ADAM 6000 Driver Configuration Manual

Table of Contents

1. ADAM 6000 Configuration

1.1 ADAM 6000

The ADAM-4000 Distributed I/O Systems from Advantech are supported by the ADAM4K **Device Type** driver in WebAccess. There are other manufacturers, which use "ADAM 6000" protocol compatible devices that are also supported by this driver.

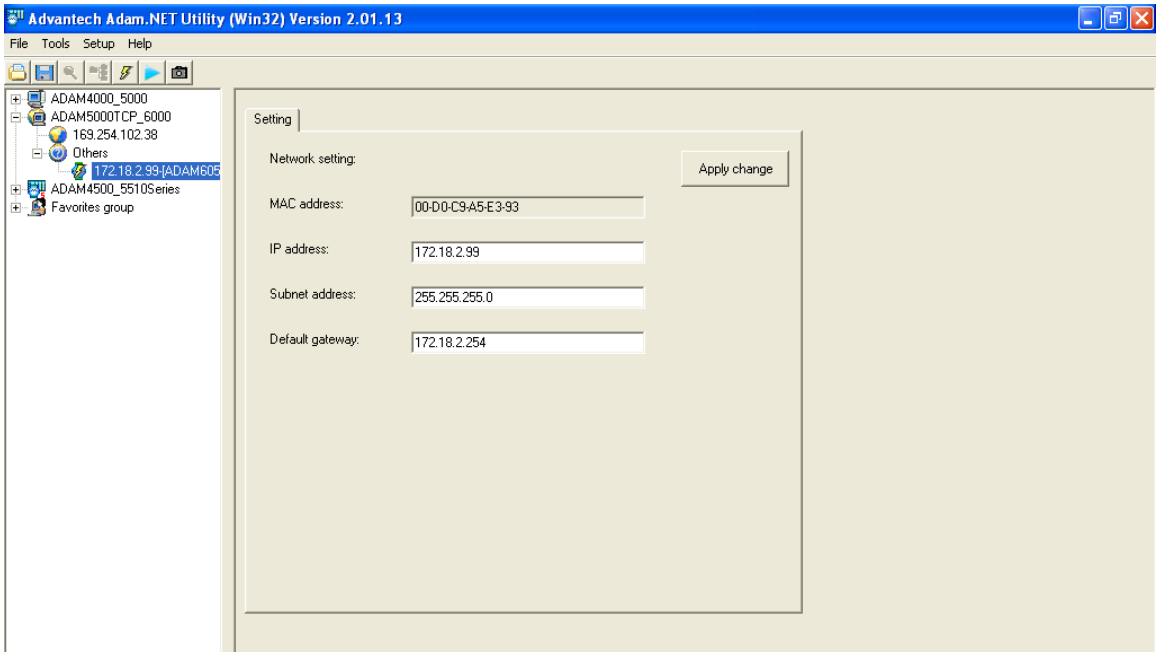
The ADAM6K Device driver reads the IO Modules of the ADAM-6000 directly.

Adam 6000 modules are connected to the computer through Ethernet. You can configure them with the Adam/Apax .NET Utility.

