

Advantech ADAM 4000

Advantech ADAM 4000 Series communication protocol

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Supported device types and versions

The protocol allows reading and writing data into the **Advantech ADAM series 4000** devices.

Types of usable I/O tags according to ADAM type are listed in the following table:

Table 1

Type and range of measurements	ADAM device type	Read/Write
1 x analog input AI	4011, 4011D, 4012, 4013, 4014D, 4016	R
8 x analog input AI	4017, 4018, 4018M, 4019	R
1 x analog output AO	4021	R/W
4 x analog output AO	4024	R/W
4 x digital output DOUT	4060	R/W
8 x digital output DOUT	4068, 4069	R/W
12 x digital output DOUT	4056S, 4056SO	R/W
8 x digital input DI	4052, 4068	R
16 x digital input DI	4051, 4053	R

Communication line configuration

Required line parameters:

- Communication line category: [Serial](#), [SerialOverUDP](#) [Device Redundant](#).
- Transfer parameters (Baud rate, number of stop bits, speed, number of bits, and parity bits) according to the setting of ADAM modules.
- Other parameters see the [Communication line - configuration dialog box](#).

Communication station configuration

- Communication protocol: **Advantech ADAM Series 4000**
- Station address – Module Address - ADAM module address (according to the setting of modules in configuration), a number in the range of 0 to 255 specified either as a decimal number or a hexadecimal number with a hash at the beginning (e.g. #1A).
- Time parameters – [polling parameters](#) – for optimal and quick communication - Delay 0 seconds (all stations).

Station protocol parameters

[Configuration dialog box](#) - tab „Parameters“.
They influence some optional parameters of the protocol.

Table 2

Full name	Meaning	Unit	Default value
Retry Count	A retry count of the request in case of a communication failure.	-	2
Retry Timeout	The delay between request retry in case of a communication failure.	ms	300 milliseconds
Wait First Timeout	The delay after sending the request before reading the response.	ms	200 milliseconds

Wait Timeout	The delay between response readings till its completing.	ms	200 milliseconds
Max Wait Retry	Retry count of response reading till its completing.	-	8
Checksum	Using the checksum. Set according to the setting of module ADAM in the configuration.	YES/NO	YES

For further information on protocol parameters, see the topic [Communication line - configuration dialog box](#).

I/O tag configuration

I/O tag address requires two parameters:

- Channel - number of ADAM module channel, a number in the range of 0 - 15 (for ADAM module with one channel, use Channel = 0), specified either as a decimal number or a hexadecimal number with a hash at the beginning (e.g. #A).

The following table represents the configuration of channels for individual types of ADAM modules:

Table 3

Module	Tag type	Channel (channels) number
4011, 4011D, 4012, 4013, 4014D, 4016	1 x AI	0
4017, 4018, 4018M, 4019	8 x AI	0 up to 7
4021	1 x AO	0
4024	4 x AO	0 up to 3
4060	4 x DOUT	0 up to 3
4068, 4069	8 x DOUT	0 up to 7
4056S, 4056SO	12 x DOUT	0 up to 11
4052, 4068	8 x DI	0 up to 7
4051, 4053	16 x DI	0 up to 15

Reading and writing of analog inputs and outputs are supported for the "Engineering units" data format.

For the other configuration parameters of I/O tags see the topic [I/O tag - configuration dialog box](#).

Literature

- Advantech ADAM 4000 Data Acquisition Modules User's Manual, Edition 10.7, May 2007.

Changes and modifications

- February 2008 – Option Checksum.
- August 2009 - Support of the value DOUT.

Document revisions

- Ver. 1.2 – February 8th, 2000 – Update for 4.07 and 4.10 versions.
- Ver. 1.3 - March 13th, 2008 - Update of protocol parameters.
- Ver. 1.4 - April 27th, 2009 - Document update.
- Ver. 1.5 - August 17th, 2009 - Document update.



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