10.2.2   Expansion card -I/O-14/08-

This chapter describes the I/O-expansion card -I/O-14/08-. It only describes the additional features that the expansion card makes available for the SERVOSTAR 600.

The -I/O-14/08- provides you with 14 additional digital inputs and 8 digital outputs. The functions of the inputs and outputs are fixed. They are used to initiate the motion tasks that are stored in the servo amplifier and to evaluate signals from the integrated position control in the higher-level control.

The functions of the inputs and signal outputs correspond exactly to the functions that can be assigned to the digital-I/O on connector X3 of the SERVOSTAR 600.

The 24VDC supply for the expansion card is taken from the controller. All inputs and outputs are electrically isolated from the servo amplifier by optocoupler.

10.2.2.1   Front view

10.2.2.2   Technical data

Control inputs	24 V / 7 mA, PLC-compatible
Signal outputs	24 V / max. 500 mA, PLC-compatible
Supply inputs, to IEC 61131	24 V (18 ... 36 V) / 100 mA plus total current of the outputs (depends on the input wiring of the controls) **The 24 VDC voltage has to be supplied by an electrically isolated power supply, e.g. with insulating transformer.**
Fusing (external)	4 AT
Connectors	MiniCombicon, 12-pole, coded on PIN1 and 12 respectively
Cables	Data – up to 50m long : 22 x 0.5mm², unshielded, Supply – 2 x 1mm², check voltage drop
Waiting time between 2 motion tasks	depends on the response time of the control system
Addressing time (min.)	4 ms
Starting delay (max.)	2 ms
Response time of digital outputs	max. 10 ms

10.2.2.3   Light emitting diodes (LEDs)

Two LEDs are mounted next to the terminals on the expansion card. The green LED signals that the 24 V auxiliary supply is available for the expansion card. The red LED signals faults in the outputs from the expansion card (overload, short-circuit).

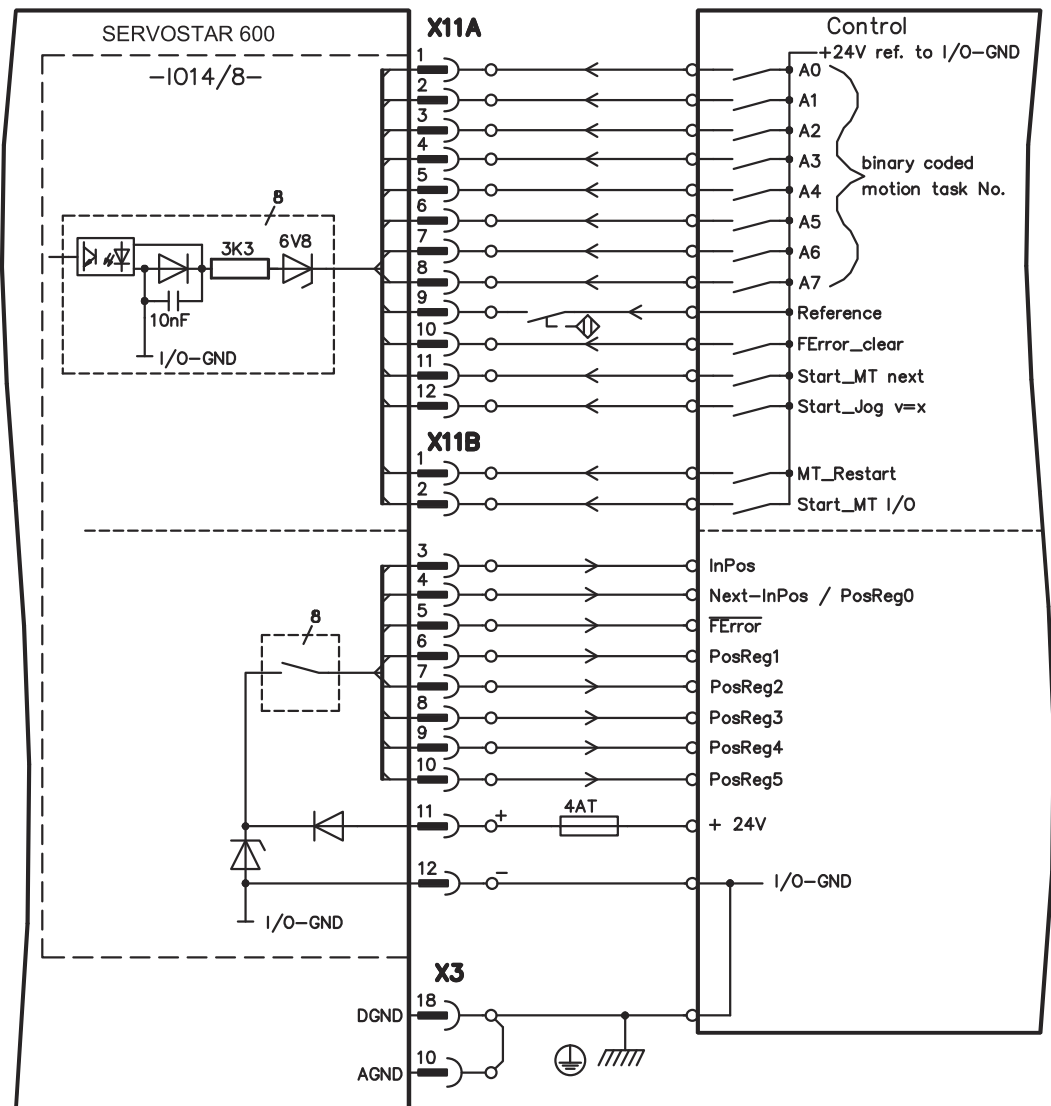### 10.2.2.4   Select motion task number (Sample)

