

Detektierender Laserscanner TiM3xx

Montage, Elektroinstallation, Lizenztexte



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1 Zu diesem Dokument

In diesem Dokument sind ergänzende Informationen zur **Montage** und **Elektroinstallation** des TiM3xx sowie **Lizenztex**te zusammengefaßt. Sie richten sich an ausreichend qualifiziertes Personal für die Installation und Inbetriebnahme.

Hinweise zur Inbetriebnahme, Konfiguration und Wartung enthält die Betriebsanleitung des TiM3xx.

Informationen zum TiM3xx finden Sie auch im Internet auf der Produktseite des TiM3xx unter www.mysick.com/de/tim3xx:

- Technische Daten im Online-Datenblatt (PDF)
- Maßzeichnung und 3D-CAD-Maßmodelle in verschiedenen elektronischen Formaten
- Reichweitendiagramm (PDF)
- EG-Konformitätserklärung (PDF)
- Konfigurationssoftware SOPAS-ET mit Online-Hilfe
- Produktinformation mit Übersicht des lieferbaren Zubehörs (PDF)
- Betriebsanleitung TiM3xx (PDF), ggf. in weiteren Sprachen
- Diese Technische Information (PDF)

Unterstützung erhalten Sie auch bei Ihrem Vertriebspartner unter www.sick.com/weltweit.

Verwendete Symbole

Einige Informationen in dieser Dokumentation sind wie folgt hervorgehoben, um den schnellen Zugriff auf diese Informationen zu erleichtern.

HINWEIS

Hinweis!

Ein Hinweis weist auf potenzielle Beschädigungsgefahren oder Funktionsbeeinträchtigungen des TiM3xx oder der daran angeschlossenen Geräte hin.



WARNUNG

Warnhinweis!

Ein Warnhinweis weist auf konkrete oder potentielle Gefahren für die körperliche Unversehrtheit des Anwenders hin. Er soll den Anwender vor Unfällen schützen.

Das Sicherheitszeichen links neben dem Warnhinweis weist auf die Art der Unfallgefahr, z.B. aufgrund von Elektrizität, hin. Die ansteigenden Warnstufen (VORSICHT, WARNUNG, GEFAHR) weisen auf die Schwere der möglichen Gefahr hin.

- Warnhinweise immer aufmerksam lesen und sorgfältig befolgen.

Wichtig

Dieser wichtige Hinweis informiert über Besonderheiten.



Dieses Symbol verweist auf ergänzende technische Dokumentationen.

Zu Ihrer Sicherheit

- Lesen Sie die Hinweise zur Montage und Elektroinstallation vor Durchführung der Arbeiten
- Lesen Sie ergänzend die Betriebsanleitung des TiM3xx um mit dem Gerät und seinen Funktionen vertraut zu werden.
- Das Gerät nur in zulässigen Umgebungsbedingungen (z.B. Temperatur, Erdpotential) einsetzen. Ggf. sind behördliche und gesetzliche Vorschriften beim Betrieb einzuhalten.
- Das verschraubte Gehäuse des TiM3xx nicht öffnen, da sonst ein Gewährleistungsanspruch gegenüber der SICK AG erlischt.
- Reparaturen am TiM3xx dürfen nur von ausgebildetem und autorisiertem Servicepersonal der SICK AG durchgeführt werden.
- Der TiM3xx ist keine Einrichtung für Personenschutz im Sinne der jeweils gültigen Sicherheitsnormen für Maschinen.

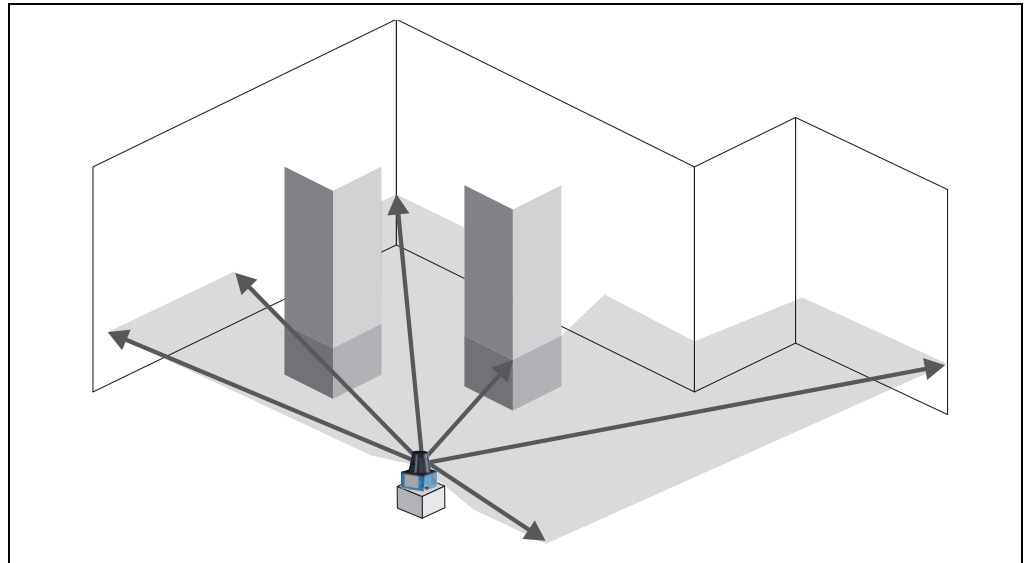
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2 Arbeitsweise des TiM3xx

2.1 Messprinzip

Der TiM3xx ist ein opto-elektronischer Laserscanner, der mit Hilfe von Laserstrahlen berührungslos den Umriss seiner Umgebung in einer Ebene abtastet. Der TiM3xx vermisst seine Umgebung in zweidimensionalen Polarkoordinaten, bezogen auf seinen Messursprung. Dieser ist auf der Haube in der Mitte durch einen runden Vertiefung gekennzeichnet. Trifft ein Laserstrahl auf ein Objekt, wird die Position in Form von Strecke und Richtung ermittelt.



Die Abtastung findet in einem Sektor von 270° statt. Die Reichweite beträgt beim TiM3xx maximal 4 m auf helle, natürliche Oberflächen mit einer Objektreflexion $> 50\%$ (z.B. eine weiße Wand).

