Device Messaging Structure
Version 2.0

09 December 2013

About HTNG

Hotel Technology Next Generation (HTNG) is a non-profit association with a mission to foster, through collaboration and partnership, the development of next-generation systems and solutions that will enable hoteliers and their technology vendors to do business globally in the 21st century; to be recognized as a leading voice of the global hotel community, articulating the technology requirements of hotel companies of all sizes to the vendor community; and to facilitate the development of technology models for hospitality that will foster innovation, improve the guest experience, increase the effectiveness and efficiency of hotels, and create a healthy ecosystem of technology suppliers.

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1   Document Information

1.1   Document History

Version	Date	Author	Comments
0.9	17 Feb 2010	Michael Linck	Public Release Draft
0.92	25 May 2010	Jon Buenviaje	Minor edits and additions in section 4
0.93	09 Jun 2010	Michael Linck	Revisions from Zug – section 3 purpose and revision process
0.94	03 Aug 2010	Michael Linck / Jon Buenviaje	Updated Value Ranges
0.95	08 Sep 2010	Jon Buenviaje	Included partial template for message line items in 4.1
0.96	14 Oct 2010	Mario Sorce	Message structure Framework–Expanded section 4
0.97	17 Dec 2010	Jim Fenno /Mario Sorce	Section 4.3 clarifications -
0.98	10 Jan 2011	Mario Sorce	Document re-organization – clean-up
0.99	25 Feb 2011	Jon Buenviaje	Moved Use Case section and modified the intro to that section. Expanded on definitions section. Other minor formatting
1.00	15 Mar 2011	Jon Buenviaje	Minor formatting. Edits and comments from San Diego F2F meeting incorporated.
1.01-1.02	17 Apr 2013	Eric Eichensehr / Gary Gage / Jay Rosamilia	General cleanup and updated Door Lock section
1.03	01 May 2013	Eric Eichensehr / Gary Gage / Jay Rosamilia	Updated Door Lock section
1.04	15 May 2013	Device Controls Integration and Intelligent Guest Room (IGR) Workgroups	Reviewed/Updated Door Lock section
1.05	22 May 2013	IGR Workgroup	Update Door Lock section
1.06	29 May 2013	IGR Workgroup	Updated Thermostat section
1.07	05 Jun 2013	IGR Workgroup	Updated Thermostat, Key and Lighting sections
1.08	12 Jun 2013	IGR Workgroup Kylene Reese	Updated In-Room Refreshment, Safe, Occupancy Detection and Drapes sections Updated and formatted document
1.09	19 Jun 2013	IGR Workgroup	Reviewed and updated Thermostat, In-Room Refreshment Center, Safe and Occupancy Detection sections with Inncom
1.10	20 Jun 2013	Jim Fenno	Updated Television Integration section
1.11	03 Jul 2013	IGR Workgroup	Reviewed Safe and Occupancy sections with VingCard Elsafe and Inncom respectively; updated Alarm section
1.12	10 Jul 2013	IGR Workgroup	Finished Alarm Clock section
1.13	17 Jul 2013	IGR Workgroup	Completed Water Detection, Coffee Maker, Window / Balcony / Lanai, and Phone sections
1.14-1.17	Jul-Aug 2013	IGR Workgroup	Updated Entry Camera and Audio Control sections
1.18	21 Aug 2013	IGR Workgroup	Updated Television section
1.19	23 Aug 2013	Jay Rosamilia, Kylene Reese	Updated Sections 1, 2 and 3
1.20	28 Aug 2013	IGR Workgroup	Updated Television, Phone sections
1.21-.22	Sep 2012	IGR Workgroup	Updated Location Services section, moved some introductory information to the Appendix section
1.23	18 Sep 2013	IGR Workgroup	Removed Key and Portable Remote Control sections, updated Energizer section
1.24	27 Sep 2013	Eric Eichensehr	Cleaned up the Messaging Structure appendix
1.25	02 Oct 2013	IGR Workgroup	Reviewed Appendix and Kylene cleaned up the doc
1.26-1.27	15-16 Oct 2013	Jay Rosamilia, Workgroup	Updated the format of a few sections

1.28	17 Oct 2013	Kylene Reese	Continued updating the format of tables
1.29	22 Oct 2013	Eric Eichensehr	Updated appendix and fixed Lock Systems message ID and indexes
1.30-1.32	23-30 Oct 2013	IGR Workgroup, Eric Eichensehr	Updated a few sections that were missing functions; Eric updated Message Structure section; Removed Set Top Box section
1.33-.34	30 Oct 2013	Kylene Reese/Jay Rosamilia	Finalized document
1.35	01 Nov2013	Kylene Reese	Prepared document for workgroup review
1.36	06 Nov 2013	IGR Workgroup	Addressed workgroup comments
1.37	06 Nov 2013	Jay Rosamilia	Update hex codes
1.38	20 Nov 2013	Kylene Reese	Prepared document for workgroup vote
2.0	09 Dec 2013	IGR Workgroup	Final 2.0 Version released to HTNG members

1.2   This Specification at a Glance

This specification is used by device manufacturers, device gateways and integrators to control, status and receive events concerning devices. Described are device messaging structures, organized by device type, that provide a series of commands, statuses and events and their supporting parameters.

1.3   Document Purpose

This Device Messaging Structure provides a defined message set designed to enable structured communication between in-room devices and controls to ease the complexity of integrating devices from multiple vendors, in turn lowering the cost of building systems.

For Vendors:
1. To provide the description of the interface required at a functional level.
2. To provide a framework for technology-neutral application interoperability.

For Hoteliers:
1. To provide a basic design specification for possible use in an RFP or as part of a checklist for development.
2. To provide a technology-neutral framework to actively describe functionality.

1.4   Scope

In 2009, the former In-Room Control Integration (ICI) Team (now the Device Control Integration Workgroup) developed a base profile of devices and controls found in the typical guestroom. In 2013, the Intelligent Guest Room Workgroup reworked the document to make it more consistent and more easily understood. This document describes the messages and defined values that devices and controls utilize to ensure full interoperability.

1.5   Audience

This document is intended to aid in the design and integration of devices and hospitality systems that require interaction with other in-room devices. The document specifically targets hospitality system developers, integrators and operators.

1.6   Relationship to Other Standards

The Intelligent Guest Room (IGR) specification is the bridge between the HTNG Guest & Room Messaging Status (GRSM) specification and this DMS specification. Additionally, the IGR specification provides a XML structure for wrapping the messaging structures found in this specification.

1.7   Known Limitations

This Device Messaging Structure (DMS) is not intended to replace existing industry standard transport protocols, rather to provide a dictionary of messages and values for manufacturers and hoteliers developing and selecting products for the hospitality industry.

