

Process Control System DE-VX 4200/DE-VX 4100/DE-VR 4008



Version 18/01/001, Januar 2018

Contents

1.	8-fold Analog Output Card DC/DC 601509/615 12Bit (DA8 card)	4
1.1.	Important Information	4
1.2.	Pin Assignment	5
2.	16-fold Digital Relais Output Card 601702.....	6
2.1.	Important Information	6
2.2.	Pin Assignment	7
3.	32-fold Transistor Output Card 601712/612.....	8
3.1.	Important Information	8
3.2.	Pin Assignment [1 / 2]	8
3.2.	Pin Assignment [2 / 2].....	10
4.	32-fold Optocoupler Card 601609/611.....	11
4.1.	Important Information	11
4.2.	Pin Assignment [1 / 2]	12
4.2.	Pin Assignment [2 / 2].....	13
5.	24-fold Digital Input Card/16-fold Output Card (24 IN/16 OUT Card) 601608	14
5.1.	Important Information	14
5.2.	Pin Assignment [1 / 3]	15
5.2.	Pin Assignment [2 / 3]	16
5.2.	Pin Assignment [3 / 3]	17
6.	8-fold Analog Input Card (AD8 Card) 601419/613.....	18
6.1.	Connection of PT – 100 Signals	18
	Important Information	18
6.2	Pin Assignment [1 / 2]	19
6.2	Pin Assignment [2 / 2]	20
6.3.	Connection of PC 100 Signals.....	21
	Pin Assignment [2 / 4]	22
	Pin Assignment [3 / 4]	23
	Pin Assignment [4 / 4]	24

6.4	Important Information for the Connecting of PT 100 Signals	25
7.	4-Analog Input/2- Analog Output Card 601460/614 (AD4/DA2 Card) / AD4/DA2 Card with S.A. 601461/616...	26
7.1	Important Information	26
7.2	Pin Assignment	27
7.3	Connection of Thermocouples and Standard Signals....	28
7.4.	Pin Assignment [1 / 2]	29
	Pin Assignment [2 / 2]	30
8.	Connection of the AD4/DA2 Card's Circuit Output.....	31
8.2.	Connection via Value Standard Signal 0-20mA	32
8.3.	Voltage Comparator of the AD4/DA2 Card with Comparator	... 33

1.8-fold Analog Output Card DC/DC 601509/615 12Bit (DA8 card)

1.1. Important Information

- The ground connections **UI -** and **I -** are internal on different potentials.
- A connection of **UI -** and **I -** (e.g. via the grounding) leads to a short circuit.
- For the connection of voltage and current outputs at the same time it is important to connect current loads between **I +** and **UI -**
- Min. load of the current outputs
> 1k ohm (between U+ and U-)
- Max. load of the current outputs:
< 1000 Ohm (between I+ und I-)
< 470 ohm (between I+ and UI-)

1.2. Pin Assignment

Output	Function	Pin Assignment		Description
		U+/I+	UI-/I-	
Output 1	0-10v 0(4)-20mA	d2 d4	b2 z4	
Output 2	0-10v 0(4)-20mA	d6 d8	b6 z8	
Output 3	0-10V 0(4)-20mA	d10 d12	b10 z12	
Output 4	0-10V 0(4)-20mA	d14 d16	b14 z16	
Output 5	0-10V 0(4)-20mA	d18 d20	b18 z20	
Output 6	0-10V 0(4)-20mA	d22 d24	b22 z24	
Output 7	0-10V 0(4)-20mA	d26 d28	b26 z28	
Output 8	0-10V 0(4)-20mA	d30 d32	b30 z32	

2. 16-fold Digital Relais Output Card 601702

2.1. Important Information

- The relay contacts are each in potential-free key function.
- The contact burden is at non-inductive 24V/1A.
- The external power supply is **24V –** or **24V ~ eff. (+/-10%)** and is connected to **Pin z28** and **z30**.

2.2. Pin Assignment

Output	Function	Pin Assignment		Description
Output 1	Relais 1	b4 d4	a x.0	
Output 2	Relais 2	z4 z6	a x.1	
Output 3	Relais 3	b6 d6	a x.2	
Output 4	Relais 4	b8 d8	a x.3	
Output 5	Relais 5	b10 d10	a x.4	
Output 6	Relais 6	b12 d12	a x.5	
Output 7	Relais 7	b14 d14	a x.6	
Output 8	Relais 8	b16 d16	a x.7	
Output 9	Relais 9	b18 d18	a x.0	
Output 10	Relais 10	b20 d20	a x.1	
Output 11	Relais 11	b22 d22	a x.2	
Output 12	Relais 12	b24 d24	a x.3	
Output 13	Relais 13	b26 d26	a x.4	
Output 14	Relais 14	b28 d28	a x.5	
Output 15	Relais 15	b30 d30	a x.6	
Output 16	Relais 16	b32 d32	a x.7	