2.2 Entfernungsmessung

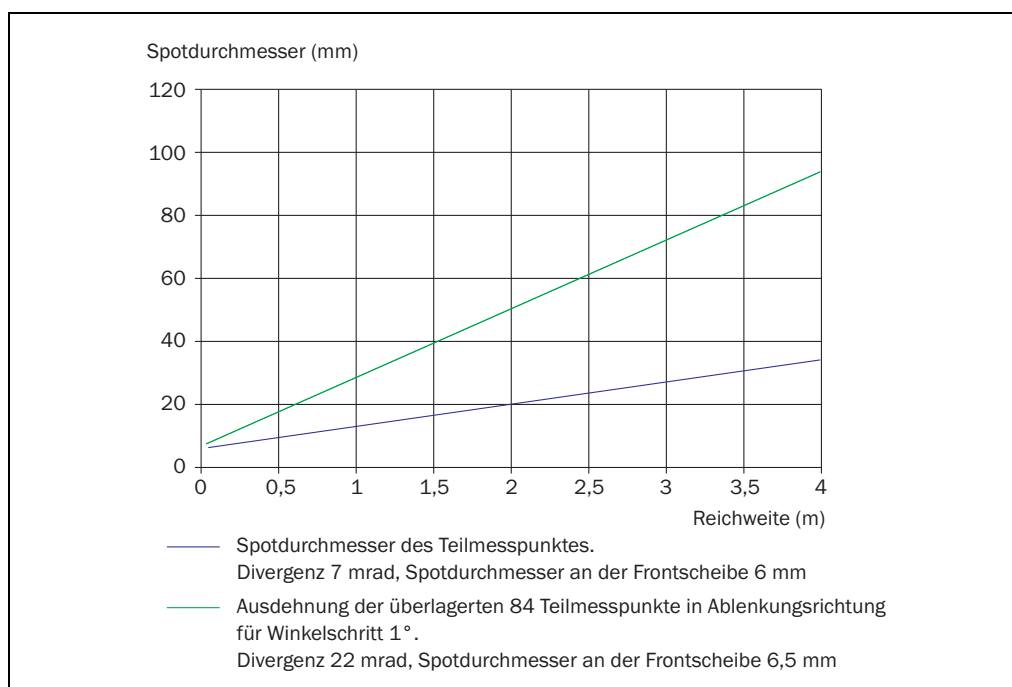
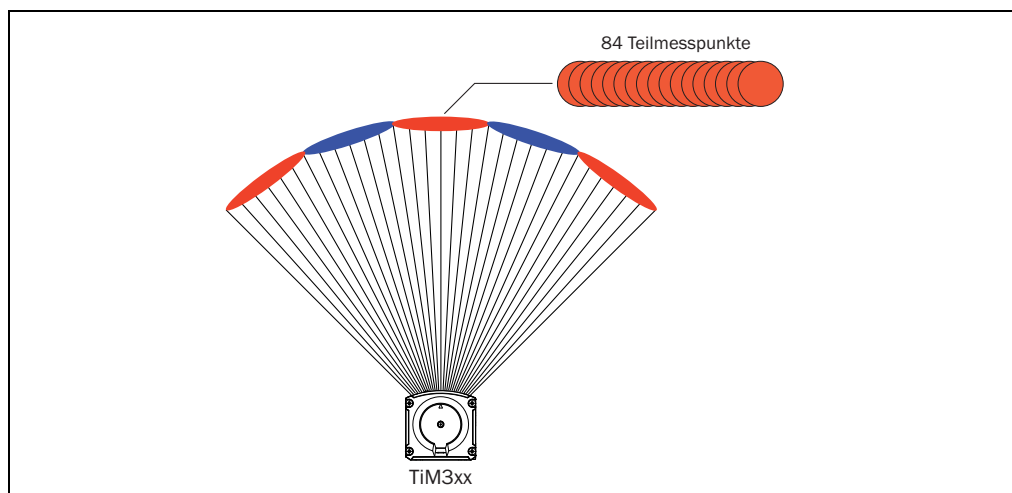
Der TiM3xx sendet mit einer Laserdiode gepulste Laserstrahlen aus. Trifft ein solcher Laserpuls auf ein Objekt oder eine Person, wird er an dessen Oberfläche reflektiert. Die Reflexion wird im Empfänger des TiM3xx von einer Fotodiode registriert. Der TiM3xx nutzt die SICK-eigene HDDM-Technologie (**H**igh **D**efinition **D**istance **M**easurement). Bei diesem Meßverfahren wird ein Messwert durch die Mittelwertbildung mehrerer Einzelpulse gebildet. Aus der Laufzeit, die das Licht von der Aussendung des Strahls bis zum Empfang der Reflexion benötigt, berechnet der TiM3xx die Entfernung zum Objekt. Dieses Prinzip der „Pulslaufzeitmessung“ wird in ähnlicher Form von Radarsystemen benutzt.

2.3 Richtungsmessung

Mit einem rotierenden Spiegel lenkt der TiM3xx die ausgesendeten Laserstrahlen ab und tastet damit die Umgebung kreisförmig ab. Die Messungen werden intern von einem Winkelskodierer in regelmäßigen Winkelschritten ausgelöst.

Der TiM3xx scannt mit einer Scanfrequenz von 15 Hz. Das Messverfahren nutzt die Mittelwertbildung aus mehreren Pulsen zur Bestimmung von Einzelmesswerten.

Bei einer Winkelauflösung von 1° setzt sich ein Messpunkt aus der Mittelung von 84 Messungen zusammen. Die Spotgeometrie der Teilmesspunkte ist nahezu rund, wobei sich ein Messpunkt durch die Überlagerung als schmales Rechteck ausprägt.



3 Montage

3.1 Lieferumfang

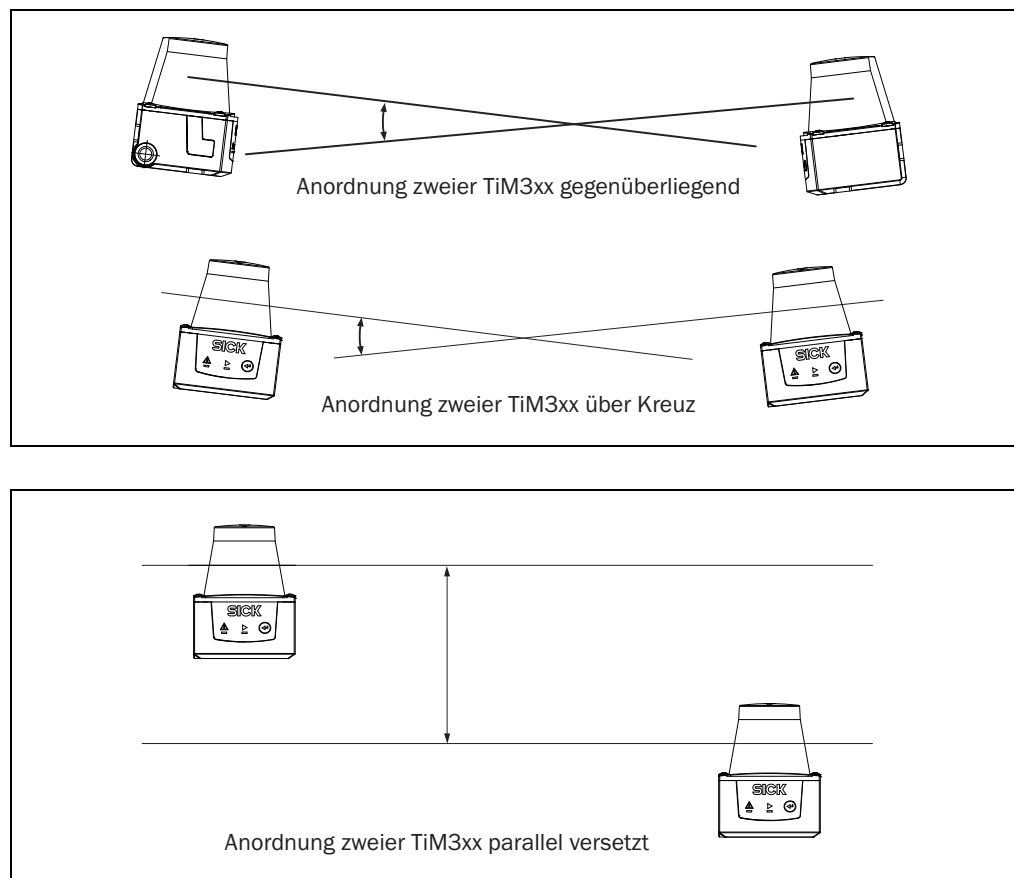
Stück	Komponente	Bemerkung
1	Laserscanner TiM3xx	In bestellter Ausführung
1	Befestigungsatz 1	2 Befestigungslaschen, 2 Schrauben M3 x 4 mm
1	DVD „Manuals & Software Auto Ident“ (Nr. 2039442)	–
1	Betriebsanleitung TiM3xx	Gedruckt in Englisch und Deutsch, ggf. in weiteren Sprachen als PDF auf der DVD

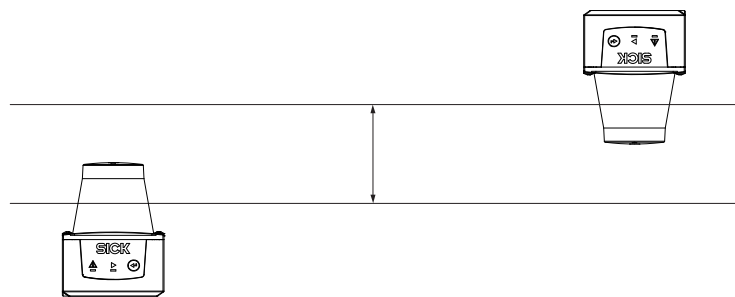
3.2 Hinweise zur Montage

- Der TiM3xx kann, vom Anwendungszweck abhängig, in beliebiger Lage montiert werden.
- Den TiM3xx möglichst erschütterungs- und schwingungsfrei befestigen.
- Den TiM3xx so montieren, dass er keiner direkten Sonnenbestrahlung (Fenster, Oberlicht) oder anderen Wärmequellen ausgesetzt ist. Damit wird ein unzulässiger Temperaturanstieg im Inneren des Geräts verhindert.

