

PACSystems™ VersaMax

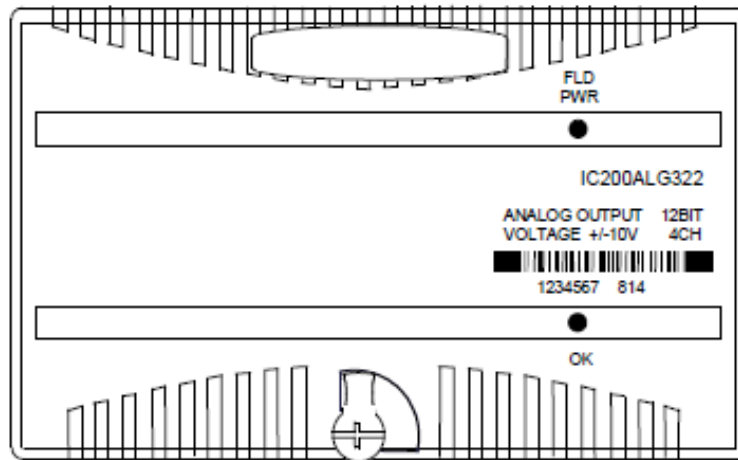
I/O MODULES, POWER SUPPLIES & CARRIERS

USER MANUAL

11.3 IC200ALG322 - Analog Output Module, 12 Bit Voltage -10 to +10 V DC 4 Channels

Analog output module IC200ALG322 provides four analog voltage outputs. The output range is -10 to +10 V DC.

Figure 11-7



An external 24V power supply is required for the outputs.

Intelligent processing for this module is performed by the CPU or Network Interface Unit. The module receives 4 words of analog output data.

11.3.1 LED Indicators

The green FLD PWR LED indicates the presence of user-side power for the analog field-side circuits.

The green OK LED is ON when backplane power is present to the module.

11.3.2 Diagnostics

The module reports a Loss of User Side Power fault for field-side circuits.

11.3.3 Configuration Parameters

The module is easily set up with a jumper for the outputs to either hold their last states or default to 0V if backplane power or communications are interrupted or the PLC is stopped. External user power must remain uninterrupted.

Outputs remain in their default or last state until the module receives different output data from the backplane, or until field power is removed.

11.3.4 Module Specifications

Module Characteristics									
Channels		4 single-ended, one group							
Module ID		FFFF9040							
Isolation:		250 V AC continuous; 1500 V AC for 1 minute Not applicable None							
User input to logic (optical) and to frame ground									
Group to group									
Channel to channel									
LED indicators		FLD PWR LED indicates field power is present OK LED indicates backplane power is present							
Backplane current consumption		5V output: 50mA maximum							
Thermal derating		None							
Configuration parameters		Output default							
Diagnostics		Loss of User Side Power							
Compatibility	PME programming software	CPU 001	CPU 002	CPU 005	CPU E05	DBI 001	EBI 001	GBI 001	PBI 001
HW, FW vers. FW release	All	AA 1.0	AA 1.5	AA 2.1	AA 2.1	AA 1.1	AA 1.0	AA 1.0	AA 1.0
External Power Supply									
Recommended range		+18 to +30 V DC (including ripple)							
Current consumption at recommended range		160mA max. (including load current)							
12V operation range		9.6 to 15 V DC, 12 V DC nominal (including ripple)							
Current consumption at 12V range		210mA max. (including load current)							
Output Characteristics									
Output voltage		±10.24 V DC							
Load characteristics:									
Resistive		5000 Ω minimum							
Capacitive		1.0μF maximum							
Accuracy at 25 °C [†]		± 0.3% typical of full scale, ± 0.5% max of full scale							
Accuracy at 0 to 60 °C		±1% maximum of full scale							
Resolution		5mV = 16 counts							
Update rate per module		0.3ms maximum							
Channel-to-channel crosstalk rejection		70dB minimum							
Output default		Hold Last State (default), 0 (configurable)							

[†] In the presence of severe RF interference, (IEC 1000-4-3, 10V/m), accuracy may be degraded to ±1%.

