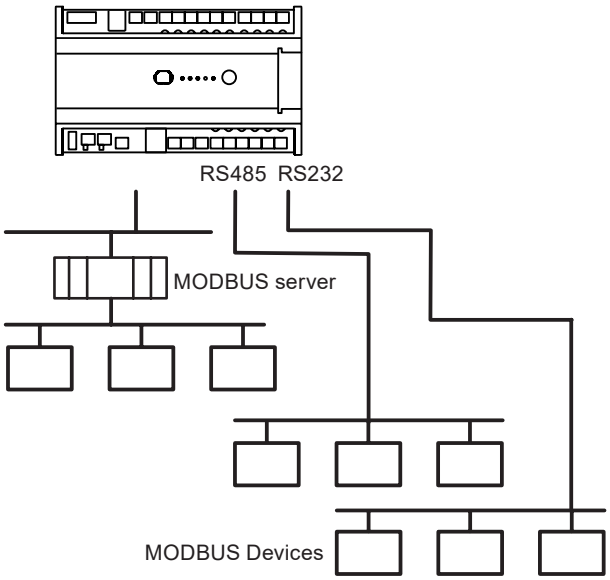
Data Sheet

IQ4/XNC MODBUS Driver
TCL Application



IQ4/XNC MODBUS Driver
TCL Application

Description

IQ®4/XNC MODBUS Driver is a Trend Custom Language (TCL) application that enables values from devices on MODBUS to be read into the strategy of an IQ4/XNC, and values from the strategy to be written to values in the MODBUS devices.

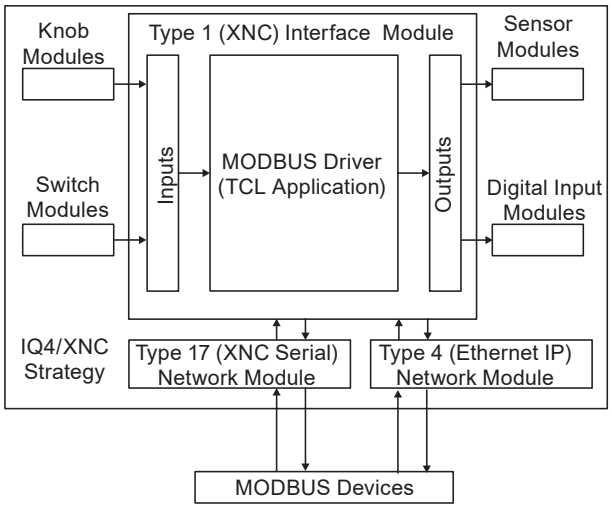
It is available with two different communications options (TCP/IP, and serial) and in two different sizes (35 and 185 data requests). The variants are functionally the same, the only difference is the number of data requests, number of inputs and outputs available and the communications method.

Features

- Read from MODBUS devices.
- Write to MODBUS devices.
- TCP/IP or serial communication options.
- Available in two different sizes (35 data requests and 185 data requests) to allow for different controller, and strategy requirements.

FUNCTIONALITY

IQ4/XNC MODBUS Driver is a Trend Custom Language (TCL) that enables values from devices on MODBUS to be read into the strategy of an IQ4/XNC. It also enables values from the strategy to be written to values in the MODBUS devices. Data read from the device is stored in the Type 1 (XNC) Interface module's outputs which can be used in the strategy. Data to be written to the device is taken from the IQ4/XNC's Type 1 (XNC) Interface module's inputs which can be modified by the strategy.



The number of data requests determines the number of different requests for information that can be set up. Each data request could request information for more several sequential values. Each data request is configured in one of the TCL interface module's stores therefore the number of data request is the number of stores available for this purpose.

The data request specifies the device containing the values, the value, and the type of value.

VARIANTS

There are four variants of the driver with different numbers of data requests, inputs, total outputs, and different communications options. See the table below.

Communications Option	Data Requests	Inputs	Total Outputs	BrIQs
TCP/IP	35	20	85	10005
TCP/IP	185	150	400	12980
Serial	35	20	85	9565
Serial	185	150	400	12540

Each driver variant uses a different number of BrIQs, this allows a different number of devices, and has a different number of outputs.

