

# ***INSTALLATION & PROGRAMMING MANUAL***

## **SMARTPAD LCD™ TOUCH-SCREEN PANEL CONTROLLER** Models SPLCD39G, SPLCD64G & SPLCD64V



**SPLCD39G**



**SPLCD64V**

## SAFETY INSTRUCTIONS - READ BEFORE OPERATING EQUIPMENT



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of un-insulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

This product was designed and manufactured to meet strict quality and safety standards. There are, however, some installation and operation precautions, which you should be particularly aware of.

1. **Read Instructions** – All the safety and operating instructions should be read before the appliance is operated.
2. **Retain Instructions** – The safety and operating instructions should be retained for future reference.
3. **Heed Warnings** – All warnings on the appliance and in the operating instructions should be adhered to.
4. **Follow Instructions** – All operating and use instructions should be followed.
5. **Water and Moisture** – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
6. **Carts and Stands** – The appliance should be used only with a cart or stand that is recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



7. **Wall or Ceiling Mounting** – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. **Ventilation** – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. **Heat** – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. **Power Sources** – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. **Grounding or Polarization** – Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.
12. **Power-Cord Protection** – Power- supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. **Cleaning** – The appliance should be cleaned only as recommended by the manufacturer.
14. **Power Lines** – An outdoor antenna should be located away from the power lines.
15. **Nonuse Periods** – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
16. **Object and Liquid Entry** – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
17. **Damage Requiring Service** – The appliance should be serviced by qualified service personnel when:
  - A. The Power-supply cord or the plug has been damaged; or
  - B. Objects have fallen, or liquid has spilled into the appliance; or
  - C. The appliance has been exposed to rain; or
  - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
  - E. The appliance has been dropped, or the enclosure damaged.
18. **Servicing** – The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.
19. **FCC Notice** – This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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# Section 1: General Information & Features

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## GENERAL INFORMATION

The SmartPad LCD series of Touchpanel Controllers is Xantech's latest generation of the SmartPad Keypad.

The SmartPad LCD Series consists of three, interactive, touchpanel keypads – a 3.9", and a 6.4" diagonal color graphic keypads as well as a 6.4" diagonal **video** keypad. All functionality and screen graphics are fully programmable using Xantech's Universal Dragon™ software. The programming interface is via the RS232 or USB ports located conveniently behind the detachable faceplate on the front of the unit. All Models come with an extensive *built-in* IR Code Library as well as the ability to learn IR codes via the *Learning Eye* located on front of the unit.

As with the previous models of SmartPad Keypads, these new touchpanels are designed to be *stand-alone* controllers with the ability to output IR commands onto the standard Xantech four-wire IR Bus as well as receive (and pass-through) IR commands via the *built-in* IR receiver. These new touchpanels also have the ability to receive and transmit RS232 commands for a wide range of control options. This keypad is also directly compatible with Xantech's MRC88 products for seamless integration with the **Whole-house Audio Video Entertainment** system.

### **The SmartPad LCD™ Touch-Screen Panel Keypad includes the following components:**

- One SmartPad LCD Touch-Screen Panel
- One DB9 RS232 programming cable to connect (Part No. 05913778)
- One USB programming cable (Part No. 05913660)
- One front panel designer Bezel (white)
- Keypad Installation Kit which includes the keypad panel back-box enclosure, an installation template (Part No. 09590255), 4 back-box mounting clips and touch-panel mounting screws
- CD-ROM Disc contains the Universal Dragon Drop-IR Programming Software (Part No. 03501085-01)
- SmartPad LCD™ Installation & Programming Instructions (Part No. 08901480)
- Two-4 conductor WECO connector plugs (Part No. 05997400)
- One-2 conductor WECO connector plug (Part No. 05996800)
- 4 Keypad jumpers for Zone Termination, Keypad Address and IR Sensor Enable (Part No. 06500135)

### **Power Supplies (not included, must be purchased separately)**

- SPLCDPS1 Powers one SPLCD
- SPLCDPS4 Powers up to four SPLCDs

### **Optional Accessories**

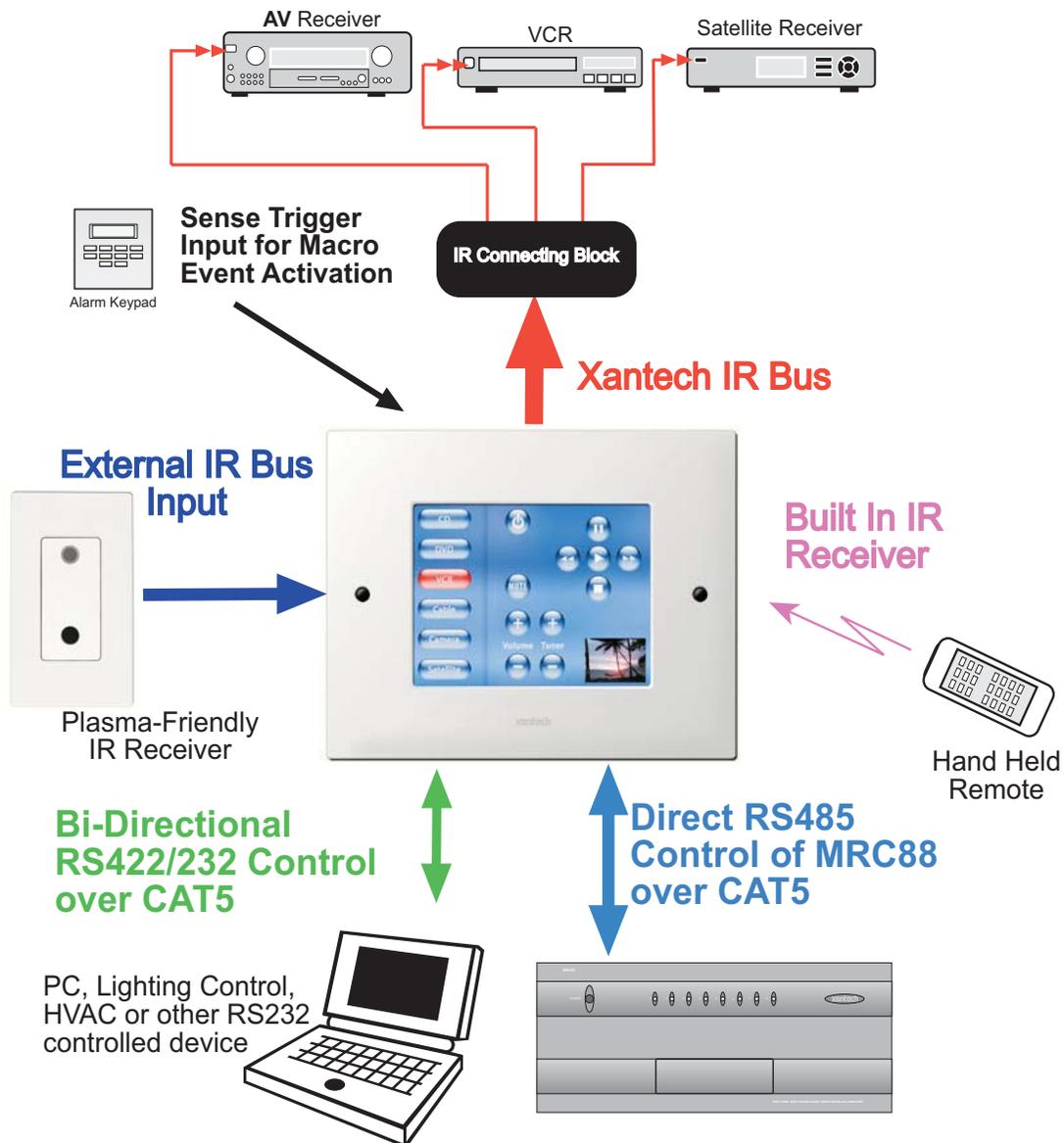
- Optional front panel Designer Bezels:
  - Almond
  - Black
  - Brown
  - Ivory
- RS422232 Converter (used for bi-directional RS232 communication between SmartPad LCD and other RS232 devices)
- RS2321X8 Eight Port Serial Router
- External IR Receivers
  - 480 Dinky Link™ Series IR Receivers
  - 490 Micro Link™ Series IR Receivers
  - 780 J-Box Series IR Receiver
  - 291 Hidden Link™ Series IR Receivers

## SYSTEM OVERVIEW

The *SmartPad LCD* is a complete control system in a single box – meaning, no extra controller box is necessary. Simply connecting a power supply and then connecting the *SmartPad LCD* outputs to any standard Xantech IR bus, makes a complete IR Repeater System. By adding the optional RS422/232 converter, you can literally control almost any Audio Video or Home Automation component. The *SmartPad LCD* or SPLCD is also directly compatible with the MRC-88 Whole-house Audio Video Entertainment System.

*SmartPad LCD* is easily programmed with Xantech's Universal Dragon Drop-IR Software via a RS232 or USB Port (Programming cables and software included). Universal Dragon is used to graphically design your screens and assign IR and/or RS232 Macros. An internal IR Library is also included for ease of programming.

The *SmartPad LCD* can be wired into numerous simultaneous application configurations such as outlined below in **Figure 1**.



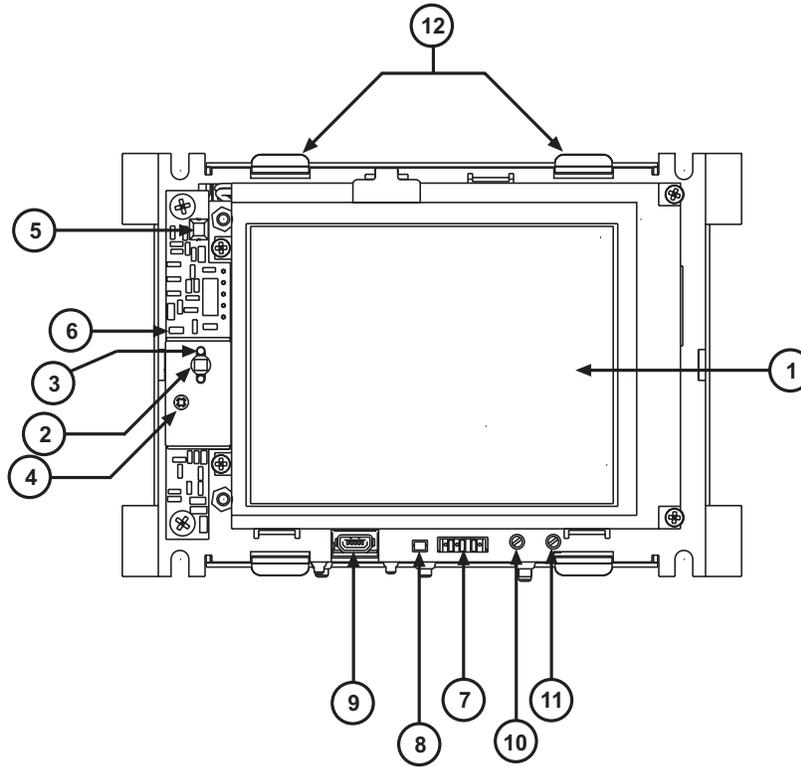
**Figure 1 - System Block Diagram**

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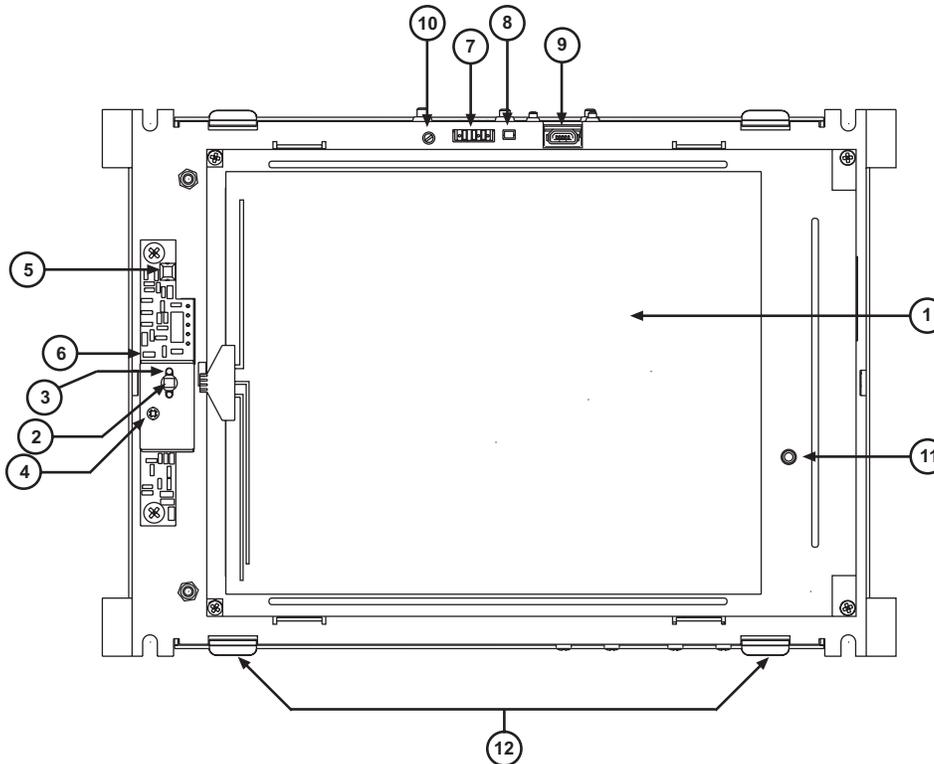
## SMARTPAD LCD FEATURES

- **LCD Touch Screen Interface:** Allows for use of GTL's (Graphical Touch Links). Colorful graphical representation of functional buttons for touch control of IR and RS232 controlled devices
- **Upper and Lower Viewing Angles:** Software Programmable for exact viewing placement
- **Programmable Backlight Control:** Selectable Time-Out for LCD backlight
- **Standard Xantech IR Bus Output:** Allows for easy interface to existing IR networks
- **Internal IR Code Library:** Built in IR Code Library. Contains all Major Brand Component IR commands. No need to 'learn' commands.
- **IR Learning:** IR commands can be learned from external hand-held remotes through the SPLCD's built-in IR learning eye to add to the SPLCD's built-in IR code library.
- **Macros:** can be built using IR, RS232, repeat or delay commands and associated with a specific button or event triggered by a keypad button press, an RC68 IR code, an MRC88 compatible keypad command, control sense status, or by RS232. Up to 40 IR commands can be issued in a single Macro.
- **IR Receiver:** Broad-band IR Receiver (30kHz-100kHz) for pass through of IR commands from Hand-Held IR Remotes
- **Talk Back / Status LED:** LED indicates presence of IR and/or programmable STATUS indication of Zone or other user defined power on/off indicator.
- **RC68 IR Trigger Sequencer:** Trigger IR and/or RS232 Macros via RC68 IR command received at the built-in IR Receiver
- **Status Input:** Trigger IR and/or RS232 Macros with a voltage between 5-30V DC, 100mA.
- **Status Output:** Send an output voltage to trigger the on/off state of another device or indicator. 12V DC @ 100mA.
- **Serial I/O:** RS232 control over an RS422 line for RS232 control of remotely located RS232 controlled devices (Requires optional RS422232 adapter).
- **MRC88 Plug-N-Play:** Direct connect to standard Keypad Input of MRC88CTL for full zone control
- **RS232 Com/USB Com Programming Ports:** Communication Programming Ports located on the front panel of the SPLCD under the bezel, used to program the system using Universal Dragon™ Software
- **Emitter Output:** Local Emitter port on the SPLCD Rear Panel. Output from IR Bus & GND terminals, 12V DC @100mA. (IR In Zone feature, MRC88 only)
- **Full Motion Video Input (SPLCD64V only):** NTSC/PAL composite video input for PiP or full screen, full motion video display
- **Firmware Upgradeable for 'Future Proof' Technology:** Upgradeable via RS232 Com Port or USB Programming Port. Firmware upgrades available for easy download by following links within Universal Dragon Software ([www.xantech.com/products/firmware.htm](http://www.xantech.com/products/firmware.htm))

**SMARTPAD LCD PANEL AND FEATURE DESCRIPTIONS**



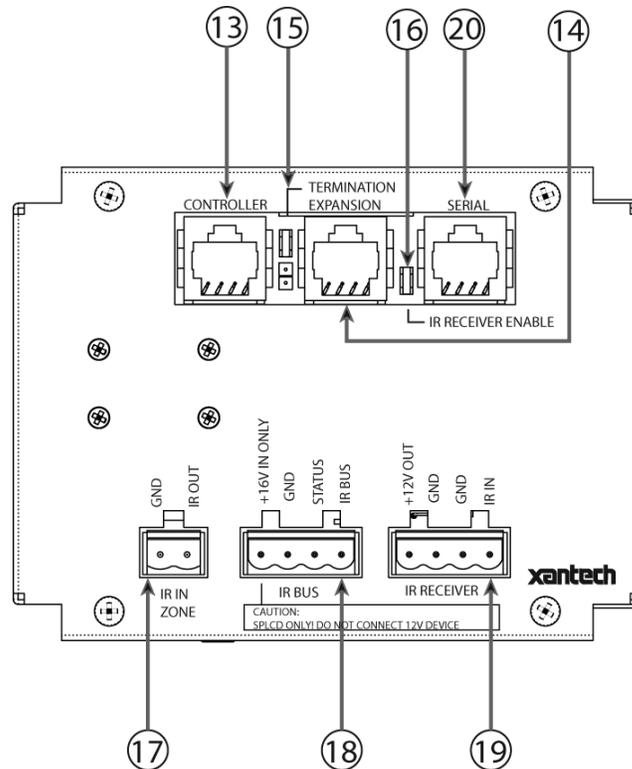
**Figure 2a – SmartPad LCD™ Model SPLCD39G – Front Panel Features and Functions**



**Figure 2b – SmartPad LCD™ Model SPLCD64G & SPLCD64V– Front Panel Features and Functions**

## SPLCD FRONT PANEL FEATURES AND CONNECTIONS

1. **LCD Touch Screen.** Displays Graphical Touch Links (GTL's) for touch initiation of IR and RS232 Macros.
2. **IR Receiver.** Receives IR from hand-held remotes to control IR devices connected to the SPLCD and trigger IR and/or RS232 macros when RC68 IR commands are received. Wide-Bandwidth IR Receiver. Accepts IR commands with carrier frequencies between 32 kHz and 75 kHz.
3. **IR Talkback and Status LED Indicator.**
  - **Flashing LED** – Indicates presence of IR at the internal IR receiver or an External IR input.
  - **Steady Green LED** – Indicates Status Line is High, configured either as an Input or Output.
  - **Blinking LED (During Project Download)** – Indicates a Base Unit Transfer is in progress.  
**NOTE:** The IR Talkback LED will also flash, blink or turn on constant when environmental IR light noise is present.
4. **IR Sensitivity Adjustment.** Carefully adjust for background light level to prevent false triggering of the IR circuits. Slowly turn clockwise to reduce sensitivity if positioned as shown in **Figures 2a, 2b (Lower Viewing Angle)**, with the **IR Receiver** positioned on the **left side**, or counterclockwise if installed in the reverse position, (**Upper Viewing Angle**, with the **IR Receiver** positioned on the **right side**).
5. **IR Learning Eye.** The IR Learning Eye allows teaching IR Codes to Universal Dragon via the SPLCD when connected to a PC Com Port (Serial or USB).
6. **IR Learning Eye LED.** LED brightness indicates the strength of a teaching remote's output to the SPLCD IR Learning sensor.
7. **RS232 Com Port.** 3 Pin Header. Connects the SPLCD to a PC running Universal Dragon Software for Programming and Firmware Upgrades. (Programming Cable Part No. 03972440)
8. **RESET Button.** Depressing this button with a blunt object will recycle SPLCD to its initial POWER ON state.
9. **USB Com Port.** Connects the SmartPad LCD to a PC running Universal Dragon Software for Programming and Firmware Upgrades.
10. **LCD Backlight Adjustment.** Adjusts the brightness of the LCD backlight. Slowly turn counter-clockwise to reduce brightness.
11. **LCD Contrast Control.** Adjusts the Contrast of the SPLCD screen. Slowly turn clockwise to increase contrast.
12. **Bezel Mounting Clips (4).** Guide clips for mounting the Front Bezel onto the SPLCD.



**Figure 3 – SmartPad LCD™ – Rear Panel Connections and Functions (Model SPLCD57G Displayed)**

### SPLCD REAR PANEL FEATURES AND CONNECTIONS

- 13. Controller Terminal.** RJ45 Jack. Connects the SPLCD to a Zone Keypad Terminal on a MRC88 Controller via CAT5 cable.
- 14. Expansion Terminal.** RJ45 Jack. Allows one SPLCD to be daisy chained to another for multiple control locations within a zone. Up to 4 SPLCD's are supported per zone. Can also be daisy chained to MRC88KP or MRC88DJKP.
- 15. Zone Termination.** Jumper. Do not remove jumper if there is only one keypad in a zone. If there is more than one keypad in a zone, remove from all but the last keypad in the daisy chain configuration.
- 16. IR Receiver Enable.** Jumper. Enables the IR sensor on the Keypad. Remove when using an external IR receiver or if experiencing IR interference from external sources (Plasma, LCD, Fluorescent lights, Sunlight etc...)
- 17. IR In-Zone.** 2-Terminal WECO style socket - Zone IR out for local 'In-Zone' emitter out. Used for IR control of equipment in the same location as the SPLCD. Output equivalent to that of Xantech Amplified Connecting blocks. 100mA peak output. Connect directly to Emitter or to Xantech Connecting Blocks (789-44 or 791-44). This feature only works with MRC88 and must be enabled in Universal Dragon in the MRC88 Project/IR Loopback Enabled.

**18. Power Input & IR Output Terminal:**

- a. **+16VDC:** For connection to 16VDC SPLCD Power Supply (Models SPLCDPS1 & SPLCDPS4)
- b. **GND:** Power Supply and IR GND connection
- c. **STATUS:** 5-30VDC, 100mA Status Input for Macro Trigger or LED power Indication **from** remote device or 12VDC STATUS output from SPLCD **to** remote device. (Universal Dragon required to configure terminal as a Status Input or Status Output).
- d. **IR BUS Pin:** IR Output from SPLCD connects to a Xantech Connecting Block (SPLCDCB100, 789-44, 791-44, CB60 etc.) Can drive a single emitter up to 2000' on 18AWG.

**19. External IR Input.** 4-Terminal WECO style socket – Allows connection of other Xantech IR Receivers and/or Keypads to be used in conjunction with the SPLCD. RC68 commands received here can trigger internal IR and/or RS232 Macros to be output on the IR BUS Terminal and/or Serial RJ45 Terminal.

**20. SERIAL:** Bi-directional RS422 Serial Port can be run up to 4000ft (1.2KM) to communicate with a remote RS232 device (or up to eight RS232 devices using the Xantech RS2321X8). This port connects via standard CAT5 cable terminated in RJ45 connectors on both ends. The RS422232 converter and a 12VDC Power Supply (both sold separately) are required for RS232 control.

## Section 2: Installation & Connections

### INSTALLATION

#### BACK BOX MOUNTING INSTRUCTIONS

Each of the four models of SPLCD Touchpanel is mounted in a corresponding junction box (included). No screws are necessary for affixing this junction box into drywall, lath & plaster, button board or other surfaces covering a hollow wall. The wall needs to be at least 3.5" (8.9cm) deep, (inside dimension).

A Mounting Wall-Cutout Template is included for precise hole dimensions. There are two models, one for each display size (3.9" and 6.4").

**NOTE:** The mounting hole size is critical as there is a +0.00" inch tolerance for this cutout. It is imperative that the provided mounting template be used to assure proper hole size. Check the table below to be sure you are using the proper Mounting Wall-Cutout Template.

SPLCD Model #	Mounting Template Part No.	Cutout Dimensions
SPLCD39G	08187158	5.50" X 6.50"
SPLCD64G	08187157	7.63" X 9.49"
SPLCD64V	08187157	7.63" X 9.49"

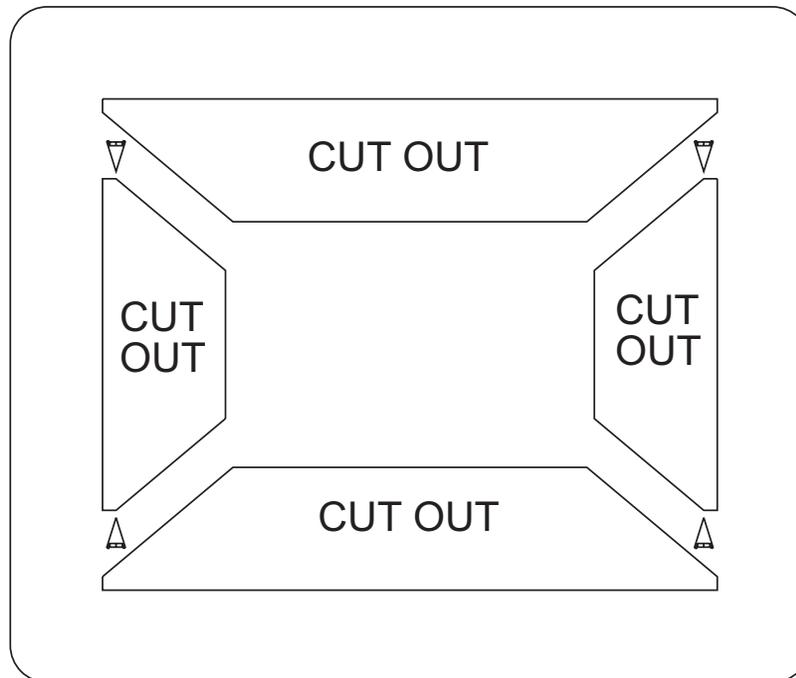
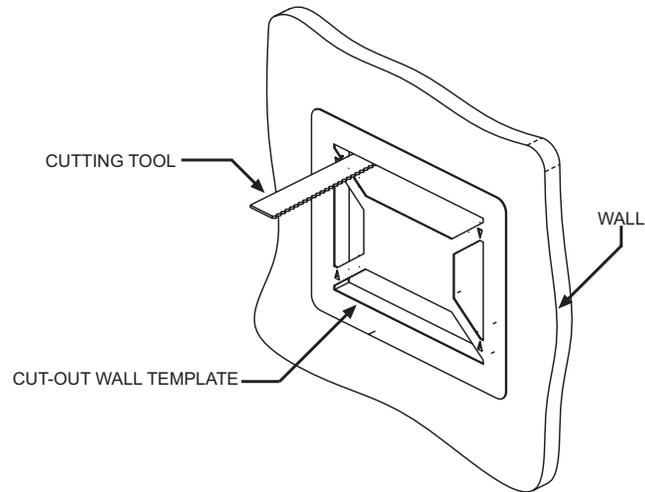


Figure 4 – Back Box Mounting Wall-Cutout Template

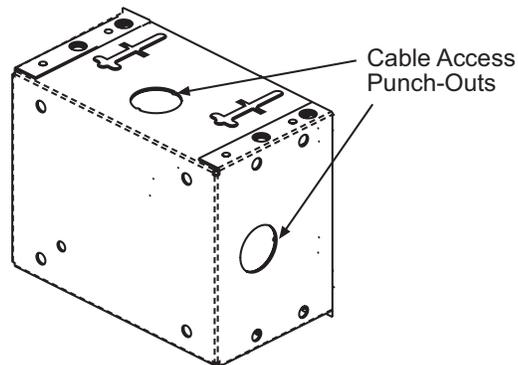
To properly mount the SPLCD, please follow these instructions carefully:

1. Place the **Mounting Template** on the **wall surface** as shown in **Figure 4** above.
2. Make sure the **Template** is *level* and gently secure to the wall using a hammer.
3. Using a hole saw or other cutting tool, carefully cut along the **inner guide lines** of the **Mounting Template** as shown in **Figure 5** below.



