

How to change Data Types for I/O Scanning in Device DDT's

Purpose: To provide information to Unity users on how they can change data types for the NOC Device DDT in "I/O Scanning" in an M340 PAC system. Customers creating a new "I/O Scanner table" for a Unity M340 project that they are creating may want data types other than Byte or String array variables that are available by default.

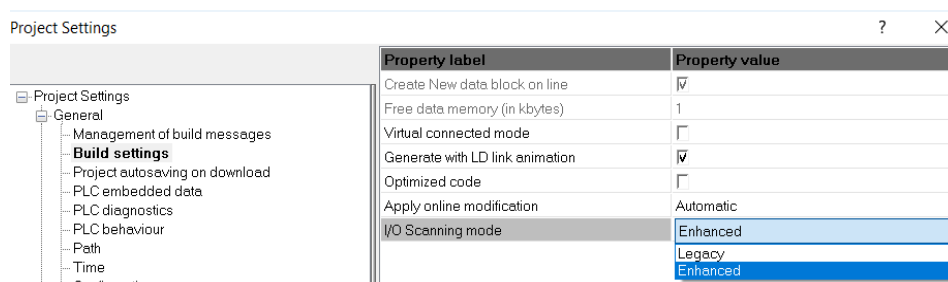
Omissions: This document is not providing details on how to add a BMXNOC0401 Ethernet module, navigate within the Device DDT or add a Modbus Device. Its purpose is to inform users on how to edit the data type of the Modbus Device in the Device DDT that they have already created.

How To Create "I/O Scanner" entries other than Byte/ String: There are two methods that can be used to change the array variable data type that is used in the Device DDT for "I/O Scanning".

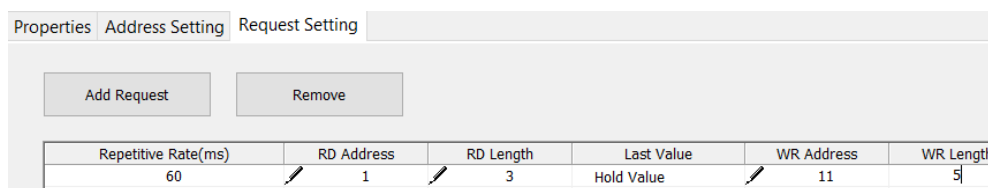
Automatic Data Type of INT: This method will automatically assign data type INT to the variables created for the Device DDT entries.

NOTE: Make this project setting change prior to entering the Device DDT entries. Any entries made prior to changing this setting will be lost.

1. Go to Tools => Project Settings => General => Build Settings. Select I/O Scanning Mode from Legacy to Enhanced.



2. Open the DTM Browser and ADD a Modbus Device.
3. Open the newly entered Modbus Device and Add a Request and enter the I/O Scanner Input and Output register references.



4. View the Unlocated variable that was created for the I/O Scanner entry.

Modbus_Device	T_Modbus_Device	
Freshness	BOOL	Global Freshness
Freshness_1	BOOL	Freshness of Object
Inputs	T_Modbus_Device_IN	Input Variables
Free	ARRAY[0..2] OF INT	Unused Variable
Free[0]	INT	Start index for 1st Connection
Free[1]	INT	
Free[2]	INT	
Outputs	T_Modbus_Device_OUT	Output Variables
Free	ARRAY[0..4] OF INT	Unused Variable
Free[0]	INT	Start index for 1st Connection
Free[1]	INT	
Free[2]	INT	
Free[3]	INT	
Free[4]	INT	

Manual Data Type selection: The I/O Scanning Mode setting is left as the default setting of Legacy.

This method allows the user to expose additional data types by manually grouping Offset/ Device rows. By default, no Offset/ Device rows are grouped. This has the data type entries as 8 bit, the only selection is the default Byte/ String for the Input and tab Output selections

- 1. Open the DTM Browser and ADD a Modbus Device.
- 2. Open the newly entered Modbus Device and Add a Request and enter the I/O Scanner Input and Output register references. **Read length of 3 and write length of 5.**

Properties Address Setting Request Setting

Add RequestRemove

Repetitive Rate(ms)	RD Address	RD Length	Last Value	WR Address	WR Length
60	101	3	Hold Value	111	5

- 3. Open the Modbus Device Request that was just created.

