

## Request Commands

Command	Command Value	Description	Viso Two	Viso Five
Query Variable	20	This command requests that a value be sent back from the unit. For example the current volume level could be requested. If the variable requested is not supported, no response should occur.	Yes	Yes
Set Variable	21	This command sets a specified function to a specified value. For example, the volume could be set to a specific value. A Variable Value response should always be sent in response to this command to confirm the value was set. If an illegal value was sent, then there should not be any changes made, and the current value should be returned. If an unsupported variable was set, then the unit should not acknowledge it.	Yes	Yes
Remote Command	22	Remote codes can be sent with this command. The unit should respond to the remote code as if the command had actually been received from the remote.	Yes	Yes
Get Software Version	23	Request software version number.	Yes	Yes
Software Update	24	This command can be used for doing software updates of the unit. However, since the method of updating the software is highly dependent on the hardware and software implementation, other methods of update are also acceptable provided they do not conflict with any other part of this protocol.	No	No
Store A/V Preset	25	This command causes all the current settings to be stored in the specified A/V preset.	No	No

Store Tuner Preset	26	Store the current tuner frequency in the specified preset.	Yes	Yes
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## Response Commands

Response Command	Command Value	Description	L54	L74
Function Value	20	This command should be sent whenever any of the function values change. This includes changes through the front panel controls, the remote, and the RS-232 port. This command should also be sent in response to Query Function and Set Function commands. For example, if the user changes the volume using the remote, this command should be sent indicating the new volume.	Yes	Yes
Software Version	23	This response is sent when a Get Software Version command is received.	Yes	Yes
Software Verify	24	This command can be used to retrieve the software from the unit for verification purposes. Other methods are also acceptable. See the description for the Update Software command.	No	No
A/V Preset Stored	25	This response is sent back to confirm a preset has been stored in response to a Store Preset command.	No	No
Tuner Preset Stored	26	This response is sent back to confirm a tuner preset has been stored in response to a Store Tuner Preset command.	Yes	Yes
RDS - PS	27	Whenever a new FM station is tuned or the PS name changes, this message will be sent.	Yes	Yes
RDS - RT	28	As RDS Radio Text is decoded, each block is sent via RS232. Each RDS RT block is 2 or 4 characters at a time.	Yes	Yes

Variable Table

Function	Function Value	Description	Viso Two	Viso Five
Device ID	20	This function can only be queried, and not set. When this function is queried it should return a string identifying the model of the unit. For example, the T762 would return the string "T762".	Read Only	Read Only
Power Mode	21	Mode of the unit, Standby or On. Protect is only used for M3.	Read/Write Arguments: 0 = Standby 1 = ON	Read/Write Arguments: 0 = Standby 1 = ON
VFD Brightness	22	Brightness mode of the display.	Read/Write Arguments: 0 = Bright 1 = Dimmed	Read/Write Arguments: 0 = Bright 1 = Dimmed
Volume	23	Master Volume level.	Read/Write Arguments: I8 = Volume Level	Read/Write Arguments: I8 = Volume Level
Mute	24	Mute status.	Read/Write Arguments: 0 = Not Muted 1 = Muted	Read/Write Arguments: 0 = Not Muted 1 = Muted
	25			
	26			
Zone Volume	27	Multi Source volume level.	N / A	N / A
Zone Mute	28	Multi Source mute status.	N / A	N / A
THX Mode	29	The THX mode is in conjunction with Surround Mode	N / A	N / A
	30			
Tape Monitor	31	Tape monitor status.	N / A	N / A
Treble	32	Treble level.	Read/Write Arguments: I8 = Treble Level	Read/Write Arguments: I8 = Treble Level
Bass	33	Bass level.	Read/Write Arguments: I8 = Bass Level	Read/Write Arguments: I8 = Bass Level
Subwoofer Level	34	Sub Woofer level.	N / A	N / A
Center Level	35	Center channel level.	N / A	N / A
Surround Level	36	Surround level.	N / A	N / A
Center Dialog	37		N / A	N / A
Audio Input Type	38	Audio Input Type.	N / A	N / A
Audio Signal Type	39	Audio Signal Type.	N / A	N / A
Surround Mode	40	Surround Mode.	N / A	Read/Write Arguments: 0 = stereo 1 = dolby prologic II music 2 = dolby prologic II movie 3 = dolby prologic II emulation 4 = EARS 5 = Enhanced Stereo 6 = DVS Reference 7 = DVS Wide