Since this document's primary purpose is to define the messaging structure in a technology-neutral fashion, it is up to implementers to determine the transport protocol and other technologies used. For those implementers who wish to leverage XML, see the Intelligent Guest Room specification.

This document does not address some emerging technologies for displaying content from guest devices onto in-room displays (such as Miracast, Airplay, DLNA). This document also does not address new mobile key technologies, including network NFC, audio and *Bluetooth*® wireless technology.

1.8   Document Terms

For the purpose of this document the following terms have been defined as follows:

Term	Definition
ADA	American Disabilities Act
DND	Do-Not-Disturb
HVAC	Heating Ventilation Air Conditioning
MUR	Make-Up-Room

1.9   Potential Uses

1. Device detects a problem and opens a trouble ticket, or finds that the condition has cleared, and closes it. Examples would be battery low (need to notify engineering), or door ajar (perhaps notify guest on television).
2. Key inserted in door lock. Different situations depending on whether it is the guest's key, a staff key, or an invalid key. Information needs to be delivered to lock system but may also need to activate room devices e.g. lights, and enters into the intelligent determination of whether a guest room is currently occupied.
3. Occupancy detector senses status change (senses motion, or senses that no motion has occurred for a long enough period of time)
4. Doorbell pushed. This may play an audible signal in the room, but may do something different based on the setting of the Do Not Disturb light, or on the presence of ADA devices within the room.
5. Guest manually sets do-not-disturb or make-up-room light. DND might cause the phone system to hold calls; MUR might alert housekeeping.
6. Telephone rings. This could be used to, for example (and possibly based on guest preferences) to automatically mute the audio system or TV or turn on the Do Not Disturb light.
7. Telephone on or off hook. Same possibilities.
8. In-room refreshment center door opened/closed. This could trigger an action to turn on the TV and advise/warn the guest of the cost.
9. Safe door opened/closed; log event.
10. Window or lanai door opened/closed. This could cause HVAC to shut off or turn on, and could cause a change in the inferred occupancy status of the room.
11. Guest changes thermostat setting.
12. Someone presses a button or switch on a device in the room (thermostat, remote control, telephone, TV, etc.) and in doing so provides evidence that the room is occupied.
13. Door opens or closes; could cause a change in the inferred occupancy status of the room.
14. Guest enters a command on a generic controls keypad, to cause a change in state of a "foreign" device (one that the keypad cannot natively control).

2 Messaging Definition

2.1 Door Lock

Message Class: 0x01 = DOOR LOCK

	Message Description				Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Command	Set Online Status	Online Status	Boolean	0 = Offline 1 = Online	0x01	0x01
Status	Get Online Status	Online Status	Boolean	0 = Offline 1 = Online	0x41	0x02
Event	Not Applicable					
Command	Set DND Status	DND Status	Boolean	0 = DND Off 1 = DND On	0x01	0x04
Status	Get DND Status	DND Status	Boolean	0 = DND Off 1 = DND On	0x41	0x05
Event	DND Status Changed	DND Status	Boolean	0 = DND Off 1 = DND On	0x81	0x06
Command	Not Applicable					
Status	Get Functional Status	Functional Status	Unsigned 8-bit integer	0 = Normal 1–255 = Error Codes	0x41	0x08
Event	Functional Status Changed	Functional Status	Unsigned 8-bit integer	0 = Normal 1-255 = Error Codes	0x81	0x09
Command	Not Applicable					
Status	Get Deadbolt Status	Deadbolt Status	Boolean	0 = Deactivated 1 = Activated	0x41	0x0B
Event	Deadbolt Status Changed	Deadbolt Status	Boolean	0 = Deactivated 1 = Activated	0x81	0x0C
Command	Not Applicable					
Status	Get Thumbturn Status	Thumbturn Status	Boolean	0 = Deactivated 1 = Activated	0x41	0x0E
Event	Thumbturn Status Changed	Thumbturn Status	Boolean	0 = Deactivated 1 = Activated	0x81	0x0F
Command	Not Applicable					
Status	Get Lock Status	Lock Status	Boolean	0 = Deactivated 1 = Activated	0x41	0x11
Event	Lock Status Changed	Lock Status	Boolean	0 = Deactivated 1 = Activated	0x81	0x12
Command	Not Applicable					
Status	Get Door Ajar Status	Door Ajar Status	Boolean	0 = Normal 1 = Ajar	0x41	0x14

Message Description					Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Event	Door Ajar Status Changed	Door Ajar Status	Boolean	0 = Normal 1 = Ajar	0x81	0x15
Command	Not Applicable					
Status	Get Battery Status	Battery Status	Unsigned 8-bit integer	0 = Okay 1 = Low 2 = Change	0x41	0x17
Event	Battery Status Changed	Battery Status	Unsigned 8-bit integer	0 = Okay 1 = Low 2 - Change	0x81	0x18
Command	Not Applicable					
Status	Not Applicable					
Event	Door Opened from interior		Void		0x81	0x1B
Command	Not Applicable					
Status	Not Applicable					
Event	Brass Key Used		Void		0x81	0x1E
Command	Not Applicable					
Status	Not Applicable					
Event	Door Forced Open		Void		0x81	0x21
Command	Not Applicable					
Status	Not Applicable					
Event	Guest Entered	Key ID	String	Custom	0x81	0x24
Command	Not Applicable					
Status	Not Applicable					
Event	New Guest Entered	Key ID	String	Custom	0x81	0x27
Command	Not Applicable					
Status	Not Applicable					
Event	Staff Entered	Key ID	String	Custom	0x81	0x2A
Command	Not Applicable					
Status	Not Applicable					
Event	Intruder Detected	Key ID	String	Custom	0x81	0x2D
Command	Not Applicable					

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Status	Not Applicable					
Event	Wandering Intruder	Key ID	String	Custom	0x81	0x30
Command	Not Applicable					
Status	Not Applicable					
Event	Unauthorized Key Attempted	Key ID	String	Custom	0x81	0x33
Command	Not Applicable					
Status	Not Applicable					
Event	Function Card Presented	Function ID	Unsigned 16-bit integer	000 to 999 = Event Detail Messages	0x81	0x36

2.2   Key

Message Class: 02 = KEY

In Version 2.0 of this document, the Key content was removed, but the section remains since Message Class 02 = KEY remains for backwards compatibility.