Channel Properties

- Switch
- TCP/IP

Services

- Address Server
- SNMP
- RSTP
- QoS
- Service Port

Security

EtherNet/IP Local Slaves

Device List

- [001] Modbus_Device <MDE
 - Request 001: Items

InputInput (bit)OutputOutput (bit)

Offset/Device	Offset/Connection	Item Name
<input type="checkbox"/> 0	0	0
<input type="checkbox"/> 1	1	1
<input type="checkbox"/> 2	2	2
<input type="checkbox"/> 3	3	3
<input type="checkbox"/> 4	4	4
<input type="checkbox"/> 5	5	5

Select a region and click on the "Define Item(s)" button to create

- 4. The Input tab is selected, the default is having independent rows of 8 bit data types>, this can be seen by selecting Define Item(s) then New Items Data Type.

InputInput (bit)OutputOutput (bit)

Offset/Device	Offset/Connection	Item Name
<input type="checkbox"/> 0	0	0
<input type="checkbox"/> 1	1	1
<input type="checkbox"/> 2	2	2
<input type="checkbox"/> 3	3	3

Item Name Definition

New Item(s) Data Type:

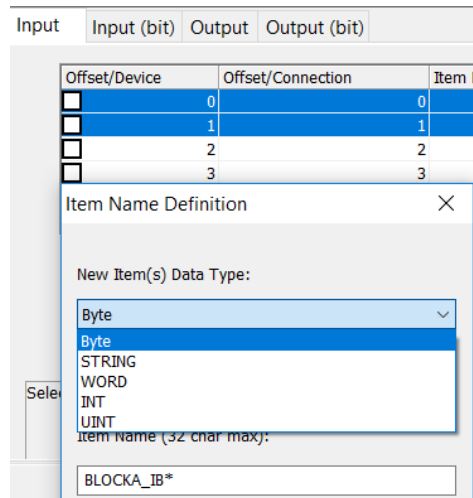
Byte

Byte

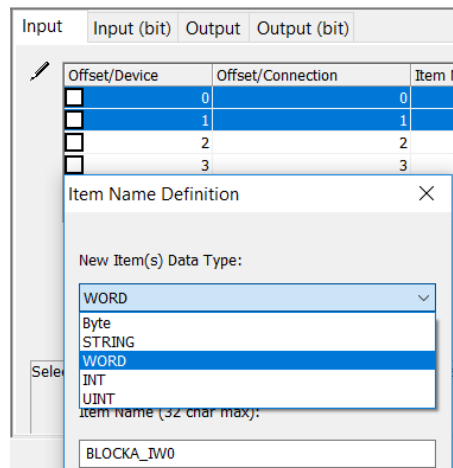
STRING

SelectOne or Several Single Item(s)

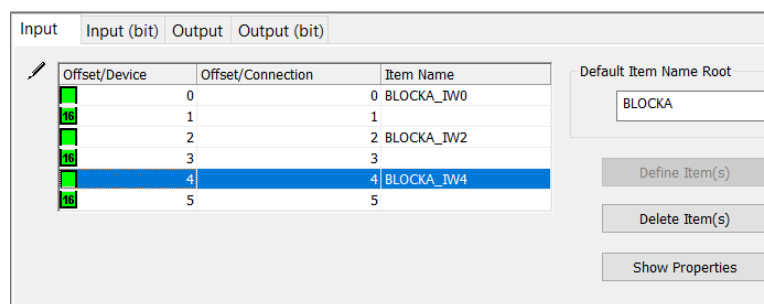
5. Here I have selected two rows to be grouped to have 16 bit data types available.














6. I have selected data type word for this presentation.



7. Each grouping needs to be manually selected and the data type defined (all WORD for this example) to have the all 3 WORDS for the Inputs (6 bytes) available in the structure.



Name	Ad...	Type	Comment
 BMENOC0301_2		T_BMENOC0301_2	
 BMEP58_ECPU_EXT		T_BMEP58_ECPU_EXT	
 Modbus_Device		T_Modbus_Device	
 Freshness		BOOL	Global Freshness
 Freshness_1		BOOL	Freshness of Object
 Inputs		T_Modbus_Device_IN	Input Variables
 BLOCKA_IW0		WORD	
 BLOCKA_IW2		WORD	
 BLOCKA_IW4		WORD	
 Free0		ARRAY[0..1] OF BYTE	Unused Variable
 Outputs		T_Modbus_Device_OUT	Output Variables