Signal Description

Arc Welding Products

IRC5 M2004

3HEA 801231-001 Rev A

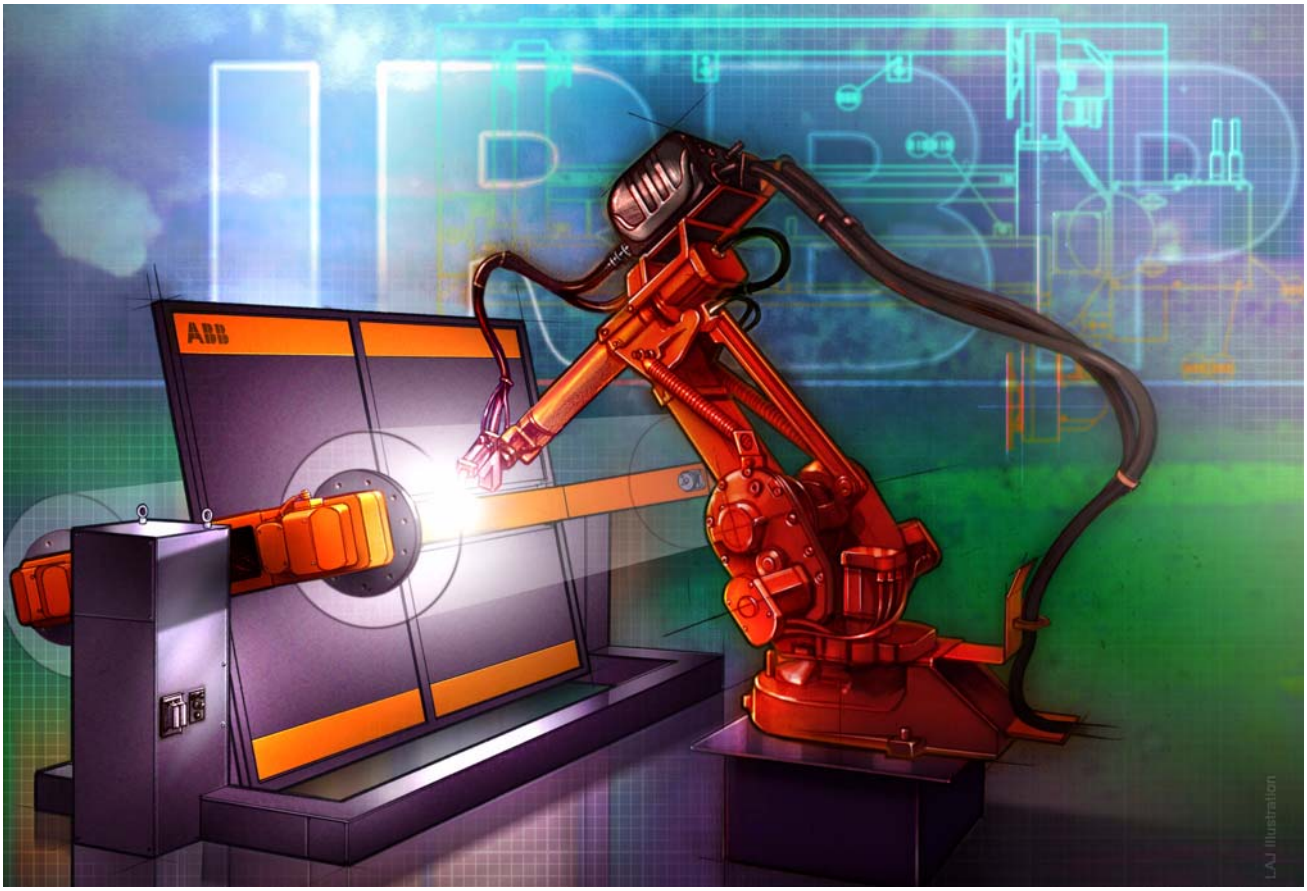


ABB Automation Technologies AB
Robotics & Manufacturing
SE-69582 Laxå
Sweden

Contents

1 General I/O Description 1

2 Process Interface 3

2.1 Arcitec/MigRob 4
2.1.1 I/O Board configuration 4
2.1.2 I/O Signals Configuration B_PROC_30 5
2.1.2.1 Digital outputs 5
2.1.2.2 Digital inputs 5
2.1.2.3 Analogue outputs 6
2.1.2.4 Analogue inputs 6
2.1.3 I/O Signals Configuration B_AW_PROC_40 7
2.1.3.1 Digital outputs 7
2.1.3.2 Digital inputs 7
2.1.3.3 Group outputs 7
2.1.3.4 Analogue inputs 7
2.1.4 I/O Signals Configuration B_AW_SIM 9
2.1.4.1 Digital output 9

2.2 ARCITEC/MigRob, Robot 2 10
2.2.1 I/O Board configuration 10
2.2.2 I/O Signals Configuration B_PROC_31 11
2.2.2.1 Digital outputs 11
2.2.2.2 Digital inputs 12
2.2.2.3 Analogue outputs 12
2.2.2.4 Analogue inputs 12
2.2.3 I/O Signals Configuration B_AW_PROC_41 13
2.2.3.1 Digital outputs 13
2.2.3.2 Digital inputs 13
2.2.3.3 Group outputs 13
2.2.3.4 Analogue inputs 14
2.2.4 I/O Signals Configuration B_AW_SIM 15
2.2.4.1 Digital output 15

2.3 RPB 16
2.3.1 I/O Board configuration 16
2.3.2 I/O Signals Configuration B_PROC_30 17
2.3.2.1 Digital outputs 17
2.3.2.2 Digital inputs 18
2.3.2.3 Analogue outputs 18
2.3.2.4 Analogue inputs 18

2.4 RPB, Robot 2 19
2.4.1 I/O Board configuration 19
2.4.2 I/O Signals Configuration B_PROC_31 20
2.4.2.1 Digital outputs 20
2.4.2.2 Digital inputs 21
2.4.2.3 Analogue outputs 21

2.4.2.4 Analogue inputs 21
2.5 Fronius 22
2.5.1 I/O Board configuration 22
2.5.2 I/O Signals Configuration FRON_BOARD_40 23
2.5.2.1 Digital outputs 23
2.5.2.2 Digital inputs 25
2.5.2.3 Analogue outputs 25
2.5.2.4 Group outputs 25
2.5.2.5 Group input 26
2.5.3 I/O Signals Configuration BOARD20 27
2.5.3.1 Digital outputs 27
2.5.3.2 Digital inputs 27
2.6 Fronius, Robot 2 28
2.6.1 I/O Board configuration 28
2.6.2 I/O Signals Configuration FRON_BOARD_41 29
2.6.2.1 Digital outputs 29
2.6.2.2 Digital inputs 30
2.6.2.3 Analogue outputs 31
2.6.2.4 Group outputs 31
2.6.2.5 Group input 31
2.6.3 I/O Signals Configuration BOARD20 32
2.6.3.1 Digital outputs 32
2.6.3.2 Digital inputs 32
3 Positioner Interface 33
3.1 IRBP A 34
3.1.1 I/O board Configuration for positioner 34
3.1.2 Simulated outputs for B_POS_SIM 35
3.1.2.1 Simulated outputs 35
3.1.2.2 Simulated inputs 35
3.1.3 I/O-Signals configuration for B_POS_21 36
3.1.3.1 Digital outputs TB4 36
3.1.3.2 Digital inputs TB3 36
3.1.4 Configuration cross-connections 37
3.2 IRBP B/D 38
3.2.1 I/O board Configuration for positioner 38
3.2.2 Simulated outputs for B_POS_SIM 39
3.2.2.1 Simulated outputs 39
3.2.2.2 Simulated inputs 39
3.2.3 I/O-Signals configuration for B_POS_21 40
3.2.3.1 Digital outputs TB4 40
3.2.3.2 Digital inputs TB3 40
3.2.4 Configuration cross-connections 41
3.3 IRBP C 42
3.3.1 I/O board Configuration for positioner 42
3.3.2 Simulated outputs for B_POS_SIM 43
3.3.2.1 Simulated outputs 43

3.3.2.2 Simulated inputs 43
3.3.3 I/O-Signals configuration for B_POS_21 44
3.3.3.1 Digital outputs TB4 44
3.3.3.2 Digital inputs TB3 44
3.3.4 Configuration cross-connections 45
3.4 IRBP C Index 46
3.4.1 I/O board Configuration for positioner 46
3.4.2 Simulated outputs for B_POS_SIM 47
3.4.2.1 Simulated outputs 47
3.4.2.2 Simulated inputs 47
3.4.3 I/O-Signals configuration for B_POS_21 48
3.4.3.1 Digital outputs TB4 48
3.4.3.2 Digital inputs TB3 48
3.4.4 Configuration cross-connections 49
3.5 IRBP K/R 50
3.5.1 I/O board configuration for positioner 50
3.5.2 Simulated outputs for B_POS_SIM 51
3.5.2.1 Simulated outputs 51
3.5.2.2 Simulated inputs 51
3.5.3 I/O-Signals configuration for B_POS_21 52
3.5.3.1 Digital outputs TB4 52
3.5.3.2 Digital inputs TB3 52
3.5.4 Configuration cross-connections 53
3.5.4.1 K/R 3DU (3 axes) 53
3.5.4.2 K/R 1DU (1-axis) 54
3.6 IRBP L 55
3.6.1 I/O board configuration for positioner 55
3.6.2 Simulated outputs for B_POS_SIM 56
3.6.2.1 Simulated outputs 56
3.6.2.2 Simulated inputs 56
3.6.3 I/O-Signals configuration for B_POS_21 57
3.6.3.1 Digital outputs TB4 57
3.6.3.2 Digital inputs TB3 57
3.6.4 Configuration cross-connections 58
4 Operator Interface IRBP 59
4.1 I/O board Configuration 59
4.2 System functions 59
4.2.1 Inputs 59
4.2.2 Outputs 59
4.3 I/O-Signals configuration for B_OP_SIM 60
4.3.1 Digital outputs 60
4.4 I/O Signals configuration for USERIO 60
4.4.1 Digital outputs 60
4.4.2 Digital inputs 60

5 Safety interface SIB V 61
5.1 Positioner B/C/D/K/R 62
5.1.1 I/O board Configuration SIB V 62
5.1.2 I/O-signal configuration for SIB_V_B1 63
5.1.2.1 Digital inputs 63
5.1.2.2 Digital inputs 64
5.1.2.3 Configuration cross-connections 64
5.2 Positioner C Index 65
5.2.1 I/O board Configuration SIB V 65
5.2.2 I/O-signal configuration for SIB_V_B2 66
5.2.2.1 Digital inputs 66
5.2.2.2 Digital inputs 67
5.2.2.3 Configuration cross-connections 67
5.3 Positioner A/L/S 68
5.3.1 I/O board Configuration SIB V 68
5.3.2 I/O-signal configuration for SIB_V_B3 69
5.3.2.1 Digital inputs 69
5.3.2.2 Configuration cross-connections 71

1 General I/O Description

General

This description covers all signals in a standard Arc Welding System based on the standard process interface delivered byABB Automation Technology Products AB. By using the Arc Welding System Configuration diskette as a optional boot diskette, the I/O configuration for the selected process equipment, positioners and options will be installed.

Composition

There are four standard I/O-places inside the cabinet.
The system interface is equipped with the following I/O units as standard:

- Simulated I/O Board
- Process Interface Board
- Digital I/O Board
- Software I/O Board

Unused I/O board places can be equipped with any I/O unit described in the Product Specification for the robot.

Usage

The number of I/O signals to be used is determined by different welding cell configurations:

- Welding equipment
- Positioner(s)
- Operator panel
- Cleaning equipment
- Search sensor
- Other options

To minimize the number of I/O units and signals, a simulated I/O board is used for some system signals and operator ready signals. The operator ready function is performed by using I/O cross connections with logical conditions.

System configuration

The complete I/O configuration for a specific system setup is obtained during the boot sequence. After boot-up, it is advisable to save the system configuration by making a back-up of the whole system. This shall be made in the service menu.

References

- Physical connections of I/O signals are shown in the electrical drawing for the signal interface (inside the robot control cubicle) in the System Manual.
- I/O units, CAN-bus connection and address keying are described in *Installation and Commissioning* in the "*Connecting Signals*" chapter in the Product Manual for the robot.

Electrical data, see Product Specification for the robot.

Note: Signals without any names in the following tables are not configured.

2 Process Interface

General

This chapter describes the different standard process configurations delivered by ABB Automation Technologies AB.