1.2 Module Settings

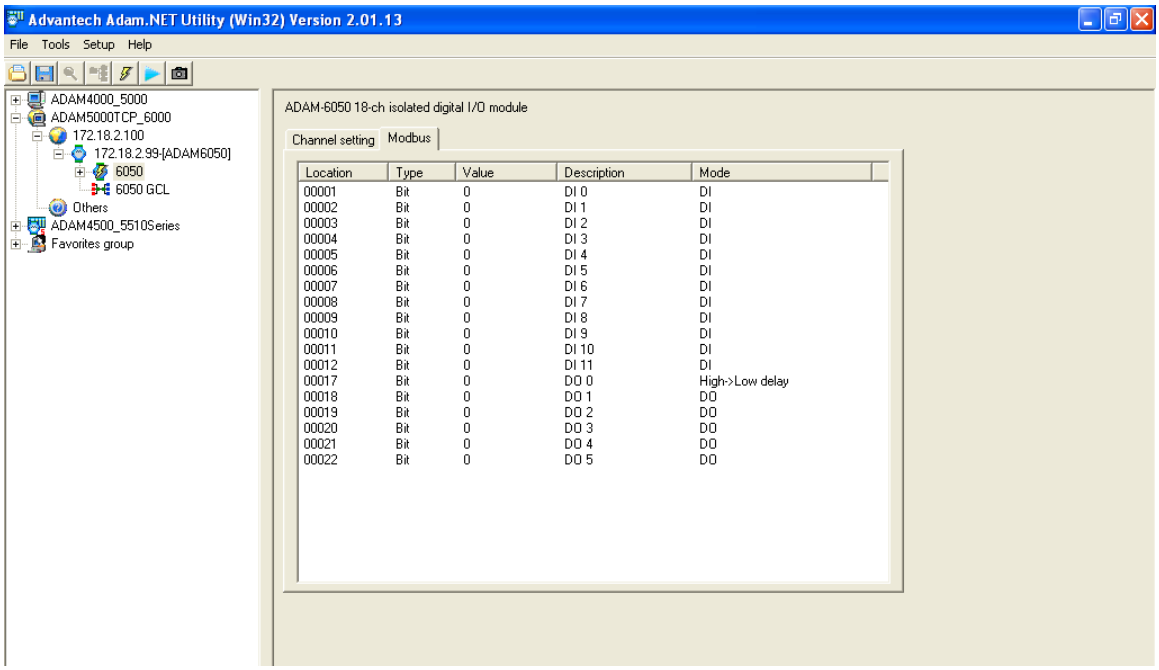
Start your module while linking the init connector to the ground (to enable the initial mode) and connect it to the computer.

On the computer start the Adam/Apax .NET Utility



The module will automatically appear in the left tree under the serial port it is connected to.

Please note the IP of the module (modify it first if it is not in the same network as your computer) and open the Modbus tab of the channels area to see the "Location" of the first parameter.



2. WebAccess Configuration

2.1 Port

The ADAM6K protocol uses a TCPIP port. Unlike Serial Ports multiple connections (and therefore multiple WebAccess TCPIP ports) can be opened on the same physical IP port.

