

Operating Instructions

Ethernet/IP Robacta CTC
Ethernet/IP Robacta TX
Ethernet/IP Robacta TX 10i
Ethernet/IP Robacta TX/i TWIN

DE | Bedienungsanleitung

EN-US | Operating instructions



42,0410,2550

007-24032025

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Allgemeines

Inhalt dieses Dokumentes

Dieses Dokument enthält Ethernet/IP Konfigurations- und Anwendungs-Informationen für

- Das Roboterinterface Robacta FB 8I_8O (dient beispielsweise als Roboterinterface für Robacta CTC)
- Die Ethernet/IP-Schnittstellen von Robacta TX, TX 10i, TW/i TWIN

Eigenschaften der Datenübertragung

Übertragungstechnik:
Ethernet/IP

Netzwerk Topologie:
Stern / Linie

Medium:
mindestens CAT5 Ethernet-Kabel (nach EN 50173 und ISO/IEC 11801)

Ethernet/IP nutzt 4 Adern des Kabels für die Signalübertragung

Übertragungsrate:
100 Mbit/s

Busanschluss:
Ethernet RJ 45

Konfigurationsparameter

Bei einigen Roboter-Steuerungen kann es erforderlich sein die hier beschriebenen Konfigurationsparameter anzugeben, damit der Feldbus-Koppler mit dem Roboter kommunizieren kann.

| Parameter | Wert |
|-----------------|----------------|
| Vendor ID | 108 |
| Device Type | 12 |
| Product Code | 9105 |
| Input size | 8 |
| Output size | 8 |
| Input assembly | 101 |
| Output assembly | 102 |
| Image type | Standard Image |

| Instance Type | Instance Name | Signal Type | Instance Number | Size [Byte] |
|--------------------|----------------------|-------------|-----------------|-------------|
| Producing Instance | Input Data Standard | IN * | 101 | 2 |
| Consuming Instance | Output Data Standard | OUT ** | 102 | 2 |

* Daten vom Fronius-Gerät zur Roboter-Steuerung

** Daten von der Roboter-Steuerung zum Fronius-Gerät

Technische Daten

Die technischen Daten des Feldbus-Kopplers sind zu finden unter:
www.beckhoff.com

Sicherheit**WARNUNG!****Gefahr durch Fehlbedienung und fehlerhaft durchgeführte Arbeiten.**

Schwere Personen- und Sachschäden können die Folge sein.

- ▶ Alle in diesem Dokument beschriebenen Arbeiten und Funktionen dürfen nur von technisch geschultem Fachpersonal ausgeführt werden.
- ▶ Dieses Dokument vollständig lesen und verstehen.
- ▶ Sämtliche Sicherheitsvorschriften und Benutzerdokumentationen dieses Gerätes und aller Systemkomponenten lesen und verstehen.

**WARNUNG!****Gefahr durch elektrischen Strom.**

Schwere Personen- und Sachschäden können die Folge sein.

- ▶ Vor Beginn der Arbeiten alle beteiligten Geräte und Komponenten ausschalten und vom Stromnetz trennen.
- ▶ Alle beteiligten Geräte und Komponenten gegen Wiedereinschalten sichern.

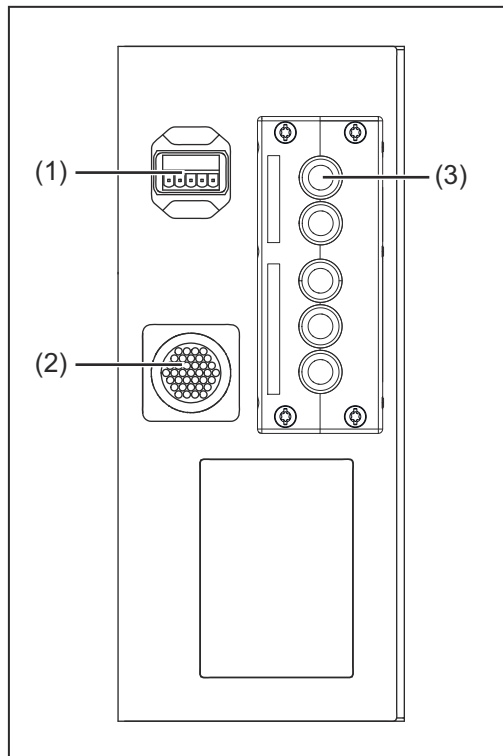
**WARNUNG!****Gefahr durch unplanmäßige Signalübertragung.**

Schwere Personen- und Sachschäden können die Folge sein.

- ▶ Über das Interface keine sicherheitsrelevanten Signale übertragen.

Anschlüsse und Steckerbelegungen

Anschlüsse für die Roboter-Steuerung an Robacta FB 8I_8O (Robacta CTC)



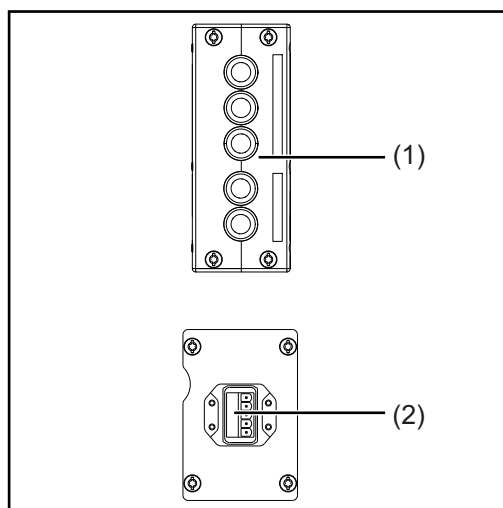
Anschlüsse an Robacta FB 8I_8O

- (1) **Anschluss Versorgung +24 V AIDA**
zur Versorgung des Feldbus-Kopplers und der I/O-Klemmen

- (2) **Anschluss-Stecker Standard I/O 1**
zur Verbindung mit Robacta CTC

- (3) **Lochplatte mit Gummi-Durchführungen**

Anschlüsse für die Roboter-Steuerung an der Geräte-Außenseite von Robacta TX, TX 10i, TX/i TWIN



- (1) **Lochplatte mit Gummi-Durchführungen**

- (2) **Anschluss Versorgung +24 V AIDA**
zur Versorgung des Feldbus-Kopplers und der I/O-Klemmen

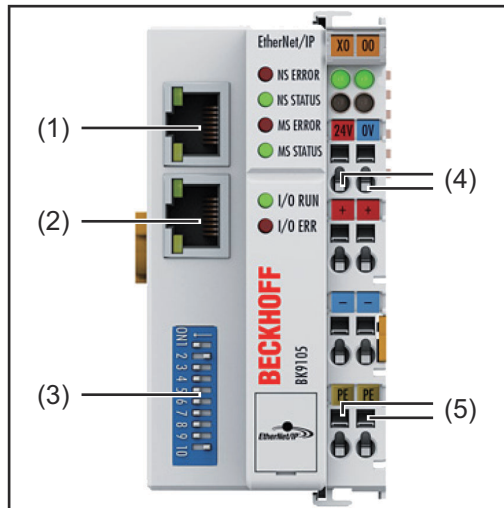
Anschlüsse am Feldbus-Koppler BK9105

VORSICHT!

Gefahr durch elektrischen Strom.

Sachschäden können die Folge sein.

- Vor Beginn der Arbeiten sicherstellen, dass die Kabel für die externe Spannungsversorgung des Feldbus-Kopplers spannungsfrei sind und bis zum Abschluss aller Arbeiten spannungsfrei bleiben.



- (1) **Anschluss EtherNet RJ 45 - Port 1**

- (2) **Anschluss EtherNet RJ 45 - Port 2**

- (3) **DIP-Schalter**
zum Einstellen der IP-Adresse

- (4) **Anschlüsse DC IN**
zum Anschließen der externen Spannungsversorgung

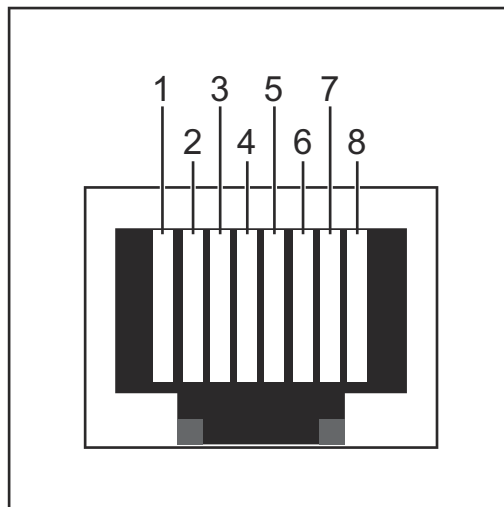
- (5) **Anschlüsse PE**

HINWEIS!

Die externe Spannungsversorgung darf nicht über das Fronius-Gerät erfolgen.

Für die externe Spannungsversorgung den Roboter oder die Roboter-Steuerung verwenden.

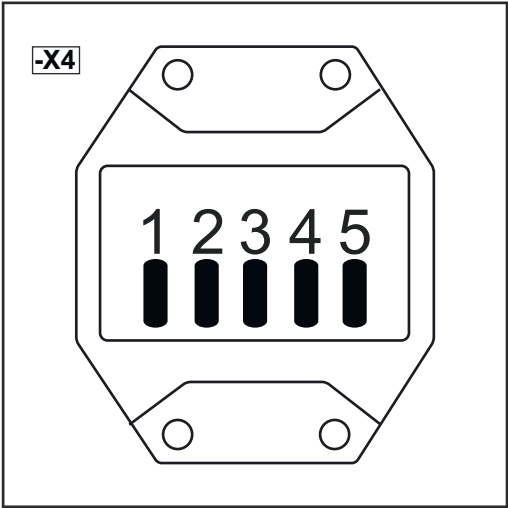
Steckerbelegung für die RJ45 EtherNet-Anschlüsse



Pin-Belegung RJ 45 ProfiNet Anschluss

| | |
|----------|---|
| 1 | TX+ (gelb) |
| 2 | TX- (orange) |
| 3 | RX+ (weiß) |
| 6 | RX- (blau) |
| 4,5,7, 8 | Normalerweise nicht verwendet; um die Signalfullständigkeit sicherzustellen, sind diese Pins miteinander verbunden und enden über einen Filterkreis am Schutzleiter (PE). |

Steckerbelegung
für Anschluss
Versorgung +24
V AIDA



| Pin | Belegung |
|-----|---|
| 1 | +24 V Spannungsversorgung für den Feldbus-Koppler |
| 2 | 0 V Spannungsversorgung für den Feldbus-Koppler |
| 3 | +24 V Spannungsversorgung für die I/O-Klemmen |
| 4 | 0 V Spannungsversorgung für die I/O-Klemmen |
| 5 | Erdungsanschluss PE |

Spannungsversorgung und Erdung

Getrennte 24 V Spannungsversorgung

Das Roboterinterface Robacta FB 8I_8O ist serienmäßig für eine getrennte 24 V Versorgung von Feldbus-Buskoppler und I/O-Klemmen ausgelegt. Hierfür sind zwei separate 24 V Stromkreise erforderlich, das Roboterinterface muss nicht geöffnet werden.

Vorgehensweise:

- 1 Stromkreis 1 an den Pins 1 (-X4:1) und 2 (-X4:2) anlegen
- 2 Stromkreis 2 an den Pins 3 (-X4:3) und 4 (-X4:4) anlegen

Gemeinsame 24 V Spannungsversorgung extern

Alternativ können Feldbus-Buskoppler und I/O-Klemmen auch gemeinsam über einen 24 V Stromkreis versorgt werden.

Bei der externen gemeinsamen Spannungsversorgung muss das Roboterinterface nicht geöffnet werden.

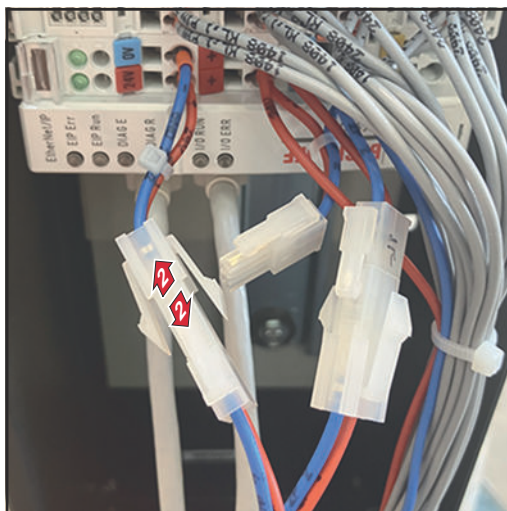
Vorgehensweise:

- 1 Am mitgelieferten Stecker Pin 1 (-X4:1) und Pin 3 (-X4:3) mittels Bügel überbrücken
- 2 Am mitgelieferten Stecker Pin 2 (-X4:2) und Pin 4 (-X4:4) mittels Bügel überbrücken
- 3 Stromkreis an den Pins 1 (-X4:1) und 2 (-X4:2) anlegen

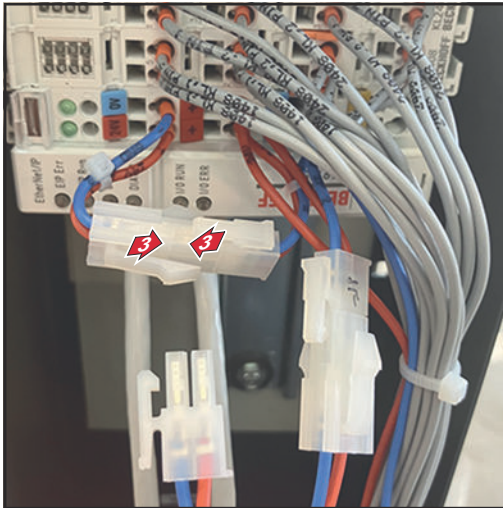
Gemeinsame 24 V Spannungsversorgung intern

Die zweite Alternative für eine gemeinsame Spannungsversorgung mit einem 24 V Stromkreis ist die interne Spannungsversorgung.

Vorgehensweise:



- 1 Das Roboterinterface Robacta FB 8I_8O öffnen
- 2 Beim Feldbus-Koppler den Stecker von 24V/OV trennen



- 3** Kabel 24V/0V vom Feldbus-Koppler mit dem freien Kabelende von +/- zusammenstecken
- 4** Das Roboterinterface Robacta FB 8I_8O schließen
- 5** Stromkreis an den Pins 3 (-X4:3) und 4 (-X4:4) anlegen

Erdungskabel anschließen

- 1** Erdungskabel auf Pin 5 (-X4:5) einstecken
- 2** Zweites Ende des Erdungskabels auf Buskoppler Anschluss PE einstecken

Roboter-Steuerung anschließen

Informationen zum Datenkabel

Anforderungen an das Datenkabel:

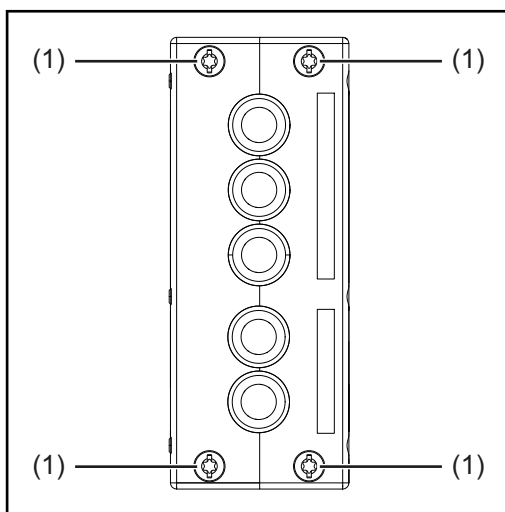
- mindestens Kategorie 5 (CAT5) nach EN 50173 oder ISO/IEC 11801
- symmetrisch (1:1) belegtes Kabel oder Cross-Over-Kabel

EtherCAT verwendet RJ45-Steckverbinder. Die Kontaktbelegung ist zum Ethernet-Standard (ISO/IEC 8802-3) kompatibel.