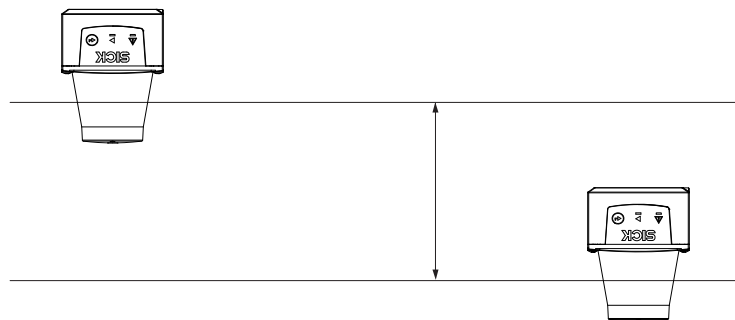
Verwendung mehrerer TiM3xx

Der TiM3xx ist so konstruiert, dass die gegenseitige Beeinflussung gleicher Sensortypen sehr unwahrscheinlich ist. Um auch geringste Einflüsse auf die Messgenauigkeit auszuschließen, empfehlen wir, die TiM3xx wie in den folgenden Beispielen zu montieren.

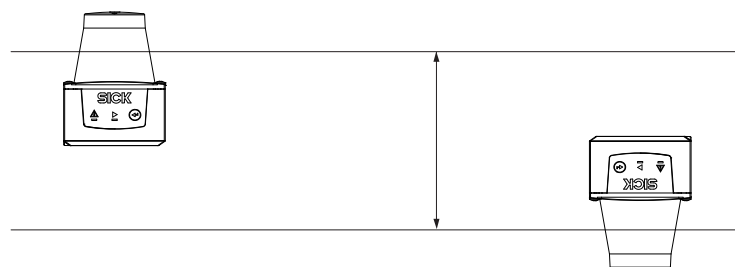




Anordnung zweier TiM3xx parallel versetzt, einer über Kopf



Anordnung zweier TiM3xx über Kopf, parallel versetzt

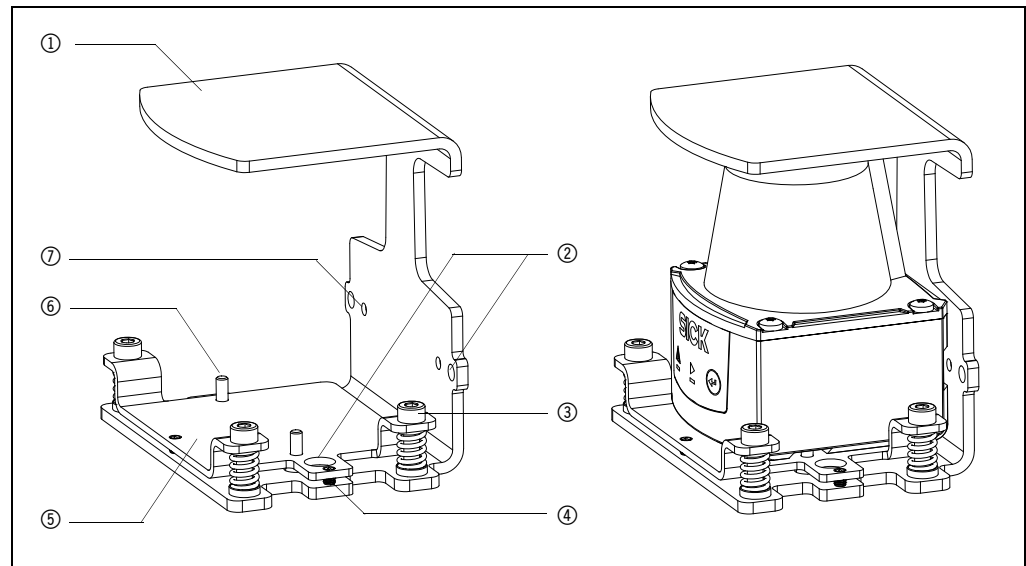


Anordnung zweier TiM3xx parallel versetzt, einer über Kopf

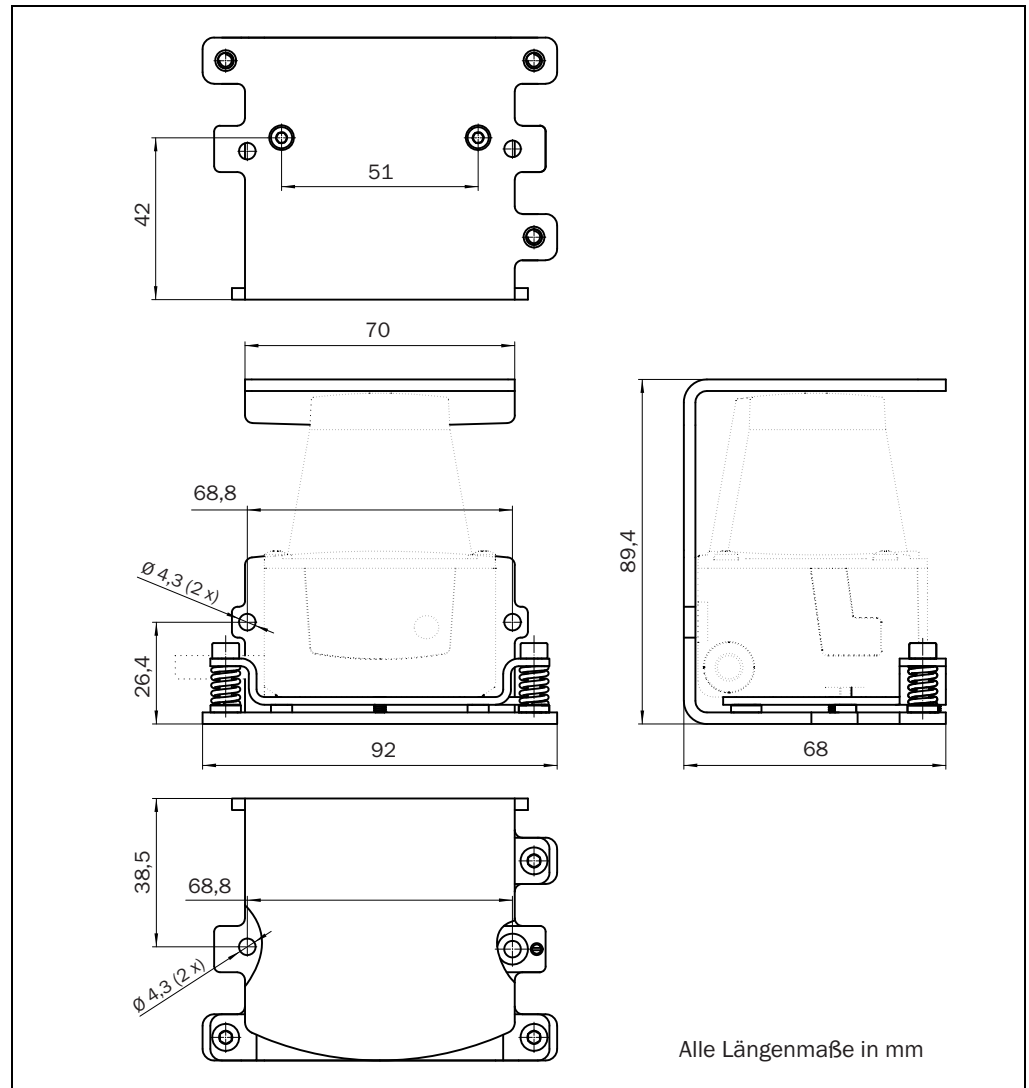
3.3 Optionales Zubehör

3.3.1 Befestigungssatz 2 (Artikel-Nr. 2061776) am TiM3xx montieren

Der Befestigungssatz 2 in Bügelform dient als Halterung mit Feinjustagemöglichkeit der Scanebene sowie als Rammschutz. Der TiM3xx kann ohne die Adapterplatte auch direkt an der Halterung befestigt werden (nur Rammschutz).