These configurations vary depending on which power source you have and whether you have Dualarc or not:

- For power source Arcitec or MigRob, see *“Arcitec/MigRob” on page 4*.
- For power source Arcitec or MigRob with Dualarc, see *“Arcitec/MigRob” on page 4* for robot 1 and *“ARCITEC/MigRob, Robot 2” on page 11* for robot 2.
- For power source RPB, see *“RPB” on page 17*.
- For power source RPB with Dualarc, see *“RPB” on page 17* for robot 1 and *“RPB, Robot 2” on page 21* for robot 2.
- For power source Fronius, see *“Fronius” on page 25*.
- For power source Fronius with Dualarc, see *“Fronius” on page 25* for robot 1 and *“Fronius, Robot 2” on page 31* for robot 2.

2.1 Arcitec/MigRob

Power source

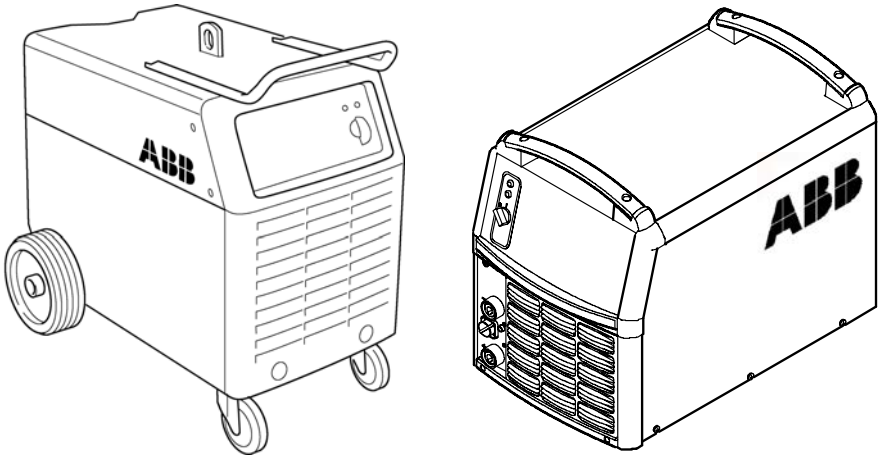


Figure 1. Power source LRC/MigRob

2.1.1 I/O Board configuration

Address	Name	Board type	Digital Inputs	Digital Outputs	Analogue Inputs	Analogue Outputs
30	B_PROC_30	Process Interface Board AD Combi I/O	16	16	3	3
40	B_AW_PROC_40	Power source				
	B_AW_SIM	Simulated Digital I/O				

2.1.2 I/O Signals Configuration B_PROC_30

2.1.2.1 Digital outputs

UnitMap	Connection	Name	Description	Type	Connected to unit
48	TB5:4	doGAS	Activate gas valve	42V AC	Welding equipment
48	TB5:12, TB5:13	doGAS	Activate gas valve	closing contact	Welding equipment
49	TB5:3	doACLN_TCH	Activate air cleaning of torch	42V AC	Welding equipment
49	TB5:10, TB5:11	doACLN_TCH	Activate air cleaning of torch	closing contact	Welding equipment
50	TB6:12	doPIB6_12	Activate push motor	42V DC	-
51	TB4:3	doMLUB_TCH	Activate torch lubrication	42V DC	Torch cleaner
52	TB4:4	doMCLN_TCH	Activate mechanical cleaning	42V DC	Torch cleaner
53	TB4:5	doPIB4_5	Activate wire cutter	42V DC	-
54	TB11:4	doPIB11_4	Not used	42V DC	-
55	TB5:14	doPIB5_14	Tig mode	42V DC	-
56	TB5:16	doPIB5_16	Not used	42V DC	-
57	TB3:1, TB3:2	doLRB_FAN	Activate power source	closing contact	Welding equipment
58	-	doPIB_CYCLE_ON	CycleOn to PIB	logical	-
59	TB5:6	doSE1_SEL	Select and activate sensor 1	logical 24V DC	Internal search sensor
60	TB5:9	doSE2_SEL	Select and activate sensor 2	logical 24V DC	Internal search sensor
61	-	doSE_REF	Set (=Lock) reference	logical	Internal search sensor
62	-	doERR_ACK	Acknowledge error in PIB	logical	-
63	-	doFEED	Activate wire feeder	logical	Welding equipment

2.1.2.2 Digital inputs

UnitMap	Connection	Name	Description	Type	Connected to unit
48	TB6:4	diWR_EST	Water established	42V AC	Welding equipment
49	TB6:5	diGA_EST	Gas established	42V AC	Welding equipment
50	TB6:3	diARC_EST	Not used	42V DC	Welding equipment
51	TB4:6	diMCLN_FIN	Cleaning of torch finished	42V DC	Torch cleaner
52	TB4:7	sen1	Welding wire detect	42V DC	BullsEye

UnitMap	Connection	Name	Description	Type	Connected to unit
53	TB6:2	diGUN_OK	Gun in position	42V DC	Welding equipment
54	-	diSE1_DET	Surface detected	logical	Internal search sensor 1
55	-	diSE2_DET	Surface detected	logical	Internal search sensor 2
56	TB6:1	diGUN_RESET	Gun resetted	42V DC	Welding equipment
57	-	diSE_VALID	Sensor valid	logical	Internal search sensor
58	-	diERR_STROBE	Error indication	logical	-
59	TB6:8	diMAN_WF	Start manual wire feed	42V DCt	Welding equipment
60	-	diERROR_NO0	Error code	logical	-
61	-	diERROR_NO1	Error code	logical	-
62	-	diERROR_NO2	Error code	logical	-
63	-	diERROR_NO3	Error code	logical	-

2.1.2.3 Analogue outputs

UnitMap	Connection	Name	Description	Connected to unit
0-15	TB3:3, TB3	aoWD_REF	MIG/MAG: voltage reference	Welding equipment
16-31	TB6:6, TB6:7, TB6:15, TB6:7	aoFEED_REF	Wire feed reference	Welding equipment
32-47	TB3:5, TB3:4	aoINDUCT_REF	MIG/MAG: inductance reference	Welding equipment

2.1.2.4 Analogue inputs

UnitMap	Connection	Name	Description	Connected to unit
0-15	TB3:7, TB3:8	aiWDM_VOLT	Measured voltage	Welding equipment
16-31	TB11:1, TB11:2	aiWDM_CURR	Measured current	Welding equipment
32-47	TB6:13, TB6:14	aiWDM_SPEED	Measured wire feed speed	Welding equipment

2.1.3 I/O Signals Configuration B_AW_PROC_40

2.1.3.1 Digital outputs

UnitMap	Name	Description
0	doWELD	Activate ARCITEC power source
1	doQUICK_STOP	Quick stop of ARCITEC power source
2	doEmStop	Emergency stop

2.1.3.2 Digital inputs

UnitMap	Name	Description
48	diARC_EST	Arc established
49	diWELD_EST	Power source welding
56	diWDU_Err	Weld data unit error
57	diPS_Err	Control board error
64	diERROR_1	Error code
65	diERROR_2	Error code
66	diERROR_3	Error code
67	diERROR_4	Error code
68	diERROR_5	Error code
69	diERROR_6	Error code
70	diERROR_7	Error code
71	diERROR_8	Error code

2.1.3.3 Group outputs

UnitMap	Name	Description
8-11	goActWirFeed	Activate wire feed unit
16-31	goCAN_SCHED	Activate schedule number in ARCITEC power source

2.1.3.4 Analogue inputs

UnitMap	Name	Description
0-15	aiVoltage	Voltage
16-31	aiCurrent	Current

UnitMap	Name	Description
32-47	aiPower	Power

2.1.4 I/O Signals Configuration B_AW_SIM

2.1.4.1 Digital output

UnitMap	Name	Description
	doFEED_SIM	Activate wire feed

2.2 ARCITEC/MigRob, Robot 2

Power source

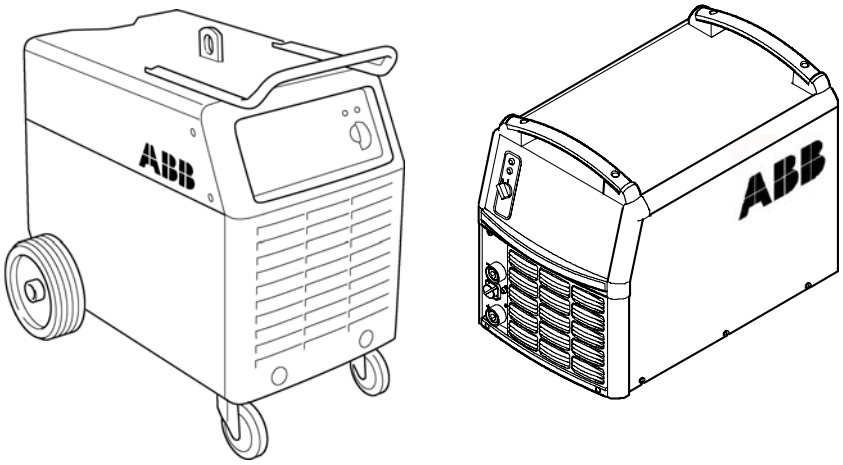


Figure 2. Power source LRC/MigRob

2.2.1 I/O Board configuration

Address	Name	Board type	Digital Inputs	Digital Outputs	Analogue Inputs	Analogue Outputs
31	B_PROC_31	Process Interface Board AD Combi I/O	16	16	3	3
41	B_AW_PROC_41	Power source				
	B_AW_SIM	Simulated Digital I/O				

2.2.2 I/O Signals Configuration B_PROC_31

2.2.2.1 Digital outputs

UnitMap	Connection	Name	Description	Type	Connected to unit
48	TB5:4	doGAS_2	Activate gas valve	42V AC	Welding equipment
48	TB5:12, TB5:13	doGAS_2	Activate gas valve	closing contact	Welding equipment
49	TB5:3	doACLN_TCH_2	Activate air cleaning of torch	42V AC	Welding equipment
49	TB5:10, TB5:11	doACLN_TCH_2	Activate air cleaning of torch	closing contact	Welding equipment
50	TB6:12	doPIB6_12_2	Activate push motor	42V DC	-
51	TB4:3	doMLUB_TCH_2	Activate torch lubrication	42V DC	Torch cleaner
52	TB4:4	doMCLN_TCH_2	Activate mechanical cleaning	42V DC	Torch cleaner
53	TB4:5	doPIB4_5_2	Activate wire cutter	42V DC	-
54	TB11:4	doPIB11_4_2	Not used	42V DC	-
55	TB5:14	doPIB5_14_2	Tig mode	42V DC	-
56	TB5:16	doPIB5_16_2	Not used	42V DC	-
57	TB3:1, TB3:2	doLRB_FAN_2	Activate power source	closing contact	Welding equipment
58	-	doPIB_CYCLE_ON_2	CycleOn to PIB	logical	-
59	TB5:6	doSE1_SEL_2	Select and activate sensor 1	logical 24V DC	Internal search sensor
60	TB5:9	doSE2_SEL_2	Select and activate sensor 2	logical 24V DC	Internal search sensor
61	-	doSE_REF_2	Set (=Lock) reference	logical	Internal search sensor
62	-	doERR_ACK_2	Acknowledge error in PIB	logical	-
63	-	doFEED_2	Activate wire feeder	logical	Welding equipment

2.2.2.2 Digital inputs

UnitMap	Connection	Name	Description	Type	Connected to unit
48	TB6:4	diWR_EST_2	Water established	42V AC	Welding equipment
49	TB6:5	diGA_EST_2	Gas established	42V AC	Welding equipment
50	TB6:3	diARC_EST_2	Not used	42V DC	Welding equipment
51	TB4:6	diMCLN_FIN_2	Cleaning of torch finished	42V DC	Torch cleaner
52	TB4:7	sen2	Welding wire detect	42V DC	BullsEye
53	TB6:2	diGUN_OK_2	Gun in position	42V DC	Welding equipment
54	-	diSE1_DET_2	Surface detected	logical	Internal search sensor 1
55	-	diSE2_DET_2	Surface detected	logical	Internal search sensor 2
56	TB6:1	diGUN_RESET_2	Gun resetted	42V DC	Welding equipment
57	-	diSE_VALID_2	Sensor valid	logical	Internal search sensor
58	-	diERR_STROBE_2	Error indication	logical	-
59	TB6:8	diMAN_WF_2	Start manual wire feed	42V DCt	Welding equipment
60	-	diERROR_NO0_2	Error code	logical	-
61	-	diERROR_NO1_2	Error code	logical	-
62	-	diERROR_NO2_2	Error code	logical	-
63	-	diERROR_NO3_2	Error code	logical	-