3. 32-fold Transistor Output Card 601712/612

3.1. Important Information

- On a connection of inductive burdens, it is important to do adequate measurements of fault clearance. All connections with 24V + and 0V have to be wired. The outputs are electrically isolated from the controller but not from each other. The max. burden for each output is at 500mA ohmic load
- Power supply 24V = (+/-15%):

24Volt:

channel: 1-8	z32	and z28
channel: 9-16	z24	and z20
channel: 17-24	z16	and z12
channel: 25-32	z8	and z4

0Volt:

z30, z26, z22, z18, z14, z10, z6, z2

3.2. Pin Assignment [1 / 2]

Output	Function	Pin Assignment		Description
Output 1	Out 1	b32	a x.0	
Output 2	Out 2	d32	a x.1	
Output 3	Out 3	b30	a x.2	
Output 4	Out 4	d30	a x.3	
Output 5	Out 5	b28	a x.4	
Output 6	Out 6	d28	a x.5	
Output 7	Out 7	b26	a x.6	
Output 8	Out 8	d26	a x.7	
Output 9	Out 9	b24	a x.0	
Output 10	Out 10	d24	a x.1	
Output 11	Out 11	b22	a x.2	
Output 12	Out 12	d22	a x.3	
Output 13	Out 13	b20	a x.4	
Output 14	Out 14	d20	a x.5	
Output 15	Out 15	b18	a x.6	
Output 16	Out 16	d18	a x.7	

3.2. Pin Assignment [2 / 2]

Output	Function	Pin Assignment		Description
Output 17	Out 17	b16	a x.0	
Output 18	Out 18	d16	a x.1	
Output 19	Out 19	b14	a x.2	
Output 20	Out 20	d14	a x.3	
Output 21	Out 21	b12	a x.4	
Output 22	Out 22	d12	a x.5	
Output 23	Out 23	b10	a x.6	
Output 24	Out 24	d10	a x.7	
Output 25	Out 25	b8	a x.0	
Output 26	Out 26	d8	a x.1	
Output 27	Out 27	b6	a x.2	
Output 28	Out 28	d6	a x.3	
Output 29	Out 29	b4	a x.4	
Output 30	Out 30	d4	a x.5	
Output 31	Out 31	b2	a x.6	
Output 32	Out 32	d2	a x.7	

4. 32-fold Optocoupler Card 601609/611

4.1. Important Information

- The optocoupler inputs each have an input range of 0-30V (DC), logic 0 < 5V logic 1 > 15V
- Earth connection: d6, d12, d20 and d30

4.2. Pin Assignment [1 / 2]

Input	Function	Pin Assignment		Description
Input 1	Opto 1	b10	e x.0	
Input 2	Opto 2	z8	e x.1	
Input 3	Opto 3	d10	e x.2	
Input 4	Opto 4	z10	e x.3	
Input 5	Opto 5	b14	e x.4	
Input 6	Opto 6	z12	e x.5	
Input 7	Opto 7	d14	e x.6	
Input 8	Opto 8	z14	e x.7	
Input 9	Opto 9	b4	e x.0	
Input 10	Opto 10	d2	e x.1	
Input 11	Opto 11	b2	e x.2	
Input 12	Opto 12	d4	e x.3	
Input 13	Opto 13	b8	e x.4	
Input 14	Opto 14	z4	e x.5	
Input 15	Opto 15	z6	e x.6	
Input 16	Opto 16	d8	e x.7	

4.2. Pin Assignment [2 / 2]

Input	Function	Pin Assignment		Description
Input 17	Opto 17	b28	e x.0	
Input 18	Opto 18	z26	e x.1	
Input 19	Opto 19	d28	e x.2	
Input 20	Opto 20	z28	e x.3	
Input 21	Opto 21	b32	e x.4	
Input 22	Opto 22	z30	e x.5	
Input 23	Opto 23	d32	e x.6	
Input 24	Opto 24	z32	e x.7	
Input 25	Opto 25	b18	e x.0	
Input 26	Opto 26	z16	e x.1	
Input 27	Opto 27	d18	e x.2	
Input 28	Opto 28	z18	e x.3	
Input 29	Opto 29	b22	e x.4	
Input 30	Opto 30	z20	e x.5	
Input 31	Opto 31	d22	e x.6	
Input 32	Opto 32	z22	e x.7	