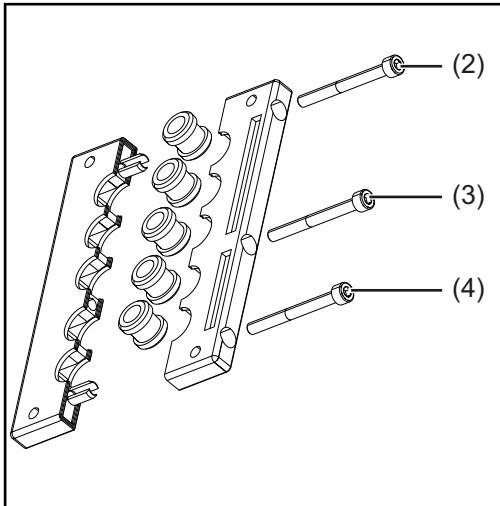
Folgende Beckhoff-Kabel und Steckverbinder sind für den Einsatz an EtherCAT-Systemen geeignet:

- ZB9010 (Industrial-Ethernet/EtherCAT-Kabel, feste Verlegung CAT 5e, 4-adrig)
- ZB9020 (Industrial-Ethernet/EtherCAT-Kabel schleppkettentauglich CAT 5e, 4-adrig)
- ZS1090-0003 (RJ45-Stecker, 4-polig, IP 20, feldkonfektionierbar)
- ZS1090-0005 (RJ45 Stecker, 8-polig (GigaBit geeignet), IP 20, feldkonfektionierbar)
- ZK1090-9191-0001 (0.17 m EtherCAT Patch-Kabel)
- ZK1090-9191-0005 (0.5 m EtherCAT Patch-Kabel)
- ZK1090-9191-0010 (1.0 m EtherCAT Patch-Kabel)
- ZK1090-9191-0020 (2.0 m EtherCAT Patch-Kabel)
- ZK1090-9191-0030 (3.0 m EtherCAT Patch-Kabel)
- ZK1090-9191-0050 (5.0 m EtherCAT Patch-Kabel)

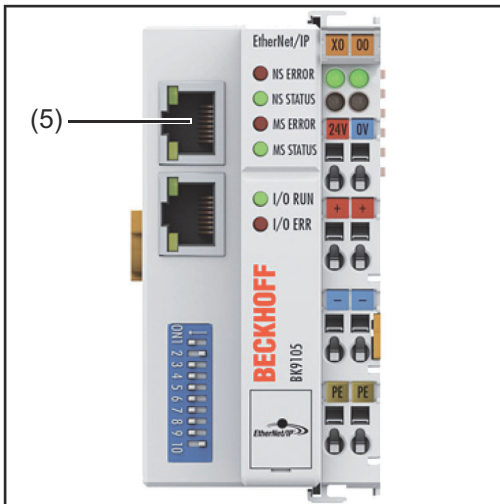
Datenkabel der Roboter-Steuerung anschließen



- 1** Geräteabdeckung demontieren, um die Zugänglichkeit zum Feldbus-Koppler herzustellen
- 2** Schrauben (1) lösen



- 3** Schrauben (2) - (4) lösen
- 4** Lochplatte öffnen
- 5** Datenkabel durch die mittlere Gummidurchführung in das Gerät verlegen



- 6** Datenkabel am RJ45-Anschluss (5) am Feldbus-Koppler anschließen
- 7** Datenkabel mit Kabelbindern fixieren
- 8** Lochplatte mit den originalen Schrauben wieder festschrauben
- 9** Geräteabdeckungen mit den originalen Schrauben wieder festschrauben
 - Anzugsmoment der Schrauben bei Robacta TX, TX 10i, TX/i TWIN = 10 Nm (7.38 ft·lb)
 - Anzugsmoment der Schrauben bei Robacta FB 8I_8O = 4 Nm (2.95 ft·lb)

IP-Adresse einstellen

Übersicht

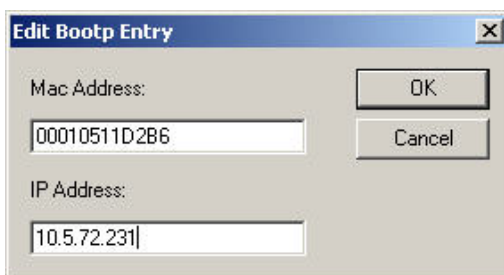
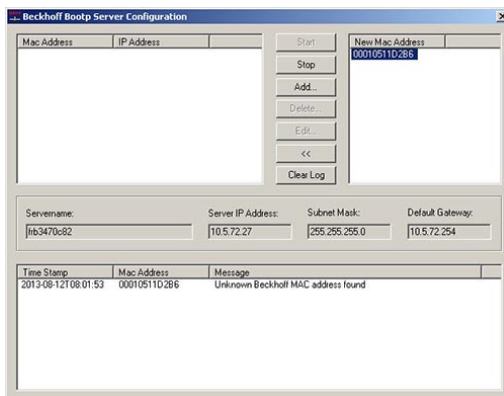
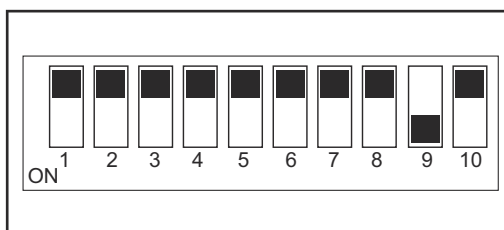
Die IP-Adresse kann auf drei unterschiedliche Arten eingestellt werden:

- über einen BootP Server
- über den ARP-Befehl im DOS-Fenster
- mit der KS2000-Konfigurationssoftware

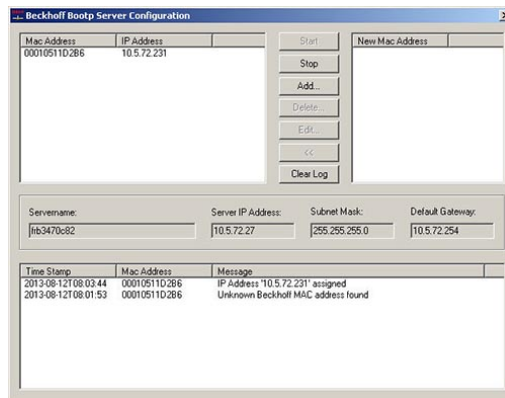
Das Einstellen der IP-Adresse über einen BootP Server wird im nachfolgenden Abschnitt beschrieben.

Informationen zum Einstellen der IP-Adresse über den ARP-Befehl im DOS-Fenster und mit der KS2000-Konfigurationssoftware sind zu finden unter:
www.beckhoff.com

IP-Adresse über BootP Server einstellen



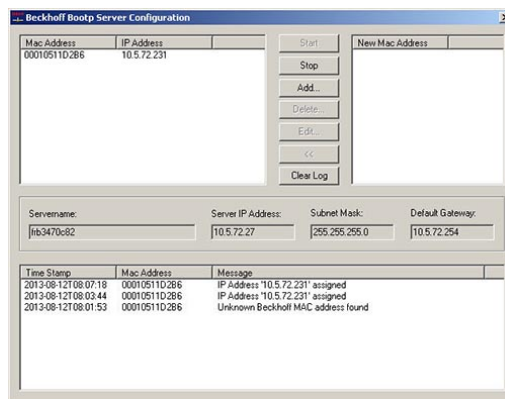
- 1 Ethernetkabel am Feldbus-Koppler BK9105 anschließen
- 2 DIP-Schalter wie abgebildet einstellen
- 3 Spannungsversorgung des Feldbus-Koppler BK9105 herstellen
- 4 Programm Beckhoff BootP-Server starten
- 5 "Start" drücken
- 6 Warten bis im Bereich „New Mac Address“ die Mac-Adresse des Feldbus-Koppler BK9105 erscheint
- 7 Doppelklick auf die gefundene Mac-Adresse
- 8 Die gewünschte IP-Adresse eingeben
- 9 Eingabe mit der Schaltfläche „OK“ bestätigen



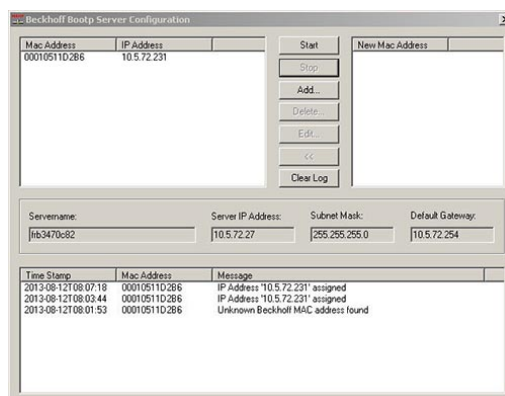
- 10** Warten bis die gewünschte IP-Adresse dem Feldbus-Koppler BK9105 zugewiesen wurde



- 11** DIP-Schalter wie abgebildet einstellen
- 12** Spannungsversorgung des Feldbus-Koppler BK9105 trennen und wiederherstellen



- 13** Warten bis die IP-Adresse erneut dem BK9105 zugewiesen wurde

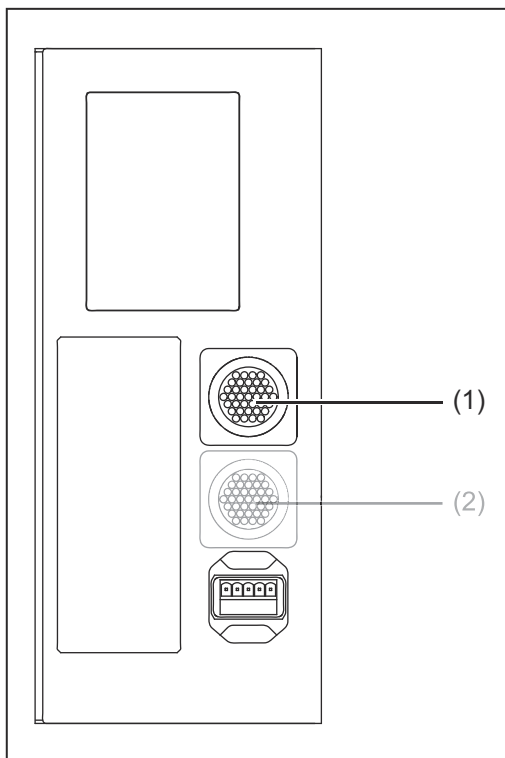


- 14** "Stop" drücken

Nun ist die IP-Adresse dem BK9105 statisch zugewiesen.

Ein- und Ausgangssignale Reinigungsgeräte

Ein- und Ausgangssignale (Stecker I/O 1)



Anschlüsse an Robacta FB 8I_8O Profinet

(1) Anschluss-Stecker Standard I/O 1

dieser Stecker befindet sich immer am Roboterinterface und dient zur Verbindung von Robacta CTC mit dem Roboterinterface

Mit diesem Stecker können zusätzlich zu Robacta CTC noch Schweißbrenner-Reinigungsgeräte am Roboterinterface angeschlossen werden. Für die Verbindung der Schweißbrenner-Reinigungsgeräte mit dem Roboterinterface ausschließlich die bei Fronius erhältlichen Kabelbäume verwenden.

(2) Anschluss-Stecker Standard I/O 2

dieser Stecker wird mit der Option 4,101,345,CK in das Roboterinterface eingebaut.

Eingangssignale

für Robacta Reamer V Easy, Robacta Reamer V Easy Han6P J, Robacta Reamer Alu Edition, Robacta Reamer Alu 3000upm, Robacta Reamer Bürstenkopf Alu, Robacta Reamer Twin:

| Eingang (Vom Feldbus-Koppler zum Anschluss-Stecker Standard I/O 1) | Pin am Anschluss-Stecker Standard I/O 1 | Signal | Aktivität |
|---|---|--------------|-----------|
| E01 | 11 | Gasdüse frei | High |
| E02 | 12 | Reserve | - |
| E03 | 13 | Reserve | - |
| E04 | 14 | Reserve | - |
| E05 | 15 | Reserve | - |
| E06 | 16 | Reserve | - |
| E07 | 17 | Reserve | - |
| E08 | 18 | Reserve | - |

Ausgangssignale für

Robacta Reamer V Easy, Robacta Reamer V Easy Han6P J, Robacta Reamer Alu

Edition, Robacta Reamer Alu 3000upm, Robacta Reamer Bürstenkopf Alu, Robacta Reamer Twin:

| Ausgang (Vom Anschluss-Stecker Standard I/O 1 zum Feldbus-koppler) | Pin am Anschluss-Stecker Standard I/O 1 | Signal | Aktivität |
|---|--|-------------------|------------------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Reinigung starten | High |
| A02 | 4 | Reserve | - |
| A03 | 5 | Reserve | - |
| A04 | 6 | Reserve | - |
| A05 | 7 | Reserve | - |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |
| A08 | 10 | Reserve | - |

Eingangssignale für Reamer Braze+:

| Eingang (Vom Feldbus-Koppler zum Anschluss-Stecker Standard I/O 1) | Pin am Anschluss-Stecker Standard I/O 1 | Signal | Aktivität |
|---|--|------------------|------------------|
| E01 | 11 | Reinigungsbereit | High |
| E02 | 12 | Reserve | - |
| E03 | 13 | Reserve | - |
| E04 | 14 | Reserve | - |
| E05 | 15 | Reserve | - |
| E06 | 16 | Reserve | - |
| E07 | 17 | Reserve | - |
| E08 | 18 | Reserve | - |

Ausgangssignale für Robacta Reamer Braze+:

| Ausgang (Vom Anschluss-Stecker Standard I/O 1 zum Feldbus-koppler) | Pin am Anschluss-Stecker Standard I/O 1 | Signal | Aktivität |
|---|--|--------------------------|------------------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Reinigungsmotor starten | High |
| A02 | 4 | Reinigungskopf justieren | High |
| A03 | 5 | Reserve | - |

| Ausgang (Vom Anschluss- Stecker Standard I/O 1 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 1 | Signal | Aktivität |
|--|--|---------|-----------|
| A04 | 6 | Reserve | - |
| A05 | 7 | Reserve | - |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |
| A08 | 10 | Reserve | - |

Eingangssignale für Reamer Robacta Reamer V:

| Eingang (Vom Feldbus-Kopp- ler zum Anschluss- Stecker Standard I/O 1) | Pin am An- schluss-Ste- cker Standard I/O 1 | Signal | Aktivität |
|---|--|-----------------------------------|-----------|
| E01 | 11 | Gasdüse frei | High |
| E02 | 12 | Gasdüse gespannt | High |
| E03 | 13 | Reinigungsmotor dreht | High |
| E04 | 14 | Trennmittel-Stand in Ord- nung | High |
| E05 | 15 | Reinigungsmotor unten | High |
| E06 | 16 | Reinigungsmotor oben | High |
| E07 | 17 | Drahtabschneider offen | High |
| E08 | 18 | Drahtabschneider ge- schlossen | High |

Ausgangssignale für Reamer Robacta Reamer V:

| Ausgang (Vom Anschluss- Stecker Standard I/O 1 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 1 | Signal | Aktivität |
|--|--|--|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Gasdüse spannen / Reini- gungsmotor ein | High |
| A02 | 4 | Trennmittel einsprühen | High |
| A03 | 5 | Drahtelektrode abschnei- den | High |
| A04 | 6 | Reinigungsmotor auf | High |
| A05 | 7 | Optionaler GND für Sen- soren | High |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |

| Ausgang (Vom Anschluss- Stecker Standard I/O 1 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 1 | Signal | Aktivität |
|--|--|---------|-----------|
| A08 | 10 | Reserve | - |

Eingangssignale für Robacta Reamer V Twin:

| Eingang (Vom Feldbus-Kopp- ler zum Anschluss- Stecker Standard I/O 1) | Pin am An- schluss-Ste- cker Standard I/O 1 | Signal | Aktivität |
|---|--|-----------------------------------|-----------|
| E01 | 11 | Gasdüse frei | High |
| E02 | 12 | Gasdüse gespannt | High |
| E03 | 13 | Reserve | - |
| E04 | 14 | Trennmittel-Stand in Ord- nung | High |
| E05 | 15 | Reinigungsmotor unten | High |
| E06 | 16 | Reinigungsmotor oben | High |
| E07 | 17 | Schwenk-Vorrichtung links | High |
| E08 | 18 | Schwenk-Vorrichtung rechts | High |

Ausgangssignale für Robacta Reamer V Twin:

| Ausgang (Vom Anschluss- Stecker Standard I/O 1 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 1 | Signal | Aktivität |
|--|--|--|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Gasdüse spannen / Reini- gungsmotor ein | High |
| A02 | 4 | Trennmittel einsprühen | High |
| A03 | 5 | Drahtelektrode abschnei- den | High |
| A04 | 6 | Reinigungsmotor auf | High |
| A05 | 7 | Schwenk-Vorrichtung nach links | High |
| A06 | 8 | Schwenk-Vorrichtung nach rechts | High |
| A07 | 9 | Reserve | - |
| A08 | 10 | Reserve | - |

