

# 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.



### Related pages:

[Communication protocols](#)