2.3   Thermostat / HVAC

Message Class: 03 = HVAC

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Command	Set Thermostat Mode	Thermostat Mode	Unsigned 8-bit integer	0 = Off 1 = Heat 2 = Cool 3 = Auto	0x03	0x01
Status	Get Thermostat Mode	Thermostat Mode	Unsigned 8-bit integer	0 = Off 1 = Heat 2 = Cool 3 = Auto	0x43	
Event	Thermostat Mode Changed	Thermostat Mode	Unsigned 8-bit integer	0 = Off 1 = Heat 2 = Cool 3 = Auto	0x83	0x03
Command	Set Target Temperature	Target Temperature	Unsigned 16-bit integer	Centigrade x 100	0x03	0x04
Status	Get Target Temperature	Target Temperature	Unsigned 16-bit integer	Centigrade x 100	0x43	0x05
Event	Target Temperature Changed	Target Temperature	Unsigned 16-bit integer	Centigrade x 100	0x83	0x06

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Command		Not Applicable				
Status	Get Measured Temperature	Measured Temperature	Unsigned 16-bit integer	Centigrade x 100	0x43	0x08
Event	Measured Temperature Changed	Measured Temperature	Unsigned 16-bit integer	Centigrade x 100	0x83	0x09
Command		Not Applicable				
Status	Get HVAC Status	Thermostat Mode	Unsigned 8-bit integer	0 = Off 1 = Heat 2 = Cool 3 = Auto	0x43	0x0B
		Target Temperature	Unsigned 16-bit integer	Centigrade x 100		
		Measured Temperature	Unsigned 16-bit integer	Centigrade x 100		
		Temperature Scale	Unsigned 8-bit integer	0 = Centigrade 1 = Fahrenheit		
		Fan Mode	Unsigned 8-bit integer	0 = Auto 1 = Fixed		
		Fan Speed	Unsigned 8-bit integer	0 = Off 1 = Low 2 = Medium 3 = High		
Event	HVAC Status Changed	Thermostat Mode	Unsigned 8-bit integer	0 = Off 1 = Heat 2 = Cool 3 = Auto	0x83	0x0C
		Target Temperature	Unsigned 16-bit integer	Centigrade x 100		
		Measured Temperature	Unsigned 16-bit integer	Centigrade x 100		
		Temperature Scale	Unsigned 8-bit integer	0 = Centigrade 1 = Fahrenheit		
		Fan Mode	Unsigned 8-bit integer	0 = Auto 1 = Fixed		
		Fan Speed	Unsigned 8-bit integer	0 = Off 1 = Low 2 = Medium 3 = High		
Command	Set Fan Speed	Fan Speed	Unsigned 8-bit integer	0 = Off 1 = Low 2 = Medium 3 = High	0x03	0x0D
Status	Get Fan Speed	Fan Speed	Unsigned 8-bit integer	0 = Off 1 = Low 2 = Medium 3 = High	0x43	0x0E
Event	Fan Speed Changed	Fan Speed	Unsigned 8-bit integer	0 = Off 1 = Low 2 = Medium 3 = High	0x83	0x0F
Command	Set Relative Fan Speed	Fan Speed Percentage	Unsigned 8-bit integer	0 – 100%	0x03	0x10
Status	Get Relative Fan Speed	Fan Speed Percentage	Unsigned 8-bit integer	0 – 100%	0x43	0x11

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Event	Relative Fan Speed Changed	Fan Speed Percentage	Unsigned 8-bit integer	0 – 100%	0x83	0x12
Command	Set Fan Mode	Fan Mode	Unsigned 8-bit integer	0 = Auto 1 = Fixed	0x03	0x13
Status	Get Fan Mode	Fan Mode	Unsigned 8-bit integer	0 = Auto 1 = Fixed	0x43	0x14
Event	Fan Mode Changed	Fan Mode	Unsigned 8-bit integer	0 = Auto 1 = Fixed	0x83	0x15
Command	Set Green Mode	Green Mode	Boolean	0 = Off 1 = On	0x03	0x16
Status	Get Green Mode	Green Mode	Boolean	0 = Off 1 = On	0x43	0x17
Event	Green Mode Changed	Green Mode	Boolean	0 = Off 1 = On	0x83	0x18
Command	Set Display Scale	Temperature Scale	Unsigned 8-bit integer	0 = Centigrade 1 = Fahrenheit	0x03	0x19
Status	Get Display Scale	Temperature Scale	Unsigned 8-bit integer	0 = Centigrade 1 = Fahrenheit	0x43	0x1A
Event	Display Scale Changed	Temperature Scale	Unsigned 8-bit integer	0 = Centigrade 1 = Fahrenheit	0x83	0x1B
Command	Not Applicable					
Status	Get Fan Duty Hours	Duty Hours	Unsigned 32-bit integer	$0-2^{32}-1$ Hours	0x43	0x1D
Event	Not Applicable					
Command	Not Applicable					
Status	Get Carbon Monoxide (CO) Level	CO Level	Unsigned 32-bit integer	0-232 -1 PPM	0x43	0x20
Event	Carbon Monoxide (CO) Level Changed	CO Level	Unsigned 32-bit integer	0-232 -1 PPM	0x83	0x21
Command	Not Applicable					
Status	Get Humidity Level	Humidity Level Percent	Unsigned 8-bit integer	0 – 100 %	0x43	0x23
Event	Humidity Level Changed	Humidity Level Percent	Unsigned 8-bit integer	0 – 100 %	0x83	0x24
Command	Not Applicable					
Status	Get Air Filter Status	Air Filter Status	Boolean	0 = Normal 1 = Dirty	0x43	0x26
Event	Air Filter Status Changed	Air Filter Status	Boolean	0 = Normal 1 = Dirty	0x83	0x27

2.4   Lighting

Message Class: 04 = LIGHTING

	Message Description				Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Set Lamp Status	Lamp Status	Boolean	0 = Off 1 = On	0x04	0x01
Status	Get Lamp Status	Lamp Status	Boolean	0 = Off 1 = On	0x44	0x02
Event	Lamp Status Changed	Lamp Status	Boolean	0 = Off 1 = On	0x84	0x03
Command	Set Lamp Dim Level	Lamp Dim Level Percent	Unsigned 8-bit integer	0-100%	0x04	0x04
Status	Get Lamp Dim Level	Lamp Dim Level Percent	Unsigned 8-bit integer	0-100%	0x44	0x05
Event	Lamp Dim Level Changed	Lamp Dim Level Percent	Unsigned 8-bit integer	0-100%	0x84	0x06
Command	Set Scene / Mood	Scene ID	Unsigned 8-bit integer	0-255	0x04	0x07
Status	Get Scene / Mood	Scene ID	Unsigned 8-bit integer	0-255	0x44	0x08
Event	Scene / Mood Changed	Scene ID	Unsigned 8-bit integer	0-255	0x84	0x09
Command	Set Green Mode	Green Mode	Boolean	0 = Off 1 = On	0x04	0x0A
Status	Get Green Mode	Green Mode	Boolean	0 = Off 1 = On	0x44	0x0B
Event	Green Mode Changed	Green Mode	Boolean	0 = Off 1 = On	0x84	0x0C
Command	Reserved For Future Use					
Status	Get Functional Status	Functional Status	Unsigned 8-bit integer	0 = Normal 1-255 = Error Codes	0x44	0x0E
Event	Functional Status Changed	Functional Status	Unsigned 8-bit integer	0 = Normal 1-255 = Error Codes	0x84	0x0F
Command	Not Applicable					
Status	Get Lamp Duty Hours	Duty Hours	Unsigned 32-bit integer	$0-2^{32}-1$ Hours	0x44	0x11
Event	Not Applicable					