- ① Haltewinkel
- ② Bohrung \varnothing 4,3 mm zur waagrechten oder senkrechten Befestigung des Haltewinkels auf einer Unterlage, 2 x 2
- ③ Zylinderkopfschraube M4 x 16 (Innensechskant) und Druckfeder zur Ausrichtung des TiM3xx, 3 x
- ④ Stiftschraube zur Arretierung der Adapterplatte nach Ausrichtung, 2 x
- ⑤ Adapterplatte
- ⑥ Zylinderkopfschraube M3 x 8 in Bohrung \varnothing 3,2 mm zur Befestigung des TiM3xx an der Adapterplatte, 2 x
- ⑦ Bohrung \varnothing 3,2 mm zur Befestigung des TiM3xx direkt am Haltewinkel, 2 x (alternativ, ohne Justagemöglichkeit der Scanebene)



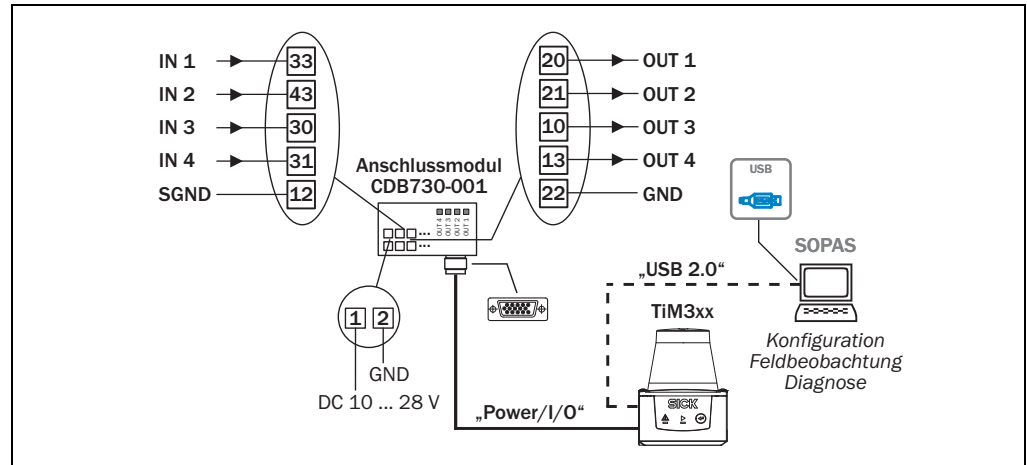
Vorgehensweise für den Anbau des TiM3xx

1. TiM3xx mit Hilfe der zwei beiliegenden Schrauben M3 x 8 an der Adapterplatte befestigen. Hierzu die Schrauben von unten durch die Bohrung im Haltewinkel und die Bohrung in der Adapterplatte einführen.
2. Scanebene des TiM3xx mit Hilfe der drei Zylinderkopfschrauben ③ ausrichten.
3. Nach der Justage die Adapterplatte mit Hilfe der beiden Stiftschrauben ④ gegen den Haltewinkel verriegeln (arretieren).

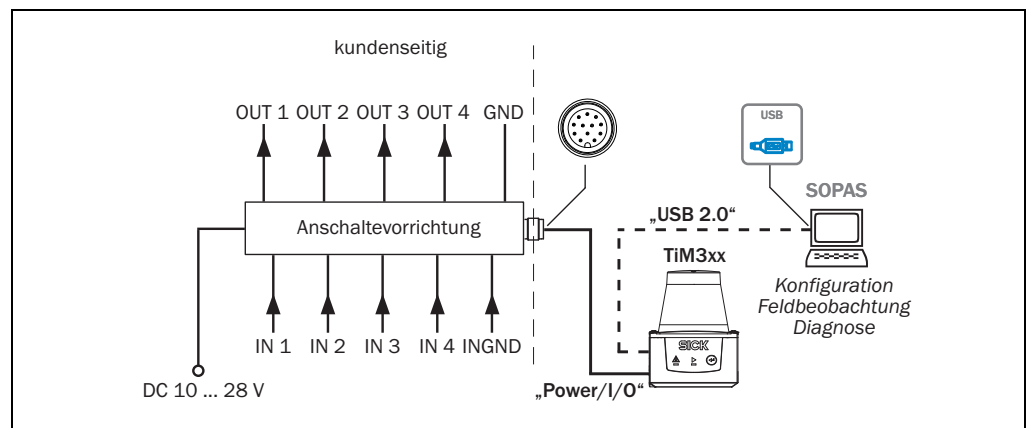
4 Elektroinstallation

4.1 Übersicht aller Schnittstellen

TiM310-1030000



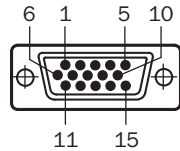
TiM310-1130000



4.2 Pin- und Aderfarbelegungen

4.2.1 TiM310-1030000

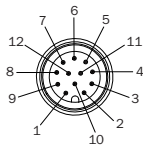
15-pol. D-Sub-HD-Leitungsstecker



Pin	Signal	Aderfarbe	Funktion
1	DC 10 ...28 V	rot	Versorgungsspannung
2	n.c.	violett	–
3	n.c.	gelb	–
4	OUT 4	rot + schwarz	Schaltausgang 4 (Index/Fehler)
5	GND	schwarz	Ground (Masse)
6	n.c.	hellblau	–
7	n.c.	dunkelblau	–
8	IN 1	türkis oder hellgrau	Schalteingang 1 (Feldsatzauswahl)
9	IN 2	grün	Schalteingang 2 (Feldsatzauswahl)
10	IN 3	grau	Schalteingang 3 (Feldsatzauswahl)
11	IN 4	rosa	Schalteingang 4 (Feldsatzauswahl)
12	OUT 1	braun	Schaltausgang 1 (Feldverletzung)
13	OUT 2	orange	Schaltausgang 2 (Feldverletzung)
14	OUT 3	weiß	Schaltausgang 3 (Feldverletzung)
15	INGND	weiß + schwarz	gemeinsame Masse aller Eingänge
–	–	metall	Schirm

4.2.2 TiM310-1130000

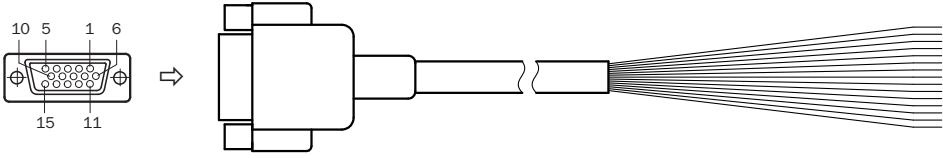
12-pol. M-12-Leitungsstecker



Pin	Signal	Aderfarbe	Funktion
1	GND	schwarz	Ground (Masse)
2	DC 10 ... 28 V	rot	Versorgungsspannung
3	IN 1	türkis/hellgrau	Schalteingang 1 (Feldsatzauswahl)
4	IN 2	grün	Schalteingang 2 (Feldsatzauswahl)
5	OUT 1	braun	Schaltausgang 1 (Feldverletzung)
6	OUT 2	orange	Schaltausgang 2 (Feldverletzung)
7	OUT 3	weiß	Schaltausgang 3 (Feldverletzung)
8	OUT 4	rot-schwarz	Schaltausgang 4 (Index/Fehler)
9	INGND	weiß-schwarz	gemeinsame Masse der Eingänge

			
Pin	Signal	Aderfarbe	Funktion
10	IN 3	grau	Schalteingang 3 (Feldsatzauswahl)
11	IN 4	rosa	Schalteingang 4 (Feldsatzauswahl)
12	n.c.	–	–
–	–	metall	Schirm

4.2.3 Adapterleitung Nr. 2043413 mit 15-pol. D-Sub-HD-Buchse und offenem Ende (optionales Zubehör) für TiM310-1030000

 <p>D-Sub-HD-Buchse Ansicht von vorne</p>			
Pin	Signal	Aderfarbe	Funktion
1	DC 10 ... 28 V	rot	Versorgungsspannung
2	n.c.	violett	–
3	n.c.	gelb	–
4	OUT 4	rot + schwarz	Schaltausgang 4 (Index/Fehler)
5	GND	schwarz	Ground (Masse)
6	n.c.	hellblau	–
7	n.c.	dunkelblau	–
8	IN 1	türkis oder hellgrau	Schalteingang 1 (Feldsatzauswahl)
9	IN 2	grün	Schalteingang 2 (Feldsatzauswahl)
10	IN 3	grau	Schalteingang 3 (Feldsatzauswahl)
11	IN 4	rosa	Schalteingang 4 (Feldsatzauswahl)
12	OUT 1	braun	Schaltausgang 1 (Feldverletzung)
13	OUT 2	orange	Schaltausgang 2 (Feldverletzung)
14	OUT 3	weiß	Schaltausgang 3 (Feldverletzung)
15	INGND	weiß + schwarz	gemeinsame Masse aller Eingänge
–	–	metall	Schirm

