Fronius RI FB Inside Bus Module Instruction Manual

Operating Instructions
RI FB Inside/i
RI MOD/i CC-M40 Ethernet/IP-2P

Contents

General

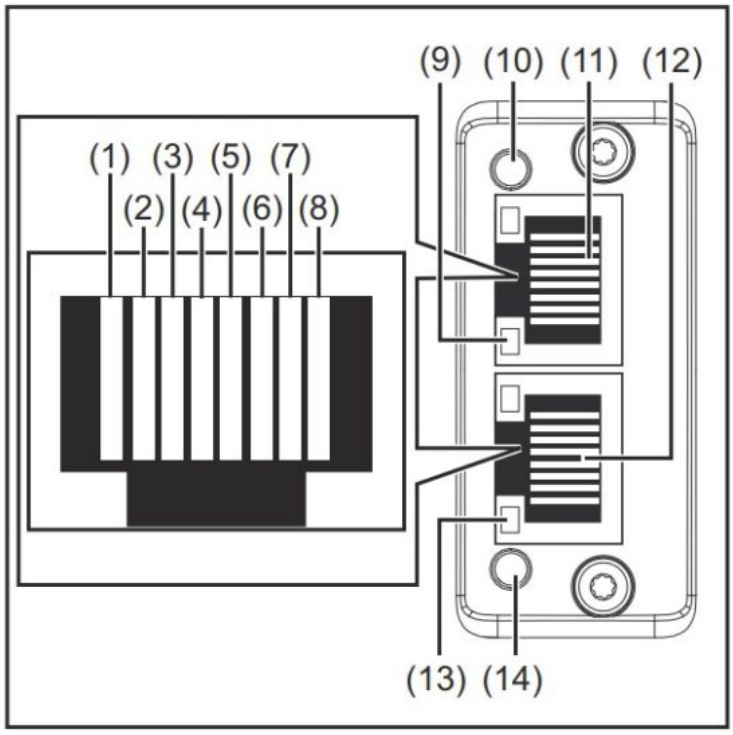
Safety

⚠ **WARNING!**

Incorrect operation and faulty work can cause serious personal injury and material damage.
All work and functions described in this document must be performed only by trained specialist personnel who have read and understood the following documents in full:

▶ this document
▶ the Operating Instructions of the robot interface “RI FB Inside/i”
▶ all documents relating to system components, especially the safety rules

Connections and Indicators on RJ 45 module



1	TX+
2	TX-
3	RX+
4 5	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).
6	RX-
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).
9	Connection/activity at connection 2 LED
10	MS LED (module status)
11	RJ-45 Ethernet connection 2
12	RJ-45 Ethernet connection 1
13	Connection/activity at connection 1 LED
14	NS LED (network status)

NS LED (Network Status)	
Status	**Meaning**
Off	No supply voltage or no IP address
Lights up green	Online, one or more connections established (CIP category 1 or 3)
Flashes green	Online, no connections established

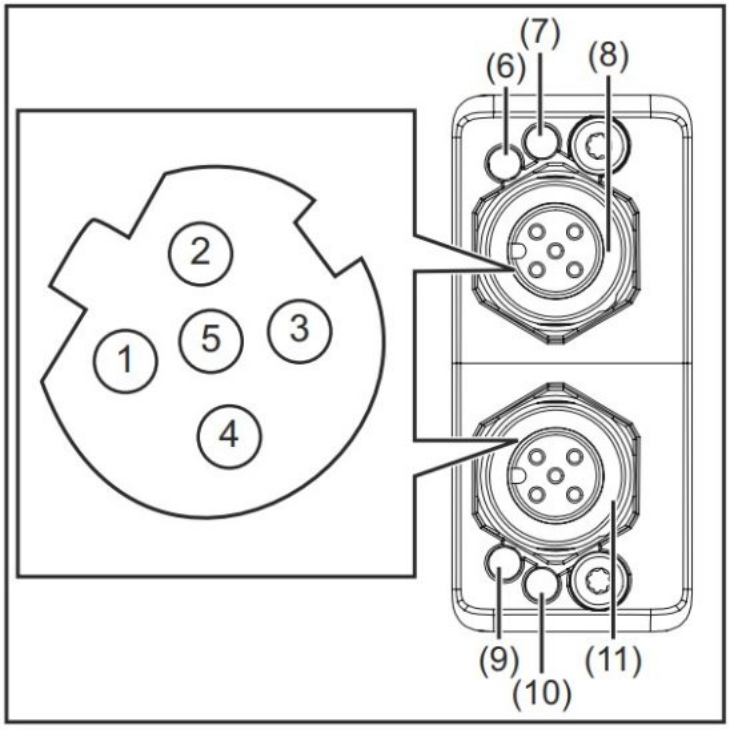
NS LED (Network Status)	
Lights up red	Double IP address, serious error
Flashes red	Overrun of time for one or more connections (CIP category 1 or 3)

