

Weld334m - User's manual
F356-IOE I/O Expansion Card


Code:33035600

10. F356-IOE I/O Expansion Card

This card houses two terminal type connectors - a 18-way connector (P24) and a 16-way connector (P23) - for the connection to the field. They support 18 off 14V inputs (20/30V - 10mA) and 16 off 24V - 0.3A inputs, four of which (dedicated to the welding solenoid valves) are protected against the simultaneous clamping of guns through a relay interlocking.

All outputs are protected against short circuit.

10.1 P23 . Description of output signals

16-way, 3.5 mm pitch linear connector for disconnectable terminals

Pin	Signal	Description	Type
1	WALLSTA	Stepper A pre-alarm	Electrodes wear function
2	WALLSTB	Stepper B pre-alarm	Electrodes wear function
3	ALLSTA	Stepper A alarm	Electrodes wear function
4	ALLSTB	Stepper B alarm	Electrodes wear function
5	RICHRV	Request for dressing	Electrodes wear function
6	RICHEL	Request for electrodes change	Electrodes wear function
7	ALARM1	Diagnostic alarm	Welding diagnostics
8	ALARM2	Hardware alarm	Machine fault
9	UNDCURR	Minimum current alarm	Welding diagnostics
10	OVRCURR	Maximum alarm current	Welding diagnostics
11	READY	Ready	Status
12	STATUS	Weld Yes/No	Status
13	EVSA	Channel A welding Solen. Valve	Solen. Valve control
14	EVASA	Channel A addit. Opening solen. Valve	Solen. Valve control
15	EVSBB	Channel B welding solen. Valve	Solen. Valve control
16	EVASB	Channel B addit. Opening solen. Valve	Solen. Valve control



P23 . Functional description of signals

Pin	Signal	Function
1	WALLSTA	Stepper A pre-alarm. Active at +24V. This output is activated as a function of the programming of the stepper concerned. It does not shut down the cycle. It is an indication that the counter is approaching the Stepper Stop threshold. Consult the programming manual for the activation of this function. The message is memorised in the alarm history.
2	WALLSTB	Same as WALLSTA, but for channel B.
3	ALLSTA	Stepper A alarm. Active at +24V. This output is activated as a function of the programming of the stepper concerned. Consult the programming manual for the activation/reset of this function. In the machine shutdown condition, the signal can be reset only by setting the counter of the relevant stepper to zero. This can be made via the RESASA (P24-7) input, or through the software reset in the Stepper menu.



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P23 . Functional description of output signals

Pin	Signal	Function
4	ALLSTB	Same as ALLSTA but for channel B.
5	RICHRAV	Request for Dressing. Active at +24V. This output is activated as a function of the programming of the stepper concerned. Consult the programming manual for the activation/reset of this function. In the machine shutdown condition, the signal can be reset only by setting the counter of the relevant stepper to zero. This can be made via the RAVOK (P24-9) input or through the software reset in the Stepper menu.
6	RICHEL	Request for electrodes change. Active at +24V. Led indicator illuminated. Same as for request for dressing but it devoted to the electrodes change. The validation is to be carried out with the CHGEOK (P24-10) input.
7	ALARM1	Signalling. Active at +24V. It does not interrupt the processing cycle. Diagnostic alarm (from E001 to E050). Generally, it is reset automatically but it can be fitted with a shutdown function in the Setup menu. See chapters on Alarms and Setup in the programming section.
8	ALARM2	Machine alarm. Active at +24V. It shuts down the cycle. It concerns faults, errors in programming and errors in wiring of both the control device and the machine. It can be reset by pressing the reset key on the small keyboard or from the RESAH dedicated input. It is active until the cause has not been removed.
9	UNDCURR	Undercurrent. Diagnostics. Active at +24V. It does not shut down the cycle. It is always activated together with the alarm 1, when the current value read by the sensor is lower than the programmed threshold. A number of causes may generate it, e.g.: No current or limit threshold, etc... It can be of use when intervention on faulty welds is needed.
10	OVRCURR	Overcurrent. Diagnostics. Active at +24V. It does not shut down the cycle. Same as Undercurrent but the current value is in excess.
11	READY	Control device ready. Active at +24V. This output is activated when the control device is ready to execute a welding cycle. When Alarm1 or Alarm2 is generated, this output is low.



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P23 . Functional description of output signals

Pin	Signal	Function
12	STATUS	Welding current enable. Active at 24V. It indicates the condition for Weld Yes; when this function is enabled, this output is high. (see also WeldYes)
13	EVSA	Piloting output of the channel A welding solenoid valve. Active at +24V. It is activated by the corresponding start and is protected through interlocking (consisting of 2 relays) which inhibits the simultaneous call of channel B. If the Start signal is dropped before the pressure cycles are completed, the call is not recognised and the electrodes go open again. When the pressure cycles are completed, the Start signal stays in the self-holding mode up to the end of the Holding cycles. (See cycle time diagrams in the programming manual).
14	EVASA	Active at +24V. Piloting output of the channel A additional opening solenoid valve. It is also known as pre-stroke or pre-approach solenoid valve. Activated by the CEVASA control, this output is protected by an interlocking, consisting of 2 relays, which inhibits the simultaneous call of channel B pre-stroke. See cycle time diagrams for the relevant timing.
15	EVSB	Piloting output of the channel B welding solenoid valve. Same as EVSA but for channel B.
16	EVASB	Piloting output of the channel B additional opening solenoid valve. Same as EVASA but for channel B.