5. 24-fold Digital Input Card/16-fold Output Card (24 IN/16 OUT Card) 601608

5.1. Important Information

- The optocoupler inputs have an input range of 0-30V,
- from a value of > 10V is log "1"
- from a value of < 6V is log "0"
- Power Supply of the outputs 18VDC – 36 VDC
 - Channel 00-07 + 24V : z12, z16
 - Channel 08-15+ 24V : z4 , z8
 - 0V: z2 (together for inputs/outputs)
 - Max. burden of the outputs 500mA (ohmic load)

5.2. Pin Assignment [1 / 3]

Input	Function	Pin Assignment		Description
Input 1	Opto 1	z32	e 32.0	
Input 2	Opto 2	b32	e 32.1	
Input 3	Opto 3	d32	e 32.2	
Input 4	Opto 4	z30	e 32.3	
Input 5	Opto 5	b30	e 32.4	
Input 6	Opto 6	d30	e 32.5	
Input 7	Opto 7	z28	e 32.6	
Input 8	Opto 8	b28	e 32.7	
Input 9	Opto 9	d28	e 33.0	
Input 10	Opto 10	z26	e 33.1	
Input 11	Opto 11	b26	e 33.2	
Input 12	Opto 12	d26	e 33.3	
Input 13	Opto 13	z24	e 33.4	
Input 14	Opto 14	b24	e 33.5	
Input 15	Opto 15	d24	e 33.6	
Input 16	Opto 16	z22	e 33.7	

5.2. Pin Assignment [2 / 3]

Input	Function	Pin Assignment		Description
Input 17	Opto 17	b22	e 34.0	
Input 18	Opto 18	d22	e 34.1	
Input 19	Opto 19	z20	e 34.2	
Input 20	Opto 20	b20	e 34.3	
Input 21	Opto 21	d20	e 34.4	
Input 22	Opto 22	z18	e 34.5	
Input 23	Opto 23	b18	e 34.6	
Input 24	Opto 24	d18	e 34.7	

5.2. Pin Assignment [3 / 3]

Output	Function	Pin Assignment		Description
Output 1	Out 1	b16	a 32.0	
Output 2	Out 2	d16	a 32.1	
Output 3	Out 3	b14	a 32.2	
Output 4	Out 4	d14	a 32.3	
Output 5	Out 5	b12	a 32.4	
Output 6	Out 6	d12	a 32.5	
Output 7	Out 7	b10	a 32.6	
Output 8	Out 8	d10	a 32.7	
Output 9	Out 9	b8	a 33.0	
Output 10	Out 10	d8	a 33.1	
Output 11	Out 11	b6	a 33.2	
Output 12	Out 12	d6	a 33.3	
Output 13	Out 13	b4	a 33.4	
Output 14	Out 14	d4	a 33.5	
Output 15	Out 15	b2	a 33.6	
Output 16	Out 16	d2	a 33.7	

6. 8-fold Analog Input Card (AD8 Card) 601419/613

6.1. Connection of PT – 100 Signals

Important Information

- 3-wire:



- 4-wire:



6.2 Pin Assignment [1 / 2]

Input	Function	Pin Assignment		Description
		+	-	
Input 1	TH - Element	Z30	D30	
	0-10V/0-2V	Z30	D30	
	0(4)-20mA	B30	D30	100Ω* Shunt-Resistor
	Jumper from	z30 to	b30	
Input 2	TH - Element	Z26	D26	
	0-10V/0-2V	Z26	D26	
	0(4)-20mA	B26	D26	100Ω* Shunt-Resistor
	Jumper from	Z26 to	B26	
Input 3	TH - Element	Z22	D22	
	0-10V/0-2V	Z22	D22	
	0(4)-20mA	B22	D22	100Ω* Shunt-Resistor
	Jumper from	Z22 to	B22	
Input 4	TH - Element	Z18	D18	
	0-10V/0-2V	Z18	D18	
	0(4)-20mA	B18	D18	100Ω* Shunt-Resistor
	Jumper from	Z18 to	B18	

* for the old Cards 601417 & 601416 **22Ω** Shunt-Resistor

6.2 Pin Assignment [2 / 2]

Input	Function	Pin Assignment		Description
		+	-	
Input 5	TH - Element	Z14	D14	
	0-10V/0-2V	Z14	D14	
	0(4)-20mA	B14	D14	100Ω* Shunt-Resistor
	Jumper from	Z14 to	B14	
Input 6	TH - Element	Z10	D10	
	0-10V/0-2V	Z10	D10	
	0(4)-20mA	B10	D10	100Ω* Shunt-Resistor
	Jumper from	Z10 to	B10	
Input 7	TH - Element	Z6	D6	
	0-10V/0-2V	Z6	D6	
	0(4)-20mA	B6	D6	100Ω* Shunt-Resistor
	Jumper from	Z6 to	B6	
Input 8	TH - Element	Z2	D2	
	0-10V/0-2V	Z2	D2	
	0(4)-20mA	B2	D2	100Ω* Shunt-Resistor
	Jumper from	Z2 to	B2	

