

Operating Instructions

RI FB PRO/i TWIN Controller
RI MOD/i CC DeviceNet



DE | Bedienungsanleitung

EN-US | Operating instructions



Inhaltsverzeichnis

Allgemeines	4
Sicherheit	4
Anschlüsse und Anzeigen.....	4
Eigenschaften der Datenübertragung	5
Konfigurationsparameter.....	6
Knotenadresse des Busmoduls einstellen.....	7
Knotenadresse des Busmoduls einstellen.....	7
Prozessdaten-Breite des Busmoduls einstellen.....	9
Prozessdaten-Breite des Busmoduls einstellen.....	9
Ein- und Ausgangssignale.....	10
Datentypen.....	10
Verfügbarkeit der Eingangssignale	10
Eingangssignale (vom Roboter zur Stromquelle).....	10
Wertebereich Working mode	17
Wertebereich Processline selection.....	17
Wertebereich Operating mode TWIN System.....	18
Wertebereich Documentation mode.....	18
Wertebereich Process controlled correction.....	18
Verfügbarkeit der Ausgangssignale	19
Ausgangssignale (von der Stromquelle zum Roboter)	19
Zuordnung Sensorstatus 1-4.....	24

Allgemeines

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.

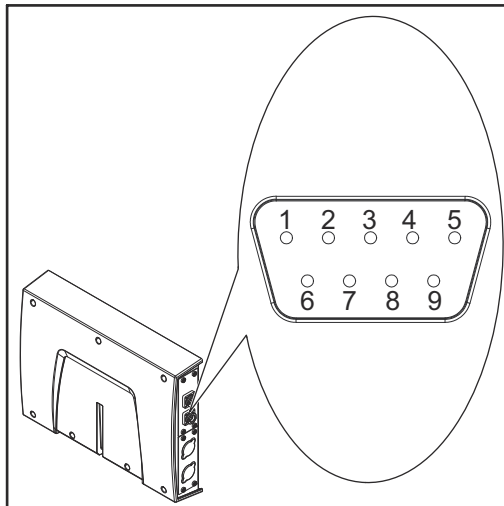
WARNUNG!

Gefahr durch unplanmäßige Signalübertragung.

Schwere Personen- und Sachschäden können die Folge sein.

- ▶ Über das Interface keine sicherheitsrelevanten Signale übertragen.

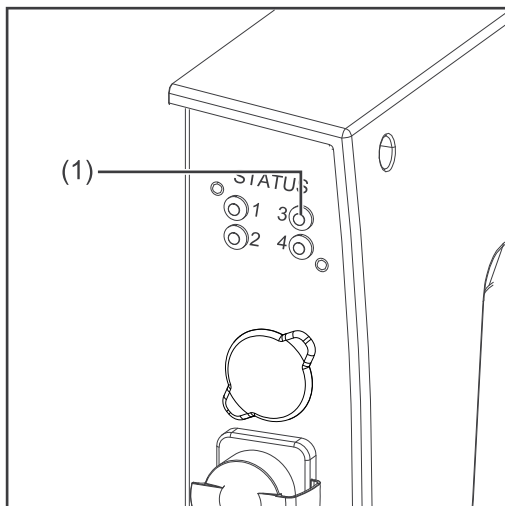
Anschlüsse und Anzeigen



Anschluss DeviceNet

Pin	Signal	Beschreibung
1	-	-
2	CAN_L	CAN low bus line
3	V-	Versorgungsspannung
4	-	-
5	-	-
6	GND	Ground
7	CAN_H	CAN high bus line
8	-	-
9	V+	Versorgungsspannung

Gehäuse = Kabelschirmung: GND ist intern mit der Kabelschirmung verbunden. Ein Abschlusswiderstand befindet sich intern zwischen den Signalen CAN_L und CAN_H.



(1) LED MS - Modulstatus

Aus:

Keine Versorgungsspannung

Leuchtet grün:

Normalbetrieb

Blinkt grün:

Fehlende oder unvollständige Konfiguration, Inbetriebnahme erforderlich

Leuchtet rot:

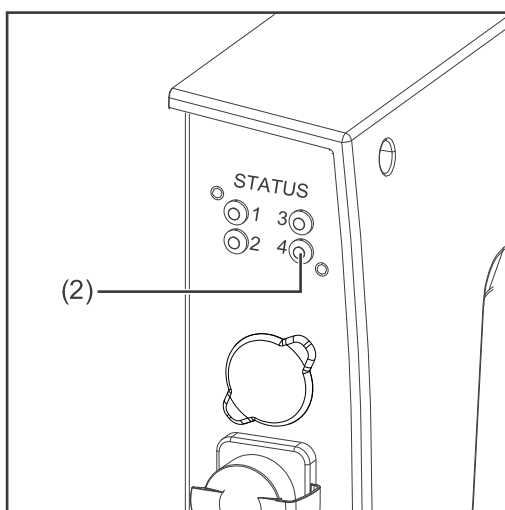
nicht behebbarer Fehler

Blinkt rot:

behebbarer Fehler

Abwechselnd rot / grün:

Selbsttest läuft



(2) LED NS - Netzwerkstatus

Aus:

Nicht online oder keine Versorgungsspannung

Leuchtet grün:

Online, eine oder mehrere Verbindungen hergestellt

Blinkt grün:

Online, keine Verbindungen hergestellt

Leuchtet rot:

kritischer Verbindungsfehler

Blinkt rot:

Zeitüberlauf bei einer oder mehreren Verbindungen

Abwechselnd rot / grün:

Selbsttest läuft

Eigenschaften der Datenübertragung

Netzwerk Topologie

Linearer Bus, Busabschluss an beiden Enden (121 Ohm), Stichleitungen sind möglich

Medium und Max. Buslänge

Bei der Auswahl der Kabel, Stecker und Abschluss-Widerstände ist die ODVA Empfehlung für die Planung und Installation von DeviceNet Systemen zu beachten.

Anzahl der Stationen

max. 64 Teilnehmer

Übertragungs-Geschwindigkeit

500 kBit/s, 250 kBit/s, 125 kBit/s

Prozessdaten-Breite

siehe Abschnitt [Prozessdaten-Breite des Busmoduls einstellen](#) auf Seite 9

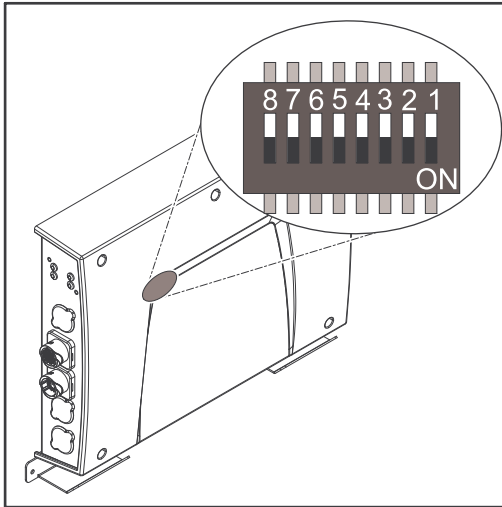
Konfigurationsparameter

Bei einigen Robotersteuerungen kann es erforderlich sein die hier beschriebenen Konfigurationsparameter anzugeben, damit das Busmodul mit dem Roboter kommunizieren kann.