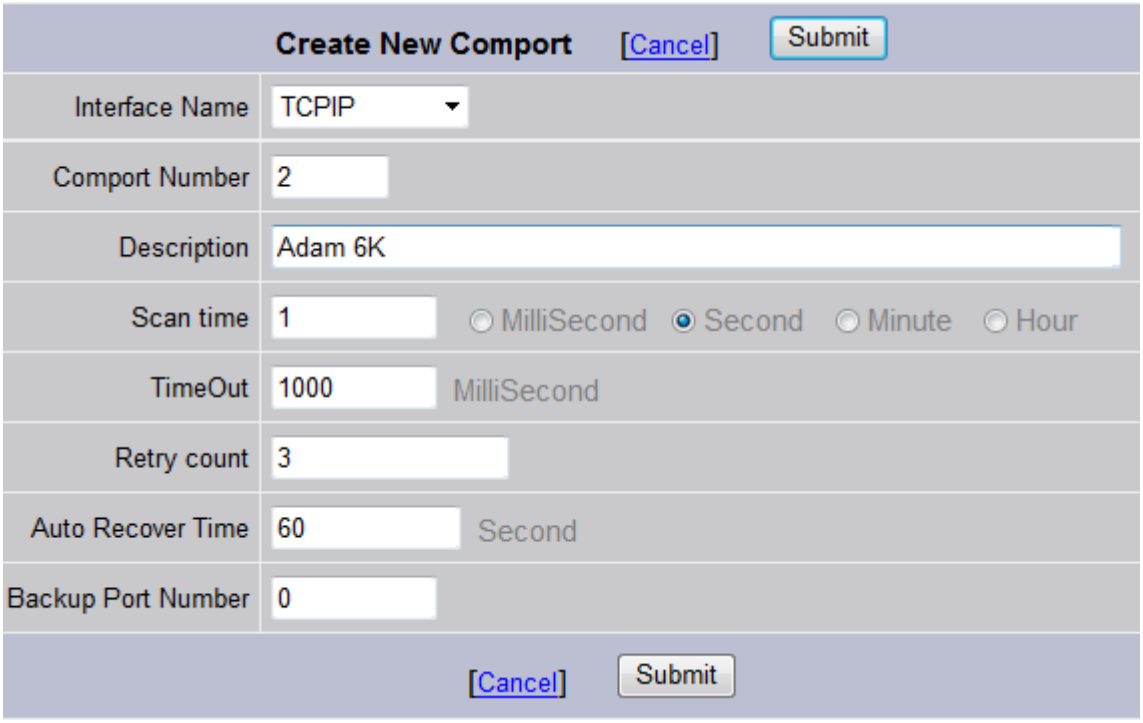
2.1.1 Check the port number

For TCPIP ports the port number does not impact the driver. It is used to recognize the port inside WebAccess. You can choose any number bellow 64 but you should make sure that the port number does not correspond to a serial port on your computer (As the port number for serial connections must match the comport number in your computer).

2.1.2 WebAccess Comport Page

Open your WebAccess Configuration and select the SCADA node you want to add the device to. Then select "Add a new Comport"

All the settings in this page must match the settings in all the modules attached to the port. So all the modules attached to the same comport must have the same settings.



2.1.3 Comport Number

Choose any available comport number

2.1.4 Description

This is an optional field used for user reference.

2.1.5 Scan Time

This is the time in milliseconds to scan the Devices. This must match the ability of the device to respond. **A typical scan rate is 1 per second**.

If the Device cannot respond as fast as the SCAN Time entered, WebAccess will scan at a slower rate.

2.1.6 Timeout

With a 1 second scan rate, **a typical Time Out = 200 Milliseconds**.

Timeout is the time waited before re-sending a communications packet that did not have a reply.

Timeout specifies how long the software waits for a response to a data request, specifically to wait for a reply from one packet. A recommended value is one-fifth the scan rate, longer if the communication device is slow.

Combined with Retry count, Timeout also determines time to consider a device or port as BAD. Timeout is the time to wait since last communication packet sent without a reply. Time is in milliseconds. Slow or poor quality communications require longer timeout. The faster the communications, the shorter the timeout required. Shorter timeouts result in faster reconnects after communication failures.

2.1.7 Retry Count

A typical Retry count = 3.

Number of times to retry communications if no reply is received from a device. Combined with Timeout, also determines time to consider a device or port as BAD.

This is the number of times after the first attempt has failed that communication should be attempted before indicating a failure. (If Retry count is 3, a total of 4 failed requests have occurred before tags are marked bad). Specifically, this is how many times to send a single packet after the field device fails to respond to the first packet. After the retry count is exceeded, all the tags in the packet are marked with asterisks and the next packet of requests is sent. A reasonable value is 3 to 5 times. After this number of tries, the tags in this packet are marked as "fail to respond" (i.e. asterisks) and are disabled. In reality, increasing the number of retries hides failures on the part of the field device to respond to a request. Essentially, increasing the retries gives the field device more chances to reply.

2.1.8 Auto Recover Time

A typical Auto Recover Time = 60 Seconds.

Auto Recover Time is the time to wait before attempting to re-establish communications with a BAD device or port.

If communications to the PLC is unusually slow due to hardware, communications or network issues, you might consider increasing this value. If communications to the PLC or RTU fails frequently, you may want to decrease this number in order to have WebAccess try to re-establish communications sooner.

