

Replacement of the different CI board versions



Replacement strategies for SIJECT CI boards

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Version 2.0

Remark

By replacing an older SIJECT CI board with a new one, please pay attention to some points.

This will avoid problems by replacing the hardware and makes some remarks to the software handling.

During the different innovation steps to the SIJECT system, also some features in the hardware were improved.

As a result of these improvements, the hardware of the different versions is not 100% compatible to each other.

On the end of this paper are some tables with the technical data's and differences between several SIJECT versions.

Please check the table thoroughly and read the instructions.

Attention:


Please be aware that a change in the hardware has also consequences in the SIMATIC hardware configuration and in the ProTool configuration (if "integrated mode" for ProTool is active).

This is not explicitly mentioned in this paper.

Replacement strategies:

NEW ⇒	SIJECT CI 16i MLFB: 6AT1131-6DD21-0AB0	SIJECT CI 16iP MLFB: 6AT1131-6DE21-0AB0	SIJECT CI 16iP MLFB: 6AT1131-6DF21-0AB0
OLD ↓↓			
SIJECT CI 16 DP (220 V/AC) MLFB: 6AT1131- 6DE20-0AA0	Not possible	Case 1	Case 5
SIJECT CI 16 (220 V/AC) MLFB: 6AT1131- 6DD20-0AA0	Case 2	Not possible	Not possible
SIJECT CI 16 DP (24 V/DC) MLFB: 6AT1131- 6DE20-0AB0	Not possible	Case 3	Case 5
SIJECT CI 16 (24 V/DC) MLFB: 6AT1131- 6DD20-0AB0	Case 4	Not possible	Not possible
SIJECT CI 16iP (24 V/DC) MLFB: 6AT1131- 6DE21-0AB0	Not possible	Not possible	Case 5

Case 1:

SIJECT CI 16 DP (220 V/AC) MLFB: 6AT1131-6DE20-0AA0		SIJECT CI 16iP MLFB: 6AT1131-6DE21-0AB0
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1. **Software**

PLC / STEP7 program: Save the PLC program to a PC or PG (not only on MMC!)
Technology blocks TECH / TEMP: If you use the SIJECT “closed loop” with the C-blocks FB105, FB113, FB116, FB127 you need a new MMC with a new license. Please contact Siemens (see Contacts on the end of this paper).

2. **New power supply:**

Replacement of the 220V/AC power supply with a 24 V/DC power supply

3. **Digital outputs X303 and X304:**

Replacement of the 16 relays outputs with 16 electronic outputs
Attention:
The outputs switching with a 24V/DC potential – like X300, X301 and X 302.
New plug placement
Plugs X303 and X304 move from the right side to the left side of the CI board .
During the replacement, you cannot directly move the connectors from one side to the other side.
Please check and change the terminal wiring on each connector one by one!

4. **Analog outputs X305**

New plug placement
Plug X305 move from the left side to right side of the CI board
Please check and change the terminal wiring on each connector one by one!

5. **Analog outputs X307**

No analog outputs for proportional valve in the new SIJECT CI 16iP.
It must be replaced by an 10V analog output (X 305) or there are external valve amplifiers necessary (external cards or valve integrated)


6. **New additional fast analog inputs X207**

These two fast analog inputs are new and can be used for pressure signals.

7. **Download the program to PLC and save on MMC**

See remarks at point 1.

Case 2:

SIJECT CI 16 (220 V/AC) MLFB: 6AT1131-6DD20-0AA0		SIJECT CI 16i MLFB: 6AT1131-6DD21-0AB0
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1. **Software**

PLC / STEP7 program: Save the PLC program to a PC or PG (not only on MMC!)
Technology blocks TECH / TEMP: If you use the SIJECT “closed loop” with the C-blocks FB105, FB113, FB116, FB127 you need a new MMC with a new license. Please contact Siemens (see Contacts on the end of this paper).

2. **New power supply:**

Replacement of the 220V/AC power supply with a 24 V/DC power supply

3. **Digital outputs X303 and X304:**

Replacement of the 16 relays outputs with 16 electronic outputs

Attention:

The outputs switching with a 24V/DC potential – like X300, X301 and X 302.

New plug placement

Plugs X303 and X304 move from the right side to the left side of the CI board .

During the replacement, you cannot directly move the connectors from one side to the other side.