Eingangssignale für Robacta Reamer V 70 Han12P:

| Eingang (Vom Feldbus-Koppler zum Anschluss-Stecker Standard I/O 1) | Pin am Anschluss-Stecker Standard I/O 1 | Signal | Aktivität |
|---|---|----------------------|-----------|
| E01 | 11 | Gasdüse frei | High |
| E02 | 12 | Reserve | - |
| E03 | 13 | Reserve | - |
| E04 | 14 | Reserve | - |
| E05 | 15 | Reserve | - |
| E06 | 16 | Reinigungsmotor oben | High |
| E07 | 17 | Reserve | - |
| E08 | 18 | Reserve | - |

Ausgangssignale für Robacta Reamer V 70 Han12P:

| Ausgang (Vom Anschluss-Stecker Standard I/O 1 zum Feldbus-koppler) | Pin am Anschluss-Stecker Standard I/O 1 | Signal | Aktivität |
|---|---|----------------------------|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Reinigung starten | High |
| A02 | 4 | Trennmittel einsprühen | High |
| A03 | 5 | Drahtelektrode abschneiden | High |
| A04 | 6 | GND für Sensoren | High |
| A05 | 7 | Reserve | - |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |
| A08 | 10 | Reserve | - |

Eingangssignale für Robacta Reamer V Comfort:

| Eingang (Vom Feldbus-Koppler zum Anschluss-Stecker Standard I/O 1) | Pin am Anschluss-Stecker Standard I/O 1 | Signal | Aktivität |
|---|---|------------------------------|-----------|
| E01 | 11 | Gasdüse frei | High |
| E02 | 12 | Ausgangssignal Sensor | High |
| E03 | 13 | Ausgangssignal Sensor | High |
| E04 | 14 | Trennmittel-Stand in Ordnung | - |
| E05 | 15 | Reserve | - |
| E06 | 16 | Reinigungsmotor oben | High |

| Eingang (Vom Feldbus-Koppler zum Anschluss-Stecker Standard I/O 1) | Pin am Anschluss-Stecker Standard I/O 1 | Signal | Aktivität |
|---|---|---------|-----------|
| E07 | 17 | Reserve | - |
| E08 | 18 | Reserve | - |

Ausgangssignale für Robacta Reamer V Comfort:

| Ausgang (Vom Anschluss-Stecker Standard I/O 1 zum Feldbus-koppler) | Pin am Anschluss-Stecker Standard I/O 1 | Signal | Aktivität |
|---|---|----------------------------|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Reinigung starten | High |
| A02 | 4 | Trennmittel einsprühen | High |
| A03 | 5 | Drahtelektrode abschneiden | High |
| A04 | 6 | Ausgangssignal Aktor | High |
| A05 | 7 | GND für die Sensoren | High |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |
| A08 | 10 | Reserve | - |

Eingangssignale für Robacta TC 1000, Robacta TC 2000:

| Eingang (Vom Feldbus-Koppler zum Anschluss-Stecker Standard I/O 1) | Pin am Anschluss-Stecker Standard I/O 1 | Signal | Aktivität |
|---|---|---------------------|-----------|
| E01 | 11 | Ready | High |
| E02 | 12 | Fluid Level Control | High |
| E03 | 13 | Cleaning Error | High |
| E04 | 14 | Reserve | - |
| E05 | 15 | Reserve | - |
| E06 | 16 | Reserve | - |
| E07 | 17 | Reserve | - |
| E08 | 18 | Reserve | - |

Ausgangssignale für Robacta TC 1000, Robacta TC 2000:

| Ausgang (Vom Anschluss- Stecker Standard I/O 1 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 1 | Signal | Aktivität |
|--|--|----------------|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Cleaning Start | High |
| A02 | 4 | Spray In | High |
| A03 | 5 | Wire Cutter | High |
| A04 | 6 | Quick Stop | High |
| A05 | 7 | Reserve | - |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |
| A08 | 10 | Reserve | - |

Ein- und Ausgangssignale Robacta CTC

Anordnung der Feldbus-Klemmen (optionale Konfiguration)

Folgend die werksseitige Anordnung der Feldbus-Klemmen:

| | | | | | |
|---------|--------|--------|--|--|--------|
| BK 9105 | KL1408 | KL2408 | KL1408 (OPT/i Robacta FB 16I_16O 4,101,345,CK) | KL2408 (OPT/i Robacta FB 16I_16O 4,101,345,CK) | KL9010 |
|---------|--------|--------|--|--|--------|

Es besteht die Möglichkeit, die zwei nachfolgend angeführten Feldbus-Klemmen in das Roboterinterface einzubauen. Dadurch kann zusätzlich zu Robacta CTC noch ein Schweißbrenner-Reinigungsgerät an das Interface angeschlossen werden. Für nähere Informationen hierfür siehe Abschnitt [Zusätzlicher Funktionsumfang von Robacta FB 8I_8O Profinet](#) ab Seite 23.

Optionale Feldbus-Klemmen

- KL1408 und
- KL2408

Beide Klemmen sind Bestandteil der Option 4,101,345,CK.

Eingangssignale (von CTC zum Roboter)

| Eingang | Signal | Bereich | Aktivität |
|---------|---------|---------|-----------|
| E01 | TLC | - | High |
| E02 | VA | - | High |
| E03 | LS | - | High |
| E04 | Reserve | - | - |
| E05 | SS1 | - | High |
| E06 | SS2 | - | High |
| E07 | 1A | - | High |
| E08 | Reserve | - | - |

Die Beschreibungen der Signale sind in der Bedienungsanleitung von Robacta CTC zu finden.

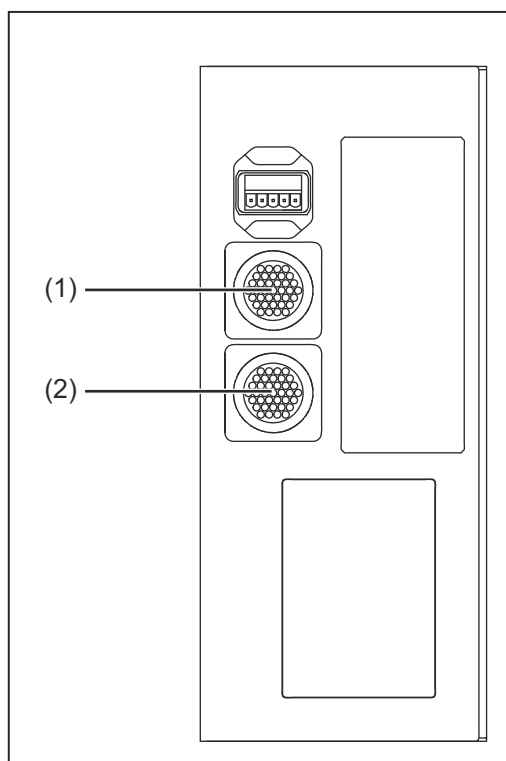
Ausgangssignale (vom Roboter zu CTC)

| Ausgang | Signal | Bereich | Aktivität |
|---------|--------|---------|-----------|
| A01 | MC | - | High |
| A02 | FWD | - | High |
| A03 | REV | - | High |
| A04 | TL | - | High |
| A05 | MO | - | High |
| A06 | M1 | - | High |

| Ausgang | Signal | Bereich | Aktivität |
|---------|---------|---------|-----------|
| A07 | Reserve | - | - |
| A08 | Reserve | - | - |

Die Beschreibungen der Signale sind in der Bedienungsanleitung von Robacta CTC zu finden.

Zusätzlicher Funktionsumfang von Robacta FB 8I_80 Profinet



Anschlüsse an Robacta FB 8I_80 Profinet

(1) Anschluss-Stecker Standard I/O 1

dieser Stecker befindet sich immer am Roboterinterface und dient zur Verbindung von Robacta CTC mit dem Roboterinterface

(2) Anschluss-Stecker Standard I/O 2

dieser Stecker wird mit der Option 4,101,345,CK in das Roboterinterface eingebaut.

Mit diesem Stecker können zusätzlich zu Robacta CTC noch Schweißbrenner-Reinigungsgeräte am Roboterinterface angeschlossen werden. Für die Verbindung der Schweißbrenner-Reinigungsgeräte mit dem Roboterinterface ausschließlich die bei Fronius erhältlichen Kabelbäume verwenden.

Eingangssignale

für Robacta Reamer V Easy, Robacta Reamer V Easy Han6P J, Robacta Reamer Alu Edition, Robacta Reamer Alu 3000upm, Robacta Reamer Bürstenkopf Alu, Robacta Reamer Twin:

| Eingang (Vom Feldbus-Koppler zum Anschluss-Stecker Standard I/O 2) | Pin am Anschluss-Stecker Standard I/O 2 | Signal | Aktivität |
|---|---|--------------|-----------|
| E09 | 11 | Gasdüse frei | High |
| E10 | 12 | Reserve | - |
| E11 | 13 | Reserve | - |
| E12 | 14 | Reserve | - |
| E13 | 15 | Reserve | - |
| E14 | 16 | Reserve | - |

| Eingang (Vom Feldbus-Koppler zum Anschluss-Stecker Standard I/O 2) | Pin am Anschluss-Stecker Standard I/O 2 | Signal | Aktivität |
|---|---|---------|-----------|
| E15 | 17 | Reserve | - |
| E16 | 18 | Reserve | - |

Ausgangssignale für Robacta Reamer V Easy, Robacta Reamer V Easy Han6P J, Robacta Reamer Alu Edition, Robacta Reamer Alu 3000upm, Robacta Reamer Bürstenkopf Alu, Robacta Reamer Twin:

| Ausgang (Vom Anschluss-Stecker Standard I/O 2 zum Feldbus-koppler) | Pin am Anschluss-Stecker Standard I/O 2 | Signal | Aktivität |
|---|---|-------------------|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Reinigung starten | High |
| A10 | 4 | Reserve | - |
| A11 | 5 | Reserve | - |
| A12 | 6 | Reserve | - |
| A13 | 7 | Reserve | - |
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Eingangssignale für Reamer Braze+:

| Eingang (Vom Feldbus-Koppler zum Anschluss-Stecker Standard I/O 2) | Pin am Anschluss-Stecker Standard I/O 2 | Signal | Aktivität |
|---|---|------------------|-----------|
| E09 | 11 | Reinigungsbereit | High |
| E10 | 12 | Reserve | - |
| E11 | 13 | Reserve | - |
| E12 | 14 | Reserve | - |
| E13 | 15 | Reserve | - |
| E14 | 16 | Reserve | - |
| E15 | 17 | Reserve | - |
| E16 | 18 | Reserve | - |

Ausgangssignale für Robacta Reamer Braze+:

| Ausgang (Vom Anschluss- Stecker Standard I/O 2 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|--|--|--------------------------|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Reinigungsmotor starten | High |
| A10 | 4 | Reinigungskopf justieren | High |
| A11 | 5 | Reserve | - |
| A12 | 6 | Reserve | - |
| A13 | 7 | Reserve | - |
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Eingangssignale für Reamer Robacta Reamer V:

| Eingang (Vom Feldbus-Kopp- ler zum Anschluss- Stecker Standard I/O 2) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|---|--|-----------------------------------|-----------|
| E09 | 11 | Gasdüse frei | High |
| E10 | 12 | Gasdüse gespannt | High |
| E11 | 13 | Reinigungsmotor dreht | High |
| E12 | 14 | Trennmittel-Stand in Ord- nung | High |
| E13 | 15 | Reinigungsmotor unten | High |
| E14 | 16 | Reinigungsmotor oben | High |
| E15 | 17 | Drahtabschneider offen | High |
| E16 | 18 | Drahtabschneider ge- schlossen | High |

Ausgangssignale für Reamer Robacta Reamer V:

| Ausgang (Vom Anschluss- Stecker Standard I/O 2 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|--|--|--|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Gasdüse spannen / Reini- gungsmotor ein | High |
| A10 | 4 | Trennmittel einsprühen | High |

| Ausgang (Vom Anschluss- Stecker Standard I/O 2 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|--|--|----------------------------------|-----------|
| A11 | 5 | Drahtelektrode abschnei- den | High |
| A12 | 6 | Reinigungsmotor auf | High |
| A13 | 7 | Optionaler GND für Sen- soren | High |
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Eingangssignale für Robacta Reamer V Twin:

| Eingang (Vom Feldbus-Kopp- ler zum Anschluss- Stecker Standard I/O 2) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|---|--|-----------------------------------|-----------|
| E09 | 11 | Gasdüse frei | High |
| E10 | 12 | Gasdüse gespannt | High |
| E11 | 13 | Reserve | - |
| E12 | 14 | Trennmittel-Stand in Ord- nung | High |
| E13 | 15 | Reinigungsmotor unten | High |
| E14 | 16 | Reinigungsmotor oben | High |
| E15 | 17 | Schwenk-Vorrichtung links | High |
| E16 | 18 | Schwenk-Vorrichtung rechts | High |

Ausgangssignale für Robacta Reamer V Twin:

| Ausgang (Vom Anschluss- Stecker Standard I/O 2 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|--|--|--|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Gasdüse spannen / Reini- gungsmotor ein | High |
| A10 | 4 | Trennmittel einsprühen | High |
| A11 | 5 | Drahtelektrode abschnei- den | High |
| A12 | 6 | Reinigungsmotor auf | High |

| Ausgang (Vom Anschluss- Stecker Standard I/O 2 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|--|--|------------------------------------|-----------|
| A13 | 7 | Schwenk-Vorrichtung nach links | High |
| A14 | 8 | Schwenk-Vorrichtung nach rechts | High |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Eingangssignale für Robacta Reamer V 70 Han12P:

| Eingang (Vom Feldbus-Kopp- ler zum Anschluss- Stecker Standard I/O 2) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|---|--|----------------------|-----------|
| E09 | 11 | Gasdüse frei | High |
| E10 | 12 | Reserve | - |
| E11 | 13 | Reserve | - |
| E12 | 14 | Reserve | - |
| E13 | 15 | Reserve | - |
| E14 | 16 | Reinigungsmotor oben | High |
| E15 | 17 | Reserve | - |
| E16 | 18 | Reserve | - |

Ausgangssignale für Robacta Reamer V 70 Han12P:

| Ausgang (Vom Anschluss- Stecker Standard I/O 2 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|--|--|---------------------------------|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Reinigung starten | High |
| A10 | 4 | Trennmittel einsprühen | High |
| A11 | 5 | Drahtelektrode abschnei- den | High |
| A12 | 6 | GND für Sensoren | High |
| A13 | 7 | Reserve | - |
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Eingangssignale für Robacta Reamer V Comfort:

| Eingang (Vom Feldbus-Kopp- ler zum Anschluss- Stecker Standard I/O 2) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|---|--|-----------------------------------|-----------|
| E09 | 11 | Gasdüse frei | High |
| E10 | 12 | Ausgangssignal Sensor | High |
| E11 | 13 | Ausgangssignal Sensor | High |
| E12 | 14 | Trennmittel-Stand in Ord- nung | - |
| E13 | 15 | Reserve | - |
| E14 | 16 | Reinigungsmotor oben | High |
| E15 | 17 | Reserve | - |
| E16 | 18 | Reserve | - |

Ausgangssignale für Robacta Reamer V Comfort:

| Ausgang (Vom Anschluss- Stecker Standard I/O 2 zum Feldbus- koppler) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|--|--|---------------------------------|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Reinigung starten | High |
| A10 | 4 | Trennmittel einsprühen | High |
| A11 | 5 | Drahtelektrode abschnei- den | High |
| A12 | 6 | Ausgangssignal Aktor | High |
| A13 | 7 | GND für die Sensoren | High |
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Eingangssignale für Robacta TC 1000, Robacta TC 2000:

| Eingang (Vom Feldbus-Kopp- ler zum Anschluss- Stecker Standard I/O 2) | Pin am An- schluss-Ste- cker Standard I/O 2 | Signal | Aktivität |
|---|--|---------------------|-----------|
| E09 | 11 | Ready | High |
| E10 | 12 | Fluid Level Control | High |
| E11 | 13 | Cleaning Error | High |
| E12 | 14 | Reserve | - |
| E13 | 15 | Reserve | - |
| E14 | 16 | Reserve | - |

| Eingang (Vom Feldbus-Koppler zum Anschluss-Stecker Standard I/O 2) | Pin am Anschluss-Stecker Standard I/O 2 | Signal | Aktivität |
|---|---|---------|-----------|
| E15 | 17 | Reserve | - |
| E16 | 18 | Reserve | - |

Ausgangssignale für Robacta TC 1000, Robacta TC 2000:

| Ausgang (Vom Anschluss-Stecker Standard I/O 2 zum Feldbus-koppler) | Pin am Anschluss-Stecker Standard I/O 2 | Signal | Aktivität |
|---|---|----------------|-----------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Cleaning Start | High |
| A10 | 4 | Spray In | High |
| A11 | 5 | Wire Cutter | High |
| A12 | 6 | Quick Stop | High |
| A13 | 7 | Reserve | - |
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Ein- und Ausgangssignale Robacta TX

Anordnung der Feldbus-Klemmen

Folgend die werksseitige Anordnung der Feldbus-Klemmen:

| | | | | | | |
|---------|--------|--------|--------|--------|--------|--------|
| BK 9105 | KL1408 | KL1408 | KL1408 | KL2408 | KL2612 | KL9010 |
|---------|--------|--------|--------|--------|--------|--------|

Es besteht die Möglichkeit, weitere Feldbus-Klemmen in ein Roboterinterface einzubauen. Die Anzahl ist jedoch durch die Gehäusegröße limitiert.