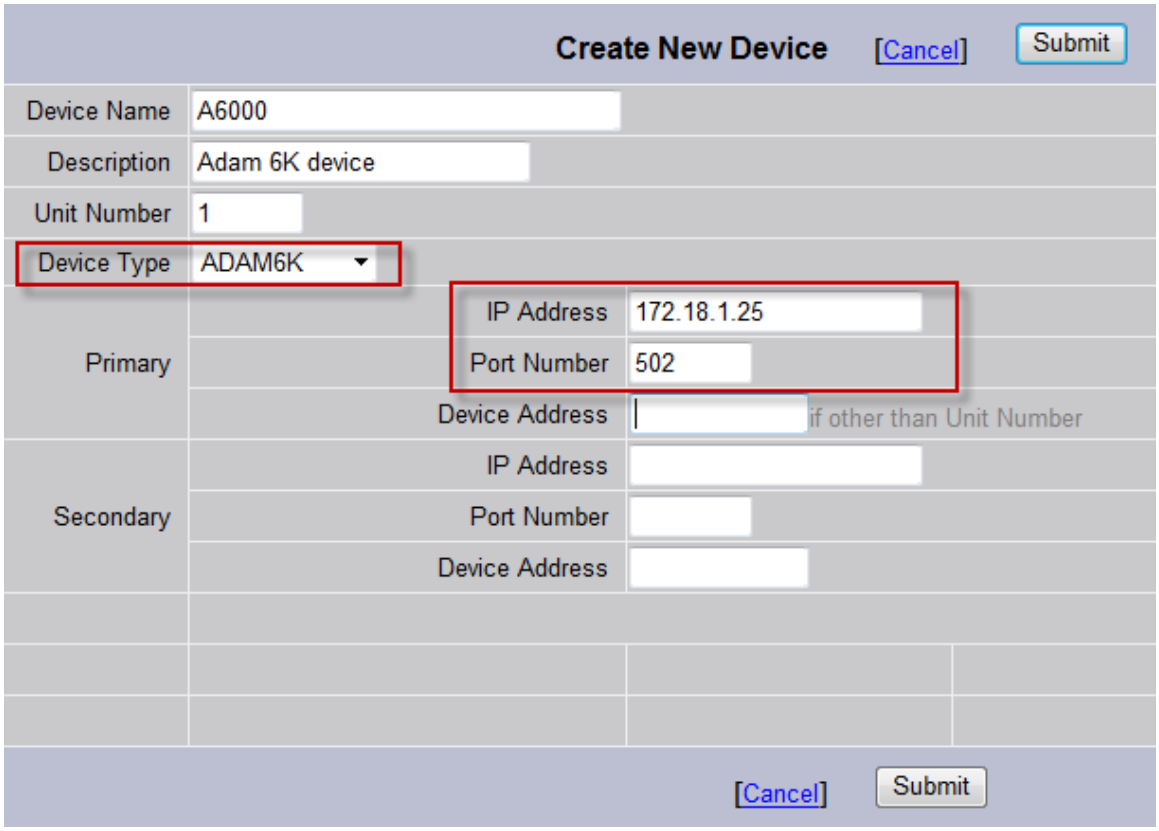
If communications to the PLC, RTU or device Fails (i.e. exceeds Timeout) WebAccess will wait the Auto Recover Time before trying to re-establish communications.

2.1.9 Backup Port

The Backup Port has not been tested for Adam 6K

2.2 Device

Then Go to the port page and select "Add a new device". Select the ADAM6K device Type.



2.2.1 Unit Number

The Unit number is not important for TCPIP communication as it is replaced by the IP Address. Just select any available unit number.

2.2.2 Port Number

For Adam 6000 modules the port number is 502.

2.3 Block

To allow users to add Adam 4K modules easily in WebAccess we created a block for each module. The block contains all the tags of the module and will allow an easy access and display.

2.3.1 Block Type

The block type allows you to select which group of parameters you want to import (Counter, PID, I/O …).