2.2.2.3 Analogue outputs

UnitMap	Connection	Name	Description	Connected to unit
0-15	TB3:3, TB3	aoWD_REF_2	MIG/MAG: voltage reference	Welding equipment
16-31	TB6:6, TB6:7, TB6:15, TB6:7	aoFEED_REF_2	Wire feed reference	Welding equipment
32-47	TB3:5, TB3:4	aoINDUCT_REF_2	MIG/MAG: inductance reference	Welding equipment

2.2.2.4 Analogue inputs

UnitMap	Connection	Name	Description	Connected to unit
0-15	TB3:7, TB3:8	aiPDM_VOLT_2	Measured voltage	Welding equipment
16-31	TB11:1, TB11:2	aiPDM_CURR_2	Measured current	Welding equipment
32-47	TB6:13, TB6:14	aiPDM_SPEED_2	Measured wire feed speed	Welding equipment

2.2.3 I/O Signals Configuration B_AW_PROC_41

2.2.3.1 Digital outputs

UnitMap	Name	Description
0	doWELD_2	Activate ARCITEC power source
1	doQUICK_STOP_2	Quick stop of ARCITEC power source
2	doEmStop_2	Emergency stop

2.2.3.2 Digital inputs

UnitMap	Name	Description
48	diARC_EST_2	Arc established
49	diWELD_EST_2	Power source welding
56	diWDU_Err_2	Weld data unit error
57	diPS_Err_2	Control board error
64	diERROR_1_2	Error code
65	diERROR_2_2	Error code
66	diERROR_3_2	Error code
67	diERROR_4_2	Error code
68	diERROR_5_2	Error code
69	diERROR_6_2	Error code
70	diERROR_7_2	Error code
71	diERROR_8_2	Error code

2.2.3.3 Group outputs

UnitMap	Name	Description
8-11	goActWirFeed_2	Activate wire feed unit
16-31	goCAN_SCHED_2	Activate schedule number in ARCITEC power source

2.2.3.4 Analogue inputs

UnitMap	Name	Description
0-15	aiVoltage_2	Voltage
16-31	aiCurrent_2	Current
32-47	aiPower_2	Power

2.2.4 I/O Signals Configuration B_AW_SIM

2.2.4.1 Digital output

UnitMap	Name	Description
	doFEED_SIM	Activate wire feed

2.3 RPB

Power source

Figure 3. Power source RPB

2.3.1 I/O Board configuration

Address	Name	Board type	Digital Inputs	Digital Outputs	Analogue Inputs	Analogue Outputs
30	B_PROC_30	Process Interface Board	16	16	3	3

2.3.2 I/O Signals Configuration B_PROC_30

2.3.2.1 Digital outputs

UnitMap	Connection	Name	Description	Type	Connected to unit
48	TB5:4	doGAS	Activate gas valve	42V AC	Welding equipment
48	TB5:12, TB5:13	doGAS	Activate gas valve	closing contact	Welding equipment
49	TB5:3	doACLN_TCH	Activate air cleaning of torch	42V AC	Welding equipment
49	TB5:10, TB5:11	doACLN_TCH	Activate air cleaning of torch	closing contact	Welding equipment
50	TB6:12	doPIB6_12	Activate push motor	42V DC	-
51	TB4:3	doMLUB_TCH	Activate torch lubrication	42V DC	Torch cleaner
52	TB4:4	doMCLN_TCH	Activate mechanical cleaning	42V DC	Torch cleaner
53	TB4:5	doPIB4_5	Activate wire cutter	42V DC	-
54	TB11:4	doPIB11_4	Not used	42V DC	-
55	TB5:14	doPIB5_14	Tig mode	42V DC	-
56	TB5:16	doPIB5_16	Not used	42V DC	-
57	TB3:1, TB3:2	doWELD	Activate power source	closing contact	Welding equipment
58	-	doPIB_CYCLE_ON	CycleOn to PIB	logical	-
59	TB5:6	doSE1_SEL	Select and activate sensor 1	logical 24V DC	Internal search sensor
60	TB5:9	doSE2_SEL	Select and activate sensor 2	logical 24V DC	Internal search sensor
61	-	doSE_REF	Set (=Lock) reference	logical	Internal search sensor
62	-	doERR_ACK	Acknowledge error in PIB	logical	-
63	-	doFEED	Activate wire feeder	logical	Welding equipment

2.3.2.2 Digital inputs

UnitMap	Connection	Name	Description	Type	Connected to unit
48	TB6:4	diWR_EST	Water established	42V AC	Welding equipment
49	TB6:5	diGA_EST	Gas established	42V AC	Welding equipment
50	TB6:3	diARC_EST	Not used	42V DC	Welding equipment
51	TB4:6	diMCLN_FIN	Cleaning of torch finished	42V DC	Torch cleaner
52	TB4:7	sen1	Welding wire detect	42V DC	BullsEye
53	TB6:2	diGUN_OK	Gun in position	42V DC	Welding equipment
54	-	diSE1_DET	Surface detected	logical	Internal search sensor 1
55	-	diSE2_DET	Surface detected	logical	Internal search sensor 2
56	TB6:1	diGUN_RESET	Gun resetted	42V DC	Welding equipment
57	-	diSE_VALID	Sensor valid	logical	Internal search sensor
58	-	diERR_STROBE	Error indication	logical	-
59	TB6:8	diMAN_WF	Start manual wire feed	42V DCt	Welding equipment
60	-	diERROR_NO0	Error code	logical	-
61	-	diERROR_NO1	Error code	logical	-
62	-	diERROR_NO2	Error code	logical	-
63	-	diERROR_NO3	Error code	logical	-

2.3.2.3 Analogue outputs

UnitMap	Connection	Name	Description	Connected to unit
0-15	TB3:3, TB3	aoWD_REF	MIG/MAG: voltage reference	Welding equipment
16-31	TB6:6, TB6:7, TB6:15, TB6:7	aoFEED_REF	Wire feed reference	Welding equipment
32-47	TB3:5, TB3:4	aoINDUCT_REF	MIG/MAG: inductance reference	Welding equipment

2.3.2.4 Analogue inputs

UnitMap	Connection	Name	Description	Connected to unit
0-15	TB3:7, TB3:8	aiPDM_VOLT	Measured voltage	Welding equipment
16-31	TB11:1, TB11:2	aiPDM_CURR	Measured current	Welding equipment
32-47	TB6:13, TB6:14	aiPDM_SPEED	Measured wire feed speed	Welding equipment

2.4 RPB, Robot 2

Power source

Figure 4. Power source RPB

2.4.1 I/O Board configuration

Address	Name	Board type	Digital Inputs	Digital Outputs	Analogue Inputs	Analogue Outputs
30	B_PROC_31	Process Interface Board	16	16	3	3

2.4.2 I/O Signals Configuration B_PROC_31

2.4.2.1 Digital outputs

UnitMap	Connection	Name	Description	Type	Connected to unit
48	TB5:4	doGAS_2	Activate gas valve	42V AC	Welding equipment
48	TB5:12, TB5:13	doGAS_2	Activate gas valve	closing contact	Welding equipment
49	TB5:3	doACLN_TCH_2	Activate air cleaning of torch	42V AC	Welding equipment
49	TB5:10, TB5:11	doACLN_TCH_2	Activate air cleaning of torch	closing contact	Welding equipment
50	TB6:12	doPIB6_12_2	Activate push motor	42V DC	-
51	TB4:3	doMLUB_TCH_2	Activate torch lubrication	42V DC	Torch cleaner
52	TB4:4	doMCLN_TCH_2	Activate mechanical cleaning	42V DC	Torch cleaner
53	TB4:5	doPIB4_5_2	Activate wire cutter	42V DC	-
54	TB11:4	doPIB11_4_2	Not used	42V DC	-
55	TB5:14	doPIB5_14_2	Tig mode	42V DC	-
56	TB5:16	doPIB5_16_2	Not used	42V DC	-
57	TB3:1, TB3:2	doWELD_2	Activate power source	closing contact	Welding equipment
58	-	doPIB_CYCLE_ON_2	CycleOn to PIB	logical	-
59	TB5:6	doSE1_SEL_2	Select and activate sensor 1	logical 24V DC	Internal search sensor
60	TB5:9	doSE2_SEL_2	Select and activate sensor 2	logical 24V DC	Internal search sensor
61	-	doSE_REF_2	Set (=Lock) reference	logical	Internal search sensor
62	-	doERR_ACK_2	Acknowledge error in PIB	logical	-
63	-	doFEED_2	Activate wire feeder	logical	Welding equipment

2.4.2.2 Digital inputs

UnitMap	Connection	Name	Description	Type	Connected to unit
48	TB6:4	diWR_EST_2	Water established	42V AC	Welding equipment
49	TB6:5	diGA_EST_2	Gas established	42V AC	Welding equipment
50	TB6:3	diARC_EST_2	Not used	42V DC	Welding equipment
51	TB4:6	diMCLN_FIN_2	Cleaning of torch finished	42V DC	Torch cleaner
52	TB4:7	sen2	Welding wire detect	42V DC	BullsEye
53	TB6:2	diGUN_OK_2	Gun in position	42V DC	Welding equipment
54	-	diSE1_DET_2	Surface detected	logical	Internal search sensor 1
55	-	diSE2_DET_2	Surface detected	logical	Internal search sensor 2
56	TB6:1	diGUN_RESET_2	Gun resetted	42V DC	Welding equipment
57	-	diSE_VALID_2	Sensor valid	logical	Internal search sensor
58	-	diERR_STROBE_2	Error indication	logical	-
59	TB6:8	diMAN_WF_2	Start manual wire feed	42V DCt	Welding equipment
60	-	diERROR_NO0_2	Error code	logical	-
61	-	diERROR_NO1_2	Error code	logical	-
62	-	diERROR_NO2_2	Error code	logical	-
63	-	diERROR_NO3_2	Error code	logical	-

2.4.2.3 Analogue outputs

UnitMap	Connection	Name	Description	Connected to unit
0-15	TB3:3, TB3	aoWD_REF_2	MIG/MAG: voltage reference	Welding equipment
16-31	TB6:6, TB6:7, TB6:15, TB6:7	aoFEED_REF_2	Wire feed reference	Welding equipment
32-47	TB3:5, TB3:4	aoINDUCT_REF_2	MIG/MAG: inductance reference	Welding equipment

2.4.2.4 Analogue inputs

UnitMap	Connection	Name	Description	Connected to unit
0-15	TB3:7, TB3:8	aiPDM_VOLT_2	Measured voltage	Welding equipment
16-31	TB11:1, TB11:2	aiPDM_CURR_2	Measured current	Welding equipment
32-47	TB6:13, TB6:14	aiPDM_SPEED_2	Measured wire feed speed	Welding equipment

2.5 Fronius

Process Interface *DeviceNet* for Fronius

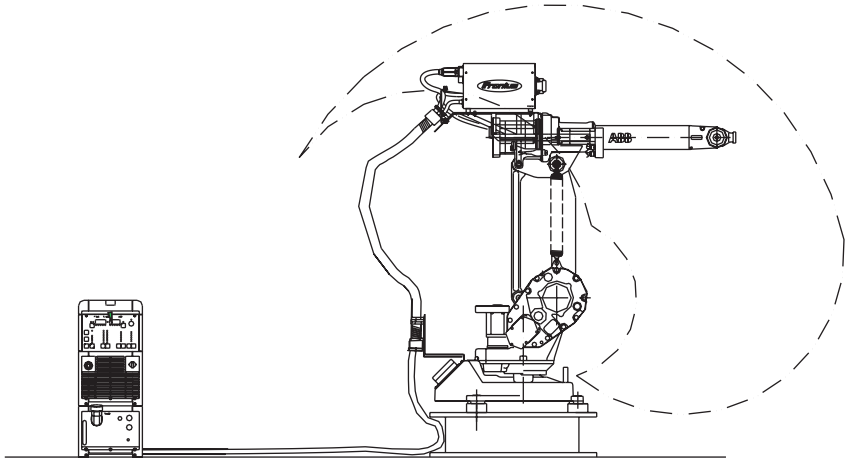


Figure 5. Welding equipment Fronius

2.5.1 I/O Board configuration

Address	Name	Board type	Digital Inputs	Digital Outputs	Analogue Inputs	Analogue Outputs
40	FRON_BOARD_40	Dvnet	96	96	4	4
20	BOARD20 (Option)	Digital I/O	16	16		