HINWEIS!

Beim Einbau weiterer Feldbus-Klemmen ändert sich das Prozessdatenbild.

Eingangssignale (von der Brennerkörper-Wechselstation zum Roboter)

| Eingang | Signal | Bereich | Aktivität |
|---------|--|---------|-----------|
| E01 | Brennerkörper-Sensor 1 | - | High |
| E02 | Brennerkörper-Sensor 2 | - | High |
| E03 | Brennerkörper-Sensor 3 | - | High |
| E04 | Brennerkörper-Sensor 4 | - | High |
| E05 | Brennerkörper-Sensor 5 | - | High |
| E06 | Brennerkörper-Sensor 6 | - | High |
| E07 | Brennerkörper-Sensor 7 | - | High |
| E08 | Brennerkörper-Sensor 8 | - | High |
| E09 | Brennerkörper-Sensor 9 | - | High |
| E10 | Brennerkörper-Sensor 10 | - | High |
| E11 | Signal Drahtsensor | - | High |
| E12 | Signal Druckschalter | - | High |
| E13 | Gasdüse frei (bei Robacta Reamer V) TC Ready (bei Robacta TC) | - | High |
| E14 | Gasdüse frei (bei Robacta Reamer V Easy) Reinigungsmotor unten (bei Robacta Reamer Bürstenkopf Alu) | - | High |
| E15 | Reinigungsmotor dreht (bei Robacta Reamer V) | - | High |

| Eingang | Signal | Bereich | Aktivität |
|---------|---|---------|-----------|
| E16 | Trennmittel Füllstand in Ordnung (bei Robacta Reamer V) | - | High |
| E17 | Reinigungsmotor unten (bei Robacta Reamer V) Cleaning Error (bei Robacta TC) | - | High |
| E18 | Reinigungsmotor oben (bei Robacta Reamer V) | - | High |
| E19 | Drahtabschneider geschlossen | - | High |
| E20 | Drahtabschneider offen | - | High |
| E21 | Signal Rutsche | - | High |
| E22 | 'C-Sens. 4' Signal 1 | - | High |
| E23 | Sensor 1 Abdeckung Robacta TX | - | High |
| E24 | Sensor 2 Abdeckung Robacta TX | - | High |

Die Beschreibungen der Signale sind in der Bedienungsanleitung von Robacta TX zu finden.

**Ausgangssignale
(vom Roboter
zur Bren-
nerkörper-
Wechselstation)**

| Ausgang | Signal | Bereich | Aktivität |
|---------|--|---------|-----------|
| A01 | Gasdüse spannen und Reinigungsmotor ein (bei Robacta Reamer V) Reinigung starten (bei Robacta Reamer V Easy und Robacta Reamer Bürstenkopf Alu) Cleaning Start (bei Robacta TC) | - | High |
| A02 | Trennmittel einsprühen (bei Robacta Reamer V) | - | High |
| A03 | Reinigungsmotor auf (bei Robacta Reamer V) | - | High |
| A04 | Drahtelektrode abschneiden | - | High |
| A05 | Ventil 1 Abdeckung Robacta TX | - | High |
| A06 | Ventil 2 Abdeckung Robacta TX | - | High |
| A07 | 'C-Act. 3' Signal 1 | - | High |
| A08 | Nicht verwendet | - | - |
| A09 | Ventil 1 Brenner wechseln | - | High |
| A10 | Reserve Relais OUT | - | High |
| A11 | Nicht verwendet | - | - |
| A12 | Nicht verwendet | - | - |

| Ausgang | Signal | Bereich | Aktivität |
|---------|-----------------|---------|-----------|
| A13 | Nicht verwendet | - | - |
| A14 | Nicht verwendet | - | - |
| A15 | Nicht verwendet | - | - |
| A16 | Nicht verwendet | - | - |

Die Beschreibungen der Signale sind in der Bedienungsanleitung von Robacta TX zu finden.

Ein- und Ausgangssignale Robacta TX 10i

Anordnung der Feldbus-Klemmen

Folgend die werksseitige Anordnung der Feldbus-Klemmen:

| | | | | | | |
|---------|--------|--------|--------|--------|--------|--------|
| BK 9105 | KL1408 | KL1408 | KL1408 | KL2408 | KL2612 | KL9010 |
|---------|--------|--------|--------|--------|--------|--------|

Es besteht die Möglichkeit, weitere Feldbus-Klemmen in ein Roboterinterface einzubauen. Die Anzahl ist jedoch durch die Gehäusegröße limitiert.

HINWEIS!

Beim Einbau weiterer Feldbus-Klemmen ändert sich das Prozessdatenbild.

Eingangssignale (von der Brennerkörper-Wechselstation zum Roboter)

| Eingang | Signal | Bereich | Aktivität |
|---------|--|---------|-----------|
| E01 | Brennerkörper-Sensor 1 | - | High |
| E02 | Brennerkörper-Sensor 2 | - | High |
| E03 | Brennerkörper-Sensor 3 | - | High |
| E04 | Brennerkörper-Sensor 4 | - | High |
| E05 | Brennerkörper-Sensor 5 | - | High |
| E06 | Brennerkörper-Sensor 6 | - | High |
| E07 | Brennerkörper-Sensor 7 | - | High |
| E08 | Brennerkörper-Sensor 8 | - | High |
| E09 | Brennerkörper-Sensor 9 | - | High |
| E10 | Brennerkörper-Sensor 10 | - | High |
| E11 | Signal Drahtsensor | - | High |
| E12 | Nicht verwendet | - | - |
| E13 | Gasdüse frei (bei Robacta Reamer V) TC Ready (bei Robacta TC) | - | High |
| E14 | Gasdüse frei (bei Robacta Reamer V Easy) Reinigungsmotor unten (bei Robacta Reamer Bürstenkopf Alu) | - | High |
| E15 | Reinigungsmotor dreht (bei Robacta Reamer V) | - | High |

| Eingang | Signal | Bereich | Aktivität |
|---------|---|---------|-----------|
| E16 | Trennmittel Füllstand in Ordnung (bei Robacta Reamer V) | - | High |
| E17 | Reinigungsmotor unten (bei Robacta Reamer V) Cleaning Error (bei Robacta TC) | - | High |
| E18 | Reinigungsmotor oben (bei Robacta Reamer V) | - | High |
| E19 | Drahtabschneider geschlossen | - | High |
| E20 | Drahtabschneider offen | - | High |
| E21 | Signal Rutsche | - | High |
| E22 | 'C-Sens. 4' Signal 1 | - | High |
| E23 | Sensor 1 Abdeckung | - | High |
| E24 | Sensor 2 Abdeckung | - | High |

Die Beschreibungen der Signale sind in der Bedienungsanleitung von Robacta TX 10i zu finden.

**Ausgangssignale
(vom Roboter
zur Bren-
nerkörper-
Wechselstation)**

| Ausgang | Signal | Bereich | Aktivität |
|---------|--|---------|-----------|
| A01 | Gasdüse spannen und Reinigungsmotor ein (bei Robacta Reamer V) Reinigung starten (bei Robacta Reamer V Easy und Robacta Reamer Bürstenkopf Alu) Cleaning Start (bei Robacta TC) | - | High |
| A02 | Trennmittel einsprühen (bei Robacta Reamer V) | - | High |
| A03 | Reinigungsmotor auf (bei Robacta Reamer V) | - | High |
| A04 | Drahtelektrode abschneiden | - | High |
| A05 | Ventil 1 Abdeckung Robacta TX | - | High |
| A06 | Ventil 2 Abdeckung Robacta TX | - | High |
| A07 | 'C-Act. 3' Signal 1 | - | High |
| A08 | Nicht verwendet | - | - |
| A09 | Nicht verwendet | - | - |
| A10 | Reserve Relais OUT | - | High |
| A11 | Nicht verwendet | - | - |
| A12 | Nicht verwendet | - | - |

| Ausgang | Signal | Bereich | Aktivität |
|---------|-----------------|---------|-----------|
| A13 | Nicht verwendet | - | - |
| A14 | Nicht verwendet | - | - |
| A15 | Nicht verwendet | - | - |
| A16 | Nicht verwendet | - | - |

Die Beschreibungen der Signale sind in der Bedienungsanleitung von Robacta TX 10i zu finden.

Ein- und Ausgangssignale Robacta TX/i TWIN

Anordnung der Feldbus-Klemmen

Folgend die werksseitige Anordnung der Feldbus-Klemmen:

| | | | | | | |
|---------|--------|--------|--------|--------|--------|--------|
| BK 9105 | KL1408 | KL1408 | KL1408 | KL2408 | KL2612 | KL9010 |
|---------|--------|--------|--------|--------|--------|--------|

Es besteht die Möglichkeit, weitere Feldbus-Klemmen in ein Roboterinterface einzubauen. Die Anzahl ist jedoch durch die Gehäusegröße limitiert.

HINWEIS!

Beim Einbau weiterer Feldbus-Klemmen ändert sich das Prozessdatenbild.

Eingangssignale (von der Brennerkörper-Wechselstation zum Roboter)

| Eingang | Signal | Bereich | Aktivität |
|---------|---|---------|-----------|
| E01 | Brennerkörper-Sensor 1 | - | High |
| E02 | Brennerkörper-Sensor 2 | - | High |
| E03 | Brennerkörper-Sensor 3 | - | High |
| E04 | Brennerkörper-Sensor 4 | - | High |
| E05 | Brennerkörper-Sensor 5 | - | High |
| E06 | Brennerkörper-Sensor 6 | - | High |
| E07 | Brennerkörper-Sensor 7 | - | High |
| E08 | Brennerkörper-Sensor 8 | - | High |
| E09 | Nicht verwendet | - | - |
| E10 | Nicht verwendet | - | - |
| E11 | Signal Drahtsensor | - | High |
| E12 | Nicht verwendet | - | - |
| E13 | Gasdüse frei (bei Robacta Reamer V Twin) TC Ready (bei Robacta TC) | - | High |
| E14 | Nicht verwendet | - | - |
| E15 | Nicht verwendet | - | - |
| E16 | Fluid Level Control (bei Robacta TC) | - | High |
| E17 | Cleaning Error (bei Robacta TC) | - | High |
| E18 | Nicht verwendet | - | - |

| Eingang | Signal | Bereich | Aktivität |
|---------|--------------------------------|---------|-----------|
| E19 | Nicht verwendet | - | - |
| E20 | Nicht verwendet | - | - |
| E21 | Nicht verwendet | - | - |
| E22 | Nicht verwendet | - | - |
| E23 | Sensor 1. Abdeckung Robacta TX | - | High |
| E24 | Sensor 2. Abdeckung Robacta TX | - | High |

Die Beschreibungen der Signale sind in der Bedienungsanleitung von Robacta TX/i TWIN zu finden.

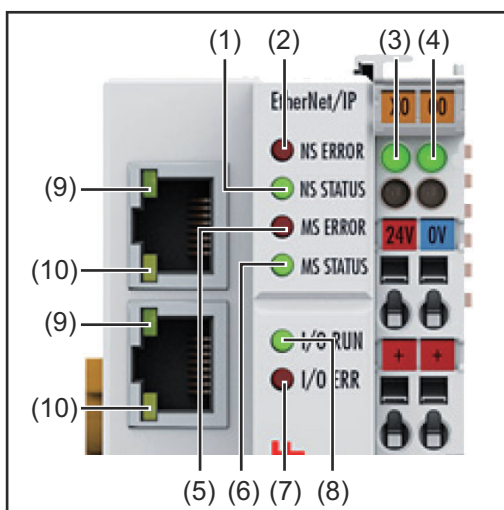
**Ausgangssignale
(vom Roboter
zur Bren-
nerkörper-
Wechselstation)**

| Ausgang | Signal | Bereich | Aktivität |
|---------|--|---------|-----------|
| A01 | Reinigung starten (bei Robacta Reamer V Twin) Cleaning Start (bei Robacta TC) | - | High |
| A02 | Spray In (bei Robacta TC) | - | High |
| A03 | Nicht verwendet | - | - |
| A04 | Drahtelektrode abschneiden | - | High |
| A05 | Ventil 1. Abdeckung Robacta TX | - | High |
| A06 | Ventil 2. Abdeckung Robacta TX | - | High |
| A07 | Nicht verwendet | - | - |
| A08 | Nicht verwendet | - | - |
| A09 | Nicht verwendet | - | - |
| A10 | Reserve Relais OUT | - | High |
| A11 | Nicht verwendet | - | - |
| A12 | Nicht verwendet | - | - |
| A13 | Nicht verwendet | - | - |
| A14 | Nicht verwendet | - | - |
| A15 | Nicht verwendet | - | - |
| A16 | Nicht verwendet | - | - |

Die Beschreibungen der Signale sind in der Bedienungsanleitung von Robacta TX/i TWIN zu finden.

Fehlerdiagnose, Fehlerbehebung

Anzeigen am Feldbus-Koppler BK9105



| | | | |
|------|--------------------------------|------|--|
| (1) | LED NS Status LED EIP RUN * | grün | zur Feldbus-Diagnose |
| (2) | LED NS Error LED EIP ERR * | rot | |
| (3) | LED Us | grün | zur Diagnose der Spannungsversorgung |
| (4) | LED Up | grün | |
| (5) | LED MS Error LED DIAG E * | rot | zur Feldbus-Diagnose |
| (6) | LED MS Status LED DIAG R* | grün | |
| (7) | LED I/O Error | rot | zur Diagnose des K-Bus |
| (8) | LED I/O Run | grün | |
| (9) | LED Link/Active | grün | zur Diagnose der Ethernet/IP State Machine/PLC |
| (10) | nicht belegt | - | - |

* bei BK9055

LEDs zur Diagnose der Spannungsversorgung

| LED | Anzeige | Bedeutung |
|-----|----------|--|
| Us | Aus | Keine Betriebsspannung am Buskoppler vorhanden |
| | Leuchtet | 24 VDC Betriebsspannung am Buskoppler vorhanden |
| Up | Aus | Keine Spannungsversorgung an den Powerkontakten vorhanden |
| | Leuchtet | Spannungsversorgung 24 VDC an den Powerkontakten vorhanden |

LED am RJ5-Anschluss

| LED | Anzeige | Bedeutung |
|-----------------|---------|----------------------------|
| LED Link/Active | Aus | keine Verbindung vorhanden |
| | Ein | Verbindung vorhanden |
| | Blinkt | Kommunikation verfügbar |

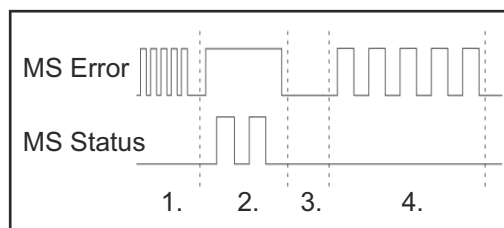
LEDs zur Feldbus-Diagnose

| LED NS Status | LED NS Error | Bedeutung |
|-------------------|-------------------|---------------------------------|
| Blinkt (0,5 Sek.) | Aus | IP-Adresse okay |
| Aus | Aus | keine IP-Adresse (DIP-Schalter) |
| Ein | Aus | Online |
| Blinkt (0,1 Sek.) | Aus | Offline PLC Stop |
| Aus | Blinkt (0,5 Sek.) | Timeout |
| Aus | Ein | IP-Adressen-Konflikt |

| LED MS Status (Fehlercode) | LED MS Error (Fehlerargument) | Bedeutung |
|----------------------------|-------------------------------|------------------------------|
| Ein | Aus | kein Fehler |
| 1 | Blinkt | zu wenig Eingangsdaten |
| 2 | Blinkt | zu viele Eingangsdaten |
| 3 | Blinkt | zu wenig Ausgangsdaten |
| 4 | Blinkt | zu viele Ausgangsdaten |
| 5 | Blinkt | Wrong Assembly Instance????? |
| 6 | Blinkt | Zweiter Master |

Fehleranzeige der LEDs MS Error und MS Status:

Die Fehleranzeige erfolgt anhand einer Blinksequenz. Im folgenden Beispiel wird die Anzeige des Fehlers "zu viele Eingangsdaten" dargestellt.