For Adam 6K select the module type. It will add all the channels and parameters available in the device.

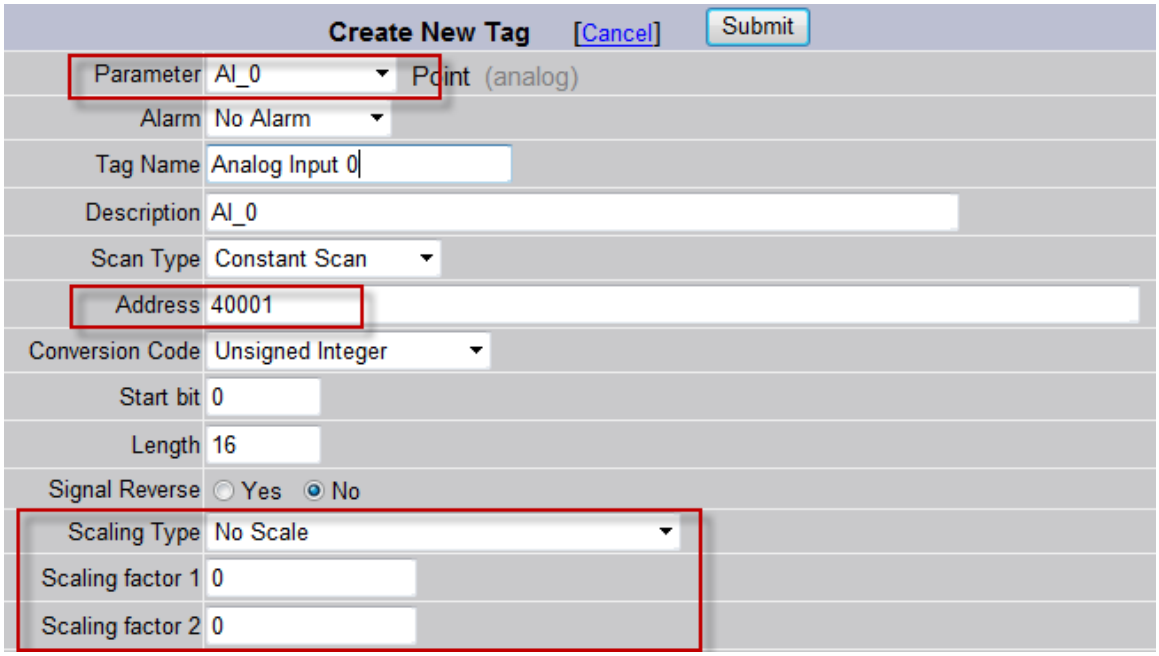
2.3.2 Offset

The offset should correspond to the address of the first parameter of the block. All the other parameters addresses will then be calculated based on the first one.

In the ADAM6K driver the offset corresponds to the number to add to the first parameter for it to correspond to the first parameter address of the modules (usually they match so just set 0)

2.4 Tag

If you do not use all the channels in the device and you want to reduce your tag count you can add the parameters one by one using "Add tag".



2.4.1 Parameter

The parameter gives the type of tag you want to import. Try to select a parameter as close to the tag type as possible because it will fill the other option with the default parameters.

In Adam 6K almost all the available tags have been put to the parameter list so by choosing the correct one all the other fields are set automatically.

2.4.2 Address

For Adam 6K just copy the modbus address given for that parameter inside the Adam .NET utility.

2.4.3 Scaling Type

If the data sent by the module is not in a human readable unit you can use the scaling to change the unit and display a more convenient unit in the node. In most cases a linear scaling type will be sufficient.

2.5 Supported Block List

There is a block for each ADAM module. The block contain all the possible parameters in the module. Here are a few of our most used blocks.