NS LED (Network Status)	
Lights up red	Double IP address, serious error
Flashes red	Overrun of time for one or more connections (CIP category 1 or 3)

MS LED (Module Status)	
Status	**Meaning**
Off	No supply voltage
Lights up green	Controlled by a Scanner in Run state and, if CIP Sync is enabled, time is synch ronized to a Grandmaster clock
Flashes green	Not configured, Scanner in Idle state, or, if CIP Sync is enabled, time is synchronized Grandmaster clock
Lights up red	Major error – exception state, serious fault, etc.
Flashes red	Correctable error – the module is configured, but there is a difference between the parameters stored and the parameters used (configuration process image, I P ad- dress)

Connection/Activity LED	
Status	**Meaning**
Off	No connection, no activity
Lights up green	Connection established (100 Mbit/s)
Flickers green	Activity (100 Mbit/s)
Lights up yellow	Connection established (10 Mbit/s)
Flickers yellow	Activity (10 Mbit/s)

Connections and Indicators on M12 module



(1)	TXD+
(2)	RXD+
(3)	TXD-
(4)	RXD-
(5)	Shield
(6)	MS LED (module status)
(7)	Connection/activity at M12 connection 2 LED
(8)	M12 connection 2
(9)	NS LED (network status)
(10)	Connection/activity at M12 connection 1 LED
(11)	M12 connection 1

NS LED (Network Status)	
Status	**Meaning**
Off	No supply voltage or no IP address
Lights up green	Online, one or more connections established (CIP category 1 or 3)
Flashes green	Online, no connections established
Lights up red	Double IP address, serious error
Flashes red	Overrun of time for one or more connections (CIP category 1 or 3)

MS LED (Module Status)	
Status	**Meaning**
Off	No supply voltage
Lights up green	Controlled by a Scanner in Run state and, if CIP Sync is enabled, time is synch ronized to a Grandmaster clock
Flashes green	Not configured, Scanner in Idle state, or, if CIP Sync is enabled, time is synchronized Grandmaster clock
Lights up red	Major error – exception state, serious fault, etc.
Flashes red	Correctable error – the module is configured, but there is a difference between the parameters stored and the parameters used (configuration process image, I P ad- dress)

Connection/Activity LED	
Status	**Meaning**
Off	No connection, no activity
Lights up green	Connection established (100 Mbit/s)
Flickers green	Activity (100 Mbit/s)
Lights up yellow	Connection established (10 Mbit/s)
Flickers yellow	Activity (10 Mbit/s)

Data Transfer Properties

Data Transfer Properties	Transfer technology Ethernet
	Medium When selecting the cables and plugs, the ODVA recommendation for the planning and installation of EtherNet/IP systems must be observed. The EMC tests were carried out by the manufacturer with the cable EC5ES8VG0 030M40M40-F.
	Transmission speed 10 Mbit/s or 100 Mbit/s
	Bus connection RJ-45 Ethernet / M12

