sem comunicação

**Configuração**

A taxa de transmissão é detectada automaticamente pelo dispositivo ao usar o PROFIBUS DP. Para outros fluxos de dados orientados por bytes, a taxa de transmissão deve ser ajustada por meio de um interruptor giratório.

Posição do interruptor giratório	Taxa de transmissão
0	Deteção automática
1	Não atribuído
2	Não atribuído
3	9,60 kbps
4	19,20 kbps
5	38,40 kbps
6	57,60 kbps
7	115,20 kbps
8	500 kbps
9	1,50 Mbps

O formato de caractere é:

1 bit de partida/8 bits de dados/paridade igual/1 bit de parada

**Reparo**

O dispositivo não deve ser reparado pelo usuário. O

dispositivo deverá ser desativado caso esteja com defeito.

Observe nossas condições para aceitação de devolução ao devolver o dispositivo à Turck.

**Descarte**

Os dispositivos devem ser descartados corretamente e não em um lixo doméstico normal.

**Declarations of conformity**

<b>EU-Konformitätserklärung Nr. UK Declaration of Conformity No. 5305-3M</b> <small>EU Declaration of Conformity No.:</small>					
Wir / We	Hans Turck GmbH & Co. KG Witzlebenstr. 7, 45472 Mülheim an der Ruhr, Germany				
erklären in alleiniger Verantwortung, dass das Produkt declare under our sole responsibility that the product					
<b>Segmentkoppler / Segment Coupler</b>					
für das / for the:	Remote – I/O – System excom				
Typ / Type:	<b>SC11Ex-3G</b>				
ID:	<b>100000550</b>				
Ex-Kennzeichnung / Ex-marking:					
	Gas / gas	Ⓜ II 3 (2) G	Ex ec ic [ib Gb] IIC T4 Gc		
	Staub / dust	Ⓜ II (2) D	[Ex ib Db] IIIC		
auf die in der von uns in Verkehr gebrachten Ausführung sich diese Erklärung bezieht, den Anforderungen der folgenden EU-Richtlinien und den Anforderungen der folgenden UK- Statutory Instruments durch Einhaltung der folgenden harmonisierten / designierten Normen genügen: to which this declaration relates in the configuration placed on the market by us, are in conformity with the requirements of the following EU-directives and the requirements of the following UK Statutory Instruments by compliance with the following harmonized / designated standards:					
<b>Richtlinie / Directive EMC SI* and part. sign. changes**</b>	<b>2014 / 30 / EU SI 2016/1091</b>	<b>26. Feb. 2014</b>			
EN 61326-1:2013					
<b>Richtlinie / Directive ATEX SI* and part. sign. changes**</b>	<b>2014 / 34 / EU SI 2016/1107</b>	<b>26. Feb. 2014</b>			
EN IEC 60079-0:2018 EN 60079-7:2015 / A1:2018 EN 60079-11:2012					
<b>Richtlinie / Directive RoHS RoHS SI* and part. sign. changes</b>	<b>2011 / 65 / EU SI 2012/3032</b>	<b>08. Jun. 2011 and SI 2019/188</b>			
EN IEC 63000:2018					
*: SI = Statutory Instrument **: SI 2019/696, SI 2020/1460					
Weitere Normen, Bemerkungen / additional standards, remarks:					
Die aufgeführten benannten Stellen haben die Konformitätsbewertung durchgeführt und Zertifikate ausgestellt: The listed notified bodies have carried out conformity assessment and issued certificates.					
<b>EU-Baumusterprüfbescheinigung (Modul B)</b> / EU-type examination certificate (module B): <b>EPS 17 ATEX 1 167 X</b> ausgestellt von / issued by: Bureau Veritas Product Services Germany GmbH, Kenn-Nr. / ID no.: 2004 Businesspark A96, 86842 Türkheim, Germany					
<b>Zertifizierung des QS-Systems (Modul D)</b> / Certification of the QS-system (module D): ausgestellt von / issued by: Physikalisch Technische Bundesanstalt, Kenn-Nr. / ID no.: 0102 Bundesallee 100, 38116 Braunschweig, Germany					
<b>UK-Baumusterprüfbescheinigung (Modul B)</b> / UK-type examination certificate (module B): <b>CML 21 UKEX 1623X</b> ausgestellt von / issued by: Eurofins E&E CML Limited, Kenn-Nr. / ID no.: 2503, New Port Road, Ellesmere Port CH65 4LZ, United Kingdom					
<b>UKCA QS- &amp; UKEX Produktzertifizierung</b> / UKCA Quality Assurance Notification & UKEX product certification: ausgestellt von / issued by: Eurofins E&E CML Limited, Kenn-Nr. / ID no.: 2503, New Port Road, Ellesmere Port CH65 4LZ, United Kingdom					
Mülheim, den 14.06.2022					
			 i.V. O. Barabas, Zulassungsbeauftragter / Certification Representative		
Ort und Datum der Ausstellung / Place and date of issue			Name, Funktion und Unterschrift des Befugten / Name, function and signature of authorized person		
FM 7.3-12			09.11.21		