2.5.1 A6015RTD

7-Channel Isolated RTD Input Module

Parameter	Description	Address

Parameter	Description	Address
AI	Analog Input	30001
AI_0	Analog Input	30001
AI_1	Analog Input	30002
AI_2	Analog Input	30003
AI_3	Analog Input	30004
AI_4	Analog Input	30005
AI_5	Analog Input	30006
AI_6	Analog Input	30007

2.5.2 A6017

8-Channel Isolated Analog Input Module

Parameter	Description	Address
AI	Analog Input	30001
AI_0	Analog Input	30001
AI_1	Analog Input	30002
AI_2	Analog Input	30003
AI_3	Analog Input	30004
AI_4	Analog Input	30005
AI_5	Analog Input	30006
AI_6	Analog Input	30007
AI_7	Analog Input	30008
DO_00	Digital Output	00017
DO_01	Digital Output	00018

2.5.3 A6018RTD

8-Channel Isolated Thermocouple Input Module

Parameter	Description	Address

Parameter	Description	Address
AI	Analog Input	30001
AI_0	Analog Input	30001
AI_1	Analog Input	30002
AI_2	Analog Input	30003
AI_3	Analog Input	30004
AI_4	Analog Input	30005
AI_5	Analog Input	30006
AI_6	Analog Input	30007
AI_7	Analog Input	30008
DO_00	Digital Output	00017
DO_01	Digital Output	00018
DO_02	Digital Output	00019
DO_03	Digital Output	00020
DO_04	Digital Output	00021
DO_05	Digital Output	00022
DO_06	Digital Output	00023
DO_07	Digital Output	00024

2.5.4 A6022

2-Channel PID Module

Parameter	Description	Address
P1AI_0	PID Parameter 0	40001
P1AI_1	PID Parameter 1	40002
P1AI_2	PID Parameter 2	40003
P1AO_0	PID Output	40011
P2AI_0	PID Parameter 0	40004
P2AI_1	PID Parameter 1	40005

Parameter	Description	Address
P2AI_2	PID Parameter 2	40006
P2AO_0	PID Output	40012
P1DI_0	Digital Output	00001
P1DO_0	Digital Output	00017
P2DI_0	Digital Output	00002
P2DO_0	Digital Output	00018

2.5.5 A6024

6-Channel Analog Input and 2-Channel Analog Output Module

Parameter	Description	Address
AI	Analog Input	30001
AI_0	Analog Input	30001
AI_1	Analog Input	30002
AI_2	Analog Input	30003
AI_3	Analog Input	30004
AI_4	Analog Input	30005
AI_5	Analog Input	30006
AO_0	Analog Output	40001
AO_1	Analog Output	40002
DI_0	Digital Input	10001
DI_1	Digital Input	10002
DO_00	Digital Output	00017
DO_01	Digital Output	00018

2.5.6 A6050

18-Channel Isolated Digital Input/Output Module

Parameter	Description	Address

Parameter	Description	Address
DI_0	Digital Input	10001
DI_1	Digital Input	10002
DI_2	Digital Input	10003
DI_3	Digital Input	10004
DI_4	Digital Input	10005
DI_5	Digital Input	10006
DI_6	Digital Input	10007
DI_7	Digital Input	10008
DI_8	Digital Input	10009
DI_9	Digital Input	10010
DI_10	Digital Input	10011
DI_11	Digital Input	10012
DO_00	Digital Output	00017
DO_01	Digital Output	00018
DO_02	Digital Output	00019
DO_03	Digital Output	00020
DO_04	Digital Output	00021
DO_05	Digital Output	00022

2.5.7 A6051

14-Channel Isolated Digital Input/Output Module with 2-Channel Counter

Parameter	Description	Address
COUNT_00	Counter	40025
COUNT_01	Counter	40027
DI_0	Digital Input	10001
DI_1	Digital Input	10002
DI_2	Digital Input	10003