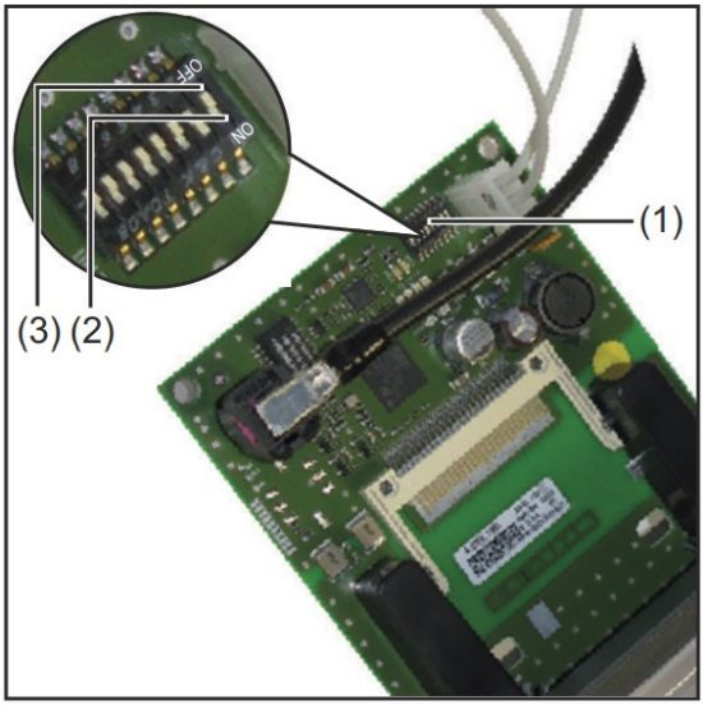
Configuration Parameters
In some robot control systems, it may be necessary to state the configuration parameters described here so that the bus module can communicate with the robot.

Parameter	Value	Description
Vendor ID	0534hex (1332dez)	Fronius International GmbH
Device Type	000Chex (12dez)	Communication adapter
Product Code	0301hex (769dez)	Fronius FB Inside Ethernet/IP-2-Port
Product Name	Fronius-FB-Inside-EtherNetIP(TM)	

Image Type	Instance Type	Instance Name	Instance Description	Instance Number	Size [Byte]
Standard Image	Produ- cing In - stance	Input Da- ta St an-dard	Data from power source to robot	100	40
	Con- suming I nstance	Output Data St andard	Data from robot to power source	150	40
Economy Image	Produ- cing In - stance	Input Da- ta St an- dard	Data from power source to robot	101	16
	Con- suming I nstance	Output Data St andard	Data from robot to power source	151	16
Retrofit Image	Produ- cing In - stance	Input Da- ta St an- dard	Data from power source to robot	102	37
	Con- suming I nstance	Output Data St andard	Data from robot to power source	152	37

Configuration of robot interface

Dip-switch function



The dip-switch (1) on the robot interface RI FB Inside/i is used to configure

- the process data width
- the node address/IP address

At the factory all positions of the dip switch are set to OFF (3).
This corresponds to the binary value 0.
The position (2) corresponds to the binary value 1.

Configuration of the process data width

Dip switch								Configuration
8	**7**	**6**	**5**	**4**	**3**	**2**	**1**	
OFF	OFF	–	–	–	–	–	–	Standard image 320 Bit
OFF	ON	–	–	–	–	–	–	Economy image 128 Bit
ON	OFF	–	–	–	–	–	–	Retro Fit Scope dependent on bus module
ON	ON	–	–	–	–	–	–	Not used

The process data width defines the scope of the transferred data volume.
The kind of data volume that can be transferred depends on

- the robot controls
- the number of welding machines
- the type of welding machines
- “Intelligent Revolution”
- “Digital Revolution” (Retro Fit)

Set node address with dip switch (example)

Dip switch								Node 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

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
NOTE!
After every change of the configurations of the dip switch settings, the inter- face needs to be restarted so that the changes will take effect.
(Restart = interrupting and restoring the power supply or executing the relevant function on the website of the power source)
Setting the IP Address
Upon delivery the node address is set to 0 using the dip switch.
This corresponds to the following IP settings:

- IP address: 0.0.0.0
- Subnet mask: 0.0.0.0
- Default gateway: 0.0.0.0

The IP address can be configured in two ways:

- Using the DIP switch within the range defined by 192.168.0.xx (xx = DIP switch setting = 1 to 63)
- If the dip switch is set to 0, using the following configuration tools:
- Using the website of the welding machine

NOTE!
If the IP address is again set to higher than 0 with the dip switch, the relevant IP address will be configured to the range of 1 to 63 after restarting the robot interface.
A node address previously configured by a configuration tool is overwritten.