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10.2 P24 . Description of input signals

18-way, 3.5mm pitch linear connector for disconnectable terminals

Pin	Signal	Description
1	STARTA	Start channel A
2	STARTB	Start channel B
3	CEVASA	Additional opening A control
4	CEVASB	Additional opening B control
5	SALDASI	Weld Yes
6	SOLOPR	Pressure only
7	RESASA	Stepper A alarm reset
8	RESASB	Stepper B alarm reset
9	RAVOK	Dressing done
10	CHGEOK	Electrodes change done
11	CODE0	Bit 0 program code
12	CODE1	Bit 1 program code
13	CODE2	Bit 2 program code
14	CODE3	Bit 3 program code
15	CODE4	Bit 4 program code
16	CODE5	Bit 5 program code
17	CODEP	Program code parity code
18	RESAH	Alarm 2 reset

P24 . Functional description of input signals

Pin	Signal	Function
1	STARTA	Channel A Start. Active at +24V. The control device activates the EVSA output (Gun A call) and executes the welding program demanded. If Start is interrupted before the pressure cycles have elapsed, the EVSA output is deactivated and electrodes open. When pressure cycles are got over, the Start signal stays in the self-holding mode up to the end of the frequency cycles.
2	STARTB	Same as STARTA but for channel B.
3	CEVASA	Control to solenoid valve for additional opening A. Active at +24V. Start of electrodes pre-approach; it is enabled and disabled with 0 to 24V ramp up, (pulse type). Signal reading time < 100mS. If not used, this input is to be connected directly to +24V.
4	CEVASB	Same as CEVASA but for channel B.



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P24 . Functional description of input signals

Pin	Signal	Function
5	SALDASI	Weld Yes. Active at +24V. It enables the welding current. Also the following functions are to be active: Weld Yes in the Setup stage* and the selector located on the front of IOB card. The control device activates the Status output (+24V) when the Weld Yes function is enabled. * See programming manual.
6	SOLOPR	Pressure only. OFF active. It is used for the gun setup. Usually at 24V, if it is open during the welding sequence, the following occurs: - The sequence is interrupted. Electrodes are closed and under pressure. - The control device waits for 24V signal on this input - The RICHSALD output is low If the Start signal is released, the call is interrupted and the gun opens. If SOLOPR goes high, the sequence is resumed, the control device makes the RICHSALD output go high and the process continues according to the status conditions of SALDASI (WELDYES) and CONSALD (CONS.TO WELD.) functions.
7	RESASA	Stepper A alarm counter reset. Active at +24V. It clears the counter of spots active on channel A, if no dressing or electrodes change is active.
8	RESASB	Same as RESASA but for channel B.
9	RAVOK	Validation of Dressing done. Active at +24V. This input is to be activated when the electrode dressing has been done (further to the Request for Dressing Signaling). It inhibits the alarm signaling, sets the welding spot counter to zero and increments, by one unit, the counter for dressing operations done in the electrodes wear program.
10	CHGEOK	Validation of electrodes change done. Active at +24V. This input is to be activated when the electrode dressing has been done (further to the Request for Electrodes Change Signaling) It inhibits the alarm signaling and sets to zero all counters of stepper concerned.
11	CODE0	Active at +24V. Inputs reserved for the selection (with binary code) of the welding program to initialise at Start. When the Start function is active, the control device reads the active code on these inputs and performs the relevant program (see list of codes on page 47). Facility to use up to 64 welding programs. IMPORTANT: To select program 64, all inputs of program codes are to be 0V logic.
12	CODE1	
13	CODE2	
14	CODE3	
15	CODE4	
16	CODE5	



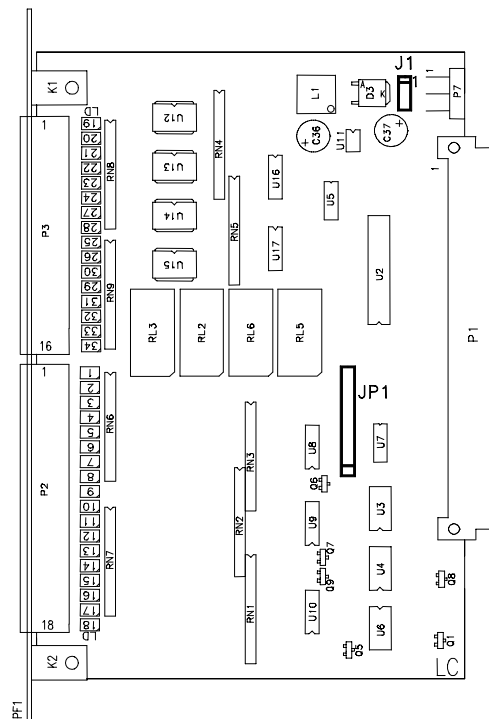
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P24 . Functional description of input signals

Pin	Signal	Function
17	CODEP	Parity Code. Active at +24V. It is used only on robot operated lines. It is used for the logic check of CODE0.....5 inputs and is dependent on the setting done in the Setup menu. (see list of codes on page 47). Warning! If not used, this input must be disabled (see Setup section of programming manual).
18	RESAH	Hardware alarm reset. Active at +24V. It inhibits the machine shutdown (Alarm 2) occurred during the processing.

Card layout: Standard setting of jumpers

J1: 2-3
JP1: Off



The list below shows the binary codes of the 64 welding programs

[illegible]



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