

VRMWB Command Reference v29Apr2015

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VRMWB General Commands

id	Device id string
serial	Device serial number string
version	Device firmware version
default	Set a memory preset to factory defaults

Note: All commands are terminated with an ASCII **carriage return** character (hex code 0x0D), represented by <CR> in the examples below. All responses are terminated with an ASCII **carriage return, line feed** pair (hex codes 0x0D, 0x0A), represented by <CRLF> in the examples below. An ellipsis (...) represents members of an array that have been omitted from an example for the sake of brevity.

id (device id)

This command may be used as a query to read the device id string. This is the "name" of the device as designated for the Lecnet2 protocol. The name is *VR* for the original two block models, *VRWB* for the wideband models, *VR944* for 944 MHz models, *VR/E02* for block 779 Japanese export models, *VR/E03* for Korean export models, and *VRWB/E02* for wideband Japanese export models. The data is a string type.

Example:

	REQUEST	RESPONSE
QUERY	<code>id?<CR></code>	<code>OK "VR"<CRLF></code>

serial (serial number)

This command may be used as a query to read the device serial number. The data is a string type.

Example:

	REQUEST	RESPONSE
QUERY	<code>serial?<CR></code>	<code>OK "1234"<CRLF></code>

version (firmware version)

This command may be used as a query to read the device firmware version number. The data is a string type.

Example:

	REQUEST	RESPONSE
QUERY	<code>version?<CR></code>	<code>OK "1.0"<CRLF></code>

default (default settings)

This command may be used to restore all settings to their factory defaults. No data is transferred.

Example:

	REQUEST	RESPONSE
COMMAND	<code>default<CR></code>	<code>OK<CRLF></code>

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VRMWB Monitoring Commands

rmeter	Get realtime RF signal level
ameter	Get realtime audio signal level
divphase	Get realtime switching diversity phase
bvolts	Get realtime transmitter battery voltage
signal	Get realtime signal-present indicator

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rmeter (get realtime RF signal level)

This command may be used as a query to read the instantaneous RF signal level at any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, in the range of 0 to 255. If the receiver module address is wildcarded, then the data type is an array of six integers.

The data values are a logarithmic representation of RF level, and may be converted to dBm using the following formula.

$$\text{RF level in dBm} = (\text{data} \div 4) - 112$$

(e.g. a data value of 180 corresponds to an RF level of -67 dBm)

Examples:

	REQUEST	RESPONSE
QUERY	<code>rmeter(1)?<CR></code>	<code>OK 123<CRLF></code>
QUERY	<code>rmeter(*)?<CR></code>	<code>OK {129,32,17,68,16,94}<CRLF></code>

ameter (get realtime audio signal level)

This command may be used as a query to read the instantaneous audio signal level at any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, in the range of 0 (silence) to 32767 (clip level). A value of 18426 corresponds to the 0dB reference level, leaving the remainder of the upper range for limiter overhead. If the receiver module address is wildcarded, then the data type is an array of six integers.

Examples:

	REQUEST	RESPONSE
QUERY	<code>ameter(2)?<CR></code>	<code>OK 13732<CRLF></code>
QUERY	<code>ameter(*)?<CR></code>	<code>OK {0,12880,0,0,0,0}<CRLF></code>

divphase (get realtime switching diversity phase)

This command may be used as a query to read the instantaneous switching diversity antenna phase at any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, 0 for a phase angle of 0 degrees, 1 for a phase angle of 180 degrees. If the receiver module address is wildcarded, then the data type is an array of six integers.

Examples:

	REQUEST	RESPONSE
QUERY	<code>divphase(6)?<CR></code>	<code>OK 0<CRLF></code>
QUERY	<code>divphase(*)?<CR></code>	<code>OK {0,0,0,0,0,0}<CRLF></code>

bvolts (get realtime transmitter battery voltage)

This command may be used as a query to detect the instantaneous transmitter battery voltage at any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, 0 for a phase angle of 0 degrees, 1 for a phase angle of 180 degrees. If the receiver module address is wildcarded, then the data type is an array of six integers.

Battery voltage is available only when a receiver's [compatibility mode](#) is set to 200 Series or Digital Hybrid, and a valid [signal is present](#). Otherwise, a value of 0 is returned.

The range and scale of the data value returned depends on the selected [transmitter battery type](#). For 9 volt batteries, the returned value is expressed in tenths of volts, ranging from 55 (5.5 volts) to 94 (9.4 volts). Typical accuracy is ± 2 tenths of a volt. For 1.5 volt batteries, the returned value is expressed in hundredths of volts, ranging from 80 (0.80 volts) to 160 (1.60 volts). Typical accuracy is ± 5 hundredths of a volt.