Parameter	Wert	Beschreibung
Vendor ID	0534 _{hex} (1332 _{dez})	Fronius International GmbH
Device Type	000C _{hex} (12 _{dez})	Communication adapter
Product Code	0480 _{hex} (1152 _{dez})	Fronius FB Pro Twin DeviceNet
Product Name	Fronius-FB-Pro-DeviceNet(TM)	

Knotenadresse des Busmoduls einstellen

Knotenadresse des Busmoduls einstellen



Die Knotenadresse des Busmoduls kann eingestellt werden:

- mit dem DIP-Schalter im Interface im Bereich von 1 bis 63
 - Werkseitig sind alle Positionen in Stellung OFF geschaltet. In diesem Fall muss die Einstellung der IP-Adresse auf die Website der Stromquelle eingestellt werden
- auf der Website der Stromquelle im Bereich von 1 bis 126 (wenn alle Positionen des DIP-Schalter in Stellung OFF geschaltet sind)

Die Knotenadresse wird mit den Positionen 1 bis 6 des DIP-Schalters eingestellt. Die Einstellung erfolgt im Binärformat. Das ergibt einen Einstellbereich von 1 bis 63 im Dezimalformat.

Beispiel für das Einstellen der Knotenadresse des Busmoduls mit dem DIP-Schalter im Interface:

DIP-Schalter								IP-Adresse
8	7	6	5	4	3	2	1	
-	-	OFF	OFF	OFF	OFF	OFF	ON	1
-	-	OFF	OFF	OFF	OFF	ON	OFF	2
-	-	OFF	OFF	OFF	OFF	ON	ON	3
-	-	ON	ON	ON	ON	ON	OFF	62
-	-	ON	ON	ON	ON	ON	ON	63

Knotenadresse auf der Website der Stromquelle (SmartManager) wie nachfolgend beschrieben einstellen:

IP-Adresse der verwendeten Stromquelle notieren:

- Am Bedienpanel der Stromquelle „Voreinstellungen“ auswählen
- Am Bedienpanel der Stromquelle „System“ auswählen
- Am Bedienpanel der Stromquelle „Information“ auswählen
- Angezeigte IP-Adresse notieren (Beispiel: 10.5.72.13)

Website der Stromquelle im Internetbrowser aufrufen:

- Computer mit dem Netzwerk der Stromquelle verbinden
- IP-Adresse der Stromquelle in die Suchleiste des Internetbrowsers eingeben und bestätigen
- Standard-Benutzernamen (admin) und Passwort (admin) eingeben
 - Website der Stromquelle wird angezeigt

Knotenadresse des Busmoduls einstellen:

- Auf der Website der Stromquelle den Reiter „RI FB PRO/i TWIN“ auswählen

- 9 Bei Punkt „Modulkonfiguration“ die gewünschte Knotenadresse für das Interface eingeben
Beispielsweise: 2
- 10 „Konfiguration setzen“ auswählen
- 11 „Feldbus-Modul neu starten“ auswählen
 - die eingestellte Knotenadresse wird übernommen

Prozessdaten-Breite des Busmoduls einstellen

Prozessdaten-Breite des Busmoduls einstellen

IP-Adresse der verwendeten Stromquelle notieren:

- 1 Am Bedienpanel der Stromquelle „Voreinstellungen“ auswählen
- 2 Am Bedienpanel der Stromquelle „System“ auswählen
- 3 Am Bedienpanel der Stromquelle „Information“ auswählen
- 4 Angezeigte IP-Adresse notieren (Beispiel: 10.5.72.13)

Website der Stromquelle (SmartManager) im Internetbrowser aufrufen:

- 5 Computer mit dem Netzwerk der Stromquelle verbinden
- 6 IP-Adresse der Stromquelle in die Suchleiste des Internetbrowsers eingeben und bestätigen
- 7 Standard-Benutzernamen (admin) und Passwort (admin) eingeben
 - Website der Stromquelle wird angezeigt

Prozessdaten-Breite des Busmoduls einstellen:

- 8 Auf der Website der Stromquelle den Reiter „RI FB PRO/i TWIN Controller“ auswählen
- 9 Bei Punkt „Prozessdaten“ die gewünschte Prozessdaten-Konfiguration auswählen
- 10 „Speichern“ auswählen
 - Die Feldbus-Verbindung wird neu gestartet und die Konfiguration übernommen

Ein- und Ausgangssignale

Datentypen

Folgende Datentypen werden verwendet:

- **UINT16** (Unsigned Integer)
Ganzzahl im Bereich von 0 bis 65535
- **SINT16** (Signed Integer)
Ganzzahl im Bereich von -32768 bis 32767

Umrechnungsbeispiele:

- für positiven Wert (SINT16)
z.B. gewünschter Drahtvorschub x Faktor
 $12.3 \text{ m/min} \times 100 = 1230_{\text{dez}} = 04\text{CE}_{\text{hex}}$
- für negativen Wert (SINT16)
z.B. gewünschte Lichtbogen-Korrektur x Faktor
 $-6.4 \times 10 = -64_{\text{dez}} = \text{FFCO}_{\text{hex}}$

Verfügbarkeit der Eingangssignale

Die nachfolgend angeführten Eingangssignale sind ab Firmware V1.8.0 des RI FB PRO/i TWIN Controller verfügbar.

Eingangssignale (vom Roboter zur Stromquelle)

Adresse							
relativ		absolut					
WORD	BYTE	BIT	BIT	Signal	Aktivität / Datentyp	Bereich	Faktor
0	0	0	0	Welding Start	steigend		
		1	1	Robot ready	High		
		2	2	Working mode Bit 0	High	Siehe nachfolgende Tabelle Wertebereich Working mode auf Seite 17	
		3	3	Working mode Bit 1	High		
		4	4	Working mode Bit 2	High		
		5	5	Working mode Bit 3	High		
		6	6	Working mode Bit 4	High		
		7	7	—			
	1	0	8	Gas on	steigend		
		1	9	Wire forward	steigend		
		2	10	Wire backward	steigend		
		3	11	Error quit	steigend		
		4	12	Touch sensing	High		
		5	13	Torch blow out	steigend		
		6	14	Processline selection Bit 0 (only available for single-wire applications)	High	Siehe nachfolgende Tabelle Wertebereich Processline selection auf Seite 17	
7		15	Processline selection Bit 1 (only available for single-wire applications)	High			
1	2	0	16	Welding Simulation	High		
		1	17	—			
		2	18	—			
		3	19	—			
		4	20	—			
		5	21	—			
		6	22	Wire brake on	High		
		7	23	Torchbody Xchange	High		
	3	0	24	—			
		1	25	Teach mode	High		
		2	26	—			
		3	27	—			
		4	28	—			
		5	29	Wire sense start	steigend		
		6	30	Wire sense break	steigend		
7	31	—					

Adresse							
relativ			absolut				
WORD	BYTE	BIT	BIT	Signal	Aktivität / Datentyp	Bereich	Faktor
2	4	0	32	Operating mode TWIN System Bit 0	High	Siehe nachfolgende Tabelle Wertebereich Operating mode TWIN System auf Seite 18	
		1	33	Operating mode TWIN System Bit 1	High		
		2	34	—			
		3	35	—			
		4	36	—			
		5	37	Documentation mode	High	Siehe nachfolgende Tabelle Wertebereich Documentation mode auf Seite 18	
		6	38	—			
		7	39	—			
	5	0	40	—			
		1	41	—			
		2	42	—			
		3	43	—			
		4	44	—			
		5	45	—			
6		46	—				
	7	47	Disable process controlled correction, Power source 1	High			