2.5.2 I/O Signals Configuration FRON_BOARD_40

2.5.2.1 Digital outputs

UnitMap	Connection	Name	Description	Type	Connected to unit
0	A204:X4	doWeld	Welding start High active	Output 1:Bit 0	Power source
1	A204:X4	doQstop	Robot ready/ Fast stop High active/ low active	Output 1:Bit 1	Power source
2	A204:X4	doMODE_BIT1	000 Standard synergy 001 Pulsed synergy 010 Job mode 011 Param. selection Internal See system manual, flap 20.	Output 1:Bit 2	Power source
3	A204:X4	doMODE_BIT2		Output 1:Bit 3	Power source
4	A204:X4	doMODE_BIT3		Output 1:Bit 4	Power source
8	A204:X4	doGAS	Activate gas valve	Output 1:Bit 8	Power source
9	A204:X4	doFEED	Activate wire feeder forward	Output 1:Bit 9	Power source
10	A204:X4	doFEED_BWD	Activate wire feeder reverse	Output 1:Bit 10	Power source
11	A204:X4	doRESET_ERR	Resetting error	Output 1:Bit 11, Inverted	Power source
12		doTOUCH_SENS			Power source
13	A204:X4	do_AIR	Activate air cleaning of torch	Output 1:Bit 12	Power source
16	A204:X4	doJOB_BIT1	Call job number 1	Output 2:Bit 0	Power source
17	A204:X4	doJOB_BIT2	Call job number 2	Output 2:Bit 1	Power source
18	A204:X4	doJOB_BIT3	Call job number 3	Output 2:Bit 2	Power source
19	A204:X4	doJOB_BIT4	Call job number 4	Output 2:Bit 3	Power source
20	A204:X4	doJOB_BIT5	Call job number 5	Output 2:Bit 4	Power source
21	A204:X4	doJOB_BIT6	Call job number 6	Output 2:Bit 5	Power source
22	A204:X4	doJOB_BIT7	Call job number 7	Output 2:Bit 6	Power source
23	A204:X4	doJOB_BIT8	Call job number 8	Output 2:Bit 7	Power source
24	A204:X4	doPROG_BIT1	Call in program (synergy) number 1	Output 2:Bit 8	Power source
25	A204:X4	doPROG_BIT2	Call in program (synergy) number 2	Output 2:Bit 9	Power source
26	A204:X4	doPROG_BIT3	Call in program (synergy) number 3	Output 2:Bit 10	Power source

UnitMap	Connection	Name	Description	Type	Connected to unit
27	A204:X4	doPROG_BIT4	Call in program (synergy) number 4	Output 2:Bit 11	Power source
28	A204:X4	doPROG_BIT5	Call in program (synergy) number 5	Output 1:Bit 0	Power source
29	A204:X4	doPROG_BIT6	Call in program (synergy) number 6	Output 1:Bit 1	Power source
30	A204:X4	doPROG_BIT7	Call in program (synergy) number 7	Output 1:Bit 2	Power source
31	A204:X4	doWELD_SIM	Simulate welding, high active	Output 1:Bit 3	Power source

2.5.2.2 Digital inputs

UnitMap	Connection	Name	Description	Type	Connected to unit
0	A204:X4	diARC_EST	Welding current flow	Input 1: Bit 0	Power source
2	A204:X4	diPROC_ACTIVE	Welding process active	Input 1: Bit 2	Power source
3	A204:X4	diPOWER_ON	Main current signal	Input 1: Bit 3	Power source
4	A204:X4	diCOLL_SENS	Torch in position	Input 1: Bit 4	Power source
5	A204:X4	diPOWER_READY	Power source OK	Input 1: Bit 5, Iverterad	Power source
6	A204:X4	diCOMM_READY	Communication OK	Input 1: Bit 6, Iverterad	Power source
8	A204:X4	diERR_BIT1	Error number 0-255,	Input 1: Bit 8	Power source
9	A204:X4	diERR_BIT2		Input 1: Bit 9	Power source
10	A204:X4	diERR_BIT3		Input 1: Bit 10	Power source
11	A204:X4	diERR_BIT4		Input 1: Bit 11	Power source
12	A204:X4	diERR_BIT5		Input 1: Bit 12	Power source
13	A204:X4	diERR_BIT6	Error number 0-255, see above	Input 1: Bit 13	Power source
14	A204:X4	diERR_BIT7		Input 1: Bit 14	Power source
15	A204:X4	diERR_BIT8	Error number 0-255, see above	Input 1: Bit 15	Power source

2.5.2.3 Analogue outputs

UnitMap	Connection	Name	Description	Connected to unit
1	A204:X4	aoPower	Power reference	Power source
2	A204:X4	aoVoltage	Arc voltage correction	Power source
3	A204:X4	awPulseCorr	Pulse/ Dynamic correction	Power source
4	A204:X4	awBurnBackCorr	Burn back correction	Power source

2.5.2.4 Group outputs

UnitMap	Connection	Name	Description	Connected to unit
2-4	A204:X4	goMODE	Select work mode	Power source
16-23	A204:X4	goJOB	Select job	Power source
24-30	A204:X4	goPROG	Select program/ synergy	Power source

2.5.2.5 Group input

UnitMap	Connection	Name	Description	Connected to unit
1	A204:X4	gi_error	Error codes	Power source

2.5.3 I/O Signals Configuration BOARD20

2.5.3.1 Digital outputs

UnitMap	Connection	Name	Description	Connected to unit
9	X2:1	doMCLN_TCH	Activate mechanical cleaning	TSC
10	X2:2	doMLUB_TCH	Activate torch lubrication	TSC
11	X2:3	doWIR_CUT	Activate wire cutter	TSC

2.5.3.2 Digital inputs

UnitMap	Connection	Name	Description	Connected to unit
1	X3:1	diMCLN_FIN	Cleaning of torch finished	TCH

2.6 Fronius, Robot 2

Process Interface *DeviceNet* for Fronius

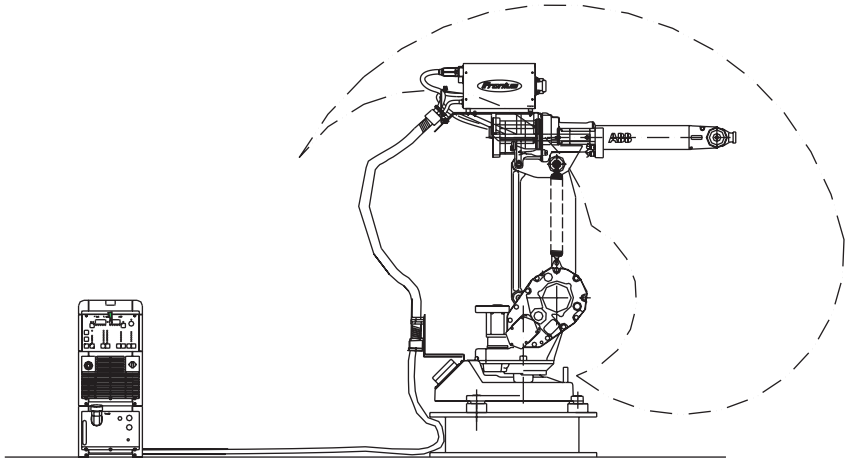


Figure 6. Welding equipment Fronius

2.6.1 I/O Board configuration

Address	Name	Board type	Digital Inputs	Digital Outputs	Analogue Inputs	Analogue Outputs
41	FRON_BOARD_41	Dvnet	96	96	4	4
20	BOARD20 (Option)	Digital I/O	16	16		

2.6.2 I/O Signals Configuration FRON_BOARD_41

2.6.2.1 Digital outputs

UnitMap	Connection	Name	Description	Type	Connected to unit
0	A204:X4	doWeld_2	Welding start High active	Output 1:Bit 0	Power source
1	A204:X4	doQstop_2	Robot ready/ Fast stop High active/ low active	Output 1:Bit 1	Power source
2	A204:X4	doMODE_BIT1_2	000 Standard synergy 001 Pulsed synergy 010 Job mode 011 Param. selection Internal See system manual, flap 20.	Output 1:Bit 2	Power source
3	A204:X4	doMODE_BIT2_2		Output 1:Bit 3	Power source
4	A204:X4	doMODE_BIT3_2		Output 1:Bit 4	Power source
8	A204:X4	doGAS_2	Activate gas valve	Output 1:Bit 8	Power source
9	A204:X4	doFEED_2	Activate wire feeder forward	Output 1:Bit 9	Power source
10	A204:X4	doFEED_BWD_2	Activate wire feeder reverse	Output 1:Bit 10	Power source
11	A204:X4	doRESET_ERR_2	Resetting error	Output 1:Bit 11, Inverted	Power source
12		doTOUCH_SENS_2			Power source
13	A204:X4	do_AIR_2	Activate air cleaning of torch	Output 1:Bit 12	Power source
16	A204:X4	doJOB_BIT1_2_2	Call job number 1	Output 2:Bit 0	Power source
17	A204:X4	doJOB_BIT2_2	Call job number 2	Output 2:Bit 1	Power source
18	A204:X4	doJOB_BIT3_2	Call job number 3	Output 2:Bit 2	Power source
19	A204:X4	doJOB_BIT4_2	Call job number 4	Output 2:Bit 3	Power source
20	A204:X4	doJOB_BIT5_2	Call job number 5	Output 2:Bit 4	Power source
21	A204:X4	doJOB_BIT6_2	Call job number 6	Output 2:Bit 5	Power source
22	A204:X4	doJOB_BIT7_2	Call job number 7	Output 2:Bit 6	Power source
23	A204:X4	doJOB_BIT8_2	Call job number 8	Output 2:Bit 7	Power source
24	A204:X4	doPROG_BIT1_2	Call in program (synergy) number 1	Output 2:Bit 8	Power source
25	A204:X4	doPROG_BIT2_2	Call in program (synergy) number 2	Output 2:Bit 9	Power source
26	A204:X4	doPROG_BIT3_2	Call in program (synergy) number 3	Output 2:Bit 10	Power source

UnitMap	Connection	Name	Description	Type	Connected to unit
27	A204:X4	doPROG_BIT4_2	Call in program (synergy) number 4	Output 2:Bit 11	Power source
28	A204:X4	doPROG_BIT5_2	Call in program (synergy) number 5	Output 1:Bit 0	Power source
29	A204:X4	doPROG_BIT6_2	Call in program (synergy) number 6	Output 1:Bit 1	Power source
30	A204:X4	doPROG_BIT7_2	Call in program (synergy) number 7	Output 1:Bit 2	Power source
31	A204:X4	doWELD_SIM_2	Simulate welding, high active	Output 1:Bit 3	Power source

2.6.2.2 Digital inputs

UnitMap	Connection	Name	Description	Type	Connected to unit
0	A204:X4	diARC_EST_2	Welding current flow	Input 1: Bit 0	Power source
2	A204:X4	diPROC_ACTIVE_2	Welding process active	Input 1: Bit 2	Power source
3	A204:X4	diPOWER_ON_2	Main current signal	Input 1: Bit 3	Power source
4	A204:X4	diCOLL_SENS_2	Torch in position	Input 1: Bit 4	Power source
5	A204:X4	diPOWER_READY_2	Power source OK	Input 1: Bit 5, Iverted	Power source
6	A204:X4	diCOMM_READY_2	Communication OK	Input 1: Bit 6, Iverted	Power source
8	A204:X4	diERR_BIT1_2	Error number 0-255,	Input 1: Bit 8	Power source
9	A204:X4	diERR_BIT2_2		Input 1: Bit 9	Power source
10	A204:X4	diERR_BIT3_2		Input 1: Bit 10	Power source
11	A204:X4	diERR_BIT4_2		Input 1: Bit 11	Power source
12	A204:X4	diERR_BIT5_2		Input 1: Bit 12	Power source
13	A204:X4	diERR_BIT6_2	Error number 0-255, see above	Input 1: Bit 13	Power source
14	A204:X4	diERR_BIT7_2		Input 1: Bit 14	Power source
15	A204:X4	diERR_BIT8_2	Error number 0-255, see above	Input 1: Bit 15	Power source

2.6.2.3 Analogue outputs

UnitMap	Connection	Name	Description	Connected to unit
1	A204:X4	aoPower_2	Power reference	Power source
2	A204:X4	aoVoltage_2	Arc voltage correction	Power source
3	A204:X4	awPulseCorr_2	Pulse/ Dynamic correction	Power source
4	A204:X4	awBurnBackCorr_2	Burn back correction	Power source

2.6.2.4 Group outputs

UnitMap	Connection	Name	Description	Connected to unit
2-4	A204:X4	goMODE_2	Select work mode	Power source
16-23	A204:X4	goJOB_2	Select job	Power source
24-30	A204:X4	goPROG_2	Select program/ synergy	Power source

2.6.2.5 Group input

UnitMap	Connection	Name	Description	Connected to unit
1	A204:X4	gi_error_2	Error codes	Power source

2.6.3 I/O Signals Configuration BOARD20

2.6.3.1 Digital outputs

UnitMap	Connection	Name	Description	Connected to unit
9	X2:1	doMCLN_TCH_2	Activate mechanical cleaning	TSC
10	X2:2	doMLUB_TCH_2	Activate torch lubrication	TSC
11	X2:3	doWIR_CUT_2	Activate wire cutter	TSC

2.6.3.2 Digital inputs

UnitMap	Connection	Name	Description	Connected to unit
1	X3:1	diMCLN_FIN_2	Cleaning of torch finished	TCH

3 Positioner Interface

General

This chapter describes the I/O configurations for positioners delivered by ABB Technologies AB.

