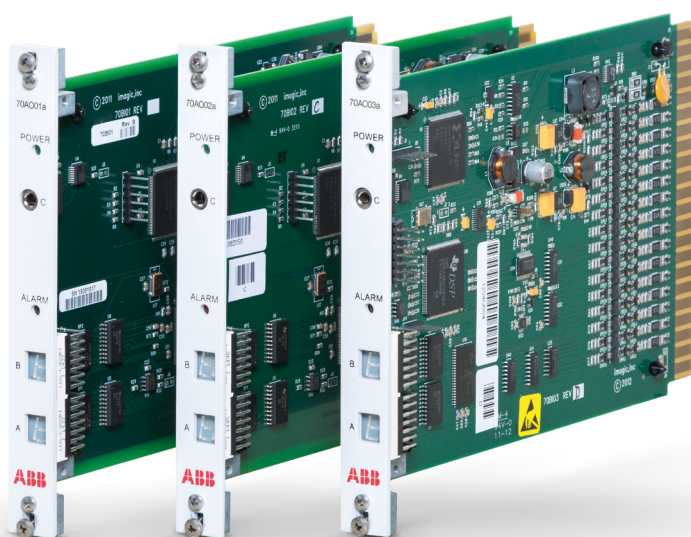


Procontrol P13 I/O Modules

Output Modules for Analog Values

70AO01a, 70AO02a & 70AO03a



The Procontrol P13 system features a comprehensive range of I/O modules for analog, digital and pulse based input and output signals. The new family of analog output modules comprises modules for provision of voltage or current output signals in the typical ranges for process control as well as a high-current output for direct control of valve positioners. All existing analog output modules of the classic Procontrol P13 portfolio can be seamlessly replaced by the new module family.

The core of the P13 analog output modules is the custom local bus UART and digital signal processing engine. The core interfaces four independent digital to analog front end circuits. Each of these analog outputs utilizes precision signal conditioning and advanced sigma delta based technology or DAC sections with a ladder network to produce current or voltage loop outputs with 16 bit resolution and monotonicity.

Using the front panel configuration port and the P13 Configurator software, the modules can be monitored and configured for different applications.

A major step forward compared to the classic P13 output modules is the possibility to use the full local bus address range with every module and to configure an individual, non-consecutive address for each channel separately. In addition, each channel can be simulated/forced directly from the P13 Configurator for easy commissioning and loop checks after maintenance.

Feature Highlights

- Comprehensive family of analog output modules for all power generation applications
- Flexible configuration possibilities for one-to-one replacements, retrofits and extensions
- Complete parametrization and configuration in software with the P13 Configurator tool; no need to set code switches and jumpers manually
- Support of non-consecutive addressing of output channels
- Support for disabling of individual input channels and less waste of valuable local bus addresses
- All modules can use the complete local bus address (normal and special) in arbitrary combinations on a single module
- State-of-the-art technology (DSP/FPGA-based) for low maintenance and outmost durability
- New high-current output module for direct connection of various valve positioning units
- Support for individual forcing of input values and/or channel disturbance on card level with the P13 Configurator tool
- Configuration cables are available with serial (DB9) or USB plug

Technical Data

	70AO01a	70AO02a	70AO03a
Description	Analog output module, voltage	Analog output module, current	Analog output module, current
Predecessor Module(s)	70AA01	70AA02	–
No. of Channels	4	4	4
I/O Interface			
Output Types	+/-10Vdc	0-20mA, 4-20mA	+/-20, 40, 50, 100mA
Connection Types	2-wire		
Resolution	16bit		
Conversion Type	Individual Sigma Delta		2 matched DAC sections utilizing a R/2R ladder network
Conversion Time	Settles to 0.1% of full scale step in 2.5ms (typical) to 3ms (max.)		
Overall Channel Accuracy	0.025% typical (0.1% max.)		
Converter Voltage Accuracy	0.0015% typical		
Local Bus Interface			
Channel Addressing (on local bus)	4 addresses, normal/special range, non-consecutive	4 addresses, normal/special range, non-consecutive	4 addresses, normal/special range, non-consecutive
Channel Usage	Individual enabling/disabling per channel		
Input Range	+/- 100%	0 – 100%	+/- 100%
Configuration and Maintenance			
Configuration Interface	Front panel RS232 (custom phone jack)		
Configuration Memory	EEPROM (onboard)		
Simulation Functions	Individual forcing of channels		
Fault Detection, Annunciation and Behavior			
Fault Conditions	Module voltage out of range, DA converter failure conditions, communications errors		
Fault Annunciation	–		
Visual	Master module ALARM LED, Individual channel ALARM LEDs		
I/O	SME2 Digital alarm output (+24Vdc) Four individual digital alarm outputs (+24Vdc) (one per channel)		
Local Bus	–		
Fault Behavior	Output set to “0” or “Last known good value” (configurable per channel)		
Electrical Characteristics			
Power Supply	via P13 rack		
Min Operating Voltage	+19.5Vdc		
Max Operating Voltage	+30Vdc		
Power Consumption	2.1W typical 5.3W max.		2.1W typical 14W max.
Voltage Compliance	–	1000Ω, 20V @ 20mA	100Ω, +/-10V @ 100mA
Maximum Source Voltage or Current	+/-11Vdc	22mA	120mA
Ambient Conditions and General Properties			
Operating Temperature	0 – 60°C		
Relative Humidity	0 – 95%		
Certifications	CE		
Dimensions	P13 Standard module (3.5E, 1T)		