**Certification data | Technical data**
**Approvals and markings**

Approvals	
EPS 17 ATEX 1 167 X	Ⓜ II 3 (2) G Ex ec ic [ib Gb] IIC T4 Gc Ⓜ II (2) D [Ex ib Db] IIIC
CML 21 UKEX1623X	
IECEx EPS 17.0085 X	Ex ec ic [ib Gb] IIC T4 Gc [Ex ib Db] IIIC
	인증서발급기관명: 한국산업안전보건공단 안전인증번호: 21-AV4BO-0218X, 21-AV4BO-0219X 안전한 사용을 위한 조건: 발급된 인증서 참조
FM21US0117X FM21CA0084X	Class I Division 2, Groups A, B, C, D; T4 Class I, Zone 2, AEx ec ic [ib Gb] IIC T4 Gc; Entity - IS-2.500 Zone 21 [AEx ib Db] IIIC

Ambient temperature T<sub>amb</sub>: -40...+70 °C

**Electrical data**

Max. voltage U <sub>m</sub>	40 VDC
Max. power consumption	4 W
<b>RS485 (non Ex)</b>	
Max. voltage U <sub>m</sub>	40 VDC
<b>RS485-IS (Ex)</b>	
Max. output voltage U <sub>O</sub>	4.2 V
Max. input voltage U <sub>I</sub>	4.2 V
Max. output current I <sub>O</sub>	148 mA
Max. output power P <sub>O</sub>	155 mW, linear characteristic
Internal inductance L <sub>I</sub>	Negligibly low
Internal capacitance C <sub>I</sub>	Negligibly low

**Technical data**

Type designation	SC11EX-3G
ID	100000550
Supply voltage	24 VDC
Power consumption	2.4 W
Galvanic isolation	Complete galvanic isolation acc to IEC/EN 60079-11 (bus-bus and bus-power supply), rated voltage 250 V
<b>RS485 (non Ex)</b>	
Signal level U <sub>nominal</sub>	5.0 V (acc. to RS485-Standard, PNO)
Baud rate	9.6 kbps...1.5 Mbps
<b>RS485-IS (Ex)</b>	
Signal level U <sub>nominal</sub>	3.3 V (acc. to RS485-IS-Standard, PNO)
Baud rate	9.6 kbps...1.5 Mbps
Number of devices	31
Relative humidity	≤ 93 % at 40 °C acc. to EN 60068-2-78
Protection class	IP20
EMC	Acc. to. EN 61326-1 Acc. to Namur NE21

ZH 快速入门指南

## 分段耦合器SC11EX-3G

## 其他文档

除了本文档之外,还可在[www.turck.com](http://www.turck.com)网站上查看以下材料:

- 数据表
- excom手册
- 合规声明(最新版本)
- 认证

## 安全须知

## 预期用途

分段耦合器SC11EX-3G将RS485标准信号转换为RS485-IS本安信号。该器件支持PROFIBUS-DP和Modbus RTU协议。RS485-IS接口符合PNO制定的PROFIBUS准则的要求。可以通过连接多个分段耦合器来实施线路冗余、系统冗余或装置冗余。本装置适合在区域2和区域22中使用。任何其他用途都不属于预期用途。图尔克公司不会对由此导致的任何损坏承担责任。

## 一般安全须知

- 本装置的组装、安装、操作、配置和维护只能由经过专业培训的人员执行。
- 该装置符合工业区的EMC要求。在住宅区使用时,请采取相应的措施以防止射频干扰。
- 仅当技术数据支持该装置联用时,才能组合使用该装置。
- 确保在系统中有足够的等电位联结节点。通过壳体上的M5 × 1螺栓将设备连接至等电位联结节点。
- 仅在允许的工作条件和环境条件中使用本装置。

## 防爆说明

- 请遵守国内和国际防爆法规。
- 将本装置应用到防爆电路时,用户还必须具有防爆知识(IEC/EN 60079-14等)。
- 只可在允许的工作条件 and 环境条件中使用该装置(参见认证数据和防爆认证要求)。
- 切勿将以前曾在非本安电路中工作过的装置连接至本安电路。
- 为本安电路中的电缆和端子贴上标签。如果贴彩色标签,请使用浅蓝色标签。单独铺设非本安型电路的线缆,或对其进行相应的隔离处理(IEC/EN 60079-14)。
- 只能在断电的情况下连接和断开非本安型电路。

在危险2区和22区中使用该装置:

- 将该装置安装在经过单独认证(符合IEC/EN 60079-0标准)且防护等级至少为IP54(依据IEC/EN 60529标准)的外壳中。

## 产品描述

## 装置概览

见图1:装置视图,图2:尺寸

## 功能展示和工作模式

分段耦合器提供以下接口:

- RS485标准接口
- RS485-IS本安接口

发送PROFIBUS报文时,数据报文的信号幅值、边沿陡度以及位宽将在耦合器中再生。带有有效起始分界符的PROFIBUS-DP报文将被转发,否则将被丢弃。对于Modbus RTU和以字节为导向的串行数据流,会处理位宽(字节刷新)和信号幅值。线路故障(断线和短路)不会在分段之间传输。因此,所有的分段都可以独立于其他分段无故障运行。最多可将31个总线节点连接至耦合器。

## 安装

**⚠ 危险**

有爆炸危险的环境  
火花点火可导致爆炸危险  
当用于防爆区域时:

- ▶ 仅允许在无爆炸隐患的环境中安装和连接电源。

- ▶ 将装置安装在DIN导轨(TH35)上。
- ▶ 相邻装置的侧面之间保持≥ 5 mm的间隙。
- ▶ 用等电位联结方式连接装置上的M5 × 1螺栓(“外壳接地”)。

## 连接

## 将PROFIBUS屏蔽层接地

用户可以根据预期的干扰和安装情况,在电容式接地和直接(硬)接地之间进行选择。屏蔽层在出厂时已通过电容连接方式接到等电位联结节点(“屏蔽点”)。这是通过在螺钉头(在外壳上标记为“屏蔽点a”和“屏蔽点b”)和外壳之间放置绝缘垫圈来实现的。

- ▶ 选择直接接地:拧下螺钉,拆下绝缘垫圈,然后拧回螺钉。
- ▶ 根据接地概念的不同,将M5 × 1螺栓(“屏蔽点”)单独与FE或PE导轨连接。

## 将分段耦合器连接至现场总线

现场总线接口设计为9针SUB-D母头接插件。

- ▶ 按照“接线图”连接该装置。

## 连接总线节点

9针SUB-D母头接插件通过RS485-IS接口连接总线节点。

- ▶ 按照“Wiring diagram”,使用获准用于防爆应用的PROFIBUS SUB-D接插件(例如D9T-RS485IS,订货号为6890944),将该装置连接至现场总线。