These configurations vary depending on which positioner you have:

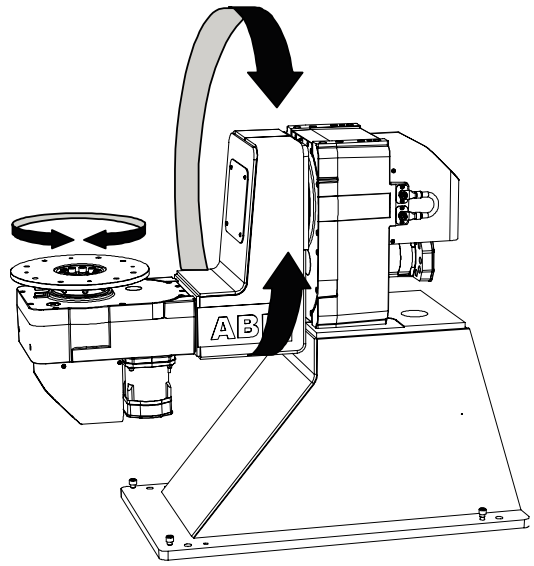
- For positioner A, see *“IRBP A” on page 34*.
- For positioner B or D, see “IRBP B/D” on page 43.
- For positioner C, see “IRBP C” on page 47.
- For positioner C Index, see “IRBP C Index” on page 51.
- For positioner K or R, see “IRBP K/R” on page 55.
- For positioner L, see “IRBP L” on page 61.

3.1 IRBP A

3.1.1 I/O board Configuration for positioner

Address	Name	Board type	Digital inputs	Digital outputs	Digital inputs	Analogue outputs	Relay outputs
-	B_POS_SIM	Simulated digital I/O					
21	B_POS_21	Relay I/O	7	12	-	-	-

Positioner type IRBP A



Figur 7 Positioner type IRBP A

3.1.2 Simulated outputs for B_POS_SIM

3.1.2.1 Simulated outputs

UnitMap	Name	Description
0	soACT_STN1	Activate mechanical unit 1
1	soACT_STN2	Activate mechanical unit 2

3.1.2.2 Simulated inputs

UnitMap	Name	Description
0	siSTN1_ACT	Mechanical unit 1 activated
1	siSTN2_ACT	Mechanical unit 2 activated

3.1.3 I/O-Signals configuration for B_POS_21

3.1.3.1 Digital outputs TB4

Output	UnitMap	Name	Description	Connected to unit
1	0	doACT_K1	Activate mechanical unit 1	Positioner
2	1	doACT_K2	Activate mechanical unit 2	Positioner
3	2	doACT_K3	Activate mechanical unit 3	Positioner
4	3	doACT_K4	Activate mechanical unit 4	Positioner
5	4			
6	5	doACT_K11	Activate release break 1	Positioner
7	6	doACT_K12	Activate release break 2	Positioner
8	7	doACT_K13	Activate release break 3	Positioner
9	8	doACT_K14	Activate release break 4	Positioner
10	9			
11	10			
12	11			
13		0V Output		
14		24V Output 1-12		

3.1.3.2 Digital inputs TB3

Input	UnitMap	Name	Description	Connected to unit
1	0	diK1_ACT	Mechanical unit 1 activated	Positioner
2	1	diK2_ACT	Mechanical unit 2 activated	Positioner
3	2	diK3_ACT	Mechanical unit 3 activated	Positioner
4	3	diK4_ACT	Mechanical unit 4 activated	Positioner
5	4			
6	5			
7	6			
8		0 V input 1-7		

3.1.4 Configuration cross-connections

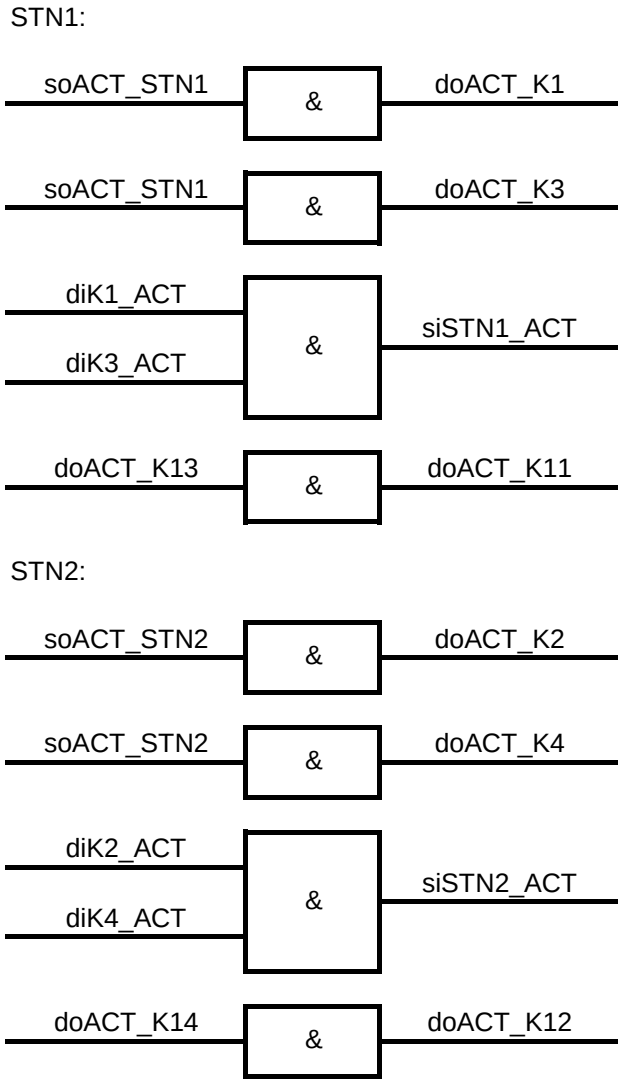


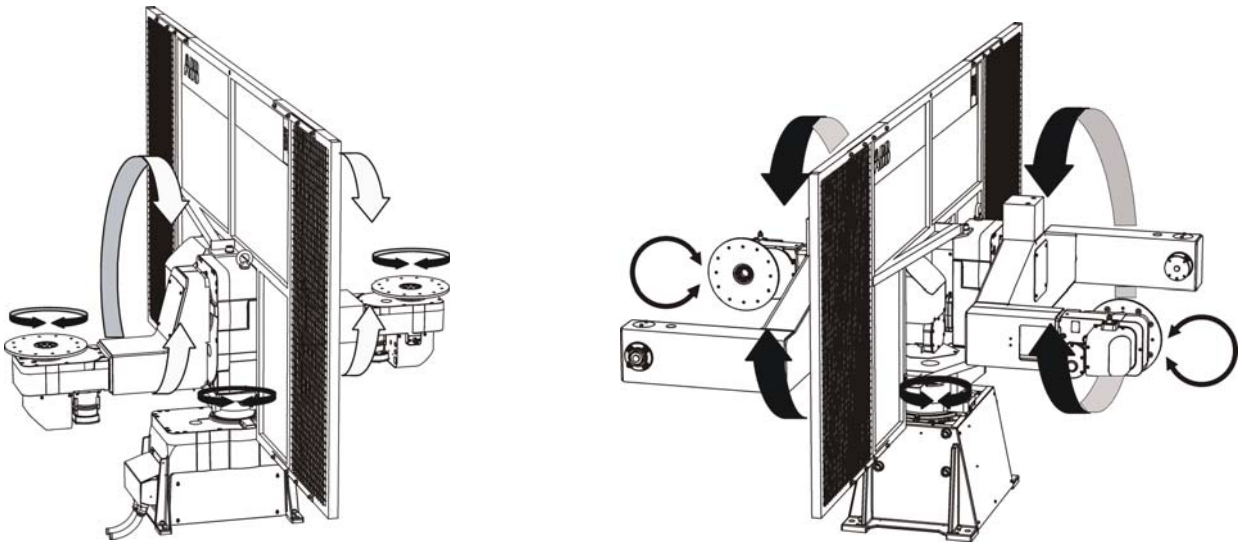
Figure 8. Cross-connection

3.2 IRBP B/D

3.2.1 I/O board Configuration for positioner

Address	Name	Board type	Digital inputs	Digital outputs	Digital inputs	Analogue outputs	Relay outputs
-	B_POS_SIM	Simulated digital I/O					
21	B_POS_21	Relay I/O	7	12	-	-	-

Positioner type IRBP B/D



Figur 9 Positioner type IRBP B/D

3.2.2 Simulated outputs for B_POS_SIM

3.2.2.1 Simulated outputs

UnitMap	Name	Description
0	soACT_STN1	Activate mechanical unit 1
1	soACT_STN2	Activate mechanical unit 2
2	soACT_INTCH	Activate mechanical unit 3

3.2.2.2 Simulated inputs

UnitMap	Name	Description
0	siSTN1_ACT	Mechanical unit 1 activated
1	siSTN2_ACT	Mechanical unit 2 activated
2	si_INTCH_ACT	Mechanical unit 3 activated

3.2.3 I/O-Signals configuration for B_POS_21

3.2.3.1 Digital outputs TB4

Output	UnitMap	Name	Description	Connected to unit
1	0	doACT_K1	Activate mechanical unit 1	Positioner
2	1	doACT_K2	Activate mechanical unit 2	Positioner
3	2	doACT_K3	Activate mechanical unit 3	Positioner
4	3	doACT_K4	Activate mechanical unit 4	Positioner
5	4	doACT_K5	Activate mechanical unit 5	Positioner
6	5	doACT_K11	Activate release break 1	Positioner
7	6	doACT_K12	Activate release break 2	Positioner
8	7	doACT_K13	Activate release break 3	Positioner
9	8	doACT_K14	Activate release break 4	Positioner
10	9	doACT_K15	Activate release break 5	Positioner
11	10			
12	11			
13		0V Output		
14		24V Output 1-12		

3.2.3.2 Digital inputs TB3

Input	UnitMap	Name	Description	Connected to unit
1	0	diK1_ACT	Mechanical unit 1 activated	Positioner
2	1	diK2_ACT	Mechanical unit 2 activated	Positioner
3	2	diK3_ACT	Mechanical unit 3 activated	Positioner
4	3	diK4_ACT	Mechanical unit 4 activated	Positioner
5	4	diK5_ACT	Mechanical unit 5 activated	Positioner
6	5			
7	6			
8		0 V input 1-7		