Adresse				Signal	Aktivität / Datentyp	Bereich	Faktor
relativ		absolut					
WORD	BYTE	BIT	BIT				
3	6	0	48	—			
		1	49	—			
		2	50	—			
		3	51	—			
		4	52	—			
		5	53	—			
		6	54	—			
	7	55	—				
	7	0	56	ExtInput1 => OPT_Output 1	High		
		1	57	ExtInput2 => OPT_Output 2	High		
		2	58	ExtInput3 => OPT_Output 3	High		
		3	59	ExtInput4 => OPT_Output 4	High		
		4	60	ExtInput5 => OPT_Output 5	High		
		5	61	ExtInput6 => OPT_Output 6	High		
6		62	ExtInput7 => OPT_Output 7	High			
7	63	ExtInput8 => OPT_Output 8	High				
4	8	0	64	—			
		1	65	—			
		2	66	—			
		3	67	—			
		4	68	—			
		5	69	—			
		6	70	—			
	7	71	Disable Process controlled correction, Power source 2	High			
	9	0	72	Contact tip short circuit detection on	High		
		1	73	—			
		2	74	—			
		3	75	—			
		4	76	—			
		5	77	—			
6		78	—				
7	79	—					
5	10	0-7	80-87	—			
	11	0-7	88-95	—			

Adresse							
relativ		absolut					
WORD	BYTE	BIT	BIT	Signal	Aktivität / Datentyp	Bereich	Faktor
6	12	0-7	96-103	Welding characteristic- / Job number, Power source 1	UINT16	0 bis 1000	1
	13	0-7	104-111				
7	14	0-7	112-119	Welding characteristic- / Job number, Power source 2	UINT16	0 bis 1000	1
	15	0-7	120-127				
8	16, 17	0-7	128-143	<i>Beim Schweißverfahren MIG/MAG Puls-Synergic, MIG/MAG Standard-Synergic, MIG/MAG Standard-Manuell, MIG/MAG PMC, MIG/MAG LSC, CMT, ConstantWire:</i> Wire feed speed command value, Power source 1	SINT16	-327,68 bis 327,67 [m/min]	100
				<i>Beim Job-Betrieb:</i> Power correction, Power source 1	SINT16	-20,00 bis 20,00 [%]	100
9	18, 19	0-7	144-159	<i>Beim Schweißverfahren MIG/MAG Puls-Synergic, MIG/MAG Standard-Synergic, MIG/MAG Standard-Manuell, MIG/MAG PMC, MIG/MAG LSC, CMT, ConstantWire:</i> Wire feed speed command value, Power source 2	SINT16	-327,68 bis 327,67 [m/min]	100
				<i>Beim Job-Betrieb:</i> Power correction, Power source 2	SINT16	-20,00 bis 20,00 [%]	100

Adresse					Aktivität / Datentyp	Bereich	Faktor
relativ		absolut					
WORD	BYTE	BIT	BIT	Signal			
10	20, 21	0-7	160-175	<i>Beim Schweißverfahren MIG/MAG Puls-Synergic, MIG/MAG Standard-Synergic, MIG/MAG PMC, MIG/MAG LSC, CMT:</i> Arclength correction, Power source 1	SINT16	-10,0 bis 10,0 [Schritte]	10
				<i>Beim Schweißverfahren MIG/MAG Standard-Manuell:</i> Welding voltage, Power source 1	UINT16	0,0 bis 6553,5 [V]	10
				<i>Beim Job-Betrieb:</i> Arclength correction, Power source 1	SINT16	-10,0 bis 10,0 [Schritte]	10
				<i>Beim Schweißverfahren ConstantWire:</i> Hotwire current, Power source 1	UINT16	0,0 bis 6553,5 [A]	10
11	22, 23	0-7	176-191	<i>Beim Schweißverfahren MIG/MAG Puls-Synergic, MIG/MAG Standard-Synergic, MIG/MAG PMC, MIG/MAG LSC, CMT:</i> Arclength correction, Power source 2	SINT16	-10,0 bis 10,0 [Schritte]	10
				<i>Beim Schweißverfahren MIG/MAG Standard-Manuell:</i> Welding voltage, Power source 2	UINT16	0,0 bis 6553,5 [V]	10
				<i>Beim Job-Betrieb:</i> Arclength correction, Power source 2	SINT16	-10,0 bis 10,0 [Schritte]	10
				<i>Beim Schweißverfahren ConstantWire:</i> Hotwire current, Power source 2	UINT16	0,0 bis 6553,5 [A]	10

Adresse					Aktivität / Datentyp	Bereich	Faktor	
relativ		absolut						
WORD	BYTE	BIT	BIT	Signal				
12	24, 25	0-7	192-207	<i>Beim Schweißverfahren MIG/MAG Puls-Synergic, MIG/MAG Standard-Synergic, MIG/MAG PMC, MIG/MAG LSC, CMT:</i> Pulse-/dynamic correction, Power source 1	SINT16	-10,0 bis 10,0 [Schritte]	10	
				<i>Beim Schweißverfahren MIG/MAG Standard-Manuell:</i> Dynamic, Power source 1	UINT16	0,0 bis 10,0 [Schritte]	10	
13	26, 27	0-7	208-223	<i>Beim Schweißverfahren MIG/MAG Puls-Synergic, MIG/MAG Standard-Synergic, MIG/MAG PMC, MIG/MAG LSC, CMT:</i> Pulse-/dynamic correction, Power source 2	SINT16	-10,0 bis 10,0 [Schritte]	10	
				<i>Beim Schweißverfahren MIG/MAG Standard-Manuell:</i> Dynamic, Power source 2	UINT16	0,0 bis 10,0 [Schritte]	10	
14	28	0-7	224-231	Wire retract correction, Power source 1	UINT16	0,0 bis 10,0	10	
	29	0-7	232-239					
15	30	0-7	240-247	Wire retract correction, Power source 2	UINT16	0,0 bis 10,0	10	
	31	0-7	248-255					
16	32	0-7	256-263	Welding speed	UINT16	0,0 bis 1000 [m/min]	10	
	33	0-7	264-271					
17	34	0-7	272-279	Process controlled correction, Power source 1	SINT16	Siehe Tabelle Wertebereich Process controlled correction auf Seite 18		
	35	0-7	280-287					
18	36	0-7	288-295	Process controlled correction, Power source 2	SINT16			
	37	0-7	296-303					
19	38	0-7	304-311	Wire forward / backward length	UINT16		OFF / 1 bis 65535 [mm]	1
	39	0-7	312-319					
20	40	0-7	320-327	Wire sense edge detection	UINT16		OFF / 0,5 bis 20,0 [mm]	10
	41	0-7	328-335					
21	42	0-7	336-343	—				
	43	0-7	344-351					

Adresse				Signal	Aktivität / Datentyp	Bereich	Faktor
relativ		absolut					
WORD	BYTE	BIT	BIT				
22	44	0-7	352-359	—			
	45	0-7	360-367				
23	46	0-7	368-375	—			
	47	0-7	376-383				
24	48	0-7	384-391	—			
	49	0-7	392-399				
25	50	0-7	400-407	—			
	51	0-7	408-415				
26	52	0-7	416-423	—			
	53	0-7	424-431				
27	54	0-7	432-439	—			
	55	0-7	440-447				
28	56	0-7	448-455	—			
	57	0-7	456-463				
29	58	0-7	464-471	Seam number	UINT16	0 bis 65535	1
	59	0-7	472-479				