Examples:

	REQUEST	RESPONSE
QUERY	<code>bvolts(1)?<CR></code>	<code>OK 87<CRLF></code>
QUERY	<code>bvolts(*)?<CR></code>	<code>OK {87,0,0,0,0,0}<CRLF></code>

signal (get realtime signal-present indicator)

This command may be used as a query to read the instantaneous signal-present status at any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, 0 for signal not present, 1 for signal present. If the receiver module address is wildcarded, then the data type is an array of six integers.

A receiver will indicate *signal present* for different reasons, depending on the current [compatibility mode](#). In the 200 Series, Digital Hybrid, IFB Series and "Mode 6" modes, which use pilot tones, *signal present* means that the carrier is on frequency and the pilot tone is present. In the other modes, which do not use pilot tones, *signal present* means that the carrier is on frequency, the RF signal strength was sufficient to break squelch, and the RF signal strength has not subsequently lingered below the squelch threshold.

Examples:

	REQUEST	RESPONSE
QUERY	<code>signal(4)?<CR></code>	<code>OK 0<CRLF></code>
QUERY	<code>signal(*)?<CR></code>	<code>OK {0,0,0,1,0,0}<CRLF></code>

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VRMWB Setup and Control Commands

channel	Operating channel
mhz	Operating frequency
level	Audio attenuator level
phase	Audio output phase
compat	Compatibility mode
smartnr	SmartNR mode
txbatt	Transmitter battery monitor mode
timer	Transmitter battery timer
divmode	Diversity mode
pilotbp	Pilot tone/squelch bypass
locked	Configuration protection
block	Frequency block

Note: All commands are terminated with an ASCII **carriage return** character (hex code 0x0D), represented by <CR> in the examples below. All responses are terminated with an ASCII **carriage return, line feed** pair (hex codes 0x0D, 0x0A), represented by <CRLF> in the examples below. An ellipsis (...) represents members of an array that have been omitted from an example for the sake of brevity.

channel (operating channel)

This command may be used to query or update the currently tuned channel of any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, in the range of 0 to 255. If the receiver module address is wildcarded, then the data type is an array of six integers.

The data values map straightforwardly to the 256 channels in the receiver module's block, so the value 0 corresponds with transmitter hex switch setting *00* and the value 255 corresponds with the transmitter hex switch setting *FF*.

Examples:

	REQUEST	RESPONSE
QUERY	<code>channel(1)?<CR></code>	<code>OK 128<CRLF></code>
QUERY	<code>channel(*)?<CR></code>	<code>OK {128,32,48,64,80,96}<CRLF></code>
UPDATE	<code>channel(1)=128<CR></code>	<code>OK<CRLF></code>
UPDATE	<code>channel(*)={128,32,48,64,80,96}<CR></code>	<code>OK<CRLF></code>

mhz (operating frequency)

This command may be used to query or update the currently tuned frequency of any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is floating point. If the receiver module address is wildcarded, then the data type is an array of six floating point numbers.

The data values represent frequencies in MHz, as a floating point number. Updates are successful only if the specified frequency fall within the coverage range of the receiver module. Update frequencies must contain a decimal point.

Examples:

	REQUEST	RESPONSE
QUERY	<code>mhz (1) ? <CR></code>	<code>OK 652.800 <CRLF></code>
QUERY	<code>mhz (*) ? <CR></code>	<code>OK { 652.800 , . . . , 624.000 } <CRLF></code>
UPDATE	<code>mhz (1) = 652.8 <CR></code>	<code>OK <CRLF></code>
UPDATE	<code>mhz (*) = { 652.8 , . . . , 624.0 } <CR></code>	<code>OK <CRLF></code>

level (audio attenuator level)

This command may be used to query or update the audio attenuator level of any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, representing nominal audio output levels in dBu, in the range of -15 to +8. If the receiver module address is wildcarded, then the data type is an array of six integers.

Examples:

	REQUEST	RESPONSE
QUERY	<code>level (5) ? <CR></code>	<code>OK -10 <CRLF></code>
QUERY	<code>level (*) ? <CR></code>	<code>OK { 5 , 5 , 5 , 5 , -10 , 5 } <CRLF></code>
UPDATE	<code>level (5) = -10 <CR></code>	<code>OK <CRLF></code>
UPDATE	<code>level (*) = { 5 , 5 , 5 , 5 , -10 , 5 } <CR></code>	<code>OK <CRLF></code>

phase (audio output phase)

This command may be used to query or update the audio output phase of any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, 0 for "in phase" and 1 for "inverted phase". If the receiver module address is wildcarded, then the data type is an array of six integers.