**Figure 5 – Cutting the Mounting Hole**

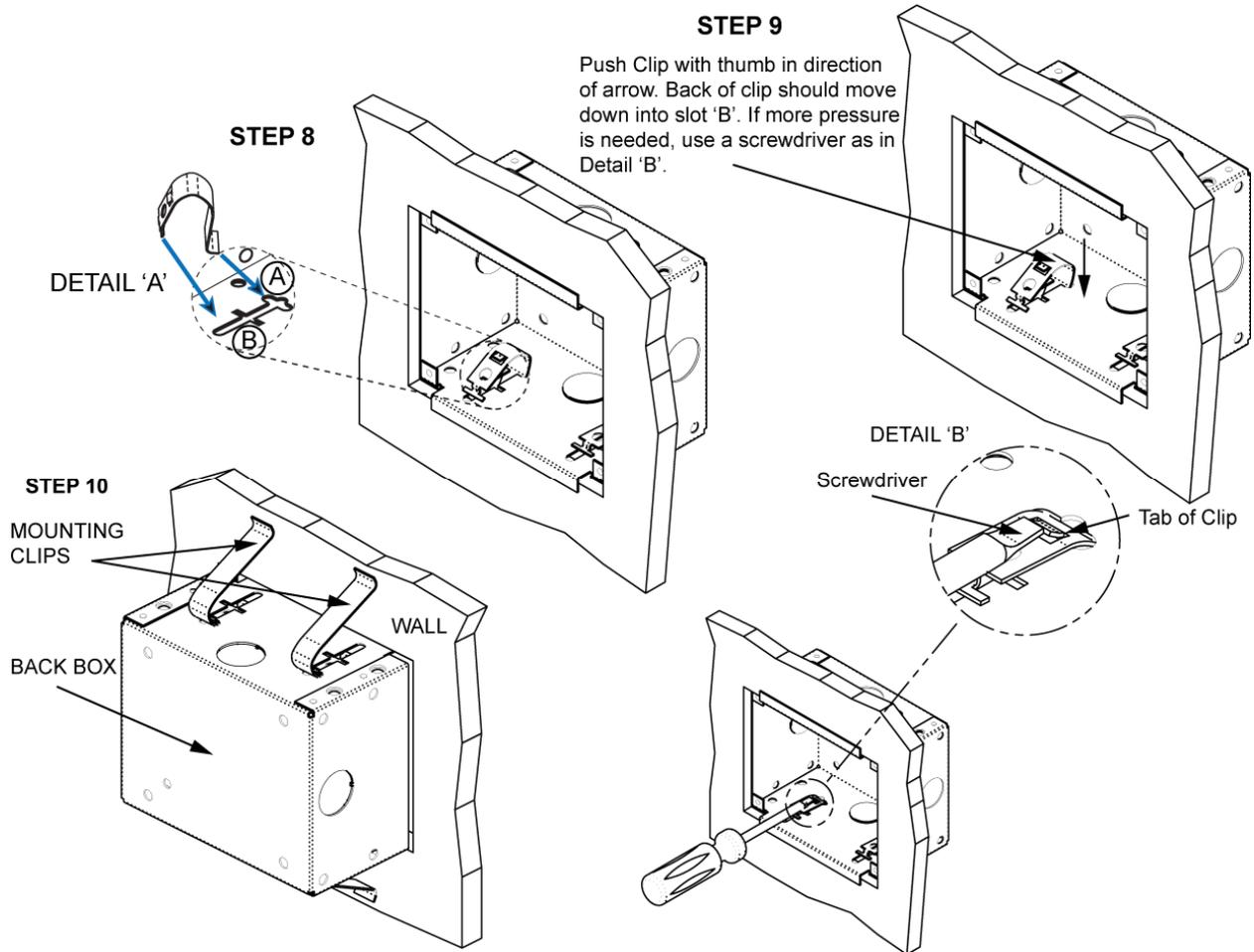
4. After the four areas are cut out, remove the **Mounting Template** and carefully remove the four areas that remain attached. Clean the area of any loose pieces. **Do not to enlarge the hole past the recommended dimensions.**
5. Remove the appropriate **hole-knockouts** on the **Back Box** to allow for wiring of the **SPLCD**.



**Figure 6 – Back Box Cable Access Point (Back-Box Rear View)**

6. Pull all **cables** through the **wall opening** and desired **punch-out hole** in the **Back Box**.

7. Insert the **Back Box** into the wall and carefully hold it evenly in place as to not allow it to fall into the wall.
8. Insert each **Mounting Clip** into **Slot A** while positioning the “T” shape of the **Mounting Clip** on the *inside surface* of the **Back Box** as shown in **Detail A** of **Figure 7**.
9. Push the **clip** with your thumb in the direction of the **arrow**. The *back* of the **clip** should move down into **Slot B**.  
**NOTE:** If more pressure is needed, use a screw driver as shown in **Detail B** of **Figure 7**.
10. Repeat **Steps 8-9** for all **four clips**. A **rear view** of the **Back Box** with **clips installed** is shown below.



**Figure 7 – Installing Back Box Mounting Clips**

## SPLCD POWER SUPPLY AND INPUT/OUTPUT WIRING INSTRUCTIONS

The SmartPad LCD can be interfaced in numerous fashions; Standard Xantech IR Bus, RS232, Direct Connect to MRC88, External IR Input, and Local IR (Emitter Output). The following sections address each of these wiring configurations.

### POWER SUPPLY & STANDARD XANTECH IR OUTPUT BUS WIRING (Figure 3- Item 18)

A 4-terminal WECO connector is provided with the SPLCD for the +16VDC, GND, STATUS, and IR OUT connections. For convenience of wiring, it is recommended that the Power Supply and IR Connecting Block be installed at the same location, typically the system head-end, although this is not required. If installed at the

head-end, run **4-conductor 18AWG stranded, non-shielded wire** to the SPLCD. If multiple SPLCD's are being installed pull home-runs from each SPLCD location back to the head-end.

**Power Supply Wiring**

All models of **SPLCD** require a **16VDC Power Supply**.

- Xantech Model# **SPLCDPS1** is a 16VDC Power Supply @ 1.5A that can power for *one* **SPLCD**.
- Xantech Model# **SPLCDPS4** is a 16V DC Power Supply @ 3.12A that can power up to *four* **SPLCD's**.

**Power Supply With a Connecting Block**

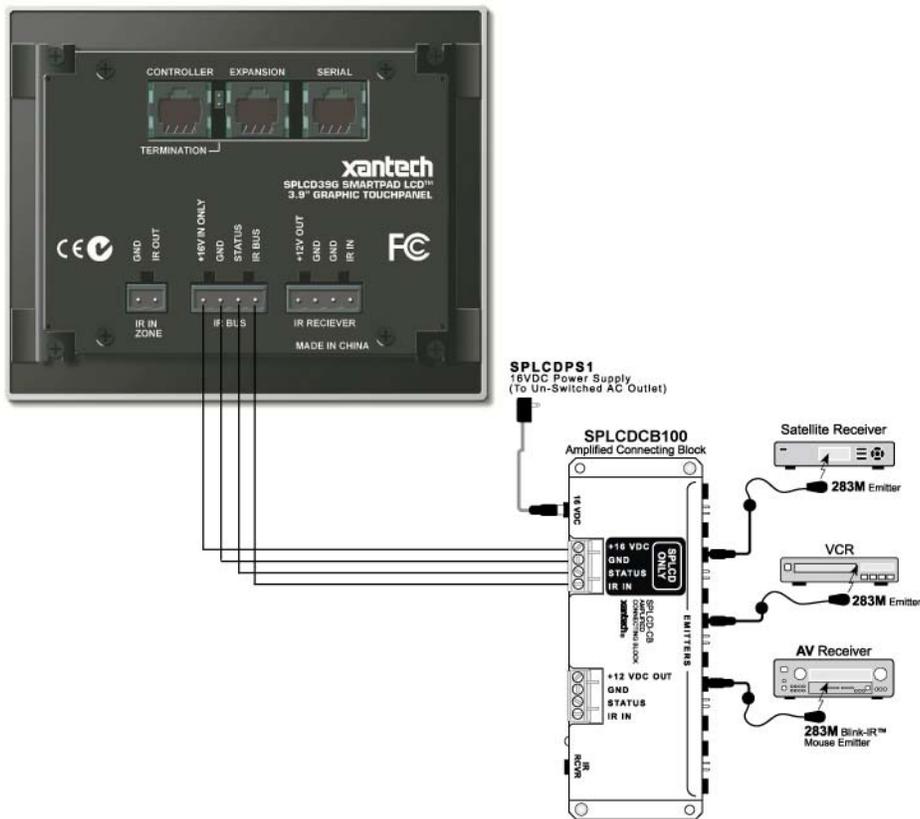
1. Connect the **2.1mm coaxial plug** of the **power supply** into the **16V DC Input** of the **SPLCD Connecting Block** (Model# **SPLCDBC100**).

**Power Supply Hard Wired to the SPLCD**

1. Cut the **2.1mm coaxial plug** off the end of the **power supply wire**. Spread the two leads and strip approximately  $\frac{1}{4}$ " off the end of each lead.
2. Using the included 4-terminal WECO connector, connect the **white stripe lead** to the **+16V In Only Terminal** and the **black wire** to **GND**.

**IR Wiring**

Connect **4-conductor 18AWG stranded non-shielded wire** from the **IR BUS, GND, STATUS** (optional) and **+16VDC Terminals** on the **SPLCD** to the appropriate **terminals** on the **SPLCDBC100 Connecting Block**. (Figure 8)



**Figure 8 – Power Supply and IR Output Wiring (Model # SPLCDBC100 Shown)**



**Caution:** The **STATUS Terminal** can be either an **INPUT** (5-30VDC from remote device) to *trigger* a **Macro** within the **SPLCD** or *illuminate* the **Talkback/Status LED** as indication of a unit or zone's power status, or it can be an **OUTPUT** (+12VDC from the SPLCD) to *activate* an **external device**. This is

important to note before **STATUS** wiring is made between the **SPLCD** and the **other device**. **DO NOT CONNECT AN OUTPUT TO ANOTHER DEVICE'S OUTPUT!**

### **External IR Input Wiring**

#### **(Figure 3 – Item 19)**

A 4-terminal WECO connector is provided for convenient wiring of external IR Receivers (780, 291, 480, 490 Series) to the SPLCD display. IR commands received here will be rebroadcast and passed out via the Xantech IR Bus of the SPLCD (**Figure 3 – Item 18**). RC68 commands received here (of the proper Code Group, C9 set as default) can trigger internal IR or RS232 Macros programmed into the SPLCD.

- **+12VDC Output:** This is a voltage regulated +12VDC output signal derived internal to the SPLCD unit from the 16VDC supply voltage. Use this output to power the external IR Receiver. The 12VDC output can power a load of up to 100mA maximum (80mA effective load).

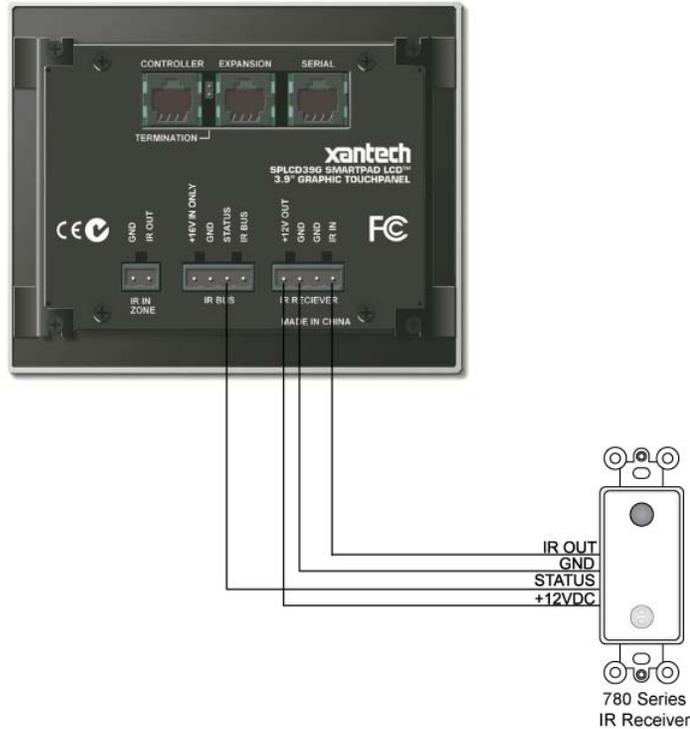


**Caution: This is a 12VDC OUTPUT only. Do not connect a 12V power source to this point. This is only an OUTPUT to power an external IR Receiver.**

- **GND:** Both **GND Terminals** are internally connected to the same point and represent chassis ground of the unit. Connect **either terminal** to the **GND** of the **external IR Receiver**.
- **IR Input:** Connect to the **IR Output** of an **IR Receiver** such as Xantech 780, 291, 480, 490 Series or other compatible device.

Pull **3-conductor 18-24AWG stranded non-shielded wire (4-Conductor** if using the **Status** line) from the **SPLCD** location to the **IR Receiver** location. (**Figure 9**) Wire gauge varies by wire run distance, see table below:

<b>Length of IR Receiver Wire</b>	<b>Gauge of Wire</b>
200' (61m)	24AWG
600' (183m)	22AWG
2000' (610m)	20AWG
5000' (1524m)	18AWG



**Figure 9 – External IR Input Wiring**

**MRC CONTROLLER AND EXPANSION PORT WIRING  
(Figure 3 – Items 13/14)**

These RJ45 ports are used for interfacing the **SPLCD** directly to a **MRC Controller** and/or **Expansion MRC Keypads**, (SLPCD's or MRC88KP's). The SPLCD can interface to the MRC Products in two ways via this connection:

1. Via **IR** along the dedicated **IR lines** of the **CAT5** connected to a **MRC44/88** (Pins 4 & 5) (MRC88 & MRC44)
2. Direct to a **MRC88** processor via the internal **RS485 communication lines** (Pins 1, 2 &7).

**Controller Terminal**

This terminal is used to connect the **SPLCD** either directly to a MRC88 Controller Zone Keypad Terminal or to the **Expansion Terminal** on an existing **MRC88 Zone Keypad**.

1. Using **CAT5 cable** terminated at both ends with RJ45 connectors, (**EIA/TIA 568B standard**) connect the **Zone Keypad Terminal** on the **MRC88 Rear Panel** to the RJ45 connector marked **Controller Terminal** on the **SPLCD Rear Panel**.

**NOTE:** When the **SPLCD** is the *last keypad* connected in line with the **MRC88**, the **Zone Termination Jumper (Figure 3 – 15)** needs to be installed.



**Caution:** Power voltage for the keypad is transmitted along this cable! **Incorrect wiring on this cable can destroy the MRC Keypad and/or the SPLCD Display!** Be sure to test cable for proper connections **before** making connections.

**Expansion Terminal**

This terminal is used to connect the **SPLCD** to additional **SPLCD's** or **MRC88 Keypads** within a zone.

**NOTE:** This feature is only functional in a MRC88 System.

1. Using **CAT5 cable** terminated at both ends with RJ45 connectors, (**EIA/TIA 568B standard**) connect the **EXPANSION Terminal (Figure 3 – 14)** on the **SPLCD Rear Panel** to the RJ45 **Controller Terminal** on the rear of the next **SPLCD or MRC88KP** in line. (Four keypads max per zone.)
2. **Remove the Zone Termination Jumper (Figure 3 – 15) from all but the last keypad** in the daisy chain.

**Serial Port Wiring (RS42232)  
(Figure 3 – Item 20)**

This is a bi-directional **RS422 Port** that can be run up to **4000ft.** (1.2KM) to communicate with a remote **RS232 device.**

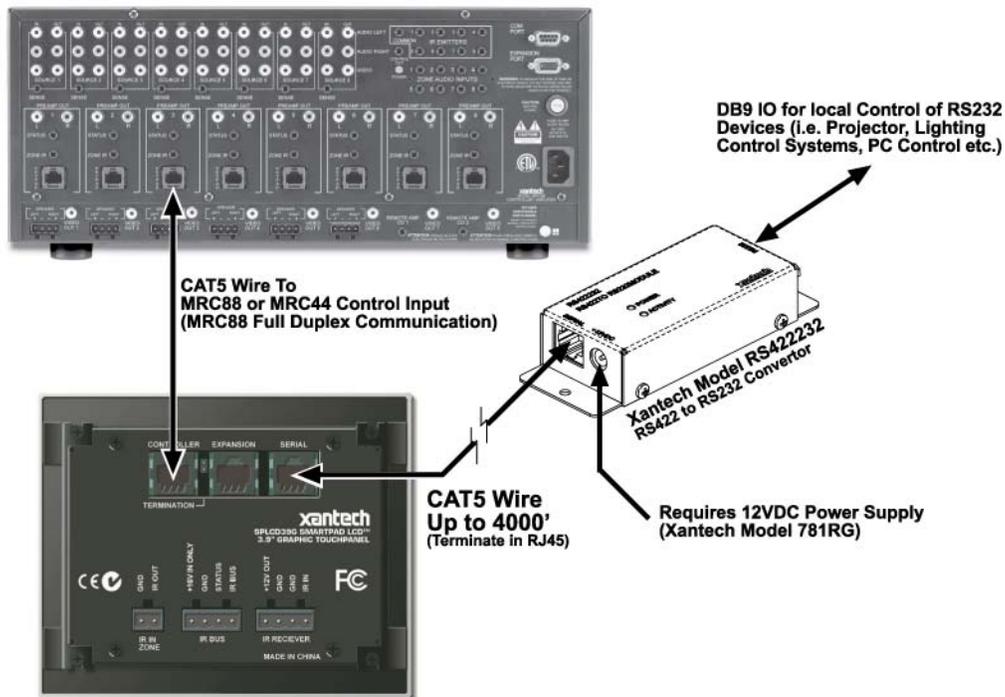
- Using **CAT5 cable** terminated in RJ45 connectors in a pin to pin configuration, connect the **Serial Port** on the **SPLCD Rear Panel** to the **Serial Port** on a Xantech **RS42232.** (Figure 10)

**NOTE 1:** The **RS42232 Converter** (sold separately) and a **12VDC Power Supply** (Xantech model 781ERGPS) should be located within **30ft** of the **RS232 device** to be controlled.

**NOTE 2:** A **Null Modem Adaptor** *may* be necessary for proper communication. Please consult manufacturer's specification of device being controlled.

DB9 Pin Out	Function
2	Rx
3	Tx
5	GND

**RS42232 DB9 Pin Out**

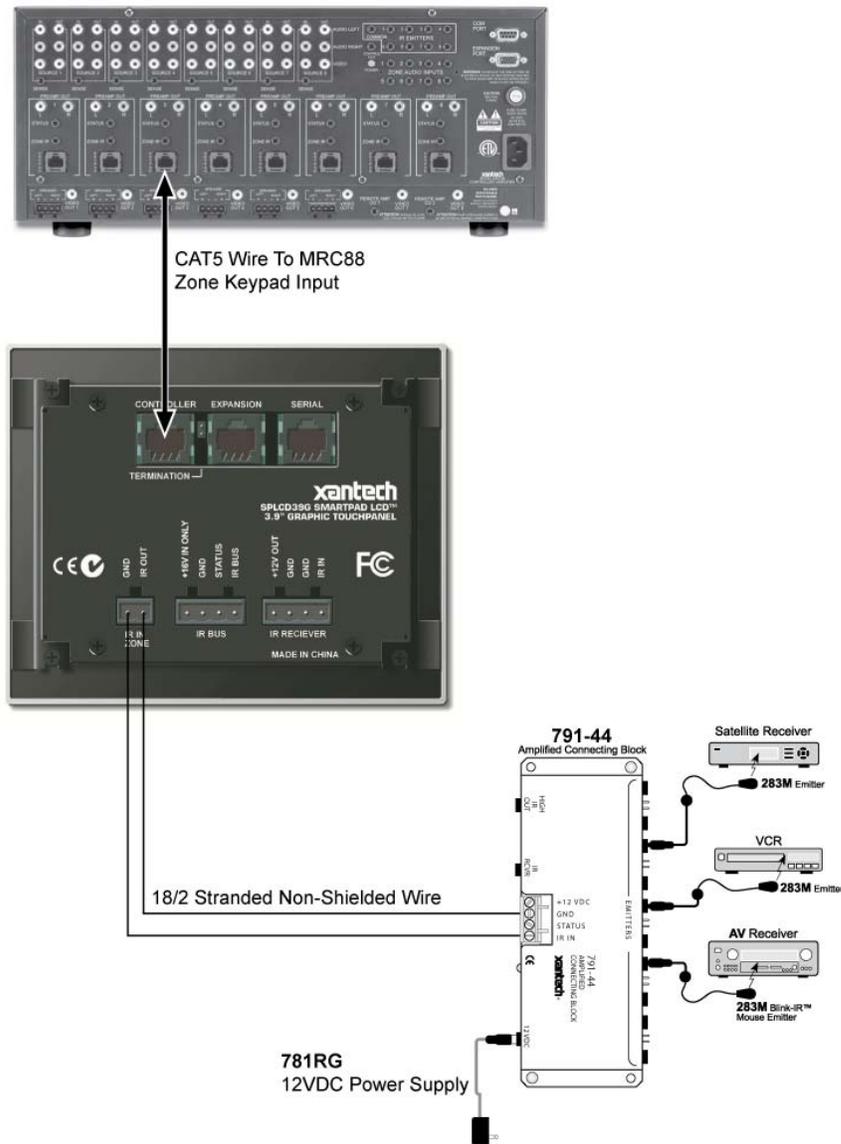


**Figure 10 – Interfacing to MRC and Serial Control**

**IR In Zone**  
**(Figure 3 – Item 17)**

IR In Zone allows connection of emitters directly to the SPLCD to control components in the same general area as the SPLCD.

1. Cut the **3.5mm mini plug** off the end of a Xantech **IR emitter**.
  2. Connect the **IR OUT Terminal** on the **SPLCD Rear Panel** to the **white stripe wire** on the emitter wire and connect the **GND Terminal** to the **black wire** on the emitter cable, using the included 2-conductor screw-type **Removable Connector**.
  3. To control **multiple components** in the same area, connect these same terminals to an **Amplified Connecting Block** (Xantech Model 791-44) using 18-20AWG 2-conductor cable.
- NOTE: IR In Zone is a MRC88 feature and must be enabled when programming the MRC88 in Universal Dragon.**



**Figure 11 – IR In Zone Connections**

## INSTALLING THE SPLCD INTO THE BACK-BOX

### Viewing Angle

The SmartPad LCD™ can be programmed for *Upper* or *Lower* viewing angles. The viewing angle the display was programmed for, affects the orientation of the display in the back box. Displays programmed for **Upper viewing angle** need to be installed with the IR Receiver located on the **right** side and displays programmed for **Lower viewing angle** need to be installed with the IR Receiver located on the **left** side. (Figures 2a & 2b)

1. Pull all **wires** through the **wire-access holes** in the **Back Box** leaving slack for strain-relief and connection to appropriate terminals on the **SPLCD Rear Panel**.
2. Insert the **SPLCD** into the **Back Box** oriented according to desired viewing angle so that the unit is flush within the **Back Box**.
3. Secure with four **6-32x1/4"** screws (Part No. 103497). **NOTE:** Do not completely tighten screws.
4. Make sure the **SPLCD** is *level within the box* and finish tightening screws. Be sure not to *over-tighten*.
5. Install front **Bezel** making sure the two **alignment tabs** are properly aligned and the **Bezel Magnets** 'attach' to the SPLCD and are holding the **Bezel** in place. (Figure 12)
6. Push the **Bezel** gently into the **Mounting Clips** until it is flush with the wall making sure the *side tabs* go through the slots on the metal bracket.

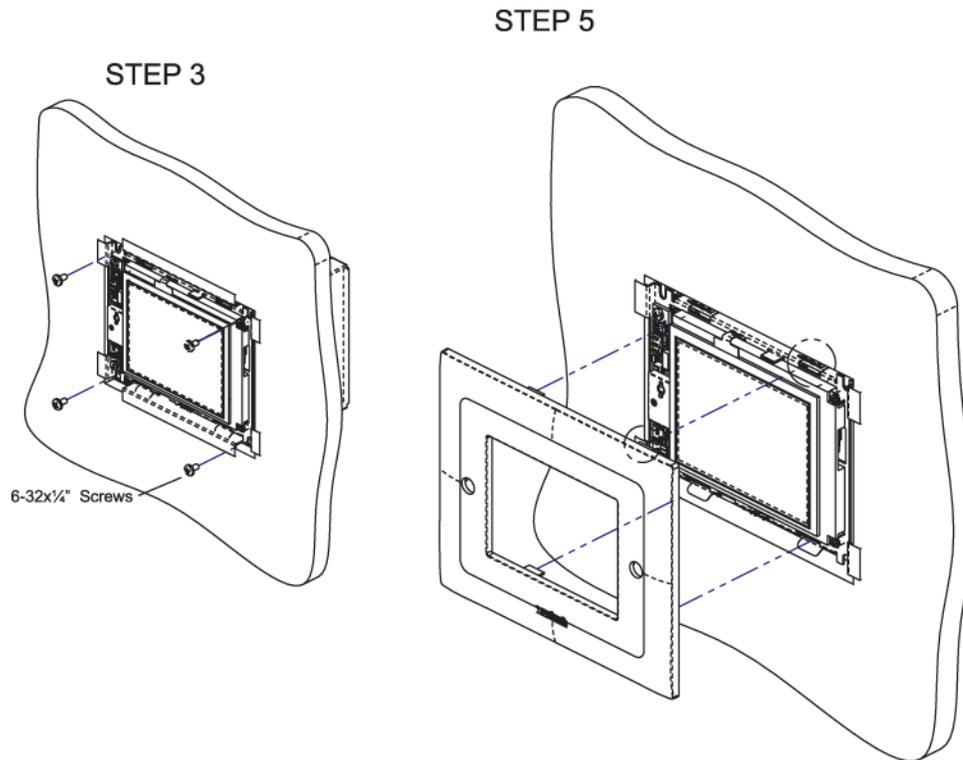


Figure 12 – Installing SPLCD into Back Box

## Section 3: Maintenance & Calibration

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### CALIBRATION

#### TOUCH SENSE CALIBRATION

The accuracy of triggering a *Hot-Spot* associated to a GTL (Graphical Touch-Link) can be calibrated using a dull blunt object such as a **Stylus** from a PDA. The smaller the diameter of the calibration tool, the more accurate the settings will be, thereby setting the SPLCD to optimum performance.

**NOTE:** When calibrating a **SLPCDG/V**, use your **finger** instead of a **stylus**.

#### To enter Calibration Mode:

1. Power ON the **SPLCD** and allow to boot.
2. With the backlight out, press and hold any area of the **Touch Screen** display with your finger. If the display is active (i.e. backlight ON), simply press and hold an area without an active GTL.
3. While keeping contact on the **Touch Screen** with your finger, gently press & hold the **Reset Button (Figures 2a & b –Item 8)** on the display with the **stylus**.
4. Keep pressure on the screen while the **SPLCD** is rebooting, approximately 6 seconds, until a white screen with a black dot appears.
5. Release the **screen**. The **black dot** should appear on the *same side* as the built in **IR Receiver**.
6. With the **stylus** touch the center of the **dot** and release.
7. Another calibration **dot** will appear towards the *top middle* of the **screen**. Again, touch the center of the **dot** and release. One more calibration **dot** will appear. Repeat as above. (There a total of three calibration points).

After touching the third calibration point with the stylus, you can test the accuracy of the calibration. Simply touch *anywhere* on the **screen** and a **dot** will appear in that **touched location**. If the dot appears *far* from the touch-point location, repeat **Steps 2-7**.

#### Exiting Calibration Mode:

After **10 seconds** of no activity, the **SPLCD** will automatically return to normal operation.

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### MAINTENANCE

#### CLEANING

The SPLCD should be cleaned with a non-abrasive cloth such as that used for eye-glass cleaning. No liquid cleanser should be used directly on the display. If the unit is powered OFF, gently wipe the face of the display so no fingerprints or dust can be seen.

If the unit is powered ON (active), simply press and hold an area of the SPLCD Display with no active GTL's. While holding this area, gently wipe the rest of the display as noted above.

## Section 4: Programming the SmartPad LCD™

Programming the SmartPad LCD system is a two-step process:

1. Creating the **GUI** (Graphical User Interface) **Screens**.
2. Assigning *functions* (marcos) to the **GTL's** (Graphical Touch Links) to control external devices.