6.3. Connection of PC 100 Signals Pin Assignment [1 / 4]

Input	Function	Pin Assignment				Description
		+		-		
Input 1	2-wire	z30		d30		
	Jumper from	z32 to		z30		
	Jumper from	d32 to		d30		
	3-wire	a z30	b d30		d d32	
	Jumper from	z32 to		z30		
	Jumper from	b32 to		d30		
	4-wire	a z32	b z30	c d30	d d32	
Input 2	2-wire	z26		d26		
	Jumper from	z28 to		z26		
	Jumper from	d28 to		d26		
	3-wire	a z26	c d26		d d28	
	Jumper from	z28 to		z26		
	Jumper from	b28 to		d26		
	4-wire	a z28	b z26	c d26	d d28	

Pin Assignment [2 / 4]

Input	Function	Pin Assignment				Description
		+	-			
Input 3	2-wire	z22		d22		
	Jumper from	z24 to		z22		
	Jumper from	d24 to		d22		
	3-wire	a z22	b d22		d d24	
	Jumper from	z24 to		z22		
	Jumper from	b24 to		d22		
	4-wire	a z24	b z22	c d22	d d24	
Input 4	2-wire	z18		d18		
	Jumper from	z20 to		z18		
	Jumper from	d20 to		d18		
	3-wire	a z18	c d18		d d20	
	Jumper from	z20 to		z18		
	Jumper from	b20 to		d18		
	4-wire	a z20	b z18	c d18	d d20	

Pin Assignment [3 / 4]

Input	Function	Pin Assignment				Description
		+			-	
Input 5	2-wire	z14		d14		
	Jumper from	z16 to		z14		
	Jumper from	d16 to		d14		
	3-wire	a z14	b d14		d d16	
	Jumper from	z16 to		z14		
	Jumper from	b16 to		d14		
	4-wire	a z16	b z14	c d14	d d16	
Input 6	2-wire	z10		d10		
	Jumper from	z12 to		z10		
	Jumper from	d12 to		d10		
	3-wire	a z10	c d10		d d12	
	Jumper from	z12 to		z10		
	Jumper from	b12 to		d10		
	4-wire	a z12	b z10	c d10	d d12	

Pin Assignment [4 / 4]

Input	Function	Pin Assignment				Description
		+		-		
Input 7	2-wire	z6		d6		
	Jumper from	z8 to		z6		
	Jumper from	d8 to		d6		
	3-wire	a z6	b d6		d d8	
	Jumper from	z8 to		z6		
	Jumper from	b8 to		d6		
	4-wire	a z8	b z6	c d6	d d8	
Input 8	2-wire	z2		d2		
	Jumper from	z4 to		z2		
	Jumper from	d4 to		d2		
	3-wire	a z2	c d2		d d4	
	Jumper from	z4 to		z2		
	Jumper from	b4 to		d2		
	4-wire	a z4	b z2	c d2	d d4	

6.4 Important Information for the Connecting of PT 100 Signals

DS-Sensor:

DS-Sensor:

For the signal acquisition of PT100 signals together with thermo elements (Th-element, mA, PT100 etc.), input 1 and 8 must not be switched as PT100 as there are the cold junction sensors.

In this case, the jumpers JP1 till JP 6 have to be plugged in at the outer surface of the card.

In case the card is only used with PT 100 elements, the jumpers JP1 till JP6 have to be plugged in at the inner surface of the card. Than, all channels 1-8 can be used. The cold junction sensors are without any function

Jumper Assignments AD8 Card



Chanel 8
PT100



Channel 1
PT100



Channel 8
Standard



Channel1
Standard

7. 4-fold Analog Input/2-fold Analog Output Card 601460/614 (AD4/DA2 Card) / AD4/DA2 Card with S.A. 601461/616

7.1 Important Information

- The **ground connections UI -** and **I -** are internal on different potentials.
- A connection of **UI -** and **I -** (e.g. via the grounding) leads to a short circuit.
- For the connection of voltage and current outputs at the same time it is important to connect current loads between **I +** and **UI -**

In general:

- Max. load of the current outputs $\leq 500\Omega$
- Min. load of the current outputs $\geq 1K\Omega$