VARIANTS (continued)

When selecting which driver variant to use you should consider the number of BrIQs available in the IQ4/XNC that is to be used, as well as the method of connecting to the MODBUS, number of data request that are required, the number of outputs required to the strategy and number of inputs required from the strategy. For details of the number of BrIQs available in the IQ4/XNC see the IQ422/.../XNC/... Interface Data Sheet (TA201346).

CONFIGURATION

The driver is configured using SET. The configuration involves specifying the values to be read and the TCL interface module's outputs, using codes in the TCL interface module's stores. The TCL interface module's must also be linked the to required place in the controller's strategy, and the strategy configured as required.

The communication settings used in MODBUS are specified in the TCL interface module's stores. This determines the necessary information for communications. In case of TCP/IP variants, this also determines the server that is being used to connect to MODBUS. If required, other servers can be specified enabling the driver to connect to more than one server.

Note: The driver can only connect to one server at a time, and a delay of 100s is required when switching between servers.

CONNECTION TO MODBUS

IQ4/XNC can connect to the MODBUS using either serial (RS232 or RS485) or TCP/IP.

When using a TCP/IP connection a MODBUS server is required. Communication between the server and the IQ4/XNC is over Ethernet using the IQ4/XNC's Ethernet connector. If required the driver can connect to more than one server (but only communicate with one at a time).

Note: Some MODBUS devices have their own MODBUS server. This means that to obtain data from different devices the driver must change connections this takes at least 100 seconds.

COMPATIBILITY

MODBUS

The driver can connect to the MODBUS using either a serial or TCP/IP connection. It supports the following MODBUS functions

Function	Description
01	Multiple-bit read (Read Coil).
02	Multiple-bit read (Read Discrete Input)
03	Multiple-word read (Read Holding Registers)
04	Multiple-word read (Read Input Registers)
05	Bit write (Write Single Coil).
06	Word write (Write Single Holding Register).
16	Multiple-word write (Write Multiple Holding Registers)

The driver supports the following data formats for reading data:

Format	Description
00	Direct read. 2 byte format.
04	IEEE value. 4 byte format.
05	Direct read with bit 16 containing sign (value range -32767 to +32768). 2 byte format.
06	IEEE configuration. Used for EM-MPO and SIRIO meters. 4 byte format.
07	BCD
09	Allows a bit mask to be applied to a 16 bit word. E.g. a bit mask retrieving bits 5 and 9 would be 0000001000100000.
10	Allows a 32 bit value to be read. Some electricity meters store values as 32 bit. Only direct read is available for this format. Any conversion should be performed by the strategy in the IQ4/XNC. 4 byte format

The driver supports the following formats for writing data:

Format	Description
00	Direct write
04	IEEE value

Trend

The IQ4/XNC MODBUS Driver is compatible with all IQ4s that have the XNC functionality (IQ4/XNC), and requires SET v7.0 or greater to enable the configuration of the IQ4/XNC.

INSTALLATION

The IQ4/XNC MODBUS Drivers are installed with SET v7.0 or greater.

Once the driver has been installed on your PC it is necessary to configure the driver. You will need: SET v7.0 or greater, the driver, an IQ4/XNC, and converter or server to interface between the IQ4/XNC and the MODBUS.

The basic installation procedure is described below:

- Install the MODBUS devices according to the manufacturer's instructions.
- Install the IQ4/XNC as described in the supplied Installation Instructions.
- Connect the IQ4/XNC to the MODBUS devices.
- Configure the driver.
- Configure the IQ4/XNC's strategy.
- Test the operation of the driver to ensure that the required values are read from and written to the MODBUS devices, and that the controller's strategy works correctly.

ORDER CODES

The drivers are supplied with SET v7.0.

In order to use the driver an IQ4/XNC is required to run the TCL. This must be purchased separately, and you should ensure that it has a large enough BrIQ count to fit the required driver, and the strategy. See IQ422/.../XNC/... Interface Data Sheet (TA201346) for details of the number of BrIQs available in each IQ4/ XNC variant.

If connecting to the MODBUS using a TCP/IP connection a MODBUS server is required. This must be purchased separately.

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