Through Universal Dragon™ Software, both of these tasks are easily performed. The software contains a built-in **Style Library** for creating the **GUI Screens** as well as a built-in **IR-Code Library** for programming each of the **GTL's**. This makes programming the SPLCD a very quick and easy process.

### INSTALLING AND CONFIGURING THE UNIVERSAL DRAGON™ SOFTWARE

#### UNIVERSAL DRAGON™ MINIMUM REQUIREMENTS

- Windows 2000/XP/Vista
  - 1.5GHz Processor or better
  - 512MB Ram (1GB recommended)
  - 600MB\* Hard drive space (more recommended as projects expand)
  - .NET Framework 2.0 (included)
  - Mouse, USB, RS232 ports
- \*600MB = 300 MB Universal Dragon™, 300MB DotNet Framework

#### INCLUDED HARDWARE & SOFTWARE ITEMS

The Universal Dragon package includes:

- Universal Dragon Drop-IR CD ROM (Part No. 03501085-01)
- DB9 Male to 3 Pin Programming Cable (Part No.03972440). Connects the SPLCD Programming Port (**Figures 2a, 2b – Item 7**) to the DB9 COM PORT on your PC.
- USB Programming (Part No.05913660). Connects the SPLCD USB Programming Port (**Figures 2a, 2b – Item 9**) to the PC's USB port.

#### CONNECTING THE SMARTPAD LCD™ TO THE PC

To program the SmartPad LCD™, the unit must be connected to a **PC** running **Universal Dragon Drop-IR Programming Software**.

##### DB9 Serial Connection

1. Connect the supplied **DB9 Programming Cable** (Part No. 03972440) to your **PC Serial Port** and the other end to the **RS232 Com Port**, (3 pin connector located under the bezel on the **SPLCD Front Panel**) - (**Figures 2a, 2b - Item 7**).

##### USB Serial Connection

The USB connection requires the included **USB 'A' Type to USB mini plug cable** (Part No. 05913660) to interface your PC with the **USB Com Port** on the **SPLCD**. Connecting a cable to this port will automatically override any device connected to the RS232 Com Port on the front of the SPLCD.

1. Connect the **'A' Type connector** (*wide* end) of the included **USB Cable** to the **PC USB Port** and the **'mini' Type connector**, (*small* end) to the **USB Com Port** on the **SPLCD Front Panel**. (**Figures 2a, 2b – Item 9**).

**NOTE:** First time use of a PC for Universal Dragon SPLCD Programming requires that certain drivers get installed to the PC from Universal Dragon. The Install Wizard will try to run as soon as the PC is connected to the SPLCD. In some cases it maybe necessary to run the Wizard twice. For additional information, see Section: **Configuring USB Port** on **Page 26**.

## SOFTWARE INSTALLATION

Universal Dragon™ can be installed using the included CD-ROM or as a download from [www.xantech.com](http://www.xantech.com). Given the size of the program, it is recommended that downloading only be done with a high-speed internet connection. Universal Dragon™ will automatically update when a PC running Universal Dragon™ is powered up, but it is always a good idea to check the website for the latest version and Application Advisories before starting a new project. To check for updates to Universal Dragon™, with the PC connected to the internet, simply click **Check For Updates** in the **Universal Dragon™ Help Menu**.

When finished installing Universal Dragon™ double click the shortcut on the pc desktop to launch the program.

### Windows 2000/XP/Vista

Install Universal Dragon Drop-IR onto your hard drive as follows:

1. Insert the disc into your computer's CD-ROM drive. If your drive has been set for auto run, a Xantech Welcome Menu will appear. If not, access your CD ROM with Windows Explorer and double click the file "setup.exe".
2. On the Welcome menu, click NEXT.
3. Follow the on-screen instructions as the program installs. Installation time will vary, depending on the speed of your machine.

## STARTING UNIVERSAL DRAGON DROP-IR™ SOFTWARE

After the successful installation of the software, double-click the Universal Dragon™ icon on your desktop or:

1. From the **Pc Start Menu**, choose **Programs**.
2. Select **Xantech** and click on **Universal Dragon™**.
3. The program loads and opens to the following Universal Dragon opening screen:

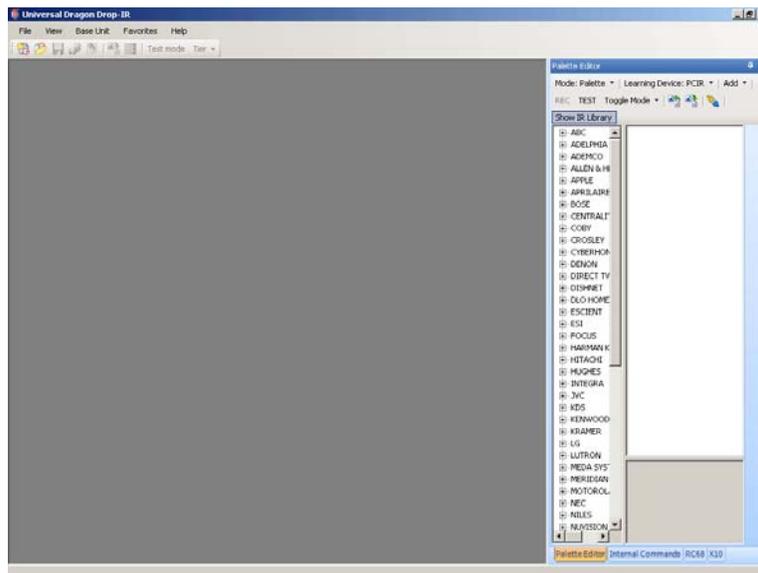


Figure 13 – Universal Dragon Opening Screen

### Serial Port Selection

When first launched, **Universal Dragon** software scans the **Serial Ports** on your **PC** and will display the available ports under **Global Preferences** in the **File Menu**. Unavailable ports will not appear.

### Configuring USB Port

To configure the **USB Port** for the first time, complete the following instructions:

1. Connect **16V DC** to the **SPLCD** and allow to completely boot.
2. Start the **PC** and allow to completely boot.
3. Connect the **USB Cable** from a **USB Port** on the **PC** to the **USB Com Port** on the **SPLCD Front Panel** (Figures 2a, 2b – Item 9).
4. A **Found New Hardware Window** should appear on the **PC**.
5. Select **“Include this Location”** when Windows® prompts you for where to look for the driver.
6. Click on **Browse** and navigate to **C:\Program Files\Xantech\Universal Dragon\Drivers**. Click **OK**.
7. In the Install Hardware Wizard Window, click **Next**, then **Finish**. If the **Install Wizard** appears again, repeat **Steps 4-5**.
8. Click **OK**. The **PC** should now be able to communicate with the **SPLCD** via **USB**.

### Selecting the Proper Com Port

Normally you would use Com Port 1 (USB will usually appear as COM 3 or above), but if it is already in use, it will be necessary to use a different one. Select the Com Port as follows:

1. In the **File Menu** click **Global Preferences** or simply press **CTRL+G** on your **PC keyboard**. The **Preferences Window** will appear.
2. In the **Preferences Window** under **Available Ports**, select the appropriate **Port** from the **pull-down**, then click **OK**.

## **VERIFYING COM PORT COMMUNICATION**

### Who Am I

Before starting a new project or doing any programming, it is highly recommended that a ‘Who Am I’ procedure be performed to confirm the firmware version of the SPLCD. This will serve two purposes. One, it will confirm the connection between the PC and the SPLCD that will be required for all programming; and two, it will assure that the SPLCD is up to date with all of the latest features and fixes.



Figure 14 – Who Am I/SPLCD



Figure 15 – Firmware Page Link

1. Connect the included **DB9 Programming Cable** (Xantech P/N 05913778) to a **Serial Port** on the **PC** and to the **RS232 COM Port** on the **SPLCD Front Panel** or connect the included **USB A-Type to mini USB plug Cable** to a **USB Port** on the **PC** and to the **USB COM Port** on the **SPLCD Front Panel**.
2. In the **Base Unit Menu**, select **WhoAmI**, then **SPLCD**. The **Who Am I? Window** will appear with all of the firmware version information for the **SPLCD**.
3. In the **Favorites Menu**, select **Xantech Firmware Page**. This will load the **Xantech Firmware Updates Page** in the web browser.
4. Compare the firmware version from **Who Am I?** to the version on the **Firmware Updates Page**. If the version on the **Updates Page** has a *higher* version number, the firmware in the **SPLCD** should be updated using the steps in the following section. If the firmware numbers are the *same*, click **OK** in the **Who Am I? Window** and proceed to section: **Starting A New SPLCD Project, (Page 29)**.

**NOTE:** If a message is returned stating: **‘Unable to connect to device. Please ensure that your device is connected.’** this could be due to the following:

1. The **SPLCD** is not powered **ON**. Check the power state of the unit.
2. There is a **communication error** between the **PC** and the **SPLCD**. Verify the **DB9** or **USB cable** is properly connected to the unit and there are *no Com Port conflicts* in your **PC**.

3. You have selected the *wrong Com Port*. Select the proper setting under: **File Menu/Global Preferences**.

### SPLCD FIRMWARE UPGRADE

The SPLCD has been designed to be “Future Proof”. As product feature improvements are developed, new System Firmware versions will be made available. Check [www.xantech.com](http://www.xantech.com) for upgrades when starting a new SPLCD Project.

SPLCD SmartPad LCD Current Firmware Version		
Post Date	Description	Download
11-14-2007	SPLCD Firmware v165 •Fixed some issues with XIR-2 IR that would cause the buttons to sometimes be sluggish, and also possibly cause the IR code to fail to control the device.	<a href="#">splcd_v165.fdl</a>
<a href="#">&gt; Archived Firmware Versions</a>		

Figure 16 – [www.xantech.com](http://www.xantech.com) Firmware Updates Page

### Downloading Firmware Files From The Web

1. Open the **Universal Dragon™ SPLCD software**. Make sure the **PC** is connected to the **Internet** and that the **SPLCD** is connected to the computer's **COM** or **USB Port**).
2. In the **Favorites Menu**, select **Xantech Firmware Page**. This will load the Xantech Firmware Updates Page in the web browser. This step and the following steps cannot be completed without an Internet connection.
3. Scroll down until you come to the **SPLCD SmartPad LCD Current Firmware Version Box**. The most recent SPLCD firmware update file will be featured here. Click the link to download the most current Firmware Update. For older versions click on **Archived Firmware Versions** and scroll to the desired version (entries are sorted with the newest entries at the top of the list and the oldest at the bottom). Click on the desired filename link to begin the download process.
4. The **File Download Window** will appear. Select **Save**.
5. The **Save As Window** will open. Navigate to: **C:\Program Files\Xantech\Universal Dragon\Firmware**. Click **Save**.
6. Once the download is complete, click on **Close** to close the download window. The browser can also be closed if no longer needed.

### Upgrading the SPLCD Firmware

Firmware Upgrades can be conducted to keep the SPLCD up to date and take advantage of new features.



Figure 17 – Firmware Upgrade

1. Start **Universal Dragon™**, connect a **programming cable** to the front of the **SPLCD** and open a **SPLCD Project**. (The SPLCD must be powered up and turned ON.)
2. In the **Base Unit Menu**, select **Upgrade**, then **SmartPad LCD**.

3. The **Open Window** will appear. Double-click the **firmware file** that was just downloaded in **Step 5** above to begin the update process.
4. After the firmware transfer is completed, in the **Base Unit Menu**, select **WhoAml**. The **WhoAml ? Window** will appear and display the three-digit firmware version that was just loaded into the **SPLCD**. If this is true, the new firmware has been successfully installed and is ready for use. If not, confirm downloaded firmware version, connections and try again.
5. If upgrading Firmware to a SPLCD with a Project already loaded, after the upgrade is complete it is recommended that a **Transfer Project** be performed to assure that the system project has not been affected by the firmware upgrade.

### **Firmware Download Interruption**

Once a Firmware Update starts downloading, if it is interrupted at any point during the download, the SPLCD will possibly lock up and you can lose communication with SPLCD. This can occur when the PC goes into screen saver or standby power mode, the SPLCD loses power or the programming cable becomes disconnected. To restore communication, you can force a firmware upgrade to SPLCD during the first five seconds after a Reset or Power Cycle.

1. Make sure the **USB/Serial Port** is connected from the **PC** to the **SPLCD**.
2. Set **Universal Dragon** up for a firmware upgrade. (**Step 2** above.)
3. Before you double-click the **firmware file** in **Universal Dragon (Step 3** above), press and release the **Reset Button** on the **SPLCD**.
4. Within *5 seconds* of pressing the **Reset Button**, double-click the **firmware file** in **Universal Dragon (Step 3** above).
5. The download should begin.
6. If the download does not start, check the **PC's Port Settings** to make sure the appropriate Port is selected. A **power cycle** of the **SPLCD** may be necessary if pressing the **Reset Button** *did not* allow download.
7. Repeat **Steps 4-5** above as appropriate.

### **GLOBAL PREFERENCES**

Before starting programming any projects, it is recommended that these settings be configured. Once set, they will remain in affect to all Universal Dragon Projects for all models, except as noted, until the settings are changed.

1. In the **File Menu**, select **Global Preferences**. The **Preferences Window** will appear.

#### **General**

If not selected, check the box and set a duration from 1-120 minutes to save AutoRecovery info. This will save a copy of the project you are working on every 'X' minutes. If Dragon crashes you will be presented with the option to recover to the last saved project.

#### **Serial**

Select the appropriate **Port** from the **pull-down**, then click **OK**.

#### **SPLCD / XTR39**

If not selected, check the box **Warn When Buttons Overlap** to have a warning appear when **GTL's** (Graphic Touch Links) overlap when creating Graphic Pages.

## STARTING A NEW SPLCD PROJECT

For example, in this section, a Blank SPLCD 64v Project will be used. With the Universal Dragon software open and Com Port communication verified, proceed as follows:

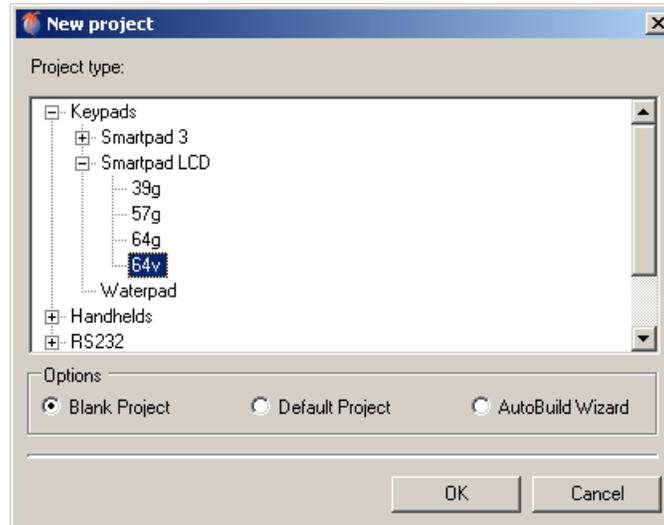


Figure 18 – New Project Window

### Blank Project

To build a SPLCD Project from scratch, do the following:

1. From the **File Menu** select **New Project (CTL+N)** or select **Open Project (CTL+O)** to modify an existing project file, or select **New Project** or **Open Project** from the **Tool Bar**. The **New Project Window** will appear.
2. Under **Project Type**, click the '+' next to **SmartPad LCD**.
3. Select the model SPLCD to be programmed. For example, a **64v** will be used.
4. Select the Radio Button for **Blank Project**. Click **OK**. A Blank SPLCD Project will open.  
**NOTE:** See: **Default Project (MRC88)** and **AutoBuild Wizard** directly below for additional New Project Options.
5. Resize the **SPLCD Window** until the full keypad and all tabs are visible (**Figure 19**).
6. If not selected, click the **Graphics Palette** and **Properties Tabs**.
7. Proceed to Section: **Creating the Graphical User Interface**.

### Default Project (MRC88)

To open pre-configured a SPLCD Project Template for use with an existing **MRC88 System**, click **Default Project** in **Step 4** above. Each SPLCD Model features an eight source layout that has been configured for use with common MRC88 applications and is already setup for MRC88 Emulation. The Button Names (Captions) can be changed if the Sources and Functions in your system are a little different than the default and these Default Projects can be modified for any feature or function that can normally be programmed to a SPLCD. Depending upon the modifications needed to match a Default Project to what you are designing, various sections of this manual will be helpful in making those changes. Review the Table of Contents for a list of topics that may apply. The first two sections to review for finishing a Default Project are Sections: **Appendix: MRC88 Emulation Mode: Feature Description & Programming** and **Auto-fill**.

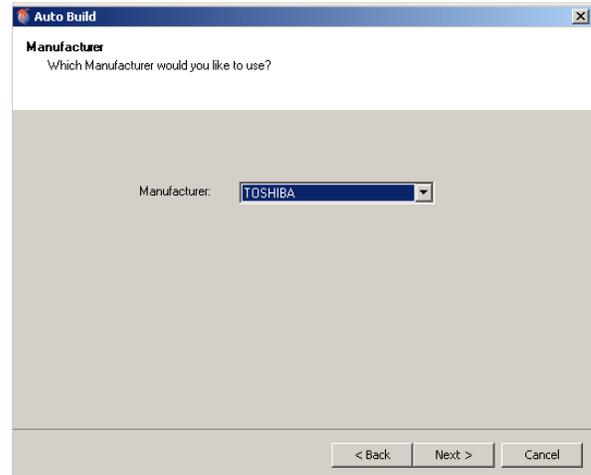
### AutoBuild Wizard

The AutoBuild Wizard allows you to 'build' a SPLCD Project, complete with Background, Buttons and IR and/or RS232 Commands in just minutes. To run the **AutoBuild Wizard**, proceed as follows:

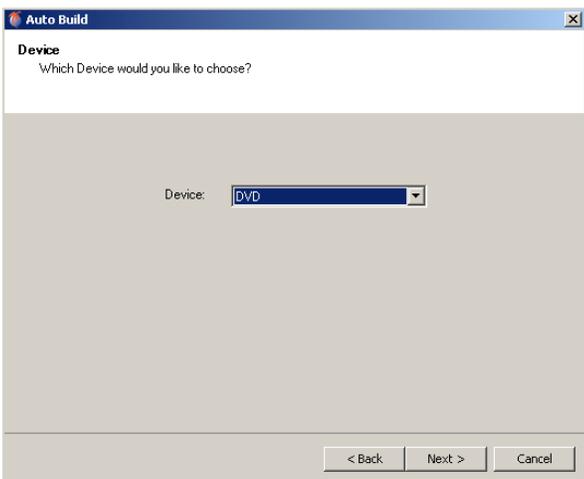
1. In the **File Menu**, select **New Project** or, in the **Tool Bar** click the **New Project Icon**.
2. Under **Project Type**, click the '+' next to **SmartPad LCD**.
3. Select the model SPLCD to be programmed. For example, a **64v** will be used. Select the Radio Button for **AutoBuild Wizard**. Click **OK**. Proceed as follows:



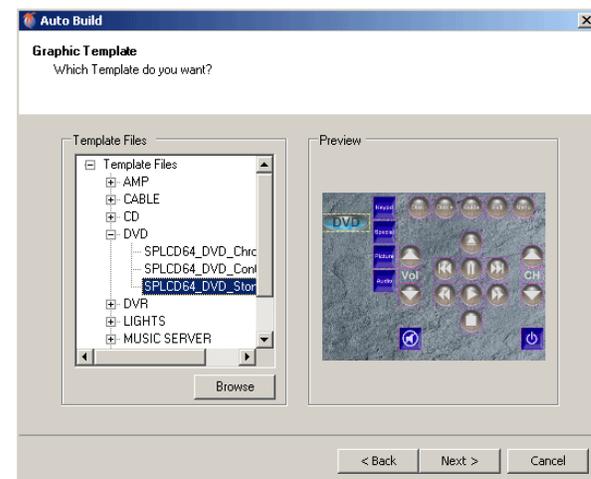
4. The **AutoBuild Wizard Start-Up Screen** will appear. Click **Next**.



5. The **Manufacturer (Brand) Select Window** will appear. Select the **Brand** for the device being added to the SPLCD Project from the **pull-down**. Click **Next**.

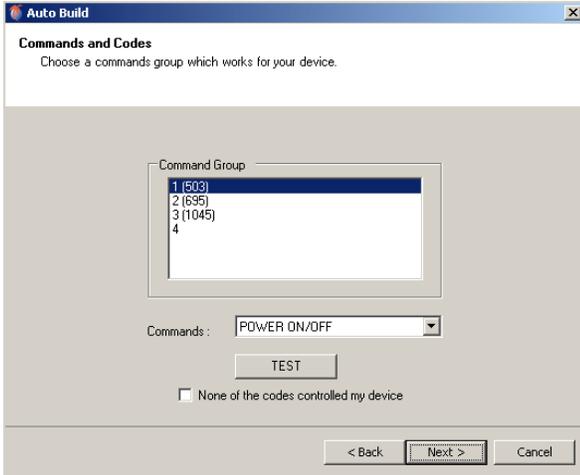


6. The **Device Select Window** will appear. Select the **Device** (DVD, Receiver, etc) for the device being added to the SPLCD Project from the **pull-down**. Click **Next**.

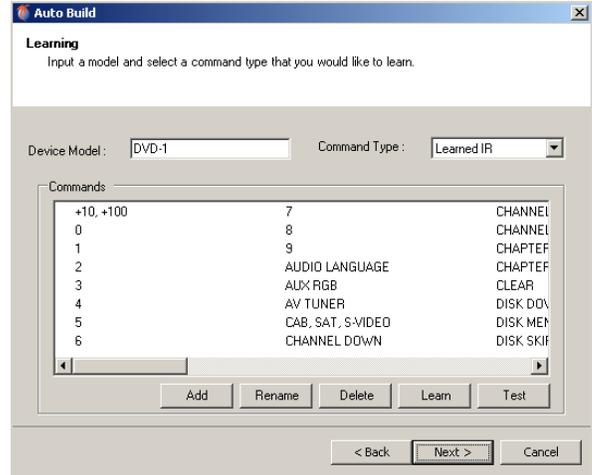


7. The **Graphic Template Select Window** will appear. In the **Template File List**, select the device being added to the SPLCD Project. Click the options for the **Template Files**. They will appear in the **Preview Block**. Click **Next** when the desired Template has been selected.

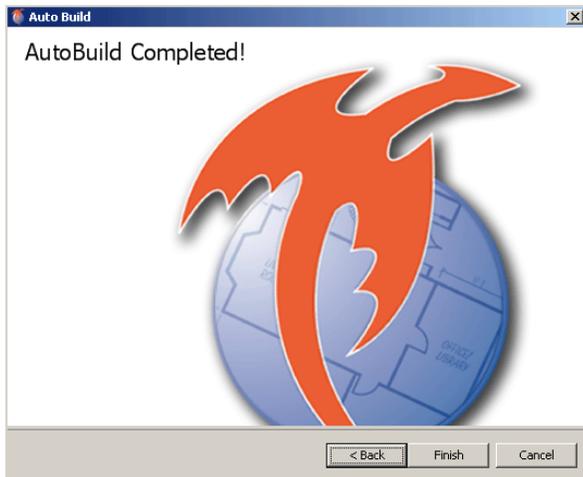
**NOTE: Steps 8-9** require that the **PC** running **Universal Dragon** is connected to the **SPLCD** via the **COM** or **USB Port** on the **SPLCD Front Panel** and that the **SPLCD** is connected to a **Connecting Block** with **IR emitters** attached to the devices being tested for IR. To test **RS232 Commands**, the **Serial Port** on the **SPLCD Rear Panel** must be connected to the device via a **R422232 Converter**. The **SPLCD** must be connected to a **16VDC Power supply**.



8. The **Commands and Codes Window** will appear. A list of available **IR, HEX IR** and **RS232 Commands** will be featured in the **Command Group Block**. Select a **Command Group**, select **Power ON/OFF** from the **Commands pull-down** and click the **Test Button**. If the device turns ON, you probably have a good Command Group. Click **Next**. The **AutoBuild Completed! Window** will appear and setup is complete for this device. If the device *does not* respond, select another **Command Group** and repeat **Test** until a good Group is found. If no Group works, click the **None of the Codes...Box**. Click **Next**.



9. The **Learning Window** will appear. **IR, HEX IR** and **RS232 Commands** can be learned in this window. To learn an **IR Command**, in **Command Type**, select **Learned IR**. Select the command in the list, click **Learn** and point the original remote at the **Learning Eye** on the **SPLCD Front Panel**. To learn a **HEX IR Command**, in **Command Type**, select **HEX IR**. Select a command and click **Learn**. Paste the **HEX Code** into the **pop-up** and click **OK**. To learn a **RS232 Command**, in **Command Type**, select **RS232**. Select the command from the list, click **Learn** and enter the **HEX** or **ASCII String** into the **pop-up** and click **OK**. To **Add** a command, click **Add** and type the name of the command. To **Rename** a command, click the name in the list click **Rename** and type the new name. To **Delete** a command, select the command and click **Delete**. When all Learning is finished, Click **Next**.



**10.** The **AutoBuild Completed! Window** will appear and setup is complete for this device. Click **Finish**.



**11.** In the **Do You Want To Run The AutoBuild Wizard Again Window**, Click **Yes** to add more devices. Click **No** to Finish. If **Yes**, repeat **Steps 1-10** until all devices have been added using the AutoBuild Wizard.

With the preceding steps complete, all sources added using the **AutoBuild Wizard** will have been placed into the **SPLCD Project** in the **SPLCD System Window**. Click each of the **Source Buttons** and review the **Function Button layout** for each **source**. The buttons should all be *labeled* and have **IR** and/or **RS232 Commands** associated with each button. The programmed commands will appear in the **Macro Command List**.

The Source/Function layouts should be ready to go, but if there are functions that are not required, functions that need to be added, or additional programming that is required, (Macro Sequences, Trigger Commands, etc) see the **Table of Contents** in this Manual for reference to the sections that will guide you through those steps.

If you are satisfied with the results of the AutoBuild Wizard as is, proceed to Sections: **Testing Commands Placed on the Virtual SPLCD** and **Transferring the Project**.

### CREATING THE GRAPHICAL USER INTERFACE (GUI)

Using Universal Dragon™ software, you can easily create stylish and intuitive screens in multiple pages for controlling any IR and/or RS232 Device. Once a project is created and a setup environment chosen, you are automatically placed in *Graphics* mode and are now ready to create your GUI (Graphical User Interface) screen.