NOTE!
If configurations have already been made, the network configurations can be restored to factory settings in two ways:
▶ set all dip switches back to 0
▶ with the button Restore factory settings on the website of the welding machine

The Website of the welding machine

The welding machine has its own website, the SmartManager.
As soon as the welding machine has been integrated into a network, the SmartManager can be opened via the IP address of the welding machine.
Depending on the system configuration and software upgrades, the SmartManager may contain the following entries:

- Overview
- Update
- Screenshot
- Save and restore
- Function packages
- Job data
- Overview of characteristics
- RI FB INSIDE/i

Call up the welding machine SmartManager and log in

1. Presettings / System/Information ==> note down IP address of the welding machine
2. Enter the IP address into the search field of the browser
3. Enter username and password

   Factory setting:

   Username = admin

   Password = admin
4. Confirm displayed message

The welding machine SmartManager is displayed.

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 m/min x 100 = 1230dec = 04CEhex
- for a negative value (SINT16) e.g. arc correction x factor -6.4 x 10 = -64dec = FFCOhex

Availability of Input Signals
The input signals listed below are available from firmware V4.1.x for all Inside/i systems.
Input signals (from robot to power source)

Address				Signal	Activity / data type	Range	Factor	Process image	
Relative			Absolu- te					Standard	Economy
WORD	BYTE	BIT	BIT						
0	0	0	0	Welding Start	Increa- sing			✓	✓
		1	1	Robot ready	High				
		2	2	Working mode Bit 0	High	See table Value Range for Working Mode on page 44			
		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	Increa- sing				
		1	9	Wire forward	Increa- sing				
		2	10	Wire backward	Increa- sing				
		3	11	Error quit	Increa- sing				
		4	12	Touch sensing	High				
		5	13	Torch blow out	Increa- sing				
		6	14	Processline selection Bit 0	High	See table Value range Process li- ne selection on page 45			
		7	15	Processline selection Bit 1	High				

Address				Signal	Activity / data type	Range	Factor	Process image	
Relative			Absolute					Standard	Economy
WORD	BYTE	BIT	BIT						
1	2	0	16	Welding simulation	High			✓	✓
		1	17	Welding process MIG/MAG: 1) Synchro pulse on	High				
				Welding process WIG: 2) TAC on	High				
		2	18	Welding process WIG: 2) Cap shaping	High				
		3	19	—					
		4	20	—					
		5	21	Booster manual	High				
		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	Increa- sing				
		6	30	Wire sense break	Increa- sing				
		7	31	—					

Address				Signal	Activity / data type	Range	Factor	Process image	
Relative			Absolu- te					Standard	Economy
WORD	BYTE	BIT	BIT						
2	4	0	32	TWIN mode Bit 0	High	See table Value Range for TWIN Mode on page 45		✓	✓
		1	33	TWIN mode Bit 1	High				
		2	34	—					
		3	35	—					
		4	36	—					
		5	37	Documentation mode	High	See table Value Range for Docu- mentation Mode on page 45			
		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	High				

Address				Signal	Activity / data type	Range	Factor	Process image	
Relative			Absolu- te					Standard	Economy
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	8-9	0–7	64–79	Welding characteristic- / Job number	UINT16	0 to 1000	1	✓	✓
5	10 – 11	0-7	80-95	Welding process MIG/MAG: 1) Constant Wire: Wire feed speed command va- lue	SINT16	-327,68 to 327,67 [m/min]	100	✓	✓
				Welding process WIG: 2) Main- / Hotwire current com- mand value	UINT16	0 to 6553,5 [A]	10		
				For job-mode: Power correction	SINT16	-20,00 to 20,00 [%]	100		

