ALMA Interface Protocol Usage and Examples

The ALMA interface protocol allows 3rd party products to control Australian Monitor products using the protocol described below. The full protocol is listed at the end of this document.

Message Format							
Operation	Section	Group	Param	Sub	Ssub	value	CR

- Message fields are separated with a space character (0x20 in hex)
- Message is terminated with a carriage return character (0x0D in hex)
- Operation is “get”, “set” or “reply”
- Mandatory Fields
    - operation, section, group & param
- Optional Fields
    - sub & ssub fields are optional
- Value field applies only to “set” & “reply” operations.
- Message field values are specified in the table at the end of this document or the accompanying excel file

Example,

Description	Command
Set output 1 volume to -40dB	set active out1 vol -40CR

*Extended examples are shown on the next page

Notes

- For “reply” operation, in case of success, value field will contain the requested/updated item
- For “reply” operation, in case of failure, value field will contain the text “error”.
- Wildcard “all” is available for message fields param, sub or ssub to provide access to first-level object members only.

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Extended Examples

	operation	section	group	param	sub	ssub	value	Carriage Return
Set input 1 volume of preset 1 to -20dB	set	preset1	in1	vol			-20.0	CR
	reply	preset1	in1	vol			-20.0	CR
Set output 1 volume to -40dB	set	active	out1	vol			-40	CR
	reply	active	out1	vol			-40	CR
Mute output 4	set	active	out4	mute			true	CR
	reply	active	out4	mute			true	CR
Set output 1 to use input 4 source	set	active	mixout1in4	source			true	CR
	reply	active	mixout1in4	source			true	CR
Get the fault status of output 3 amplifier	get	active	out3	amp	status	fault		CR
	reply	active	out3	amp	status	fault	false	CR
Save current configuration to preset 1	set	device	preset	save			1	CR
	reply	device	preset	save			1	CR
Recall preset 1	set	device	preset	recall			1	CR
	reply	device	preset	recall			1	CR
Enter standby mode	set	device	mode	standby			true	CR
	reply	device	mode	standby			true	CR
Get product serial number	get	device	version	serial				CR
	reply	device	version	serial			nsnu1807dja00001	CR
Set input 1 volume of preset 1 to -20dB	set	preset1	in1	vol			-20	CR
	reply	preset1	in1	vol			-20	CR
Set the username to “admin”	set	device	security	user1	name		admin	CR
	reply	device	security	user1	name		admin	CR
Log in with username and password “admin”	set	device	security	login			admin,admin	CR
	reply	device	security	login			admin,admin	CR
Reset the device	set	device	mode	reset			true	CR
	reply	device	mode	reset			true	CR

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ALMA Interface Protocol Specification for Australian Monitor products

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Name						Value Type		Description	Comment	operation permission		Used in Product Flag			
operation	section	group	param	sub	ssub	Value Type	Value Range			set	get	HSxxP	ISxxP	TBA	TBA
										No access **U**nsecure **S**ecure **A**dmin					
set						object		operation to update config data	object will contain section, group & param fields, sub & ssub are optional	-	-	Y	Y		
get						object		operation to retrieve config data	object will contain section, group & param fields, sub & ssub are optional	-	-	Y	Y		
reply						object		operation to reply to a 'get' or 'set' operation	object will contain section, group & param fields, sub & ssub are optional	-	-	Y	Y		
	device					object		Device Section		-	-	Y	Y		
		version				object		Version group		-	-	Y	Y		
			serial			string		Serial Number	see AM-TS-140414 Product Serial Numbering Standard	N	U	Y	Y		
			app			array[3], unsigned 8-bit number	0..255	Application firmware version	format: major.minor.build	N	U	Y	Y		
			boot			array[3], unsigned 8-bit number	0..255	Bootloader firmware version	format: major.minor.build	N	U	Y	Y		
			dsp			array[3], unsigned 8-bit number	0..255	DSP firmware version	format: major.minor.build	N	U	Y	Y		
			mac			array[6], unsigned 8-bit number	0..255	MAC Address		N	U	N	Y		
			json			array[3], unsigned 8-bit number	0..255	JSON Interface Protocol Specification version	format: major.minor.build	N	U	Y	Y		
			hardware			unsigned 8-bit number	1..32	Hardware ID **(deprecated, use parameter 'pcbrev')**	PCB ID	N	U	Y	N		
			amp			unsigned 8-bit number	1..32	Amplifier ID **(deprecated, use parameter 'pcbrev')**	PCB ID	N	U	Y	N		
			model			string	8 bytes, UTF-8	Amplifier Model Number		N	U	N	Y		
			pcbrev			array[numpcbrev], unsigned 8-bit number	0..99	PCB revision array	Array of PCB revision numbers. Value 255 indicates PCB not detected	N	U	Y	Y		
		config				object		Configuration Group		-	-	Y	Y		
			id			unsigned 8-bit number	0..255	Device ID	For RS485 & daisy chained devices	S	S	N	N		
			name			string	32 bytes, UTF-8	Device name	default to serial number	S	S	Y	Y		
			numinput			unsigned 8-bit number	0..255	Total Number of inputs		N	S	Y	Y		