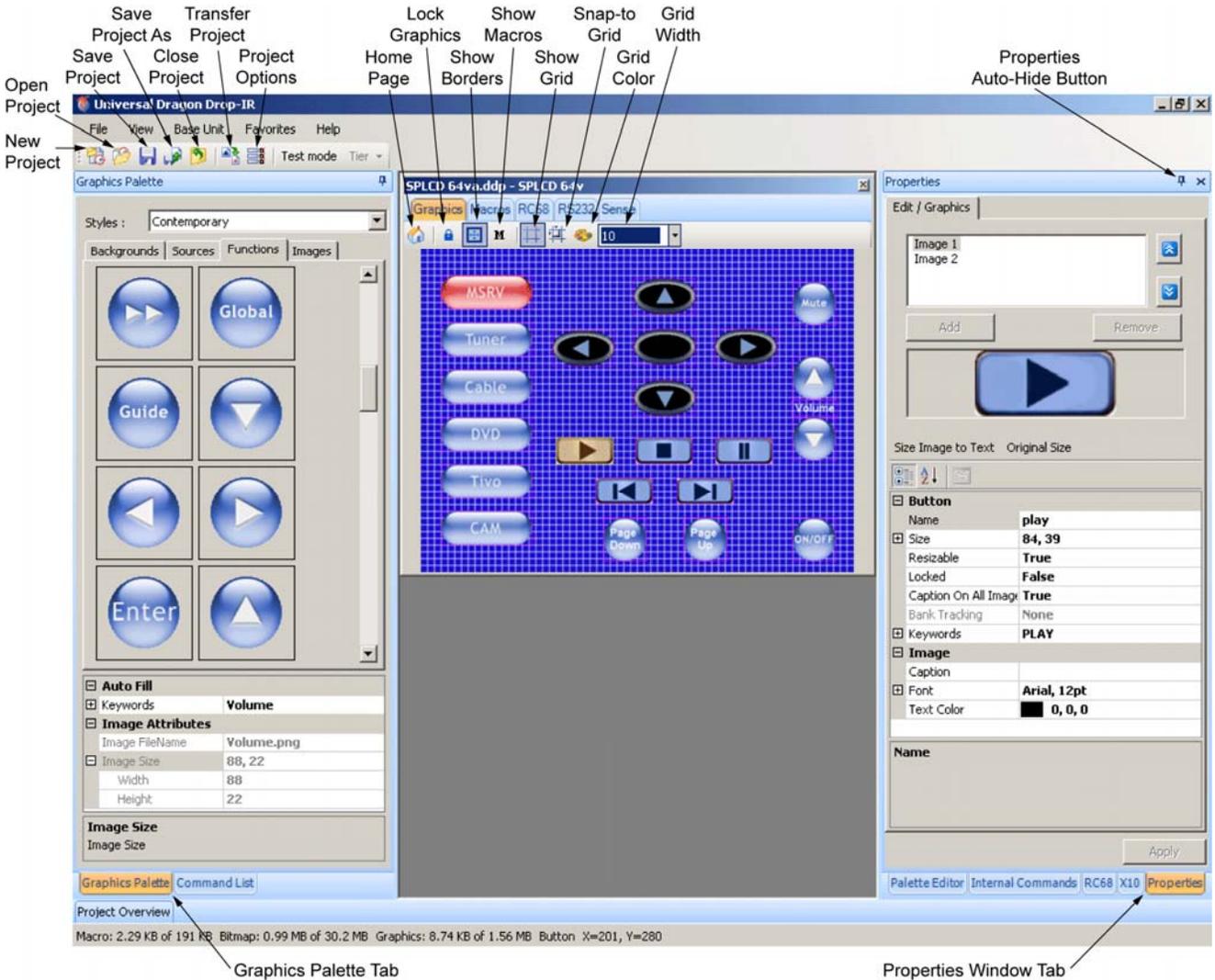


Figure 19 – SPLCD Graphic Page Edit Screen (Populated)

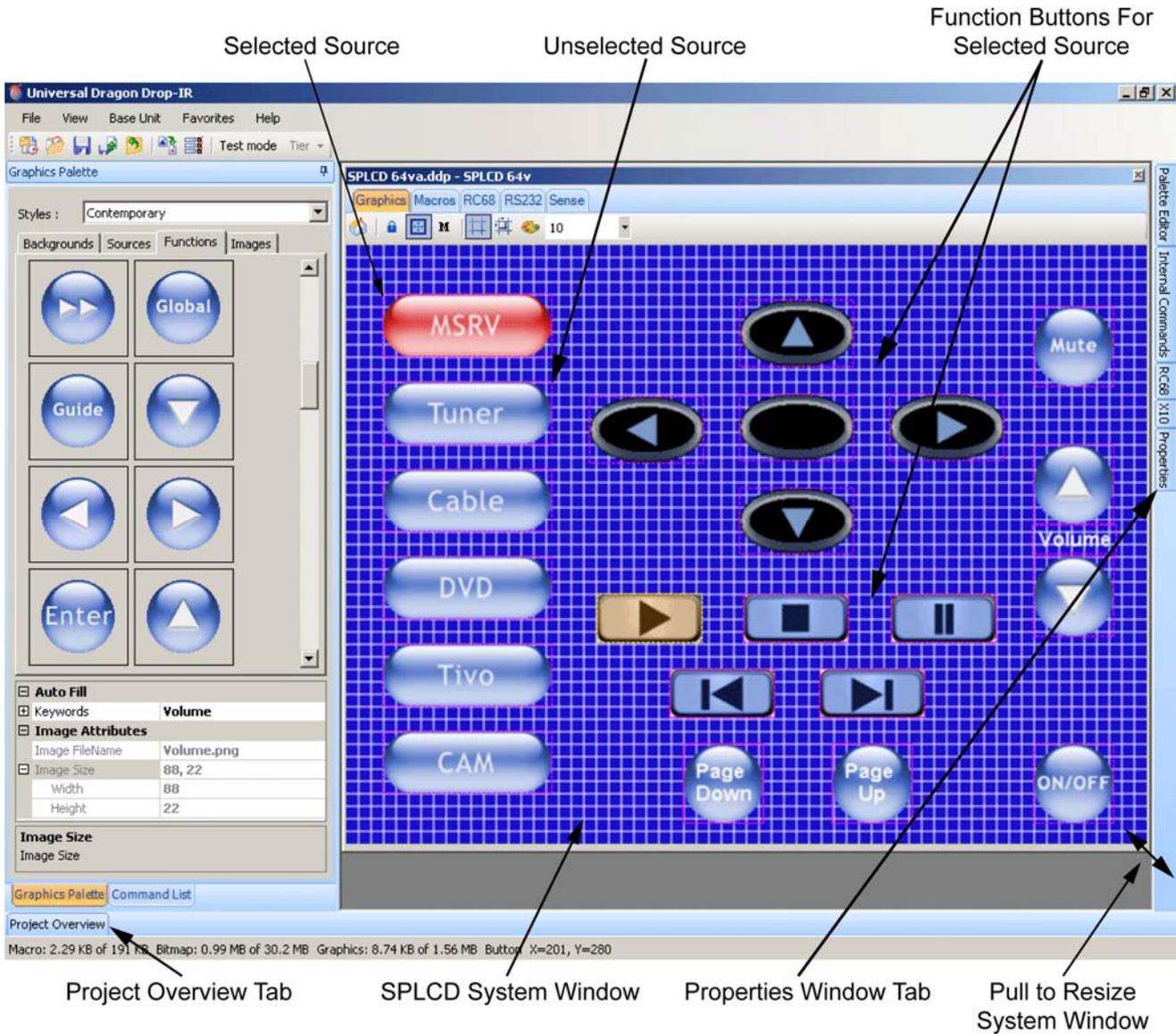


Figure 20 – Building The GUI Screen

**MANAGING THE WORKSPACE**

**IMPORTANT NOTE:** The **SPLCD System Window** is scalable so the SPLCD System Window workspace can be enlarged for placing and aligning **Source** and **Function Buttons**. Clicking the **Properties** and **Project Overview Auto-Hide Buttons** (thumb tacks), sends those windows to the margins. This allows the SPLCD System Window to be expanded to its greatest size, by dragging the **lower right corner** diagonally, making the button placement process much easier. (Figure 20) Rolling over the **Project Overview** or **Properties Tab** with the mouse will cause the Window to pop-up. The Window will automatically 'hide' by moving the mouse anywhere on the screen, clearing the view of the workspace. To keep the window open, for example to add or edit text on a button, roll over the **Properties Tab** to un-hide the window, click the **Auto-Hide Button** again, and the window will stay in place as originally sized. This is also useful by hiding and unhiding the **Project Overview Tab** for direct selection of individual pages without covering the workspace.

Auto-Hide Button position  = Hold. Auto-Hide Button position  = Hide.

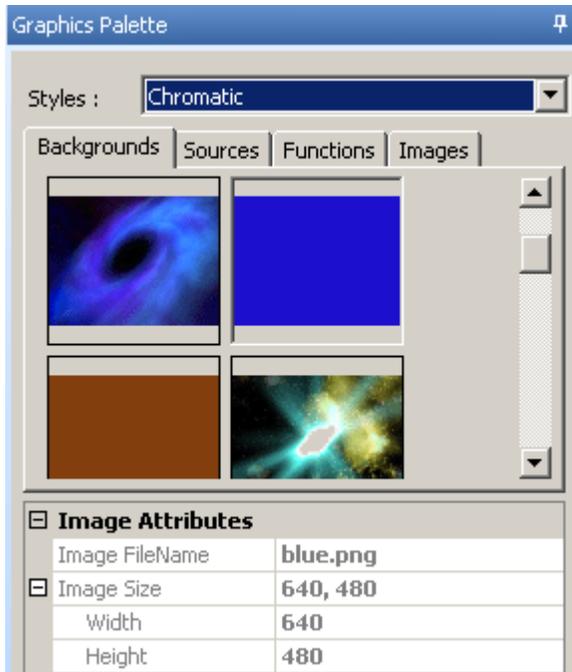


Figure 21 – Selecting Background Style

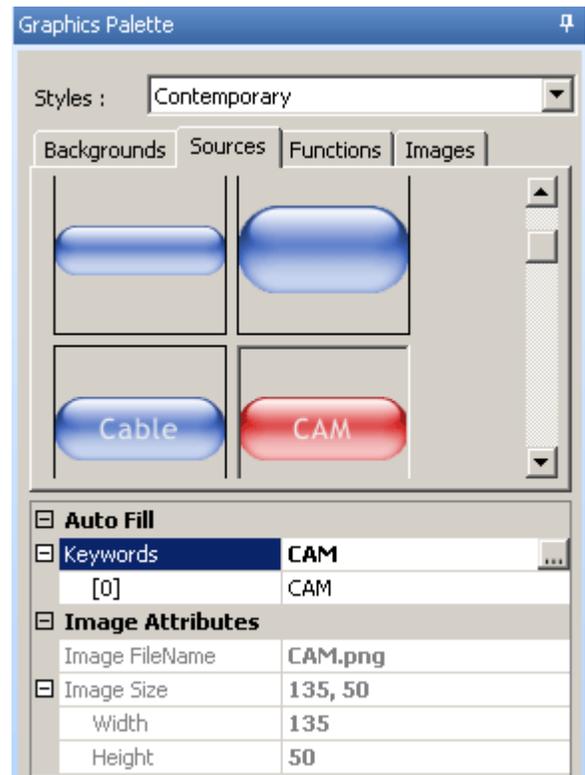


Figure 22 – Selecting Source GTL Style

### CHOOSING A STYLE

Multiple **STYLES** of **Backgrounds**, **Source Buttons**, and **Function Buttons** are included in a **Graphics Library** within **Universal Dragon**. Each **Style** contains its own set of **Backgrounds** and **GTL's** (Graphical Touch Links). Once a **Background** is selected, *any mix* of **Source** and **Function Button Styles** will be available. For purpose of example, a **Chromatic Background**, with **Contemporary Source Buttons** and **Skyline Function Buttons** will be used.

**NOTE:** Custom Backgrounds can be imported into Universal Dragon as BMP or PNF Files to create a variety of special effects. Theme backgrounds can be used to match the personality or interest of the user, a photo image of an Audio Video Entertainment Center or wall section can be used to create a truly custom control experience. See Section: **Importing Pictures as Custom Backgrounds** and **Transparent Button Overlay: Features & Programming** for additional information (Page 83).

### Backgrounds

Any Background from any Style can be used on a New SPLCD Project. To choose a style:

1. Select the **Graphics Tab** in the **SPLCD System Window**. The **Graphics Window** should now be displayed in the work environment. Selecting the **Graphics Tab** will also open the **Graphics Palette**.
2. In the **Graphics Palette**, select the **Backgrounds Tab**. The **Background options** for a given style will be displayed in the **Graphics Palette**, with the **Image Attributes** of a selected **Background** indicated directly below. (Figure 21)
3. Select a **Style** from the **pull-down** and browse the associated **Backgrounds**, **Source** and **Function GTL's** shown in the list until a desired style is found.
4. Once a suitable style is found, with the **Backgrounds Tab** selected, *click-&-drag (drag-&-drop!)* the desired background onto the **SPLCD System Window**.
5. If using the *same style* **Background** as **Source** and **Function GTL's**, proceed to the next section. If using a *different style* **Source GTL**, click the **Source Tab** then select the **Source GTL Style** from the **pull-down**.

## BUILDING A PAGE (WORKING WITH GTL'S)

A **GTL** (Graphical Touch Link) is in plain terms, a **graphical button** that can be pressed to initiate a macro of IR and/or RS232 commands or to call up a page of additional GTL's. A **Source GTL** will *always* call up a page of **Function GTL's** and can also have a Macro associated with it if so desired. A **Function GTL** can initiate a macro, call up an *additional* page of Function GTL's, or *do both* with the same touch of the GTL. (i.e. Creating a **Menu GTL** can initiate a macro to call up a menu screen from a DVD player or Media Server to be displayed on a video monitor, **AND** call up an additional page on the SPLCD screen containing the Cursor GTL Buttons used to navigate the DVD Menu.)

**NOTE:** When programming a **SPLCD64v**, the **Full Screen Video Mode** can be modified to display an actual **DVD** or **Media Server Menu** on the **SPLCD** and overlay **Transparent Button GTL's** allowing control of the actual **DVD** or **Media Server Menu** from the **SPLCD64v**.

### Placing Source GTL's

1. With the **Background** placed in the **System Window**, in the **Graphics Palette**, click the **Sources Tab** to display the **Source Buttons** associated with the selected **Background Style**. If using a *different style Source GTL*, select the **Source GTL Style** from the **pull-down**. The **Source Button options** for a given **Style** will be displayed in the **Graphics Palette**, with the **Image Attributes** of a selected **Source Button** indicated directly below. (**Figure 22**)
2. In the **System Window**, click the **Grid Icon** to activate the **GTL Alignment Grid**. If desired, (and highly recommended), also click the **Snap-to Grid Icon**. This will automatically snap same size/shape buttons into horizontal and vertical alignment on the grid for a professional look.)
3. Select a desired **Source Button** (i.e. DVD, SAT, MSRV etc.) and *drag-and-drop* the **Source GTL** onto the Background.

**NOTE:** If a **Source Button** with a particular legend (DVD, SAT, etc.) is *not* shown in the list, select a **Blank Source Button** (no lettering on the GTL) and drag it onto the Background. **Blank GTL's** can be edited and customized for text and color. See Section: **Editing GTL Properties** below for instructions.

4. Once on the **Grid**, the **GTL** can be placed anywhere on the screen. To move the **GTL** either click and drag to the proper placement, or simply select the **GTL** with the mouse and then use the **arrow keys** on the **PC Keyboard** to move the **GTL** to the proper placement.

**NOTE:** **GTL X/Y Coordinates** are displayed in the **Information Bar** at the bottom of the Universal Dragon Screen. The **Snap-to Grid** will align same-size/same-shape GTL's, but when mixing GTL's of *different* styles, sizes and shapes, it is sometimes more effective to turn the Snap-to function *off* and use the **X/Y Coordinates** for reference in aligning **GTL's**. For fine movement of GTL's, click a **GTL** and use the **arrow keys** on the **PC Keyboard**.

5. Repeat **Steps 3-4** for all **Source Buttons**.

**NOTE:** When a **Source GTL** is placed on the screen, a new **Page** is automatically inserted for placing **Function GTL's** associated with that **Source**. Multiple pages can be inserted for a single source as needed. Individual Pages are shown in the **Product Overview Window Tree View**. (See Section: **Inserting Pages** for additional information.)

### Home Page

When placing **Function Button GTL's**, it is very important to plan the locations of buttons that will be used on *all* pages, such as **Volume**, **Mute** and **Power**. The easiest way to do this is to click the **Home Page Icon** in the **System Window**. This will change what is displayed in the **System Window** to the top level of the SPLCD Project showing only **Source GTL's** and **Function GTL's** that are to appear on *all* pages. Place these types of buttons first, and then select a **Source** and place the specific **Function GTL's** for the **Source Page** being configured, so you don't have to go back and rearrange work that has already been done. **Page Up** and **Page Down** will not necessarily appear on all pages, but plan ahead and leave a consistent space on each page for these important navigation buttons when needed.

**NOTE 1:** **Function GTL's** placed on the **Home Page** appear on *all* Pages. *Any change* to a **GTL** on the **Home Page** will affect that **GTL** on *all* Pages. If a *particular Function GTL* is *not* to appear on *all* Pages, *do not* place it on the **Home Page**, rather *manually* place and position that **Function GTL** on the *desired* Pages. **Source GTL's** will *always* appear on *all* pages except as indicated in **NOTE: 2**.

**NOTE 2:** All **Source** and **Function GTL's** placed on the **Home Page** are *turned off* in **Full Screen Video Mode** on the **SPLCD64v**.

**Placing Function Button GTL's**

Once a Source Page has been inserted, you may now start placing **Function Button GTL's** associated with that Source onto the Source Page.

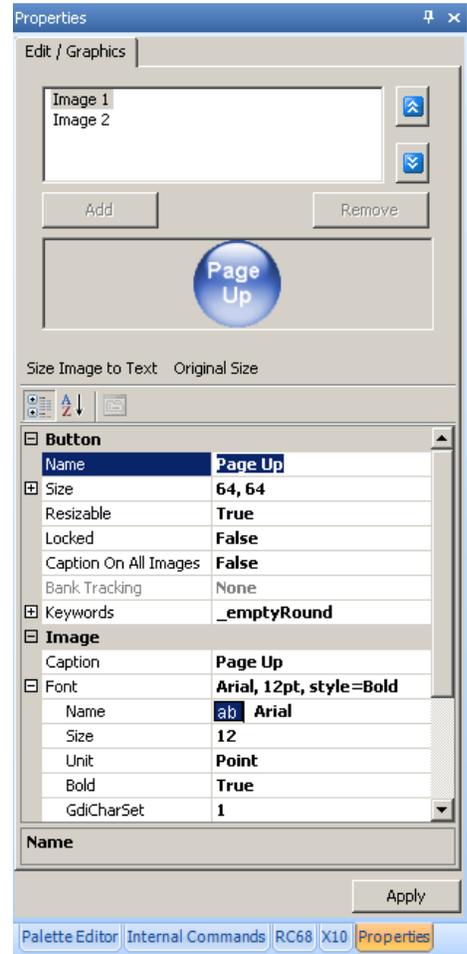
1. Click on a **Source Button** located in the **SPLCD Systems Window**. The **Source Button** should now appear *selected*.  
**NOTE:** GTL's have an UP and DOWN graphic associated with them. UP depicts the GTL in its *non-selected* state and the DOWN graphic depicts the GTL in its *selected* state. The UP and DOWN graphics will typically be indicated by a difference in color or shading or both. The UP and DOWN graphics can be edited. See Section: **Editing GTL Properties** directly following, for additional information.
2. Click the **Functions Tab** in the **Graphics Palette**. All of the **Function Buttons** associated with that **Style** will be displayed.
3. Select a **Button** and *drag-and-drop* it anywhere on the **Background** in the **SPLCD System Window**.
4. If a desired **Function Button** is not shown in the list, simply select a **Blank Button** and drag it onto the **Background**. As mentioned above, this button can be edited to display the desired text and color you wish.  
**NOTE:** You may also place a **Text Label** onto the Background to describe the function of a button or group of buttons. This is useful for **Volume** and **Channel Up/Down** controls. See Section: **Creating Labels** for additional information.
5. Repeat **Steps 3 & 4** for all desired **Function Buttons** for each **Source**.

**EDITING GTL PROPERTIES**

The Properties of a GTL button can be edited for Text, Font and Color. This allows dragging a blank GTL Button onto the any page and editing it as needed. This is useful when a button is needed for a special function or Source that is not included in the Graphics Library. Each GTL has two *states*: Up and Down. Each of these states can be edited separately to give a unique appearance when either selected or non-selected.

**To Edit a GTL:**

1. If already placed in the **System Window**, click the **GTL** to be edited. To edit a new or blank button, click and drag the button from the **Graphics Palette** to the **Properties Window** and click **Original Size**.  
**NOTE:** Text on GTL's from the Graphics Library cannot be changed or edited. Use a **blank GTL** for Source or Function GTL's not found in the Library. If a particular Button Style is not available in the Graphics Library as a blank, please logon to the Xantech Forum at [www.xantech.com/forum/](http://www.xantech.com/forum/) to post button requests and we will try to accommodate those requests as part of our ongoing product development effort.
2. If not already open, rollover the **Properties Tab** to unhide the **Properties Window** and click the **Auto-Hide Button** (thumb tack) to hold the window open.



**Figure 23 – Button Properties**

## EDIT/GRAPHICS TAB

Use the following tools as needed to modify button graphics and configure text on placed blank buttons:

### Image 1/Image 2

These selections show the UP and DOWN views and **Button** (graphical) and **Image** (text) **Attributes** of a placed **GTL** (Source or Function; pre-titled or blank). **Image 1** selects the UP position; **Image 2** selects the DOWN position.

1. Click **Image 1** or **Image 2** to select the up or down position for a given button.

### Size Image to Text

This tool will reshape a button to fit around text that has been added to a blank button.

1. After all **Button** and **Image Attributes** of a button have been set, click to reshape the button to fit the text.  
**NOTE:** This tool will change the *shape* of the button. To resize the button, *in its original shape*, to fit the text, change the **Size** of the Button.

### Original Size

This tool will reshape a button to its original size and shape, whether modified from **Size Image to Text** or the **Button/Size** Settings.

1. Click to return a button to the size/shape it was when originally placed.

## BUTTON

The tools in this section adjust the **graphical attributes** of placed **buttons**.

### Name

This setting allows naming a *placed GTL*. Pre-configured buttons are already named, but can be re-named (not recommended), and blank buttons can be named for reference. This setting does not change the appearance of the Button. It only changes the Button Name in the Attributes

1. Double click to activate the **text field**.
2. Enter the Button Name (i.e. Page UP)
3. Click **Apply**. To make changes permanent, in the **File Menu**, select **Save**.

### Size

This setting allows modifying the *size* of a *placed GTL*. Changing the Height and Width can also modify the shape, i.e. change a round button to an oval or a square to a rectangle, etc.

1. Double click on **Size** or click the '-' to open the **Height** and **Width** boxes.
2. Double click **Height** or **Width** or *drag* the associated value.
3. Enter new **size values**.
4. Click **Apply**. To make changes permanent, in the **File Menu**, select **Save**.  
**NOTE:** If results are undesirable, re-enter **original dimensions** or click **Original Size**.

### Resizable

This setting locks the dimensions of a *selected GTL* so it cannot accidentally be changed. **True** = resizable; **False** = locked.

1. Double click **Resizable**.
2. Select **True/False** from the **pulldown**.
3. Click **Apply**. To make changes permanent, in the **File Menu**, select **Save**.

### Locked

This setting will lock a *selected GTL* in place so it cannot accidentally be moved while configuring the Graphics Layout of a Page. **True** = locked; **False** = movable.

1. Double click **Locked**.
2. Select **True/False** from the **pulldown**.
3. Click **Apply**. To make changes permanent, in the **File Menu**, select **Save**.

**Caption On All Images**

This setting places the *same* (True) or *different* (False) **Text Attributes** on **Image 1** and **Image 2**. This allows applying different Fonts, Font size, color, weight, etc to create a unique appearance to the UP and DOWN views.

1. Quickly click twice to change setting or select **True/False** from the **pull-down**.
2. Click **Apply**. To make changes permanent, in the **File Menu**, select **Save**.

**Bank Tracking**

This setting will assign a **Xantech Bank Tracking Command** to a **Source GTL** as is standard on all **Xantech Keypad Source Buttons**. This command will output from the **SPLCD** when the assigned **Source Button** is pressed and change any other **Xantech Keypads** *connected in parallel* (IR) or *daisy chained* (RS485), and configured with the same **Bank Tracking Command** to the selected **source**.

1. Repeatedly click or use the **pull-down** to select a **Bank Tracking Command** or **None** as appropriate.  
**NOTE: Bank Tracking Commands** can only be assigned to **Source GTL's**.
2. Click **Apply**. To make changes permanent, in the **File Menu**, select **Save**.

**Keywords**

Keywords are search tools used by Universal Dragon for the **Auto-fill** process. Associating 'Keywords' to a button such as Play, Stop, Volume UP, Volume DOWN, Menu UP, Menu DOWN, etc, allows Universal Dragon to automatically associate specific commands from the **Command Groups** to **Source** and **Function Buttons** placed on a **Source Page** in the **System Window**. (i.e. If **Play** and **Stop** buttons have been placed on a **Page**, and a **Command Group** is *dragged* onto the **screen**, Universal Dragon will associate the **commands** titled **Play** and **Stop** with those **buttons**.)

**NOTE 1:** When adding or modifying Keywords, be specific. If a button is to be a Volume UP button, be sure the Keywords include Volume Up and not just Up. Same with Menu Up. This will allow Universal Dragon to fine tune the search process and better associate the proper commands. (A quick review of the **Function Lists** within the **Command Groups** will help you understand the specific **function names** associated with the **commands**.)

**NOTE 2:** Keywords added or modified in the **Graphics Palette**, become universal to *all Projects* that use that **button**. Keywords added or modified in **Properties**, will only affect *that button* in *that Project*.

**IMAGE**

The tools in this section adjust the **Text Attributes** of placed **buttons**.

**Caption**

This setting enters the **text** that will appear on a *placed GTL*.

1. Double click **Caption**, then enter the text that is to appear on the **GTL**, in the active **text field**.
2. Click **Apply**. To make changes permanent, in the **File Menu**, select **Save**.

**Font**

These settings determine the Font, Font size, weight, etc that will appear on the actual GTL. This is identical to selecting a font in a word processing program. Typically all fonts loaded to the PC will be available for use in Universal Dragon.

1. Double click **Font**, or click the '+' to expand the **Font Options List**.
2. In the **Font line**, click the **Browse Button** to open the **Font Window**. Make selections from the available choices and click **OK**. Or use the individual settings:

**Name**

1. Continually click **Name** to scroll through the font options, or select a font from the **pull-down**.

**Size**

1. Double click **Size**, then enter the font **size value**.

**Unit**

1. Continually click **Unit**, or select the font **unit of measure** from the **pull-down**.

**Bold**

1. Continually click to select **Bold** (True) or **Normal** (False), or select **True/False** from the **pull-down**.

**Italic**

1. Continually click to select **Italic** (True) or **Normal** (False), or select **True/False** from the **pull-down**.

**Strikeout**

1. Continually click to select **Strikeout** (True) or **Normal** (False), or select **True/False** from the **pull-down**.

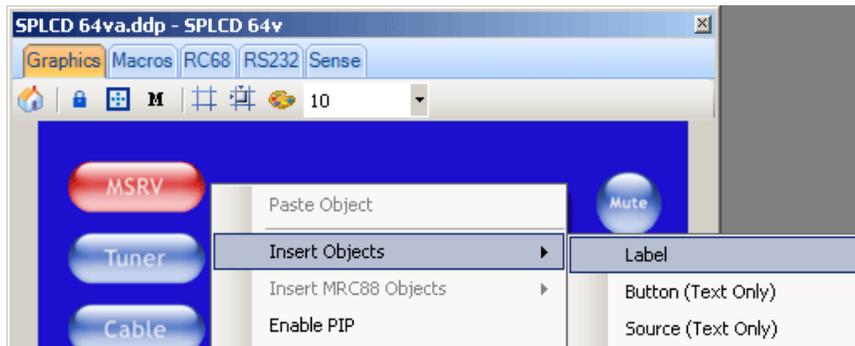
**Underline**

1. Continually click to select **Underline** (True) or **Normal** (False), or select **True/False** from the **pull-down**.

**INSERTING LABELS**

A Label may be inserted anywhere on the **GUI** screen to provide a *description* to a **GTL** or a **group of GTL's**. (i.e. Volume UP/DOWN).

**NOTE:** A **Label** is not programmable for any function. A **Button** (Text Only) has the same capabilities as a **Function GTL** and a **Source** (Text Only) has the same capabilities as a **Source GTL**.



**Figure 24 – Insert Label**

To insert a **Label** proceed as follows:

1. Right click on any blank area (no GTL's) in the **SPLCD System Window**.
2. From the **pop-up**, select whether this will be a text **Label**, text-only **Source Button**, or a text-only **Function Button**.
3. Once the **Label** is placed in the **Systems Window**, move the **Label** to its desired location.
4. Right click the **Label** and select **Properties** from the drop-down menu to edit the text as outlined in the previous section.

## INSERTING ADDITIONAL PAGES FOR A SINGLE SOURCE

Additional blank pages can be inserted as needed, for a given source. After a blank page is inserted, it may be populated with **Function Buttons**, as in the previous section. This may be useful when a page becomes full of commands or for easier operation (i.e. placing the Motion Control Buttons and Menu Navigation Buttons of a DVD Player on separate pages).