Wertebereich Working mode

Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Beschreibung
0	0	0	0	0	Parameteranwahl intern
0	0	0	0	1	Kennlinien Betrieb Sonder 2-Takt
0	0	0	1	0	Job-Betrieb
0	1	0	0	0	Kennlinien Betrieb 2-Takt
0	1	0	0	1	MIG/MAG Standard-Manuell 2-Takt
1	0	0	0	1	Kühlmittel-Pumpe stoppen

Wertebereich Betriebsart

Wertebereich Processline selection

Bit 1	Bit 0	Beschreibung
0	0	Prozesslinie 1 (default)
0	1	Prozesslinie 2
1	0	Prozesslinie 3
1	1	Reserviert

Wertebereich Prozesslinien-Auswahl

**Wertebereich
Operating mode
TWIN System**

Bit 1	Bit 0	Funktion Stromquelle 1	Funktion Stromquelle 2
0	0	Single mode	OFF
0	1	TWIN Lead	TWIN Trail
1	0	TWIN Trail	TWIN Lead
1	1	OFF	Single mode

Wertebereich Betriebsart TWIN System

**Wertebereich
Documentation
mode**

Bit 0	Beschreibung
0	Nahtnummer von Stromquelle (intern)
1	Nahtnummer von Roboter (Word 29)

Wertebereich Dokumentationsmodus

**Wertebereich
Process control-
led correction**

Prozess	Signal	Aktivität / Datentyp	Wertebereich Einstellbereich	Einheit	Faktor
PMC	Arc length stabilizer	SINT16	-327,8 bis +327,7 0,0 bis +5,0	Volt	10

Wertebereich prozessabhängige Korrektur

Verfügbarkeit der Ausgangssi- gnale

Die nachfolgend angeführten Ausgangssignale sind ab Firmware V1.8.0 des RI FB PRO/i TWIN Controller verfügbar.

Ausgangssignale (von der Strom- quelle zum Ro- boter)

Adresse				Signal	Aktivität / Datentyp	Bereich	Faktor
relativ		absolut					
WORD	BYTE	BIT	BIT				
0	0	0	0	Heartbeat Powersource	High / Low	1 Hz	
		1	1	Power source ready	High		
		2	2	Warning	High		
		3	3	Process active	High		
		4	4	Current flow	High		
		5	5	Arc stable- / touch signal	High		
		6	6	Main current signal	High		
		7	7	Touch signal	High		
	1	0	8	Collisionbox active	Low	0 = Kollision oder Kabelbruch	
		1	9	Robot Motion Release, Power source 1	High		
		2	10	Wire stick workpiece	High		
		3	11	—			
		4	12	Short circuit contact tip	High		
		5	13	Parameter selection internally	High		
		6	14	—			
7	15	Torch body gripped	High				

Adresse								
relativ			absolut					
WORD	BYTE	BIT	BIT	Signal	Aktivität / Datentyp	Bereich	Faktor	
1	2	0	16	Command value out of range	High			
		1	17	Correction out of range	High			
		2	18	—				
		3	19	Limitsignal, Power Source 1	High			
		4	20	—				
		5	21	—				
		6	22	Main supply status	Low			
	7	23	—					
	3	0	24	Sensor status 1, Power Source 1	High	Siehe Tabelle Zuordnung Sensorstatus 1-4 auf Seite 24		
		1	25	Sensor status 2, Power Source 1	High			
		2	26	Sensor status 3, Power Source 1	High			
		3	27	Sensor status 4, Power Source 1	High			
		4	28	—				
		5	29	—				
6		30	—					
7	31	—						
2	4	0	32	—				
		1	33	—				
		2	34	—				
		3	35	Safety status Bit 0, Power Source 1	High			
		4	36	Safety status Bit 1, Power Source 1	High			
		5	37	—				
		6	38	Notification	High			
	7	39	System not ready	High				
	5	0	40	—				
		1	41	—				
		2	42	—				
		3	43	—				
		4	44	—				
		5	45	—				
6		46	—					
7	47	—						

Adresse							
relativ		absolut					
WORD	BYTE	BIT	BIT	Signal	Aktivität / Datentyp	Bereich	Faktor
3	6	0	48	—			
		1	49	—			
		2	50	—			
		3	51	—			
		4	52	—			
		5	53	—			
		6	54	Gas nozzle touched	High		
	7	55	—				
	7	0	56	ExtOutput1 <= OPT_Input1	High		
		1	57	ExtOutput2 <= OPT_Input2	High		
		2	58	ExtOutput3 <= OPT_Input3	High		
		3	59	ExtOutput4 <= OPT_Input4	High		
		4	60	ExtOutput5 <= OPT_Input5	High		
		5	61	ExtOutput6 <= OPT_Input6	High		
6		62	ExtOutput7 <= OPT_Input7	High			
7	63	ExtOutput8 <= OPT_Input8	High				
4	8	0	64	—			
		1	65	Robot Motion Release, Power source 2	High		
		2	66	Limitsignal, Power source 2	High		
		3	67	—			
		4	68	—			
		5	69	—			
		6	70	—			
	7	71	—				
	9	0	72	—			
		1	73	—			
		2	74	—			
		3	75	—			
		4	76	—			
		5	77	—			
6		78	—				
7	79	—					

Adresse							
relativ			absolut				
WORD	BYTE	BIT	BIT	Signal	Aktivität / Datentyp	Bereich	Faktor
5	10	0	80	Sensor status 1, Power Source 2	High	Siehe Tabelle Zuordnung Sensorstatus 1-4 auf Seite 24	
		1	81	Sensor status 2, Power Source 2	High		
		2	82	Sensor status 3, Power Source 2	High		
		3	83	Sensor status 4, Power Source 2	High		
		4	84	—			
		5	85	—			
		6	86	—			
		7	87	—			
	11	0	88	—			
		1	89	—			
		2	90	—			
		3	91	Safety status Bit 0, Power Source 2	High		
		4	92	Safety status Bit 1, Power Source 2	High		
		5	93	—			
		6	94	—			
7	95	—					
6	12	0-7	96-103	Welding voltage, Power source 1	UINT16	0,0 bis 655,35 [V]	100
	13	0-7	104-111				
7	14	0-7	112-119	Welding voltage, Power source 2	UINT16	0,0 bis 655,35 [V]	100
	15	0-7	120-127				
8	16	0-7	128-135	Welding current, Power source 1	UINT16	0,0 bis 6553,5 [A]	10
	17	0-7	136-143				
9	18	0-7	144-151	Welding current, Power source 2	UINT16	0,0 bis 6553,5 [A]	10
	19	0-7	152-159				
10	20	0-7	160-167	Wire feed speed, Power source 1	SINT16	-327,68 bis 327,67 [m/min]	100
	21	0-7	168-175				
11	22	0-7	176-183	Wire feed speed, Power source 2	SINT16	-327,68 bis 327,67 [m/min]	100
	23	0-7	184-191				
12	24	0-7	192-199	Actual real value for seam tracking	UINT16	0 bis 6,5535	1000 0
	25	0-7	200-207				
13	26	0-7	208-215	Error number, Power source 1	UINT16	0 bis 65535	1
	27	0-7	216-223				