			numoutput			unsigned 8-bit number	0..255	Total Number of outputs		N	S	Y	Y		
			nummic			unsigned 8-bit number	0..255	Number of microphone inputs		N	S	N	N		
			numline			unsigned 8-bit number	0..255	Number of line inputs		N	S	N	N		
			numpaging			unsigned 8-bit number	0..255	Number of paging inputs		N	S	N	N		
			numstereo			unsigned 8-bit number	0..255	Number of stereo inputs		N	S	N	N		
			nummp			unsigned 8-bit number	0..255	Number of Media Player inputs	Only one Media Player input per device	N	S	N	N		
			numpink			unsigned 8-bit number	0..255	Number of Pink Noise inputs		N	S	N	N		
			numwhite			unsigned 8-bit number	0..255	Number of White Noise inputs	Only one White Noise input per device	N	S	N	N		
			numtesttone			unsigned 8-bit number	0..255	Number of Sine wave Test Tone inputs	Only one Sine wave Test Tone input per device	N	S	N	N		
			numoutm			unsigned 8-bit number	0..255	Number of mono outputs		N	S	N	Y		
			numouts			unsigned 8-bit number	0..255	Number of stereo outputs		N	S	N	N		
			numfilterin			unsigned 8-bit number	0..255	Number of filters per input		N	S	N	N		
			numfilterout			unsigned 8-bit number	0..255	Number of filters per output		N	S	Y	Y		
			numtone			unsigned 8-bit number	0..255	Number of tones per output		N	S	N	N		
			numpreset			unsigned 8-bit number	0..255	Number of Presets		N	S	Y	Y		
			numuser			unsigned 8-bit number	0..255	Number of Security Users		N	S	Y	Y		
			numntpaddr			unsigned 8-bit number	0..255	Number of NTP Servers		N	S	N	N		
			numpcbrev			unsigned 8-bit number	0..255	Number of PCB revision numbers		N	S	Y	Y		
			numcontrol			unsigned 8-bit number	0..255	Number of Control Port pins		N	S	N	Y		
		mode				object		Mode Group		-	-	Y	Y		
			reset			bool	true	Reset device action flag	reset action may disconnect browser	S	N	Y	Y		
			factory			char	a, c, p	Factory Reset device action: all, current config, presets	reset action may disconnect browser	S	N	Y	Y		
			standby			bool	true/false	Standby mode action flag	enter / exit Standby Mode	S	S	Y	Y		
			wakelan			bool	true/false	Wake on LAN action flag		S	S	N	Y		
			autostandby			bool	true/false	Auto standby mode action flag	enable / disable Auto Standby Mode	S	S	Y	Y		

			autotime			unsigned 16-bit number	0..maxTime (s)	Auto standby time	display as minutes & seconds	S	S	Y	Y		
			autolevel			signed 8-bit number	minVol..maxVol (dB)	Auto standby threshold level	only used in HSP. Auto standby moved to inX section for other products	S	S	Y	N		
			softstart			unsigned 16-bit number	0..65535 (ms)	Audio soft start period	output volumes ramp up over soft start period after power up or exit standby	S	S	Y	Y		
			control			array[numcontrol], string		Control Port pin feature assignment array		-	-	N	Y		
				…				as per controlX		-	-	N	Y		
			controlX			string	5 bytes, UTF-8	Control Port pin feature assignment where X = 1..numcontrol		S	S	N	Y		
			status			object		Device Mode Status information		-	-	Y	Y		
				standby		bool	true/false	Standby mode status flag	Standby Mode may have multiple triggers	N	S	Y	Y		
			failover			array[numoutput], object		Failover Param array							
				…				as per failoverX		-	-	N	Y		
			failoverX			object		Config for failover X where X = 1..numoutput							
				id		unsigned 8-bit number	1..numuser	User ID index		N	A	N	Y		
				inputlost		unsigned 8-bit number	1..255	Monitored input to trigger failover		S	S	N	Y		
				switchoverinput		unsigned 8-bit number	1..255	Fallback input when monitored input lost		S	S	N	Y		
				threshold		float (32-bit) number	minVal..maxVal (dB)	Threshold to start failover action		S	S	N	Y		
				delay		unsigned 16-bit number	0..65535 (ms)	Delay before switchover actioned		S	S	N	Y		
				vol		float (32-bit) number	minVol..maxVol (dB)	Switchover input volume		S	S	N	Y		
				enable		bool	true/false	Enable failover flag		S	S	N	Y		
				status		object		Failover status information		N	S	N	Y		
					id	unsigned 8-bit number	1..numuser	User ID index		N	A	Y	Y		
					activated	bool	true/false	Failover activated flag		N	S	N	Y		
			led			unsigned 8-bit number	0-255	0=turn all front panel leds off for ten seconds, 1=turn all front panel leds On for ten seconds		S	S	N	Y		
		preset				object		Preset Group		-	-	Y	Y		
			save			unsigned 8-bit number	1..numpreset	Save active audio configuration to Preset		S	N	Y	Y		