2.5   DND-Housekeeping

Message Class: 05 = DND-HOUSEKEEPING

	Message Description				Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Set Room Status	Room Status	Unsigned 8-bit integer	0 = Clean 1 = Dirty 2 = Check	0x05	0x01
Status	Get Room Status	Room Status	Unsigned 8-bit integer	0 = Clean 1 = Dirty 2 = Check	0x45	0x02
Event	Room Status Changed	Room Status	Unsigned 8-bit integer	0 = Clean 1 = Dirty 2 = Check	0x85	0x03
Command	Set DND Status	DND Status	Boolean	0 = Off 1 = On	0x05	0x04
Status	Get DND Status	DND Status	Boolean	0 = Off 1 = On	0x45	0x05
Event	DND Status Changed	DND Status	Boolean	0 = Off 1 = On	0x85	0x06
Command	Set Concierge Call Status	Call Status	Boolean	0 = Off 1 = On	0x05	0x07
Status	Get Concierge Call Status	Call Status	Boolean	0 = Off 1 = On	0x45	0x08
Event	Concierge Call Status Changed	Call Status	Boolean	0 = Off 1 = On	0x85	0x09

2.6   In-Room Refreshment Center

Message Class: 06 = IN-ROOM REFRESHMENT CENTER

	Message Description				Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Set Lock Status	Lock Status	Boolean	0 = Deactivated 1 = Activated	0x06	0x01
Status	Get Lock Status	Lock Status	Boolean	0 = Deactivated 1 = Activated	0x46	0x02
Event	Lock Status Changed	Lock Status	Boolean	0 = Deactivated 1 = Activated	0x86	0x03
Command	Set Inventory Status	Inventory Status	Boolean	0 = Is Serviced 1 = Needs Service	0x06	0x04
Status	Get Inventory Status	Inventory Status	Boolean	0 = Is Serviced 1 = Needs Service	0x46	0x05
Event	Inventory Status Changed	Inventory Status	Boolean	0 = Is Serviced 1 = Needs Service	0x86	0x06
Command	Set Temperature	Low Threshold	Unsigned 16-bit integer	Centigrade x 100	0x06	0x07

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
	Alarm Thresholds	High Threshold	Unsigned 16-bit integer	Centigrade x 100		
Status	Get Temperature Thresholds	Low Threshold	Unsigned 16-bit integer	Centigrade x 100	0x46	0x08
		High Threshold	Unsigned 16-bit integer	Centigrade x 100		
Event	Temperature Alarm Thresholds Changed	Low Threshold	Unsigned 16-bit integer	Centigrade x 100	0x86	0x09
		High Threshold	Unsigned 16-bit integer	Centigrade x 100		
Command	Not Applicable					
Status	Get Door Status	Door Status	Boolean	0 = Closed 1 = Open	0x46	0x0B
Event	Door Status Changed	Door Status	Boolean	0 = Closed 1 = Open	0x86	0x0C
Command	Not Applicable					
Status	Get Inventory Item Status	Inventory Position	Unsigned 8-bit integer	0 – 255	0x46	0x0E
		Position Status	Unsigned 8-bit integer	0 = Empty 1 = Stocked 2 = Unknown 3 = Manipulated 4 = Tampered 5 = Sensor Problem		
Event	Inventory Item Changed	Inventory Position	Unsigned 8-bit integer	0 – 255	0x86	0x0F
		Position Status	Unsigned 8-bit integer	0 = Empty 1 = Stocked 2 = Unknown 3 = Manipulated 4 = Tampered 5 = Sensor Problem		
Command	Not Applicable					
Status	Get Number of Inventory Positions	Number of Positions	Unsigned 8-bit integer	0 – 255	0x46	0x11
Event	Not Applicable					

2.7   Safe

Message Class: 07 = SAFE

	Message Description				Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command		Not Applicable				
Status	Get Door Status	Door Status	Boolean	0 = Closed 1 = Open	0x47	0x02
Event	Door Status Changed	Door Status	Boolean	0 = Closed 1 = Open	0x87	0x03
Command		Not Applicable				
Status	Get Lock Status	Lock Status	Boolean	0 = Lock 1 = Unlock	0x47	0x05
Event	Lock Status Changed	Lock Status	Boolean	0 = Lock 1 = Unlock	0x87	0x06

2.8   Occupancy Detection

Message Class: 08 = OCCUPANCY DETECTION

	Message Description				Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Set Occupancy Status	Occupancy Status	Boolean	0 = Unoccupied 1 = Occupied	0x08	0x01
		Occupancy Status Cause	Unsigned 8-bit integer	0 = Unknown 1 = Usage 2 = Motion 3 = Door Ajar 4 = Normal 5 = Timeout		
Status	Get Occupancy Status	Occupancy Status	Boolean	0 = Unoccupied 1 = Occupied	0x48	0x02
		Occupancy Status Cause	Unsigned 8-bit integer	0 = Unknown 1 = Usage 2 = Motion 3 = Door Ajar 4 = Normal 5 = Timeout		
Event	Occupancy Status Changed	Occupancy Status	Boolean	0 = Unoccupied 1 = Occupied	0x88	0x03
		Occupancy Status Cause	Unsigned 8-bit integer	0 = Unknown 1 = Usage 2 = Motion 3 = Door Ajar 4 = Normal 5 = Timeout		

2.9   Energizer

Message Class: 09 = ENERGIZER

	Message Description				Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Not Applicable					
Status	Get Key Status	Key Status	Boolean	0 = Key Not Present 1 = Key Present	0x49	0x02
Event	Key Status Changed	Key Status	Boolean	0 = Key Not Present 1 = Key Present	0x89	0x03