A **Blank Page** is always inserted *AFTER* the *currently selected* page.

### Insert a New Page

1. Select the **Source Button** of the desired page (if already on the page to be inserted from, go to **Step 2**).
2. Drag a *blank Function Button* onto the existing page to be used as a **Go To Page Button**. This button will be used to *navigate* to the *next page*.
3. Right-click on the button from **Step 2** and select **Insert New Page** from the **pop-up**. (**Figure 25**) While programming in **Universal Dragon**, once configured as a **'Go To' Button**, the button can double clicked to navigate as configured, i.e. **Page Down**.
4. A new page is now inserted and may be filled with additional **Function Button GTL's**.
5. Additional pages can be inserted in the same manner as needed. If no additional pages are required for the selected source, place another *blank Function Button GTL* on the current page. This button will be used to return (*navigate*) to the *previous page*.

### Return to Previous Page

6. Drag a **Function Button GTL** onto the existing page to be used as a **Go To Page Button**. This button will be used to return (*navigate*) to the *previous page*.
7. Right-click on the button from **Step 6** and select **Insert Go To Previous Page** from the **pop-up**. (**Figure 26**) While programming in **Universal Dragon**, once configured as a **'Go To' Button**, the button can double clicked to navigate as configured, i.e. **Page Up**.

**NOTE:** This button can also have a macro associated with it to perform a function on the actual Source Component as well as taking the user to the *Next or Previous Page*. For example, a MENU button can be used to call up a menu on the DVD itself and also bring up a page of MENU Cursor buttons on the SPLCD panel for the User to use to navigate through the DVD Menu.

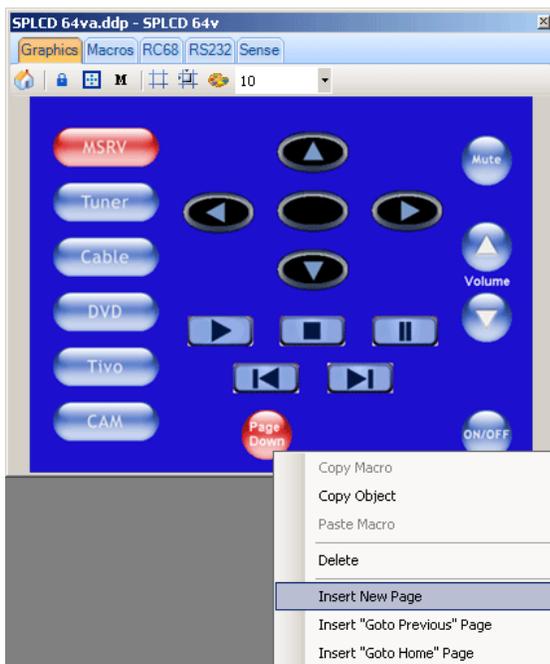


Figure 25 – Insert New Page

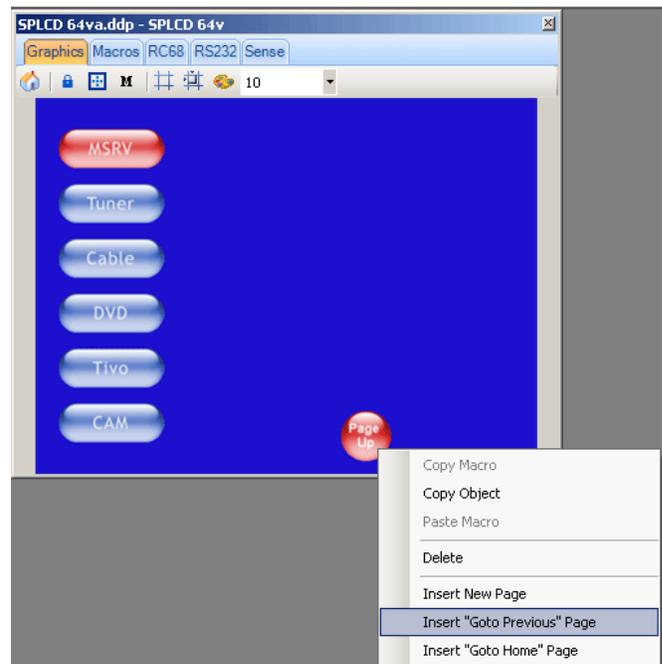


Figure 26 – Go To Previous Page

## IMPORTING AND EXPORTING SPLCD PAGES

Different types of components will sometimes use similar page layouts. That is, devices with Motion Control (Play, Stop, Pause, etc) use similar button layouts as will Tuning devices for Ch+, Ch-, Numeric entry, etc. Universal Dragon allows Pages to be 'copied' and 'saved' (Export) and then reused (Import) for other devices within a given Project or in a completely separate Project, saving valuable programming time, by not having to recreate every Page for every device in every Project.

**NOTE:** A Page Exported with IR or RS232 Commands already programmed will retain that programming. When the Page is later Imported, it will still have all IR/RS232 programming intact.

### Exporting SPLCD Pages

1. In the **SPLCD System Window**, navigate to the **Page** to be **Exported**.
2. Right click in any **blank space**, (no **GTL** or **PiP**) and select **Export Page** in the **pop-up**.
3. The **Save As Window** will appear. *Navigate* to where you would like to *Save Pages*. (Creating a **New Folder** called **Pages** within the **Projects Folder** [C:\Program Files\Xantech\Universal Dragon\Projects] is convenient for keeping **Pages** and **Projects** in one place.) Click **Save**.

### Importing SPLCD Pages

1. In the **SPLCD System Window**, navigate to where a **Page** is to be **Imported**. (i.e. a **Source Page** with no **Function Buttons**.)
2. Right click in any **blank space**, (no **GTL** or **PiP**) and select **Import Page** in the **pop-up**.
3. The **Open Window** will appear. *Navigate* to where **SPLCD Pages** have been saved and select the appropriate **Page**. The **SPLCD Page** in the **System Window** will populate with all **graphical GTL's** and **IR/RS232 Commands** associated with the **Imported Page**.
4. If the **Background Style** of the **Imported Page** is different than the **Background** for the rest of the **Project** and you want to change it to match the other **Pages**, click the **Graphics Palette Tab**. In the **Graphics Palette Window**, click the **Backgrounds Tab** and select the **Background Style** that matches the other **Pages** in the current **Project**.
5. Click and Drag the **Background** onto the **Imported Page**. The **Background** will change to match the other **Pages** in the **Project**.
6. To change the **Button Style** on the **Imported Page**, repeat **Steps 4-5**, this time selecting the **Functions Tab** instead of **Backgrounds**.

## LEARNING IR COMMANDS (Creating Palette Files)

IR Codes from the manufacturer's remotes for each of the components you wish to control from the SPLCD can be learned into the Universal Dragon™ software and stored in **Palette Files (Command Groups)** for placement onto the Keypads. In order to do this, the SPLCD must be connected to the **PC** as outlined in the Section: **Connecting the SPLCD to the PC**.

**NOTE 1:** Before starting this section, included in **Universal Dragon™**, is an extensive **IR Code Library**. Before learning any IR commands, check the **IR Library** to see if the **IR Commands** for the components you wish to control are listed.

**NOTE 2:** If you have previously created **Palette Files** in any other versions of Dragon Drop-IR™ Software (for programming URC-2's, MRC88, etc) these files can *Imported* into **Universal Dragon**. If all of your codes are either located in the **IR Code Library** or are already learned in **Command Groups**, proceed to the section entitled: **Placing Commands onto the GTL's**.



Figure 27 – Open Palette Editor

### BUILT-IN IR CODE LIBRARY

Universal Dragon has a built-in IR Code Library. The IR Code Library is a large database of manufacturer's IR Commands for a whole assortment of brands and components. If your manufacturer's codes are in our database there might not be any need to 'teach' IR commands into the system. To check the Universal Dragon's extensive IR Code Library, do the following:

1. Open a **SPLCD Project**.
2. If not already open, in the **View Menu**, select **Palette Editor** or roll over the **Palette Tab** and click the **Auto-Hide Button** (thumb tack) to hold the window open. The **Palette Editor** will open. (Figure 28).
3. Select **Show IR Library**.
4. Click the **+** next to the appropriate **Brand** (Pioneer, Sony, etc). A list of available components will open.
5. Click the **Component Type** (i.e. VCR, DVD etc). A list of **Command Groups** for the selected brand/component's IR codes (and RS232 commands) will be displayed.

**NOTE:** A **Tab** appear in the margin next to the **Palette Editor** for each **Command Group** opened to allow switching between multiple **Command Groups** while programming buttons. Use the **arrows** at the bottom of the window to **scroll** through multiple **Tabs** and use the **'X' Button** to **close** unneeded **Command Groups**.

6. You will need to **test** the commands from these different **Command Groups** to see which one works with your **component**. Please see the next section: **Testing IR Commands in the IR Library**.

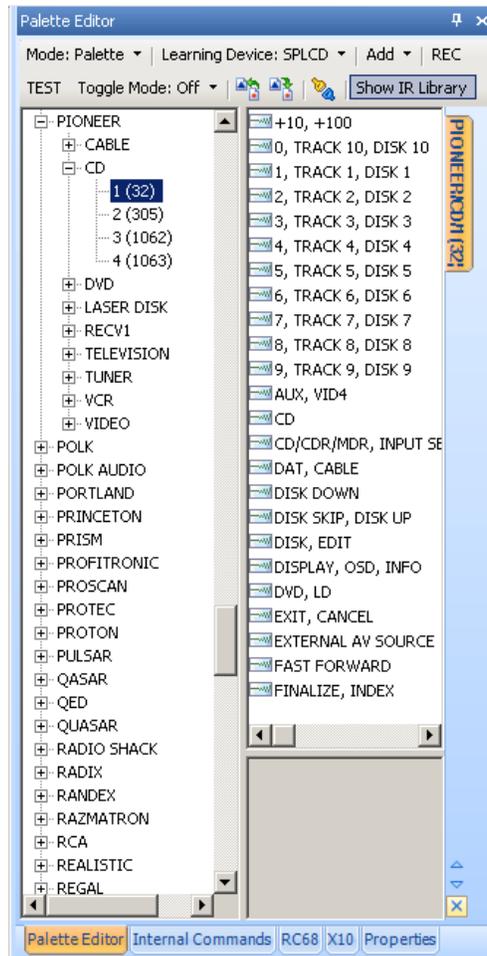


Figure 28 – Palette Editor

### TESTING IR COMMANDS IN THE IR LIBRARY

Once you have located all of the **Command Groups** for a specific manufacturer/component, you will need to test the commands to see which Command Group is associated with your specific component.

**NOTE:** To test commands out of the Library, the **PC** running **Universal Dragon** must be connected to the **SPLCD** via the **RS232** or **USB Programming Port** and the **IR output** of the **SPLCD** must be connected to a **Connecting Block** as shown in **Figure 8, Page 17**. Connect an **IR Emitter** to the connecting block and attach it to the component being tested over the **IR Eye**.

1. With the **IR Library** opened to the specific manufacturer/component list of **Command Groups** as outlined above, click on the **first Command Group listed** [i.e. **1 (32)**]. A list of all of commands associated with this component will be displayed.
2. With the **PC** connected to the **SPLCD Programming Port**, select the **Test Button** located at the top of the **Palette Editor Window**. The **Test Button** should now be highlighted in **dark blue**.
3. Click the **Power ON/OFF** command and other basic function commands as listed in the **Command Group**. The controlled component should respond to each command sent. (i.e. **Power** should turn the source ON or OFF, **Play** plays the content etc.)  
**NOTE:** Whenever possible, look for Command Groups with discreet ON/OFF Codes. These will help keep components in sync with the system by providing absolute power commands.
4. If a component does not respond to a command, click on another **Command Group** listed for that **manufacturer/component** and **retest**.

5. If the **codes** for the specified component **are found** in the **IR Library**, you are now ready to start creating **IR Macros** under the **GTL Buttons** you created in the previous section. Proceed to Section: **Placing Commands onto the GTL's**. If **no working commands** can be found in the **IR Library**, proceed to the Section: **Learning IR Commands, Page 45**.

### IMPORTING XANTECH LEGACY IR PALETTE FILES

If you have worked with previous versions of Xantech Dragon Drop-IR Programming Software, the IR Palette Files (.pal and .bci) can be imported into Universal Dragon for IR programming when the command files are not found in the Universal Dragon IR Library.

1. In the **Palette Editor**, click the **Import Icon**. (  ) The **Open Window** will appear.
2. In the **Open Window**, browse to where the **Legacy Files** are saved, typically: **C:\Program Files\Xantech\Dragon\Palettes**
3. Select the *Type of File*.
4. Click the **File** to be imported. The **Import Palette Window** will appear. When the download is complete, click **OK**.
5. In the **Palette Editor**, *navigate* the **Brand List** to the appropriate **Brand** (i.e. JVC). Click the appropriate type of **component** (i.e. VCR).
6. The imported commands will be listed as a **Command Group**. Click the **Command Group**. The **IR Commands** will be listed in the right side window in the **Palette Editor** and are ready for button programming.

### LEARNING IR COMMANDS (XIR2)

An **IR Learning Eye** is located on the front panel of the **SPLCD** and is accessible when the **Bezel** is removed (**Figures 2a, 2b Item 5**).

**NOTE: Commands learned through the SPLCD's front panel learning eye (XIR2 method) are NOT backwards compatible to some other Xantech devices (i.e. MRC44, URC-2 etc...). This means, palettes created in Universal Dragon SPLCD cannot be copied to previous versions of Universal Dragon software.**

**NOTE:** When learning IR commands through the front panel learning-eye, it is suggested that the *environment* be free of any IR interference. This could include fluorescent or halogen lighting, sunlight, plasma or LCD displays and interference from a PC Monitor display.

### Finding the Optimal Positioning of the Teaching Remote

An IR strength indicator LED is located on the front panel (**IR Learning Eye LED, Figures 2a, 2b - Item 6 Page 10**), to show the optimal position for the teaching remote. Before proceeding, position the *teaching* remote approximately 1-2 inches from the **IR Learning Eye**, press any button on the remote and observe the brightness of the **LED**. Move the **remote slowly up and down** past the **IR Learning Eye** to find the position where the **LED** is *brightest*. This will be the position to be used for recording **IR commands**.

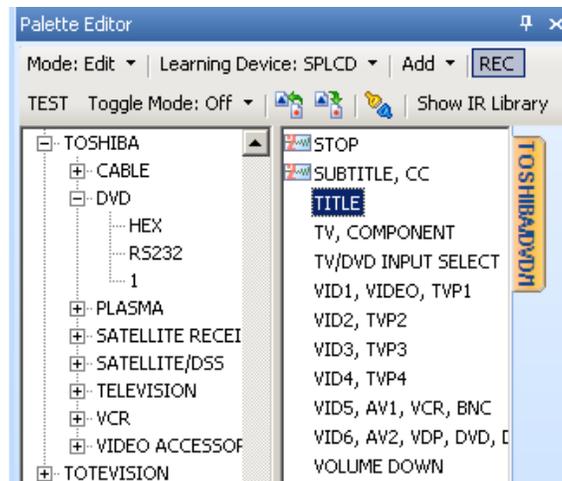


Figure 29 – Learning IR Commands

### Using the Palette Editor

**NOTE:** The **Palette Editor** for IR Commands is available whether a project is opened or not.

1. If not already open, in the **View Menu**, click **Palette Editor** or hit **[CTRL+ALT+P]** on your keyboard. The **Palette Editor** will open.
2. In the **Palette Editor**, change **Mode** to **Edit**, using the **pull-down**.
3. In the **Palette Editor**, change **Learning Device** to **SPLCD**, using the **pull-down**.
4. Be sure **Test** and **Show IR Library** are *de-selected*, (normal background).
5. Scroll the **Brand List** and click the '+' next to the appropriate **Brand** as shown in **Figure 29** (Toshiba). A sub-directory of components will appear. (If a particular **Brand** does not appear on the **List**, see Section: **Editing Brand, Component and Function Lists/Adding Brands**.)
6. Click the '+' next to the appropriate **Component** (DVD). (If a particular **Component** does not appear in the sub-directory, see Section: **Editing Brand, Component and Function Lists/Adding Components and Functions**.)
7. A **Function List** for the selected component will appear. Review the **Function List** and compare it to the source remote. If a particular function is not displayed or not named appropriately, see Section **Editing Brand, Component and Function Lists/Adding Components and Functions**.)
8. Click **REC** at the top of the **Palette Editor**. It will **highlight** to indicate **REC Mode**. Universal Dragon is now ready to learn the IR codes for the specific brand/component selected.  
**NOTE: Before performing Step 9, read Steps 9-12, as the RECORD process is a timed function. You will have 5 seconds to perform the process before the system times out.**
9. Place the *Teaching* (source) remote in the optimal position as found above.
10. Select the **command** to be learned, in the **Function List**. (i.e. Power, Play, Stop etc.). The **Learn IR Window** will appear. You will have approximately **5 seconds** to learn the **IR command**.
11. While holding the source remote in the optimal teaching position, typically within 1-2" of the **IR Learning Eye**, *press and hold* the corresponding **command button** on the **source remote**. When the message **IR Learning was successful** appears, click **OK**. An **XIR2 Symbol** (🔊) will appear to the left of the selected function indicating that an IR code has been learned.  
**NOTE 1:** If you wait longer than five seconds, a time-out message: **'Failed To Learn IR Timeout'** will appear. Click **OK** and try again. If you continue to have problems learning commands, run a **Who Am I** to confirm PC connection to and communication with the SPLCD.  
**NOTE 2:** When teaching commands, *press and hold* the button until the **IR Learning was successful** message appears. Not all IR codes are structured the same. Some will be learned with a press and hold while others may require a quick tap of the original remote button. Some will require a button press duration somewhere in between.
12. Repeat **Steps 9-12** for all **source functions** not found in the **IR Library**, that are to be used on the **SPLCD**.
13. All learned commands can now be utilized for programming. In **Palette Editor**, change **Mode** to **Palette**, select **Show IR Library** and navigate the **Brand/Component List** to the learned commands.

## EDITING FUNCTION NAMES IN THE PALETTE EDITOR

If a function on the **Source Remote** is not displayed in the **Function List**, you can either *Rename* an **existing function** or *Add* a **new function** to the **List**. Editing **Function Names** in the **Palette Editor** will only affect the specific **Brand/Component Palette File** you are currently saving to. (i.e. Making a change to a function under DENON DVD will only appear in DENON DVD).

### To Rename an Existing Function

1. Right-click on the **function** to be **renamed**.
2. Select **Rename** from the **pop-up**.
3. Edit the text as desired and press **Enter** on your keyboard.
4. The **Rename Window** will appear with a **Warning Message**. Click **YES** to **Save**.

### To Add a New Function

1. Scroll down to the bottom of the **Function List** on the right side window of the **Palette Editor**.
2. Right click on a **blank area** of the **List** and select **New Command** from the **pop-up**.
3. Enter the **name** of the **new function** as you would like it to appear in the **List** and press **Enter** on your keyboard to **Save**.

## TESTING IR COMMANDS IN THE PALETTE EDITOR

Before programming any SPLCD Buttons with learned commands, they should be tested to assure that the learned commands are the correct commands and that they are functional. The wrong command or a non-functioning command in a power or source select sequence will cause system control errors. It is much easier to find these types of errors by testing newly learned commands, than to try to isolate the problem later.

**NOTE:** To test learned commands, the **PC** running **Universal Dragon** must be connected to the **SPLCD** via the **RS232** or **USB Programming Port**. The **IR output** of the **SPLCD** should be connected to a **Connecting Block** as shown in **Figure 8, Page 17**. Connect an **IR Emitter** to the connecting block and attach it to the component being tested, over the **IR Eye**.

1. With the **PC** connected to the **SPLCD Programming Port**, select **Test** in the **Palette Editor Window**. The **TEST Button** should now be highlighted.
2. Click on each of the command names one-by-one that need to be tested. The SPLCD screen will display a test screen for a second or two.
3. The controlled component should respond to each command sent. (i.e. "Power" turns the source ON or OFF, "PLAY" plays the content etc.)  
**NOTE:** Only functions with a **XIR1** (  ) or **XIR2 Symbol** (  ) will execute. **IR Commands** from the **IR Library** will not appear in **Edit Test Mode**. To test **IR Commands** from the **IR Library**, change the **Palette Editor Mode** to **Palette**.
4. If a component does not respond to a command, re-learn and re-test the IR command until the component responds.
5. Repeat **Steps 1-6** for all commands to be tested.

## IR COMMAND GROUPS

Unlike previous versions of Dragon Drop-IR, it is not necessary to create IR Palettes from learned commands. Universal Dragon does this automatically. Learned IR Commands are placed into **Command Groups** that can be accessed by clicking **Show IR Library** in the **Palette Editor**. The **Learned Commands** will appear in the **Brand/Component List** just as the **Library Commands** do. The **Learned Commands** will be listed *numerically* in the **sub-directory**, but will *not* have an associated **numeric code group suffix** in parenthesis. (**Figure 30**) **Learned Commands** can also be differentiated from **Library Commands** by the **IR Code Symbol** next to each **Function**. An **IR Library Command** will have a  **Symbol** and a **Learned IR Command** will have a **XIR1**  or **XIR2**  **Symbol** just to the left of the **Function Name** in the **Function List**.

**NOTE:** The XIR1 Symbol features a red '1' and the XIR2 Symbol features a red '2'.

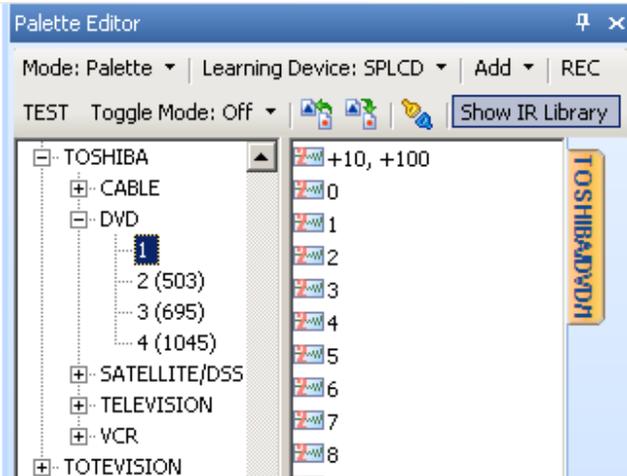


Figure 30 – Learned IR Command Group

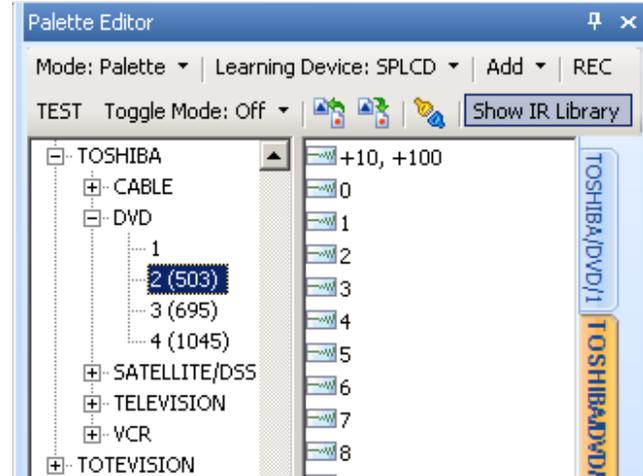


Figure 31 – Library IR Command Group

### EDITING BRAND, COMPONENT, AND FUNCTION LISTS

If a brand, component, or function is not found in the Palette Editor, each can be added as follows:

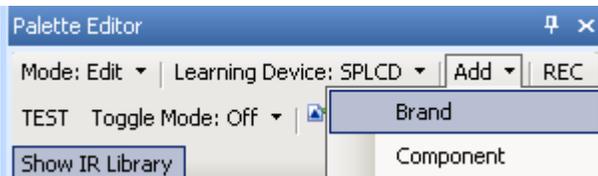


Figure 32 – Add Brand

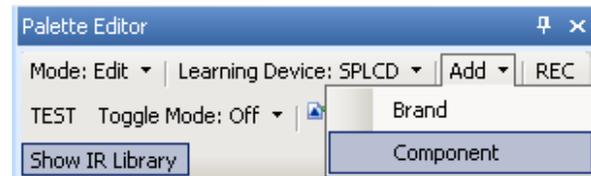


Figure 33 – Add Component

#### Adding Brands

1. In the **Palette Editor**, click **Mode** and select **Edit**.
2. Click the **Add Menu** and select **Brand**, or right click anywhere in the **Brands List** and select **New Brand** in the **pop-up**.
3. A **Text Box** (New Brand) will appear at the bottom of the **Brands List**. Type the name of the new brand and press **Enter** on the **keyboard**.
4. The new name is added to the list and saved.

**NOTE:** The New Brand will ultimately be saved to the **IR Library Brands List** alphabetically, but will not appear as an **IR Library Brand** until at least one **Component** and one **Function** have been programmed. To find a **New Brand** that does *not* have any commands programmed, in **Palette Editor**, change **Mode** to: **Edit** and scroll the **list** to the **New Brand**.

#### Adding Components and Functions

1. If not already selected, in the **Palette Editor**, click **Mode** and select **Edit**.
2. In the **Brands List**, select the **Brand** to which the **New Component** is to be added.
3. Click the **Add Menu** and select **Component**, or right click the selected **Brand** then select **Add Component** in the **pop-up**.
4. A **Text Box** (New Component) will appear at the bottom of the selected **Brand's Components sub-directory**. Type the name of the **New Component** and press **Enter** on the **keyboard**.
5. To add **Functions** (commands), right click in the **Command List** (right hand column of **Palette Editor**) and select **Add Command** from the **pop-up**.
6. Type the name of the **New Command** and press **Enter** on the **keyboard**. The new command will be saved to the **Command List** and will be available for programming **HEX**, **RS232** or **IR Commands** for the *specific*



7. From the **list** find a **Model Number** the same as your model or one similar to it. (Typically within a certain brand, model numbers considerably different than yours will have commands that work).
8. Next to the desired command, you should see a box containing the discrete **Hex Code**. Click the **Copy to Clipboard Link** or highlight (drag-select) the **IR Hex Code**, then right click and select **Copy** from the **pop-up**.
9. Return to **Universal Dragon**. In the **Palette Editor Brand List** select the **Brand/Component** for the command to be imported.
10. Click the **Hex sub-directory**.
11. In the **Command List**, click on the **Function** (command) you wish to import the discrete code for.
12. Right click the selected **command** and select **Record** from the pop-up. The **Discreet Command Window** will appear.
13. Right click in the **Discrete Command Window** and select **Paste** from the pop-up, or press **[CNTRL] + [V]** on your **keyboard** to paste the code to the window. Click **OK**.
14. A  will now be displayed to the left of the function indicating the code has been successfully imported.
15. Repeat **Steps 8-13** for all commands to be imported from Remote Central.

