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Quick reference

496 Wireless Receiver System

Analogue & Digital Output Unit

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The 496 System

The 496 is a low power wireless concentrator receiver output unit for 490 and 491 transmitter hardware. Currently 496 hardware provides six 4-20mA outputs, 7 digital and or pulse output with mapping for error outputs for remote unit low battery and pulse error or link fail on the other. Additionally two error LEDs and three status LEDs provide a quick overview of the unit's health and current activity. Diagnostic and configuration via a standard RS232 level serial port (19200 baud default). One seven segment display provides status and channel selection information when using the single push button and no serial port.

Operation

All channels must be 'paired' with a remote channel and be enabled to deliver output. With the internal configurator it is possible to calibrate, test and configure each port. The usual method of pairing would be to put the unit in pairing mode by pressing the push button for five seconds and then each press will move to the next channel. Stop on the one to be paired and move to the remote unit to send a pairing packet to complete the association. All status LEDs will flash and the seven segment display will show the channel being paired for ten minutes before automatically terminating pairing if no channel has been received.

During normal operation the status LEDs show a combined status of all channels. Pressing the single push button for a period of less than five seconds allows each individual channel's error state to be shown. Note that channels displayed on the seven segment display with the decimal point shown are disabled and will never show an error or generate any output. Leaving idle for approximately five seconds will terminate the this display mode. Alternatively step past the last channel.

The 'C' LED will 'single blip' when operation is normal and 'double bleep' when an error is present on any channel. The low battery and fault open collector outputs always indicate the combined status of all enabled channels.

Each channel can be individually enabled and disabled via the configurator allowing unused or unpaired channels to not produce a link fail or to mask another error. This feature also allows a faulty unit to be temporarily disabled to exclude it from the system. Please note that the pairing is not altered or removed so a unit can be placed back into the system by just re-enabling it.

The '**ancal**' command allows each channel to be calibrated during setup. No restrictions on calibration and mapping values within the 10 bit converter range are forced upon the user. Reverse and normal mapping are all supported. Obviously with no restrictions it is possible to set an output so it will map to a single output value. Output channels have been scaled for a nominal 20mA output at 1000 counts to give maximum range with a small allowance for component tolerances.

Configurator Command Reference

Current **[ch]** names are an1 to an6, do1 and pu1 for pulse input

- **'exit'**
Leave the configurator. Configurator will automatically time out after no activity when not in an active command state.
- **'reboot'**
What it says. The EE state is updated before rebooting.
- **'bootloader'**
Before using this command it is advisable to execute the **'list'** command to capture current configuration as it will be erased during the software upgrade.

.Using a serial port terminal program like HyperTerminal @19200 baud enter '+++' (without quotes) to enter the configurator. Enter the command **'bootloader'** and when 'XMODEM NOW!' is shown after the device reboots, start an XMODEM transfer of the newly supplied software file to the device. After a couple of minutes it will have update the firmware and rebooted.

Now the pre-bootload configuration can be restored to the unit by feeding the lines captured with the 'list' command back into the configurator or by manually entering them.

- **'baud [2400-57600]'**
Without parameters displays current baud rate, with a valid value from 2400 to 57600 it changes the baud rate after the next reboot or power cycle.
- **'set [ch] [on|off]'**
Without parameters displays currently enabled and disabled channels. Supplying a channel displays only that channels status. Supplying a channel and on or off will enable or disable that channel.
- **'fail [ch] [seconds]'**
Without parameters displays current link fail times for all channels. Supplying a channel displays only that channels value. Supplying a channel and a value in seconds will configure that channels link fail. Each channel has its own individual link fail time allowing differing settings between channels and device types.
e.g. fail an2 600 (linkfail on an2 is 600 seconds)
- **'cal [ch] [calL] [calH]'**
Without parameters displays all channels cal values. Cal values calibrate the output driver circuit to the chosen points typically 4mA and 20mA. The **'ancal'** command would normally be used to set these parameters for all channels in the workshop as part of initial setup. Supplying a channel displays only that channels values. Supplying a channel and both calL and calH will set that channels output calibration points.
e.g. cal an3 200 1000 (set nominal default calibration 4mA and 20mA on AN3)

- **'map [ch] [mapL] [mapH]'**
Without parameters displays all channel map values. Map values calibrate the remotely paired channels mapping values to the corresponding calibration points in the output driver circuit, typically 4mA and 20mA (at the remote end). Supplying a channel displays only that channels status. Supplying a channel and both mapL and mapH will set that channels remote channels mapping to the calibration points.
e.g. map an3 200 1000 (set nominal remote mapping 4mA and 20mA on AN3)
- **'pair [ch] [serial number] [ch]'**
Without parameters displays all channel pairings. With a channel parameter displays just that channels pairing. Supplying an output channel with a remote unit serial number and a remote channel will set pairing for that channel to the remote units channel.
e.g. pair an1 4105 an2 (pair unit 4105/an2 to an1 on this unit)
- **'chan [ch] [on|off] [serial number] [ch] [fail] [calL] [calH] [mapL] [mapH]'**
chan [ch] [on|off] [serial number] [ch] [fail] [pulse count]'
This rather large command allows every value for a channel to be displayed and or configured in one go. This command comes into its own when new software is to be loaded into the unit. Perform a **'list'** command or just **'chan'** command to list current settings. Bootload new software and then feed these lines back into the configurator to re-configure the device to its previous settings before bootloading. The bootloading process erases all settings. All values have been described in previous commands. Two versions of the command exist to allow for pulse configured outputs or analogue configured outputs.
- **'eesave'**
Allow internal EE status to be saved at any point.
- **'text [on|off]'**
Enable or disable some useful text output messages when setting up channels.
- **'human [on|off]'**
Enable or disable incoming packet decoded text output messages.
- **'signon [on|off]'**
Enable or disable the sign on text output message.
- **'serial' 'info' 'support' 'list' 'help'**
The command names describe their function.

- **'ancal [start ch] [start output value]'**
The output channel calibration is setup via this command. A start channel must be supplied but the output start value is optional. Several keyboard characters aid in setting and testing parameters. Bold characters below show what characters apply to what (upper or lower case for some). Typical use would set 4mA and 20mA value for each channel to correct for component tolerances. Once outputs are calibrated then the remote channels can be mapped to them.
 - **up** increase output value by one step.
 - **Up** increase output value by ten steps.
 - **down** decrease output value by one step.
 - **Down** decrease output value by ten step.
 - **Toggle** Toggle between calH and calL output values.
 - **< or ,** Decrease selected channel number.
 - **> or .** Increase selected channel number.
 - **High** Set calH value for current channel with current output value.
 - **Low** Set calL value for current channel with current output value.
 - **'ESC'** End calibration function.

Analog Operating Voltage

The internal operating voltage of the 496 Receiver is 11.5 volts. The analog output circuitry operates from either this internal regulated supply or an external 24VDC regulated analog supply fed in through the ANA PWR input connector.

Overlay and IO Interfaces for 496-05