Examples:

	REQUEST	RESPONSE
QUERY	<code>phase(2)?<CR></code>	<code>OK 0<CRLF></code>
QUERY	<code>phase(*)?<CR></code>	<code>OK {0,0,0,0,0,0}<CRLF></code>
UPDATE	<code>phase(2)=0<CR></code>	<code>OK<CRLF></code>
UPDATE	<code>phase(*)={0,0,0,0,0,0}<CR></code>	<code>OK<CRLF></code>

compat (compatibility mode)

This command may be used to query or update the compatibility mode of any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, in the range 0 to 6. If the receiver module address is wildcarded, then the data type is an array of six integers.

The data values correspond with the seven compatibility modes, as follows.

<i>data value</i>	<i>compatibility mode</i>
0	100 Series
1	200 Series
2	"Mode 3"
3	Digital Hybrid
4	IFB Series
5	"Mode 6"
6	"Mode 7"

Examples:

	REQUEST	RESPONSE
QUERY	<code>compat(1)?<CR></code>	<code>OK 3<CRLF></code>
QUERY	<code>compat(*)?<CR></code>	<code>OK {3,3,3,3,3,3}<CRLF></code>
UPDATE	<code>compat(1)=3<CR></code>	<code>OK<CRLF></code>
UPDATE	<code>compat(*)={3,3,3,3,3,3}<CR></code>	<code>OK<CRLF></code>

smartnr (SmartNR mode)

This command may be used to query or update the SmartNR (Smart Noise Reduction) mode of any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, 0 for *OFF*, 1 for *NORMAL*, or 2

for *FULL*. If the receiver module address is wildcarded, then the data type is an array of six integers.

The SmartNR setting is meaningful only when the receiver module's [compatibility mode](#) is set to *Digital Hybrid*.

Examples:

	REQUEST	RESPONSE
QUERY	<code>smartnr(6)?<CR></code>	<code>OK 1<CRLF></code>
QUERY	<code>smartnr(*)?<CR></code>	<code>OK {2,1,1,1,1,1}<CRLF></code>
UPDATE	<code>smartnr(6)=1<CR></code>	<code>OK<CRLF></code>
UPDATE	<code>smartnr(*)={2,1,1,1,1,1}<CR></code>	<code>OK<CRLF></code>

txbatt (transmitter battery monitor mode)

This command may be used to query or update the transmitter battery monitor mode of any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, in the range 0 to 5. If the receiver module address is wildcarded, then the data type is an array of six integers.

The data values correspond with the six transmitter battery monitor modes, as follows.

<i>data value</i>	<i>transmitter battery monitor mode</i>
0	<i>9V alkaline:</i> Battery voltage is reported on the 9V scale. Low battery indicator thresholds are set for alkaline batteries.
1	<i>9V lithium:</i> Battery voltage is reported on the 9V scale. Low battery indicator thresholds are set for lithium batteries.
2	<i>9V with timer:</i> Battery voltage is reported on the 9V scale. Digital battery timer display shown in place of normal battery indicator.
3	<i>AA alkaline:</i> Battery voltage is reported on the 1.5V scale. Low battery indicator thresholds are set for alkaline batteries.
4	<i>AA lithium:</i> Battery voltage is reported on the 1.5V scale. Low battery indicator thresholds are set for lithium batteries.
5	<i>AA with timer:</i> Battery voltage is reported on the 1.5V scale. Digital battery timer display shown in place of normal battery indicator.

Examples:

	REQUEST	RESPONSE
QUERY	<code>txbatt(3)?<CR></code>	<code>OK 0<CRLF></code>

QUERY	<code>txbatt(*)?<CR></code>	<code>OK {0,0,0,0,0,0}<CRLF></code>
UPDATE	<code>txbatt(3)=0<CR></code>	<code>OK<CRLF></code>
UPDATE	<code>txbatt(*)={0,0,0,0,0,0}<CR></code>	<code>OK<CRLF></code>

timer (transmitter battery timer)

This command may be used to query or update the transmitter battery timer of any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, in the range 0 to 599 (minutes). If the receiver module address is wildcarded, then the data type is an array of six integers.

A receiver module's battery timer is operational only if the [transmitter battery monitor mode](#) is set to one of the timer modes (2 or 5), and the time advances only when a [signal is present](#).