4.3 Hinweise zur Elektroinstallation

- Voraussetzungen für Schutzart IP 65:
Die schwarze Gummilasche (USB-Buchse) muss bündig am Gehäuse anliegen. Den TiM3xx bei geöffneter Abdeckung der USB-Buchse vor Feuchtigkeit und Staub schützen.
- Elektrische Verbindungen zwischen dem TiM3xx und anderen Geräten nur im spannungsfreien Zustand herstellen oder lösen. Ansonsten kann es zu Beschädigungen der Geräte kommen.
- Aderquerschnitte der kundenseitig zuführenden Versorgungsleitung gemäß gültiger Normen wählen.
- Wird die Versorgungsspannung für den TiM3xx nicht über das optionale Anschlussmodul CDB730-001 (Artikel-Nr. 1055981) zugeführt, den TiM3xx mit einer externen Sicherung von 0,8 A träge am Anfang der Versorgungsleitung aus Sicht der Stromversorgung absichern. Das Anschlussmodul besitzt bereits eine entsprechende Sicherung.
- Sämtliche am TiM3xx angeschlossene Stromkreise müssen als SELV- oder PELV-Stromkreise ausgeführt werden (SELV = **S**afety **E**xtra **L**ow **V**oltage = Sicherheitskleinspannung, PELV = **P**rotective **E**xtra **L**ow **V**oltage = Schutzkleinspannung).
- Versorgungsspannung für den TiM3xx erst nach Abschluss der Anschlussarbeiten und sorgfältiger Prüfung der Verdrahtungsarbeiten einschalten.

4.4 Voraussetzungen für den sicheren Betrieb des TiM3xx in einer Anlage

Der TiM3xx ist auf elektrische Sicherheit gemäß EN 60950-1 (2006-04)/A11 (2009-03) ausgelegt und geprüft.

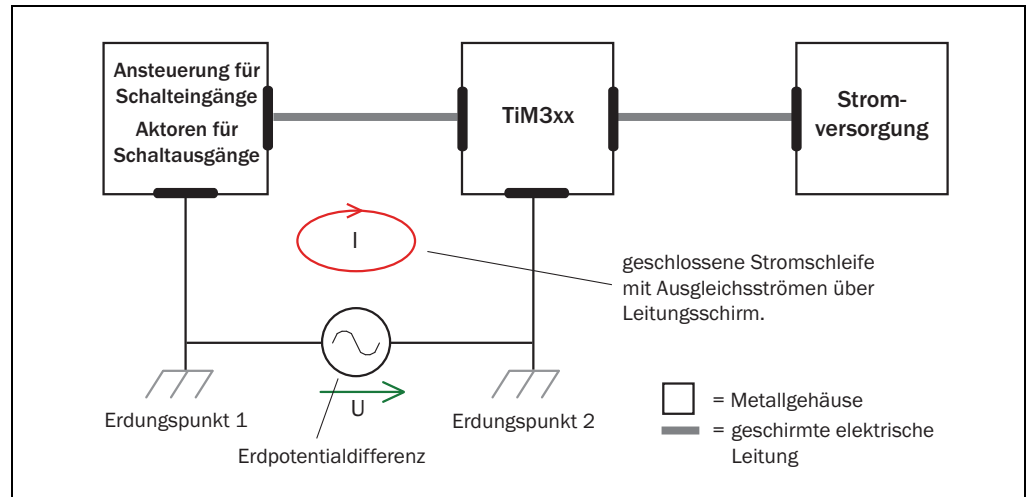
Er wird über geschirmte Leitungen an die Peripheriegeräte (Stromversorgung, Steuerung, Aktoren) angeschlossen. Der Leitungsschirm z.B. der Versorgungsleitung liegt dabei an dem Metallgehäuse des TiM3xx auf. Das Gerät kann entweder über den Leitungsschirm oder über die beiden Befestigungslaschen geerdet werden.

Falls die Peripheriegeräte Metallgehäuse besitzen und die Leitungsschirme ebenfalls an deren Gehäuse aufliegen, wird davon ausgegangen, dass alle beteiligten Geräte in der Installation das **gleiche Erdpotential** haben.

Dies erfolgt durch die Einhaltung z.B. der folgenden Bedingungen:

- Montage der Geräte auf leitende Metallflächen
- Fachgerechte Erdung der Geräte/Metallflächen in der Anlage
- Niederimpedanter und stromtragfähiger Potentialausgleich zwischen Bereichen mit unterschiedlichen Erdpotentialen, falls erforderlich.

Sind diese Bedingungen nicht erfüllt, z.B. bei Geräten innerhalb eines weit verteilten Systems über mehrere Gebäude, können Potentialausgleichströme über die Leitungsschirme zwischen den Geräten aufgrund unterschiedlicher Erdpotentiale fließen und zu Gefahren führen.



Aufgrund des unzureichenden Erdpotentialausgleichs entstehen Spannungsdifferenzen zwischen den Erdungspunkten 1 und 2. Über die geschirmten Leitungen/Metallgehäuse schließt sich die Stromschleife.



GEFAHR

Verletzungsgefahr/Beschädigungsgefahr durch elektrischen Strom!

Potentialausgleichsströme zwischen dem TiM3xx und anderen geerdeten Geräten in der Anlage können ggf. folgende Auswirkungen haben:

- Gefährliche Spannungen am Metallgehäuse z.B. des TiM3xx
- Fehlverhalten oder die Zerstörung der Geräte
- Schädigung/Zerstörung des Leitungsschirms durch Erhitzung sowie Leitungsbrände
- Wo die örtlichen, ungünstigen Gegebenheiten ein sicheres Erdungskonzept (gleiches Erdpotential in allen Erdungspunkten) nicht erfüllen, Maßnahmen gemäß den nachfolgenden Ausführungen durchführen.

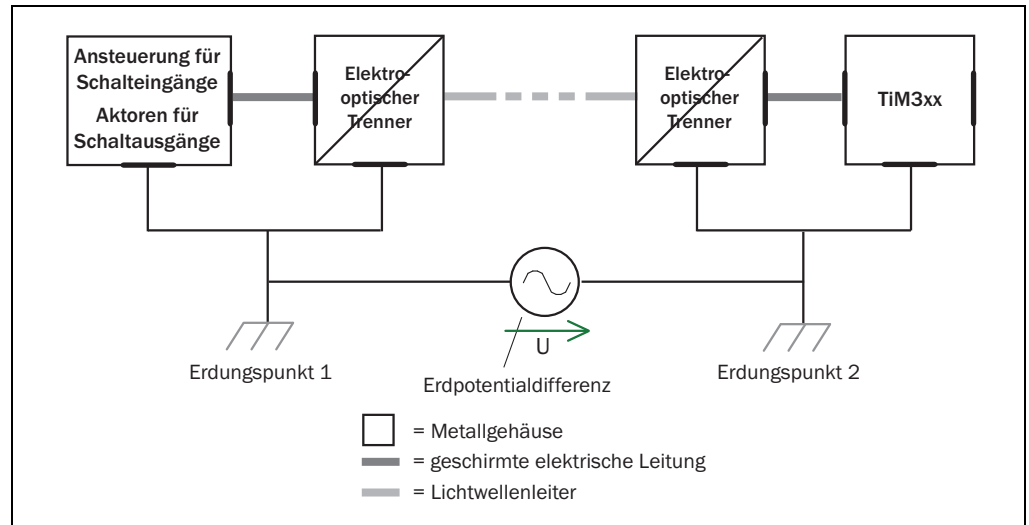
Abhilfemaßnahmen

Die vorrangige Lösung für das Vermeiden von Potentialausgleichsströmen auf den Leitungsschirmen ist die Sicherstellung eines niederimpedanten und stromtragfähigen Potentialausgleichs. Ist dieser nicht realisierbar, dienen die folgenden beiden Lösungsansätze als Vorschlag.