Address				Signal	Activity / data type	Range	Factor	Process image	
Relative			Absolu- te						
WORD	BYTE	BIT	BIT					Standard	Economy
6	12 – 13	0-7	96-111	Welding process MIG/MAG: 1) Arclength correction	SINT16	-10,0 to 10,0 [Schritte]	10	✓	✓
				Welding process MIG/MAG Standard-Manuel: Welding voltage	UINT16	0,0 to 6553,5 [V]	10		
				Welding process WIG: 2) Wire feed speed command va- lue	SINT16	-327,68 to 327,67 [m/min]	100		
				For job-mode: Arclength correction	SINT16	-10,0 to 10,0 [Schritte]	10		
				Welding process Constant Wire: Hotwire current	UINT16	0,0 to 6553,5 [A]	10		
7	14 – 15	0-7	112-127	Welding process MIG/MAG: 1) Pulse-/dynamic correction	SINT16	-10,0 to 10,0 [steps]	10	✓	✓
				Welding process MIG/MAG Standard-Manuel: Dynamic	UINT16	0,0 to 10,0 [steps]	10		
				Welding process WIG: 2) Wire cor rection	SINT16	-10,0 to 10,0 [steps]	10		
8	16 – 17	0-7	128-143	Welding process MIG/MAG: 1) Wire retract correction	UINT16	0,0 to 10,0 [steps]	10	✓	
				Welding process WIG: 2) Wire retract end	UINT16	OFF, 1 to 50 [mm]	1		
9	18-19	0-7	144-159	Welding speed	UINT16	0,0 to 1000,0 [cm/min]	10	✓	

Address				Signal	Activity / data type	Range	Factor	Process image	
Relative			Absolu- te					Standard	Economy
WORD	BYTE	BIT	BIT						
10	20 – 21	0-7	160-175	Process controlled correction		See table Value range for Pro- cess controlled correction on page 45		✓	
11	22 – 23	0-7	176-191	Welding process WIG: 2) Wire positioning start				✓	
12	24 – 25	0-7	192-207	—				✓	
13	26 – 27	0-7	208-223	—				✓	
14	28 – 29	0-7	224-239	—				✓	
15	30 – 31	0-7	240-255	Wire forward / backward length	UINT16	OFF / 1 to 65535 [mm]	1	✓	
16	32 – 33	0-7	256-271	Wire sense edge detection	UINT16	OFF / 0,5 to 20,0 [mm]	10	✓	
17	34 – 35	0-7	272-287	—				✓	
18	36 – 37	0-7	288-303	—				✓	
19	38 – 39	0-7	304-319	Seam number	UINT16	0 to 65535	1	✓	

1. MIG/MAG Puls-Synergic, MIG/MAG Standard-Synergic, MIG/MAG Standard-Manuel, MIG/MAG PMC, MIG/MAG, LSC
2. WIG coldwire, WIG hotwire

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	0	Idle Mode
1	0	0	0	1	Stop coolant pump
1	1	0	0	1	R/L-Measurement

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 TWIN Mode

Bit 1	Bit 0	Description
0	0	TWIN Single mode
0	1	TWIN Lead mode
1	0	TWIN Trail mode
1	1	Reserved

Value range for TWIN mode
Value Range for Documentation Mode

Bit 0	Description
0	Seam number of welding machine (internal)
1	Seam number of robot (Word 19)

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 Output Signals

The output signals listed below are available from firmware V4.1.x for all Inside/i systems.

Output Signals (from Power Source to Robot)

Address				Signal	Activity / data type	Range	Factor	Process image	
relative			absolute						
WORD	BYTE	BIT	BIT					Standard	Economy
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	High	0 = collisi- on or ca- ble break			
		1	9	Robot Motion Release	High				
		2	10	Wire stick workpiece	High				
		3	11	—					
		4	12	Short circuit contact tip	High				
		5	13	Parameter selection in- ternally	High				
		6	14	Characteristic number valid	High				
		7	15	Torch body gripped	High				

Address		Signal	Activity / data type	Range	Factor	Process image	
relative	absolute						
						Sta	Eco