11.3.5 Field Wiring

Terminal	Connection	Terminal	Connection
A1	No connection	B1	No connection
A2	V OUT 1	B2	Shield Termination Point
A3	RET 1	B3	No connection
A4	No connection	B4	Shield Termination Point
A5	V OUT 2	B5	No connection
A6	RET 2	B6	Shield Termination Point
A7	No connection	B7	No connection
A8	V OUT 3	B8	Shield Termination Point
A9	RET 3	B9	No connection
A10	No connection	B10	Shield Termination Point
A11	V OUT 4	B11	No connection
A12	RET 4	B12	Shield Termination Point
A13	No connection	B13	JMP 1A
A14	No connection	B14	JMP 1B
A15	No connection	B15	No connection
A16	No connection	B16	No connection
A17	Field Return	B17	No connection
A18	Field Power	B18	No connection

Wiring Connections for Carriers with Two Rows of Terminals IC200CHS002, 005 IC200CHS012, 015	
Wiring Connections for Carriers with Three Rows of Terminals IC200CHS001, 022, 025 IC200CHS011	

11.3.6 Jumper Selection

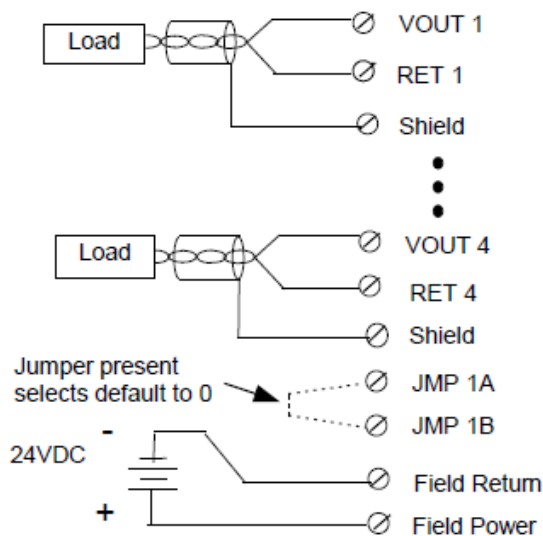
A jumper on the carrier can be used to select the output default mode.

If no jumper is installed on pins B13 and B14 outputs hold their last state (the last commanded value from the backplane) if backplane power or communications are interrupted or the PLC is stopped. With a jumper installed, if such conditions occur outputs default to 0 V. This should only be changed with field power and backplane power removed.

Jumper	Selects
None	Hold Last State
JMP 1	Default to 0

11.3.7 Wiring Example

Figure 11-8



11.3.8 Cable Shield Connections

Shielded twisted pair cable is recommended for all the analog channel connections.

If the module is installed on a Terminal-style I/O Carrier (IC200CHS001, 002, or 005) or a Compact Terminal-style I/O Carrier (IC200CHS022, 025), the cable shield can be connected directly to the carrier per the Field Wiring Table. An Auxiliary I/O Terminal Strip (IC200TBM001, 002, or 005) can also be added to the Terminal-style I/O Carriers to aid in grounding shields. Be sure to ground the Auxiliary I/O Terminal Strip as well if you plan to use it for this purpose.

If the module is installed on a Connector-style I/O Carrier (IC200CHS003), the cable shield can be connected directly to an Interposing Terminal (IC200CHS011, 012, 015). Be sure to

ground the Interposing Terminal. It is recommended to use a shielded interposing cable as well between the Interposing Terminal and the Connector Base. A custom shielded cable can be made using the Connector kit (IC200ACC304). In addition, a custom shield braid can be wrapped around standard Interposing Cables (IC200CBL105, 110, 120, 230). If this approach is used be sure to ground the braid.

All cable shield connections should be connected to earth ground and be kept as short as practical. The power cable does not need to be shielded.

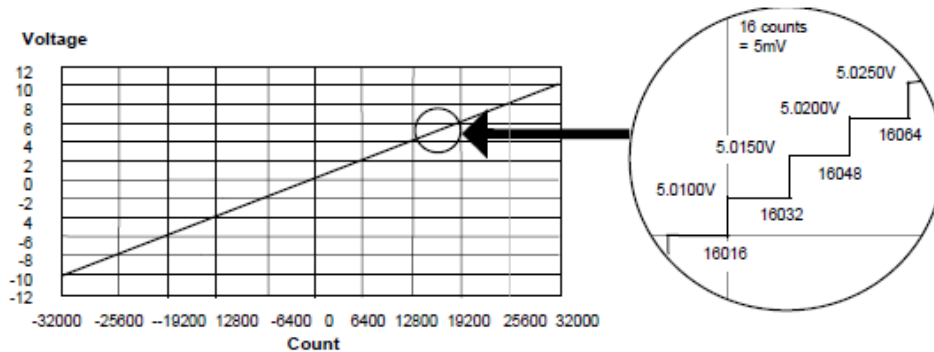
11.3.9 Scaling

The following graphs illustrate the relationship between the output voltage measured at the field terminals and the data that is output by the module.

Figure 11-9

Count vs Output Voltage

Voltage can be calculated using the following equation:



$$V_{out} = ((\text{analog counts} \times 20.5) / 65535)$$

The count value must be a multiple of 16. If the module receives a count value that is not a multiple of 16, it rounds the value down to the closest multiple of 16. For example:

Count	Voltage
16032	5.0150V
16040	5.0150V
16048	5.0200V