



Module Interface Specification

for a

**Set Top Box**



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## **Introduction**

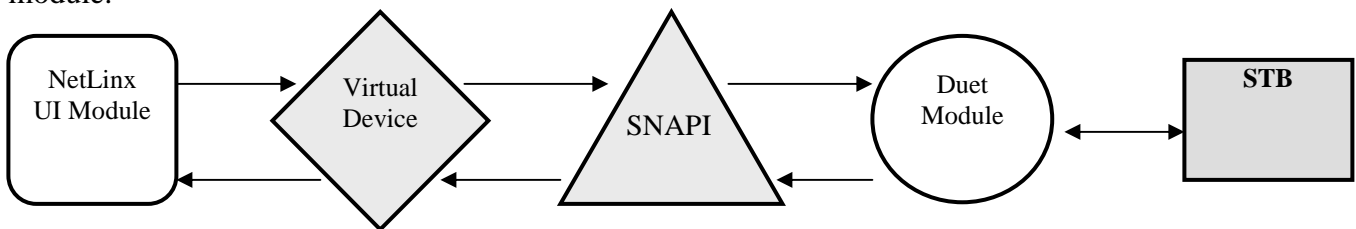
This is a reference manual to describe the generic interface provided between an AMX NetLinx system and a Set Top Box with IR Control.

This module was written using NetLinx Studio version 2.7 build 2.7.0.210, and Café Duet application platform and runtime version 1.9.194.

## **Overview**

The module translates between the standard interface described below and the Set top box.

The following diagram gives a graphical view of the interface between the interface code and the Duet module.



Some functionality in the device interface may not be implemented in the API interface.

## **Implementation**

To interface to the AMX Control Life Generic Set Top Box module, the programmer must perform the following steps:

1. Define the device ID for the TV that will be controlled.
2. Define the virtual device ID that the set top box module will use to communicate with the main program.
3. the AMX Control Life Generic Set Top Box module must be included in the program with a DEFINE\_MODULE command. This command starts execution of the module and passes in the following key information: the device ID of the TV to be controlled, and the virtual device ID for communicating to the main program.

An example of how to do this is shown below.

```
DEFINE_DEVICE
dvTP      = 10001:1:0 // The touch panel used for output
dvTV      = 5001:4:0 // The TV connected to the NetLinx IR port
vdvTV     = 30001:1:0 // The virtual device use for communication between the
                    // Comm module interface and User_Interface (UI) module interface
```

```
Define_Combine (vdvTV, dvTP)
```

```
define_module 'CL_STB_IR_dr1_0_1' IR1(vdvTV, dvTV)
```

## **Channels**

The UI module controls the TV via channel events (NetLinX commands *pulse, on, and off*) sent to the COMM module. The channels supported by the COMM module are listed below. These channels are associated with the virtual device(s) and are independent of the channels associated with the touch panel device.

Note: An ‘\*’ indicates an extension to the standard API.

<b>Channel</b>	<b>Description</b>
9	PULSE: Cycle Power
10	PULSE: Press 0
11	PULSE: Press 1
12	PULSE: Press 2
13	PULSE: Press 3
14	PULSE: Press 4
15	PULSE: Press 5
16	PULSE: Press 6
17	PULSE: Press 7
18	PULSE: Press 8
19	PULSE: Press 9
20	PULSE: Press +10
21	PULSE: Enter Button
22	PULSE: Next Station Preset
23	PULSE: Previous Station Preset
24	ON: Ramp Volume Up - used for feedback also OFF: Stop Ramping
25	ON: Ramp Volume Down - use for feedback also OFF: Stop Ramping
26	PULSE: Cycle Volume Mute
27	PULSE: Discrete Power On
28	PULSE: Discrete Power Off
42	PULSE: Cycle AB Switch
43	PULSE: Cancel Button
44	PULSE: Menu Button
45	PULSE: Move Menu Cursor UP
46	PULSE: Move Menu Cursor Down
47	PULSE: Move Menu Cursor Left
48	PULSE: Move Menu Cursor Right
49	PULSE: Select Menu Item
50	PULSE: Exit Button
65	PULSE: Function Button
66	PULSE: Setup Button
*67	PULSE: Select station preset 1
*68	PULSE: Select station preset 2
*69	PULSE: Select station preset 3
*70	PULSE: Select station preset 4
*71	PULSE: Select station preset 5
*72	PULSE: Select station preset 6
*73	PULSE: Select station preset 7
*74	PULSE: Select station preset 8
*75	PULSE: Select station preset 9
*76	PULSE: Select station preset 10
99	PULSE: Display Button
100	PULSE: Subtitle Button
101	PULSE: Info Button
102	PULSE: Favorites Button