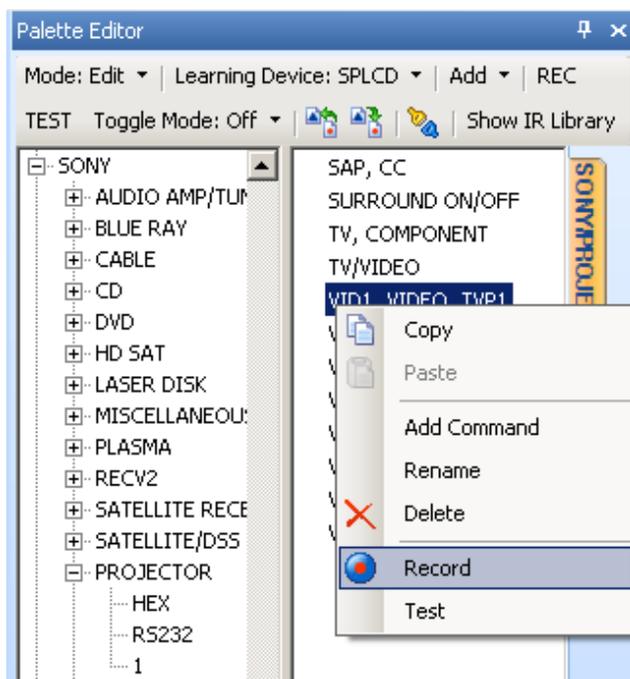


Figure 36 – Record Hex Data

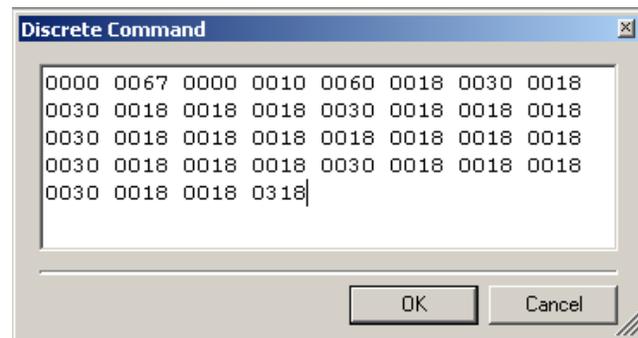


Figure 37 – Pasted Hex Data

## ENTERING RS232 COMMANDS (Creating RS232 Command Palette Files)

The SPLCD can be used to control advanced components such as projectors and lighting systems directly from the keypad that would normally be controlled via RS232 with exotic controllers or automation systems.

RS232 Command Strings must be entered into Universal Dragon and output from the system to exactly match the protocol defined by the manufacturer of the component being controlled. Some manufacturers will publish RS232 Command Tables in their Manuals, others post the commands on their web sites and others may require a call to that company's technical support department. **Be sure to have the latest version of this information prior to programming any RS232 Commands.**

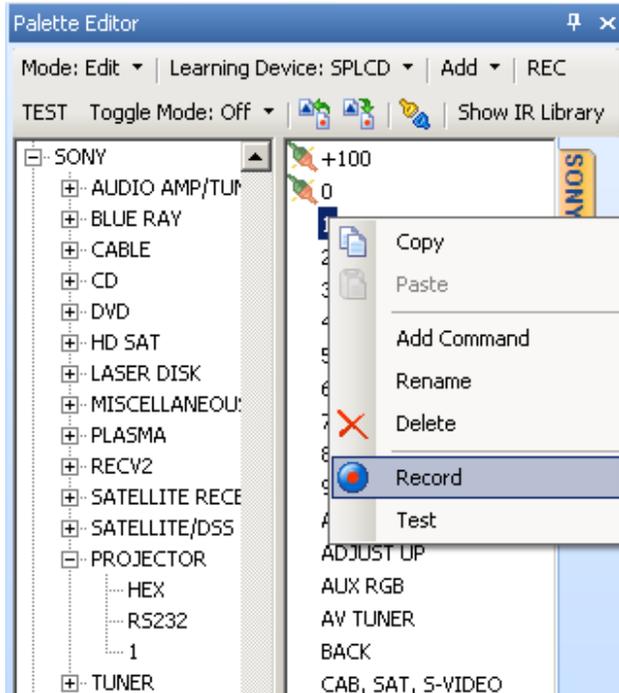


Figure 38 – Record RS232 Commands

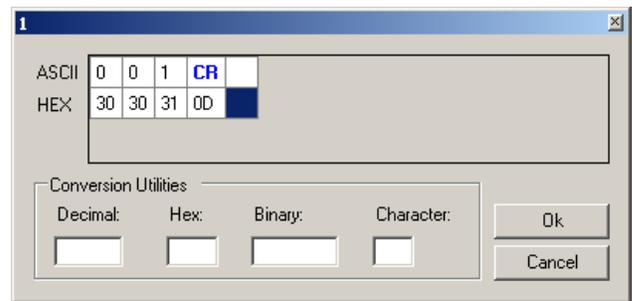


Figure 39 – RS232 Command String Editor

### ENTERING RS232 COMMAND STRINGS

1. In the **Palette Editor** select (single click) the appropriate **Brand** (i.e. Sony, Panasonic etc). A **sub-directory of Components** will appear. (If a specific brand is not found, See Section: **Editing Brand, Component and Function Lists**.)
2. In the **Brand sub-directory**, select (single click) the appropriate **Component** (DVD, SAT etc). (If a specific component is not found, See Section: **Editing Brand, Component and Function Lists**.)
3. The **Palette Editor** will now be open to the **Brand/Component** selected and a sub-directory of **code types** (Hex, RS232, IR) will open. Select **RS232**. A **Function List** for that type of component and code type will appear in the right hand column. Review the **Function List** and compare it to the source remote. (If a specific function is not displayed or not named appropriately, see Section: **Editing Function Names in the Palette Editor**.)
4. Right click a **command** in the **Function List** that is to be programmed with an **RS232 Command** (i.e. Power, Play, Stop etc.) and select **Record** from the **pop-up**. The **RS232 Command String Editor Window** will appear. (The window will indicate the selected command in the Title Bar to assist in programming the proper command string to the proper function.)
5. Click in the **ASCII** or **HEX** row depending upon the type of data to be entered. The **selected row** will change to **dark blue**.
6. Enter the **command string** by typing on the **computer keyboard**. Both ASCII and HEX Data will be shown.  
**NOTE:** The maximum number of characters that can be entered into a string is **100 characters**.
7. Click **OK** after the entire string is entered. An **RS232 Command Icon** will appear to the left of the selected function indicating that an RS232 Command String has been entered.  
**NOTE:** A **Conversion Utility** is included within this window. Entering commands of any format into this utility will display the character in all other formats (i.e. Decimal, Hex, Binary, and ASCII).
8. Repeat **Steps 5-7** for all of the **source functions** to be programmed with **RS232 Commands**.
9. Test all **RS232 Commands** as described in the following section.
10. After all **RS232 Commands** have been tested, switch the **Palette Editor Mode** to **Palette**, to place **RS232 Commands** on buttons.

## TESTING RS232 COMMAND STRINGS

There are two methods of testing RS232 Command Strings directly from the Palette Editor: One is directly out of the PC's Com Port and the second method is through the SPLCD's RS232 **Serial Port (Figure 3 Item 20)**. Using either method, you can control the component or device directly for confirmation of the command string programming or send the command to an RS232 Utility Program to verify proper output (this is good for troubleshooting purposes or for testing the command without the component or device present).

### Using PC Test

1. Connect the **Com Port** of the **PC** running **Universal Dragon** to the corresponding component or device of the commands to be tested.  
**NOTE:** A **Null Modem cable** may be necessary for communicating with the Component or Device. Check the manufacturer's specification to see if this is required.
2. In the **Palette Editor** click **Test**. It will highlight **dark blue**.
3. In the **Palette Editor Tool Bar**, click **RS232 Settings** () to be sure the **RS232 Port Settings** are properly set appropriate for the connected device. (Refer to the mfg's Instruction Manual of the component or device being tested for the proper communication settings.)
4. In **Palette Editor**, select the appropriate **Brand/Component** and then select **RS232** from the **Component sub-directory**.
5. In the **Function List**, click on the **command string** to be tested.  
**NOTE:** Only commands with the  icon will be able to be tested.
6. The connected component or device should respond appropriately for the command sent. If not, check the **command string** entered and **port settings** in the **RS232 Settings Window**. If device still doesn't respond, see the **Troubleshooting Section** to verify RS232 communication.
7. Repeat **Steps 1-6** for all **RS232 Commands** prior to programming the **SPLCD**.

### Using SPLCD Test

**NOTE: The PC running Universal Dragon needs to be connected to the Programming Port of the SPLCD and communication verified (Base Unit "Who Am I") before continuing.**

1. Connect the **Serial Port** on the **SPLCD Rear Panel (Figure 3 Item 20)** to a Xantech **RS232422 Converter** (not included). Connect the **RS232 Port** on the **RS232422** to the appropriate port on the component or device of the commands to be tested.  
**NOTE:** A **Null Modem cable** may be necessary for communicating with the Component or Device. Check the manufacturer's specification to see if this is required.
2. In the **Palette Editor** click **Test**. It will highlight **dark blue**.
3. In the **Palette Editor Tool Bar**, click **RS232 Settings** () to be sure the **RS232 Port Settings** are properly set appropriate for the connected device. (Refer to the mfg's Instruction Manual of the component or device being tested for the proper communication settings.)
4. In **Palette Editor**, select the appropriate **Brand/Component** and then select **RS232** from the **Component sub-directory**.
5. In the **Function List**, click on the **command string** to be tested.  
**NOTE:** Only commands with the  icon will be able to be tested.
6. The connected component or device should respond appropriately for the command sent. If not, check the **command string** entered and **port settings** in the **RS232 Settings Window**. If device still doesn't respond, see the **Troubleshooting Section** to verify RS232 communication.
7. Repeat **Steps 1-6** for all **RS232 Commands** prior to programming the **SPLCD**.

## RS232 COMMAND GROUPS

Unlike previous versions of Dragon Drop-IR, it is not necessary to create RS232 Command Palettes from programmed commands. Universal Dragon does this automatically. Programmed RS232 Commands are placed into **Command Groups** that can be accessed by clicking **Show IR Library** in the **Palette Editor**. The Command Groups will appear in the **Brand/Component List** just as the IR and Hex Command Palettes do. The programmed commands will be listed as **RS232** in the **Code Type sub-directory**, and programmed commands will be included in the same **Group** as RS232 Commands from the Library. RS232 Commands are indicated by the  **RS232 Command Symbol** next to each **Function** in the **Function List**.

### PLACING COMMANDS ONTO THE GTL's (Creating Macros)

All Commands – IR, Hex and RS232 should be confirmed and tested before placing any commands on GTL's. IR, Hex and RS232 Commands are all placed on GTL's in the same manner and all can be programmed to the same GTL for use as a Macro Sequence.

**NOTE:** At this point, the **SPLCD Source** and **Function GTL's** should already be configured on the **Virtual SPLCD** in the **SPLCD System Window**. If this has not been done, return to Section: **Creating the Graphical User Interface (GUI)**.

With the **SPLCD Project** open, resize and configure the windows as shown in **Figure 40**.

**NOTE:** In the **SPLCD System Window**, click the **Macros Tab**. This will open the **Command List Window** and lock the **GTL's** in place, so they don't accidentally get moved while placing commands.

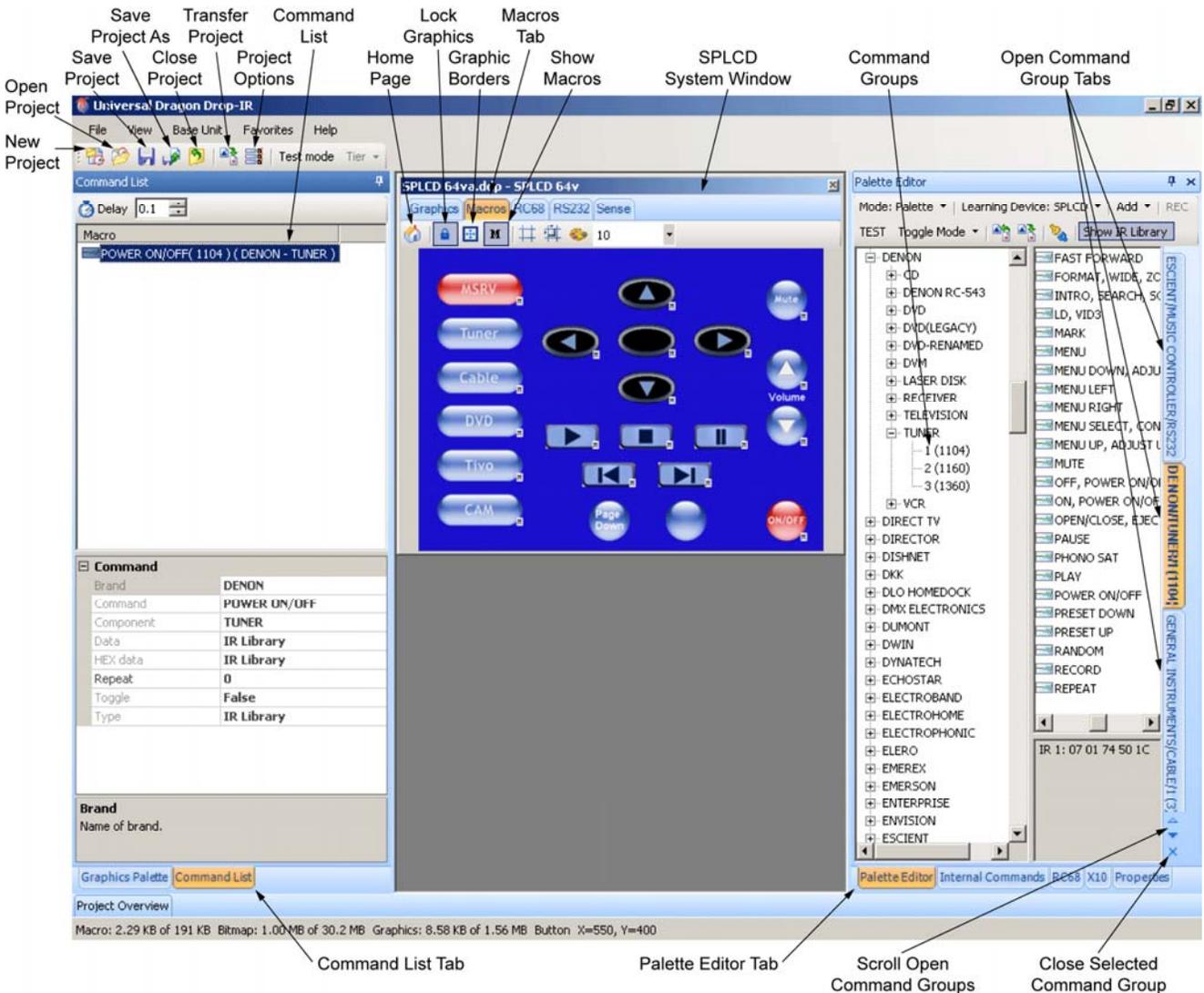


Figure 40 – Macro Programming Screen

## SELECTING IR AND RS232 COMMAND GROUPS FROM THE PALETTE EDITOR

1. Click the **Palette Editor Tab** to open the **Palette Editor**. (Click the **Auto-Hide Button** (thumb tack) to hold the window open if it has been hidden in the margin.)
2. In the **Palette Editor Menu Bar**, click **Show IR Library** so it is highlighted in **dark blue**.
3. Click on the appropriate **Brand** (Denon, Escient, etc.). A **sub-directory** of available **components** will open.
4. Click on the appropriate **Component** (CD, DVD, SAT, etc.). A **sub-directory** of **IR and RS232 Command Groups** will open.
5. Click the appropriate **Command Group** for the **components/devices** being controlled with the **SPLCD** being programmed.

**NOTE:** As multiple **Command Groups** are selected, each will appear as a **Tab** in the margin, so they can be easily selected while placing commands on the **GTL's** without having to scroll through the **Brand/Component List** every time a different group is needed. The *selected Command Group Tab* will highlight *orange* and the groups can be *scrolled* and *closed* using the **buttons** at the bottom of the **Palette Editor**.

## ASSOCIATING COMMANDS TO GTL'S (DRAG AND DROP COMMANDS)

### Auto-Fill IR Commands

Auto-Fill is the Express Lane to associating IR Commands to GTL's. Auto-Fill will automatically populate all buttons with *Keywords* associated that have been placed on an open Page in the SPLCD System Window with IR Commands. Keywords are search tools used by Universal Dragon for the **Auto-fill** process. Associating 'Keywords' to a button such as Play, Stop, Volume UP, Volume DOWN, Menu UP, Menu DOWN, etc, allows Universal Dragon to automatically associate specific commands from the **Command Groups** to **Source and Function Buttons** placed on a **Source Page** in the **System Window**. (i.e. If **Play** and **Stop** buttons have been placed on a **Page**, and a **Command Group** is *dragged* onto the **screen**, Universal Dragon will associate the **commands** titled **Play** and **Stop** with those **buttons**.) To Auto-Fill an SPLCD Page:

1. Open a **Source Page** that has been configured with all required **Source** and **Function GTL's**.
2. In the **Palette Editor Window**, select the appropriate **Brand** and **Component** from the **IR Library**.
3. *Click and Drag* the appropriate **IR Command Group** onto a blank space on the **SPLCD Page** in the **System Window**. A **Message Window** indicating the *number* of **IR Commands** that were associated to that page will appear.

**NOTE:** Having the '**M**' (show macros) **Icon** selected in the **Tool Bar** will assist in indicating which buttons do and do not have commands associated.

4. Click each **button** and check the **associated command** in the **Macro Command List**. Sometimes an incorrect command will get placed due an ambiguous Keyword.
5. Manually delete and replace commands as needed.

### Manually Associating IR Commands to GTL's

1. Select the **Macros Tab** in the **SPLCD System Window**.
2. In the Universal Dragon **Tool Bar**, click the **Show Macros Icon**. It will highlight. A small '**M**' will appear next to each button that has any commands (single or sequences) associated. This provides a useful reference to be sure no buttons go un-programmed.
3. Click a **Source Button** on the virtual **SPLCD**.
4. Select the appropriate **Command Group Tab**. Click the appropriate **command** from the **Function List**. The code name (function/brand/component) for that button will appear in the **Command List Window**.  
**NOTE:** Typically, because this is a **Source Select Button** an **Input Command** such as Tuner, CD, DVD, etc. would be appropriate. If additional commands are required, such as a specific audio mode to correspond to the selected source, or a play command to automatically play the source when selected, select **Command Groups** and click **Functions** as needed to create **Macro Sequences**. (See Section: **Programming Sequences** below for additional information.)
5. With the **Source Button** selected in **Step 3** above still selected, on the **virtual SPLCD**, click a **Function Button** for that **source**. Select the appropriate **Command Group Tab** for that source and click the appropriate **command** for the selected **Function Button** in the **Function List**.

**NOTE:** To add additional commands to the same button, select **Command Groups** and click **Functions** as needed to create **Macro Sequences**. Up to **40 Commands** can be placed under each programmable button (See Section: **Programming Sequences** below for additional information.)

- Repeat **Steps 3-5** for all **Source** and **Function GTL's**.

### **Programming Sequences (Macros)**

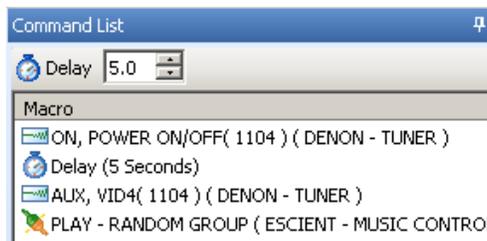
All programmable buttons on the SPLCD can be programmed to send Macro Sequences of up to 40 commands. Typically, Volume and Channel, UP/DOWN Buttons would not be programmed for Sequences and there may be buttons for specific functions, given the component/device, that are also not suited for sequences. However, on a purely technical level, any button on a SPLCD can be programmed for a Macro Sequence.

- Click the **button** to be programmed.
- Open all **Command Groups** to be used in the **sequence**.
- Select the **Command Groups**, and click on the **commands** in the order that the **sequence** is to be sent.
- The order of the commands in the sequence can be changed by simply *dragging* the command towards the desired position in the list. Press and hold the left mouse button with the cursor over the desired command. While holding, drag the command to the desired position in the list and release.

**NOTE:** As you drag a command *upward* in the list and you want the command between two existing commands, drop it on the *lower* command. As you drag *downward*, drop it on the *upper* command.

### **Timed Delays**

Timed Delays can be placed between commands in a Macro Sequence. This is sometimes necessary in sequences when a delay is needed between two commands to allow a device to respond completely to the previous command. (i.e. After a POWER ON command is issued, a delay is usually necessary before the next command will be recognized and should be added so the source components don't start playing before the amp or receiver has had a chance to power up and switch on its output. Another effective use for delay is between commands when entering multiple digit channel commands to a Cable Box or Satellite Receiver to allow the box to recognize each command.)



**Figure 41 – Delay in a Sequence**

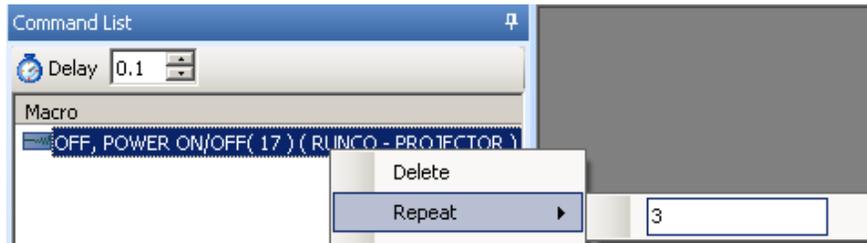
- In the Command List, click the ▼ and ▲ arrows in the **Delay Box** for the amount of delay between commands in .1 second increments up to 30 seconds (i.e. 2 = 2 seconds) or simply highlight the number in the **Delay Box** and enter the number using the **keyboard**.
- Click **Delay**, or if entering from the keyboard simply hit **Enter** on the keyboard. This will place the **delay** at the end of the **Command List** and the delay time appears as a step in the sequence.
- Left Click and Drag the **Delay (5 Seconds)** line and drop it between any two commands in the **Command List**.

**NOTE:** As you drag a command *upward* in the list and you want the command between two existing commands, drop it on the *lower* command. As you drag *downward*, drop it on the *upper* command.

### **Repeat Commands**

Commands can be repeated to extend the amount of times the command is issued. This is sometimes necessary for STOP commands or any commands that seem to be intermittent with a short button press. Many

brands of projectors look for extended OFF commands to avoid accidentally turning projectors off to protect bulbs from unnecessary power cycles. To repeat an IR Command:



**Figure 42 – Repeating an IR Command**

1. Right click the **command** in the **Command List**, select **Repeat** from the pop-up and roll the cursor into the **blank pop-up**. A **text block** will appear in the **blank pop-up**.
2. Enter a **numeric value** with the **keyboard** for the number of times the command is to repeat.
3. Click any inactive location on the screen (no **GTL**) or press **Enter**.

#### **Delete A Command From the Command List**

1. In the **Command List** right-click the **command** or **delay** to be deleted.
2. Select **Delete** from the pop-up and the **command** or **delay** will be removed from the **Macro Command List**.

#### **Testing Commands Placed on the Virtual SPLCD**

Commands placed under buttons on the Virtual SPLCD can, and should, be tested prior to downloading to the actual SPLCD. To test placed commands, the **PC** running **Universal Dragon** must be connected to the **SPLCD** via the **RS232** or **USB Programming Port**. The **IR output** of the **SPLCD** should be connected to a **Connecting Block** as shown in **Figure 8, Page 17**. Connect **IR Emitters** to the appropriate outputs on the connecting block and attach them over the **IR eyes** on the components being tested.

**NOTE:** If RS232 Commands have been placed under any **GTL**'s, the SPLCD must be connected to the RS232 controlled device with an **RS232422** as described in Section: **Testing RS232 Commands/Using SPLCD Test**.

1. In the **Universal Dragon Tool Bar**, click **Test Mode** so it is highlighted in **dark blue**.
2. Click a **GTL Source** or **Function Button** in the **SPLCD System Window** with placed IR commands to be tested. (i.e. The **MSRV Source Select Button**).
3. Each **command** and **delay** in the **Command List** will highlight **red** as it is being output from Universal Dragon. The associated command(s) should output from the emitters and control the connected devices as designed.
4. Test all **Source** and **Function GTL**'s to confirm programming.
5. Deselect the **Test Button** when testing is complete.
6. Make necessary changes to button programming as needed following the steps in the previous sections until all buttons are executing properly.

---

## TRANSFERRING THE PROJECT

With all commands tested, the project can now be transferred to the SPLCD.

**NOTE:** Before continuing, make sure the **PC** is properly connected to the **SPLCD** by running a **Base Unit/ Who Am I**. A proper connection will return a window with product information on the connected Panel. See Section: **Verifying Com Port Communication/Who Am I** for additional information. If programming for the current project will include advanced configuration you may also transfer the project at this time for a System Test before getting into more complex system features. To transfer the project to the SPLCD:

1. In the **Menu Bar**, click **Base Unit** and select **Who Am I** from the **pop-up**. Verify a valid response is received.
2. In the **File Menu** select **Transfer Project** or click the **Transfer Project Icon** (  ) in the **Tool Bar**.
3. A **File Transfer Dialog Window** should appear on the **PC** and start showing progress of the transfer process. During this time, the **SPLCD Display** will turn *white* with an activity wheel in the middle of the display to show activity.
4. When the transfer is complete the message: **Transfer Succeeded** will appear in the **File Transfer Dialog Window**. Click **OK**.
5. **Test all Buttons on the SPLCD to confirm the Project Transfer.**
6. In some cases, recalibration may be necessary after a **Project Transfer** or **Firmware Update**. See Section: **Calibration** for additional information.

---

## SAVING THE PROJECT

Once the Project has been transferred and all functions tested and confirmed the project should be saved for future reference or upgrades.

### Save Project

1. In the **File Menu**, select **Save Project** or in the **Tool Bar**, click the **Save Project Icon**.
2. The **Save As Window** will appear for a new, unsaved project. (No window will appear when saving new work on a previously saved project.)
3. The default Folder for Universal Dragon™ Projects is:  
**C:\Program Files\Xantech\Universal Dragon vX.X\Projects**. Navigate to this location if the **Projects Folder** does not appear in the **Save In Box**.
4. Enter a name for the project in the **File Name Box**. (The client's name, ie: 'Jones Home' is a good way to keep track of individual projects.)
5. Click **Save**.
6. To close a project without saving changes, In the **File Menu**, select **Close Project**. In the **Save Window**, click **NO**. The project will close without saving changes. The project will still be available for future use, in its last saved form.

### Save Project As

When programming a project for a new client that is similar or identical to an existing project, **Open** the existing project. In the **File Menu** select **Save As**, then enter the new file name as described in **Step 4** above. The project will be saved with the new file name. At this point, the project can be transferred to the Controller if no additional changes are required, or after making the necessary changes for the new client.

### File Size

The Maximum file size for a SPLCD Project is 3MB for SPLCD39G. SPLCD64G/V prior to **Serial Number 071118** max file size is 32MB. SPLCD64G/V **Serial Number 071119** and higher max file size is 1GB.

### Project Transfer Interruption

Once a Project Transfer starts downloading, if it is interrupted at any point during the download, the SPLCD may lock up and you may lose communication with the SPLCD. This can occur when the PC goes into screen saver or standby power mode, the SPLCD loses power or the programming cable becomes disconnected.

1. Press and release the **Reset Button** on the **SPLCD**.

2. After approximately five seconds, the **SPLCD** will ask you if you wish to abort loading the Project. Touch the display within 10 seconds of this message being displayed to force the system to abort loading the project.
3. At this point you should be able to do a **Project Transfer** from **Universal Dragon** to load your project into the **SPLCD**.
4. If the download does not start, check the **PC's Port Settings** to make sure the appropriate Port is selected.
5. Please also note in an installed environment, power fluctuations may also cause the **Abort Project Load** message to appear. In this scenario, don't abort project load just yet. Try letting project load first.

## Section 5: Advanced Programming

### RC68 IR CODE TRIGGERED SEQUENCER

The SmartPad LCD™ Touch Screen Controller can generate IR and/or RS232 command sequences that are triggered by single RC68 commands received at the SPLCD's IR Receiver (**Figures 2a, 2b – Item 2**). This feature can be useful in eliminating long sequence execution from hand-held controllers and also allow a wider range of programmable remotes that can be used with the SPLCD (i.e. Remotes that do not allow sequence programming).

When the SPLCD receives a specific RC68 command (Default Code Group **C9**), via the built-in IR Receiver or an external IR Receiver, the system will output a sequence of commands. The sequence can be any combination of IR Commands, Internal SPLCD Controller Commands, and RS232 commands. This means a basic programmable remote can trigger any command (IR, RS232 or Xantech 'Internal Commands') to communicate with all devices connected to the SPLCD. A total of 55 Macro's can be triggered in this fashion.