## 连接电源

该装置配有一个2针Ex e螺旋接线柱,用于连接电源。

- ▶ 按照“Wiring diagram”连接该装置。电缆的最大横截面为2.5 mm<sup>2</sup>。

## 打开终端电阻器

▶ 必须在各分段的起始点和结束点打开终端电阻器。本安端的终端电阻器符合由PROFIBUS用户组织(PNO)制定的“RS485-IS”准则(文档编号为2.262)。

KO 빠른 시작 가이드

## 세그먼트 커플러 SC11EX-3G

## 추가 문서

이 문서 외에도 다음과 같은 자료를 인터넷([www.turck.com](http://www.turck.com))에서 확인할 수 있습니다.

- 데이터 시트
- excom 매뉴얼
- 적합성 선언(현재 버전)
- 인증

## 사용자 안전 정보

## 사용 목적

세그먼트 커플러 SC11EX-3G는 표준 RS485 신호를 본질 안전 RS485-IS 신호로 변환합니다. 이 장치는 PROFIBUS-DP 및 Modbus RTU 프로토콜을 지원합니다. RS485-IS 인터페이스는 PNO에서 설정한 PROFIBUS 지침의 요구 사항을 준수합니다. 여러 세그먼트 커플러를 연결하여 라인, 시스템 또는 장치 이중화가 구현될 수 있습니다. 이 장치는 2종 및 22종 위험 지역에서 사용하기에 적합합니다. 기타 다른 방식으로 사용하는 것은 사용 목적을 따르지 않는 것입니다. 터크는 그로 인한 손상에 대해 어떠한 책임도 지지 않습니다.

## 일반 안전 지침

- 전문적인 훈련을 받은 숙련된 인력만이 이 장치의 설치, 장착, 작동, 구성 및 유지보수를 수행해야 합니다.
- 이 장치는 산업 분야의 EMC 요구 사항을 충족합니다. 주거 지역에서 사용하는 경우 무선 주파수 간섭을 방지하기 위한 조치를 취하십시오.
- 기술 데이터에 따라 공동 사용에 적합한 것으로 표시된 장치만 결합하십시오.
- 시스템에 충분한 등전위 본딩이 있는지 확인하십시오. 하우징의 M5 × 1 볼트를 통해 등전위 본드에 장치를 연결하십시오.
- 허용된 작동 및 주변 조건 내에서만 장치를 사용하십시오.

## 폭발 방지 참고 사항

- 폭발 방지에 관한 국내 및 국제 규정을 준수하십시오.
- 폭발 위험 회로에서 이 장치를 사용할 경우 사용자는 폭발 방지(KS C IEC 60079-14 등)에 대한 지식이 있어야 합니다.
- 허용되는 작동 및 주변 조건에서만 장치를 사용하십시오(인증 데이터 및 방폭 인증 요구 사항 참조).
- 이전에 비본질 안전 회로에서 작동했다면 절대로 장치를 본질 안전 회로에 연결하지 마십시오.
- 본질 안전 회로가 있는 케이블과 터미널에 라벨을 부착하십시오. 색상으로 라벨을 지정하는 경우에는 하늘색을 사용하십시오. 본질적으로 안전하지 않은 회로의 케이블은 별도로 배치하거나 IEC/EN 60079-14 규격에 따라 절연하십시오.
- 전압이 가해지지 않은 경우에만 비본질 안전 회로를 연결 및 분리하십시오.

2종 및 22종 위험 지역 내 장치 사용:

- IEC/EN 60529에 따라 보호 등급이 IP54 이상인 IEC/EN 60079-0 규격의 별도 승인 외함에 장치를 설치하십시오.

## 제품 설명

## 장치 개요

그림 1: 장치 도면, 그림 2: 치수 참조

## 기능 및 작동 모드

세그먼트 커플러는 다음과 같은 인터페이스와 함께 제공됩니다.