3.2.4 Configuration cross-connections

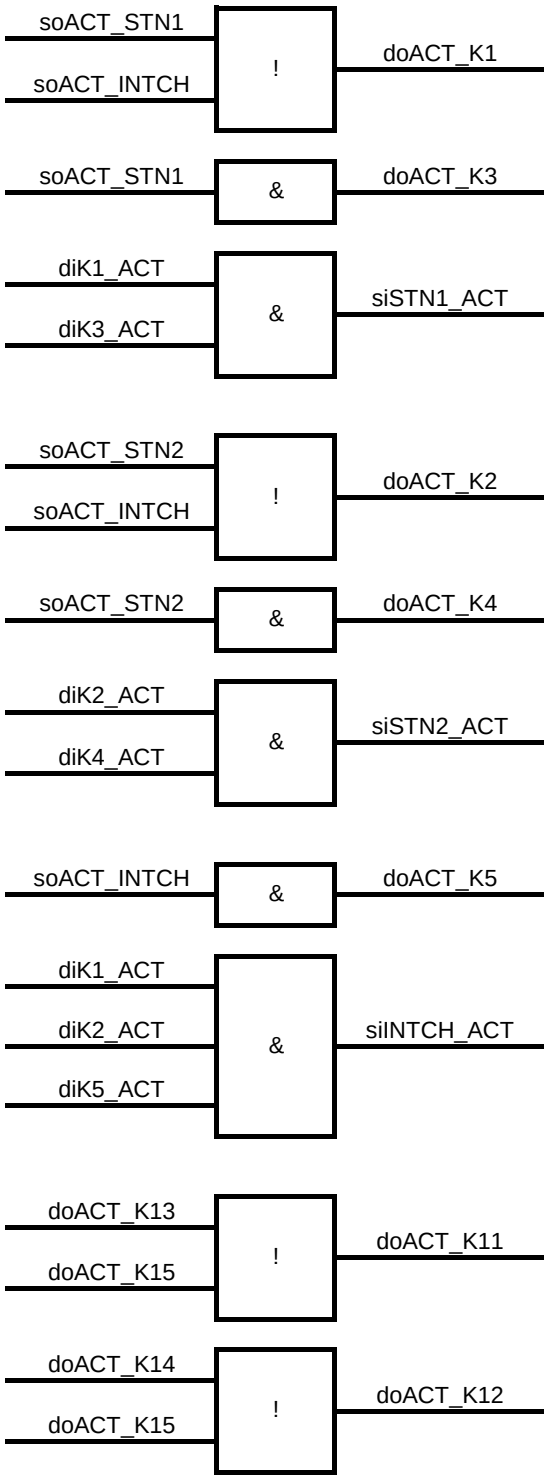


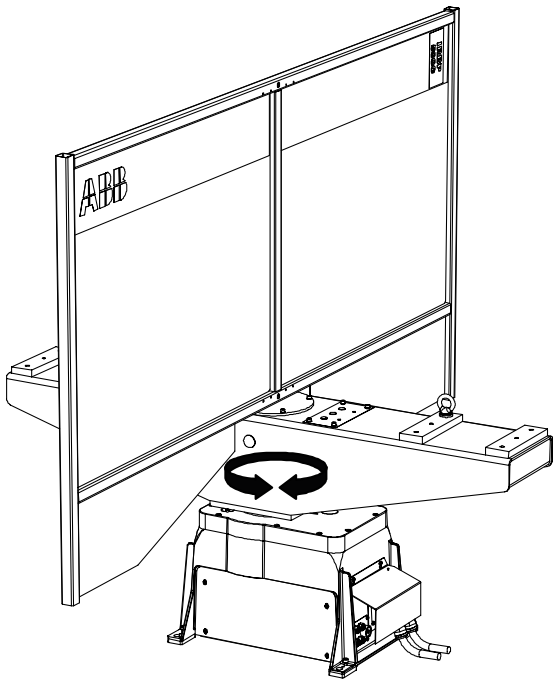
Figure 10. Cross-connections

3.3 IRBP C

3.3.1 I/O board Configuration for positioner

Address	Name	Board type	Digital inputs	Digital outputs	Analogue inputs	Analogue outputs	Relay outputs
-	B_POS_SIM	Simulated digital I/O					
21	B_POS_21	Relay I/O	7	12	-	-	-

Positioner type IRBP C



Figur 11 Positioner type IRBP C

3.3.2 Simulated outputs for B_POS_SIM

3.3.2.1 Simulated outputs

UnitMap	Name	Description
0	soACT_STN1	Activate mechanical unit 1

3.3.2.2 Simulated inputs

UnitMap	Name	Description
0	siSTN1_ACT	Mechanical unit 1 activated

3.3.3 I/O-Signals configuration for B_POS_21

3.3.3.1 Digital outputs TB4

Output	UnitMap	Name	Description	Connected to unit
1	0			
2	1			
3	2			
4	3			
5	4	doACT_K5	Activate mechanical unit 1	Positioner
6	5			
7	6			
8	7			
9	8			
10	9	doACT_K15	Activate release break 1	Positioner
11	10			
12	11			
13		0V Output		
14		24V Output 1-12		

3.3.3.2 Digital inputs TB3

Input	UnitMap	Name	Description	Connected to unit
1	0			
2	1			
3	2			
4	3			
5	4	diK5_ACT	Mechanical unit 1 activated	Positioner
6	5	diLS_1_INPOS	Limit switch station 1	Station interchange unit
7	6	diLS_2_INPOS	Limit switch station 2	Station interchange unit
8		0 V input 1-7		

3.3.4 Configuration cross-connections

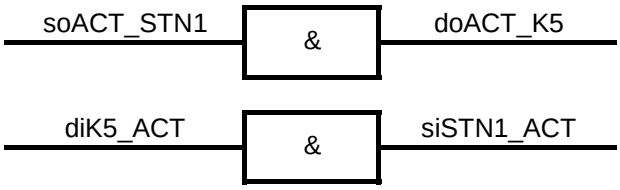


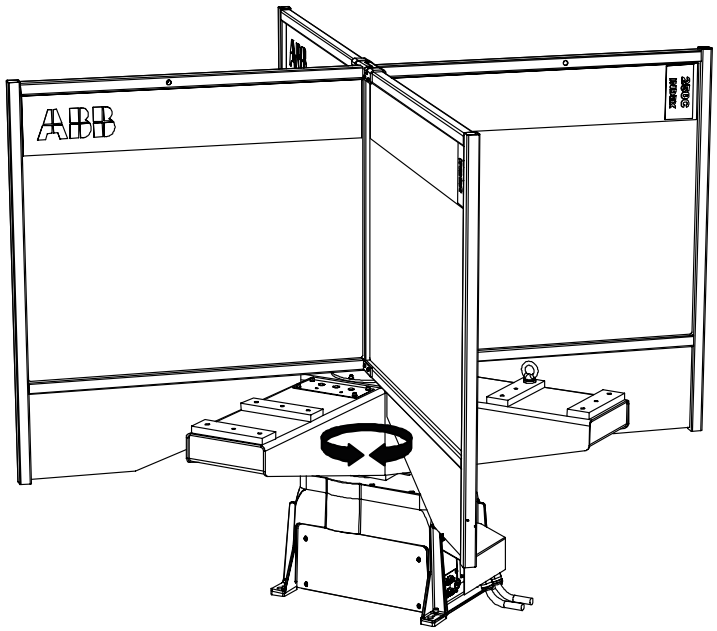
Figure 12. Cross-connections

3.4 IRBP C Index

3.4.1 I/O board Configuration for positioner

Address	Name	Board type	Digital inputs	Digital outputs	Analogue inputs	Analogue outputs	Relay outputs
-	B_POS_SIM	Simulated digital I/O					
21	B_POS_21	Relay I/O	7	12	-	-	-

Positioner type IRBP C Index



Figur 13 Positioner type IRBP C Index

3.4.2 Simulated outputs for B_POS_SIM

3.4.2.1 Simulated outputs

UnitMap	Name	Description
0	soACT_STN1	Activate mechanical unit 1

3.4.2.2 Simulated inputs

UnitMap	Name	Description
0	siSTN1_ACT	Mechanical unit 1 activated

3.4.3 I/O-Signals configuration for B_POS_21

3.4.3.1 Digital outputs TB4

Output	UnitMap	Name	Description	Connected to unit
1	0			
2	1			
3	2			
4	3			
5	4	doACT_K5	Activate mechanical unit 1	Positioner
6	5			
7	6			
8	7			
9	8			
10	9	doACT_K15	Activate release break 1	Positioner
11	10			
12	11			
13		0V Output		
14		24V Output 1-12		

3.4.3.2 Digital inputs TB3

Input	UnitMap	Name	Description	Connected to unit
1	0	diLS_2_INPOS	Limit switch station 2	Station interchange unit
2	1	diLS_4_INPOS	Limit switch station 4	Station interchange unit
3	2			
4	3			
5	4	diK5_ACT	Mechanical unit 1 activated	Positioner
6	5	diLS_1_INPOS	Limit switch station 1	Station interchange unit
7	6	diLS_3_INPOS	Limit switch station 3	Station interchange unit
8		0 V input 1-7		

3.4.4 Configuration cross-connections

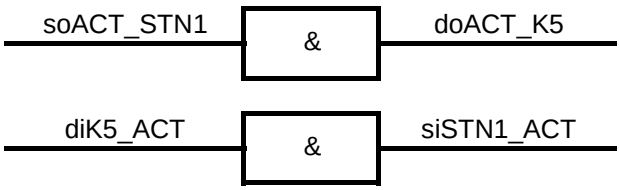


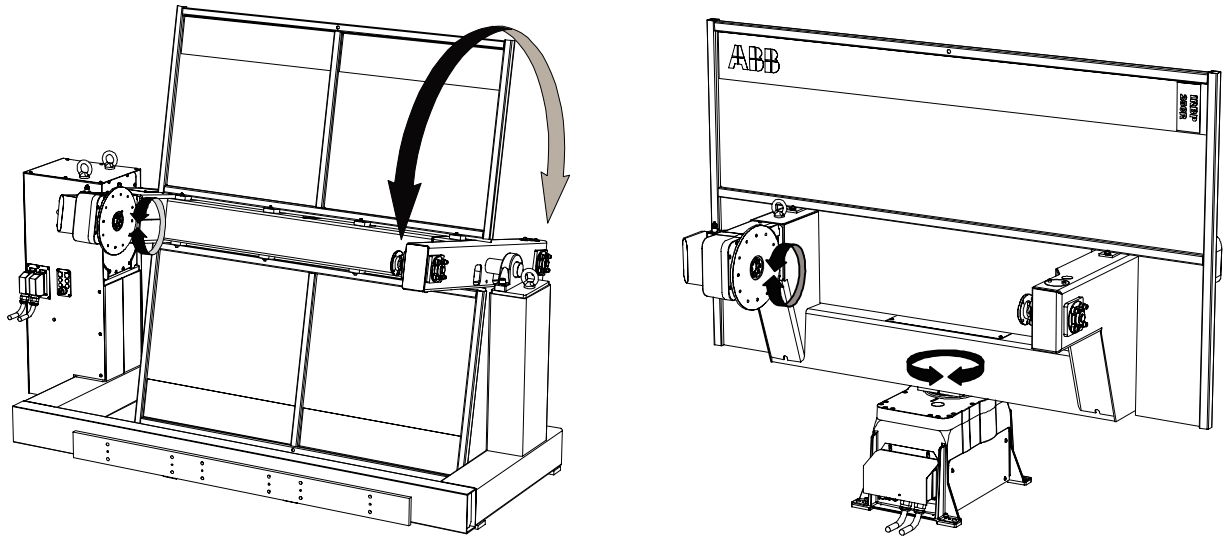
Figure 14. Cross-connections

3.5 IRBP K/R

3.5.1 I/O board configuration for positioner

Address	Name	Board type	Digital inputs	Digital outputs	Analogue inputs	Analogue outputs	Relay outputs
-	B_POS_SIM	Simulated digital I/O					
21	B_POS_21	Relay I/O	7	12	-	-	-

Positioner type IRBP K/R



Figur 15 Positioner type IRBP R/K

3.5.2 Simulated outputs for B_POS_SIM

3.5.2.1 Simulated outputs

UnitMap	Name	Description
0	soACT_STN1	Activate mechanical unit 1
1	soACT_STN2	Activate mechanical unit 2
2	soACT_INTCH	Activate mechanical unit 3

3.5.2.2 Simulated inputs

UnitMap	Name	Description
0	siSTN1_ACT	Mechanical unit 1 activated
1	siSTN2_ACT	Mechanical unit 2 activated
2	siINTCH_ACT	Mechanical unit 3 activated

3.5.3 I/O-Signals configuration for B_POS_21

3.5.3.1 Digital outputs TB4

Output	UnitMap	Name	Description	Connected to unit
1	0	doACT_K1	Activate mechanical unit 1	Positioner
2	1	doACT_K2	Activate mechanical unit 2	Positioner
3	2			
4	3			
5	4	doACT_K5	Activate mechanical unit 3	Positioner
6	5	doACT_K11	Activate release break 1	Positioner
7	6	doACT_K12	Activate release break 2	Positioner
8	7			
9	8			
10	9	doACT_K15	Activate release break 3	Positioner
11	10			
12	11			
13		0V Output		
14		24V Output 1-12		

3.5.3.2 Digital inputs TB3

Input	UnitMap	Name	Description	Connected to unit
1	0	diK1_ACT	Mechanical unit 1 activated	Positioner
2	1	diK2_ACT	Mechanical unit 2 activated	Positioner
3	2			
4	3			
5	4	diK5_ACT	Mechanical unit 3 activated	Positioner
6	5	diLS_1_INPOS	Limit switch station 1	Station interchange unit
7	6	diLS_2_INPOS	Limit switch station 2	Station interchange unit
8		0 V input 1-7		