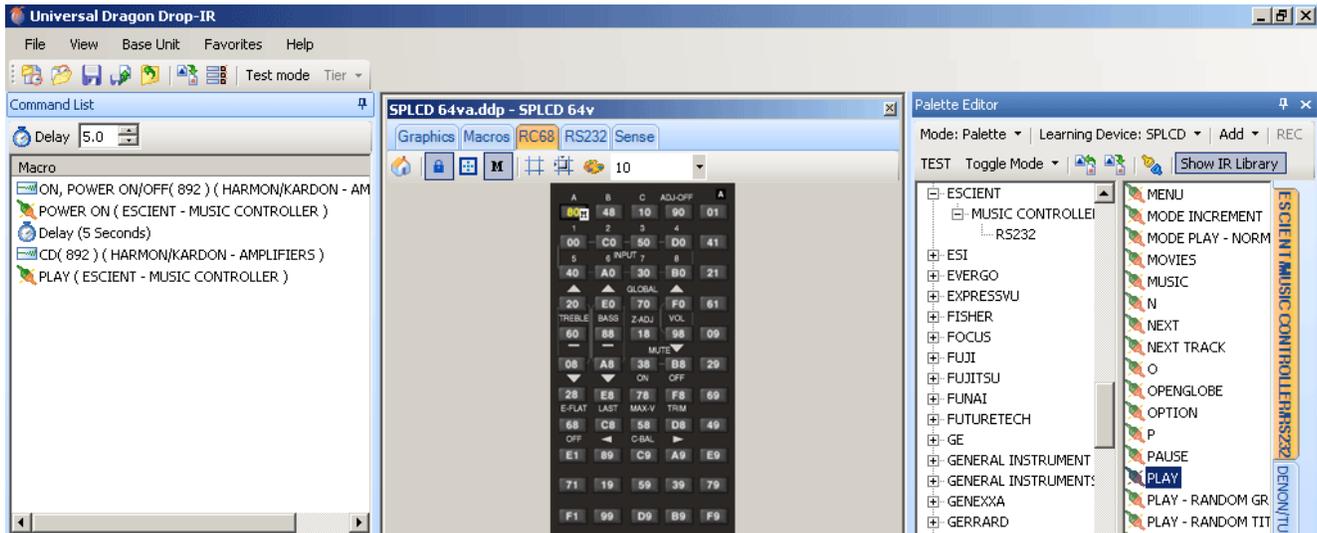


Figure 42 – RC68 IR Code Triggered Sequencer

### PROGRAMMING RC68 TRIGGERED SEQUENCES

Programming the RC68 Triggered Sequencers is similar to programming macros under GTL buttons.

1. Click on the **RC68 Tab** in the **SPLCD System Window**.
2. Open all the **IR** and **RS232 Command Groups** for the **devices** to be controlled in the **RC68 Triggered sequence**.
3. Select the **RC68 Sequence Trigger Command** to be programmed. (i.e. click on the **80 Button** or any of the other **54 buttons** shown under the **RC68 Tab** so it is highlighted in **yellow**.)
4. Click the appropriate **Command Group Tab** for the first **IR** or **RS232 Command** to be associated with the selected **RC68 Trigger Command**. The **command name** (function/brand/component) will appear in the **Macro Command List Window**.
5. Repeat **Steps 2-4** for all **IR/RS232 Commands** to be associated to this **RC68 Trigger Command**. A maximum of **40 commands** may be placed under each **RC68 Trigger**, including **Delay Commands**).
6. Repeat **Steps 2-5** for any other **RC68 Triggers**. (55 Triggers total.)

**NOTE:** Creating a written record of each RC68 Trigger command button and a brief description of its macro function is recommended for reference. (i.e. Button 80 = Turn on HK Receiver and Escient Server, Select

CD Input and Play Server.) Use the blank pages at the end of this manual and keep it in the Customer File for future use.

### TEACHING RC68 TRIGGER COMMANDS TO A UNIVERSAL REMOTE

The Macro Sequences created in the previous section must be triggered by RC68 Commands when issued from a Universal Remote, another keypad or an IR Receiver connected to the SPLCD's IR IN Bus (**Figure 3 – Item 19**). This requires the use of a **RC68X Handheld Programmer (sold separately)** or Universal Dragon Software (Xantech programmable devices only).

**NOTE:** The programming in the following sections requires use of Xantech RC68 Commands to trigger Macro Sequences from the SPLCD. Non-Xantech branded remotes, keypads and other controllers will need to be programmed with RC68 Commands that are generated by either a RC68+ or RC68X. The older RC68 will work, but it does not provide the complete code set available for creating triggered macros. For simplicity, these codes will be generically referred to as RC68 commands in the following sections.

1. On the rear of the **RC68 Hand-Held Programmer**, set the **Code Group Dials** to **C9**. (No Overlay needed)
2. Set the **Universal Learning Remote** to be used to *learn mode* per the manufacturer's instructions.
3. Select the **button** on the **Universal Remote** that is to issue the **RC68 Trigger Command** and locate the properly numbered **RC68 Button** on the **RC68 Hand Held Programmer** (i.e. Button 80).
4. Teach the **RC68 Command** to the **Universal Remote** per the remote's instructions.
5. Repeat **Steps 2-4** for all **RC68 Trigger Commands** to be used.

### PROGRAMMING THE URC-2B/P FOR USE WITH SPLCD RC68 TRIGGERED SEQUENCES

Programming a Xantech Model URC-2B/P (Black or Platinum) Universal Remote to trigger the programmed RC68 sequences can be done in two different ways: either identically to the procedure above (teaching directly with the RC68 Hand Held Programmer) or by using Universal Dragon Software. To program the URC-2 for operation with the SPLCD using Universal Dragon, please do the following:

1. Either **open** an existing or create a **new URC-2B/P Project**.
2. With the **URC-2 Base Unit** open, click the **RC68 Tab** in the **Palette Editor**.
3. Click the **Options Tab** on the **RC68 Command Palette**.
4. Under **Xantech Model** select **SPLCD** from the pull-down. If **SPLCD** is not found in the pull-down, select **MAC1** as shown in **Figure 43**.
5. Change the **Code Group** to **C9**.
6. Click the **RC68 Remote Tab**.
7. Click the **button** on the **virtual URC-2** to be used to trigger the **Macro Sequence** created on the **SPLCD**. (i.e. CD Button as shown in **Figure 44**.)
8. Click the **RC68 Trigger Command Button** in the **RC68 Command Palette** that corresponds to the **Macro Sequence** programmed on the **SPLCD**. (i.e. button 80)
9. Confirm the proper **RC68 Command** is shown in the **Macro Command List**.
10. Repeat **Steps 7-9** for all **RC68 Triggered Sequences** programmed on the **SPLCD** that are to be triggered from the **URC2**.

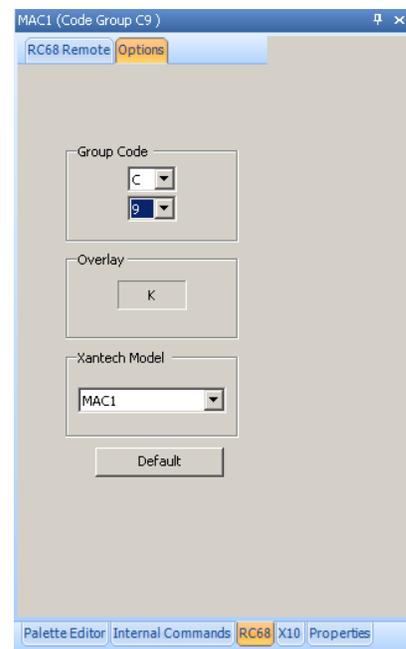


Figure 43 – RC68 Options

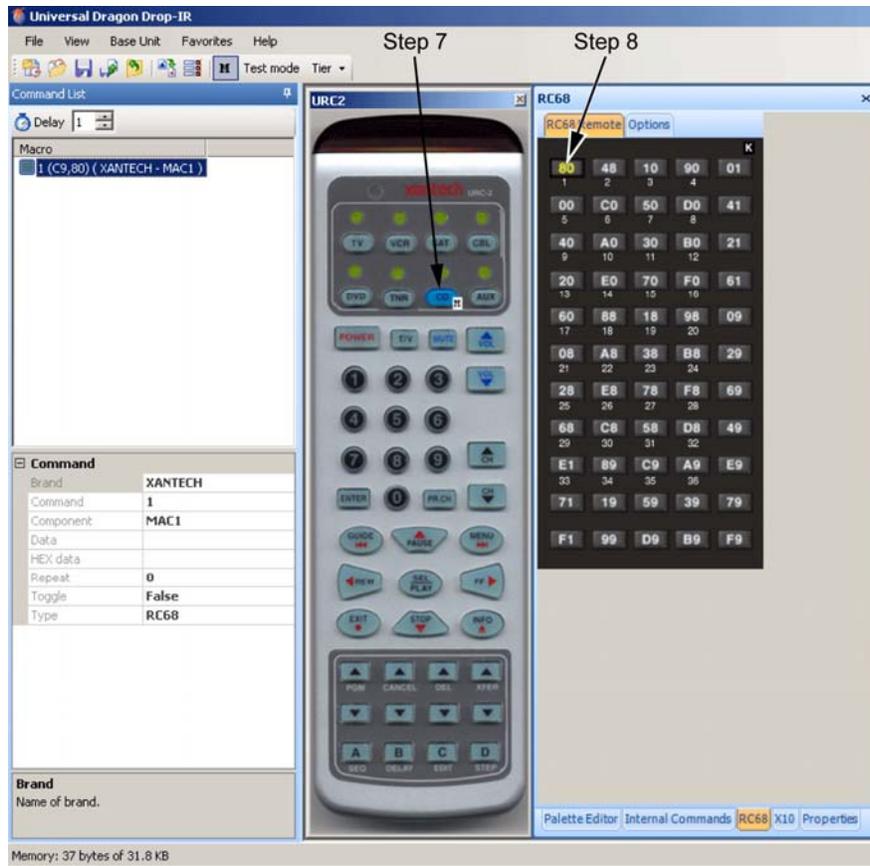


Figure 44 – URC-2 RC68 Macro Trigger Programming

## RS232 INPUT TRANSLATOR

The SPLCD Touch Screen Controller has the ability to receive specific Xantech RS232 ASCII strings and associate them to individual IR Commands or IR Macro Sequences to control any number of IR controlled devices. This allows a central PC (or other RS232 unit) to control any IR device connected to the SPLCD IR Bus Output.

**NOTE:** For RS232 Communication, a **RS422232 Converter** and **12V DC Power Supply** (Xantech Part # 781ERGPS) (both sold separately) are required. For RS232 Connections, see **Figure 11** in **Section 2** of this manual. A **Null Modem cable** may be necessary for communicating with the Component or Device. Check the manufacturer's specification to see if this is required.

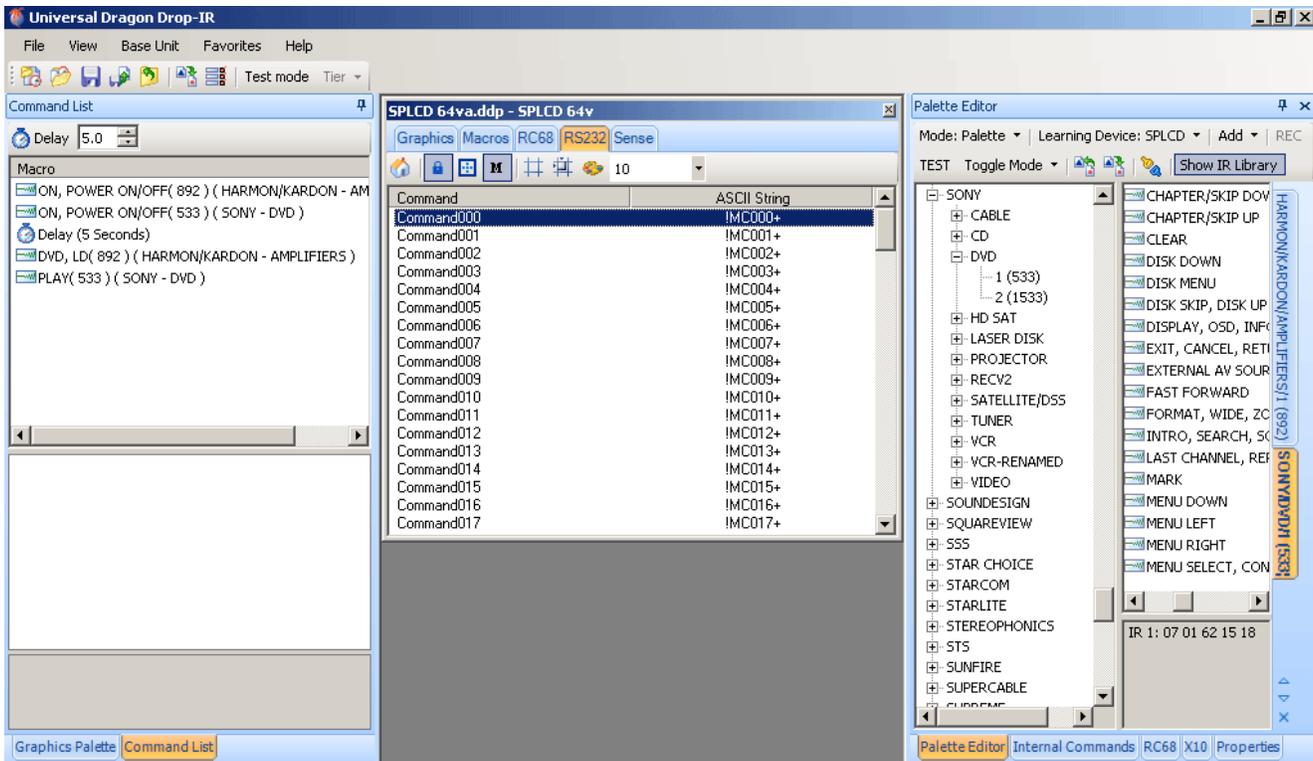


Figure 45 – RS232 Input Translator

## PROGRAMMING IR COMMANDS AND SEQUENCES

The RS232 Input Translator gets programmed in the same manner as programming macros under GTL Buttons and RC68 Sequence Triggers. Commands from the IR Command Groups can be associated with any of the 128 available ASCII strings. This allows programming up to 128 different ASCII command strings to control external IR devices.

### Selecting IR Command Groups from the IR Code Library

1. If not already open, in the **View Menu**, select **Palette Editor** or click the **Palette Editor Tab**.
2. In the **Palette Editor Menu Bar**, select **Show IR Library** so it is highlighted **dark blue**.
3. In the **Brand/Component List**, click the appropriate **Brand**. (Harmon Kardon, Sony, etc.) A sub-directory of component types will open.
4. In the **Component sub-directory** click the appropriate **Component Type** (i.e. VCR, TV etc.). A sub-directory of Command Groups will open.
5. Select the proper **Command Group**. (Be sure to select an IR Command Group. The RS232 Input Translator only outputs IR commands.)
6. Repeat **Steps 3-5** for all **components/commands** being used in the **macro**. As multiple **Command Groups** are selected, they will stack in the margin as **Tabs**. Click a **Tab** to show the **commands** for that **Command Group** in the **Function List**.

### Associating RS232 Commands with IR Commands

1. In the **System Window**, select the **RS232 Tab**. (Figure 45)
2. In the **RS232 Window**, select an **ASCII Command String**. The selected string will be highlighted in a blue background.
3. Click the **Tab** for the **Command Group** with the first **IR command** to be associated to the selected **ASCII Command string**.
4. The **code name** (function/brand/component) for the selected **IR Command** will appear in the **Macro Command List**.

5. Repeat **Steps 3-4** for all **IR commands** to be associated to this **Command String**. A maximum of **40 IR Commands** may be associated with each string.
6. Repeat **Steps 2-5** for all required **ASCII Strings**, up to 128 total.

**NOTE:** It is recommended to write down the ASCII command string and a brief description of its corresponding MACRO function. Each ASCII String will need to be entered into the controlling PC/device as it appears opposite the COMMAND Number. (i.e. to trigger 'Command 000' you will need to issue **!000MC+** as the ASCII command string from the controlling PC/device.)

### Testing Commands in the RS232 Input Translator

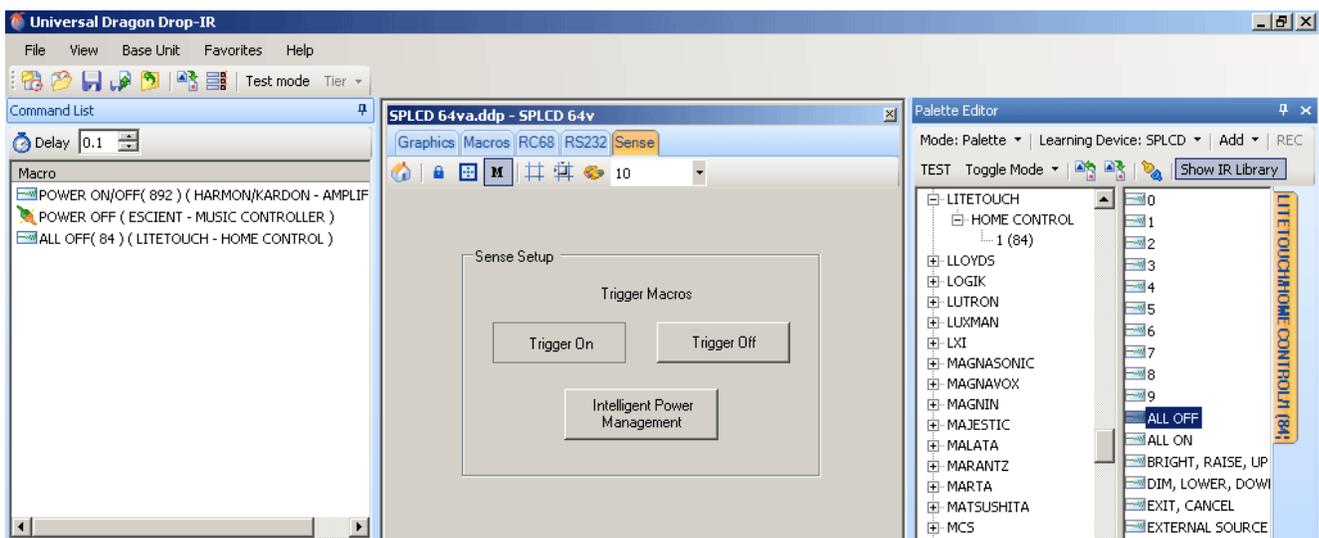
Commands associated with the ASCII Command strings in the RS232 Input Translator should be tested prior to downloading to the SPLCD. To test commands, the PC running Universal Dragon must be connected to the SPLCD front panel Com Port or USB Port and emitters must be connected to the SPLCD IR Bus (**Figure 8, Page 17**).

1. In the Universal Dragon **Menu Bar**, click **Test Mode** so it is highlighted **dark blue**.
2. In the **System Window**, select an **ASCII Command String** with associated **IR codes** to be tested. (i.e. Command MC000+). The **command string** should now be highlighted **dark blue**.
3. The **IR Commands** listed under the **Macro Command List** for that selected **ASCII Command** should now be executed in order of appearance out of the **IR Bus** on the **SPLCD Rear Panel**.
4. Verify that all components/devices have responded to the Macro Sequence as designed.

**NOTE:** RS232 commands may also be placed under the RS232 trigger macro to go back to the issuing RS232 device. For testing RS232 commands placed under this macro, the device needs to be connected to the **DB9 RS232 Port** of the **RS422232 Converter** as shown in **Figure 11**.

## SENSE TRIGGER MACROS

The **Status Terminal** located on the rear of the SPLCD (**Figure 3 - Item 19c**) may also be utilized to trigger a Macro Sequence (IR and/or RS232). Two macros can be triggered when the incoming **Status Voltage** is either *High* (5-30V DC) or *Low* (0V DC). This is very useful for numerous applications such as a doorbell trigger circuit to mute a particular zone, set a preferred lighting scene when a component is turned on or turn off all lights and A/V equipment when an alarm system is activated.



## Figure 46 – Sense Trigger Setup

### Programming The Sense Input

1. In the **SPLCD System Window**, select the **Sense Tab**.
2. In the **Sense Setup Block**, under **Trigger Macros**, click **Trigger On**. The button will appear *unshaded*.
3. In the **Palette Editor**, from the **Command Groups**, select the appropriate **IR** and/or **RS232 Command(s)** to be output with a *positive* sense input (applied voltage = + 5 to 30V DC).
4. In the **Sense Setup Block**, under **Trigger Macros**, click **Trigger Off**. The button will appear *unshaded*.
5. In the **Palette Editor** from the **Command Groups**, select the appropriate **IR** and/or **RS232 command(s)** to be output with the *absence* of a sense input (applied voltage = 0V DC).
6. Selected Commands will appear in the **Macro Command List**.
7. In the **Universal Dragon Tool Bar**, click the **Project Options Icon** (  ). Under the **Settings Tab**, be sure **Line Input Role** is set to **Input**. See Section: **Options Settings/Track LED Settings** and **Line Input Role Settings** for additional information.

### INTELLIGENT POWER MANAGEMENT

The **Status Input** can also be used for sensing the **power state** of an external **device** to prevent unwanted **power commands** from being issued when not desired. If the sensed device has a **Status Output** (or a switched or sensed AC outlet with a DC Power Supply or 12V output), when a **Source GTL** is pressed, if the **Status Line** is *Low* (Status = 0V) the **Power ON Command** *will* be initiated. If the **Status Line** is *High* (STATUS = 5 to 30V DC), the **Power ON Command** will *not* be output.

This feature will also allow for a **System Power Macro** to be initiated whenever a **Source GTL** is pressed. In this application, the main system component, A/V Receiver, Multi-room Controller, etc. must have a common 12V DC Control output that indicates System State (ON/OFF). In this case, when a **Source GTL** is pressed, if the **System Status Line** is *Low* (Status = 0V) the **Power ON Macro** *will* be initiated. If the **System Status Line** is *High* (STATUS = 5 to 30V DC), the macro will *not* be output.

### Programming Intelligent Power Management

1. In the **SPLCD System Window**, select the **Sense Tab**.
2. In the **Sense Setup Block**, Select **Intelligent Power Management**.
3. In the **Palette Editor** from the **Command Groups**, select the appropriate **IR** and/or **RS232 command(s)** to be output when the **Status Line** is *Low* (Status = 0V).
4. Selected Commands will appear in the **Macro Command List**.

## ASSIGNING BANK TRACK CODES TO SOURCE GTL'S

By assigning discrete **Bank Track Codes** to each **Source Button**, the SPLCD can work in conjunction with accompanying learning hand held remotes (similar to Xantech Model URC-2P/B) or other Xantech Keypads or SPLCD panels in the same zone. When a source is changed on the accompanying hand held remote (or another SPLCD panel), the Source Pages on all keypads will change to remain in sync with the current Source selection.

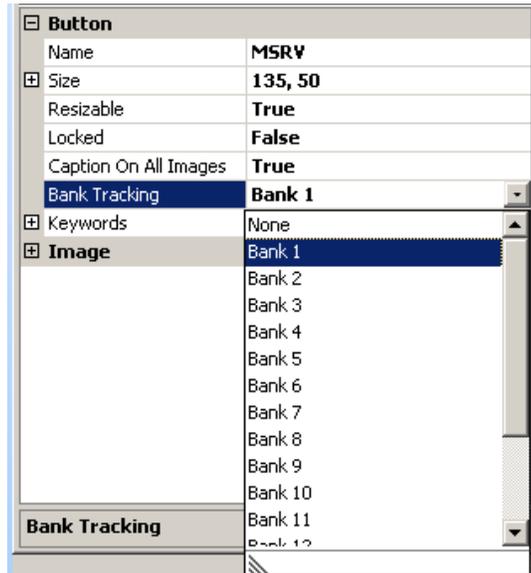


Figure 47 – Assigning Bank Track Codes to Source GTL's

### Programming Bank Track Codes

1. In the **SPLCD System Window**, select the **Macros Tab**.
2. Right-click on a **Source Button** and select **Properties** or in the **Palette Editor**, select the **Properties Tab**.
3. In the **Properties Window**, at the bottom of the window, in the **Button Attributes**, click **Bank Track** and select the appropriate **Bank Track Code**, for the selected source, from the **pull-down**.

**NOTE 1:** Default **Code Group** for Bank Track codes is **D8** and can be found under **the Project Options Icon in the Tool Bar**.

**NOTE 2:** The **URC-2P/B** is pre-programmed with **Bank Track Codes 1-8** and is directly compatible with the SPLCD Bank Track Code system.

## Section 6: Options Settings

In the **Project Options Window** in Universal Dragon, the user can change the settings for RC68 Code Group, Bank Track Code Group, Status Line and LED Operation, Backlight Control, Display Orientation, RS232 Port Settings, MRC88 Emulation and Password.

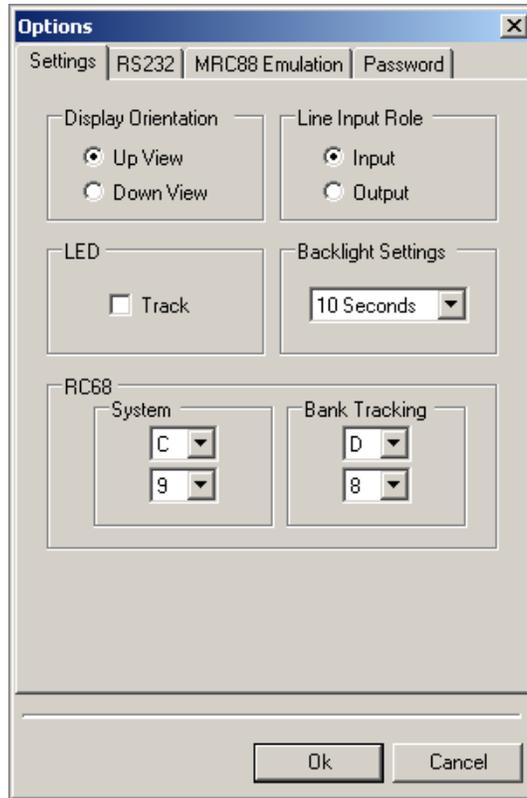
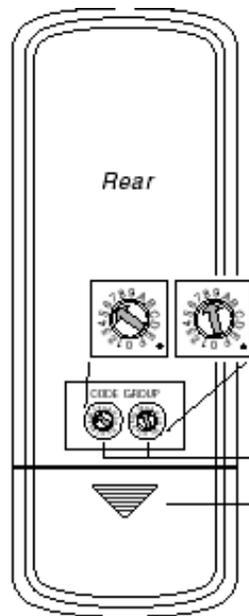


Figure 48 – SPLCD Options Settings

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### RC68 CODE GROUP

The **RC68 Code Group** setting refers to the group of IR codes that will be used to **trigger RC68 Sequences** as discussed in **Section 5**. The number associated with this **Code Group** refers to the **dial setting** on the rear of a **RC68+/X Handheld Programmer (Figure 49)**. The **SPLCD Default Code Group** is **C9**. This setting only needs to be changed if multiple SPLCD's are connected in parallel and have different control functions, if they are all within line of sight of a remote programmed with Bank Track Codes, or if there is an IR code group conflict with some other device used in the same system.



**Figure 49 – RC68+/X Handheld Programmer Code Group**

---

### **BANK TRACK CODE GROUP**

When an SPLCD is used in a system in conjunction with other controllers (i.e. handheld remotes or other SPLCD panels) in which the equipment can be controlled from multiple locations, the SPLCD panels have the ability to track source selections simultaneously for in-sync operation for the current source selection if the remotes and SPLCD's are all configured with the same Bank Track Codes and the SPLCD's are connected in Parallel.

Example: If a user walks into a room and selects DVD on the SPLCD and then decides to select CD using a handheld remote, the SPLCD will automatically switch to the CD source page. The same thing will happen when multiple SPLCD's are connected in parallel and a selection is made on one panel, the other panels will automatically switch to the source page selected.

The default Bank Track Code Group is **D8**.

---

### **TRACK LED SETTING**

The **Status LED** (Figure 2 - Item 3) can be configured to track the **Status Terminal** on the rear of the **SPLCD** (Figure 3 – Item 19c). If this is desired **LED Track** should be **selected** (check mark). The **default setting** is **de-selected** (no check mark).