Anzeigebeispiel "zu viele Eingangsdaten"

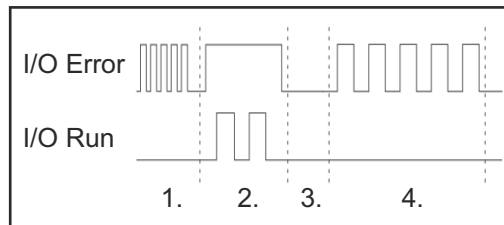
1. LED MS Error blinkt schnell
LED MS Status ist AUS
2. LED MS Error leuchtet
LED MS Status zeigt den Fehlercode (2 x Blinken)
3. beide LED sind AUS
4. LED MS Error zeigt das Fehlerargument (5 x Blinken)
LED MS Status ist AUS

LEDs zur Diagnose des K-Bus

| LED I/O Run | Anzeige | Bedeutung | Abhilfe |
|-------------|----------|---------------|---------|
| | Aus | K-Bus inaktiv | - |
| | Leuchtet | K-Bus aktiv | - |

Fehleranzeige der LEDs I/O Run und I/O Error:

Die Fehleranzeige erfolgt anhand einer Blinksequenz. Im folgenden Beispiel wird die Anzeige des Fehlers "Tabellenvergleich Busklemme 5" dargestellt.



Anzeigebeispiel "Tabellenvergleich Busklemme 5"

1. LED I/O Error blinkt schnell
LED I/O Run ist AUS
2. LED I/O Error leuchtet
LED I/O Run zeigt den Errorcode (2 x Blinken)
3. beide LED sind AUS
4. LED I/O Error zeigt das Fehlerargument (5 x Blinken)
LED I/O Run ist AUS

| LED I/O Error | | | |
|---------------|---------------------|---|--|
| Anzeige | Fehlerargument | Bedeutung | Abhilfe |
| Blinkt | | EMV Probleme | <ul style="list-style-type: none"> - Spannungsversorgung auf Unter- oder Überspannungsspitzen kontrollieren - EMV-Maßnahmen ergreifen - Liegt ein K-Bus-Fehler vor, kann durch erneutes Starten (Aus- und Wiedereinschalten des Kopplers) der Fehler lokalisiert werden |
| 1 Impuls | 0 | EEPROM-Prüfsummenfehler | Herstellereinstellung mit der Konfigurationssoftware KS2000 setzen (Menü "Online -> Koppler -> Dienste -> Herstellereinstellung") |
| | 1 | Überlauf im Code Buffer | Weniger Busklemmen stecken. Bei prog. Konfiguration sind zu viele Einträge in der Tabelle |
| | 2 | Unbekannter Datentyp | Software Update des Buskopplers notwendig |
| 2 Impulse | 0 | Programmierte Konfiguration, falscher Tabelleneintrag | Programmierte Konfiguration auf Richtigkeit überprüfen |
| | n (n > 0) | Tabellenvergleich (Busklemme n) | Falschen Tabelleneintrag richtig stellen |

| LED I/O Error | | | |
|---------------|-----------------|---|---|
| Anzeige | Fehler-argument | Bedeutung | Abhilfe |
| 3 Impulse | 0 | K-Bus-Kommandofehler | <ul style="list-style-type: none"> - Keine Busklemme gesteckt - Eine der Busklemmen ist defekt; angehängte Busklemmen halbieren und prüfen ob der Fehler bei den übrigen Busklemmen noch vorhanden ist. Dies weiter durchführen, bis die defekte Busklemme lokalisiert ist. |
| 4 Impulse | 0 | K-Bus-Datenfehler, Bruchstelle hinter dem Buskoppler | Prüfen ob die n+1 Busklemme richtig gesteckt ist, gegebenenfalls tauschen |
| | n | Bruchstelle hinter Busklemme n | Kontrollieren ob die Busendklemme 9010 gesteckt ist |
| 5 Impulse | n | K-Bus-Fehler bei Register-Kommunikation mit Busklemme n | n-te Busklemme tauschen |
| 6 Impulse | 0 | Initialisierungsfehler | Feldbus-Koppler tauschen |
| | 1 | interner Datenfehler | |
| | 2 | | |
| | 4 | | |
| | 8 | | |
| | 16 | | |
| 14 Impulse | n | n-te Busklemme hat das falsche Format | Buskoppler erneut Starten, falls der Fehler erneut auftritt die Busklemme tauschen. |
| 15 Impulse | n | Anzahl der Busklemmen stimmt nicht mehr | Buskoppler erneut Starten, falls der Fehler erneut auftritt, Hersteller-einstellung mit der Konfigurationssoftware KS2000 setzen |
| 16 Impulse | n | Länge der K-Bus-Daten stimmt nicht mehr | Buskoppler erneut Starten, falls der Fehler erneut auftritt, Hersteller-einstellung mit der Konfigurationssoftware KS2000 setzen |

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General

Contents of this document

- This document contains Ethernet/IP configuration and application information for:
- The robot interface Robacta FB 8I_8O (serves for example as robot interface for Robacta CTC)
 - The Ethernet/IP interfaces of Robacta TX, TX 10i, TW/i TWIN

Data transfer properties

Transmission technology:
Ethernet/IP

Network topology:
Star / line

Medium:
Min. CAT5 Ethernet cable (as per EN 50173 and ISO/IEC 11801)

Ethernet/IP uses four wires of the cable for signal transmission

Transmission rate:
100 Mbit/s

Bus connection:
RJ 45 Ethernet

Configuration parameters

In some robot control systems, it may be necessary to state the configuration parameters described here so that the fieldbus coupler can communicate with the robot.

| Parameter | Value |
|-----------------|----------------|
| Vendor ID | 108 |
| Device Type | 12 |
| Product Code | 9105 |
| Input size | 8 |
| Output size | 8 |
| Input assembly | 101 |
| Output assembly | 102 |
| Image type | Standard image |

| Instance type | Instance name | Signal type | Instance number | Size [bytes] |
|--------------------|----------------------|-------------|-----------------|--------------|
| Producing instance | Input data standard | IN * | 101 | 2 |
| Consuming Instance | Output data standard | OUT** | 102 | 2 |

* Data from the Fronius device to the robot controls

** Data from the robot controls to the Fronius device

Technical data

The technical data of the fieldbus coupler can be found under:
www.beckhoff.com

Safety**WARNING!****Danger from incorrect operation and work that is not carried out properly.**

This can result in serious personal injury and damage to property.

- ▶ All the work and functions described in this document must only be carried out by technically trained and qualified personnel.
- ▶ Read and understand this document in full.
- ▶ Read and understand all safety rules and user documentation for this equipment and all system components.

**WARNING!****Danger from electrical current.**

This can result in serious personal injury and damage to property.

- ▶ Before starting work, switch off all the devices and components involved and disconnect them from the grid.
- ▶ Secure all devices and components involved so they cannot be switched back on.

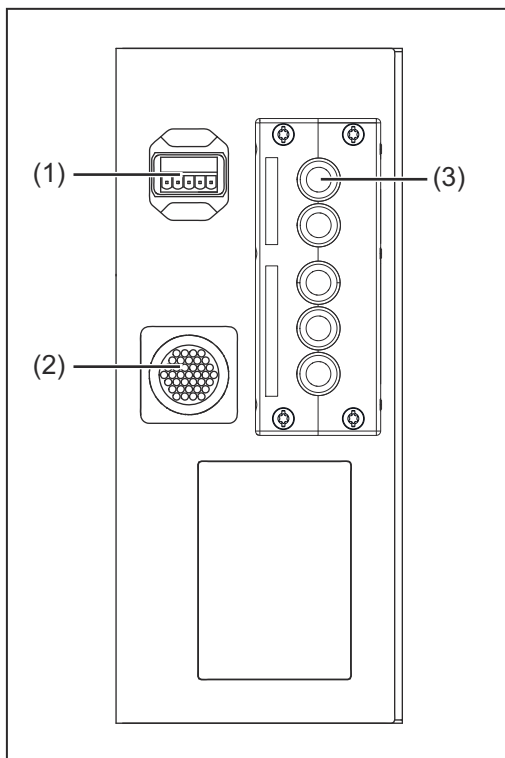
**WARNING!****Danger from unplanned signal transmission.**

This can result in serious personal injury and damage to property.

- ▶ Do not transfer safety signals via the interface.

Connections and connector pin assignments

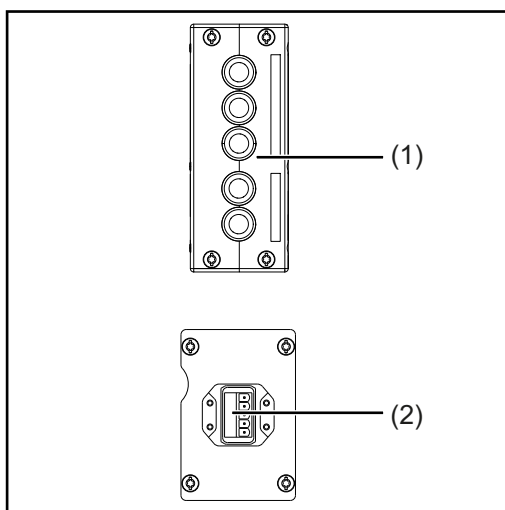
Connections for robot controls to Robacta FB 8I_8O (Robacta CTC)



Connections to Robacta FB 8I_8O

- (1) **Supply connection +24 V AIDA** for supplying the fieldbus coupler and the I/O terminals
- (2) **Standard I/O 1 connecting plug** for connecting to Robacta CTC
- (3) **Perforated plate with rubber bushings**

Connections for robot controls on the outside of Robacta TX, TX 10i, TX/i TWIN



- (1) **Perforated plate with rubber bushings**
- (2) **Supply connection +24 V AIDA** for supplying the fieldbus coupler and the I/O terminals

Connections on the fieldbus coupler BK9105

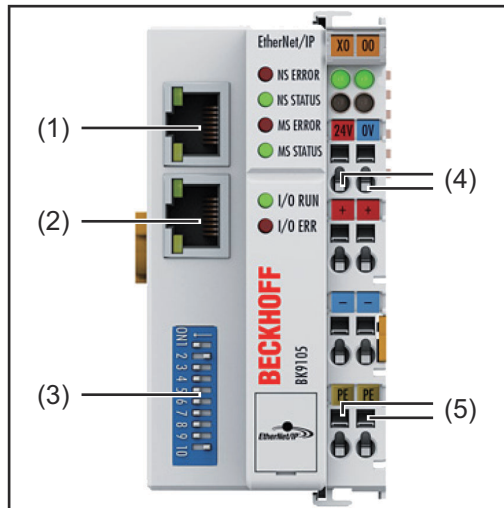


CAUTION!

Danger from electrical current.

This can result in damage to property.

- Before beginning the work, make sure that the cables for the external power supply of the fieldbus coupler are not live and remain so until all work has been completed.

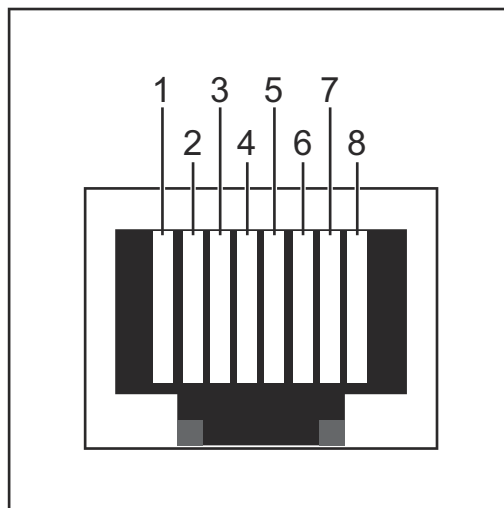


- (1) **RJ 45 Ethernet connection - Port 1**
- (2) **RJ 45 Ethernet connection - Port 2**
- (3) **Dip switch**
for setting the IP address
- (4) **Connections DC IN**
for connecting the external power supply
- (5) **Connections PE**

NOTE!

The external power supply must not be provided via the Fronius device.
Use the robot or robot controls for the external power supply.

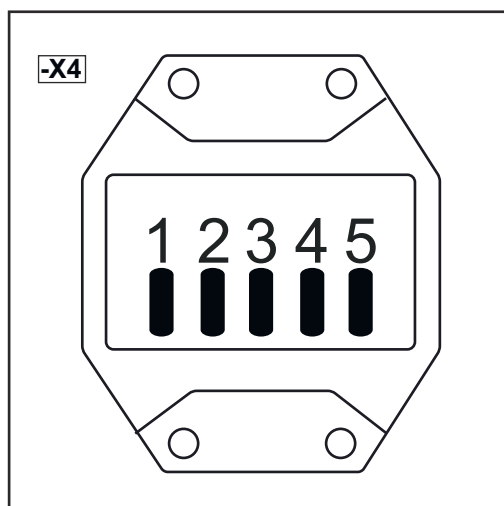
Pin assignment for the RJ45 Ethernet connections



Pin assignment RJ45 ProfiNet connection

| | |
|---------|---|
| 1 | TX+ (yellow) |
| 2 | TX- (orange) |
| 3 | RX+ (white) |
| 6 | RX- (blue) |
| 4,5,7,8 | Not normally used; to ensure signal completeness, these pins must be interconnected and, after passing through a filter circuit, must terminate at the ground conductor (PE). |

Pin assignment for supply connection socket +24 V AIDA



| Pin | Assignment |
|-----|---|
| 1 | +24 V power supply for the fieldbus coupler |
| 2 | 0 V power supply for the fieldbus coupler |
| 3 | +24 V power supply for the I/O terminals |
| 4 | 0 V power supply for the I/O terminals |
| 5 | Ground connection PE |

Power supply and grounding

Separate 24 V power supply

The robot interface Robacta FB 8I_8O is designed as standard for a separate 24 V supply of fieldbus bus coupler and I/O terminals. This requires two separate 24 V circuits, the robot interface does not have to be opened.

Procedure:

- 1** Apply circuit 1 to pins 1 (-X4:1) and 2 (-X4:2)
- 2** Apply circuit 2 to pins 2 (-X4:3) and (-X4:4)

Common 24 V external power supply

Alternatively, fieldbus bus couplers and I/O terminals can also be supplied jointly via a 24 V circuit.

For the external common power supply, the robot interface does not have to be opened.

Procedure:

- 1** On the supplied connector, bridge pin 1 (-X4:1) and pin 3 (-X4:3) with a piece of wire
- 2** On the supplied connector, bridge pin 2 (-X4:2) and pin 4 (-X4:4) with a piece of wire
- 3** Apply the circuit to pins 1 (-X4:1) and 2 (-X4:2)

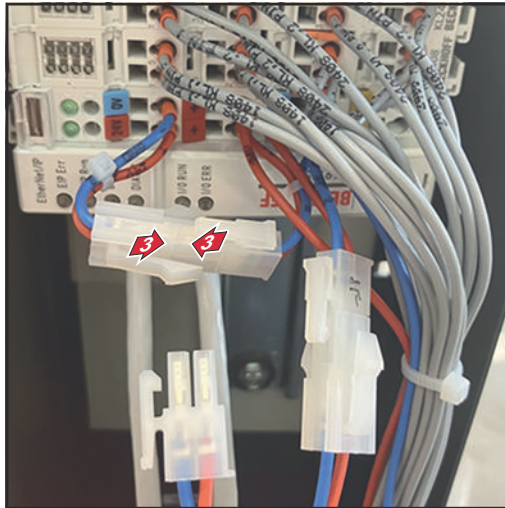
Common 24 V internal power supply

The second alternative for a common power supply with a 24 V circuit is the internal power supply.