3.5.4 Configuration cross-connections

3.5.4.1 K/R 3DU (3 axes)

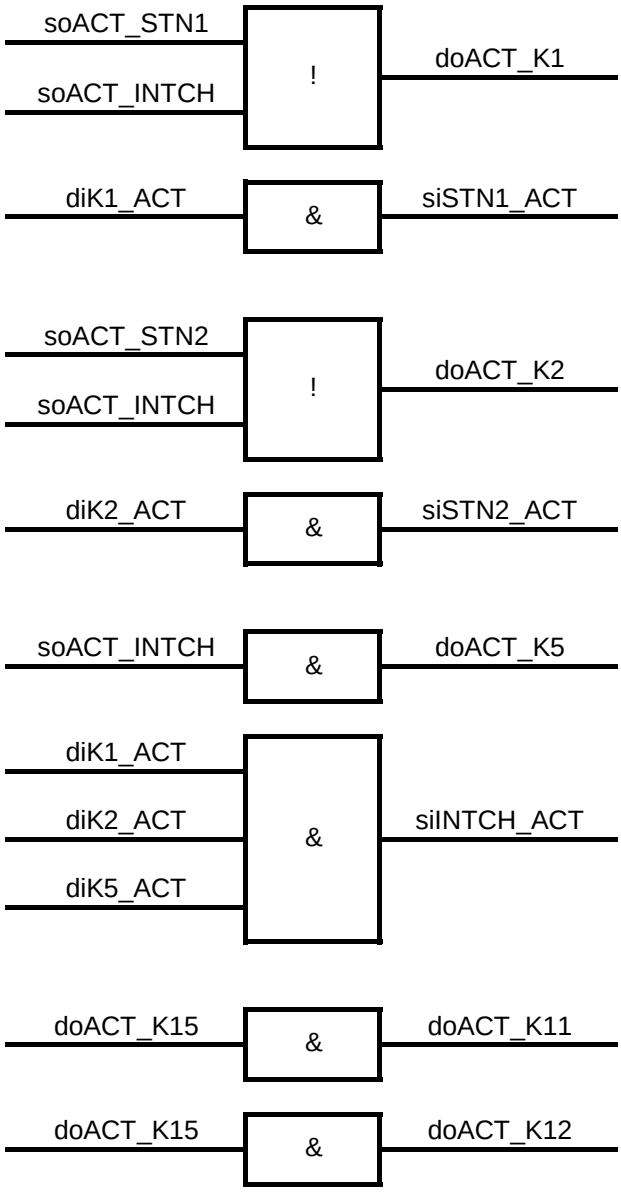


Figure 16. Cross-connections 3DU

3.5.4.2 K/R 1DU (1-axis)

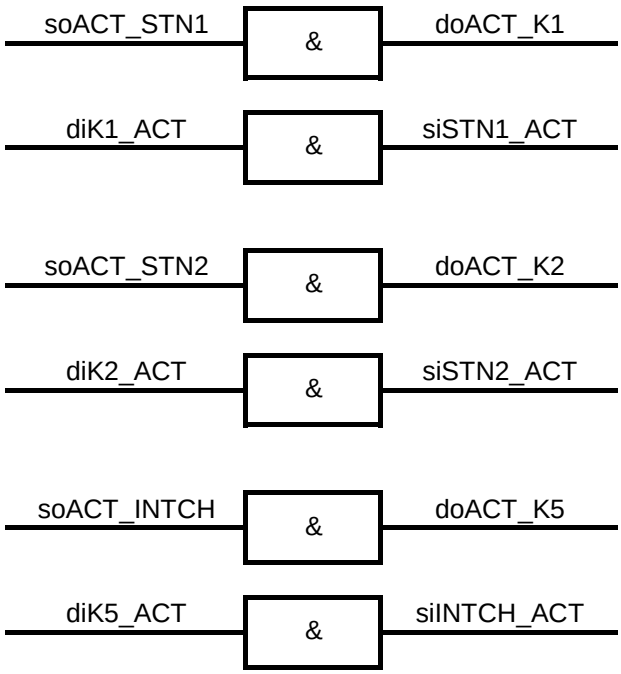


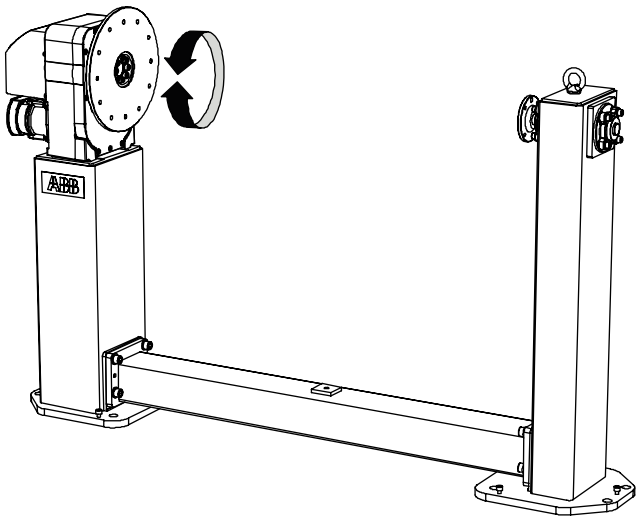
Figure 17. Cross-connections 1DU, (1-axis)

3.6 IRBP L

3.6.1 I/O board configuration for positioner

Address	Name	Board type	Digital inputs	Digital outputs	Analogue inputs	Analogue outputs	Relay outputs
-	B_POS_SIM	Simulated digital I/O					
21	B_POS_21	Relay I/O	7	12	-	-	-

Positioner type IRBP L



Figur 18 Positioner type IRBP L

3.6.2 Simulated outputs for B_POS_SIM

3.6.2.1 Simulated outputs

UnitMap	Name	Description
0	soACT_STN1	Activate mechanical unit 1
1	soACT_STN2	Activate mechanical unit 2

3.6.2.2 Simulated inputs

UnitMap	Name	Description
0	siSTN1_ACT	Mechanical unit 1 activated
1	siSTN2_ACT	Mechanical unit 2 activated

3.6.3 I/O-Signals configuration for B_POS_21

3.6.3.1 Digital outputs TB4

Output	UnitMap	Name	Description	Connected to unit
1	0	doACT_K1	Activate mechanical unit 1	Positioner
2	1	doACT_K2	Activate mechanical unit 2	Positioner
3	2			
4	3			
5	4			
6	5	doACT_K11	Activate release break 1	Positioner
7	6	doACT_K12	Activate release break 2	Positioner
8	7			
9	8			
10	9			
11	10			
12	11			
13		0V Output		
14		24V Output 1-12		

3.6.3.2 Digital inputs TB3

Input	UnitMap	Name	Description	Connected to unit
1	0	diK1_ACT	Mechanical unit 1 activated	Positioner
2	1	diK2_ACT	Mechanical unit 2 activated	Positioner
3	2			
4	3			
5	4			
6	5			
7	6			
8		0 V input 1-7		

3.6.4 Configuration cross-connections

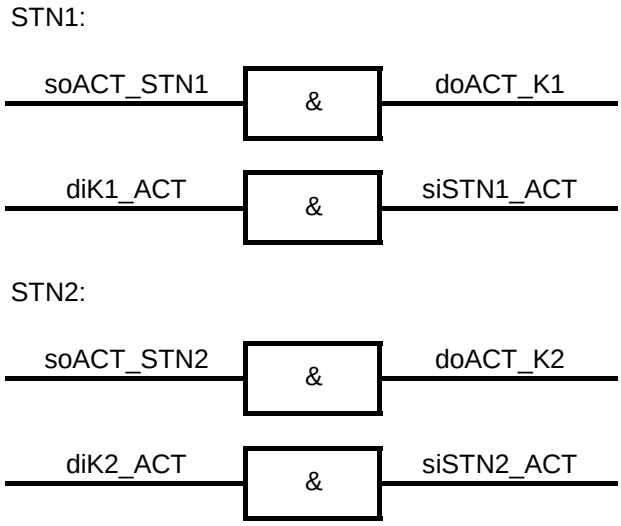


Figure 19. Cross-connections

4 Operator Interface IRBP

General

This chapter describes the I/O configurations for operator panels delivered by ABB Technologies AB.

4.1 I/O board Configuration

Address	Name	Board type	Digital inputs	Digital outputs	Analogue outputs	Analogue outputs
-	B_OP_SIM	Simulated digital I/O				
21	USERIO	Digital I/O	8	8	-	-

4.2 System functions

4.2.1 Inputs

Signal name	Action
diPROG_START	Start
diPROG_STOP	Stop

4.2.2 Outputs

Signal name	Status
doCYCLE	CycleOn
doMON	MotorOn
doAUTO	AutoOn

4.3 I/O-Signals configuration for B_OP_SIM

4.3.1 Digital outputs

UnitMap	Name	Description
10	doCYCLE	CycleOn
11	doAUTO	AutoOn
12	doMON	MotrorOn

4.4 I/O Signals configuration for USERIO

4.4.1 Digital outputs

UnitMap	Name	Description
0	doPROC1	Operator ready activated on station 1
1	doPROC2	Operator ready acitvated on station 2
2	doPERM_ENTR1	Permit operator ready on station 1
3	doPERM_ENTR1	Permit operator ready on station 2

4.4.2 Digital inputs

Unit Map	Name	Description
0	diPROC1	Operator ready OK on station 1
1	diPROC2	Operator ready OK on station 2
2	diPROG_START	Program start
3	diPROG_STOP	Program stop

5 Safety interface SIB V

About this chapter

This chapter describes the different I/O configurations for standard equipment for safety supervision SIB V, delevered by ABB Technologies AB.

These configurations vary depending on which positioner you have:

- For positioners B, C, D, K or R, see *“Positioner B/C/D/K/R” on page 62*.
- For positioner C Index, see “Positioner C Index” on page 71.
- For positioners A, L or S, see “Positioner A/L/S” on page 75.

5.1 Positioner B/C/D/K/R

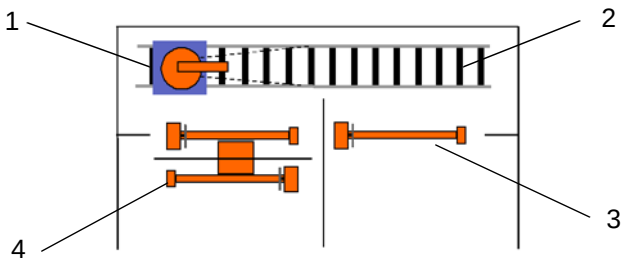
5.1.1 I/O board Configuration SIB V

Address	Name	Board type	Digital inputs	Digital outputs
8	SIB_V_B1	Safety Interface Board Type 1	56	-
9*	SIB_V_B1	Safety Interface Board Type 1	56	-
8	SIB_V_B2	Safety Interface Board Type 2	56	-
9*	SIB_V_B2	Safety Interface Board Type 2	56	-
8	SIB_V_B3	Safety Interface Board Type 3	56	-
9*	SIB_V_B3	Safety Interface Board Type 3	56	-

***) Used as board No 2 in multi-stations applications or combinations between different types of positioners.**

Example: Robot weldihng station with one positioner type IRBP 250K and one positioner type IRBP 250L.