WORD	BYTE	BIT	BIT					nda rd	no my
1	2	0	16	Command value out of range	High			✓	✓
		1	17	Correction out of range	High				
		2	18	—					
		3	19	Limitsignal	High				
		4	20	—					
		5	21	—					
		6	22	Main supply status	Low				
		7	23	—					
	3	0	24	Sensor status 1	High	See table Assign- ment of Sensor Sta- tuses 1 –4 on page 49			
		1	25	Sensor status 2	High				
		2	26	Sensor status 3	High				
		3	27	Sensor status 4	High				
		4	28	—					
		5	29	—					
		6	30	—					
		7	31	—					
2	4	0	32	—				✓	✓
		1	33	—					
		2	34	—					
		3	35	Safety status Bit 0	High	See table Value ran- g e Safety status on pag e 50			
		4	36	Safety status Bit 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				Signal	Activity / data type	Range	Factor	Process image	
relative			absolute						
WORD	BYTE	BIT	BIT					Standard	Economy
3	6	0	48	Process Bit 0	High	See table Value Range for Process Bit on page 50		✓	✓
		1	49	Process Bit 1	High				
		2	50	Process Bit 2	High				
		3	51	Process Bit 3	High				
		4	52	Process Bit 4	High				
		5	53	—					
		6	54	Touch signal gas nozzle	High				
		7	55	TWIN synchronization active	High				
	7	0	56	ExtOutput1 <= OPT_In- put1	High				
		1	57	ExtOutput2 <= OPT_In- put2	High				
		2	58	ExtOutput3 <= OPT_In- put3	High				
		3	59	ExtOutput4 <= OPT_In- put4	High				
		4	60	ExtOutput5 <= OPT_In- put5	High				
		5	61	ExtOutput6 <= OPT_In- put6	High				
		6	62	ExtOutput7 <= OPT_In- put7	High				
		7	63	ExtOutput8 <= OPT_In- put8	High				
4	8-9	0-7	64-79	Welding voltage	UINT16	0.0 to 655.35 [V]	100	✓	✓
5	10 – 11	0-7	80-95	Welding current	UINT16	0.0 to 6553.5 [A]	10	✓	✓
6	12 – 13	0-7	96-111	Wire feed speed	SINT16	-327.68 to 327.67 [m/min]	100	✓	✓
7	14 – 15	0-7	112-127	Actual real value for seam tracking	UINT16	0 to 6.5535	10000	✓	✓
8	16 – 17	0-7	128-143	Error number	UINT16	0 to 65535	1	✓	

9	18 – 19	0-7	144-159	Warning number	UINT16	0 to 65535	1	✓	

Address				Signal	Activity / data type	Range	Factor	Process image	
relative			absolute						
WORD	BYTE	BIT	BIT					Standard	Economy
10	20 – 21	0-7	160-175	Motor current M1	SINT16	-327.68 to 327.67 [A]	100	✓	
11	22 – 23	0-7	176-191	Motor current M2	SINT16	-327.68 to 327.67 [A]	100	✓	
12	24 – 25	0-7	192-207	Motor current M3	SINT16	-327.68 to 327.67 [A]	100	✓	
13	26 – 27	0-7	208-223	—				✓	
14	28 – 29	0-7	224-239	—				✓	
15	30 – 31	0-7	240-255	—				✓	
16	32 – 33	0-7	256-271	Wire position	SINT16	-327.68 to 327.67 [mm]	100	✓	
17	34 – 35	0-7	272-287	—				✓	
18	36 – 37	0-7	288-303	—				✓	
19	38 – 39	0-7	304-319	—				✓	

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)

Assignment of sensor statuses
Value range Safety status

Bit 1	Bit 0	Description
0	0	Reserve
0	1	Hold
1	0	Stop
1	1	Not installed / active

Value range Safety status
Value Range for Process Bit

Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Description
0	0	0	0	0	No internal parameter selection or process
0	0	0	0	1	MIG/MAG pulse synergic
0	0	0	1	0	MIG/MAG standard synergic
0	0	0	1	1	MIG/MAG PMC
0	0	1	0	0	MIG/MAG LSC
0	0	1	0	1	MIG/MAG standard manual
0	0	1	1	0	Electrode
0	0	1	1	1	TIG
0	1	0	0	0	CMT
0	1	0	0	1	ConstantWire
0	1	0	1	0	ColdWire
0	1	0	1	1	DynamicWire