Connection of PT – 100 Signals

- 3-wire:



- 4-wire:



7.2 Pin Assignment

Output	Function	Pin Assignment		Description
		U+/I+	UI-/I-	
Output 1	0-10V 0(4)-20mA	D30 D32	B30 Z32	
Output 2	0-10V 0(4)-20mA	D26 D28	B26 Z28	

7.3 Connection of Thermocouples and Standard Signals:

Input	Function	Pin Assignment		Description
		+	-	
Input 1	TH-Element	z16	d16	
	0-10V/0-2V	z16	d16	
	0(4)-20mA	b16	d16	100Ω* Shunt-Resistor
	Jumper from	z16 to	b16	
Input 2	TH-Element	z12	d12	
	0-10V/0-2V	z12	d12	
	0(4)-20mA	b12	d12	100Ω* Shunt-Resistor
	Jumper from	z12 to	b12	
Input 3	TH-Element	z6	d6	
	0-10V/0-2V	z6	d6	
	0(4)-20mA	b6	d6	100Ω* Shunt-Resistor
	Jumper from	z6 to	b6	
Input 4	TH-Element	z2	d2	
	0-10V/0-2V	z2	d2	
	0(4)-20mA	b2	d2	100Ω* Shunt-Resistor
	Jumper from	z2 to	b2	

* for the old Card 601409 **22Ω** Shunt-Resistor

7.4. Pin Assignment [1 / 2]

Input	Function	Pin Assignment				Description
		+		-		
Input 1	2-wire	z16		d16		
	Jumper from	z18 to		z16		
	Jumper from	d18 to		d16		
	3-wire	a z16	c d16		d d18	
	Jumper from	z18 to		z16		
	Jumper from	b18 to		d16		
	4-wire	a z18	b z16	c d16	d d18	
Input 2	2-wire	z12		d12		
	Jumper from	z14 to		z12		
	Jumper from	d14 to		d12		
	3-wire	a z12	c d12		d d14	
	Jumper from	z14 to		z12		
	Jumper from	b14 to		d12		
	4-wire	a z14	b z12	c d12	d d14	

Pin Assignment [2 / 2]

Input	Function	Pin Assignment				Description
		+		-		
Input 3	2-wire	z6		d6		
	Jumper from	z8 to		z6		
	Jumper from	d8 to		d6		
	3-wire	a z6	c d6	d d8		
	Jumper from	z8 to		z6		
	Jumper from	b8 to		d6		
	4-wire	a z8	b z6	c d6	d d8	
Input 4	2-wire	z2		d2		
	Jumper from	z4 to		z2		
	Jumper from	d4 to		d2		
	3-wire	a z2	c d2	d d4		
	Jumper from	z4 to		z2		
	Jumper from	b4 to		d2		
	4-wire	a z4	b z2	c d2	d d4	

8. Connection of the AD4/DA2 Card's Circuit Output

8.1. Connection via Actual Value Standard Signal 0-10V

- Description:
 The limiting value 0 to 10 V should be fixed via the analogy output 1.
 The actual value 0 to 10 V should be read in via analogy input 1.
 The relay should switch off when exceeding the limiting value.

Function	In-/Output	Pin Wiring	Additional
Set Point	Analog Output 1	d30 to z18	z18=Comparator Input -
Actual Value	Analog Input 1	(+): z16 to b18	b18= Comparator Input + d16= Analog Input 1
		(-): d16 to d18	
Actual Value (+)	Analog Input 1	z16	
Actual Value (-)	Analog Input 1	d16	
Circuit Output	Common Contact(C)	z20	
	Break Contact (NC)	d20	
	Make Contact	b20	

8.2. Connection via Value Standard Signal 0-20mA

- Description**
 The limiting value 0 to 20mA should be fixed via the analogy output 1.
 The actual value 0 to 20mA should be read in via analogy input 1.
 The relais should switch off when exceeding the limiting value.

Function	In- / Output	Pin Wiring	Additional
Set Point	Analog Output 1 (mA)	d32 to z18 z18 with 330Ω possible 1% tolerance to b24	z18=Comparator Input –
Actual Value	Comparator Input +	b18 with 330Ω possible 1% tolerance to z16 z16 to b16	b18= Comparator Input + z16=Analog Input 1 +
GND	Analog Input 1	d16 to z32	
Set Point (+)	Analog Input 1	b18	
Set Point (-)	Analog Input 1	d16	
Circuit Output	Common Contact(C)	z20	
	Break Contact (NC)	d20	
	Make Contact (NO)	b20	

8.3. Voltage Comparator of the AD4/DA2 Card with Comparator