Exemple



Figur 20 Robot welding station with one positioner IRBP 250K and one positioner IRBP 250L

Pos	Description	Pos	Description
1	Robot	3	IRBP 250L
2	Travel track	4	IRBP 250K

5.1.2 I/O-signal configuration for SIB_V_B1

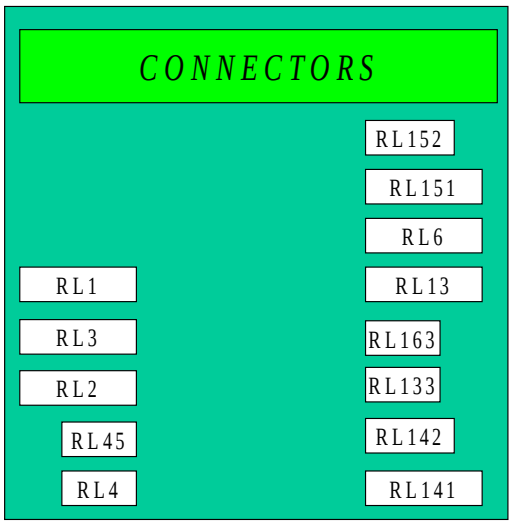


Figure 21. Unit for safety supervision SIB_V_B1

5.1.2.1 Digital inputs

UnitMap	Connection	Name	Description	Connected to unit
0	TB1:8	diASTOP_CHA	Run chain AS1-	Panel board/safety switch service door
1	TB1:4	diASTOP_CHB	Run chain AS2+	Panel board/safety switch service door
2	TB31:9, TB31:17	diRL1	Channel 1 active	Entrance protection area 1
3	TB31:8, TB31:18	diRL2	Channel 2 active	Entrance protection area 1
4	TB1:16	diRL3	Reset/control of function safety circuits	Entrance protection area 1
5	TB4:4	diRL4	Activate entrance protection area 1	Op-panel
6	TB2:9	diRL13	Indication station 1 at robot	Station interchange
7	TB2:10	diRL133	Indication station 1 at robot (inverted signal)	Station interchange
9	TB2:11	diRL141	Indication station 2 at robot	Station interchange
10	TB2:12	diRL143	Indication station 2 at robot (inverted signal)	Station interchange

5.1.2.2 Digital inputs

UnitMap	Connection	Name	Description	Connected to unit
16	TB1:1	diGSTOP_CHA	Run chain GS2+	Panel board
17	TB1:5	diGSTOP_CHB	Run chain GS1-	Panel board
24	TB111:10, TB31:2	diRL201	Channel 1 active	Safety switch service door
25	TB111:8, TB31:4	diRL202	Channel 2 active	Safety switch service door
26	TB111:11, TB31:5	diRL203	Reset/control of function safety circuits	Safety switch service door
27	TB111:13, TB31:6	diRL204	Activate safety circuits service door	Pushbutton service door

5.1.2.3 Configuration cross-connections

Figure 22. Cross-connections for unit for safety supervision SIB_V_typ 1

5.2 Positioner C Index

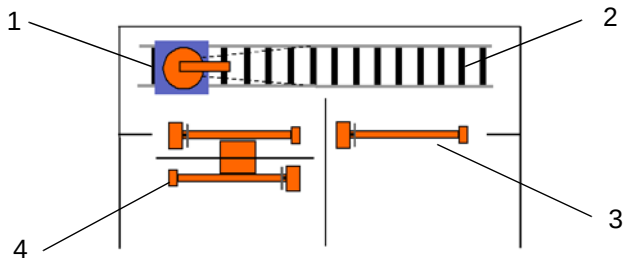
5.2.1 I/O board Configuration SIB V

Address	Name	Board type	Digital inputs	Digital outputs
8	SIB_V_B1	Safety Interface Board Type 1	56	-
9*	SIB_V_B1	Safety Interface Board Type 1	56	-
8	SIB_V_B2	Safety Interface Board Type 2	56	-
9*	SIB_V_B2	Safety Interface Board Type 2	56	-
8	SIB_V_B3	Safety Interface Board Type 3	56	-
9*	SIB_V_B3	Safety Interface Board Type 3	56	-

***) Used as board No 2 in multi-stations applications or combinations between different types of positioners.**

Example: Robot weldihng station with one positioner type IRBP 250K and one positioner type IRBP 250L.

Exemple



Figur 23 Robot welding station with one positioner IRBP 250K and one positioner IRBP 250L

Pos	Description	Pos	Description
1	Robot	3	IRBP 250L
2	Travel track	4	IRBP 250K

5.2.2 I/O-signal configuration for SIB_V_B2

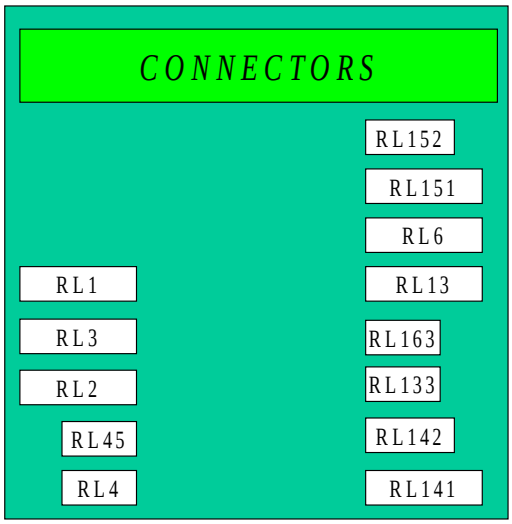


Figure 24. Unit for safety supervision SIB_V_B2

5.2.2.1 Digital inputs

UnitMap	Connection	Name	Description	Connected to unit
0	TB1:8	diASTOP_CHA	Run chain AS1-	Panel board/safety switch service door
1	TB1:4	diASTOP_CHB	Run chain AS2+	Panel board/safety switch service door
2	TB31:9, TB31:17	diRL1	Channel 1 active	Entrance protection area 1
3	TB31:8, TB31:18	diRL2	Channel 2 active	Entrance protection area 1
4	TB1:16	diRL3	Reset/control of function safety circuits	Entrance protection area 1
5	TB4:4	diRL4	Activate entrance protection area 1	Op-panel
6	TB2:9	diRL13	Indication station 1 at robot	Station interchange
7	TB2:10	diRL133	Indication station 1 at robot (inverted signal)	Station interchange
9	TB2:11	diRL141	Indication station 2 at robot	Station interchange
10	TB2:12	diRL143	Indication station 2 at robot (inverted signal)	Station interchange

5.2.2.2 Digital inputs

UnitMap	Connection	Name	Description	Connected to unit
11	TB2:13	diRL151	Indication station 2 at robot	Station interchange
12	TB2:14	diRL153	Indication station 2 at robot (inverted signal)	Station interchange
13	TB2:15	diRL16	Indication station 4 at robot	Station interchange
14	TB2:16	diRL163	Indication station 4 at robot (inverted signal)	Station interchange
16	TB1:1	diGSTOP_CHA	Run chain GS2+	Panel board
17	TB1:5	diGSTOP_CHB	Run chain GS1-	Panel board
24	TB111:10, TB31:2	diRL201	Channel 1 active	Safety switch service door
25	TB111:8, TB31:4	diRL202	Channel 2 active	Safety switch service door
26	TB111:11, TB31:5	diRL203	Reset/control of function safety circuits	Safety switch service door
27	TB111:13, TB31:6	diRL204	Activate safety circuits service door	Pushbutton service door

5.2.2.3 Configuration cross-connections

Figure 25. Cross-connections for unit for safety supervision SIB_V_typ 2

5.3 Positioner A/L/S

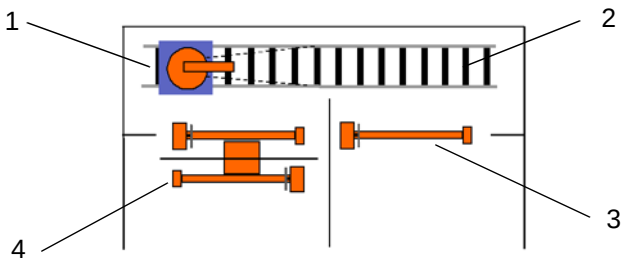
5.3.1 I/O board Configuration SIB V

Address	Name	Board type	Digital inputs	Digital outputs
8	SIB_V_B1	Safety Interface Board Type 1	56	-
9*	SIB_V_B1	Safety Interface Board Type 1	56	-
8	SIB_V_B2	Safety Interface Board Type 2	56	-
9*	SIB_V_B2	Safety Interface Board Type 2	56	-
8	SIB_V_B3	Safety Interface Board Type 3	56	-
9*	SIB_V_B3	Safety Interface Board Type 3	56	-

***) Used as board No 2 in multi-stations applications or combinations between different types of positioners.**

Example: Robot weldihng station with one positioner type IRBP 250K and one positioner type IRBP 250L.

Exemple



Figur 26 Robot welding station with one positioner IRBP 250K and one positioner IRBP 250L

Pos	Description	Pos	Description
1	Robot	3	IRBP 250L
2	Travel track	4	IRBP 250K

5.3.2 I/O-signal configuration for SIB_V_B3

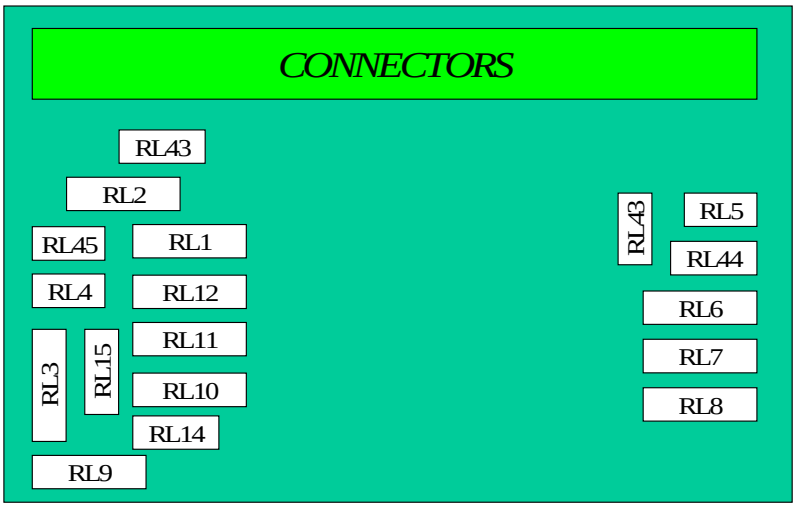


Figure 27. Unit for safety supervision SIB_V_B3

5.3.2.1 Digital inputs

UnitMap	Connection	Name	Description	Connected to unit
0	TB1:8	diASTOP_CHA	Run chain AS1-	Panel board/safety switch service door
1	TB1:4	diASTOP_CHB	Run chain AS2+	Panel board/safety switch service door
2	TB31:2,TB31:15	diRL1	Channel 1 active	Entrance protection area 1
3	TB31:1,TB31:16	diRL2	Channel 2 active	Entrance protection area 1
4	TB31:9	diRL3	Reset/control of function safety circuits	Entrance protection area 1
5	TB33:14	diRL11	Channel 1 active	Station indikation switch robot in area 2
6	TB33:15	diRL12	Channel 2 active	Station indikation switch robot in area 2
7		diRL15	Reset/control of function safety circuits	Safety relays robot in area 2
9	TB33:12	diRL9	Channel 1 active	Station indikation switch robot in area 1
10	TB33:13	diRL10	Channel 2 active	Station indikation switch robot in area 1

UnitMap	Connection	Name	Description	Connected to unit
11		diRL14	Reset/control of function safety circuits	Safety relays robot in area 1
12	TB4:4	diRL4	Activate entrance protection area 1	Op-panel
13	TB4:1	diRL5	Activate entrance protection area 2	Op-panel
14	TB32:9	diRL6	Reset/control of function safety circuits	Entrance protection area 2
16	TB32:1,TB32:16	diRL7	Channel 1 active	Entrance protection area 2
17	TB32:2,TB32:15	diRL8	Channel 2 active	Entrance protection area 2
18	TB2:4, TB34:5	diGSTOP_CHA_1	Run chain GS2+ area1	Panel board
19	TB1:1, TB34:3	diGSTOP_CHA_2	Run chain GS2+ area2	Panel board
20	TB2:8, TB34:11	diGSTOP_CHB_1	Run chain GS1- area 1	Panel board
21	TB1:5, TB34:9	diGSTOP_CHB_2	Run chain GS1- area 2	Panel board
24	TB111:10, TB33:2	diRL201	Channel 1 active	Safety switch service door
25	TB111:8, TB33:4	diRL202	Channel 2 active	Safety switch service door
26	TB111:11, TB33:5	diRL203	Reset/control of function safety circuits	Safety switch service door
27	TB111:13, TB33:6	diRL204	Activate safety circuits service door	Pushbutton service door
32	TB112:10, TB33:8	diRL401	Channel 1 active	Home position switch
33	TB112:8,TB33:9	diRL402	Channel 2 active	Home position switch
34	TB112:11*), TB112:12*)	diRL403	Reset/control of function safety circuits	Home position switch

5.3.2.2 Configuration cross-connections

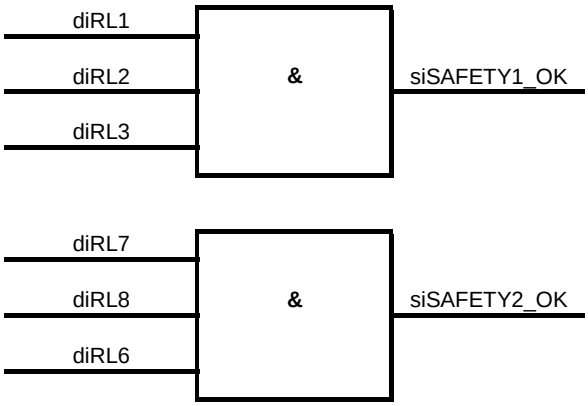


Figure 28. Cross-connections for unit for safety supervision SIB_V_typ 3