			recall			unsigned 8-bit number	1..numpreset	Recall audio configuration from Preset		S	N	Y	Y		
			name			array[numpreset], string		Preset name array		-	-	Y	Y		
				…				as per nameX		-	-	Y	Y		
			nameX			string	32 bytes, UTF-8	Preset name where X = 1..numpreset		S	S	Y	Y		
		network				object		Network Group		-	-	N	Y		
			name			string	15 bytes, UTF-8	Network domain name	default: AusMonitor (NETBIOS / DNS friendly name)	S	S	N	Y		
			mac			array[6], unsigned 8-bit number	0..255	MAC Address	same data as device,version,mac	S	S	N	Y		
			ipaddr			array[4], unsigned 8-bit number	0..255	IPv4 Address	Used when DHCP client is disabled	S	S	N	Y		
			subnet			array[4], unsigned 8-bit number	0..255	Subnet Mask	Used when DHCP client is disabled	S	S	N	Y		
			gateway			array[4], unsigned 8-bit number	0..255	Default Gateway Address	Used when DHCP client is disabled	S	S	N	Y		
			dhcp			bool	true/false	DHCP Client enable flag	When disabled, use the specified ipaddr, subnet & gateway	S	S	N	Y		
			proxy			bool	true/false	Proxy Server enable flag		S	S	N	N		
			proxyaddr			array[4], unsigned 8-bit number	0..255	Proxy Address		S	S	N	N		
			proxyport			unsigned 16-bit number	0..65535	Proxy Port		S	S	N	N		
			ntpaddr			array[numntp], string		NTP Server Address array		-	-	N	Y		
				…				as per ntpX		-	-	N	Y		
			ntpaddrX			string	32 bytes, UTF-8	NTP Server Address where X = 1..numntp		S	S	N	Y		
			status			object		Network Status information		-	-	N	Y		
				link		bool	true/false	Link established status flag		N	S	N	Y		
				connect		bool	true/false	Connection established status flag		N	S	N	Y		
			tcpserver							S	S	N	Y		
				enable		bool	true/false	Enable failover flag		S	S	N	Y		
				port		unsigned 16-bit number	0..65535	tcpserver port number		S	S	N	Y		
			udpserver							S	S	N	Y		
				enable		bool	true/false	Enable failover flag		S	S	N	Y		
				port		unsigned 16-bit number	0..65535	udpserver port number		S	S	N	Y		
		security				object		Security Group		-	-	Y	Y		
			enable			bool	true/false	Security enable flag	default: false	A	U	Y	Y		

			login			array[2], string	32 bytes, UTF-8	Login array	No space or comma in username or password. Format: username,password	U	N	Y	Y		
			logout			string	32 bytes, UTF-8	username		S	N	N	Y		
			user			array[numuser], object		User array		-	-	Y	Y		
				…				as per userX		-	-	Y	Y		
			userX			object		User X where X = 1..numuser		-	-	Y	Y		
				id		unsigned 8-bit number	1..numuser	User ID index		N	A	Y	Y		
				name		string	32 bytes, UTF-8	Username	default: admin	A	A	Y	Y		
				password		string	32 bytes, UTF-8	Password	default: admin	A	A	Y	Y		
				email		string	32 bytes, UTF-8	Email address		A	A	N	Y		
				active		bool	true/false	User active flag		A	A	N	Y		
				admin		bool	true/false	Admin permission flag		A	A	Y	Y		
				get		bool	true/false	Operation 'get' requires secure access flag		A	A	N	Y		
				set		bool	true/false	Operation 'set' requires secure access flag		A	A	N	Y		
				timeout		unsigned 16-bit number	10..65535 (s)	Login active time period	display as hours, minutes & seconds	A	A	Y	Y		
		rtc				object		Real Time Clock Group		-	-	N	N		
			date			array[3], number		Date array		-	-	N	N		
				year		unsigned 16-bit number	0..65535	Year	no epoch	S	S	N	N		
				month		unsigned 8-bit number	1..12	Month		S	S	N	N		
				date		unsigned 8-bit number	1..31	Date		S	S	N	N		
			time			array[3], number		Time array		-	-	N	N		
				hour		unsigned 8-bit number	0..23	Hour		S	S	N	N		
				min		unsigned 8-bit number	0..59	Minute		S	S	N	N		
				sec		unsigned 8-bit number	0..59	Second		S	S	N	N		
			datetime			array[6], number		Date & Time array		-	-	N	N		
				year		unsigned 16-bit number	0..65535	Year	no epoch	S	S	N	N		
				month		unsigned 8-bit number	1..12	Month		S	S	N	N		
				date		unsigned 8-bit number	1..31	Date		S	S	N	N		
				hour		unsigned 8-bit number	0..23	Hour		S	S	N	N		
				min		unsigned 8-bit number	0..59	Minute		S	S	N	N		
				sec		unsigned 8-bit number	0..59	Second		S	S	N	N		