Wichtig Es wird ausdrücklich davon abgeraten, die Leitungsschirme aufzutrennen. Mit dieser Maßnahme kann die Einhaltung der EMV-Grenzwerte der Geräte nicht mehr gewährleistet werden.

a) Massnahmen bei räumlich weitverteilten Systeminstallationen

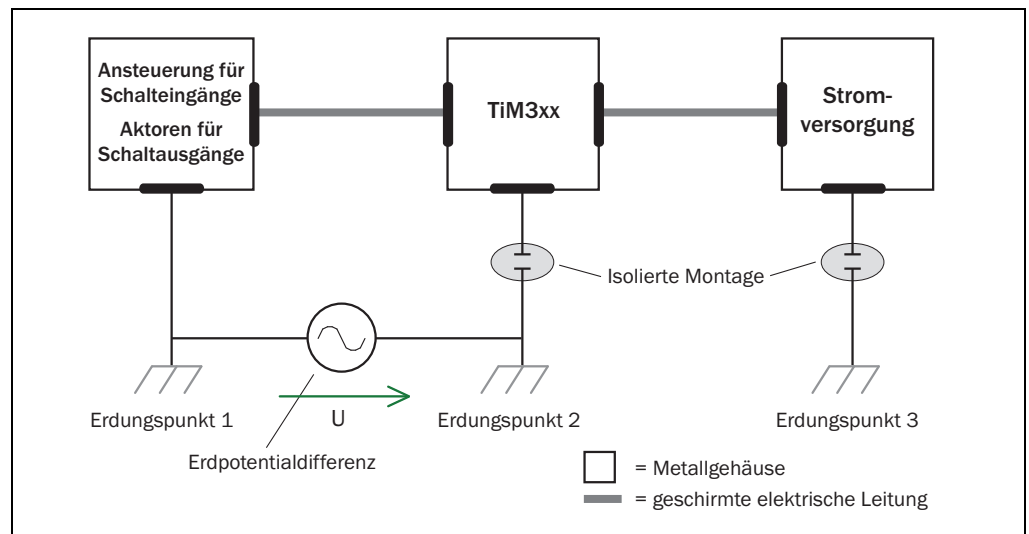
Bei räumlich weit verteilten Systeminstallationen, mit entsprechend großen Potentialunterschieden, wird der Aufbau lokaler Inseln und die Verbindung dieser Inseln über kommerziell erhältliche **elektro-optische Signaltrenner** empfohlen. Mit dieser Maßnahme wird ein Höchstmaß an Robustheit gegenüber elektromagnetischen Störungen erreicht, bei gleichzeitiger Einhaltung sämtlicher Anforderungen der EN 60950-1.



Durch den Einsatz der elektro-optischen Signaltrenner zwischen den Inseln wird die Erdschleife aufgetrennt. Innerhalb der Inseln werden durch einen tragfähigen Potentialausgleich Ausgleichsströme auf den Leitungsschirmen verhindert.

b) Massnahmen bei kleinen Systeminstallationen

Bei kleineren Installationen mit nur geringen Potentialunterschieden kann die isolierte Montage des TiM3xx und der Peripheriegeräte eine hinreichende Lösung sein.



Erdschleifen werden, selbst bei hohen Erdpotentialdifferenzen wirksam verhindert. Dadurch fließen keine Ausgleichsströme mehr über die Leitungsschirme und Metallgehäuse.

Wichtig Die Stromversorgung für den TiM3xx sowie die angeschlossene Peripherie müssen dann ebenfalls die erforderliche Isolation gewährleisten.

Unter Umständen kann zwischen den isoliert montierten Metallgehäusen und dem örtlichen Erdpotential ein berührbares Potential entstehen.

4.5 Installationsschritte

4.5.1 Anschluss der Versorgungsspannung

Der TiM3xx benötigt eine Versorgungsspannung DC 10 ... 28 V (stabilisierte Funktionskleinspannung (SELV oder PELV) nach der Norm IEC 60364-4-41 (VDE 0100 Teil 410)). Die Stromquelle muss mind. 5 W Leistung abgeben können.



GEFAHR

Verletzungsgefahr durch elektrischen Strom!

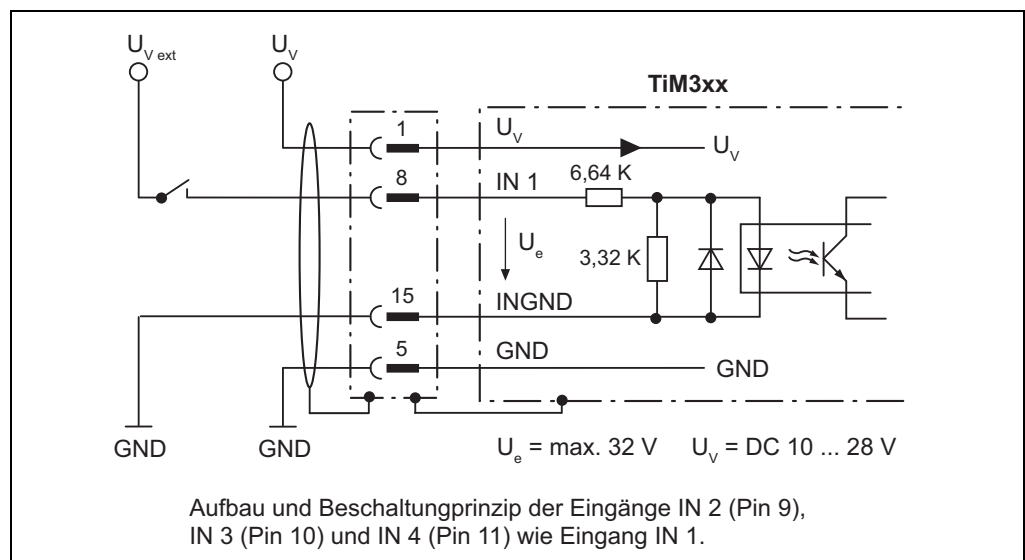
Wird die Versorgungsspannung durch Entnahme und Wandlung von Strom aus dem Wechselstromnetz mit Hilfe eines stabilisierten Netzgerät erzeugt, kann mangelhafte elektrische Trennung zwischen Eingangs- und Ausgangskreis zu einem Stromschlag führen.

- Nur ein Netzgerät verwenden, dessen Ausgangskreis gegenüber dem Eingangskreis eine sichere elektrische Trennung durch Doppelisolation und Sicherheitstransformator nach IEC 742 (VDE 0551) besitzt.

4.5.2 Beschaltung der Schalteingänge IN 1 ... IN 4

Die vier digitalen Schalteingänge aktivieren in binärer Kombination einen der 16 Feldsätze als Auswertefall (Kombinatorik-Tabelle siehe *Betriebsanleitung TiM3xx*). Die Eingänge sind gegenüber der Versorgungsspannung des TiM3xx entkoppelt. Sie haben jedoch einen gemeinsamen Bezugspunkt (INGND), sind also untereinander nicht entkoppelt.

Wichtig Wird der TiM3xx zusammen mit einem Anschlussmodul CDB730-001 betrieben, ist zu beachten, dass der Bezugspunkt INGND mit GND des TiM3xx fest verschaltet ist.

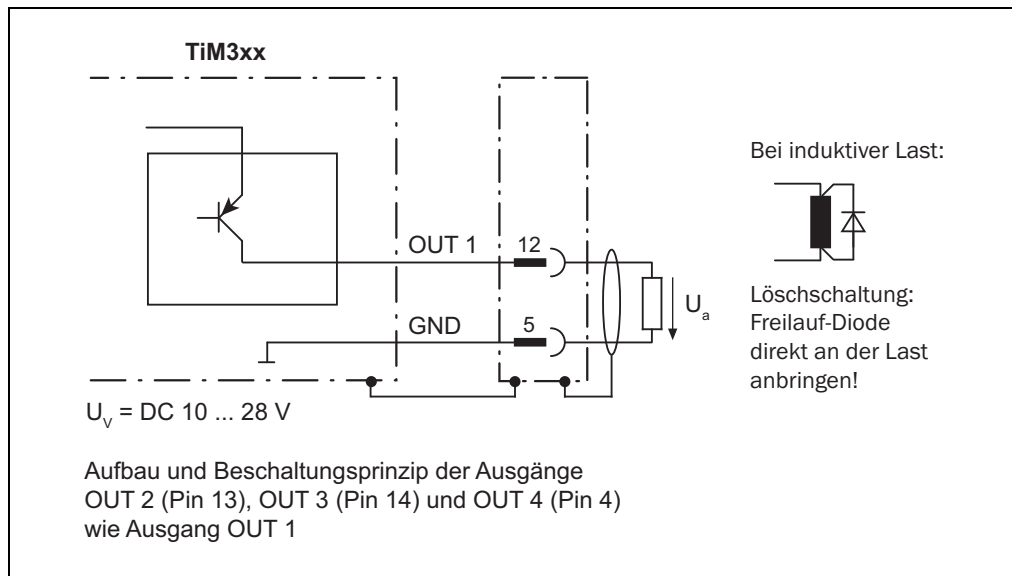


Die Kenndaten aller Schalteingänge sind identisch.