Examples:

	REQUEST	RESPONSE
QUERY	<code>timer(5)?<CR></code>	<code>OK 0<CRLF></code>
QUERY	<code>timer(*)?<CR></code>	<code>OK {0,0,0,0,0,0}<CRLF></code>
UPDATE	<code>timer(5)=0<CR></code>	<code>OK<CRLF></code>
UPDATE	<code>timer(*)={0,0,0,0,0,0}<CR></code>	<code>OK<CRLF></code>

divmode (diversity mode)

This command may be used to query or update the diversity mode of any or all of the receiver pairs. The receiver pair is specified by using the address syntax. Valid addresses are 1 (pair of receivers 1 and 2), 2 (pair of receivers 3 and 4), and 3 (pair of receivers 5 and 6). The data type is integer, in the range 0 to 2. If the receiver module address is wildcarded, then the data type is an array of three integers.

The data values correspond with the three diversity modes, as follows.

<i>data value</i>	<i>diversity mode</i>
0	Switched diversity (separate receivers)
1	Ratio diversity pair
2	Frequency diversity pair

Examples:

	REQUEST	RESPONSE
QUERY	<code>divmode(2)?<CR></code>	<code>OK 0<CRLF></code>

QUERY	<code>divmode(*)?<CR></code>	<code>OK {0,0,0}<CRLF></code>
UPDATE	<code>divmode(2)=0<CR></code>	<code>OK<CRLF></code>
UPDATE	<code>divmode(*)={0,0,0}<CR></code>	<code>OK<CRLF></code>

Note that changing the diversity mode can have side effects. When entering a diversity mode, certain parameters of the second receiver in the pair must be changed to agree with the first in the pair. When leaving ratio diversity mode, a frequency conflict may be reported. Simply tune one of the formerly paired receiver modules to a different channel to remove the conflict.

pilotbp (pilot tone/squelch bypass)

This command may be used to query or update the pilot tone/squelch bypass of any or all of the receiver modules. The receiver module is specified by using the address syntax. Addresses must be in the range 1 to 6. The data type is integer, 0 for normal operation and 1 for "bypass". If the receiver module address is wildcarded, then the data type is an array of six integers.

Regardless of the current compatibility mode, setting this parameter to 1 has the effect of defeating squelch. Any signal or noise on the channel will be heard.

This setting is temporary. Normal squelch operation may be restored either by returning this parameter to 0 or by switching the power off and on again.

Examples:

	REQUEST	RESPONSE
QUERY	<code>pilotbp(6)?<CR></code>	<code>OK 0<CRLF></code>
QUERY	<code>pilotbp(*)?<CR></code>	<code>OK {0,0,0,0,0,0}<CRLF></code>
UPDATE	<code>pilotbp(6)=0<CR></code>	<code>OK<CRLF></code>
UPDATE	<code>pilotbp(*)={0,0,0,0,0,0}<CR></code>	<code>OK<CRLF></code>

locked (configuration protection)

This command may be used to query or update the configuration protection status of the master unit. The data type is integer, 0 for "not locked" (the default setting) and 1 for "locked".

In the *locked* state, no settings or operating parameters may be changed from the front panel until the *locked* status is turned off. It is possible to unlock the configuration from the front panel, but no other changes may be made from the front panel while the configuration is locked. Operation from the USB and RS-232 ports is not affected by this setting. Serial commands may alter any setting or operating parameter at any time, regardless of *locked* status.

Examples:

	REQUEST	RESPONSE
QUERY	<code>locked?<CR></code>	<code>OK 0<CRLF></code>
UPDATE	<code>locked=0<CR></code>	<code>OK<CRLF></code>

block (frequency block)

This command may be used as a query to report the frequency block of the master unit, or the frequency block of any or all detected receiver modules.

The receiver module is specified using the address syntax. Addresses must be in the range 1 to 6, or '*' for all six. The returned data type is integer, and valid values are 18 (a code for block 470), and 19 thru 33. The value 944 is valid for 944 MHz models only. If the block number returned for a module is zero, then no module is installed in the corresponding slot.

If the address syntax is not used (i.e. the simple query `block?` is issued), the master unit's block range is reported. For two block models, the master unit covers a two block range, and the lower of the two blocks is reported by this command. For wideband models, a code for the block range is returned: 0 for low range (block 470 thru 26), 1 for normal range (block 21 thru 29). This query is not valid on 944 MHz, VR/E02 or VR/E03 models, as they cover only a single block.

Note: Some early (2007) wideband units issue an error in response to the master block query. In all such cases, the unit covers the normal block range (21 thru 29), and may be treated as though a "1" response had been received.

Examples:

	REQUEST	RESPONSE
QUERY	<code>block?<CR></code>	<code>OK 24<CRLF></code>
QUERY	<code>block(1)?<CR></code>	<code>OK 25<CRLF></code>
QUERY	<code>block(*)?<CR></code>	<code>OK {25,25,25,24,24,24}<CRLF></code>

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