Adresse				Signal	Aktivität / Datentyp	Bereich	Faktor
relativ		absolut					
WORD	BYTE	BIT	BIT				
14	28	0-7	224-231	Error number, Power source 2	UINT16	0 bis 65535	1
	29	0-7	232-239				
15	30	0-7	240-247	Motor current M1, Power source 1	UINT16	-327,68 bis 327,67 [A]	100
	31	0-7	248-255				
16	32	0-7	256-263	Motor current M1, Power source 2	UINT16	-327,68 bis 327,67 [A]	100
	33	0-7	264-271				
17	34	0-7	272-279	Motor current M2, Power source 1	UINT16	-327,68 bis 327,67 [A]	100
	35	0-7	280-287				
18	36	0-7	288-295	Motor current M2, Power source 2	UINT16	-327,68 bis 327,67 [A]	100
	37	0-7	296-303				
19	38	0-7	304-311	Motor current M3, Power source 1	UINT16	-327,68 bis 327,67 [A]	100
	39	0-7	312-319				
20	40	0-7	320-327	Motor current M3, Power source 2	UINT16	-327,68 bis 327,67 [A]	100
	41	0-7	328-335				
21	42	0-7	336-343	Warning, Power source 1	UINT16	0 bis 65535	1
	43	0-7	344-351				
22	44	0-7	352-359	Warning, Power source 2	UINT16	0 bis 65535	1
	45	0-7	360-367				
23	46	0-7	368-375	Wire position, Power source 1	UINT16	-327,68 bis 327,67 [mm]	100
	47	0-7	376-383				
24	48	0-7	284-291	Wire position, Power source 2	UINT16	-327,68 bis 327,67 [mm]	100
	49	0-7	292-399				
25	50	0-7	400-407	—			
	51	0-7	408-415				
26	52	0-7	416-423	—			
	53	0-7	424-431				
27	54	0-7	432-439	—			
	55	0-7	440-447				
28	56	0-7	448-455	—			
	57	0-7	456-463				
29	58	0-7	464-471	—			
	59	0-7	472-479				

Zuordnung Sensorstatus 1-4

Signal	Beschreibung
Sensor status 1	OPT/i WF R Drahtende (4,100,869)
Sensor status 2	OPT/i WF R Drahtfass (4,100,879)
Sensor status 3	OPT/i WF R Ringsensor (4,100,878)
Sensor status 4	Drahtpufferset CMT TPS/i (4,001,763)

Table of contents

General.....	26
Safety.....	26
Connections and Indicators.....	26
Data Transfer Properties.....	27
Configuration Parameters.....	28
Setting the Bus Module Node Address.....	29
Setting the Bus Module Node Address.....	29
Set the Process Data Width of the Bus Module.....	31
Setting the Process Data Width of the Bus Module.....	31
Input and output signals.....	32
Data types.....	32
Availability of input signals.....	32
Input signals (from robot to power source).....	32
Value Range for Working Mode.....	41
Value range Process line selection.....	41
Value range for Operating mode TWIN System.....	41
Value range for Documentation mode.....	41
Value range for Process controlled correction.....	41
Availability of the output signals.....	42
Output signals (from power source to robot).....	42
Assignment of Sensor Statuses 1–4.....	47

General

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.

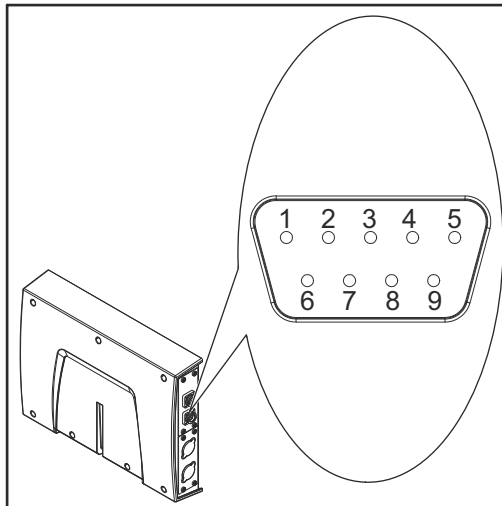
WARNING!

Danger from unplanned signal transmission.

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

- ▶ Do not transfer safety signals via the interface.

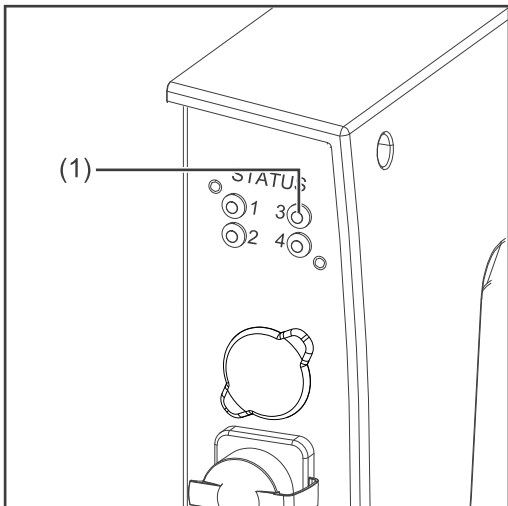
Connections and Indicators



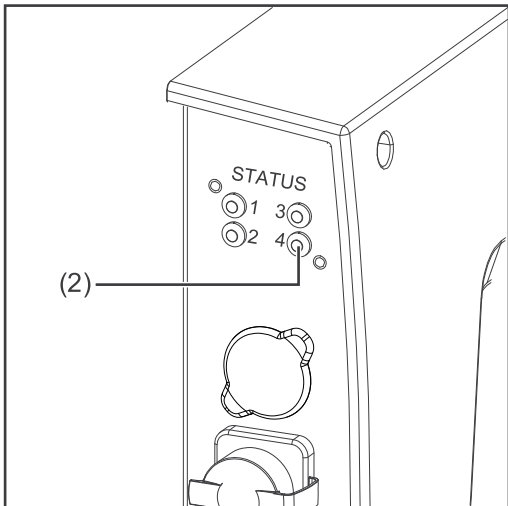
DeviceNet Connection Socket

Pin	Signal	Description
1	-	-
2	CAN_L	CAN low bus line
3	V-	Supply voltage
4	-	-
5	-	-
6	GND	Ground
7	CAN_H	CAN high bus line
8	-	-
9	V+	Supply voltage

Housing = cable shielding: GND is connected internally with the cable shielding. A terminating resistor is located internally between the CAN_L and CAN_H signals.



(1) MS LED - module status	
Off:	No supply voltage
Lights up green:	Normal operation
Flashes green:	Missing or incomplete configuration, commissioning required
Lights up red:	Non-correctable error
Flashes red:	Correctable error
Alternates between red and green:	Self-test is running



(2) NS LED - network status	
Off:	Not online or no supply voltage
Lights up green:	Online, one or more connections established
Flashes green:	Online, no connections established
Lights up red:	Critical connection error
Flashes red:	Timeout for one or more of the connections
Alternates between red and green:	Self-test is running

Data Transfer Properties

Network topology	Linear bus, bus termination on both ends (121 Ohm), stub cables are possible
Medium and maximum bus length	When selecting the cable, plug, and terminating resistors, the ODVA recommendation for the planning and installation of DeviceNet systems must be observed.
Number of stations	Max. 64 participants
Transmission speed	500 kbit/s, 250 kbit/s, 125 kbit/s
Process data width	See section Setting the Process Data Width of the Bus Module on page 31