		log				object		Log Request Group		-	-	N	Y		
			enable			object		Log Request flags		-	-	N	Y		
				error		bool	true/false	All Error logs		S	S	N	Y		
				warn		bool	true/false	All Warning logs		S	S	N	Y		
				info		bool	true/false	All Information logs		S	S	N	Y		
				nexterror		bool	true/false	Next Error logged (subscribe while true)		S	S	N	Y		
				nextwarn		bool	true/false	Next Warning logged (subscribe while true)		S	S	N	Y		
				nextinfo		bool	true/false	Next Information logged (subscribe while true)		S	S	N	Y		
			error			array[...], string		Error Log (reply only)		N	S	N	Y		
			warn			array[...], string		Warning Log (reply only)		N	S	N	Y		
			info			array[...], string		Information Log (reply only)		N	S	N	Y		
	active					object		Active Audio Processing Section		-	-	Y	Y		
		expansion				array[numexpansion], object		Expansion Group array		-	-	N	Y		
			…					as per expansionX		-	-		Y		
		expansionX				object		Config for Expansion X where X = 1..numexpansion		-	-	N	Y		
			id			unsigned 8-bit number	1..numexpansion	Expansion ID index		N	S	N	Y		
			heartbeat			bool	true/false	do we have comms with the expansion board		N	S	N	Y		
			type									N	Y		
		in				array[numinput], object		Input Group array		-	-	Y	Y		
			…					as per inX		-	-	Y	Y		
		inX				object		Config for Input X where X = 1..numinput		-	-	Y	Y		
			id			unsigned 8-bit number	1..numinput	Input ID index		N	S	Y	Y		
			name			string	32 bytes, UTF-8	Input name	surround name with " ", e.g. set active in1 "Input 1"	S	S	Y	Y		
			mode			char	m, l, p, s, 3, n, w, t, a	Input mode: mic, line, paging, stereo, MP, pink noise, white noise, test tone, attenuation	Attenuation only applies to analog expansion (-6dB)	S	S	Y	Y		
			disable			bool	true/false	Input disable flag		S	S	N	N		
			invert			bool	true/false	Invert enable flag		S	S	N	N		
			mute			bool	true/false	Mute enable flag		S	S	N	N		
			gnd			bool	true/false	Ground Lift enable flag		S	S	N	N		
			ptt			bool	true/false	PTT switch enable flag (mode = p)		S	S	N	N		