105	PULSE: Guide Button
199	ON: Set Volume Mute On - used for feedback also OFF: Set Volume Mute Off
212	ON: AB Switch Set to B (pulse IR Channel 212) OFF: AB Switch Set to A (pulse IR Channel 42)
224	PULSE: Cycle station preset group/bank
225	PULSE: Station is incremented
226	PULSE: Station is decremented
227	PULSE: Scans for next station
228	PULSE: Scans for previous station
229	PULSE: Seeks for next station
230	PULSE: Seeks for previous station
234	PULSE: Cycle On Screen Display
235	PULSE: Go to Previous Station
251	ON: Device is Online - used for feedback only OFF: Device is not Online
252	ON: Data is Initialized - use for feedback only OFF: Data is not Initialized
255	ON: Set Power On - used for feedback also OFF: Set Power Off

**Table 1 - Virtual Device Channel Events**

## Command Control

The UI module controls the TV via command events (NetLinx command *send\_command*) sent to the COMM module. The commands supported by the COMM module are listed below.

Note: An '\*' indicates an extension to the standard API.

Command	Description
?BAND	Query for Band ?BAND
?DEBUG	Request the state of the debug feature. ?DEBUG
DEBUG-<value>	Set the state of debugging messages in the UI module and the Comm. module. <b>Note:</b> See Programming Notes section.  <value> : 1 = set only error messages on 2 = set error and warning messages on 3 = set error, warning & info messages on 4 = set all messages on  DEBUG-1
IOLINK-<dps>,<channel>	Associate a Power Sensor with the device  <dps> : the DPS in string form, i.e. 17:1:0 <channel> : channel on the IO device to which the power sensor is connected.  IOLINK-17:1:0,1
?PROPERTY-<key>	Get the value of a property <key>. If the value is not initialized, an empty string is returned.  <key> : IRONTIME (Pulse Time) IROFFTIME (Interval between two pulses)  ?PROPERTY-IRONTIME
PROPERTY-<key>,<value>	Set the value of property <key> to <value>. This must be followed by the REINIT command to take effect. These values are not initialized by default.  <key> : IRONTIME (Pulse Time) IROFFTIME (Interval between two pulses)  <value> : Pulse time in 1/10 sec  PROPERTY-IRONTIME,5
REINIT	Re-initializes the communication link and data. <b>Note:</b> This command deletes any messages waiting to go out to the device.  REINIT
?STATIONPRESETCOUNT	Query for number of station presets ?STATIONPRESETCOUNT
?STATIONPRESETPROPERTIES	Query for properties of all station presets ?STATIONPRESETPROPERTIES

?STATIONPRESETPROPERTY- <index>	Query for properties of specific station preset <index> : 1 - 10 ?STATIONPRESETPROPERTY-8
?TUNERBANDCOUNT	Query for number of tuner bands ?TUNERBANDCOUNT
?TUNERBANDPROPERTIES	Query for properties of all tuner bands ?TUNERBANDPROPERTIES
?TUNERBANDPROPERTY-<index>	Query for properties of specific tuner band <index> : 1 ?TUNERBANDPROPERTY-1
?TUNERPRESET	Query for tuner preset. ?TUNERPRESET
TUNERPRESET-<Preset>	Recall tuner preset <Preset> : 1 - 10 TUNERPRESET-1
?VERSION	Query for the current version number of the Duet module. ?VERSION
?XCH	Get the current tuner station. ?XCH
XCH-<station>	Set the current tuner station. <station> : station number XCH-77

**Table 2 – Send Command Definitions**

## **Command Feedback**

The COMM module provides feedback to the User Interface module for TV changes via command events. The commands supported are listed below.

**PLEASE NOTE:** Feedback is only provided when there is a state change. If no state change resulted from the command sent in, then no feedback will be returned.

<b>Command</b>	<b>Description</b>
BAND-<tb>	Return the band of the tuner  <tb>: TV  BAND-TV
DEBUG-<value>	Returns the state of debugging messages in the UI module and the Comm. module.  <value> : 1 = set only error messages on 2 = set error and warning messages on 3 = set error, warning and info messages on 4 = set all messages on  DEBUG-1
PROPERTY-<key>,<value>	Feedback on the value of property <key>. <b>Note:</b> An empty string is returned if the property has no value.  <key> : IRONTIME (Pulse Time) IROFFTIME (Interval between two pulses)  <value> : Pulse time in 1/10 sec  PROPERTY-IRONTIME,5
TUNERPRESET-<preset>	Return current tuner preset index  TUNERPRESET-1
VERSION-<version>	Reports the version number of the module.  <version> : xx.yy.zz = module version number  VERSION-1.0.1
XCH-<station>	Returns the current tuner station.  <station> :  XCH-101

**Table 3 - Command Feedback Definitions**