

Quantum Protocol

This protocol supports communication with Quantum RTUs implemented with Prolog STD bus hardware. This protocol is as used by Equilon, now Shell Pipeline company.

Connector Configuration Parameters

RTS ON DelayX10ms

Enter a number from 0 to 255 (0 to 2.55 seconds) to delay sending a message after turning on Request To Send (RTS). Commonly used with modem communication to allow additional time for the modems to synchronize.

RTS OFF DelayX10ms

Enter a number from 0 to 255 (0 to 2.55 seconds) to keep RTS on after a message has been sent. Commonly used to keep a radio on for a short period of time at the end of a message.

Handshake Option

If Full Handshake is selected the Omnii-Comm will assert RTS and wait for CTS before sending a message. RTS will be turned off after the message has been sent. If Constant Carrier is selected the Omnii-Comm will assert RTS when it sends its first message and leave it asserted. It will wait for CTS before sending. If Ignore CTS is selected, RTS will be asserted before sending a message and removed at the end of the message. The CTS input will be ignored. If No Handshake is selected, RTS will be asserted when the Omnii-Comm sends its first message. RTS will not be turned off at the end of the message. The CTS input will be ignored. If Activity Monitor is selected, the Omnii-Comm will check the DCD input before sending a message. If DCD is ON, the Omnii-Comm will delay sending the message.

Retry Count

The number of times a message will be retried before an error is reported

Option Bit Parameters

Use Radio Key

If checked, Bit 0 in a register specified by the "Radio Key Address" on the Header configuration screen will be turned ON before a message is sent and turned OFF after the message has been completed.

Check Status Byte

Quantum messages have a status byte inserted that reports the status of the RTU. If this box is checked and the status byte is non zero, the data returned will be marked bad.

Don't Byte Reverse Data

If this box is checked returned data will not be byte reversed. If it is unchecked, the data will be byte reversed.

Don't Invert Status Bits

If this box is checked the status bits will not be inverted. If it is unchecked, the status bits will be inverted.

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Protocol Extension Table Parameters

The Protocol extension table is used to define additional parameters required for Quantum operation. Click on the box to enable the Protocol Extension Table. Click on the button to bring up the specific options as detailed below.

SP Conv Tbl Dta Type

The first two entries are used to define the Data Type and Starting Offset for the "Setpoint Conversion" table used with Quantum. The Setpoint Conversion table is used to optionally translate a single byte point number (0-255) to a two byte Quantum address.

The table can be of any length as specified by the entry at the top of the table. The table can be read from anywhere and placed into any Data Type. You can also read the table from RAM or EEPROM. In this case, the first two entries of the extension table are used to specify the memory address of the start of the table. If the first entry is less than 22, then a Data Type and Offset is assumed. If the first entry is 22 or higher, a memory address is assumed.

The table has the following format:

	FDB	\$A5A5	Setpoint table ID, must be first word
	FCB	3	number of entries in table
L1	FCB	0	Point #
	FDB	48	Quantum Address
L2	FCB	1	Point #
	FDB	49	Quantum Address
L3	FCB	4	Point #
	FDB	304	Quantum Address

Frz Seq Num

Frz Bytes 4-5

Quantum RTUs update when they receive a Freeze command. The Freeze command is a 7 byte message consisting of a Remote Address, Seq Num1, Seq Num 2, Byte 4, Byte 5 and 2 byte CRC. The next two entries are used to specify the Freeze Sequence Number and Freeze Bytes 4 and 5 in the Quantum Freeze message. The Freeze Command is actually sent as an Omnii-Comm poll.

Polls to Q on Frz

Start with Poll

Poll Delay

The Omnii-Comm will Queue one or more polls to run after the Freeze poll. The Number of Polls to queue on Freeze and the Starting Poll Number are specified in the next two Protocol Extension Table entries.

The final entry allows an optional delay before the polls are queued. Enter the delay as 100 msec per count.

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Poll Table Read Parameters

RTU Address

The Address Of the RTU that will respond to this Read Request. Valid addresses are from 0 to 255.

Poll Type

Select Standard Poll or Freeze. A standard Poll returns all data from the RTU. A Freeze Poll instructs the RTU to collect data. The Freeze Sequence Number, Freeze Message bytes 4 and 5 are obtained from the Protocol Extension Table for the Quantum Connector. After a Freeze has been sent, 1 or more poll tables are queued to run to collect the data. The Protocol Extension table defines the Number of Polls to queue, the Starting Poll Number and an optional Poll Delay.

Status Bytes

The number of Status Bytes expected in the reply. Must be an even number of bytes.

Accumulators

The number of 3-byte accumulators expected in the reply.

Convert to 4 byte

Optionally convert the 3-byte accumulators to 4-byte before storing the data.

Analog Inputs

The number of Analog Inputs expected in the response.

Tanks

The number of Tanks expected in the response.

Convert to 4 byte

Optionally convert the 3-byte Tank levels to 4-byte before storing the data.

Change BCD to Binary

Optionally change BCD Tank Levels to Binary

Bytes

The total number of bytes expected in the response. This should be the byte count after any 3 to 4 byte conversions.

Control Offset

The Control Offset is used when defining Analog or Digital outputs and more than one Poll Table is used to define the number of points required. For instance if 100 AO points were defined in another Poll Table (0 - 99) then enter a Control Offset of 100 when defining additional AO points.

Poll Table Write and Error Parameters

INVALID SELECTION. Can not Write to Quantum RTU using the Poll Table. Writes are sent to the Quantum RTU automatically when a data base point is changed.

Note: System Error Protocol Definitions are the same as Poll Table Write and Error Parameters

Database Extension Table Parameters

Index	Name	Size
0	INVALID SELECTION	