Variable Table

Function	Function Value	Description	Viso Two	Viso Five
Video Input Type	41	Video input type.	N / A	N / A
Late Night / DRC	42	Status of Late Night mode.	Read/Write Arguments: 0 = DRC off 1 = DRC on	Read/Write Arguments: 0 = DRC off 1 = DRC on
Tuner Band	43	Selected tuner band.	Read/Write Arguments: 0 = AM 1 = FM 2 = XM/DAB	Read/Write Arguments: 0 = AM 1 = FM 2 = XM/DAB
AM Frequency	44	Currently selected AM frequency.	Read/Write Arguments: 2 byte unsigned number representing AM frequency. Little-endian	Read/Write Arguments: 2 byte unsigned number representing AM frequency. Little-endian
FM Frequency	45	Currently selected FM frequency.	Read/Write Arguments: 2 byte unsigned number representing FM frequency. The number should be scaled by a factor of 100. ie) Frequency 102.1MHz is represented as 10210. Little-endian	Read/Write Arguments: 2 byte unsigned number representing FM frequency. The number should be scaled by a factor of 100. ie) Frequency 102.1MHz is represented as 10210. Little-endian
Tuner Stereo Mode	46	Tuner Stereo Mode	N / A	N / A
FM Mute	47	FM Mute Status.  Note: On the T163/T762/T763/T773/C425, the FM Mute and FM Stereo functions are linked.	Read/Write Arguments: 0 = FM mute off 1 = FM mute on	Read/Write Arguments: 0 = FM mute off 1 = FM mute on
Digital Input Selection	48	Digital Input setting	N / A	N / A
Blend	49	Tuner Blend Status	N / A	N / A
Zone Power Mode	52	Power mode of the second zone.	N / A	N / A
Current Input	53	Current Input.	Read/Write Arguments: 0 = DVD 1 = Satellite 2 = CAB/SAT 3 = VCR 4 = Video 4 5 = Tuner 6 = External 5.1	Read/Write Arguments: 0 = DVD 1 = Satellite 2 = CAB/SAT 3 = VCR 4 = Video 4 5 = Tuner 6 = External 5.1
Zone Input	54	Current Zone Input.	N / A	N / A
Input Name	55	This function can be used to retrieve and set input names.	N / A	N / A
AM Preset	56	Current AM frequency preset.	Read/Write Arguments: 1 byte to indicate the current AM preset	Read/Write Arguments: 1 byte to indicate the current AM preset

Variable Table

Function	Function Value	Description	Viso Two	Viso Five
FM Preset	57	Current FM frequency preset. This is used for AM and FM preset on the C425.	Read/Write Arguments: 1 byte to indicate the current FM preset	Read/Write Arguments: 1 byte to indicate the current FM preset
Speaker A	58	Speaker A Relay setting.	N / A	N / A
Speaker B	59	Speaker B Relay setting.	N / A	N / A
Tone Defeat	60	Tone Defeat setting.	Read/Write Arguments: 0 = Tone Defeat off 1 = Tone Defeat on	Read/Write Arguments: 0 = Tone Defeat off 1 = Tone Defeat on
Tilt	61	Tilt Setting	N / A	N / A
Balance	62	Balance level setting. Negative for left side, positive for right side.	N / A	N / A
Stereo Mode	64	Stereo mode of speakers.	N / A	N / A
Crossover	65	Biamp crossover	N / A	N / A
Play Time	80	Current play time of the CD or DVD. Should match what the display is currently set to (ie. Elapsed or Remaining)	N / A	N / A
Track Info	81	Current track of the CD or DVD	Read/Write* Arguments: byte0 = Title byte1 = Chapter/Track	Read/Write* Arguments: byte0 = Title byte1 = Chapter/Track
Video System	83	Video format setting	Read/Write Arguments: 0 = Auto 1 = NTSC 2 = PAL 3 = PAL 60	Read/Write Arguments: 0 = Auto 1 = NTSC 2 = PAL 3 = PAL 60
Resolution	84	Resolution setting	Read/Write Arguments: 0 = 480/576i 1 = 720p 2 = 1080i 3 = 480p/576p	Read/Write Arguments: 0 = 480/576i 1 = 720p 2 = 1080i 3 = 480p/576p
Progressive Scan	85	Progressive scan setting		
Play Back Control	86	Applies to Video CDs. PBC Control. As it is in the OSD	Read/Write Arguments: 0 = PBC off 1 = PBC on	Read/Write Arguments: 0 = PBC off 1 = PBC on
Tray Status	87	Tray status setting	Read/Write Arguments: 0 = close 1 = open	Read/Write Arguments: 0 = close 1 = open
Play Mode	88	Play mode setting	Read/Write Arguments: 0 = stop 1 = play 2 = pause 10 = FastForward 2X 11 = FastForward 4X 12 = FastForward 6X 13 = FastForward 8X 20 = FastBackward 1X 21 = FastBackward 2X 22 = FastBackward 4X 23 = FastBackward 6X 24 = FastBackward 8X 30 = SlowForward 1/2X 31 = SlowForward 1/4X 32 = SlowForward 1/8X 40 = SlowBackward 1/2X 41 = SlowBackward 1/4X 42 = SlowBackward 1/8X	Read/Write Arguments: 0 = stop 1 = play 2 = pause 10 = FastForward 2X 11 = FastForward 4X 12 = FastForward 6X 13 = FastForward 8X 20 = FastBackward 1X 21 = FastBackward 2X 22 = FastBackward 4X 23 = FastBackward 6X 24 = FastBackward 8X 30 = SlowForward 1/2X 31 = SlowForward 1/4X 32 = SlowForward 1/8X 40 = SlowBackward 1/2X 41 = SlowBackward 1/4X 42 = SlowBackward 1/8X