2.10   Drapes Control

Message Class: 10 = DRAPES CONTROL

	Message Description				Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Set Blackout Level	Blackout Level Percent	Unsigned 8-bit integer	0-100%	0x0A	0x01
Status	Get Blackout Level	Blackout Level Percent	Unsigned 8-bit integer	0-100%	0x4A	
Event	Blackout Level Changed	Blackout Level Percent	Unsigned 8-bit integer	0-100%	0x8A	0x03
Command	Set Scene / Mood	Scene ID	Unsigned 8-bit integer	0-255	0x0A	0x04
Status	Not Applicable					
Event	Scene / Mood Changed	Scene ID	Unsigned 8-bit integer	0-255	0x8A	0x06
Command	Set Open/Close Set Point	Set Point Percent	Unsigned 8-bit integer	0-100%	0x0A	0x07
Status	Get Open/Close Set Point	Set Point Percent	Unsigned 8-bit integer	0-100%	0x4A	0x08
Event	Open/Close Set Point Changed	Set Point Percent	Unsigned 8-bit integer	0-100%	0x8A	0x09

2.11 Alarm Clock

Message Class: 11 = ALARM CLOCK

Message Description					Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Set Date/Time	Current DateTime	DateTime	CCYY-MM-DDThh:mm	0x0B	0x01
Status	Get Date/Time	Current DateTime	DateTime	CCYY-MM-DDThh:mm	0x4B	0x02
Event	Date/Time Changed		Void		0x8B	0x03
Command	Set Alternate Date/Time	Alternate DateTime	DateTime	CCYY-MM-DDThh:mm	0x0B	0x04
Status	Get Alternate Date/Time	Alternate DateTime	DateTime	CCYY-MM-DDThh:mm	0x4B	0x05
Event	Alternate Date/Time Changed		Void		0x8B	0x06
Command	Set Alarm Time	Index	Unsigned 8-bit integer	0-255	0x0B	0x07
		Alarm Time	Time	hh:mm		
Status	Get Alarm Time	Index	Unsigned 8-bit integer	0-255	0x4B	0x08
		Alarm Time	Time	hh:mm		
Event	Alarm Time Changed	Index	Unsigned 8-bit integer	0-255	0x8B	0x09
		Alarm Time	Time	hh:mm		
Command	Set Alarm Status	Index	Unsigned 8-bit integer	0-255	0x0B	0x0A
		Alarm Status	Boolean	0 = Off 1 = On		
Status	Get Alarm Status	Index	Unsigned 8-bit integer	0-255	0x4B	0x0B
		Alarm Status	Boolean	0 = Off 1 = On		
Event	Alarm Status Changed	Index	Unsigned 8-bit integer	0-255	0x8B	0x0C
		Alarm Status	Boolean	0 = Off 1 = On		
Command	Set Alarm Mode	Alarm Mode	String	Buzzer, Audio Source	0x0B	0x0D
Status	Get Alarm Mode	Alarm Mode	String	Buzzer, Audio Source	0x4B	0x0E
Event	Alarm Mode Changed	Alarm Mode	String	Buzzer, Audio Source	0x8B	0x0F
Command	Reset Alarms		Void		0x0B	0x10
Status	Not Applicable					

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Event	Reset Alarms Changed		Void		0x8B	0x12
Command	Not Applicable					
Status	Not Applicable					
Event	Unanswered Alarm		Void		0x8B	0x15
Command	Set Initial Volume	Volume Percent	Unsigned 8-bit integer	0-100%	0x0B	0x16
Status	Get Initial Volume	Volume Percent	Unsigned 8-bit integer	0-100%	0x4B	0x17
Event	Initial Volume Changed	Volume Percent	Unsigned 8-bit integer	0-100%	0x8B	0x18
Command	Set Volume	Volume Percent	Unsigned 8-bit integer	0-100%	0x0B	0x19
Status	Get Volume	Volume Percent	Unsigned 8-bit integer	0-100%	0x4B	0x1A
Event	Volume Changed	Volume Percent	Unsigned 8-bit integer	0-100%	0x8B	0x1B
Command	Set Volume Limit	Volume Percent	Unsigned 8-bit integer	0-100%	0x0B	0x1C
Status	Get Volume Limit	Volume Percent	Unsigned 8-bit integer	0-100%	0x4B	0x1D
Event	Volume Limit Changed	Volume Percent	Unsigned 8-bit integer	0-100%	0x8B	0x1E
Command	Set Audio Source	Source Type	String	AM, FM, Sirius XM, Internet Radio, CD/DVD, AUX, DOCK	0x0B	0x1F
Status	Get Audio Source	Source Type	String	AM, FM, Sirius XM, Internet Radio, CD/DVD, AUX, DOCK	0x4B	0x20
Event	Audio Source Changed	Source Type	String	AM, FM, Sirius XM, Internet Radio, CD/DVD, AUX, DOCK	0x8B	0x21
Command	Set Station	Station	String	AM XXXX (970) FM XXX.X (102.5) Sirius XM XXX (0-999) Internet URL	0x0B	0x22
Status	Get Station	Station	String	AM XXXX (970) FM XXX.X (102.5) Sirius XM XXX (0-999) Internet URL	0x4B	0x23
Event	Station Changed	Station	String	AM XXXX (970) FM XXX.X (102.5) Sirius XM XXX (0-999) Internet URL	0x8B	0x24
Command	Set Preset	Preset Number	Unsigned 8-bit integer	0-255	0x0B	0x25
		Source Type	String	AM, FM, Sirius XM, Internet Radio, CD/DVD, AUX, DOCK		

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
		Station	String	AM XXXX (970) FM XXX.X (102.5) Sirius XM XXX (0-999) Internet URL		
Status	Get Preset	Preset Number	Unsigned 8-bit integer	0-255	0x4B	0x26
		Source Type	String	AM, FM, Sirius XM, Internet Radio, CD/DVD, AUX, DOCK		
		Station	String	AM XXXX (970) FM XXX.X (102.5) Sirius XM XXX (0-999) Internet URL		
Event	Preset Changed	Preset Number	Unsigned 8-bit integer	0-255	0x8B	0x27
		Source Type	String	AM, FM, Sirius XM, Internet Radio, CD/DVD, AUX, DOCK		
		Station	String	AM XXXX (970) FM XXX.X (102.5) Sirius XM XXX (0-999) Internet URL		
Command	Select Preset	Preset Number	Unsigned 8-bit integer	0-255	0x0B	0x28
Status	Get Selected Preset	Preset Number	Unsigned 8-bit integer	0-255	0x4B	0x29
Event	Selected Preset Changed	Preset Number	Unsigned 8-bit integer	0-255	0x8B	0x2A
Command	Set Daylight Saving Mode	Daylight Saving Mode	Boolean	0 = Auto 1 = Off	0x0B	0x2B
Status	Get Daylight Saving Mode	Daylight Saving Mode	Boolean	0 = Auto 1 = Off	0x4B	0x2C
Event	Daylight Saving Mode Changed	Daylight Saving Mode	Boolean	0 = Auto 1 = Off	0x8B	0x2D
Command	Not Applicable					
Status	Get Battery Level	Battery Status	Unsigned 8-bit integer	0 = Okay 1 = Low 2 = Change	0x4B	0x2F
Event	Battery Level Changed	Battery Status	Unsigned 8-bit integer	0 = Okay 1 = Low 2 = Change	0x8B	0x30