- 표준 RS485 인터페이스
  - 본질 안전 RS485-IS 인터페이스
- PROFIBUS 텔레그램이 전송될 때 데이터 텔레그램의 신호 진폭, 엣지 경사도 및 비트 폭이 커플러에서 재생성됩니다. 유효한 시작 구분 기호가 있는 PROFIBUS-DP 텔레그램이 전달되며, 그렇지 않은 경우 텔레그램이 무시됩니다. Modbus RTU 및 바이트 지향 시리얼 데이터 흐름의 경우, 비트 폭(바이트 새 로 고침) 및 신호 진폭이 처리됩니다. 라인 고장(와이어 단선 및 단락)은 세그먼트 간에 전송되지 않습니다. 따라서 모든 세그먼트는 상호 독립적으로 아무 문제 없이 작동할 수 있습니다. 최대 31개의 버스 노드가 커플러에 연결될 수 있습니다.

## 설치

**⚠ 위험**

폭발 위험이 있는 환경  
스파크 접점에 따른 폭발 위험  
폭발 위험 지역에서 사용할 때:

- ▶ 폭발 위험이 없는 환경에서만 파워 서플라이를 설치 및 연결하십시오.
- ▶ DIN 레일(TH35)에 장치를 설치하십시오.
- ▶ 인접 장치의 측면에서 5 mm 이상 간격을 유지하십시오.
- ▶ 등전위 본드가 있는 장치에 M5 × 1 볼트(“케이스 접지”)를 연결하십시오.

## 연결

## PROFIBUS 실드 접지

사용자는 예상되는 간섭 및 설치에 따라 정전 용량 접지와 직접(하드) 접지 중에서 선택할 수 있습니다. 실드는 공장 출하 시 등전위 본드(“실드”)에 용량적으로 배치됩니다. 이 작업은 나사 헤드(하우징에 “실드 a”와 “실드 b”로 표시)와 하우징 사이에 절연 와셔를 배치하여 수행됩니다.

- ▶ 직접 접지 선택: 나사를 풀고 절연 와셔를 제거한 후 나사를 교체합니다.
- ▶ 접지 개념에 따라 M5 × 1 볼트(“실드”)를 별도로 FE 또는 PE 레일에 연결하십시오.

## 필드버스에 세그먼트 커플러 연결

필드버스 인터페이스는 9핀 SUB-D female 커넥터로 설계되었습니다.

- ▶ “Wiring diagram”에 따라 장치를 연결하십시오.

## 버스 노드 연결

RS485-IS 인터페이스를 통한 버스 노드 연결에 9핀 SUB-D female 커넥터를 사용할 수 있습니다.

- ▶ 폭발 방지 애플리케이션용으로 승인된 PROFIBUS SUB-D 커넥터를 사용하여 “Wiring diagram”에 따라 장치를 필드 버스에 연결하십시오(예: D9T-RS485IS, ID 6890944).

## 파워 서플라이 연결

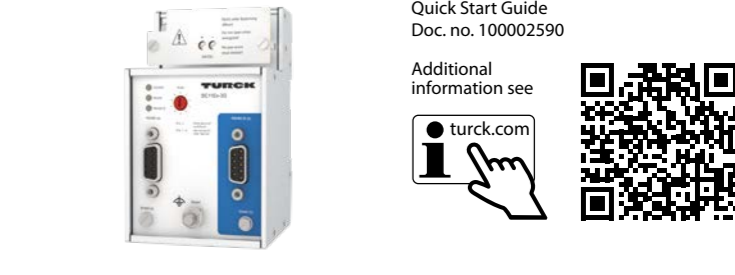
이 장치에는 파워 서플라이 연결을 위한 2핀 Ex e 나사 터미널이 제공됩니다.

- ▶ “Wiring diagram”에 따라 장치를 연결하십시오. 최대 케이 블 단면적은 2.5 mm<sup>2</sup>입니다.

