Analog I/O Setup and Diagnostics

Introduction

AUTOMATIONDIRECT offers a variety of analog I/O that is supported by KEP***Direct*** OPC Server in the ***Direct***LOGIC, Productivity3000 and Terminator I/O product lines. Most of these modules have relatively the same setup and diagnostics within each product family but there are some exceptions. This section documents the common setups and diagnostics for analog I/O modules through KEP***Direct*** OPC Server.

*Direct*LOGIC and Productivity3000 Analog I/O

For information on specific analog module configuration and jumper settings, please consult the appropriate user manual.

Terminator Analog I/O

All setup for Terminator I/O is either automatically enabled (for analog input modules) or is accomplished through software enable bits (for analog output modules) available in the KEP***Direct*** OPC Server software. Only the thermocouple (T1F-14THM) and RTD module (T1F-16RTD) include hardware jumpers on the module for channel selection and setup. For more information on specific module analog setup, see the in-the-box data sheet included with each Terminator I/O module, or see the Terminator I/O Installation Manual (T1K-INST-M).

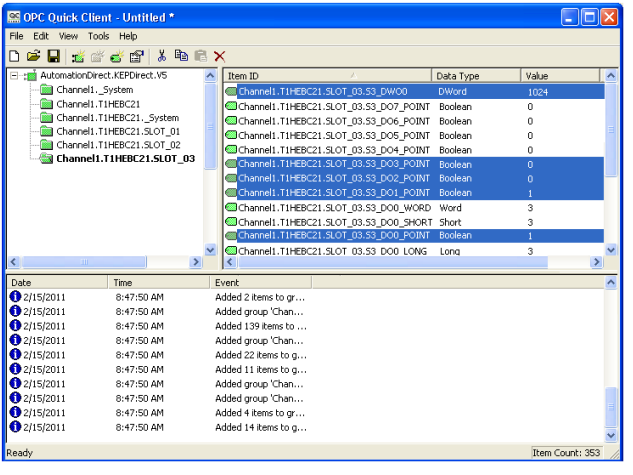
The in-the-box data sheets and Terminator I/O Installation Manual (T1K-INST-M) describe the usage of the Module Control Byte for Output Enable and range selections. This Module Control Byte is presented as a separate byte and boolean output points that can be selected by the connected OPC Client to enable the output, and to select specific analog range options. The following table shows the correlation of the Module Control Byte and the KEP***Direct*** byte for Output Enable and range selections.

Module Control Byte	Bit 24	Bit 25	Bit 26	Bit 27	Bit 28-31
KEPDirect Byte	DO0_Point	DO1_Point	DO2_Point	DO3_Point	DO4_Point - DO7_Point
Description	Outputs Enable	Unipolar / Bipolar	5V / 10V Range	0-20 mA / 4-20 mA Range	Reserved for future use
	0 = All outputs OFF 1 = All outputs Enabled	0 = Unipolar selected 1 = Bipolar selected	0 = 5V range 1 = 10V range	0 = 0-20 mA range 1 = 4-20 mA range	

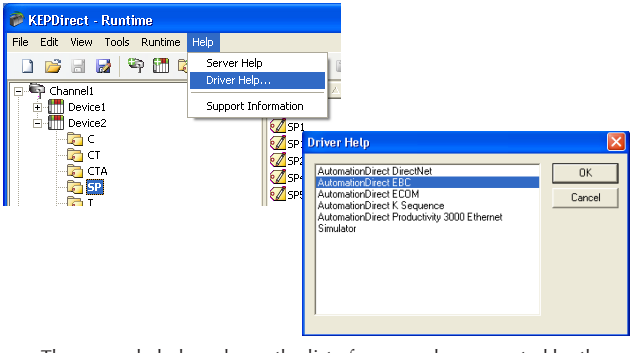
The following example shows how the KEPDirect OPC Quick Client can be used to setup the Terminator I/O analog output voltage module located in slot 3.

NOTE: *As seen in the following diagram, the EBC driver will generate both bit level and word level tags for each analog channel of a module. Many of these tags are duplicates and may not be needed for your particular application.*

The highlighted selections are configured for Output Enabled (DO0_Point=1), BiPolar (DO1_Point=1), and 5V (DO2_Point=0). The analog output data value is 1024 decimal and results in a voltage output of -2.5V.



Diagnostic bits for the analog I/O are supported differently on each module but will present themselves as error bits/values or messages to the KEP***Direct*** OPC Server software using a common convention. A complete definition of the error information, and it's format convention, is available in the Help file. This can be accessed through the **Help** menu from within the server.



The example below shows the list of error codes supported by the **AUTOMATIONDIRECT EBC** server. The most common errors for analog I/O are 139, 142, 155, and 200-216 depending on the features supported in the specific analog module.