2.12 Water Detection

Message Class: 12 = WATER DETECTION

Message Description					Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Not Applicable					
Status	Get Water Spill Status	Water Spill Status	Boolean	0 = False 1 = True	0x4C	0x02
Event	Water Spill Status Changed		Void		0x8C	0x03
Command	Not Applicable					
Status	Get Meter Reading	Meter Reading	Unsigned 32-bit integer	0-4,294,967,295 liters	0x4C	0x05
Event	Not Applicable					

2.13 Balcony / Window / Lanai

Message Class: 13 = BALCONY / WINDOW / LANAI

Message Description					Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Not Applicable					
Status	Get Open Status	Open Status	Boolean	0 = Closed 1 = Open	0x4D	0x02
Event	Open Status Changed	Open Status	Boolean	0 = Closed 1 = Open	0x8D	0x03

2.14 Coffee Maker

Message Class: 14 = COFFEE MAKER

Message Description					Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Set Power Status	Power Status	Boolean	0 = Off 1 = On	0x0E	0x01
Status	Get Power Status	Power Status	Boolean	0 = Off 1 = On	0x4E	0x02
Event	Power Status Changed	Power Status	Boolean	0 = Off 1 = On	0x8E	0x03
Command	Set Start Time	Start Time	Time	hh:mm	0x0E	0x04

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Status	Get Start Time	Start Time	Time	hh:mm	0x4E	0x05
Event	Start Time Changed	Start Time	Time	hh:mm	0x8E	0x06
Command	Not Applicable					
Status	Get Water Status	Water Status	Unsigned 8-bit integer	0 = Okay 1 = Low 2 = Fill	0x4E	0x08
Event	Water Status Changed	Water Status	Unsigned 8-bit integer	0 = Okay 1 = Low 2 = Fill	0x8E	0x09
Command	Not Applicable					
Status	Get Coffee Status	Coffee Status	Unsigned 8-bit integer	0 = Okay 1 = Low 2 = Fill	0x4E	0x0B
Event	Coffee Status Changed	Coffee Status	Unsigned 8-bit integer	0 = Okay 1 = Low 2 = Fill	0x8E	0x0C

2.15 Phone

Message Class: 15 = PHONE

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Command	Set DND Status	DND Status	Boolean	0 = DND Off 1 = DND On	0x0F	0x01
Status	Get DND Status	DND Status	Boolean	0 = DND Off 1 = DND On	0x4F	0x02
Event	DND Status Changed	DND Status	Boolean	0 = DND Off 1 = DND On	0x8F	0x03
Command	Set Message Waiting Status	Message Waiting Status	Boolean	0 = Indicator Off 1 = Indicator On	0x0F	0x04
Status	Get Message Waiting Status	Message Waiting Status	Boolean	0 = Indicator Off 1 = Indicator On	0x4F	0x05
Event	Message Waiting Status Changed	Message Waiting Status	Boolean	0 = Indicator Off 1 = Indicator On	0x8F	0x06
Command	Not Applicable					
Status	Get Handset Status	Handset Status	Boolean	0 = On Hook 1 = Off Hook	0x4F	0x08
Event	Handset Status Changed	Handset Status	Boolean	0 = On Hook 1 = Off Hook	0x8F	0x09
Command	Not Applicable					

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Status	Get Phone Line Status	Phone Line Status	Boolean	0 = Idle 1 = Ringing 2 = Off Hook 3 = On Hold	0x4F	0x0B
Event	Phone Line Status Changed	Phone Line Status	Boolean	0 = Idle 1 = Ringing 2 = Off Hook 3 = On Hold	0x8F	0x0C
		Caller ID	String			

2.16 Entry Camera

Message Class: 16 = ENTRY CAMERA

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Command	Set Camera Status	Camera Status	Boolean	0=Off 1=On	0x10	0x01
Status	Get Camera Status	Camera Status	Boolean	0=Off 1=On	0x50	0x02
Event	Camera Status Changed	Camera Status	Boolean	0=Off 1=On	0x90	0x03
Command	Adjust Focus Level	Focus Level	Unsigned 8 Bit Integer	0-255 (0=near)	0x10	0x04
Status	Get Focus Level	Focus Level	Unsigned 8 Bit Integer	0-255 (0=near)	0x50	0x05
Event	Focus Level Changed	Focus Level	Unsigned 8 Bit Integer	0-255 (0=near)	0x90	0x06
Command	Set Auto Focus Status	Focus Status	Boolean	0=Off 1=On	0x10	0x07
Status	Get Auto Focus Status	Focus Status	Boolean	0=Off 1=On	0x50	0x08
Event	Auto Focus Status Changed	Focus Status	Boolean	0=Off 1=On	0x90	0x09
Command	Adjust Zoom Level	Zoom Level	Unsigned 8 Bit Integer	0-255 (0=out/wide)	0x10	0x0A
Status	Get Zoom Level	Zoom Level	Unsigned 8 Bit Integer	0-255 (0=out/wide)	0x50	0x0b
Event	Zoom Level Changed	Zoom Level	Unsigned 8 Bit Integer	0-255 (0=out/wide)	0x90	0x0C
Command		Not Applicable				
Status	Get Functional Status	Functional Status	Unsigned 8 Bit Integer	0=Normal 1-255 = error codes	0x50	0x0E
Event	Functional Status Changed	Functional Status	Unsigned 8 Bit Integer	0=Normal 1-255 = error codes	0x90	0x0F
Command	Set Camera Preset	Preset Status	Unsigned 8 Bit Integer	0-255	0x10	0x10