Schaltverhalten	Strom auf den Eingang startet die zugewiesene Funktion im TiM3xx. (Grundeinstellung: Pegel: aktiv high; Entprellung: 10 ms)
Eigenschaften	<ul style="list-style-type: none"> – Opto-entkoppelt – Mit einem elektronischen Schalter (PNP-Ausgang) oder einem mechanischen Schalter beschaltbar
Elektrische Werte	Low: $U_e \leq 2 \text{ V}; I_e \leq 0,3 \text{ mA}$ High: $8 \text{ V} \leq U_e \leq 32 \text{ V}; 0,7 \text{ mA} \leq I_e \leq 5 \text{ mA}$

4.5.3 Beschaltung der Schaltausgänge OUT 1 ... OUT 4

Die Schalteingänge OUT 1 bis OUT 3 signalisieren in Kombination die Verletzung der einzelnen Felder eines Feldsatzes (Kombinatorik-Tabelle siehe *Betriebsanleitung TiM3xx*). Der Ausgang OUT 4 dient der Ausgabe eines Fehlers und eines regelmäßigen Indeximpulses.



Die Kenndaten aller Schaltausgänge sind identisch.

Schaltverhalten	PNP-schaltend gegen die Versorgungsspannung U_V . <ul style="list-style-type: none"> OUT 1 ... OUT 3: Ruhepegel: High (keine Feldverletzung), Arbeitspegel: Low (Feldverletzung) Ansprechzeit: 134 ms ... 30 s (über SOPAS einstellbar) Haltezeit: 0 ms ... 10 s (über SOPAS einstellbar) OUT 4: Ruhepegel: High (Device Ready), Arbeitspegel: Low (Fehler), Low-Impuls (15 Hz, Index, entspricht Messung bei 90°)
Eigenschaften	<ul style="list-style-type: none"> Kurzschlussfest und temperaturgeschützt Galvanisch nicht getrennt von der Versorgungsspannung U_V
Elektrische Werte	$0 \text{ V} \leq U_a \leq U_V$ Garantiert: $(U_V - 1,5 \text{ V}) \leq U_a \leq U_V$ bei $I_a \leq 100 \text{ mA}$

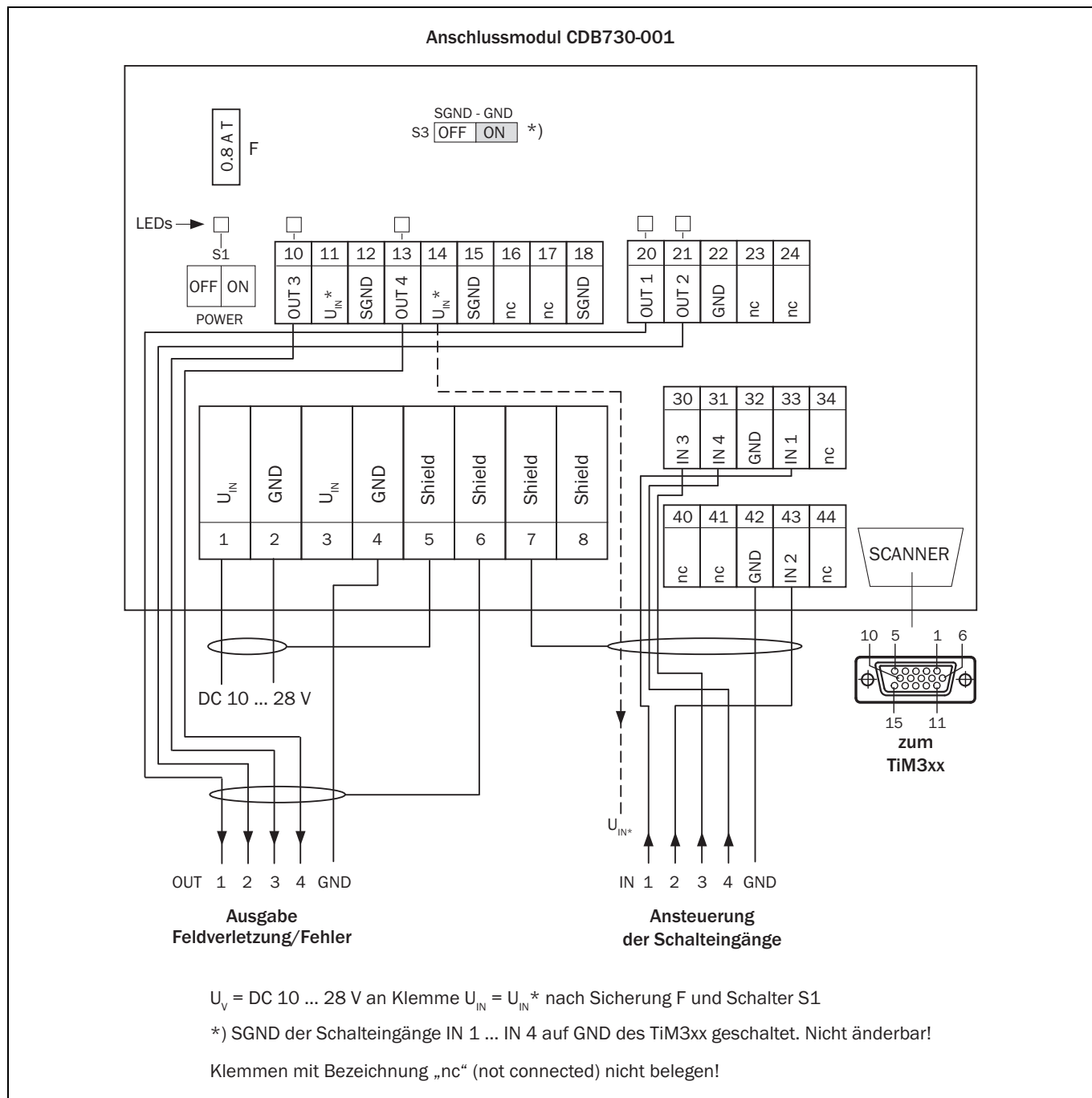
Wichtig Längere Anschlussleitungen an den Schaltausgängen des TiM3xx sind aufgrund des auftretenden Spannungsfalls zu vermeiden. Dieser berechnet sich wie folgt:

$$\Delta U = \frac{2 \times \text{Länge} \times \text{Strom}}{\text{Leitwert} \times \text{Querschnitt}}$$

Leitwert für Kupfer: 56 m/Ω mm².

4.6 Verwendung des Anschlussmoduls CDB730-001 (Artikel-Nr. 1055981)

4.6.1 Verdrahtungsübersicht

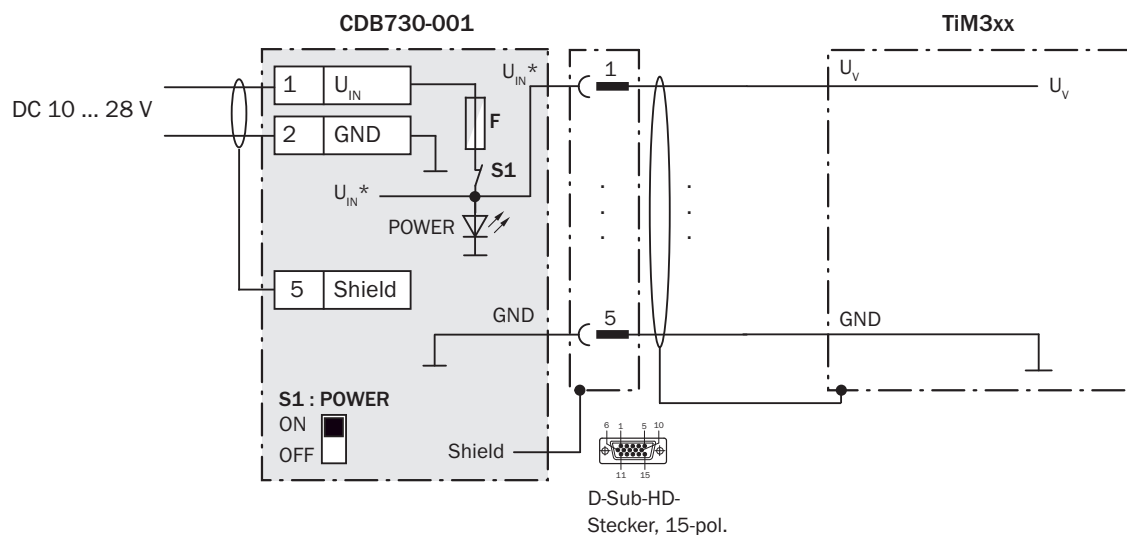


4.6.2 Schalter

Schalter	Funktion	Default
S1	Anliegende Versorgungsspannung: ON: Versorgungsspannung U_{IN}^* ein OFF: Versorgungsspannung U_{IN}^* aus	ON
S3	Bezugspotential für SGND: ON: verbunden mit GND des TiM3xx	ON (nicht änderbar)

