

# PERSEUS RECEIVER CAT INTERFACE REFERENCE MANUAL



Microtelecom s.r.l. - Pavia di Udine, Italia

## Default CAT commands

Command ID	Effect
\$00	Transfer frequency
\$01	Transfer mode
\$03	Read operating frequency
\$04	Read mode
\$05	Set frequency
\$06	Set mode
\$11	Read and set attenuator
\$15 \$01	Read Squelch level
\$15 \$02	Read S-Meter level
\$16 \$02	Enable PreAmp ADC and Dither generator
\$16 \$12	Set AGC
\$19 \$00	Read default address

## Microtelecom extensions

Command ID	Effect
\$70 \$01	Set DDC sampling rate
\$70 \$02	Start recording
\$70 \$03	Stops recording
\$70 \$04	Set filter bandwidth
\$70 \$05	Enable/disable sound output
\$70 \$06	Set Noise Blanker (On/Off and mode)
\$70 \$07	Enable/disable Noise Reduction
\$70 \$08	Enable/disable Auto Notch
\$70 \$09	Enable/disable CW Peak
\$70 \$0A	Set Volume level
\$70 \$0B	Set Noise Blanker level
\$70 \$0C	Set Noise Reduction level
\$70 \$0D	Set Auto Notch level
\$70 \$0E	Set CW Peak level
\$70 \$0F	Get receiver info

## CI-V Commands Parameters

This section is not meant to be a complete CI-V reference, but it simply describes the differences and customizations available through the Perseus CAT interface.

### Mode Setting Commands (CMD \$01 and CMD \$06)

Commands \$01 and \$06 will only set the demodulator, ignoring the second parameter (filter width). The demodulator indexes are listed in the following table.

Mode ID	Mode
\$00	LSB
\$01	USB
\$02	AM
\$03	CW
\$04	RTTY
\$05	FM
\$06	SAM
\$07	DRM
\$08	USER (*)

(\*) Zero IF, 31.25 kS/s, IQ output on VAC interface

### Set Attenuator Command (CMD \$11)

The set attenuator command accepts the following values:

Value	Effect
\$00	Attenuator Off
\$10	10 dB Attenuator
\$20	20 dB Attenuator
\$30	30 dB Attenuator
(empty)	Read Attenuator setting

### Read S-Meter (CMD \$15 \$02)

After receiving this command, Perseus will reply with a BCD value in the range 0..255 (thus its width could be one or two bytes), using the following values as extremes:

Value	Meaning
0	-140 dBm
255	+30 dBm

### PreAmp ADC and Dither Generator (CMD \$16 \$02)

This command accepts the following values:

Value	Effect	
	PreAmp	Dither
\$00	OFF	OFF
\$01	ON	OFF
\$02	OFF	ON
\$03	ON	ON

### AGC Setting (CMD \$16 \$12)

This command accepts the following values:

Value	AGC
\$00	Disabled
\$01	Fast
\$02	Medium
\$03	Slow

### Read Default Address Command (CMD \$19 \$00)

Perseus replies to this command with its predefined address (*\$E1*). Perseus will reply to any request ("To address" in the CAT specification) even if the destination addresses don't match.

### DDC Sample Rate Setting (CMD \$70 \$01)

This command accepts the following values:

Value	DDC SR
\$00	125 kS/s
\$01	250 kS/s
\$02	500 kS/s
\$03	1 MS/s
\$04	2 MS/s

### Start Recording (CMD \$70 \$02)

The data field in this command must contain a zero-terminated string containing a full path and file name to record. If the file cannot be created (e.g. if the path doesn't exist), Perseus will reply with a *NOK*. After receiving a "Start Recording" command, some other CAT commands could be ignored (e.g. if the user requests to tune a frequency outside the recording bandwidth or tries to change ADC or Attenuators settings). Created files will be segmented as usual, adding the *\_nnn* suffix right before the *.wav* extension (where *nnn* is a progressive number).

**End Recording (CMD \$70 \$03)**

This command stops the recording session.

**Set Filter Bandwidth (CMD \$70 \$04)**

This command allows setting both the desired filter button and width. The data field in this command should be formatted as follows (after the \$70 \$04 command):

$$FltIdx \ Val1 \ \$AA \ Val2$$

FltIdx is the button filter index, going from \$00 for the 50 kHz button up to \$06 for the 0.8 kHz button. \$AA is the delimiter between Val1 and Val2 (BCD format). The meaning of Val1 and Val2 is different if using USB/LSB or the other modes. During SSB operation, the values represent the lower and higher edges of the filter (e.g. 300 and 2700) measured in Hz. Using all the other demodulators, Val1 will be considered as a filter width and Val2 will be used as frequency offset from the center. For example, in AM mode, the command to send for a symmetric (centered on the carrier) filter, 10 kHz wide, is:

$$\$FE \ \$FE \ \$XX \ \$XX \ \$70 \ \$04 \ \$02 \ \$00 \ \$00 \ \$01 \ \$AA \ \$00 \ \$FD$$
**Set Sound Output (CMD \$70 \$05)**

This command controls the sound output (enable/disable).

Value	Effect
\$00	Disable
\$01	Enable

**Set Noise Blanker (CMD \$70 \$06)**

This command controls the Noise Blanker functionality, as shown in the following table.

Value	Effect
\$00	Disabled
\$01	Wide
\$02	Narrow
\$03	Vectorial

**Set Noise Reduction (CMD \$70 \$07)**

This command controls the Noise Reduction function (enable/disable).

Value	Effect
\$00	Disable
\$01	Enable

**Set Auto Notch (CMD \$70 \$08)**

This command controls the Auto Notch Filter (enable/disable).

Value	Effect
\$00	Disable
\$01	Enable

**Set CW Peak (CMD \$70 \$09)**

This command controls the CW Peak Filter (enable/disable).

Value	Effect
\$00	Disable
\$01	Enable

**Set Volume Level (CMD \$70 \$0A)**

This command sets the audio output level. Accepted range is 0..255 on a single byte (not BCD).

**Set Noise Blanker Level (CMD \$70 \$0B)**

This command sets the Noise Blanker value. Accepted range is 0..255 on a single byte (not BCD).

**Set Noise Reduction Level (CMD \$<70 \$0C)**

This command sets the Noise Reduction level. Accepted range is 0..255 on a single byte (not BCD).

**Set Auto Notch Threshold (CMD \$70 \$0D)**

This command sets the Auto Notch filter threshold. Accepted range is 0..255 on a single byte (not BCD).

**Set CW Peak Threshold (CMD \$70 \$0E)**

This command sets the CW Peak filter threshold. Accepted range is 0..255 on a single byte (not BCD).

**Get Receiver Information (CMD \$70 \$0F)**

This command requests receiver serial number and software version. The reply is in the following format:

*\$FE \$FE \$XX \$XX \$70 \$0F String1 \$7C String2 \$7C String3 \$FD*

where *String1* is the Perseus executable software version, *String2* is the DLL version and *String3* is the full receiver ID (the first 5 digits are the receiver serial number). The strings are divided by a \$7C (“|”, vertical bar).