Message Description					Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Status	Get Camera Preset	Preset Status	Unsigned 8 Bit Integer	0-255	0x50	0x11
Event	Camera Preset Changed	Preset Status	Unsigned 8 Bit Integer	0-255	0x90	0x12
Command	Adjust Pan Position	Pan Position	Unsigned 8 Bit Integer	0-255 (0=left)	0x10	0x13
Status	Get Pan Position	Pan Position	Unsigned 8 Bit Integer	0-255 (0=left)	0x50	0x14
Event	Pan Position Changed	Pan Position	Unsigned 8 Bit Integer	0-255 (0=left)	0x90	0x15
Command	Adjust Tilt Position	Tilt Position	Unsigned 8 Bit Integer	0-255 (0=down)	0x10	0x16
Status	Get Tilt Position	Tilt Position	Unsigned 8 Bit Integer	0-255 (0=down)	0x50	0x17
Event	Tilt Position Changed	Tilt Position	Unsigned 8 Bit Integer	0-255 (0=down)	0x90	0x18
Command	Adjust IRIS Level	Iris Level	Unsigned 8 Bit Integer	0-255 (0=closed)	0x10	0x19
Status	Get IRIS Level	Iris Level	Unsigned 8 Bit Integer	0-255 (0=closed)	0x50	0x1A
Event	IRIS Level Changed	Iris Level	Unsigned 8 Bit Integer	0-255 (0=closed)	0x90	0x1B
Command	Not Applicable					
Status	Get Contact Closure Status	Contact Closure Status	Boolean	0=Off 1=On	0x50	0x1D
		Contact Number	Unsigned 8 Bit Integer	0-255		
Event	Contact Closure Status Changed	Contact Closure Status	Boolean	0=Off 1=On	0x90	0x0E
		Contact Number	Unsigned 8 Bit Integer	0-255		
Command	Not Applicable					
Status	Not Applicable					
Event	Motion Status Changed	Sensor Status	Unsigned 8 Bit Integer	0-255	0x90	0x21
Command	Set Online Status	Online Status	Boolean	0=Offline 1=Online	0x10	0x22
Status	Get Online Status	Online Status	Boolean	0=Offline 1=Online	0x50	0x23
Event	Online Status Changed		Void			0x24

2.17 Location Service

Message Class: 17 = LOCATION SERVICE

Message Description					Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Set Known Location	Location Name	String		0x11	0x01
		Asset Identifier	String			
Status	Get Location	Location Name	String		0x51	0x02
		Asset Identifier	String			
Event	Location Changed	Location Name	String		0x91	0x03
		Asset Identifier	String			

2.18 Audio Control

Message Class: 18 = AUDIO CONTROL

Message Description					Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Command	Set Power Status	Power Status	Boolean	0=Off 1=On	0x12	0x01
Status	Get Power Status	Power Status	Boolean	0=Off 1=On	0x52	0x02
Event	Power Status Changed	Power Status	Boolean	0=Off 1=On	0x92	0x03
Command	Set Mute Status	Mute Status	Boolean	0=Unmuted 1=Muted	0x12	0x04
Status	Get Mute Status	Mute Status	Boolean	0=Unmuted 1=Muted	0x52	0x05
Event	Mute Status Changed	Mute Status	Boolean	0=Unmuted 1=Muted	0x92	0x06
Command	Set Volume	Volume Percent	Unsigned 8-bit integer	0-100%	0x12	0x07
Status	Get Volume	Volume Percent	Unsigned 8-bit integer	0-100%	0x52	0x08
Event	Volume Changed	Volume Percent	Unsigned 8-bit integer	0-100%	0x92	0x09
Command	Set Audio Source	Source Type	String	AM, FM, Sirius XM, Internet Radio, CD/DVD, Aux, Dock, TV	0x12	0x0A
Status	Get Audio Source	Source Type	String	AM, FM, Sirius XM, Internet Radio, CD/DVD, Aux, Dock, TV	0x52	0x0B

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Event	Audio Source Changed	Source Type	String	AM, FM, Sirius XM, Internet Radio, CD/DVD, Aux, Dock, TV	0x92	0x0C
Command	Set Station	Station	String	AM XXXX (970) FM XXX.X (102.5) Sirius XM XXX (0-999) Internet URL	0x12	0x0D
Status	Get Station	Station	String	AM XXXX (970) FM XXX.X (102.5) Sirius XM XXX (0-999) Internet URL	0x52	0x0E
Event	Station Changed	Station	String	AM XXXX (970) FM XXX.X (102.5) Sirius XM XXX (0-999) Internet URL	0x92	0x0F
Command	Set Zone Status	Zone Number	Unsigned 8-bit integer	0-255	0x12	0x10
		Zone Status	Boolean	0=Off 1=On		
Status	Get Zone Status	Zone Number	Unsigned 8-bit integer	0-255	0x52	0x11
		Zone Status	Boolean	0=Off 1=On		
Event	Zone Status Changed	Zone Number	Unsigned 8-bit integer	0-255	0x92	0x12
		Zone Status	Boolean	0=Off 1=On		

2.19 Television Integration

Message Class: 19 = TELEVISION INTEGRATION

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Command	Set TV Status	Power Status	Unsigned 8-bit integer	0 = Off 1 = Standby 2 = On	0x13	0x13
		TV Mode	Unsigned 8-bit integer	0 = Normal 1 = Kiosk Mode 2 = Menu Mode		
		Channel Number	String			
		Volume Percent	Unsigned 8-bit integer	0-100%		
		Mute Status	Unsigned 8-bit integer	0 = Unmuted 1 = Muted		

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
		Input Source	Unsigned 8-bit integer	0 = Coax 1 = Composite 2 = Svideo 3 = Component 4 = VGA 5 = HDMI 6 = USB 7 = RJ45 Ethernet		
		Input Index	Unsigned 8-bit integer	0-255		
Status	Get TV Status	Power Status	Unsigned 8-bit integer	0 = Off 1 = Standby 2 = On	0x53	0x14
		TV Mode	Unsigned 8-bit integer	0 = Normal 1 = Kiosk Mode 2 = Menu Mode		
		Channel Number	String			
		Volume Percent	Unsigned 8-bit integer	0-100%		
		Mute Status	Unsigned 8-bit integer	0 = Unmuted 1 = Muted		
		Input Source	Unsigned 8-bit integer	0 = Coax 1 = Composite 2 = Svideo 3 = Component 4 = VGA 5 = HDMI 6 = USB 7 = RJ45 Ethernet		
		Input Index	Unsigned 8-bit integer	0-255		
Event	TV Status Changed	Power Status	Unsigned 8-bit integer	0 = Off 1 = Standby 2 = On	0x93	0x15
		TV Mode	Unsigned 8-bit integer	0 = Normal 1 = Kiosk Mode 2 = Menu Mode		
		Channel Number	String			
		Volume Percent	Unsigned 8-bit integer	0-100%		
		Mute Status	Unsigned 8-bit integer	0 = Unmuted 1 = Muted		
		Input Source	Unsigned 8-bit integer	0 = Coax 1 = Composite 2 = Svideo 3 = Component 4 = VGA 5 = HDMI 6 = USB 7 = RJ45 Ethernet		
		Input Index	Unsigned 8-bit integer	0-255		
Command	Set Power Status	Power Status	Unsigned 8-bit integer	0 = Off 1 = Standby	0x13	0x16
Status	Get Power Status	Power Status	Unsigned 8-bit integer	0 = Off 1 = Standby	0x53	0x17