			phantom			bool	true/false	Phantom power enable flag (mode = m)		S	S	N	N		
			autostandby			bool	true/false	Auto standby mode action flag	enable / disable input for Auto Standby Mode	S	S	N	Y		
			autolevelatt			bool	true/false	Auto standby input attenuation action flag	enable/disable 10db attenuator for the auto standby signal detector	S	S	N	N		
			autolevel			signed 8-bit number	minVol..maxVol (dB)	Auto standby threshold level for inX		S	S	Y	Y		
			freq			unsigned 16-bit number	1..20000 (Hz)	Frequency (mode = t)	Sine wave test tone frequency	S	S	Y	Y		
			gainana			float (32-bit) number	minVol..maxVol (dB)	Analogue gain		S	S	N	Y		
			gaindig			float (32-bit) number	minVol..maxVol (dB)	Digital gain	Digital gain used for Dante modules	S	S	N	Y		
			vol			float (32-bit) number	minVol..maxVol (dB)	Volume	For mode = s, value type will be array of left & right channels	S	S	Y	N		
				up		float (32-bit) number	> 0.0 (dB)	Increase volume by specified value (update only)	For mode = s, value will be applied to both left & right channels	S	N	Y	N		
				down		float (32-bit) number	> 0.0 (dB)	Decrease volume by specified value (update only)	For mode = s, value will be applied to both left & right channels	S	N	Y	N		
			status			object		Input Status information		-	-	Y	Y		
				leveli		signed 8-bit number	-128..127 (dB)	Level in meter status	For mode = s, value type will be array of left & right channels	N	S	Y	Y		
				levelo		signed 8-bit number	-128..127 (dB)	Level out meter status	For mode = s, value type will be array of left & right channels	N	S	Y	N		
				clipi		bool	true/false	Clip in status	For mode = s, value type will be array of left & right channels	N	S	N	N		
				clipo		bool	true/false	Clip out status	For mode = s, value type will be array of left & right channels	N	S	N	N		
				ptt		bool	true/false	PTT switch status (mode = p)		N	S	N	N		
			filter			array[numfilterin], object		Filter array		-	-	N	N		
				…				as per filterX		-	-	N	N		
			filterX			object		Filter X where X = 1..numfilterin		-	-	N	N		
				id		unsigned 8-bit number	1..numfilter	Filter ID index		N	S	N	N		
				enable		bool	true/false	Enable flag		S	S	N	N		
				type		string	hp, lp, ap, hs, ls, eq, no	Filter type: hi-pass, all-pass, lo-pass, hi-shelf, lo-shelf, eq (bell), notch	Two byte string	S	S	N	N		

				freq		unsigned 16-bit number	1..22000 (Hz)	Cut-off frequency		S	S	N	N		
				gain		float (32-bit) number	minGain..maxGain (dB)	Gain (cut / boost)	For type = hp, lp, ap, hs, ls, eq	S	S	N	N		
				q		float (32-bit) number	0.00..20.00	Quality parameter	For type = ap, eq	S	S	N	N		
				family		char	b, s, l	Filter family: butterworth, bessel, linkwitz–riley	For type = hp, lp	S	S	N	N		
				slope		unsigned 8-bit number	6..48 (dB)	Slope of filter in 6dB steps	For type = hp, lp	S	S	N	N		
			agc			object		Auto Gain Control block		-	-	N	N		
				enable		bool	true/false	Enable flag		S	S	N	N		
				threshold		float (32-bit) number	minVol..maxVol (dB)	Theshold activation level		S	S	N	N		
				ratio		float (32-bit) number	1.0..∞	Gain Ratio (X:1)		S	S	N	N		
				target		float (32-bit) number	minVol..maxVol (dB)	Target level		S	S	N	N		
				attack		unsigned 16-bit number	1..5000 (ms)	Attack time		S	S	N	N		
				release		unsigned 16-bit number	1..5000 (ms)	Release Time		S	S	N	N		
				status		object		Status information		-	-	N	N		
					leveli	signed 8-bit number	-128..127 (dB)	Level in meter status	For mode = s, value type will be array of left & right channels	N	S	N	N		
					levelo	signed 8-bit number	-128..127 (dB)	Level out meter status	For mode = s, value type will be array of left & right channels	N	S	N	N		
					gr	signed 8-bit number	-128..127 (dB)	Gain reduction meter status		N	S	N	N		
					above	bool	true/false	Signal above threshold		S	S	N	N		
			compressor			object		Compressor block	May be used as Limiter	-	-	N	N		
				enable		bool	true/false	Enable flag		S	S	N	N		
				threshold		float (32-bit) number	minVol..maxVol (dB)	Theshold activation level		S	S	N	N		
				makeup		float (32-bit) number	minGain..maxGain (dB)	Make-up compensation gain level (post compressor)		S	S	N	N		
				ratio		float (32-bit) number	1.0..∞	Compression Ratio (X:1)	Compressor generally < 20:1. Limiter generally ∞:1	S	S	N	N		
				knee		unsigned 8-bit number	0..48 (dB)	Knee width (in steps of 6dB)	Limiter has hard knee (0dB witdh)	S	S	N	N		
				attack		unsigned 16-bit number	1..maxTime (ms)	Attack time	Limiter has zero attack time	S	S	N	N		
				hold		unsigned 16-bit number	0..maxTime (ms)	Hold Time		S	S	N	N		
				release		unsigned 16-bit number	1..maxTime (ms)	Release Time		S	S	N	N		
				status		object		Status information		-	-	N	N		
					leveli	signed 8-bit number	-128..127 (dB)	Level in meter status	For mode = s, value type will be array of left & right channels	N	S	N	N		