Procedure:



- 1** Open the robot interface Robacta FB 8I_8O
- 2** Disconnect the connector of the fieldbus coupler from 24V/0V



- 3** Connect the 24V/0V cable from the fieldbus coupler to the free cable end of +/-
- 4** Close the robot interface Robacta FB 8I_8O
- 5** Apply circuit to pins 3 (-X4:3) and 4 (-X4:4)

Connecting grounding cable

- 1** Plug the grounding cable into pin 5 (-X4:5)
- 2** Plug the second end of the grounding cable into the bus coupler connection PE

Connecting the Robot Control

Data cable information

Requirements applicable to the data cable:

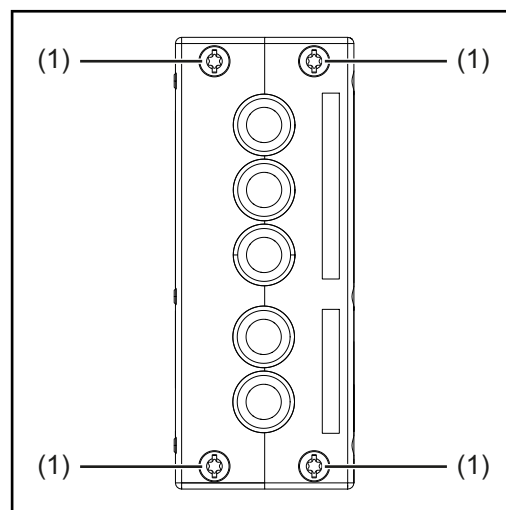
- Minimum category 5 (CAT5) as per EN 50173 or ISO/IEC 11801
- Symmetrical (1:1) cable or cross-over-cable

EtherCAT uses RJ45 plug connections. The contact assignment is compatible with the Ethernet standard (ISO/IEC 8802-3).

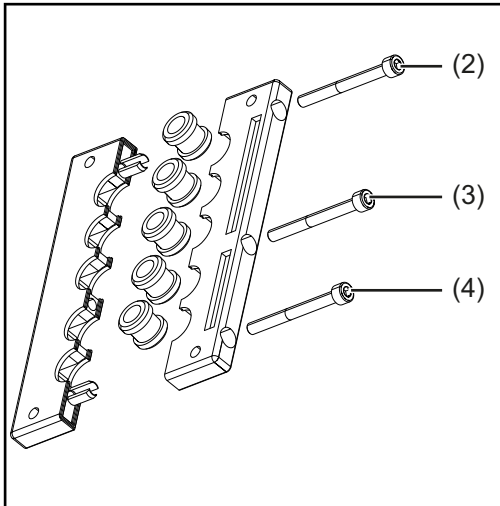
The following Beckhoff cables and plug connectors are suitable for use with EtherCAT systems:

- ZB9010 (Industrial Ethernet/EtherCAT cable, fixed installation CAT 5e, 4-wire)
- ZB9020 (Industrial Ethernet/EtherCAT cable suitable for drag chains CAT 5e, 4-wire)
- ZS1090-0003 (RJ45 plug, 4-pin, IP 20, suitable for field assembly)
- ZS1090-0005 (RJ45 plug, 8-pin (GigaBit suitable), IP 20, suitable for field assembly)
- ZK1090-9191-0001 (0.17 m EtherCAT patch cable)
- ZK1090-9191-0005 (0.5 m EtherCAT patch cable)
- ZK1090-9191-0010 (1.0 m EtherCAT patch cable)
- ZK1090-9191-0020 (2.0 m EtherCAT patch cable)
- ZK1090-9191-0030 (3.0 m EtherCAT patch cable)
- ZK1090-9191-0050 (5.0 m EtherCAT patch cable)

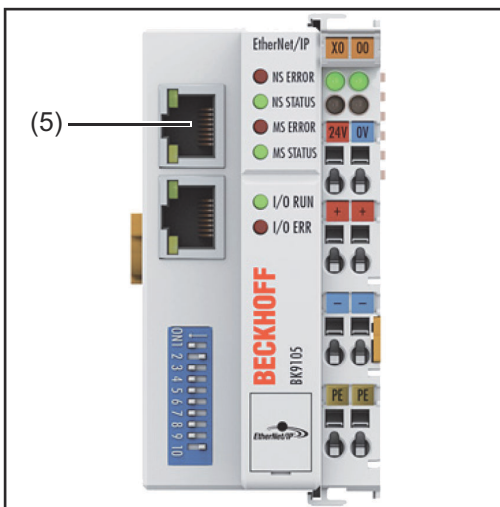
Connecting the robot control data cable



- 1** Dismantle the device cover to make the fieldbus coupler accessible
- 2** Undo the screws (1)



- 3** Remove screws (2) - (4)
- 4** Open perforated plate
- 5** Route the data cable into the device through the center rubber bushing



- 6** Connect the data cable to the RJ45 connection (5) at the fieldbus coupler
- 7** Secure the data cable with cable ties
- 8** Screw the perforated plate back in place with the original screws
- 9** Screw the device covers back on with the original screws
 - Tightening torque of the screws for Robacta TX, TX 10i, TX/i TWIN = 10 Nm (7.38 ft-lb)
 - Tightening torque of the screws for Robacta FB 8I_8O = 4 Nm (2.95 ft-lb)

Setting the IP address

Overview

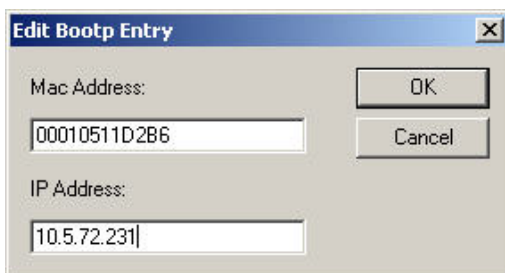
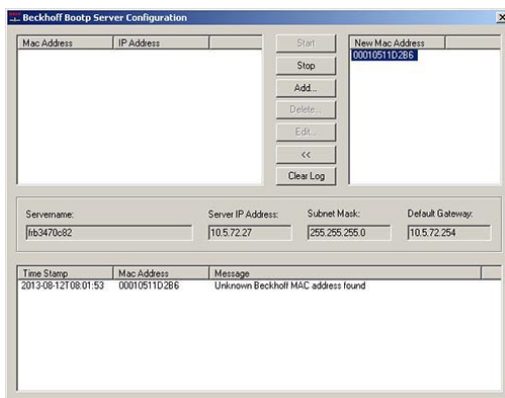
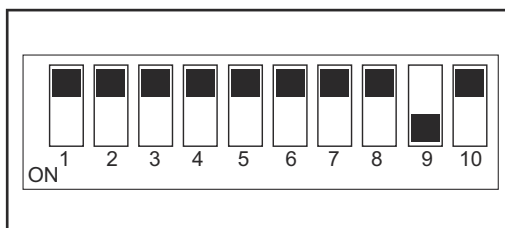
The IP address can be configured in three different ways:

- Using a BootP server
- Using the ARP command in the DOS window
- Using the KS2000 configuration software

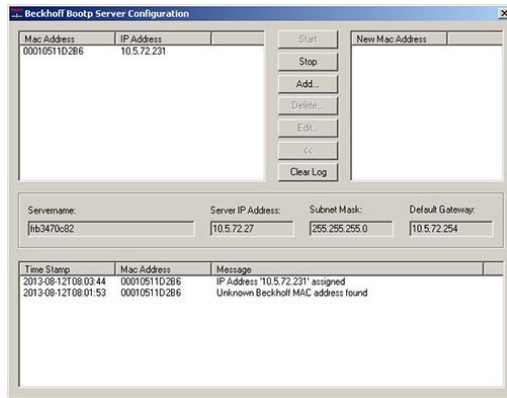
Setting the IP address via a BootP server is described in the following section.

Information on setting the IP address via the ARP command in the DOS window and with the KS2000 configuration software can be found at: www.beckhoff.com

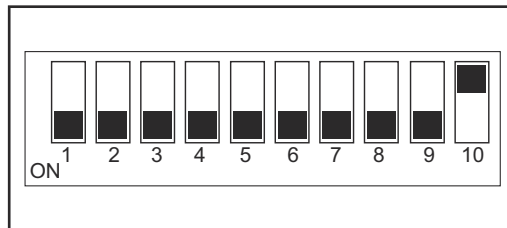
Setting the IP address using BootP server



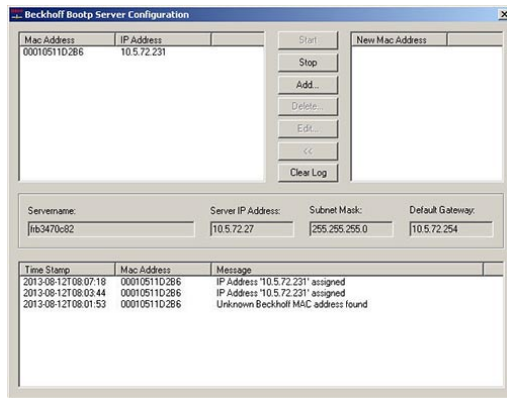
- 1 Connect the Ethernet cable to the fieldbus coupler BK9105
- 2 Set the dip switch as shown
- 3 Establish the power supply of the BK9105 fieldbus coupler
- 4 Start the Beckhoff BootP server program
- 5 Press "Start"
- 6 Wait until the Mac address of the BK9105 fieldbus coupler appears in the "New Mac Address" area
- 7 Double click on the found Mac address
- 8 Enter the desired IP address
- 9 Confirm entry with the "OK" button



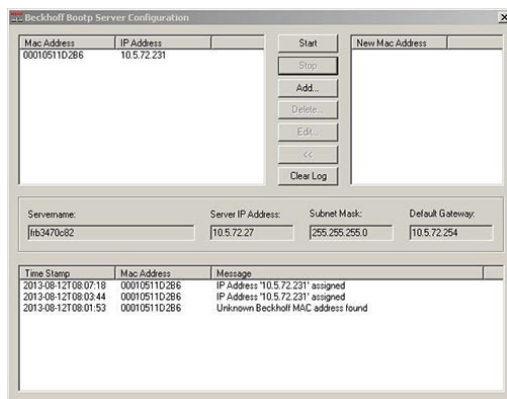
- 10** Wait until the desired IP address has been assigned to the fieldbus coupler BK9105



- 11** Set the dip switch as shown
- 12** Disconnect and restore the power supply of the BK9105 fieldbus coupler



- 13** Wait until the IP address has been assigned to the BK9105 again

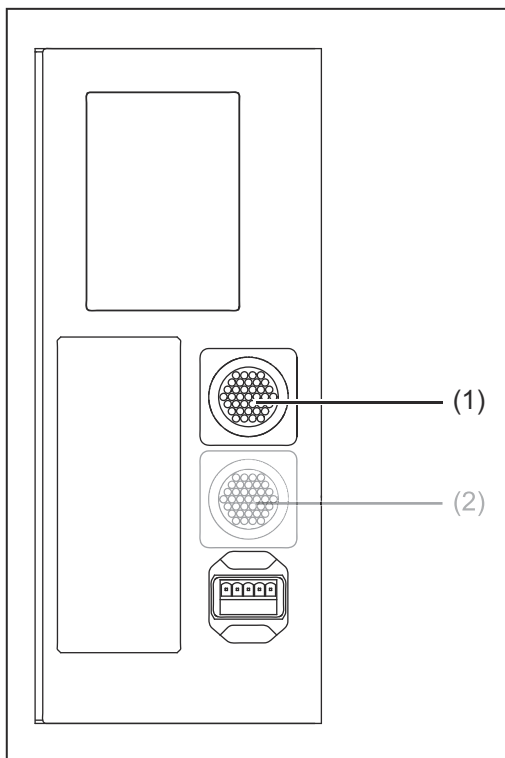


- 14** Press "Stop"

The IP address has now been statically assigned to the BK9105.

Cleaning device input and output signals

Input and output signals (I/O 1 plug)



Connections to Robacta FB 8I_80 Profinet

(1) Standard I/O 1 connecting plug

This connecting plug is always found on the robot interface and is used to connect Robacta CTC to the robot interface. This plug can be used to connect welding torch cleaning devices to the robot interface in addition to Robacta CTC. Only use the cable harnesses available from Fronius to connect the welding torch cleaning devices to the robot interface.

(2) Standard I/O 2 connecting plug

This connecting plug is installed in the robot interface with option 4,101,345,CK.

Input signals for Robacta Reamer V Easy, Robacta Reamer V Easy Han6P J, Robacta Reamer Alu Edition, Robacta Reamer Alu 3000upm, Robacta Reamer Alu brush head, Robacta Reamer Twin:

| Input (from the fieldbus coupler to the standard I/O 1 connecting plug) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|---|---|-----------------|--------|
| E01 | 11 | Gas nozzle free | High |
| E02 | 12 | Reserve | - |
| E03 | 13 | Reserve | - |
| E04 | 14 | Reserve | - |
| E05 | 15 | Reserve | - |
| E06 | 16 | Reserve | - |
| E07 | 17 | Reserve | - |
| E08 | 18 | Reserve | - |

Output signals for Robacta Reamer V Easy, Robacta Reamer V Easy Han6P J, Robacta Reamer Alu Edition, Robacta Reamer Alu 3000upm, Robacta Reamer Alu brush head, Robacta Reamer Twin:

| Output (from the standard I/O 1 connecting plug to the fieldbus coupler) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|--|---|----------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Start cleaning | High |
| A02 | 4 | Reserve | - |
| A03 | 5 | Reserve | - |
| A04 | 6 | Reserve | - |
| A05 | 7 | Reserve | - |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |
| A08 | 10 | Reserve | - |

Input signals for Reamer Braze+:

| Input (from the fieldbus coupler to the standard I/O 1 connecting plug) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|---|---|--------------------|--------|
| E01 | 11 | Ready for cleaning | High |
| E02 | 12 | Reserve | - |
| E03 | 13 | Reserve | - |
| E04 | 14 | Reserve | - |
| E05 | 15 | Reserve | - |
| E06 | 16 | Reserve | - |
| E07 | 17 | Reserve | - |
| E08 | 18 | Reserve | - |

Output signals for Robacta Reamer Braze+:

| Output (from the standard I/O 1 connecting plug to the fieldbus coupler) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|--|---|-------------------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Start cleaning motor | High |
| A02 | 4 | Calibrate cleaning head | High |
| A03 | 5 | Reserve | - |
| A04 | 6 | Reserve | - |
| A05 | 7 | Reserve | - |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |

| Output (from the standard I/O 1 connecting plug to the fieldbus coupler) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|--|---|---------|--------|
| A08 | 10 | Reserve | - |

Input signals for Robacta Reamer V:

| Input (from the fieldbus coupler to the standard I/O 1 connecting plug) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|---|---|------------------------|--------|
| E01 | 11 | Gas nozzle free | High |
| E02 | 12 | Gas nozzle clamped | High |
| E03 | 13 | Cleaning motor turns | High |
| E04 | 14 | Parting agent level OK | High |
| E05 | 15 | Cleaning motor bottom | High |
| E06 | 16 | Cleaning motor top | High |
| E07 | 17 | Wire cutter open | High |
| E08 | 18 | Wire cutter closed | High |

Output signals for Robacta Reamer V:

| Output (from the standard I/O 1 connecting plug to the fieldbus coupler) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|--|---|------------------------------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Clamp gas nozzle/cleaning motor on | High |
| A02 | 4 | Inject parting agent | High |
| A03 | 5 | Cut the wire electrode | High |
| A04 | 6 | Cleaning motor off | High |
| A05 | 7 | Optional GND for sensors | High |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |
| A08 | 10 | Reserve | - |