Please check and change the terminal wiring on each connector one by one!

4. **Analog outputs X305**

New plug placement

Plug X305 move from the left side to right side of the CI board

Please check and change the terminal wiring on each connector one by one!

5. **Analog outputs X307**


Only 2 analog outputs available for proportional valve in the new SIJECT CI16i.

If there are more than 2 outputs used, it must be replaced by an 10V analog output (X 305) or external valve amplifiers necessary (external cards or valve integrated)

6. **Download the program to PLC and save on MMC**

See remarks at point 1.

Case 3:

SIJECT CI 16 DP (24 V/DC) MLFB: 6AT1131-6DE20-0AB0		SIJECT CI 16iP MLFB: 6AT1131-6DE21-0AB0
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1. **Software**

PLC / STEP7 program: Save the PLC program to a PC or PG (not only on MMC!)
Technology blocks TECH / TEMP: If you use the SIJECT “closed loop” with the C-blocks FB105, FB113, FB116, FB127 you need a new MMC with a new license. Please contact Siemens (see Contacts on the end of this paper).

2. **Digital outputs X303 and X304:**

Replacement of the 16 relays outputs with 16 electronic outputs

Attention:

The outputs switching with a 24V/DC potential – like X300, X301 and X 302.

New plug placement

Plugs X303 and X304 move from the right side to the left side of the CI board .

During the replacement, you cannot directly move the connectors from one side to the other side.

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3. **Analog outputs X305**

New plug placement

Plug X305 move from the left side to right side of the CI board

Please check and change the terminal wiring on each connector one by one!

4. **Analog outputs X307**

No analog outputs for proportional valve in the new SIJECT CI 16iP.

It must be replaced by an 10V analog output (X 305) or there are external valve amplifiers necessary (external cards or valve integrated)


5. **New additional fast analog inputs X207**

These two fast analog inputs are new and can be used for pressure signals.

6. **Download the program to PLC and save on MMC**

See remarks at point 1.

Case 4:

SIJECT CI 16 (24 V/DC) MLFB: 6AT1131-6DD20-0AB0		SIJECT CI 16i MLFB: 6AT1131-6DD21-0AB0
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1. **Software**

PLC / STEP7 program: Save the PLC program to a PC or PG (not only on MMC!)
Technology blocks TECH / TEMP: If you use the SIJECT “closed loop” with the C-blocks FB105, FB113, FB116, FB127 you need a new MMC with a new license. Please contact Siemens (see Contacts on the end of this paper).

2. **Digital outputs X303 and X304:**

Replacement of the 16 relays outputs with 16 electronic outputs

Attention:

The outputs switching with a 24V/DC potential – like X300, X301 and X 302.

New plug placement

Plugs X303 and X304 move from the right side to the left side of the CI board .

During the replacement, you cannot directly move the connectors from one side to the other side.

Please check and change the terminal wiring on each connector one by one!

3. **Analog outputs X305**

New plug placement

Plug X305 move from the left side to right side of the CI board

Please check and change the terminal wiring on each connector one by one!

4. **Analog outputs X307**


Only 2 analog outputs available for proportional valve in the new SIJECT CI16i.

If there are more than 2 outputs used, it must be replaced by an 10V analog output (X 305) or external valve amplifiers necessary (external cards or valve integrated)

5. **Download the program to PLC and save on MMC**

See remarks at point 1.

Case 5:

SIJECT CI 16 DP (24 V/DC) MLFB: 6AT1131-6DE20-0AB0		SIJECT CI 16iP MLFB: 6AT1131-6DF21-0AB0
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1. **Software**

PLC / STEP7 program: Save the PLC program to a PC or PG (not only on MMC!)
Technology blocks TECH / TEMP: If you use the SIJECT “closed loop” with the C-blocks FB105, FB113, FB116, FB127 you need a new MMC with a new license. Please contact Siemens (see Contacts on the end of this paper).

2. **Digital outputs X303 and X304:**

Replacement of the 16 relays outputs with 16 electronic outputs
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3. **Analog outputs X305**

New plug placement
Plug X305 move from the left side to right side of the CI board
Please check and change the terminal wiring on each connector one by one!