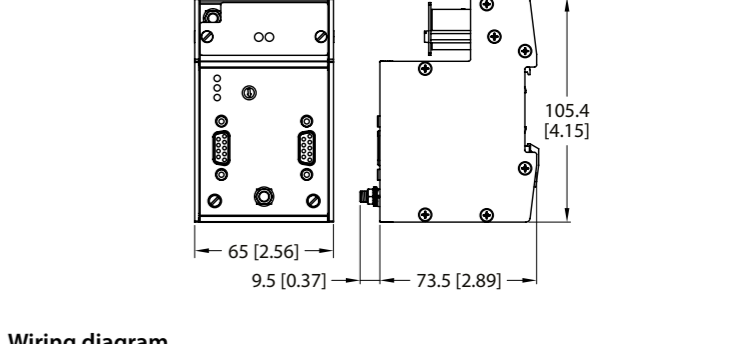
## 종단 저항 커기

▶ 종단 저항은 각 세그먼트의 시작과 끝에서 켜져야 합니다. 본질 안전 엔드의 종단 저항은 PROFIBUS 사용자 조직(PNO)에서 설정한 “RS485-IS” 지침(문서 번호 2.262)을 충족합니다.

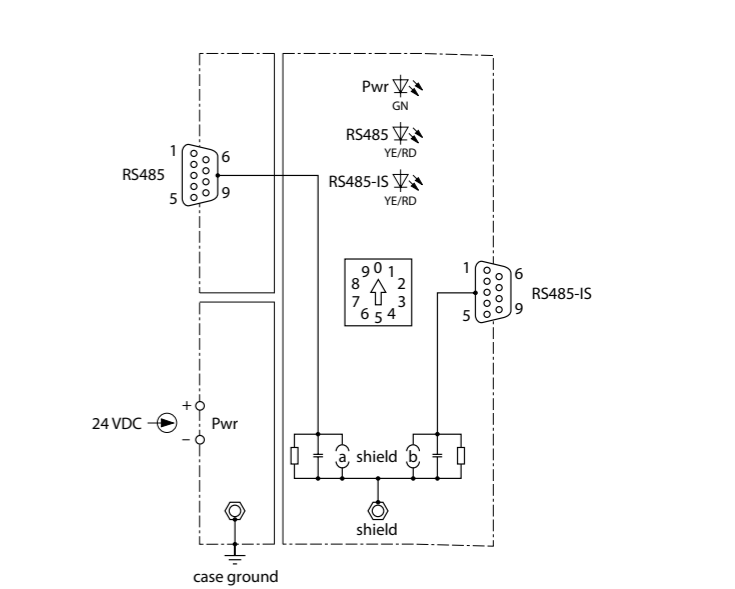
①



②



## Wiring diagram



Pin	Pin assignment	Wiring diagram
Pin 1	n. c.	5
Pin 2	n. c.	4
Pin 3	RxD/TxD-P	3
Pin 4	n. c.	2
Pin 5	DGND	1
Pin 6	VP	9
Pin 7	n. c.	8
Pin 8	RxD/TxD-N	7
Pin 9	n. c.	6
Case	PE/FE	

## ZH 快速入门指南

### 调试

连接电缆并接通电源后, 装置将自动运行。

### 运行

LED	指示	含义
POWER	绿灯	装置正常运行
RS485/RS485-IS	红灯	通信错误
	黄色	总线通信激活
	呈黄色闪烁	正在搜索传输速率
	熄灭	没有通信

### 设置

使用PROFIBUS DP时, 设备会自动检测传输速率。对于其他字节导向型串行数据流, 必须通过一个旋转开关调整传输速率。

旋转开关位置	传输速率
0	自动检测
1	未分配
2	未分配
3	9.60 kbps
4	19.20 kbps
5	38.40 kbps
6	57.60 kbps
7	115.20 kbps
8	500 kbps
9	1.50 Mbps

字符格式为:

1个起始位/8个数据位/偶校验/1个停止位

### 维修

用户不得维修该装置。如果出现故障, 必须停用该装置。如果要将该装置送还给图尔克公司维修, 请遵从我们的返修验收条件。

### 废弃处理

必须正确地弃置该装置, 不得混入普通生活垃圾中丢弃。

## Certification data | Technical data

### Approvals and markings

Approvals	
EPS 17 ATEX 1 167 X	II 3 (2) G Ex ec ic [Ib Gb] IIC T4 Gc II (2) D [Ex ib Db] IIIC
CML 21 UKEX1623X	
IECEx EPS 17.0085 X	Ex ec ic [Ib Gb] IIC T4 Gc [Ex ib Db] IIIC
	인증서발급기관명: 한국산업안전보건공단 안전인증번호: 21-AV4BO-0218X, 21-AV4BO-0219X 안전한 사용을 위한 조건: 발급된 인증서 참조
FM21US0117X FM21CA0084X	Class I Division 2, Groups A, B, C, D; T4 Class I, Zone 2, AEx ec ic [Ib Gb] IIC T4 Gc; Entity - IS-2.500 Zone 21 [AEx ib Db] IIIC
Ambient temperature T <sub>amb</sub> : -40...+70 °C	

	인증서발급기관명: 한국산업안전보건공단 안전인증번호: 21-AV4BO-0218X, 21-AV4BO-0219X 안전한 사용을 위한 조건: 발급된 인증서 참조
FM21US0117X FM21CA0084X	Class I Division 2, Groups A, B, C, D; T4 Class I, Zone 2, AEx ec ic [Ib Gb] IIC T4 Gc; Entity - IS-2.500 Zone 21 [AEx ib Db] IIIC
Ambient temperature T <sub>amb</sub> : -40...+70 °C	

## KO 빠른 시작 가이드

### 시운전

케이블이 연결되고 파워 서플라이가 켜지면 장치가 자동으로 작동 가능해집니다.

### 작동

LED	표시	의미
POWER	녹색	장치 작동 가능
RS485/RS485-IS	적색	통신 오류
	황색	버스 통신 활성화
	황색 점멸	전송 속도 검색
	꺼짐	통신 없음

### 설정

PROFIBUS DP를 사용할 때 장치에서 전송 속도를 자동으로 감지합니다. 다른 바이트 지향 시리얼 데이터 스트림의 경우 로터리 스위치를 통해 전송 속도를 조정해야 합니다.

로터리 스위치 위치	전송 속도
0	자동 감지
1	할당되지 않음
2	할당되지 않음
3	9.60 kbps
4	19.20 kbps
5	38.40 kbps
6	57.60 kbps
7	115.20 kbps
8	500 kbps
9	1.50 Mbps

문자 형식은 다음과 같습니다.

1개 시작 비트/8개 데이터 비트/짝수 패리티/1개 정지 비트

### 수리

이 장치는 사용자가 수리해서는 안 됩니다. 이 장치에 고장이 발생한 경우 설치 해체해야 합니다. 장치를 터크에 반품할 경우, 반품 승인 조건을 준수하십시오.

### 폐기

이 장치는 올바른 방법으로 폐기해야 하며 일반적인 가정 폐기물과 함께 배출해서는 안 됩니다.

Type designation	SC11EX-3G
ID	100000550
Supply voltage	24 VDC
Power consumption	2.4 W
Galvanic isolation	Complete galvanic isolation acc to IEC/EN 60079-11 (bus-bus and bus-power supply), rated voltage 250 V
<b>RS485 (non Ex)</b>	
Signal level U <sub>nominal</sub>	5.0 V (acc. to RS485-Standard, PNO)
Baud rate	9.6 kbps...1.5 Mbps
<b>RS485-IS (Ex)</b>	
Signal level U <sub>nominal</sub>	3.3 V (acc. to RS485-IS-Standard, PNO)
Baud rate	9.6 kbps...1.5 Mbps
Number of devices	31
Relative humidity	≤ 93 % at 40 °C acc. to EN 60068-2-78
Protection class	IP20
EMC	Acc. to. EN 61326-1 Acc. to Namur NE21