Input signals for Robacta Reamer V Twin:

| Input (from the fieldbus coupler to the standard I/O 1 connecting plug) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|---|---|--------------------|--------|
| E01 | 11 | Gas nozzle free | High |
| E02 | 12 | Gas nozzle clamped | High |

| Input (from the fieldbus coupler to the standard I/O 1 connecting plug) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|---|---|------------------------|--------|
| E03 | 13 | Reserve | - |
| E04 | 14 | Parting agent level OK | High |
| E05 | 15 | Cleaning motor bottom | High |
| E06 | 16 | Cleaning motor top | High |
| E07 | 17 | Swivel device left | High |
| E08 | 18 | Swivel device right | High |

Output signals for Robacta Reamer V Twin:

| Output (from the standard I/O 1 connecting plug to the fieldbus coupler) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|--|---|------------------------------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Clamp gas nozzle/cleaning motor on | High |
| A02 | 4 | Inject parting agent | High |
| A03 | 5 | Cut the wire electrode | High |
| A04 | 6 | Cleaning motor off | High |
| A05 | 7 | Swivel device to the left | High |
| A06 | 8 | Swivel device to the right | High |
| A07 | 9 | Reserve | - |
| A08 | 10 | Reserve | - |

Input signals for Robacta Reamer V 70 Han12P:

| Input (from the fieldbus coupler to the standard I/O 1 connecting plug) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|---|---|--------------------|--------|
| E01 | 11 | Gas nozzle free | High |
| E02 | 12 | Reserve | - |
| E03 | 13 | Reserve | - |
| E04 | 14 | Reserve | - |
| E05 | 15 | Reserve | - |
| E06 | 16 | Cleaning motor top | High |
| E07 | 17 | Reserve | - |
| E08 | 18 | Reserve | - |

Output signals for Robacta Reamer V 70 Han12P:

| Output (from the standard I/O 1 connecting plug to the fieldbus coupler) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|--|---|------------------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Start cleaning | High |
| A02 | 4 | Inject parting agent | High |
| A03 | 5 | Cut the wire electrode | High |
| A04 | 6 | GND for sensors | High |
| A05 | 7 | Reserve | - |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |
| A08 | 10 | Reserve | - |

Input signals for Robacta Reamer V Comfort:

| Input (from the fieldbus coupler to the standard I/O 1 connecting plug) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|---|---|------------------------|--------|
| E01 | 11 | Gas nozzle free | High |
| E02 | 12 | Output signal sensor | High |
| E03 | 13 | Output signal sensor | High |
| E04 | 14 | Parting agent level OK | - |
| E05 | 15 | Reserve | - |
| E06 | 16 | Cleaning motor top | High |
| E07 | 17 | Reserve | - |
| E08 | 18 | Reserve | - |

Output signals for Robacta Reamer V Comfort:

| Output (from the standard I/O 1 connecting plug to the fieldbus coupler) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|--|---|------------------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Start cleaning | High |
| A02 | 4 | Inject parting agent | High |
| A03 | 5 | Cut the wire electrode | High |
| A04 | 6 | Actuator output signal | High |
| A05 | 7 | GND for the sensors | High |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |

| Output (from the standard I/O 1 connecting plug to the fieldbus coupler) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|--|---|---------|--------|
| A08 | 10 | Reserve | - |

Input signals for Robacta TC 1000, Robacta TC 2000:

| Input (from the fieldbus coupler to the standard I/O 1 connecting plug) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|---|---|---------------------|--------|
| E01 | 11 | Ready | High |
| E02 | 12 | Fluid Level Control | High |
| E03 | 13 | Cleaning Error | High |
| E04 | 14 | Reserve | - |
| E05 | 15 | Reserve | - |
| E06 | 16 | Reserve | - |
| E07 | 17 | Reserve | - |
| E08 | 18 | Reserve | - |

Output signals for Robacta TC 1000, Robacta TC 2000:

| Output (from the standard I/O 1 connecting plug to the fieldbus coupler) | Pin on the standard I/O 1 connecting plug | Signal | Action |
|--|---|----------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A01 | 3 | Cleaning Start | High |
| A02 | 4 | Spray In | High |
| A03 | 5 | Wire Cutter | High |
| A04 | 6 | Quick Stop | High |
| A05 | 7 | Reserve | - |
| A06 | 8 | Reserve | - |
| A07 | 9 | Reserve | - |
| A08 | 10 | Reserve | - |

Robacta CTC input and output signals

Arrangement of the fieldbus terminals (optional configuration)

The following shows the fieldbus terminal allocation as set in the factory:

| | | | | | |
|---------|--------|--------|--|--|--------|
| BK 9105 | KL1408 | KL2408 | KL1408 (OPT/i Robacta FB 16I_16O 4,101,345,CK) | KL2408 (OPT/i Robacta FB 16I_16O 4,101,345,CK) | KL9010 |
|---------|--------|--------|--|--|--------|

It is possible to install the two fieldbus terminals listed below in the robot interface. This means that a welding torch cleaning device can be connected to the interface in addition to Robacta CTC. For more information on this, see section [Additional scope of functions of Robacta FB 8I_8O Profinet](#) from page 61.

Optional fieldbus terminals

- KL1408 and
- KL2408

Both terminals are part of option 4,101,345,CK.

Input signals (from CTC to robot)

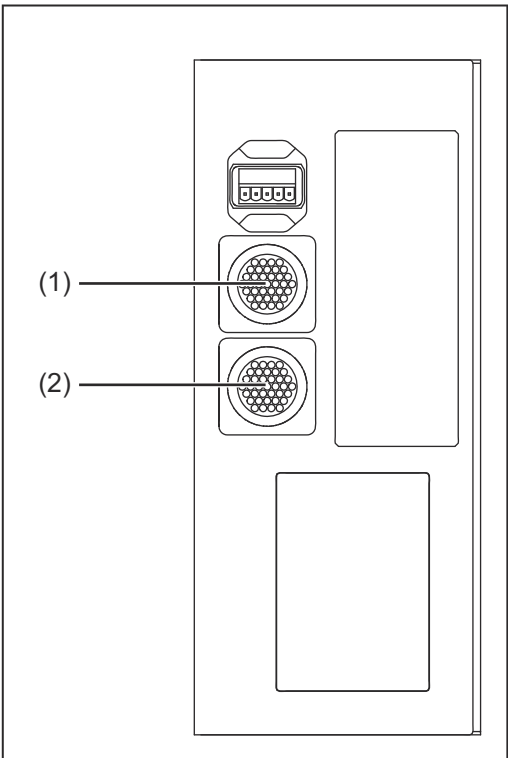
| Input | Signal | Range | Activity |
|-------|---------|-------|----------|
| E01 | TLC | - | High |
| E02 | VA | - | High |
| E03 | LS | - | High |
| E04 | Reserve | - | - |
| E05 | SS1 | - | High |
| E06 | SS2 | - | High |
| E07 | 1A | - | High |
| E08 | Reserve | - | - |

Output signals (from robot to CTC)

| Output | Signal | Range | Action |
|--------|---------|-------|--------|
| A01 | MC | - | High |
| A02 | FWD | - | High |
| A03 | REV | - | High |
| A04 | TL | - | High |
| A05 | Mo | - | High |
| A06 | M1 | - | High |
| A07 | Reserve | - | - |
| A08 | Reserve | - | - |

Descriptions of the signals can be found in the Operating Instructions for Robacta CTC.

Additional scope of functions of Robacta FB 8I_8O Profinet



Connections to Robacta FB 8I_8O Profinet

- (1) Standard I/O 1 connecting plug**

This connecting plug is always found on the robot interface and is used to connect Robacta CTC to the robot interface
- (2) Standard I/O 2 connecting plug**

This connecting plug is installed in the robot interface with option 4,101,345,CK.

This plug can be used to connect welding torch cleaning devices to the robot interface in addition to Robacta CTC. Only use the cable harnesses available from Fronius to connect the welding torch cleaning devices to the robot interface.

Input signals for Robacta Reamer V Easy, Robacta Reamer V Easy Han6P J, Robacta Reamer Alu Edition, Robacta Reamer Alu 3000upm, Robacta Reamer Alu brush head, Robacta Reamer Twin:

| Input (from the fieldbus coupler to the standard I/O 2 connecting plug) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|---|-----------------|--------|
| E09 | 11 | Gas nozzle free | High |
| E10 | 12 | Reserve | - |
| E11 | 13 | Reserve | - |
| E12 | 14 | Reserve | - |
| E13 | 15 | Reserve | - |
| E14 | 16 | Reserve | - |
| E15 | 17 | Reserve | - |
| E16 | 18 | Reserve | - |

Output signals for Robacta Reamer V Easy, Robacta Reamer V Easy Han6P J, Robacta Reamer Alu Edition, Robacta Reamer Alu 3000upm, Robacta Reamer Alu brush head, Robacta Reamer Twin:

| Output (from the standard I/O 2 connecting plug to the fieldbus coupler) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|--|----------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Start cleaning | High |
| A10 | 4 | Reserve | - |
| A11 | 5 | Reserve | - |
| A12 | 6 | Reserve | - |
| A13 | 7 | Reserve | - |
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Input signals for Reamer Braze+:

| Input (from the fieldbus coupler to the stan- dard I/O 2 connec- ting plug) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|---|--|--------------------|--------|
| E09 | 11 | Ready for cleaning | High |
| E10 | 12 | Reserve | - |
| E11 | 13 | Reserve | - |
| E12 | 14 | Reserve | - |
| E13 | 15 | Reserve | - |
| E14 | 16 | Reserve | - |
| E15 | 17 | Reserve | - |
| E16 | 18 | Reserve | - |

Output signals for Robacta Reamer Braze+:

| Output (from the standard I/O 2 connecting plug to the fieldbus coupler) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|--|-------------------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Start cleaning motor | High |
| A10 | 4 | Calibrate cleaning head | High |
| A11 | 5 | Reserve | - |
| A12 | 6 | Reserve | - |
| A13 | 7 | Reserve | - |

| Output (from the standard I/O 2 connecting plug to the fieldbus coupler) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|--|---------|--------|
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Input signals for Robacta Reamer V:

| Input (from the fieldbus coupler to the stan- dard I/O 2 connec- ting plug) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|---|--|------------------------|--------|
| E09 | 11 | Gas nozzle free | High |
| E10 | 12 | Gas nozzle clamped | High |
| E11 | 13 | Cleaning motor turns | High |
| E12 | 14 | Parting agent level OK | High |
| E13 | 15 | Cleaning motor bottom | High |
| E14 | 16 | Cleaning motor top | High |
| E15 | 17 | Wire cutter open | High |
| E16 | 18 | Wire cutter closed | High |

Output signals for Robacta Reamer V:

| Output (from the standard I/O 2 connecting plug to the fieldbus coupler) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|--|---------------------------------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Clamp gas nozzle/cleaning motor on | High |
| A10 | 4 | Spray parting agent | High |
| A11 | 5 | Cut the wire electrode | High |
| A12 | 6 | Cleaning motor up | High |
| A13 | 7 | Optional GND for sensors | High |
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Input signals for Robacta Reamer V Twin:

| Input (from the fieldbus coupler to the standard I/O 2 connecting plug) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|---|------------------------|--------|
| E09 | 11 | Gas nozzle free | High |
| E10 | 12 | Gas nozzle clamped | High |
| E11 | 13 | Reserve | - |
| E12 | 14 | Parting agent level OK | High |
| E13 | 15 | Cleaning motor bottom | High |
| E14 | 16 | Cleaning motor top | High |
| E15 | 17 | Swivel device left | High |
| E16 | 18 | Swivel device right | High |

Output signals for Robacta Reamer V Twin:

| Output (from the standard I/O 2 connecting plug to the fieldbus coupler) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|---|---|------------------------------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Clamp gas nozzle/cleaning motor on | High |
| A10 | 4 | Spray parting agent | High |
| A11 | 5 | Cut the wire electrode | High |
| A12 | 6 | Cleaning motor up | High |
| A13 | 7 | Swivel device to the left | High |
| A14 | 8 | Swivel device to the right | High |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Input signals for Robacta Reamer V 70 Han12P:

| Input (from the fieldbus coupler to the standard I/O 2 connecting plug) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|---|--------------------|--------|
| E09 | 11 | Gas nozzle free | High |
| E10 | 12 | Reserve | - |
| E11 | 13 | Reserve | - |
| E12 | 14 | Reserve | - |
| E13 | 15 | Reserve | - |
| E14 | 16 | Cleaning motor top | High |
| E15 | 17 | Reserve | - |

| Input (from the fieldbus coupler to the standard I/O 2 connecting plug) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|---|---------|--------|
| E16 | 18 | Reserve | - |

Output signals for Robacta Reamer V 70 Han12P:

| Output (from the standard I/O 2 connecting plug to the fieldbus coupler) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|---|---|------------------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Start cleaning | High |
| A10 | 4 | Spray parting agent | High |
| A11 | 5 | Cut the wire electrode | High |
| A12 | 6 | GND for sensors | High |
| A13 | 7 | Reserve | - |
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Input signals for Robacta Reamer V Comfort:

| Input (from the fieldbus coupler to the standard I/O 2 connecting plug) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|---|------------------------|--------|
| E09 | 11 | Gas nozzle free | High |
| E10 | 12 | Output signal sensor | High |
| E11 | 13 | Output signal sensor | High |
| E12 | 14 | Parting agent level OK | - |
| E13 | 15 | Reserve | - |
| E14 | 16 | Cleaning motor top | High |
| E15 | 17 | Reserve | - |
| E16 | 18 | Reserve | - |

Output signals for Robacta Reamer V Comfort:

| Output (from the standard I/O 2 connecting plug to the fieldbus coupler) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|--|------------------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Start cleaning | High |
| A10 | 4 | Spray parting agent | High |
| A11 | 5 | Cut the wire electrode | High |
| A12 | 6 | Actuator output signal | High |
| A13 | 7 | GND for the sensors | High |
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Input signals for Robacta TC 1000, Robacta TC 2000:

| Input (from the fieldbus coupler to the stan- dard I/O 2 connec- ting plug) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|---|--|---------------------|--------|
| E09 | 11 | Ready | High |
| E10 | 12 | Fluid Level Control | High |
| E11 | 13 | Cleaning Error | High |
| E12 | 14 | Reserve | - |
| E13 | 15 | Reserve | - |
| E14 | 16 | Reserve | - |
| E15 | 17 | Reserve | - |
| E16 | 18 | Reserve | - |

Output signals for Robacta TC 1000, Robacta TC 2000:

| Output (from the standard I/O 2 connecting plug to the fieldbus coupler) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|--|----------------|--------|
| +24 V | 1 | - | - |
| GND | 2 | - | - |
| A09 | 3 | Cleaning Start | High |
| A10 | 4 | Spray In | High |
| A11 | 5 | Wire Cutter | High |
| A12 | 6 | Quick Stop | High |
| A13 | 7 | Reserve | - |

| Output (from the standard I/O 2 connecting plug to the fieldbus coupler) | Pin on the standard I/O 2 connecting plug | Signal | Action |
|--|--|---------|--------|
| A14 | 8 | Reserve | - |
| A15 | 9 | Reserve | - |
| A16 | 10 | Reserve | - |

Robacta TX input and output signals

Fieldbus terminal allocation

The following shows the fieldbus terminal allocation as set in the factory:

| | | | | | | |
|---------|--------|--------|--------|--------|--------|--------|
| BK 9105 | KL1408 | KL1408 | KL1408 | KL2408 | KL2612 | KL9010 |
|---------|--------|--------|--------|--------|--------|--------|

Additional fieldbus terminals can be installed in a robot interface. However, the number is limited by the size of the housing.

NOTE!

The process data frame changes when additional fieldbus terminals are installed.