Parameter	Description	Address
DI_3	Digital Input	10004
DI_4	Digital Input	10005
DI_5	Digital Input	10006
DI_6	Digital Input	10007
DI_7	Digital Input	10008
DI_8	Digital Input	10009
DI_9	Digital Input	10010
DI_10	Digital Input	10011
DI_11	Digital Input	10012
DO_00	Digital Output	00017
DO_01	Digital Output	00018

2.5.8 A6052

16-Channel Source Type Isolated Digital Input/Output Module

Parameter	Description	Address
DI_0	Digital Input	10001
DI_1	Digital Input	10002
DI_2	Digital Input	10003
DI_3	Digital Input	10004
DI_4	Digital Input	10005
DI_5	Digital Input	10006
DI_6	Digital Input	10007
DI_7	Digital Input	10008
DO_00	Digital Output	00017
DO_01	Digital Output	00018
DO_02	Digital Output	00019
DO_03	Digital Output	00020

Parameter	Description	Address
DO_04	Digital Output	00021
DO_05	Digital Output	00022
DO_06	Digital Output	00023
DO_07	Digital Output	00024

2.5.9 A6060

6-Channel Digital Input and 6-Channel Relay Module

Parameter	Description	Address
DI_0	Digital Input	10001
DI_1	Digital Input	10002
DI_2	Digital Input	10003
DI_3	Digital Input	10004
DI_4	Digital Input	10005
DI_5	Digital Input	10006
DO_00	Digital Output	00017
DO_01	Digital Output	00018
DO_02	Digital Output	00019
DO_03	Digital Output	00020
DO_04	Digital Output	00021
DO_05	Digital Output	00022

2.5.10 A6066

6-Channel Digital Input and 6-Channel Power Relay Module

Parameter	Description	Address
DI_0	Digital Input	10001
DI_1	Digital Input	10002
DI_2	Digital Input	10003

Parameter	Description	Address
DI_3	Digital Input	10004
DI_4	Digital Input	10005
DI_5	Digital Input	10006
DO_00	Digital Output	00017
DO_01	Digital Output	00018
DO_02	Digital Output	00019
DO_03	Digital Output	00020
DO_04	Digital Output	00021
DO_05	Digital Output	00022

2.6 Main Parameter List

Parameter	Description	Address
AI	Analog Input	30001
AI_0	Analog Input	30001
AI_1	Analog Input	30002
AI_2	Analog Input	30003
AI_3	Analog Input	30004
AI_4	Analog Input	30005
AI_5	Analog Input	30006
AI_6	Analog Input	30007
AI_7	Analog Input	30008
AO	Analog Output	40001
AO_0	Analog Output	40001
AO_1	Analog Output	40002

Parameter	Description	Address
COUNT_00	Counter	40025
COUNT_01	Counter	40027
P1AI_0	PID Parameter 0	40001
P1AI_1	PID Parameter 1	40002
P1AI_2	PID Parameter 2	40003
P1AO_0	PID Output	40011
P2AI_0	PID Parameter 0	40004
P2AI_1	PID Parameter 1	40005
P2AI_2	PID Parameter 2	40006
P2AO_0	PID Output	40012
DI	Digital Input	10001
DI_0	Digital Input	10001
DI_1	Digital Input	10002
DI_2	Digital Input	10003
DI_3	Digital Input	10004
DI_4	Digital Input	10005
DI_5	Digital Input	10006
DI_6	Digital Input	10007
DI_7	Digital Input	10008
DI_8	Digital Input	10009
DI_9	Digital Input	10010
DI_10	Digital Input	10011
DI_11	Digital Input	10012
DO	Digital Output	00017
DO_00	Digital Output	00017
DO_01	Digital Output	00018
DO_02	Digital Output	00019

Parameter	Description	Address
DO_03	Digital Output	00020
DO_04	Digital Output	00021
DO_05	Digital Output	00022
DO_06	Digital Output	00023
DO_07	Digital Output	00024
P1DI_0	Digital Output	00001
P1DO_0	Digital Output	00017
P2DI_0	Digital Output	00002
P2DO_0	Digital Output	00018