4. **Analog outputs X307**

No analog outputs for proportional valve in the new SIJECT CI 16iP.
It must be replaced by an 10V analog output (X 305) or there are external valve amplifiers necessary (external cards or valve integrated)

5. **New additional fast analog inputs X207**

These two fast analog inputs are new and can be used for pressure signals.

6. **Download the program to PLC and save on MMC**

See remarks at point 1.

Contacts:

If you need technical support or you have some questions to these paper, you should contact one of these Siemens offices:

Sales Department

Wolfgang Radermacher

SIEMENS AG, A&D MC PM1

Postbox 3180

91050 Erlangen

Tel.: +49 9131/98-2208

Fax: +49 9131/98-2121

Email: wolfgang.radermacher@siemens.com

Wolfgang Zapf

SIEMENS AG, A&D MC PM1

Postbox 3180

91050 Erlangen

Tel.: +49 9131/98-2065

Fax: +49 9131/98-2121

Email: wolfgang.zapf@siemens.com

Technical Support

Jamal Smouhi

SIEMENS AG, A&D VREG NRH B18

Postbox 30 11 66

50823 Köln

Tel. +49 221-576 3027

Fax +49 221-576 2936

Email: Jamal.Smouhi@siemens.com

Dietmar Antwerpen

SIEMENS AG, A&D VREG NRH B18

Postbox 30 11 66

50823 Köln

Tel. +49 221-576 3119

Fax +49 221-576 2936

Email: dietmar.antwerpen@siemens.com

Technical data's and differences

Version 1: CI 16 and CI 16DP with 220V / AC power supply

	SIJECT CI 16	SIJECT CI16DP
module / memory		
Main processor board	SIMATIC S7-300	SIMATIC S7-300
PLC module	314	315-2
guaranteed memory	128 kByte	128 kByte
Program memory (Restspeicher ohne Technologie)	48 Kbyte	64 Kbyte
timer	128	128
counter	64	64
digital inputs		
Digital input (DC24V)	31	31
digital output		
Digital output (2A)	24	24
Short-circuit protection	yes	yes
Relay output (230 V, 0,5A)	16	16
analog inputs		
Thermocouple input (16 Bit)	8	8
Thermocouple type	K/J	K/J
Linear scale input (1kOhm - 10 kOhm, 12 Bit)	4	4
analog outputs		
Prop. valve output (+/- 10V, 12 Bit)		
	2 (X306)	4 (X306 + X307)
Prop. valve output (+24 - 38V / 0,75 - 2A, 12 Bit)		
interfaces		
OP interface (seriell)	1	1
MPI interface	1	1
Profibus-DP interface	-	1
P-Bus interface	1	1
CAN - Bus interface	-	option
Memory card slot	1	1
System power supply	AC100-250V	AC100-250V

Replacement strategies for SIJECT CI boards



SIJECT CI 16



SIJECT CI 16DP

Version 2: CI 16 and CI 16DP with 24V / DC power supply

The only difference to Version 1 is the input voltage for power supply.
Only the 220V/DC power supply was replaced by a 24V/DC power supply.
All inputs / outputs and other interfaces are no difference.

Version 3: CI 16i and CI 16iP with 24V / DC power supply

Complete internal redesign

The digital relay outputs are replaced by electronic digital outputs (2A)

Other plug placement for digital outputs, MPI, P-Bus



	SIJECT CI 16i	SIJECT CI 16iP
PLC module	314	314C-2DP
Programming	STEP 7	STEP 7
Load memory	128 Kbytes	520 Kbytes
Program memory (after loaded technology)	48 Kbytes	400 Kbytes
timer	128	256
counter	64	256
Digital input (DC24V)	31	31
High speed counter	1	1

Replacement strategies for SIJECT CI boards

Digital output (2A)	40	40
Short-circuit protection	yes	yes
Thermocouple input (16 Bit)	8	8
Inputs for linear scales (1kOhm - 10 kOhm, 12 Bit)	4	4
Inputs for fast analog signals (0-10V, 14-bit resolution)	-	2 (X 305)
Prop. valve output (+/- 10V, 12 Bit)	4	4
Prop. valve current output (+24 - 38V / 0,75 - 2A, 12 Bit)	2 (X306)	-
OP interface (serial)	1	1
MPI interface	1	1
P-Bus interface	1	1
Profibus-DP interface	-	1
Memory card slot	1	1
System power supply	24V DC	24 V DC