Input signals (from the torch body change station to the robot)

| Input | Signal | Range | Action |
|-------|--|-------|--------|
| E01 | Torch body sensor 1 | - | High |
| E02 | Torch body sensor 2 | - | High |
| E03 | Torch body sensor 3 | - | High |
| E04 | Torch body sensor 4 | - | High |
| E05 | Torch body sensor 5 | - | High |
| E06 | Torch body sensor 6 | - | High |
| E07 | Torch body sensor 7 | - | High |
| E08 | Torch body sensor 8 | - | High |
| E09 | Torch body sensor 9 | - | High |
| E10 | Torch body sensor 10 | - | High |
| E11 | Wire sensor signal | - | High |
| E12 | Pressure switch signal | - | High |
| E13 | Gas nozzle free (with Robacta Reamer V) TC Ready (with Robacta TC) | - | High |
| E14 | Gas nozzle free (with Robacta Reamer V Easy) Cleaning motor bottom (with Robacta Reamer Alu brush head) | - | High |

| Input | Signal | Range | Action |
|-------|---|-------|--------|
| E15 | Cleaning motor turns (with Robacta Reamer V) | - | High |
| E16 | Parting agent filling level OK (with Robacta Reamer V) | - | High |
| E17 | Cleaning motor bottom (with Robacta Reamer V) Cleaning Error (with Robacta TC) | - | High |
| E18 | Cleaning motor top (with Robacta Reamer V) | - | High |
| E19 | Wire cutter closed | - | High |
| E20 | Wire cutter open | - | High |
| E21 | Chute signal | - | High |
| E22 | 'C-Sens. 4' Signal 1 | - | High |
| E23 | Robacta TX cover sensor 1 | - | High |
| E24 | Robacta TX cover sensor 2 | - | High |

Descriptions of the signals can be found in the Operating Instructions for Robacta TX.

**Output signals
(from the robot
to the torch body
change station)**

| Output | Signal | Range | Action |
|--------|--|-------|--------|
| A01 | Clamp gas nozzle and cleaning motor on (with Robacta Reamer V) Start cleaning (with Robacta Reamer V Easy and Robacta Reamer Alu brush head) Cleaning Start (with Robacta TC) | - | High |
| A02 | Inject parting agent (with Robacta Reamer V) | - | High |
| A03 | Cleaning motor up (with Robacta Reamer V) | - | High |
| A04 | Cut the wire electrode | - | High |
| A05 | Robacta TX cover valve 1 | - | High |
| A06 | Robacta TX cover valve 2 | - | High |
| A07 | 'C-Act. 3' Signal 1 | - | High |
| A08 | Not used | - | - |
| A09 | Valve 1, welding torch changeover | - | High |
| A10 | Reserve for relay OUT | - | High |
| A11 | Not used | - | - |

| Output | Signal | Range | Action |
|--------|----------|-------|--------|
| A12 | Not used | - | - |
| A13 | Not used | - | - |
| A14 | Not used | - | - |
| A15 | Not used | - | - |
| A16 | Not used | - | - |

Descriptions of the signals can be found in the Operating Instructions for Robac-ta TX.

Robacta TX 10i input and output signals

Fieldbus terminal allocation

The following shows the fieldbus terminal allocation as set in the factory:

| | | | | | | |
|---------|--------|--------|--------|--------|--------|--------|
| BK 9105 | KL1408 | KL1408 | KL1408 | KL2408 | KL2612 | KL9010 |
|---------|--------|--------|--------|--------|--------|--------|

Additional fieldbus terminals can be installed in a robot interface. However, the number is limited by the size of the housing.

NOTE!

The process data frame changes when additional fieldbus terminals are installed.

Input signals (from the torch body change station to the robot)

| Input | Signal | Range | Action |
|-------|--|-------|--------|
| E01 | Torch body sensor 1 | - | High |
| E02 | Torch body sensor 2 | - | High |
| E03 | Torch body sensor 3 | - | High |
| E04 | Torch body sensor 4 | - | High |
| E05 | Torch body sensor 5 | - | High |
| E06 | Torch body sensor 6 | - | High |
| E07 | Torch body sensor 7 | - | High |
| E08 | Torch body sensor 8 | - | High |
| E09 | Torch body sensor 9 | - | High |
| E10 | Torch body sensor 10 | - | High |
| E11 | Wire sensor signal | - | High |
| E12 | Not used | - | - |
| E13 | Gas nozzle free (with Robacta Reamer V) TC Ready (with Robacta TC) | - | High |
| E14 | Gas nozzle free (with Robacta Reamer V Easy) Cleaning motor bottom (with Robacta Reamer Alu brush head) | - | High |

| Input | Signal | Range | Action |
|-------|---|-------|--------|
| E15 | Cleaning motor turns (with Robacta Reamer V) | - | High |
| E16 | Parting agent filling level OK (with Robacta Reamer V) | - | High |
| E17 | Cleaning motor bottom (with Robacta Reamer V) Cleaning Error (with Robacta TC) | - | High |
| E18 | Cleaning motor top (with Robacta Reamer V) | - | High |
| E19 | Wire cutter closed | - | High |
| E20 | Wire cutter open | - | High |
| E21 | Chute signal | - | High |
| E22 | 'C-Sens. 4' Signal 1 | - | High |
| E23 | Cover sensor 1 | - | High |
| E24 | Cover sensor 2 | - | High |

Descriptions of the signals can be found in the Operating Instructions for Robacta TX 10i.

**Output signals
(from the robot
to the torch body
change station)**

| Output | Signal | Range | Action |
|--------|--|-------|--------|
| A01 | Clamp gas nozzle and cleaning motor on (with Robacta Reamer V) Start cleaning (with Robacta Reamer V Easy and Robacta Reamer Alu brush head) Cleaning Start (with Robacta TC) | - | High |
| A02 | Inject parting agent (with Robacta Reamer V) | - | High |
| A03 | Cleaning motor up (with Robacta Reamer V) | - | High |
| A04 | Cut the wire electrode | - | High |
| A05 | Robacta TX cover valve 1 | - | High |
| A06 | Robacta TX cover valve 2 | - | High |
| A07 | 'C-Act. 3' Signal 1 | - | High |
| A08 | Not used | - | - |
| A09 | Not used | - | - |
| A10 | Reserve for relay OUT | - | High |
| A11 | Not used | - | - |

| Output | Signal | Range | Action |
|--------|----------|-------|--------|
| A12 | Not used | - | - |
| A13 | Not used | - | - |
| A14 | Not used | - | - |
| A15 | Not used | - | - |
| A16 | Not used | - | - |

Descriptions of the signals can be found in the Operating Instructions for Robac-ta TX 10i.

Robacta TX /i TWIN input and output signals

Fieldbus terminal allocation

The following shows the fieldbus terminal allocation as set in the factory:

| | | | | | | |
|---------|--------|--------|--------|--------|--------|--------|
| BK 9105 | KL1408 | KL1408 | KL1408 | KL2408 | KL2612 | KL9010 |
|---------|--------|--------|--------|--------|--------|--------|

Additional fieldbus terminals can be installed in a robot interface. However, the number is limited by the size of the housing.

NOTE!

The process data frame changes when additional fieldbus terminals are installed.

Input signals (from the torch body change station to the robot)

| Input | Signal | Range | Action |
|-------|--|-------|--------|
| E01 | Torch body sensor 1 | - | High |
| E02 | Torch body sensor 2 | - | High |
| E03 | Torch body sensor 3 | - | High |
| E04 | Torch body sensor 4 | - | High |
| E05 | Torch body sensor 5 | - | High |
| E06 | Torch body sensor 6 | - | High |
| E07 | Torch body sensor 7 | - | High |
| E08 | Torch body sensor 8 | - | High |
| E09 | Not used | - | - |
| E10 | Not used | - | - |
| E11 | Wire sensor signal | - | High |
| E12 | Not used | - | - |
| E13 | Gas nozzle free (with Robacta Reamer V Twin) TC Ready (with Robacta TC) | - | High |
| E14 | Not used | - | - |
| E15 | Not used | - | - |
| E16 | Fluid Level Control (with Robacta TC) | - | High |
| E17 | Cleaning Error (with Robacta TC) | - | High |

| Input | Signal | Range | Action |
|-------|--------------------------------|-------|--------|
| E18 | Not used | - | - |
| E19 | Not used | - | - |
| E20 | Not used | - | - |
| E21 | Not used | - | - |
| E22 | Not used | - | - |
| E23 | Sensor first Robacta TX cover | - | High |
| E24 | Sensor second Robacta TX cover | - | High |

Descriptions of the signals can be found in the Operating Instructions for Robacta TX/i TWIN.

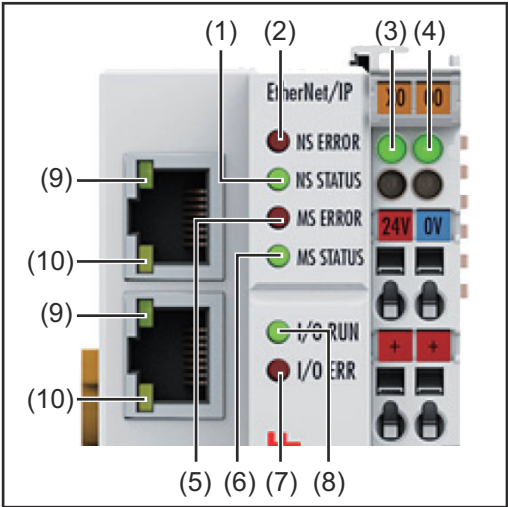
**Output signals
(from the robot
to the torch body
change station)**

| Output | Signal | Range | Action |
|--------|---|-------|--------|
| A01 | Start cleaning (with Robacta Reamer V Twin) Cleaning Start (with Robacta TC) | - | High |
| A02 | Spray In (with Robacta TC) | - | High |
| A03 | Not used | - | - |
| A04 | Cut the wire electrode | - | High |
| A05 | Valve first Robacta TX cover | - | High |
| A06 | Valve second Robacta TX cover | - | High |
| A07 | Not used | - | - |
| A08 | Not used | - | - |
| A09 | Not used | - | - |
| A10 | Reserve for relay OUT | - | High |
| A11 | Not used | - | - |
| A12 | Not used | - | - |
| A13 | Not used | - | - |
| A14 | Not used | - | - |
| A15 | Not used | - | - |
| A16 | Not used | - | - |

Descriptions of the signals can be found in the Operating Instructions for Robacta TX/i TWIN.

Troubleshooting

Indicators on the
fieldbus coupler
BK9105



| | | | |
|------|--------------------------------|-------|---|
| (1) | LED NS Status LED EIP RUN * | Green | for fieldbus diagnosis |
| (2) | LED NS Error LED EIP ERR * | Red | |
| (3) | LED Us | Green | for power supply diagnosis |
| (4) | LED Up | Green | |
| (5) | LED MS Error LED DIAG E * | Red | for fieldbus diagnosis |
| (6) | LED MS Status LED DIAG R* | Green | |
| (7) | LED I/O Error | Red | for communication bus diagnosis |
| (8) | LED I/O Run | Green | |
| (9) | LED Link/Active | Green | for Ethernet/IP State Machine/PLC diagnosis |
| (10) | Not assigned | - | - |

* for BK9055

LEDs for power
supply diagnosis

| LED | Indicator | Meaning |
|-----|-----------|---|
| Us | Off | No operating voltage on the bus coupler |
| | Lights up | 24 VDC operating voltage present on the bus coupler |
| Up | Off | No power supply to the power contacts present |
| | Lights up | 24 VDC power supply to the power contact present |

LED on the RJ5 connection socket

| LED | Indicator | Meaning |
|-----------------|-----------|-------------------------|
| LED Link/Active | Off | No connection available |
| | On | Connection established |
| | Flashes | Communication available |

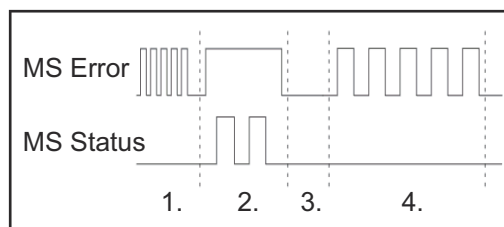
LEDs for fieldbus diagnosis

| LED NS Status | LED NS Error | Meaning |
|--------------------|--------------------|----------------------------|
| Flashes (0.5 sec.) | Off | IP address OK |
| Off | Off | No IP Address (dip switch) |
| On | Off | Online |
| Flashes (0.1 sec.) | Off | Offline PLC Stop |
| Off | Flashes (0.5 sec.) | Timeout |
| Off | On | IP address conflict |

| LED MS Status (error code) | LED MS Error (reason for error) | Meaning |
|----------------------------|---------------------------------|------------------------------|
| On | Off | No error |
| 1 | Flashes | Not enough input data |
| 2 | Flashes | Too much input data |
| 3 | Flashes | Not enough output data |
| 4 | Flashes | Too much output data |
| 5 | Flashes | Wrong assembly instance????? |
| 6 | Flashes | Second master |

LEDs MS Error and MS Status error display:

The error display is based on a flashing sequence. In the following example the error display for "too much input data" is shown.



Display example "too much input data"

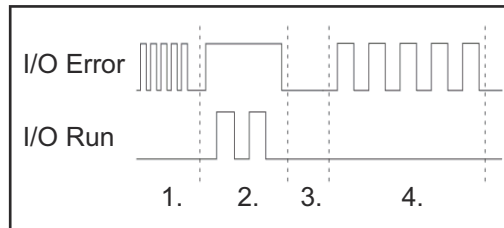
1. LED MS Error flashes quickly
LED MS Status is OFF
2. LED MS Error lights up
LED MS Status shows the error code (2 x flashes)
3. Both LEDs are OFF
4. LED MS Error shows the reason for error (5 x flashes)
LED MS Status is OFF

LEDs for communication bus diagnosis

| LED I/O Run | Indicator | Meaning | Remedy |
|-------------|-----------|----------------------------|--------|
| | Off | Communication bus inactive | - |
| | Lights up | Communication bus active | - |

LEDs I/O Run and I/O Error error display:

The error display is based on a flashing sequence. In the following example the error display for "Bus terminal 5 table comparison" is shown.

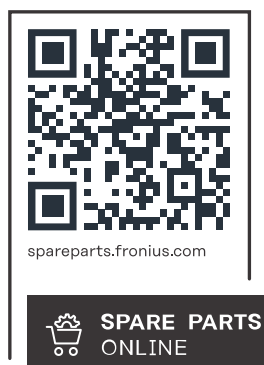


Display example "Bus terminal 5 table comparison"

1. LED I/O Error flashes quickly
LED I/O Run is OFF
2. LED I/O Error lights up
LED I/O Run displays the error code (2 x flashes)
3. Both LEDs are OFF
4. LED I/O Error displays the reason for error (5 x flashes)
LED I/O Run is OFF

| LED I/O Error | | | |
|---------------|---------------------|---|---|
| Indicator | Reason for error | Meaning | Remedy |
| Flashes | | EMC problems | <ul style="list-style-type: none"> - Check power supply for under- or over-voltage peaks - Take EMC measures - If there is a communication bus error, the error can be localized by restarting the coupler (switch the coupler off and on again) |
| 1 pulse | 0 | EEPROM checksum error | Reset factory settings using the KS2000 configuration software (Menu "Online -> Coupler -> Services -> Factory Settings") |
| | 1 | Overflow in code buffer | Insert fewer bus terminals. Too many entries in the table for prog. configuration |
| | 2 | Unknown data type | Software update of the bus coupler is needed |
| 2 pulses | 0 | Programmed configuration, incorrect table entry | Check that programmed configuration is correct |
| | n (n > 0) | Table comparison (bus terminal n) | Correct the incorrect table entry |

| LED I/O Error | | | |
|---------------|------------------|--|--|
| Indicator | Reason for error | Meaning | Remedy |
| 3 pulses | 0 | Communication bus command error | <ul style="list-style-type: none"> - No bus terminal inserted - One of the bus terminals is faulty, remove half of the inserted bus terminals and check whether or not there is still an error with the remaining bus terminals. Continue this until the faulty bus terminal is found. |
| 4 pulses | 0 | Communication bus data error, break behind the bus coupler | Check whether or not the n+1 bus terminal is inserted correctly, replace if necessary |
| | n | Break behind bus terminal n | Check whether or not the 9010 bus end terminal is inserted |
| 5 pulses | n | Communication bus error during register communication with bus terminal n | Replace nth bus terminal |
| 6 pulses | 0 | Initialization error | Replace fieldbus coupler |
| | 1 | Internal data error | |
| | 2 | | |
| | 4 | | |
| | 8 | | |
| | 16 | | |
| 14 pulses | n | n th bus terminal has an incorrect format | Restart the bus coupler; if the error reoccurs, replace the bus terminal. |
| 15 pulses | n | Number of bus terminals no longer matches | Restart the bus coupler; if the error reoccurs, reset the factory settings using the KS2000 configuration software |
| 16 pulses | n | Length of communication bus data no longer matches | Restart the bus coupler; if the error reoccurs, reset the factory settings using the KS2000 configuration software |



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