Variable Table

Function	Function Value	Description	Viso Two	Viso Five
Repeat	89	Repeat setting. Repeat A-B setting is Read-Only	Read/Write Arguments: 0 = none 1 = repeat all 2 = repeat track/chapter	Read/Write Arguments: 0 = none 1 = repeat all 2 = repeat track/chapter
Zoom	90	Zoom setting	Read/Write Arguments: 0 = no zoom 1 = Level 1 zoom 2 = Level 2 zoom 3 = Level 3 zoom	Read/Write Arguments: 0 = no zoom 1 = Level 1 zoom 2 = Level 2 zoom 3 = Level 3 zoom
Audio Track	91	Audio track setting (select between audio tracks available on DVD)	Read/Write Arguments: 0 = Default audio track 1 = Audio track 1 2 = Audio track 2 3 = Audio track 3	Read/Write Arguments: 0 = Default audio track 1 = Audio track 1 2 = Audio track 2 3 = Audio track 3
Subtitle	93	Subtitle setting	Read/Write* Arguments: 0 = none 1 = default subtitle 2 = 1st subtitle 3 = 2nd subtitle 4 = 3rd subtitle n = nth subtitle	Read/Write* Arguments: 0 = none 1 = default subtitle 2 = 1st subtitle 3 = 2nd subtitle 4 = 3rd subtitle n = nth subtitle
Angle	94	Angle setting	Read/Write* Arguments: 0 = none 1 = 1st angle 2 = 2nd angle n = nth angle	Read/Write* Arguments: 0 = none 1 = 1st angle 2 = 2nd angle n = nth angle
Digital Output	95	Digital output setting	Read/Write Arguments: 0 = none 1 = Stream/PCM 2 = BitStream 3 = Auto	Read/Write Arguments: 0 = none 1 = Stream/PCM 2 = BitStream 3 = Auto
Black Level	96	Video black level setting	N / A	N / A
Random	100	Random Mode	Read/Write* Arguments: 0 = random off 1 = random on	Read/Write* Arguments: 0 = random off 1 = random on
TV Aspect Ratio	101	Change the TV aspect ratio	Read/Write Arguments: 0 = Widescreen 16:9 1 = Letter box 4:3 2 = Pan scan 4:3	Read/Write Arguments: 0 = Widescreen 16:9 1 = Letter box 4:3 2 = Pan scan 4:3
Picture Mode	102	Change the Picture Mode setting	N / A	N / A
Brightness	103	Change the video output's brightness	N / A	N / A
Contrast	104	Change the video output's contrast	N / A	N / A
Saturation	105	Change the video output's saturation	N / A	N / A
Sharpness	106	Change the video output's sharpness	N / A	N / A
Gamma	107	Change the gamma setting	N / A	N / A
Video Output (HDMI/VGA)	108	Change the video output setting. Note: Only one output, HDMI or VGA, can be ON at a time	N / A	N / A
Video Output (ON/OFF)	109	Change the video output ON or OFF	N / A	N / A
Digital Audio Output Sample Freq.	110	Change the digital audio output sample frequency	N / A	N / A
Master Volume	111	Change the Master Volume setting	N / A	N / A