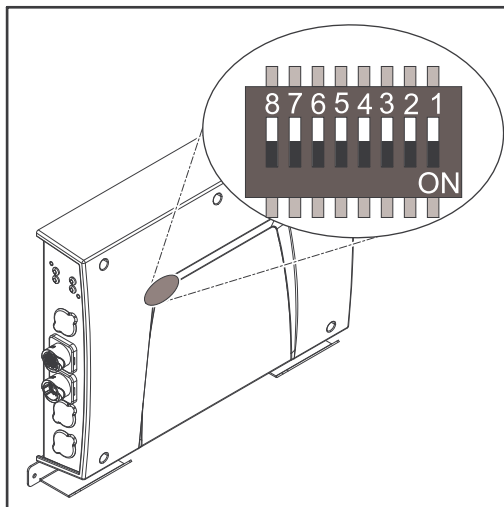
Configuration Parameters

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

Parameter	Value	Description
Vendor ID	0534 _{hex} (1332 _{dec})	Fronius International GmbH
Device Type	000C _{hex} (12 _{dec})	Communication adapter
Product Code	0480 _{hex} (1152 _{dec})	Fronius FB Pro Twin DeviceNet
Product Name	Fronius-FB-Pro-DeviceNet(TM)	

Setting the Bus Module Node Address

Setting the Bus Module Node Address



You can set the bus module node address as follows:

1. Using the DIP switch in the interface within the range 1 to 63
 - All positions are set to the OFF position at the factory. In this case, the IP address must be set on the website of the power source
2. On the website of the power source within the range 1 to 126 (if all positions of the DIP switch are set to the OFF position)

The node address is set with positions 1 to 6 of the dip switch. The configuration is carried out in binary format. This results in a configuration range of 1 to 63 in decimal format.

Example for setting the node address of the bus module using the DIP switch in the interface:

DIP-Switch								IP Address
8	7	6	5	4	3	2	1	
-	-	OFF	OFF	OFF	OFF	OFF	ON	1
-	-	OFF	OFF	OFF	OFF	ON	OFF	2
-	-	OFF	OFF	OFF	OFF	ON	ON	3
-	-	ON	ON	ON	ON	ON	OFF	62
-	-	ON	ON	ON	ON	ON	ON	63

Set the node address on the website of the power source (SmartManager) as described below:

Note down the IP address of the power source used:

- 1 On the power source control panel, select "Defaults"
- 2 On the power source control panel, select "System"
- 3 On the power source control panel, select "Information"
- 4 Note down the displayed IP address (example: 10.5.72.13)

Access the website of the power source in the internet browser:

- 5 Connect the computer to the network of the power source

- 6 Enter the IP address of the power source in the search bar of the Internet browser and confirm
- 7 Enter the standard user name (admin) and password (admin)
 - The website of the power source is displayed

Set the bus module node address:

- 8 On the power source website, select the "RI FB PRO/i TWIN" tab
- 9 Enter the desired node address for the interface under "Module configuration"
 - For example: 2
- 10 Select "Set configuration"
- 11 Select "Restart module"
 - The set node address is applied

Set the Process Data Width of the Bus Module

Setting the Process Data Width of the Bus Module

Note down the IP address of the power source used:

- 1 On the power source control panel, select "Defaults"
- 2 On the power source control panel, select "System"
- 3 On the power source control panel, select "Information"
- 4 Note down the displayed IP address (example: 10.5.72.13)

Access the website of the power source (SmartManager) in the internet browser:

- 5 Connect the computer to the network of the power source
- 6 Enter the IP address of the power source in the search bar of the Internet browser and confirm
- 7 Enter the standard user name (admin) and password (admin)
 - The website of the power source is displayed

Set the process data width of the bus module:

- 8 On the power source website, select the "RI FB PRO/i TWIN Controller" tab
- 9 Under "Process data", select the desired process data configuration
- 10 Select "Save"
 - The field bus connection is restarted and the configuration is adopted

Input and output signals

Data types

The following data types are used:

- **UINT16** (Unsigned Integer)
Whole number in the range from 0 to 65535
- **SINT16** (Signed Integer)
Whole number in the range from -32768 to 32767

Conversion examples:

- for a positive value (SINT16)
e.g. desired wire speed x factor
 $12.3 \text{ m/min} \times 100 = 1230_{\text{dec}} = 04\text{CE}_{\text{hex}}$
- for a negative value (SINT16)
e.g. arc correction x factor
 $-6.4 \times 10 = -64_{\text{dec}} = \text{FFCO}_{\text{hex}}$

Availability of input signals

The input signals listed below are available as of firmware V1.8.0 of the RI FB PRO/i TWIN.

Input signals (from robot to power source)

Address							
Relative			Absolute				
WORD	BYTE	BIT	BIT	Signal	Activity/ data type	Range	Factor
0	0	0	0	Welding Start	Increasing		
		1	1	Robot ready	High		
		2	2	Working mode Bit 0	High	See following table Value Range for Working Mode on page 41	
		3	3	Working mode Bit 1	High		
		4	4	Working mode Bit 2	High		
		5	5	Working mode Bit 3	High		
		6	6	Working mode Bit 4	High		
	7	7	—				
	1	0	8	Gas on	Increasing		
		1	9	Wire forward	Increasing		
		2	10	Wire backward	Increasing		
		3	11	Error quit	Increasing		
		4	12	Touch sensing	High		
		5	13	Torch blow out	Increasing		
		6	14	Processline selection Bit 0 (only available for single-wire applications)	High	See following table Value range Process line selection on page 41	
7		15	Processline selection Bit 1 (only available for single-wire applications)	High			

Address							
Relative			Absolute				
WORD	BYTE	BIT	BIT	Signal	Activity/ data type	Range	Factor
1	2	0	16	Welding Simulation	High		
		1	17	—			
		2	18	—			
		3	19	—			
		4	20	—			
		5	21	—			
		6	22	Wire brake on	High		
	7	23	Torchbody Xchange	High			
	3	0	24	—			
		1	25	Teach mode	High		
		2	26	—			
		3	27	—			
		4	28	—			
		5	29	Wire sense start	Increasing		
6		30	Wire sense break	Increasing			
7	31	—					

Address							
Relative			Absolute				
WORD	BYTE	BIT	BIT	Signal	Activity/ data type	Range	Factor
2	4	0	32	Operating mode TWIN System Bit 0	High	See following table Value range for Operating mode TWIN System on page 41	
		1	33	Operating mode TWIN System Bit 1	High		
		2	34	—			
		3	35	—			
		4	36	—			
		5	37	Documentation mode	High	See following table Value range for Documentation mode on page 41	
		6	38	—			
		7	39	—			
	5	0	40	—			
		1	41	—			
		2	42	—			
		3	43	—			
		4	44	—			
		5	45	—			
6		46	—				
	7	47	Disable process controlled correction, Power source 1	High			

Address							
Relative			Absolute				
WORD	BYTE	BIT	BIT	Signal	Activity/ data type	Range	Factor
3	6	0	48	—			
		1	49	—			
		2	50	—			
		3	51	—			
		4	52	—			
		5	53	—			
		6	54	—			
	7	55	—				
	7	0	56	ExtInput1 => OPT_Output 1	High		
		1	57	ExtInput2 => OPT_Output 2	High		
		2	58	ExtInput3 => OPT_Output 3	High		
		3	59	ExtInput4 => OPT_Output 4	High		
		4	60	ExtInput5 => OPT_Output 5	High		
		5	61	ExtInput6 => OPT_Output 6	High		
6		62	ExtInput7 => OPT_Output 7	High			
7	63	ExtInput8 => OPT_Output 8	High				
4	8	0	64	—			
		1	65	—			
		2	66	—			
		3	67	—			
		4	68	—			
		5	69	—			
		6	70	—			
	7	71	Disable Process controlled correction, Power source 2	High			
	9	0	72	Contact tip short circuit detection on	High		
		1	73	—			
		2	74	—			
		3	75	—			
		4	76	—			
		5	77	—			
6		78	—				
7	79	—					