					levelo	signed 8-bit number	-128..127 (dB)	Level out meter status	For mode = s, value type will be array of left & right channels	N	S	N	N		
					gr	signed 8-bit number	-128..127 (dB)	Gain Reduction meter status		N	S	N	N		
					above	bool	true/false	Level above threshold status flag	For mode = s, value type will be array of left & right channels	N	S	N	N		
			limiter			object		Limiter block		-	-	N	N		
				enable		bool	true/false	Enable flag		S	S	N	N		
				threshold		float (32-bit) number	minVol..maxVol (dB)	Theshold activation level		S	S	N	N		
				gain		float (32-bit) number	minGain..maxGain (dB)	Gain Reduction		S	S	N	N		
				hold		unsigned 16-bit number	0..maxTime (ms)	Hold time		S	S	N	N		
				release		unsigned 16-bit number	1..maxTime (ms)	Release time		S	S	N	N		
				status		object		Status information		-	-	N	N		
					leveli	signed 8-bit number	-128..127 (dB)	Level in meter status	For mode = s, value type will be array of left & right channels	N	S	N	N		
					levelo	signed 8-bit number	-128..127 (dB)	Level out meter status	For mode = s, value type will be array of left & right channels	N	S	N	N		
					gr	signed 8-bit number	-128..127 (dB)	Gain reduction meter status		N	S	N	N		
					above	bool	true/false	Level above threshold status flag	For mode = s, value type will be array of left & right channels	S	S	N	N		
			noisegate			object		Noise Gate block		-	-	N	N		
				enable		bool	true/false	Enable flag		S	S	N	N		
				threshold		float (32-bit) number	minVol..maxVol (dB)	Theshold activation level		S	S	N	N		
				range		float (32-bit) number	minGain..maxGain (dB)	Range / Depth attenuation level		S	S	N	N		
				attack		unsigned 16-bit number	1..maxTime (ms)	Attack time		S	S	N	N		
				hold		unsigned 16-bit number	0..maxTime (ms)	Hold time		S	S	N	N		
				release		unsigned 16-bit number	1..maxTime (ms)	Release time		S	S	N	N		
				status		object		Status information		-	-	N	N		
					above	bool	true/false	Level above threshold status flag	For mode = s, value type will be array of left & right channels	N	S	N	N		
			mpctrl			object		Media Player Control array (mode = 3)		-	-	N	N		
				play		bool	true/false	Play track		S	S	N	N		
				pause		bool	true/false	Pause playback		S	S	N	N		
				stop		bool	true/false	Stop playback		S	S	N	N		

				fwd		bool	true/false	Scroll forward in track		S	S	N	N		
				back		bool	true/false	Scroll back in track		S	S	N	N		
				next		bool	true/false	Skip to next track		S	S	N	N		
				prev		bool	true/false	Skip to previous track		S	S	N	N		
		mixoutXin				array[numinput], object		Mixer Group array for Output X where X = 1..numoutput		-	-	Y	Y		
			…					as per mixoutXinY		-	-	Y	Y		
		mixoutXinY				object		Mixer config for Output X Input Y where X = 1..numoutput, Y = 1..numinput		-	-	Y	Y		
			idout			unsigned 8-bit number	1..numoutput	Output ID index		N	S	Y	Y		
			idin			unsigned 8-bit number	1..numinput	Input ID index		N	S	Y	Y		
			source			bool	true	Source select	Input source selection for Output (single Input selection, no mixing)	S	S	Y	N		
			invert			bool	true/false	Invert enable flag		S	S	N	Y		
			mute			bool	true/false	Mute enable flag		S	S	N	Y		
			vol			float (32-bit) number	minVol..maxVol (dB)	Volume	For mode = s, value type will be array of left & right channels	S	S	N	Y		
				up		float (32-bit) number	> 0.0 (dB)	Increase volume by specified value	For mode = s, value will be applied to both left & right channels	S	N	N	Y		
				down		float (32-bit) number	> 0.0 (dB)	Decrease volume by specified value	For mode = s, value will be applied to both left & right channels	S	N	N	Y		
			status			object		Input Status information		-	-	N	Y		
				leveli		signed 8-bit number	-128..127 (dB)	Level in meter status	For mode = s, value type will be array of left & right channels	N	S	N	N		
				levelo		signed 8-bit number	-128..127 (dB)	Level out meter status	For mode = s, value type will be array of left & right channels	N	S	N	Y		
				clipi		bool	true/false	Clip in status	For mode = s, value type will be array of left & right channels	N	S	N	N		
				clipo		bool	true/false	Clip out status	For mode = s, value type will be array of left & right channels	N	S	N	N		
				ptt		bool	true/false	PTT switch status (mode = p)	duplicate of input-inX-status-ptt	N	S	N	N		
			priority			object		Priority block		-	-	N	N		
				enable		bool	true/false	Enable flag		S	S	N	N		
				threshold		signed 8-bit number	minVol..maxVol (dB)	Acivation threshold		S	S	N	N		