Variable Table

Function	Function Value	Description	Viso Two	Viso Five
Downmix	112	Change the Downmix setting	Read/Write: Arguments: 0 = L/Rt 1 = Stereo 2 = off	Read/Write: Arguments: 0 = L/Rt 1 = Stereo 2 = off
Test Tone	113	Turn the test tone on or off	Read/Write Arguments: 0 = Test Tones off 1 = Test Tones on	Read/Write Arguments: 0 = Test Tones off 1 = Test Tones on
AutoPlay	114	Turn autoplay on or off	Read/Write Arguments: 0 = autoplay off 1 = autoplay on	Read/Write Arguments: 0 = autoplay off 1 = autoplay on
CD Filter	115	Change the CD Filter setting	N / A	N / A
Layer	116	Change the CD Layer Setting as the remote does, not the default mode within the OSD	N / A	N / A
SACD Mode	117	Change the SACD mode from 2-channel to multi-channel as the remote does, not the default mode within the OSD	N / A	N / A
Display Mode	118	Change the display from elapsed, remain, disc elapsed, disc remain	Read/Write Arguments: 0 = Elapsed 1 = Remain 2 = Disc Elapsed 3 = Disc Remain	Read/Write Arguments: 0 = Elapsed 1 = Remain 2 = Disc Elapsed 3 = Disc Remain
iPod Title	150	String containing the Currently playing Track Title	Read Only	Read Only
iPod Artist	151	String containing the currently playing Artist	Read Only	Read Only
iPod Album	152	String containing the currently playing Album	Read Only	Read Only
iPod Repeat	153	Change the repeat state of the connected iPod ***	Read/Write Arguments: 0 = None 1 = One (track) 2 = All	Read/Write Arguments: 0 = None 1 = One (track) 2 = All
iPod Shuffle	154	Change the shuffle state of the connected iPod ***	Read/Write Arguments: 0 = None 1 = Albums 2 = Songs	Read/Write Arguments: 0 = None 1 = Albums 2 = Songs
iPod Audiobook Speed	155	Change the audiobook state of the connected iPod ***	Read/Write Arguments: 0 = Normal 1 = Fast 2 = Slow	Read/Write Arguments: 0 = Normal 1 = Fast 2 = Slow
iPod Menu Timeout	156	Timeout for iPod user interface. Timeout for returning to the "Now Playing" screen from the music browsing screens	Read/Write Arguments: 1 byte that indicates number of seconds, 0 indicates no timeout	Read/Write Arguments: 1 byte that indicates number of seconds, 0 indicates no timeout
XM Channel	180	Get the current XM channel	Read/Write Arguments: 1 byte that indicates the channel number (0 - 255)	Read/Write Arguments: 1 byte that indicates the channel number (0 - 255)
XM ChannelName	181	String containing the current XM channel name	Read Only	Read Only
XM Channel Category	182	String containing the current XM channel category	Read Only	Read Only
XM Name	183	String containing the current XM channel Song/Program name	Read Only	Read Only
XM Title	184	String containing the current XM channel Song/Program Title	Read Only	Read Only
DAB DLS	200	String containing the current DAB DLS text	Read Only	Read Only
DAB Service	201	String containing the current DAB service	Read Only	Read Only
Query All	255	If this value is queried, all of the above function values which are supported for the model in question will be sent.		

\* This works, depending on the type of media

\*\* Not all of the functions work



**Example Table**

I8	I8 - One byte signed two's complement number	Example: -128 = 0x80 Example: -53 = 0xCB Example: 4 = 0x04 Example: 127 = 0x7F
Q8.8	Q8.8 - Two byte signed two's complement fixed-point number. To be sent/received as little-endian.	Example: -71.5 = 0xB880 Example: -1.5 = 0xFE80 Example: 8 = 0x0800 Example: 120.5 = 0x7880

Command Examples using Q8.8	Set Volume to -71.5 dB (PC to Unit)  <i>decimal:</i> 1, 21, 23, 128, 184, 2, 155  <i>hex:</i> 0x01, 0x15, 0x17, <b>0x80, 0xB8</b> , 0x02, 0x9B	
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