Address								
Relative			Absolute					
WORD	BYTE	BIT	BIT	Signal	Activity/ data type	Range	Factor	
5	10	0-7	80-87	—				
	11	0-7	88-95	—				
6	12	0-7	96-103	Welding characteristic- / Job number, Power source 1	UINT16	0 to 1000	1	
	13	0-7	104-111					
7	14	0-7	112-119	Welding characteristic- / Job number, Power source 2	UINT16	0 to 1000	1	
	15	0-7	120-127					
8	16, 17	0-7	128-143	For the welding processes MIG/MAG pulse synergic, MIG/MAG standard synergic, MIG/MAG standard manual, MIG/MAG PMC, MIG/MAG LSC, CMT, ConstantWire: Wire feed speed command value, Power source 1	SINT16	-327.68 to 327.67 [m/min]	100	
				For job mode: Power correction, Power source 1	SINT16	-20.00 to 20.00 [%]	100	
9	18, 19	0-7	144-159	For the welding processes MIG/MAG pulse synergic, MIG/MAG standard synergic, MIG/MAG standard manual, MIG/MAG PMC, MIG/MAG LSC, CMT, ConstantWire: Wire feed speed command value, Power source 2	SINT16	-327.68 to 327.67 [m/min]	100	
				For job mode: Power correction, Power source 2	SINT16	-20.00 to 20.00 [%]	100	

Address				Signal	Activity/ data type	Range	Factor
Relative			Absolute				
WORD	BYTE	BIT	BIT				
10	20, 21	0-7	160- 175	<p>For the welding processes MIG/MAG pulse synergic, MIG/MAG standard synergic, MIG/MAG PMC, MIG/MAG LSC, CMT:</p> <p>Arclength correction, Power source 1</p>	SINT16	-10.0 to 10.0 [steps]	10
				<p>For the welding process MIG/MAG standard manual:</p> <p>Welding voltage, Power source 1</p>	UINT16	0.0 to 6553.5 [V]	10
				<p>For job mode:</p> <p>Arclength correction, Power source 1</p>	SINT16	-10.0 to 10.0 [steps]	10
				<p>For the welding process ConstantWire:</p> <p>Hotwire current, Power source 1</p>	UINT16	0.0 to 6553.5 [A]	10
11	22, 23	0-7	176-191	<p>For the welding processes MIG/MAG pulse synergic, MIG/MAG standard synergic, MIG/MAG PMC, MIG/MAG LSC, CMT:</p> <p>Arclength correction, Power source 2</p>	SINT16	-10.0 to 10.0 [steps]	10
				<p>For the welding process MIG/MAG standard manual:</p> <p>Welding voltage, Power source 2</p>	UINT16	0.0 to 6553.5 [V]	10
				<p>For job mode:</p> <p>Arclength correction, Power source 2</p>	SINT16	-10.0 to 10.0 [steps]	10
				<p>For the welding process ConstantWire:</p> <p>Hotwire current, Power source 2</p>	UINT16	0.0 to 6553.5 [A]	10

Address				Signal	Activity/ data type	Range	Factor		
Relative			Absolu- te						
WORD	BYTE	BIT	BIT						
12	24, 25	0-7	192-207	<i>For the welding processes MIG/MAG pulse synergic, MIG/MAG standard synergic, MIG/MAG PMC, MIG/MAG LSC, CMT:</i> Pulse-/dynamic correction, Power source 1	SINT16	-10.0 to 10.0 [steps]	10		
				<i>For the welding process MIG/MAG standard manual:</i> Dynamic, Power source 1	UINT16	0.0 to 10.0 [steps]	10		
13	26, 27	0-7	208-223	<i>For the welding processes MIG/MAG pulse synergic, MIG/MAG standard synergic, MIG/MAG PMC, MIG/MAG LSC, CMT:</i> Pulse-/dynamic correction, Power source 2	SINT16	-10.0 to 10.0 [steps]	10		
				<i>For the welding process MIG/MAG standard manual:</i> Dynamic, Power source 2	UINT16	0.0 to 10.0 [steps]	10		
14	28	0-7	224-231	Wire retract correction, Power source 1	UINT16	0.0 to 10.0	10		
	29	0-7	232-239						
15	30	0-7	240- 247	Wire retract correction, Power source 2	UINT16	0.0 to 10.0	10		
	31	0-7	248- 255						
16	32	0-7	256-263	Welding speed	UINT16	0.0 to 1000 [m/min]	10		
	33	0-7	264-271						
17	34	0-7	272-279	Process controlled correction, Power source 1	SINT16	See table Value range for Process controlled correction on page 41			
	35	0-7	280- 287						
18	36	0-7	288- 295	Process controlled correction, Power source 2	SINT16				
	37	0-7	296- 303						
19	38	0-7	304- 311	Wire forward / backward length	UINT16			OFF / 1 to 65535 [mm]	1
	39	0-7	312-319						

Address				Signal	Activity/ data type	Range	Factor
Relative		Absolu- te	BIT				
WORD	BYTE	BIT					
20	40	0-7	320-327	Wire sense edge detection	UINT16	OFF / 0.5 to 20.0 [mm]	10
	41	0-7	328-335				
21	42	0-7	336-343	—			
	43	0-7	344-351				
22	44	0-7	352-359	—			
	45	0-7	360-367				
23	46	0-7	368-375	—			
	47	0-7	376-383				
24	48	0-7	384-391	—			
	49	0-7	392-399				
25	50	0-7	400-407	—			
	51	0-7	408-415				
26	52	0-7	416-423	—			
	53	0-7	424-431				
27	54	0-7	432-439	—			
	55	0-7	440-447				
28	56	0-7	448-455	—			
	57	0-7	456-463				
29	58	0-7	464-471	Seam number	UINT16	0 to 65535	1
	59	0-7	472-479				

Value Range for Working Mode

Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
0	0	0	0	0	Internal parameter selection
0	0	0	0	1	Special 2-step mode characteristics
0	0	0	1	0	Job mode
0	1	0	0	0	2-step mode characteristics
0	1	0	0	1	2-step MIG/MAG standard manual
1	0	0	0	1	Stop coolant pump

Value range for operating mode

Value range Process line selection

Bit 1	Bit 0	Description
0	0	Process line 1 (default)
0	1	Process line 2
1	0	Process line 3
1	1	Reserved

Value range for process line selection

Value range for Operating mode TWIN System

Bit 1	Bit 0	Function power source 1	Function power source 2
0	0	Single mode	OFF
0	1	TWIN Lead	TWIN Trail
1	0	TWIN Trail	TWIN Lead
1	1	OFF	Single mode

Value range for TWIN System Mode

Value range for Documentation mode

Bit 0	Description
0	Seam number of power source (internal)
1	Seam number of robot (Word 29)

Value range for documentation mode

Value range for Process controlled correction

Process	Signal	Activity / data type	Value range configuration range	Unit	Factor
PMC	Arc length stabilizer	SINT16	-327.8 to +327.7 0.0 to +5.0	Volts	10

Value range for process-dependent correction

Availability of the output signals

The output signals listed below are available as of firmware V1.8.0 of the RI FB PRO/i TWIN.