Message Description					Message Header	
Type	Function	Parameters	Data Type	Allowable Values	Message ID	Message Index
Event	Power Status Changed	Power Status	Unsigned 8-bit integer	0 = Off 1 = Standby	0x93	0x18
Command	Set TV Mode	TV Mode	Unsigned 8-bit integer	0 = Normal 1 = Kiosk Mode 2 = Menu Mode	0x13	0x19
Status	Get TV Mode	TV Mode	Unsigned 8-bit integer	0 = Normal 1 = Kiosk Mode 2 = Menu Mode	0x53	0x1A
Event	TV Mode Changed	TV Mode	Unsigned 8-bit integer	0 = Normal 1 = Kiosk Mode 2 = Menu Mode	0x93	0x1B
Command	Set Channel	Channel Number	String		0x13	0x1C
Status	Get Channel	Channel Number	String		0x53	0x1D
Event	Channel Changed	Channel Number	String		0x93	0x1E
Command	Set TV Source	Input Source	Unsigned 8-bit integer	0 = Coax 1 = Composite 2 = Svideo 3 = Component 4 = VGA 5 = HDMI 6 = USB 7 = RJ45 Ethernet	0x13	0x1F
		Input Index	Unsigned 8-bit integer	0-255		
Status	Get TV Source	Input Source	Unsigned 8-bit integer	0 = Coax 1 = Composite 2 = Svideo 3 = Component 4 = VGA 5 = HDMI 6 = USB 7 = RJ45 Ethernet	0x53	0x20
		Input Index	Unsigned 8-bit integer	0-255		
Event	TV Source Changed	Input Source	Unsigned 8-bit integer	0 = Coax 1 = Composite 2 = Svideo 3 = Component 4 = VGA 5 = HDMI 6 = USB 7 = RJ45 Ethernet	0x93	0x21
		Input Index	Unsigned 8-bit integer	0-255		
Command	Set Volume Level	Volume Percent	Unsigned 8-bit integer	0-100%	0x13	0x22
Status	Get Volume Level	Volume Percent	Unsigned 8-bit integer	0-100%	0x53	0x23
Event	Volume Level Changed	Volume Percent	Unsigned 8-bit integer	0-100%	0x93	0x24
Command	Set Mute Status	Mute Status	Unsigned 8-bit integer	0 = Unmuted 1 = Muted	0x13	0x25
Status	Get Mute Status	Mute Status	Unsigned 8-bit integer	0 = Unmuted 1 = Muted	0x53	0x26

Message Description					Message Header	
Type	**Function**	**Parameters**	**Data Type**	**Allowable Values**	**Message ID**	**Message Index**
Event	Mute Status Changed	Mute Status	Unsigned 8-bit integer	0 = Unmuted 1 = Muted	0x93	0x27
Command	Set Backlight Level	Backlight Percent	Unsigned 8-bit integer	0-100%	0x13	0x28
Status	Get Backlight Level	Backlight Percent	Unsigned 8-bit integer	0-100%	0x53	0x29
Event	Backlight Level Changed	Backlight Percent	Unsigned 8-bit integer	0-100%	0x93	0x2A
Command	Display Message	Message	String		0x13	0x2B
Status	Not Applicable					
Event	Message Displayed	Message	String		0x93	0x2D
Command	Start Application	Command	String		0x13	0x2E
Status	Not Applicable					
Event	Application Started	Command	String		0x93	0x30

2.20 Voice Activation

Message Class: 20 = VOICE ACTIVATION

In Version 2.0 of this document, the Voice Activation content was removed, but the section remains since Message Class 20 = VOICE ACTIVATION remains for backwards compatibility.

2.21 Portable Remote Control

Message Class: 21 = PORTABLE REMOTE CONTROL

In Version 2.0 of this document, the Voice Activation content was removed, but the section remains since Message Class 21 = PORTABLE REMOTE CONTROL remains for backwards compatibility.

3   Messaging Structure Appendix

3.1   Message Format

Each message begins with a 16-bit message header followed by a variable length message payload followed by a 16-bit end of stream (EOS) indicator.

Message header		Message payload	Message end
8-bit Message ID	8-bit Message Index	Variable Length Data	16-bit EOS

3.2   Message Header

Following is the layout of the Message Header with an example:

MSB	16 Bits		LSB
	2 Bytes		
16 15	14 13 12 11 10 09	08 07 06 05 04 03 02 01	
Message ID		Message Index	
Type	Message Class		

Field Name	Description

Type	This field identifies the type of the message.
	        0x00 = Command
	        0x01 = Status message
	        0x02 = Event
	        0x03 = Vendor specific

Message Class	This field identifies the major class of devices.
	        0x01 = Lock
	        0x02 = Lighting
	        0x03 = HVAC
	        …

Message Index	This field identifies a specific command, event, or status.
	        0x01 = Set Online Status
	        0x02 = Get Online Status
	        0x03 = …

For example, a Thumbturn Status Changed Event message header from a Lock system would have the following identifier value: 0x8101.

0x81		0x0F	
Type	Message Class	Message Index	
1 0	0 0 0 0 0 1	0 0 0 0 1 1 1 1	

To simplify, for the first 16 classes or types of system, the first nibble of the Message Header MSB Byte is as follow:

0x0 = Status
0x4 = Command
0x8 = Event
0xC = Vendor Specific

The second nibble of the Message Header MSB Byte is equal to the Message Class. In our example, Message Class = 01 was the Lock system.

3.3   Message Payload

The message payload is a packed data structure containing the data types (parameters) used by a specific command, status or event. A special byte, EOS (end of stream), will signal the end of the message payload. There are several basic data types representing 8/16/32 bits unsigned data plus a string type to accommodate variable size data up to 65535 bytes. If the data is sent in binary-encoded format, then big-endian encoding is applied.

Type Class	Data Type	Length of Data (Bytes)	Data Format
Void	No data	0	-
Logical	Boolean	1	0x00,0x01
Bitset	32-bit bitset	4	0-0xFFFFFFFF
Unsigned integer	Unsigned 8-bit integer	1	0-0xFF
	Unsigned 16-bit integer	2	0-0xFFFF
String	8-bit byte array	2+length of string	First 2 bytes are length
DateTime	String	16	CCYY-MM-DDThh:mm

3.4   End of Stream (EOS) Indicator

To facilitate the processing of variable length messages the following reserved value indicates the end of message data.

Value Name	Value	DataType	Attribute Description
MessageEOS	0xC0FF	16-bit unsigned integer	This attribute terminates the current message. Data after this attribute will be discarded.