				level		unsigned 8-bit number	1..4	Priority Level (Low, Med, High, Highest)		S	S	N	N		
				release		unsigned 8-bit number	0s..maxTime	Release time (seconds)		S	S	N	N		
			bgmsrc			object		Background Music Source block (mode = m, l, s)		-	-	N	N		
				enable		bool	true/false	Enable flag	Only one mic/line/stereo input can be selected as the BGM source	S	S	N	N		
				mute		bool	true/false	Mute signal flag		S	S	N	N		
				vol		float (32-bit) number	minVol..maxVol (dB)	Volume	For mode = s, value type will be array of left & right channels	S	S	N	N		
				status		object		Status information		-	-	N	N		
					levelo	signed 8-bit number	-128..127 (dB)	Level out meter status	For mode = s, value type will be array of left & right channels	N	S	N	N		
					clipo	bool	true/false	Clip out status	For mode = s, value type will be array of left & right channels	N	S	N	N		
			pagecontrol			object		Paging Control block		-	-	N	N		
				enable		bool	true/false	Enable flag		S	S	N	N		
				threshold		float (32-bit) number	minVol..maxVol (dB)	Theshold activation level	applicable when mixer-outXinY-enable-ptt is false	S	S	N	N		
				attack		unsigned 8-bit number	1..maxTime (ms)	Attack time		S	S	N	N		
				hold		unsigned 16-bit number	0..maxTime (ms)	Hold time		S	S	N	N		
				release		unsigned 16-bit number	1..maxTime (ms)	Release time		S	S	N	N		
				chimeen		bool	true/false	Chime enable flag		S	S	N	N		
				chimevol		float (32-bit) number	minVol..maxVol (dB)	Chime volume		S	S	N	N		
			pageaction					Paging Action block (mode = m, l, s)		-	-	N	N		
				enable		bool	true/false	Enable flag		S	S	N	N		
				depth		float (32-bit) number	minVol..maxVol (dB)	Duck depth		S	S	N	N		
		out				array[numoutput], object		Output Group array		-	-	Y	Y		
			…					as per outX		-	-	Y	Y		
		outX				object		Config for Output X where X = 1..numoutput		-	-	Y	Y		
			id			unsigned 8-bit number	1..numoutput	Output ID index		N	S	Y	Y		
			name			string	32 bytes, UTF-8	Output name	surround name with " ", e.g. set active out1 "Output 1"	S	S	Y	Y		
			mode			char	m, s	Output mode: mono, stereo		S	S	N	N		

			type			unsigned 8-bit number	4, 70, 100	Output type: 4Ω, 70V, 100V		S	S	Y	Y		
			disable			bool	true/false	Output disable flag		S	S	N	N		
			invert			bool	true/false	Invert enable flag		S	S	Y	Y		
			mute			bool	true/false	Mute enable flag		S	S	Y	Y		
			extmute			bool	true/false	External Mute Control enable flag	Enable/disable external mute control for this output	S	S	Y	N		
			gainana			float (32-bit) number	minVol..maxVol (dB)	Analogue gain		S	S	N	N		
			gaindig			float (32-bit) number	minVol..maxVol (dB)	Digital gain		S	S	N	Y		
			vol			float (32-bit) number	minVol..maxVol (dB)	Volume	For mode = s, value type will be array of left & right channels	S	S	Y	Y		
				up		float (32-bit) number	> 0.0 (dB)	Increase volume by specified value	For mode = s, value will be applied to both left & right channels	S	N	Y	Y		
				down		float (32-bit) number	> 0.0 (dB)	Decrease volume by specified value	For mode = s, value will be applied to both left & right channels	S	N	Y	Y		
			status			object		Input Status information		-	-	Y	Y		
				leveli		signed 8-bit number	-128..127 (dB)	Level in meter status	For mode = s, value type will be array of left & right channels	N	S	N	Y		
				levelo		signed 8-bit number	-128..127 (dB)	Level out meter status	For mode = s, value type will be array of left & right channels	N	S	Y	Y		
				clipi		bool	true/false	Clip in status	For mode = s, value type will be array of left & right channels	N	S	N	N		
				clipo		bool	true/false	Clip out status	For mode = s, value type will be array of left & right channels	N	S	N	N		
			filter			array[numfilterout], object		Filter array		-	-	N	Y		
				…				as per filterX		-	-	N	Y		
			filterX			object		Filter X where X = 1..numfilterout		-	-	Y	Y		
				…				as per filterX		-	-	Y	Y		
			agc			object		Auto Gain Control block		-	-	N	N		
				…				as per agc		-	-	N	N		
			compressor			object		Compressor block		-	-	Y	Y		
				…				as per compressor		-	-	Y	Y		
			limiter			object		Limiter block		-	-	N	N		
				…				as per limiter		-	-	N	N		
			noisegate			object		Noise Gate block		-	-	N	N		
				…				as per noisegate		-	-	N	N		
			delay			object		Delay block		S	S	N	Y		
				enable		bool	true/false	Enable flag		S	S	N	Y		

