

# Leeds and Northrup Conitel 2020 Slave protocol

## Connector Configuration Parameters

### Control TimeoutX10ms

The Control Timeout is the amount of time the Omnii-Comm will wait for an Execute message after receiving a Select message. If the Execute is not received within the Control Deselect Time multiplied by 10msec the Select will be cancelled. Any subsequent Execute message will be ignored until a new Select is received

### Pre-trans MARK ms

This field allows the user to define the Pre-Transmission Mark time in milliseconds. The Pre-Transmission Mark time is used to frame Conitel messages.

### 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.

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## Option Bit Parameters

### Master

This box must be unchecked to select Slave operation.

### 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.

### Ext. Baud Rate Gen.

Conitel Messages are asynchronous and can vary in length. Long messages require a very accurate baud rate clock to insure their recovery at the receiving end. The Conitel variable word width UART is implemented in special on board hardware that uses the microprocessors clock for basic timing. The processor clock is an 8MHZ crystal which is not a multiple of the baud rates that Conitel systems typical use. If this box is checked, the clock from UART 1 Channel A is used for the special UART hardware. This is typically an exact multiple of the standard baud rates used for Conitel (typically 1200 baud). Note if you use UART 1 Channel A for on any other communications port you can only use at the same baud rate as specified on the Conitel connector screen.

### EXECUTE Grp/Mod Chk

Controls in Conitel normally use a Select/Execute sequence where two messages, the Select followed by the Execute must be received error free within the Control Timeout period. The Select messages MUST specify the Group and Modifier (point number) to be used for the control. The Execute message MAY specify the Group and Modifier. Checking this box will disable the test to see if the Execute message Group and Modifier match the Group and Modifier in the Select message. Normally you will want to do the check so the box will be open.

### Use DCD

If this box is checked, the Omnii-Comm will only receive data if the DCD line is high. If this box is unchecked the state of the DCD line is not used.

### Direct SETPOINT

If this box is checked, the Omnii-Comm will perform a Setpoint write upon receipt. No execute message is required.

### Direct TRIP/CLOSE

If this box is checked, the Omnii-Comm will perform a Trip or Close operation on receipt of the Select message. No execute is required.

### Error Replies Enabled

Some Conitel installations return an error response if a problem is detected. Most installations just do not reply if there is an error. This option allows the user to select if Error Replies are used. Check the box to enable Error Replies.

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## Protocol Extension Table Parameters

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

### Accumulator Freeze Delay

The Accumulator Freeze Delay is an optional delay that can be used to "hold off" the response to either an accumulator freeze or accumulator freeze and reset command. The freeze commands in CONITEL return data from a scan group that is specified in the command. The Omnii-Comm maintains an internal data base of the CONITEL data that is continuously refreshed from the source, usually a PLC. The Omnii-Comm does not know what type of data is being collected from the PLC, only what Scan Group it belongs to so there is no way for the Omnii-Comm to freeze or reset an accumulator. Only the PLC knows which words are accumulators. Therefore, the PLC is the one that needs to do the freeze and reset. When a freeze or freeze and reset command is received the Omnii-Comm will set a specific bit in the PLC (in the MCD freeze word) when the command is received. The delay is used to hold off the response to the Host until the PLC has time to act on the freeze command bit and for the new (presumably frozen) data to be read by the Omnii-Comm. The delay will be the count entered times 10 msec.

### Contact Dwell Time

Conitel TRIP and CLOSE outputs are momentary. When a TRIP or CLOSE command is received followed by an EXECUTE the Omnii-Comm will set a specific bit in the PLC as determined by the command. The Contact Dwell Time is the amount of time that the Omnii-Comm will delay after setting the bit before it will automatically come back and clear it. The Contact Dwell Time is the count entered times 10 msec.

### Valid Trip Groups

The Valid Trip Groups entry is a binary number that is used to enable or disable TRIP groups. Typically, a configuration will define 32 words that will be used for TRIP/CLOSE controls. This user definable field can be used to individually enable and disable each group. TRIP group 0 is the least significant bit (rightmost) and TRIP group 15 is the leftmost bit.

### Valid Close Groups

The Valid Close Groups entry is a binary number that is used to enable or disable CLOSE groups. Typically, a configuration will define 32 words that will be used for TRIP/CLOSE controls. This user definable field can be used to individually enable and disable each group. CLOSE group 0 is the least significant bit (rightmost) and CLOSE group 15 is the leftmost bit.

### Valid Setpoint A Groups

The Valid Setpoint A Groups entry is a binary number that is used to enable or disable SETPOINT A groups. Typically, a configuration will define 32 words that will be used for SETPOINT A/B controls. This user definable field can be used to individually enable and disable each group. SETPOINT A group 0 is the least significant bit (rightmost) and SETPOINT A group 15 is the leftmost bit.

### Valid Raise/Lower

The Valid Raise/Lower Groups entry is a binary number that is used to enable or disable Unit Raise/Lower groups. Typically, a configuration will define 16 words that will be used for Unit Raise/Lower controls. This user definable field can be used to individually enable and disable each group. Raise/Lower group 0 is the least significant bit (rightmost) and Raise /Lower group 15 is the leftmost bit.

### Spy Mode

If enabled, special code in the Conitel Slave Receive handler checks the CRC in each 32 bit receive block and if correct moves 2 12-bit data sections (right justified) to a buffer area. The data is transmitted out all Modbus Report By Exception (Modbus RBX) ports that are defined. The message transmitted is formatted the same as a Read Holding Registers response message (Omnii-Comm Addx, FC=03, Byte Count, Data, Error Check (LRC or CRC)).

## Poll Table Read Parameters

INVALID SELECTION. Cannot read from Conitel SLAVE port.

## Poll Table Write and Error Parameters

Conitel Write functions are not currently supported.

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

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### Database Extension Table Parameters

Index	Name	Size:Max Length
0	SCAN Group 0	2:256
1	SCAN Group 1	2:256
2	SCAN Group 2	2:256
3	SCAN Group 3	2:256
4	SCAN Group 4	2:256
5	SCAN Group 5	2:256
6	SCAN Group 6	2:256
7	SCAN Group 7	2:32
8	SCAN Group 8	2:32
9	SCAN Group 9	2:32
10	SCAN Group A	2:64
11	SCAN Group B	2:32
12	SCAN Group C	2:32
13	SCAN Group D	2:32
14	SCAN Group E	2:32
15	SCAN Group F	2:32
16	TRIP/CLOSE	2:32
17	SETPOINT A/B	2:32
18	AGC	2:32
19	MCD & Freeze	2:32