BridgeWay
Application Note

Version 1.0

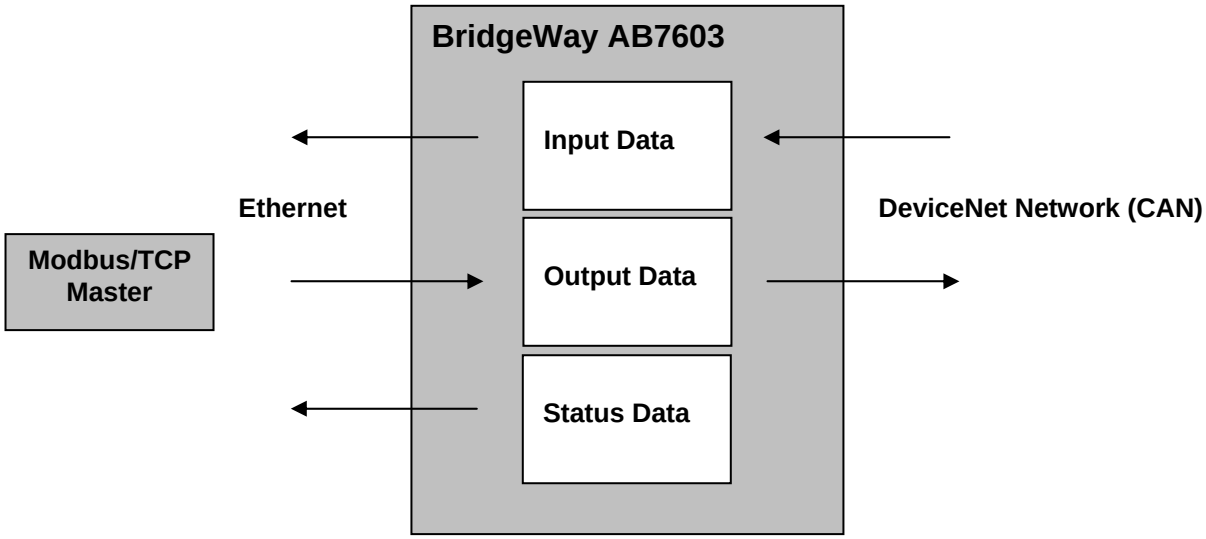
AB7603 Modbus/TCP Register Mapping Overview

Important! Please ensure that you have the latest version of BWConfig software that is compatible with your module version. You can download BWConfig for the AB7603 here:

http://www.pyramidsolutions.com/Expertise_DataCom_Support_DEVM_ETHA.htm

The format of AB7603 input and output data and addressing of Modbus registers for Modbus/TCP access to the input, output and status data is explained beginning on page 7-1.

AB7603 Functional Diagram



The diagram above provides a high level view of the following:

1) The Input, Output and Status data within the AB7603 is accessible by the Modbus/TCP Master via Modbus Commands (e.g. Read Input Register or Read / Write Holding Register)
2) The AB7603 takes inbound DeviceNet message data and places it in the Input Data Table (based on the Byte Swapping selection)
3) The AB7603 takes output data written to the Output Data Table by the Modbus/TCP Master and sends it onto the DeviceNet Network (in Run Mode).
4) The AB7603 provides module status information made available through the Status Data Table and readable by the Modbus/TCP Master. This data is used for diagnostics and can be used by the Modbus/TCP Master logic

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AB7603 Output Data

The AB7603 Output Data Table starts at register offset 0x400, or 1024 (zero's offset). In Modbus terminology, this is effectively Holding Register 41025 (because register numbers are 1's offset). Each Holding Register is a 16 bit value.

Modbus Holding Registers corresponding to AB7603 (Modbus/TCP Slave) Output Data Table are as follows:

AB7603 Output Data Table	Modbus Holding Register
Run/Idle Header	41025
Command Header	41027
Start of DeviceNet Output Data	41029

The Output Data Table of the AB7603 is written by the Modbus/TCP Master via Modbus/TCP messages. This includes setting of the Run/Idle & Command Headers to put the AB7603 in Run Mode (or Idle) as well as the DeviceNet output data that will be sent by the AB7603 to the DeviceNet network.

Important! Setting the AB7603 to Run or Idle Mode

If the “Swap I/O Bytes” option is ***selected*** through BWConfig, the Run/Idle and Command Headers will be in the format described in the manual on page 4-5. i.e. if you set both holding registers 41025 and 41027 to 0x0001, the AB7645 will be placed in Run Mode (BridgeWay Status LED goes solid green) and DeviceNet Output data will be sent by the module.

If the “Swap I/O Bytes” option is ***not selected***, the headers will be in Little Endian format, i.e. the bytes are swapped from Modbus. To set bit 0 (the Run/Idle bit) of these registers, you must set the register value to 0x0100. If you set both holding registers 41025 and 41027 to 0x0100, the module will be placed into Run Mode.

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AB7603 Input Data

AB7603 input data starts at register offset 0. This would be input register 30001 or holding register 40001 in Modbus terminology.

The Modbus registers corresponding to the AB7603 (Modbus/TCP Slave) input data are as follows:

AB7603 Input Data Area	Modbus Input Register	Modbus Holding Register
Status Header	30001	40001
Start of DeviceNet Input Data	30003	40003

Important! All DeviceNet data is Little Endian format or least significant byte first. Modbus/TCP assumes data is Big Endian or most significant byte first.

An example of the way data is stored based on its "endianess" is as follows:

Value in Decimal:	**25421**	Value in Hex:	**634D**
Big Endian Byte Storage Order:	**634D**	Little Endian Byte Storage Order:	**4D63**

By selecting the "Swap Bytes" option in BWConfig and downloading this to the module, the AB7603 will then swap the Endian byte orientation of ***every*** 16 bit word for input ***and*** output data.

AB7603 Web Pages

Pyramid Solutions provides several web pages available via the built-in AB7603 web server to help you set up, troubleshoot and monitor your AB7603.

Point your browser to the configured AB7603 IP Address to view the web pages. Use BWConfig to view/set the AB7603 IP Address if IP Address configuration hasn't been completed.

AB7603 firmware, web pages, documentation and EDS files are updated periodically along with the BWConfig application software. Check our web site AB7603 support page at http://www.pyramidsolutions.com/Expertise_DataCom_Support_DEVM_ETHA.htm or Contact Pyramid Solutions at 248-549-1200 ext. 231 for updates.