				time		unsigned 16-bit number	0..5000 (ms)	Delay time	For mode = s, value type will be array of left & right channels	S	S	N	Y		
			tone			array[numtone], object		Tone Generator array		-	-	N	N		
				…				as per toneX		-	-	N	N		
			toneX			object		Tone Generator X where X = 1..numtone	Predefined evac/alert/intruder/bell/chime tones	-	-	N	N		
				id		unsigned 8-bit number	1..numtone	Tone ID index		N	S	N	N		
				name		string	32 bytes, UTF-8	Tone name		S	S	N	N		
				enable		bool	true/false	Enable flag		S	S	N	N		
				priority		unsigned 8-bit number	1..255	Tone priority (1=highest)		S	S	N	N		
				vol		float (32-bit) number	minVol..maxVol (dB)	Volume		S	S	N	N		
			amp			object		Amplifier Status Information		-	-	Y	Y		
				temp		unsigned 8-bit number	0..255 (°C)	Temperature		N	S	N	N		
				status		object		Status information		-	-	Y	Y		
					tempwarm	bool	true/false	Thermal warm level warning		N	S	Y	Y		
					temphot	bool	true/false	Thermal hot level warning		N	S	Y	Y		
					standby	bool	true/false	Standby status		N	S	Y	Y		
					overtemp	bool	true/false	Overtemperature Shutdown status		N	S	Y	Y		
					overload	bool	true/false	Overload Shutdown status		N	S	Y	Y		
					fault	bool	true/false	Startup fault status		N	S	Y	Y		
					reset	bool	true/false	Reset status		N	S	Y	Y		
					mute	bool	true/false	Mute status		N	S	Y	Y		
				astatus		array[], bool		Status information	NB: this is an array, not an object	-	-	Y	Y		
					…			as per status		-	-	Y	Y		
	presetX					object		Preset Audio Processing Section where X = 1..numpreset		-	-	Y	Y		
		in				array[numinput], object		Preset Input Group array		-	-	Y	Y		
			…					as per active inX		-	-	Y	Y		
		inX				object		Preset Config for Input X		-	-	Y	Y		
			…					as per active inX		-	-	Y	Y		
		mixoutXin				array[numinput], object		Preset Mixer Group array for Output X		-	-	Y	Y		
			…					as per active mixoutXinY		-	-	Y	Y		

		mixoutXinY				object		Preset Mixer config for Output X Input Y		-	-	Y	Y		
			…					as per active mixoutXinY		-	-	Y	Y		
		out				array[numoutput], object		Preset Output Group array		-	-	Y	Y		
			…					as per active outX		-	-	Y	Y		
		outX				object		Preset Config for Output X		-	-	Y	Y		
			…					as per active outX		-	-	Y	Y		
	copy					object		Preset Audio Processing Section where X = 1..numpreset		-	-	Y	Y		
		outX				object		Preset Input Group array		-	-	Y	Y		
			all							-	-	N	Y		
				to		unsigned 8-bit number	1-9					N	Y		
			compressor					compressor block		-	-	N	Y		
				to		unsigned 8-bit number	1-9	copies all the compressor settings to this output from the selected output		-	-	N	Y		
			delay					delay block		-	-	N	Y		
				to		unsigned 8-bit number	1-4	copies all the delay settings to this output from the selected output		-	-	N	Y		
			filter			array[3],string	"dest=?","start=?","count=?"	you are copying a variable amount of filters from one output to another. The values used to replace the "?" must be numbers that are within the valid range for the amp/dsp being controlled	E.g. "dest=3","start=2","count=5" and outX=1: In this situation you would be copying 5 filters, starting at filter 2 from output 1 to output 3	-	-	N	Y		
						array[3]:unsigned 8-bit number	destination,start_filter,qty	copies all the filter settings to this output from the selected output		-	-	N	Y		
			mix					mixer block		-	-	N	Y		
				to		unsigned 8-bit number	1-9	copies all the mixer settings to this output from the selected output		-	-	N	Y		
			type							-	-	N	Y		
						unsigned 8-bit number	4, 70, 100	Output type: 4Ω, 70V, 100V				N	Y		

		presetX				object		Preset Input Group array		-	-	N	Y		
			to			unsigned 8-bit number	1-10	copies the settings to this preset from the selected preset		-	-	N	Y		