4.6.3 Versorgungsspannung im CDB730-001 anschließen

Versorgungsspannung im Anschlussmodul CDB730-001 verdrahten



$U_V = \text{DC } 10 \dots 28 \text{ V}$ an Klemme $U_{IN} = U_{IN}^*$ nach Sicherung F und Schalter S1

Schalter S1:**ON:**

Versorgungsspannung U_{IN} über Sicherung als U_{IN}^* an CDB730-001 und TiM3xx geschaltet.
Spannung U_{IN}^* zusätzlich an Klemme 11 und 14 abgreifbar.

OFF:

CDB730-001 und TiM3xx von Versorgungsspannung getrennt.
Empfohlene Stellung bei allen Anschlussarbeiten.

4.6.4 Schalteingänge im CDB730-001 verdrahten

Schalteingänge „IN 1 ... IN 4“ des TiM3xx im Anschlussmodul CDB730-001 verdrahten

Schema:

Schaltelement extern versorgt

Schaltelement über CDB730-001 versorgt

CDB730-001

TiM3xx

*) INGND der Schalteingänge IN 1 ... IN 4 auf GND des TiM3xx geschaltet. Nicht änderbar!

IN 2

IN 3

IN 4

Kenndaten der Schalteingänge „IN 1 ... IN 4“

Schaltverhalten	Strom auf einen Eingang aktiviert in Kombination mit den anderen Eingängen den zugeordneten Feldzusatz als Auswertefall. Grundeinstellung: Pegel aktiv high, Entprellung 10 ms
Eigenschaften	- verpolsicher - mit PNP-Ausgang eines Sensors oder einem mechanischen Schalter beschaltbar
Elektrische Werte	Low: $U_e \leq 2\text{ V}$; $I_e \leq 0,3\text{ mA}$ High: $8\text{ V} \leq U_e \leq 32\text{ V}$; $0,7\text{ mA} \leq I_e \leq 5\text{ mA}$

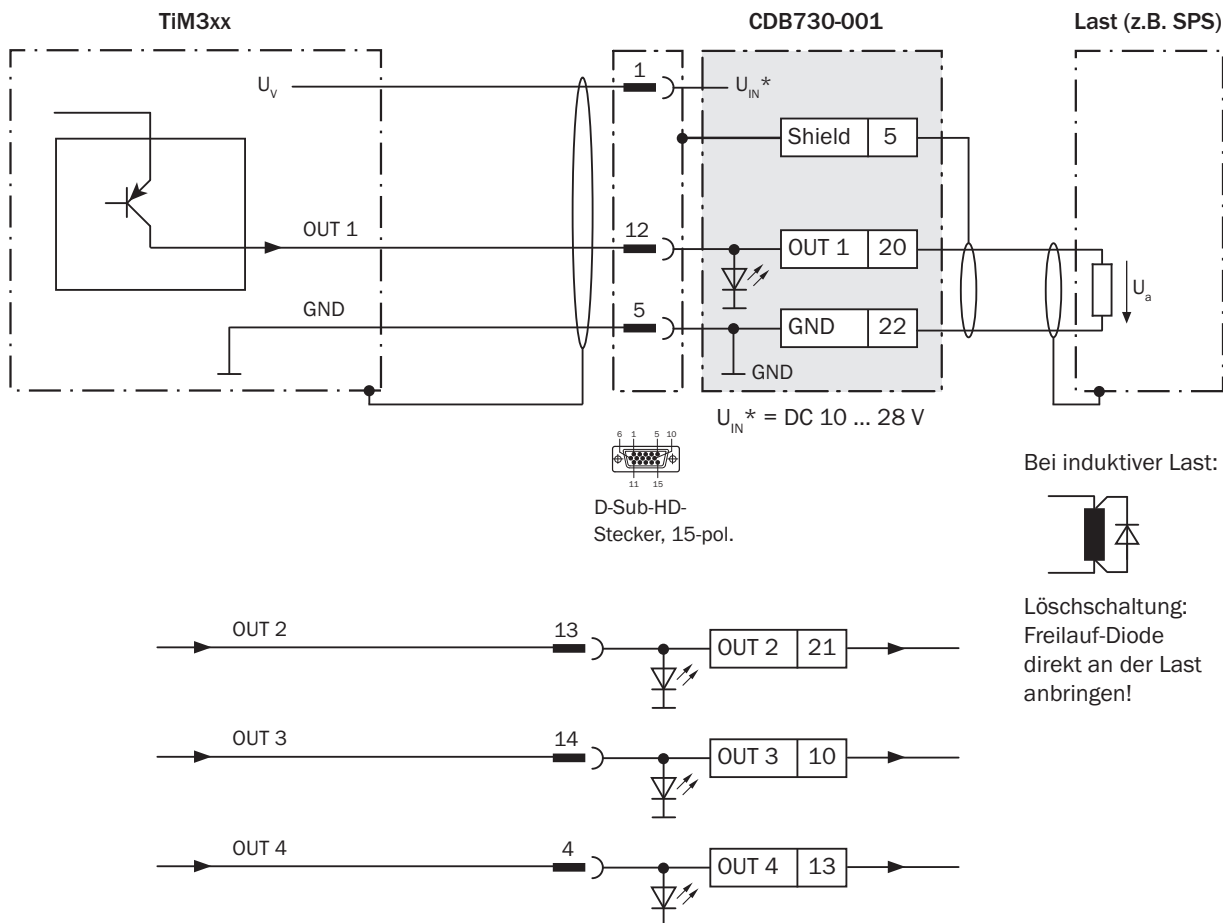
Pin-/Aderfarbbelegung konfektionierter Leitungen

Signal	Leitung Nr. 2043413	
	D-Sub-HD Buchse, 15-pol.	offene Adern, 15-adrig
U_v	1	rot
IN 1	8	türkis oder hellblau
IN 2	9	grün
IN 3	10	grau
IN 4	11	rosa
GND	5	schwarz

4.6.5 Schaltausgänge im CDB730-001 verdrahten

Schaltausgänge „OUT 1 ... OUT 4“ des TiM3xx im Anschlussmodul CDB730-001 verdrahten

Schema:



Kenndaten der Schaltausgänge „OUT 1 ... OUT 4“

Schaltverhalten	PNP-schaltend gegen Versorgungsspannung U_v – OUT 1 ... OUT 3: Ruhepegel: High (keine Feldverletzung) Arbeitspegel: Low (Feldverletzung) – OUT 4: Ruhepegel: High (Device Ready) Arbeitspegel: Low (Fehler), Low (15 Hz, Index, entspricht Messung bei 90°)
Eigenschaften	– kurzschlussfest + temperaturgeschützt – galvanisch nicht getrennt von U_v
Elektrische Werte	$0 \text{ V} \leq U_a \leq U_v$ Garantiert: ($U_v - 1,5 \text{ V}$) $\leq U_a \leq U_v$ bei $I_a \leq 100 \text{ mA}$

Pin-/Aderfarbbelegung konfektionierter Leitungen

Signal	Leitung Nr. 2043413	
	D-Sub-HD Buchse, 15-pol.	offene Adern, 15-adrig
U_v	1	rot
OUT 1	12	braun
OUT 2	13	orange
OUT 3	14	weiß
OUT 4	4	rot + schwarz
GND	5	schwarz

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