Output signals (from power source to robot)

Address				Signal	Activity/ data type	Range	Factor
Relative		Absolute					
WORD	BYTE	BIT	BIT				
0	0	0	0	Heartbeat Powersource	High/low	1 Hz	
		1	1	Power source ready	High		
		2	2	Warning	High		
		3	3	Process active	High		
		4	4	Current flow	High		
		5	5	Arc stable- / touch signal	High		
		6	6	Main current signal	High		
	7	7	Touch signal	High			
	1	0	8	Collisionbox active	Low	0 = collision or cable break	
		1	9	Robot Motion Release, Power source 1	High		
		2	10	Wire stick workpiece	High		
		3	11	—			
		4	12	Short circuit contact tip	High		
		5	13	Parameter selection internally	High		
		6	14	—			
7		15	Torch body gripped	High			

Address								
Relative			Absolute					
WORD	BYTE	BIT	BIT	Signal	Activity/ data type	Range	Factor	
1	2	0	16	Command value out of range	High			
		1	17	Correction out of range	High			
		2	18	—				
		3	19	Limitsignal, Power Source 1	High			
		4	20	—				
		5	21	—				
		6	22	Main supply status	Low			
	7	23	—					
	3	0	24	Sensor status 1, Power Source 1	High	See table Assignment of Sensor Statuses 1–4 on page 47		
		1	25	Sensor status 2, Power Source 1	High			
		2	26	Sensor status 3, Power Source 1	High			
		3	27	Sensor status 4, Power Source 1	High			
		4	28	—				
		5	29	—				
6		30	—					
2	4	0	32	—				
		1	33	—				
		2	34	—				
		3	35	Safety status Bit 0, Power Source 1	High			
		4	36	Safety status Bit 1, Power Source 1	High			
		5	37	—				
		6	38	Notification	High			
	7	39	System not ready	High				
	5	0	40	—				
		1	41	—				
		2	42	—				
		3	43	—				
		4	44	—				
		5	45	—				
6		46	—					
7	47	—						

Address							
Relative			Absolute				
WORD	BYTE	BIT	BIT	Signal	Activity/ data type	Range	Factor
3	6	0	48	—			
		1	49	—			
		2	50	—			
		3	51	—			
		4	52	—			
		5	53	—			
		6	54	Gas nozzle touched	High		
	7	55	—				
	7	0	56	ExtOutput1 <= OPT_Input1	High		
		1	57	ExtOutput2 <= OPT_Input2	High		
		2	58	ExtOutput3 <= OPT_Input3	High		
		3	59	ExtOutput4 <= OPT_Input4	High		
		4	60	ExtOutput5 <= OPT_Input5	High		
		5	61	ExtOutput6 <= OPT_Input6	High		
6		62	ExtOutput7 <= OPT_Input7	High			
7	63	ExtOutput8 <= OPT_Input8	High				
4	8	0	64	—			
		1	65	Robot Motion Release, Power source 2	High		
		2	66	Limitsignal, Power source 2	High		
		3	67	—			
		4	68	—			
		5	69	—			
		6	70	—			
		7	71	—			
	9	0	72	—			
		1	73	—			
		2	74	—			
		3	75	—			
		4	76	—			
		5	77	—			
6		78	—				
7	79	—					

Address					Activity/ data type	Range	Factor
Relative		Absolute					
WORD	BYTE	BIT	BIT	Signal			
5	10	0	80	Sensor status 1, Power Source 2	High	See table Assignment of Sensor Statuses 1–4 on page 47	
		1	81	Sensor status 2, Power Source 2	High		
		2	82	Sensor status 3, Power Source 2	High		
		3	83	Sensor status 4, Power Source 2	High		
		4	84	—			
		5	85	—			
		6	86	—			
	11	0	88	—			
		1	89	—			
		2	90	—			
		3	91	Safety status Bit 0, Power Source 2	High		
		4	92	Safety status Bit 1, Power Source 2	High		
		5	93	—			
		6	94	—			
	7	95	—				
6	12	0–7	96–103	Welding voltage, Power source 1	UINT16	0.0 to 655.35 [V]	100
	13	0–7	104–111				
7	14	0–7	112–119	Welding voltage, Power source 2	UINT16	0.0 to 655.35 [V]	100
	15	0–7	120–127				
8	16	0–7	128–135	Welding current, Power source 1	UINT16	0.0 to 6553.5 [A]	10
	17	0–7	136–143				
9	18	0–7	144–151	Welding current, Power source 2	UINT16	0.0 to 6553.5 [A]	10
	19	0–7	152–159				
10	20	0–7	160–167	Wire feed speed, Power source 1	SINT16	-327.68 to 327.67 [m/min]	100
	21	0–7	168–175				
11	22	0–7	176–183	Wire feed speed, Power source 2	SINT16	-327.68 to 327.67 [m/min]	100
	23	0–7	184–191				
12	24	0–7	192–199	Actual real value for seam tracking	UINT16	0 to 6.5535	1000 0
	25	0–7	200–207				
13	26	0–7	208–215	Error number, Power source 1	UINT16	0 to 65535	1
	27	0–7	216–223				

Address							
Relative		Absolute					
WORD	BYTE	BIT	BIT	Signal	Activity/ data type	Range	Factor
14	28	0-7	224-231	Error number, Power source 2	UINT16	0 to 65535	1
	29	0-7	232-239				
15	30	0-7	240-247	Motor current M1, Power source 1	UINT16	-327.68 to 327.67 [A]	100
	31	0-7	248-255				
16	32	0-7	256-263	Motor current M1, Power source 2	UINT16	-327.68 to 327.67 [A]	100
	33	0-7	264-271				
17	34	0-7	272-279	Motor current M2, Power source 1	UINT16	-327.68 to 327.67 [A]	100
	35	0-7	280-287				
18	36	0-7	288-295	Motor current M2, Power source 2	UINT16	-327.68 to 327.67 [A]	100
	37	0-7	296-303				
19	38	0-7	304-311	Motor current M3, Power source 1	UINT16	-327.68 to 327.67 [A]	100
	39	0-7	312-319				
20	40	0-7	320-327	Motor current M3, Power source 2	UINT16	-327.68 to 327.67 [A]	100
	41	0-7	328-335				
21	42	0-7	336-343	Warning,, Power Source 1	UINT16	0 to 65535	1
	43	0-7	344-351				
22	44	0-7	352-359	Warning,, Power source 2	UINT16	0 to 65535	1
	45	0-7	360-367				
23	46	0-7	368-375	Wire position, Power source 1	UINT16	-327.68 to 327.67 [mm]	100
	47	0-7	376-383				
24	48	0-7	284-291	Wire position, Power source 2	UINT16	-327.68 to 327.67 [mm]	100
	49	0-7	292-399				
25	50	0-7	400-407	—			
	51	0-7	408-415				
26	52	0-7	416-423	—			
	53	0-7	424-431				
27	54	0-7	432-439	—			
	55	0-7	440-447				
28	56	0-7	448-455	—			
	57	0-7	456-463				
29	58	0-7	464-471	—			
	59	0-7	472-479				

**Assignment of
Sensor Statuses
1-4**

Signal	Description
Sensor status 1	OPT/i WF R wire end (4,100,869)
Sensor status 2	OPT/i WF R wire drum (4,100,879)
Sensor status 3	OPT/i WF R ring sensor (4,100,878)
Sensor status 4	Wire buffer set CMT TPS/i (4,001,763)



Fronius International GmbH

Froniusstraße 1
4643 Pettenbach
Austria
contact@fronius.com
www.fronius.com

At www.fronius.com/contact you will find the contact details
of all Fronius subsidiaries and Sales & Service Partners.