## Declarations of conformity

<b>EU-Konformitätserklärung Nr. UK Declaration of Conformity No. 5305-3M</b> EU Declaration of Conformity No.:		
Wir / We	Hans Turck GmbH & Co. KG Witzlebenstr. 7, 45472 Mülheim an der Ruhr, Germany	
erklären in alleiniger Verantwortung, dass das Produkt declare under our sole responsibility that the product		
<b>Segmentkoppler / Segment Coupler</b>		
für das / for the:	Remote – I/O – System excom	
Typ / Type:	<b>SC11Ex-3G</b>	
ID:	<b>100000550</b>	
Ex-Kennzeichnung / Ex-marking:	Gas / gas  II 3 (2) G Ex ec ic [Ib Gb] IIC T4 Gc Staub / dust  II (2) D [Ex ib Db] IIIC	
auf die in der von uns in Verkehr gebrachten Ausführung sich diese Erklärung bezieht, den Anforderungen der folgenden EU-Richtlinien und den Anforderungen der folgenden UK- Statutory Instruments durch Einhaltung der folgenden harmonisierten / designierten Normen genügen: to which this declaration relates in the configuration placed on the market by us, are in conformity with the requirements of the following EU-directives and the requirements of the following UK Statutory Instruments by compliance with the following harmonized / designated standards:		
<b>Richtlinie / Directive EMC</b> <b>EMC SI* and part. sign. changes**</b> EN 61326-1:2013	<b>2014 / 30 / EU</b> <b>SI 2016/1091</b>	<b>26. Feb. 2014</b>
<b>Richtlinie / Directive ATEX</b> <b>ATEX SI* and part. sign. changes**</b> EN IEC 60079-0:2018	<b>2014 / 34 / EU</b> <b>SI 2016/1107</b> EN 60079-7:2015 / A1:2018	<b>26. Feb. 2014</b> EN 60079-11:2012
<b>Richtlinie / Directive RoHS</b> <b>RoHS SI* and part. sign. changes</b> EN IEC 63000:2018	<b>2011 / 65 / EU</b> <b>SI 2012/3032</b>	<b>08. Jun. 2011</b> <b>and SI 2019/188</b>
*: SI = Statutory Instrument	**: SI 2019/696, SI 2020/1460	
Weitere Normen, Bemerkungen / additional standards, remarks:	Die aufgeführten benannten Stellen haben die Konformitätsbewertung durchgeführt und Zertifikate ausgestellt: The listed notified bodies have carried out conformity assessment and issued certificates:	
<b>EU-Baumusterprüfbescheinigung (Modul B)</b> / EU-type examination certificate (module B): ausgestellt von / issued by:	<b>EPS 17 ATEX 1 167 X</b> Bureau Veritas Product Services Germany GmbH, Kenn-Nr. / ID no.: 2004 Businesspark A96, 86842 Türkheim, Germany	
<b>Zertifizierung des QS-Systems (Modul D)</b> / Certification of the QS-system (module D): ausgestellt von / issued by:	Physikalisch Technische Bundesanstalt, Kenn-Nr. / ID no.: 0102 Bundesallee 100, 38116 Braunschweig, Germany	
<b>UK-Baumusterprüfbescheinigung (Modul B)</b> / UK-type examination certificate (module B): ausgestellt von / issued by:	<b>CML 21 UKEX 1623X</b> Eurofins E&E CML Limited, Kenn-Nr. / ID no.: 2503, New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom	
<b>UKCA QS- &amp; UKEX Produktzertifizierung</b> / UKCA Quality Assurance Notification & UKEX product certification: ausgestellt von / issued by:	Eurofins E&E CML Limited, Kenn-Nr. / ID no.: 2503, New Port Road, Ellesmere Port, CH65 4LZ, United Kingdom	
Mülheim, den 14.06.2022		
	i.V. O. Barabas, Zulassungsbeauftragter / Certification Representative	
Ort und Datum der Ausstellung / Place and date of issue	Name, Funktion und Unterschrift des Befugten / Name, function and signature of authorized person	
FM 7.3-12		09.11.21