Value Range for Process Bit
Value Range for Function status

Bit 1	Bit 0	Description
0	0	Inactive
0	1	Idle
1	0	Finished
1	1	Error

Value range for function status

Retrofit Image Input and Output Signals

Input Signals

The signals listed below are available from firmware V1.6.0 for all Inside/i systems.

Serial no.	Signal designation	Range	Action
E01	Welding on		High
E02	Robot ready		High
E03	Operating mode bit 0	See table Value range for opera- ting modes on page 52	High
E04	Operating mode bit 1		High
E05	Operating mode bit 2		High
E06	—		
E07	—		
E08	—		
E09	Gas test		High
E10	Wire forward		High
E11	Wire backward		High
E12	Error quit		High
E13	Position search		High
E14	Purge welding torch		High
E15	—		
E16	—		
E17 – E24	Job number	0 to 99	
E25 – E31	Program number	1 to 127	
E32	Welding simulation		High
Only in Job mode (E17 – E32):			
E17 – E31	Job number	0 to 999	
E32	Welding simulation		High
E33 – E40	Output set value – Low byte	0 to 65535 (0 to 100%)	
E41 – E48	Output set value – High byte		
E49 – E56	Arc length correction, set value Low byte	0 to 65535 (-30 to +30%)	
E57–E64	Arc length correction, set value High byte		
E65 – E72	Pulse or dynamic correction	0 to 255 (-5 to +5%)	
E73–E80	—		
E81 – E88	—		
E89 – E96	—		

Serial no.	Signal designation	Range	Action
E97 – E104	Welding speed – Low byte	0 to 65535 (0 to 6553.5 cm/ min)	
E105 – E112	Welding speed – High byte		
E113	SynchroPulse on		High
E114	—		
E115	—		
E116	—		
E117	Output full range (0 to 30 m)		High
E118	—		
E119	—		
E120	—		
E121 – E128	—		
E129 – E296	—		

Value range for operating modes

Bit 2	Bit 1	Bit 0	Description
0	0	0	MIG/MAG Synergic welding
0	0	1	MIG/MAG Synergic welding
0	1	0	Job mode
0	1	1	Internal parameter selection

Output Signals
The signals listed below are available from firmware V1.6.0 for all Inside/i systems.

Seq. no	Signal designation	Range	Action
A01	Arc stable		High
A02	Limit signal		High
A03	Process active		High
A04	Main current signal		High
A05	Welding torch collision protection		High
A06	Power source ready		High
A07	Communication ready		High
A08	Life Cycle Toggle Bit (250ms)		High
A09 – A16	—		
A17 – A24	—		
A25	—		

Seq. no	Signal designation	Range	Action
A26	—		
A27	—		
A28	Wire present		
A29	Short circuit time exceeded		High
A30	—		
A31	—		
A32	Power out of range		High
A33 – A40	Welding voltage actual value – Low byte	0 to 65535 (0 to 100 V)	
A41 – A48	Welding voltage actual value – High byte		
A49 – A56	Welding current actual value – Low byte	0 to 65535 (0 to 1000 A)	
A57 – A64	Welding current actual value – High byte		
A65 – A72	Motor current	0 to 255 (0 to 5 A)	
A73 – A80	—		
A81 – A88	—		
A89 – A96	—		
A97 – A104	Wire speed – Low byte	0 to vDmax	
A105 – A112	Wire speed – High byte		
A113 – A120	—		
A121 – A128	—		
A129 – A296	—		

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Documents / Resources

	Fronius RI FB Inside Bus Module [pdf] Instruction Manual 42, 0410, 1916, RI FB Inside Bus Module, RI FB Inside, Bus Module, Module

References

- Fronius Spare Parts
- User Manual