Motion task no.	A7	A6	A5	A4	A3	A2	A1	A0
binary 1010 1110	1	0	1	0	1	1	1	0
decimal 174	128	-	32	-	8	4	2	-

10.2.2.5 **Connector assignments**

Connector X11A			
Pin	**Dir**	**Function**	**Description**
1	In	A0	Motion task no., LSB
2	In	A1	Motion task no., 2^1
3	In	A2	Motion task no., 2^2
4	In	A3	Motion task no., 2^3
5	In	A4	Motion task no., 2^4
6	In	A5	Motion task no., 2^5
7	In	A6	Motion task no., 2^6
8	In	A7	Motion task no., MSB
9	In	Reference	Polls the reference switch. If a digital input on the basic unit is used as a reference input, then the input on the I/O expansion card will **not** be evaluated.
10	In	FError_clear	Clear the warning of a following error (no3) or the response monitoring (n04).
11	In	Start_MT Next	The following task, that is defined in the motion task by "Start with I/O" is started. The target position of the present motion task must be reached before the following task can be started. The next motion block can also be started by an appropriately configured digital input on the basic unit.
12	In	Start_Jog v=x	Start of the setup mode "Jog Mode" with a defined speed. After selecting the function, you can enter the speed in the auxiliary variable "x". The sign of the auxiliary variable defines the direction. A rising edge starts the motion, a falling edge cancels the motion.

Connector X11B			
1	In	MT_Restart	Continues the motion task that was previously interrupted. The motion task can also be continued by an appropriately configured digital input on the basic unit.
2	In	Start_MT I/O	Start of the motion task that has the number that is presented, bit-coded, at the digital inputs (A0 to A7). The digital function with the same name, in the basic unit, starts the motion task with the address from the digital inputs on the basic unit.
3	Out	InPos	When the target position for a motion task has been reached (the InPosition window), this is signaled by the output of a HIGH-signal. **A cable break will not be detected**
4	Out	Next-InPos	The start of each motion task in an automatically executed sequence of motion tasks is signaled by an inversion of the output signal. The output produces a Low signal at the start of the first motion task of the motion task sequence. The form of the message can be varied by using ASCII commands.
		PosReg0	Can only be adjusted by ASCII commands.
5	Out	$\overline{\text{FError}}$	A LOW signal indicates that the position has gone outside the acceptable following error window.
6	Out	PosReg1	
7	Out	PosReg2	The preset function of the corresponding position register is indicated by a HIGH-signal.
8	Out	PosReg3	
9	Out	PosReg4	
10	Out	PosReg5	Can only be adjusted by ASCII commands.
11	Supply	24VDC	auxiliary supply voltage
12	Supply	I/O-GND	Digital-GND for the controls

10.2.2.6   Connection diagram

SERVOSTAR 600

−IO14/8−

X11A

1	A0 → +24V ref. to I/O−GND
2	A1
3	A2
4	A3 binary coded
5	A4 motion task No.
6	A5
7	A6
8	A7
9	Reference
10	FError_clear
11	Start_MT next
12	Start_Jog v=x

3K3   6V8

10nF

I/O−GND

Control

X11B

1	MT_Restart
2	Start_MT I/O
3	InPos
4	Next−InPos / PosReg0
5	FError
6	PosReg1
7	PosReg2
8	PosReg3
9	PosReg4
10	PosReg5
11	4AT + 24V
12	I/O−GND

I/O−GND

X3

DGND 18	
AGND 10	

NOTE   **AGND and DGND (connector X3) must be joined together !**