When the **LED Track** is **selected** (check mark), the **Status LED** will turn **ON** whenever a positive voltage (5-30VDC) is present on the **Status Terminal** on the rear of the **SPLCD**. Whenever this voltage is **LOW** (0V DC) the **Status LED** will turn **OFF**.

This works in conjunction with the **Line Input Role** setting.

### **LINE INPUT ROLE SETTING**

The **Status Terminal** on the rear of the **SPLCD** (Figure 3 – Item 19c) can be configured as either an **Input** to sense the state of an external device or as an **Output** to control an external device.

**Input**

When **Input** is selected in the **Line Input Role Block** and a 5 to 30V DC signal is present on the **Status Terminal** on the rear of the **SPLCD**, the following event/actions can be triggered:

1. The **Status LED** on the **SPLCD** Front Panel will turn ON [Requires **LED Track** to be selected, (check mark)].
2. Initiate a **Sense Trigger Macro** (if one is associated to the **System Window/Sense Tab/ON Button**).
3. Utilize **Intelligent Power Management** (if selected at: **System Window/Sense Tab/Intelligent Power Management**).

**NOTE:** Items **1&2** or **1&3** may be programmed to occur simultaneously.

**Output**

When **Output** is selected in the **Line Input Role Block**, the **Status Terminal** becomes a switchable 12V DC Output. When the **Internal Command: Set Line Status/ON** is placed under a **GTL** and that button is pressed, the **Status Terminal** outputs **12V DC**. When the **Internal Command: Set Line Status/OFF** is placed under a **GTL** and that button is pressed, the **Status Terminal** outputs **0V DC**. This can be utilized to control an external device via a 12V trigger when an appropriately configured **GTL** is pressed (i.e. Control a Projection Screen, a Lift, Drapes or an amplifier with a 12V DC Control Input).

**Note:** The **Status Output** is rated at 15mA maximum.

---

**BACKLIGHT SETTINGS**

This sets the **LCD Backlight** to stay ON for a specified amount of time after the display is last touched. The **Backlight** can be set to stay ON from **1-30 seconds** in *1 second increments*, **1-30 minutes** in *1 minute increments* or **Always ON**.

**NOTE:** The internal **IR receiver** is *disabled* whenever the **Backlight** is ON to avoid interference. Therefore if **Always ON** is selected, the IR Receiver will not be active.

---

**DISPLAY ORIENTATION**

The LCD Display needs to be configured for the proper viewing angle according to the position it will be installed with regard to the user. (**Figure 50**)

**Up**

Select this setting if the **SPLCD** will be installed at a height *equal to or above* the user's **eye level**. (**IR Sensor** on the *right* side, **Rear Panel** in *normal* orientation.)

**Down**

Select this setting if the **SPLCD** will be installed at a height *equal to or below* the user's **eye level**. (**IR Sensor** on the *left* side, **Rear Panel** *upside down*. If the **SPLCD** is not oriented as described, the graphics will appear upside down.)

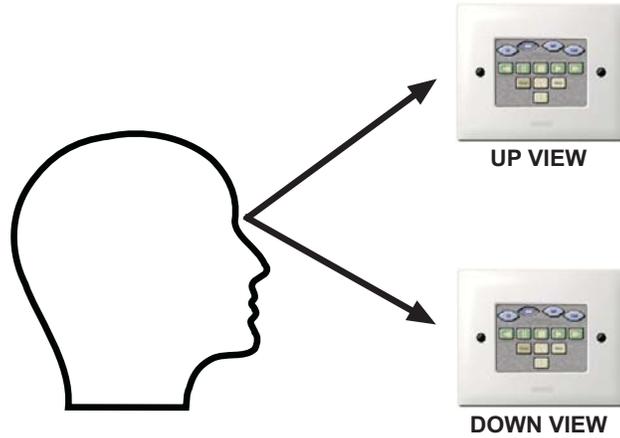


Figure 50 – Display Orientation

**RS232 SETTINGS**

To configure the settings of the **Serial Port** located on the **SPLCD Rear Panel (Figure 3 – Item 21)**, if not already open, in the **Menu Bar**, click on the **Project Options Icon** and in the **Options Window** select the **RS232 Tab**. This will display all of the configurable RS232 settings for the Serial Port. (Figure 51)

**NOTE: The Serial Port on the SPLCD Rear Panel is a RS422 Port.** Use of this Port requires a Xantech **RS422232 Converter** or a **RS2321X8 Router** and a **781ERGPS Power Supply** to communicate with RS232 controlled devices.

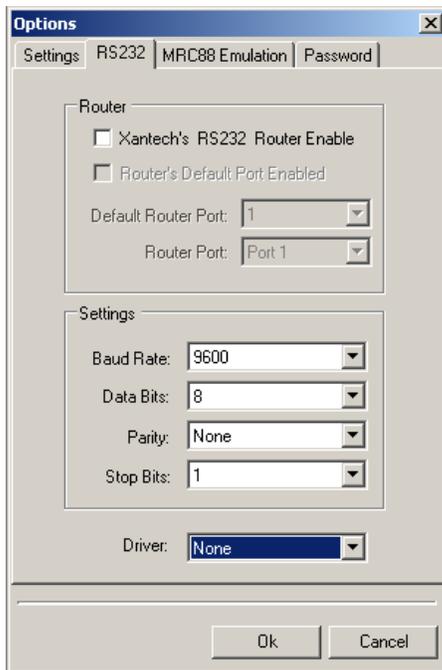


Figure 51 - RS232 Port Default Settings

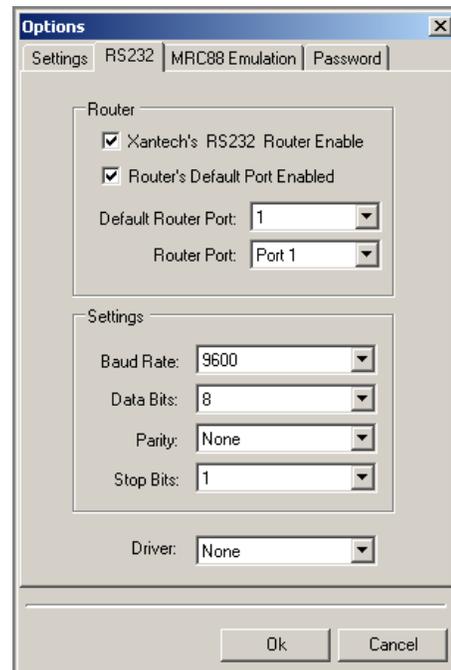


Figure 52 – RS232 Port Router Settings

### **RS232 Port Default Settings**

Use this configuration when controlling a *single* **RS232 device** from the **SPLCD**.

To change **Baud Rate, Data Bits, Stop Bits** or **Parity** settings, click on the corresponding pull-down and select the desired setting per manufacturer's specification for the device to be controlled via RS232. Default settings for all are shown above in **Figure 51**. If controlling a **Xantech XDT Tuner** or **XMUSIC Server**, select the appropriate **Driver** from the **pull-down**, when configuring the associated **Port**.

**NOTE:** If controlling a **Xantech XDT Tuner** or **XMUSIC Server**, use a **Null Modem Cable** (Part No. 05913560).

### **RS232 Port Router Settings**

Use this configuration when controlling *multiple* **RS232 (or RS422) devices** (up to eight) from the **SPLCD** using the **RS2321X8 Router**. See: **RS2321X8 Router Installation Instructions** for complete instructions.

1. In the **Router Block**, select (check mark) **Xantech RS232 Router Enable**.
2. To have the **RS2321X8** always return to a **specific port** (default) select (check mark) **Router's Default Port Enabled** and select the appropriate **Port** from the **Default Router Port pull-down**.
3. To set the *individual Router Ports* to the appropriate **Protocol**, using the **Router Port pull-down**, select each **Port individually**, (Port1, Port 2, Port 3, etc.) and set the **Baud Rate, Data Bits, Stop Bits** and **Parity** settings for *each device* by **Port**, per the manufacturer's specification for the device connected to the selected **RS2321X8 Port**.
4. If controlling a **Xantech XDT Tuner** or **XMUSIC Server**, select the appropriate **Driver** from the **pull-down**, when configuring the associated **Port**. (i.e. Port 1 = XDT, Port 2 = Xantech Music Server.)

## Section 7: Appendix

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### INTERFACING SPLCD with MRC44 (IR Control) & MRC88 (MRC88 Emulation)

The SmartPad LCD™ allows direct integration with Xantech MRC Products via the CONTROL and EXPANSION RJ45 Terminals on the SPLCD Rear Panel (**Figure 3 – Items 13 & 14**). Connecting either of these terminals to a Zone Keypad Connection on the rear of a MRC44 or MRC88 allows IR control of the MRC and any components connected to the MRC Controller.

**NOTE:** An external **16VDC Power Supply** must be connected to the **+16V In Only** and **GND Terminals** on the **IR Bus Connections** on the **SPLCD Rear Panel**. (**Figure 3- Items 19a & 19b**) **A MRC cannot power a SPLCD.**

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### MRC88 EMULATION MODE: FEATURE DESCRIPTION & PROGRAMMING

#### SPLCD/MRC88 EMULATION MODE

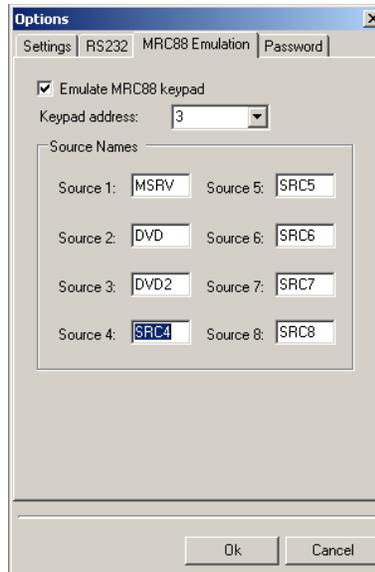
The full line of SmartPad™ LCD Controllers can be seamlessly integrated into a new or existing MRC88 or MRAUDIO8X8 System over the existing CAT5 cable. This allows the SPLCD to initiate any macro programmed in the MRC88 Controller without the use of IR commands. All Macro Programming resides in the MRC88 allowing for ease of initial programming and any upgrades that should be required. For simplicity, MRC88 and MRAUDIO8X8 will be referred to as MRC88.

#### Connecting the SPLCD to the MRC88 Controller

1. Connect one end of the **CAT5** to the appropriate **Zone Keypad Terminal** on the **MRC88 Rear Panel** and the other end to the **Controller Terminal** on the **SPLCD Rear Panel**.
2. Connect a **16V DC Power** (Xantech Part # SPLCDPS1) directly to the **IR Bus +16V DC** and **GND Terminals** on the **SPLCD Rear Panel**.  
**NOTE: The SPLCD cannot be powered directly from the MRC88 Controller.**
3. If using *multiple* keypads in a single zone, the *last* keypad in line must have the **Zone Termination Jumper** installed.  
**NOTE:** SPLCD comes with the Zone Termination Jumper installed by default.

#### Configuring Dragon Drop SPLCD for MRC88 Emulation Mode

1. Program the **MRC88** as you would for a standard **MRC88 Keypad** using both **Tier 1** and **Tier 2** on the buttons for added functionality if desired.
2. Create the graphic layout for an **SPLCD Project** in **Universal Dragon** as appropriate for the system being controlled. Place **Source** and **Function GTL's** as required.
3. After all of the **GTL's** are laid out, as is done in a standard SPLCD project, click the **Project Options Icon** in the **Tool Bar**. The **Options Window** will appear. (**Figure 53**)
4. Click the **MRC88 Emulation Tab**. Select (check mark) the box: **Emulate MRC88 Keypad**.
5. If you are using **multiple keypads** in a **single zone**, set *each keypad* to a unique **Keypad Address**. Up to four keypads can be used in a single zone.  
**NOTE:** If using standard MRC88 Keypads in conjunction with the SPLCD in a zone, you must also set the **MRC88KP Address Jumper** to a unique address.
6. Under **MRC88 Source Names** enter the names as they appear in the **Universal Dragon MRC88 Project**.  
**NOTE:** This is necessary for proper Source Name display when using the MRC88 **Status** function.



**Figure 53 – Options Window/MRC88 Emulation**

#### **Programming SPLCD for MRC88 Functionality**

Once the SPLCD has been configured for MRC88 Keypad Emulation, you can point any GTL on the SPLCD to a specific macro within the MRC88 Controller.

1. In the **SPLCD System Window**, click the **Macros Tab** to lock in the current **GTL Button** layout.
2. In the **SPLCD System Window**, select a **Source Button**.
3. In the **Palette Editor Window**, click the **Internal Commands Tab**.
4. In the **Internal Command Window**, select **MRC88 Button Emulation** from the **pull-down**.  
**NOTE:** The **MRC88 Internal Commands** are pointers to **button locations** within the **MRC88 Controller**. The **SPLCD** can now initiate whatever **Macros** are programmed within the **MRC88** under these buttons.
5. Scroll through the list and associate the **SPLCD Button** to the appropriate **MRC88 Internal Command** to initiate the Macro programmed under that specific button within the MRC88 Controller. (i.e. In the **SPLCD System Window**, click the **Source 1 Button (DVD)** and then select **Src 1** from the **MRC88 Button Emulation List** as shown in the example below.

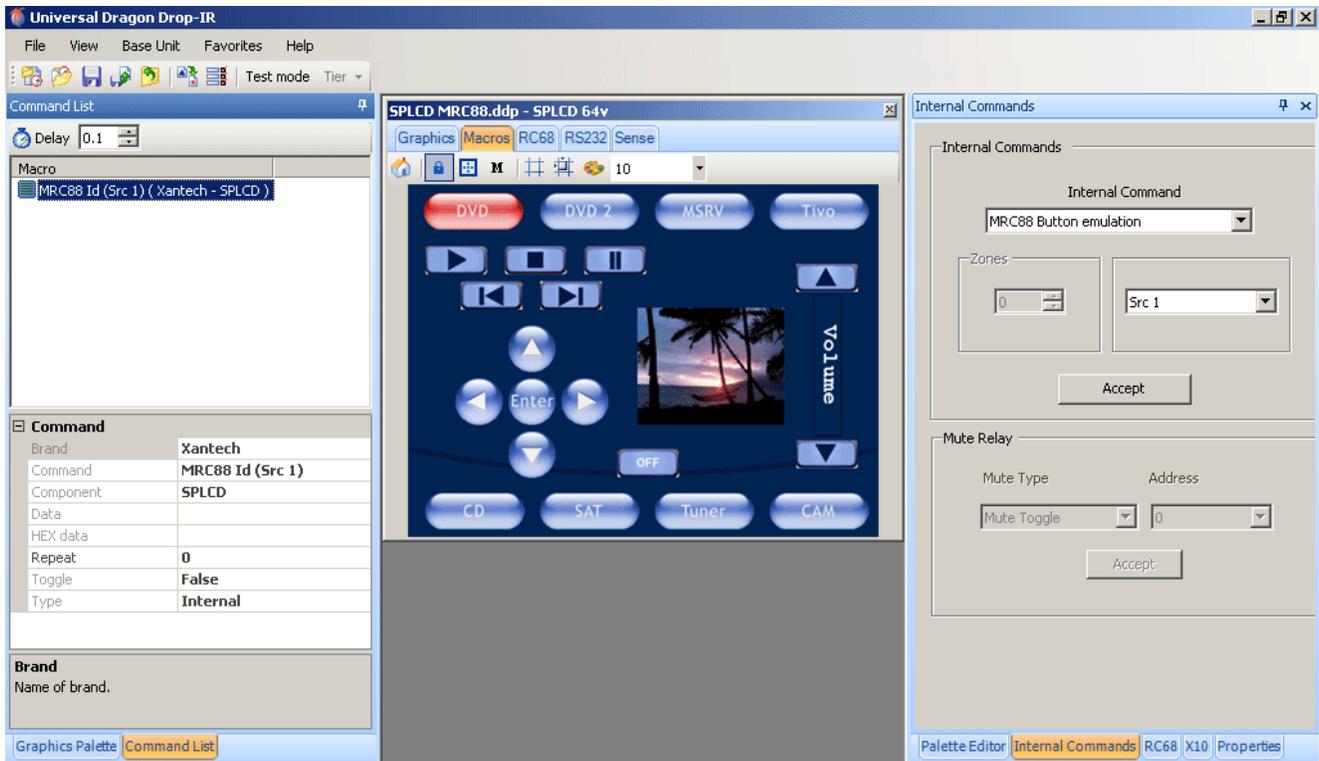


Figure 54 – Assigning MRC88 Internal Commands to GTL's

6. Repeat **Step 5** for all **Source Button GTL's**.
7. Repeat the same procedure for all **Function Button GTL's** that will emulate the **Function Buttons** on a **MRC88 Keypad** (i.e. **Play, Stop, Pause, etc.**).
8. You can also associate a **SPLCD Button GTL** to a **MRC88 Tier 2 Macro**.
  - a) In your **MRC88 Project**, assign the **5 MRC88KP Motion Control Buttons** (Play, Stop, Pause, Rew, FF) as **Tier 1**.
  - b) Program **Tier 2** as the **Menu Navigation Buttons** (Up, Down, Left, Right, Select).
  - c) In the **SPLCD Project**, select the **Button GTL for Play** and associate it with the **MRC88 Internal Command: Play**.
  - d) Click the **Button GTL for Select** and assign it the **MRC88 Internal Command: Play Tier 2**.
9. Repeat **Step 8** for all **Button GTL's** on the **SPLCD** (i.e. MRC88 Volume UP/DOWN, OFF, Mute, etc.) to emulate all of the **Buttons** on a **MRC88KP**.
10. If more button control is needed from the **SPLCD** additional **Function Button GTL's** can be *placed* and *programmed* with **IR Commands** to pass **IR** through the **CAT5** to the **MRC88 Controller** as you would in a standard project for additional control functionality of external devices.
 

**NOTE:** To trigger **Macro Sequences**, setup **RC68 IR Triggered Macros** in the **MRC88 Project**. By doing so, the **SPLCD** only needs to send a *single IR Command* to trigger the **Macro Sequence** within the **MRC88**. This keeps all of the **Macro Programming** within the **MRC88**.

### Placing MRC88 Objects on the SPLCD

**MRC88 Graphic Objects** can also be placed on a **SPLCD Page** to provide the same **MRC88 System Information** displayed on a **MRC88KP**. Objects that can be placed are:

- **STATUS DISPLAY:** Displays **Zone Status, Source Icons, and Zone Linking Information**.
- **INFORMATION DISPLAY:** Displays **Xantech XDT Tuner Metadata, Mute, Zone OFF, Priority Lockout Status, etc.**
- **HORIZONTAL BARS:** Horizontal Bars display **Zone Volume, EQ or Balance Level**.
- **VERTICAL BARS:** Vertical Bars display **Zone Volume, EQ or Balance Level**.

To place one or more of these objects on a **SPLCD Page**:

1. Right click on a *blank* area of the background (no **GTL** or **PiP**).
2. Select **Insert MRC88 Object** from the **pop-up**.
3. Select the **MRC88 Object: Horizontal or Vertical Volume, EQ or Balance Bar, Informational or Status Display**.

**NOTE 1:** Once placed on a **SPLCD Page**, these objects can be *moved* to any desired **location** by clicking and dragging the **object**. The **object colors** can be *modified* to match the **Style** of the **Background** and **Buttons** by clicking the **Properties Tab**, clicking **Border Color** or **Color** and changing the color selection in the **pull-down**.

**NOTE 2:** The **Horizontal** and **Vertical Bars** can be *resized* for **length** and **width** by clicking the **Properties Tab** and changing the values under **Size**. The **Status** and **Informational Displays** *cannot* be resized.

## MRC88 OBJECT PROGRAMMING: ADDING VOLUME BAR, STATUS BAR ETC...

### TRANSPARENT GTL'S AND MRC88 EMULATION

Combining these two features allows for unique programming possibilities.

Below is an example for creating Interactive Volume Bars so the user can press different areas of the Volume Bar and have the Zone Volume Level *jump* immediately to that level. In this particular example we will separate the Volume Bar into three sections, Low Level, Mid Level and High Volume Level.

This will require programming to *both* the **MRC** and **SPLCD Projects** in **Universal Dragon**.

### MRC88 PRESET VOLUME LEVEL PROGRAMMING

The following Steps will be performed in the MRC88 Project for the system being configured. (Refer to the **MRC88/MRAUDIO8X8 Installation Instructions; Section 5: RC68+ IR Code Triggered Sequencer** for further explanation of the following):

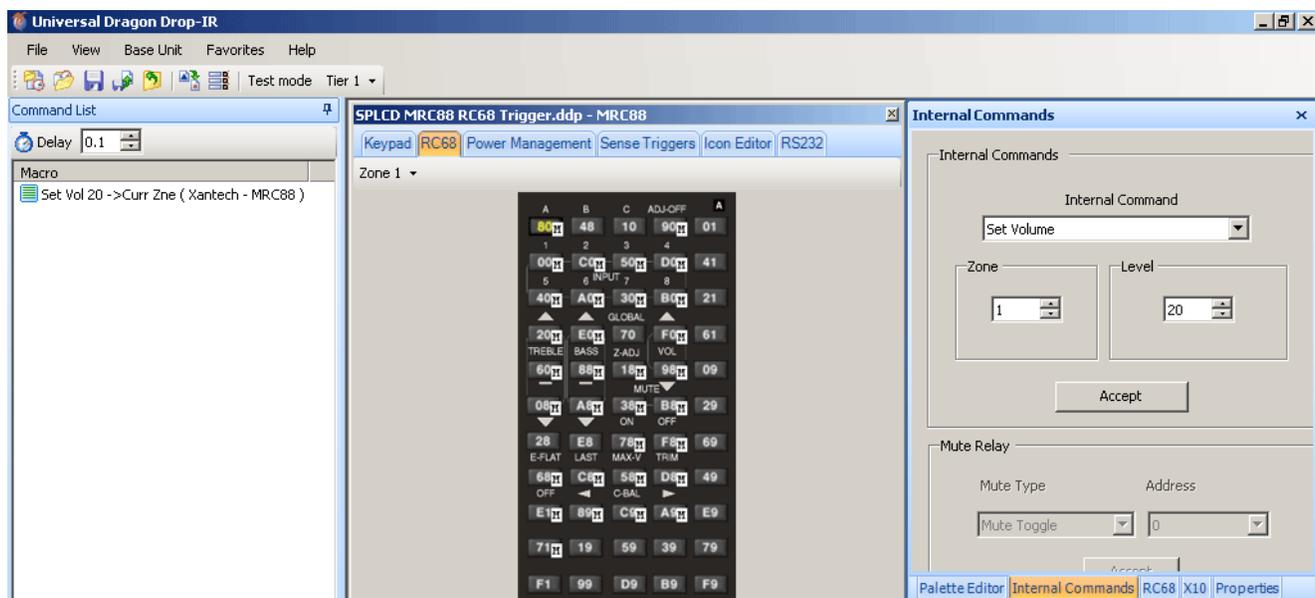


Figure 55 – MRC88 RC68 Volume Preset Macro Trigger Programming

1. Within the appropriate **MRC88 Project**, in the **System Window**, select the **Zone** the **SPLCD** will be connected to from the **pull-down**. (Zone 1)
2. In the **System Window** click the **RC68 Tab**.
3. In the **Palette Editor Window**, click the **Internal Commands Tab**.
4. In the **Internal Commands Block**, select **Set Volume** from the **pull-down**.
5. Select the **Zone Number**. ( Zone 1)
6. Select the **[80] Button** on the **Virtual RC68** (or any other free RC68 Trigger Button).
7. Select a discrete Volume **Level** for the *Low* setting (i.e. **20**) and click **Accept**.
8. Repeat for two other **RC68 Trigger Buttons** for a *Mid* Volume level and a *Hi* Volume Level (i.e. place the discrete **Set Volume Level 40 Command** under the **[48] Button** and the discrete **Set Volume Level 50 Command** under the **[10] Button** on the **Virtual RC68**.

### SPLCD / MRC88 PRESET VOLUME LEVEL PROGRAMMING

The following Steps will be performed in the SPLCD Project for the system being configured.

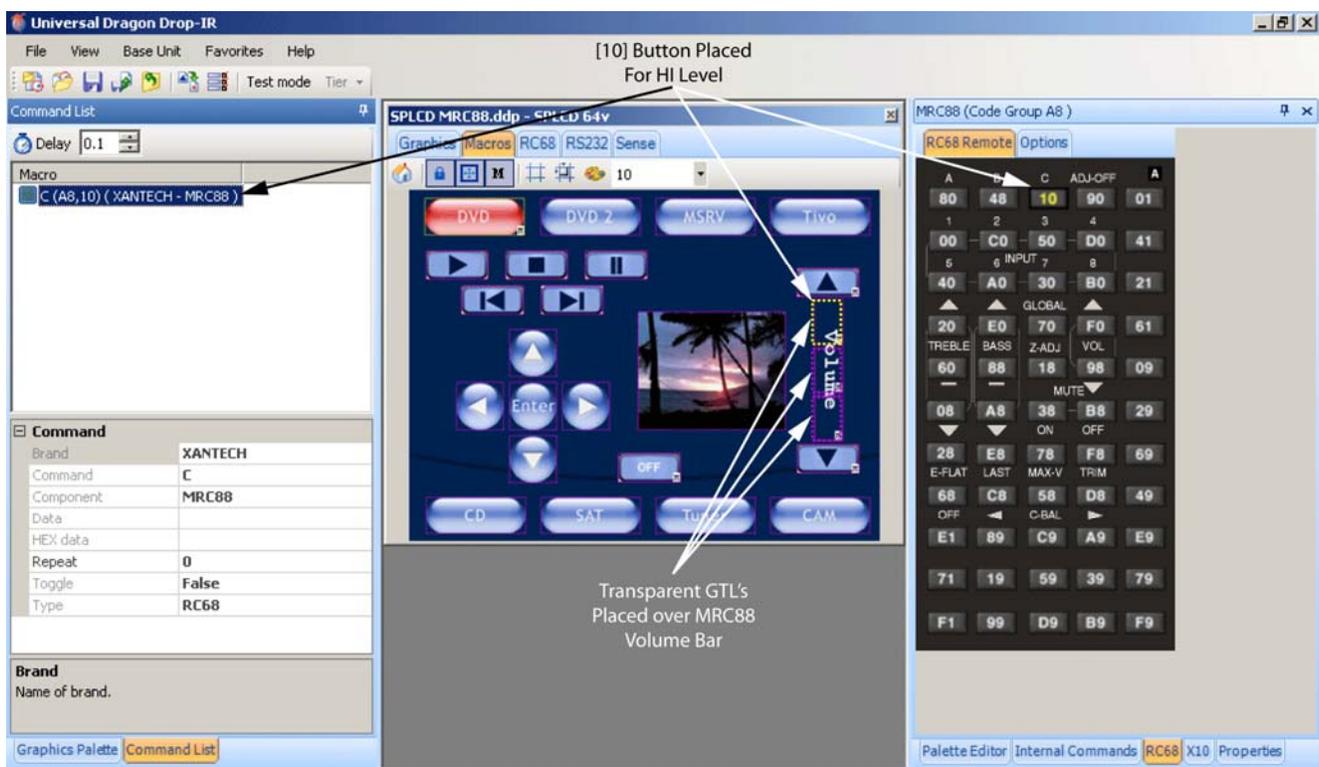


Figure 56 – Configuring MRC88 Volume Preset Triggers

#### Placing the Volume Bar

1. Right click on a *blank* area of the **Background** (no **GTL** or **PiP**) and select **Insert MRC88 Object**, then select a **Horizontal** or **Vertical Volume Bar** from the **pop-up** options.
2. Place and resize to the desired position.

#### Creating Transparent GTL's over a Volume Bar

1. Right click on a blank area of the background (no **GTL** or **PiP**) and select **Insert Objects** then **Transparent Button** from the **pop-up**.
2. Resize the **Transparent GTL** to cover 1/3 of the **Volume Bar** and place over the *lower* 1/3 of the **Volume Bar**.

**NOTE:** Use the **Size** values in the **Properties/Button Attributes** for reference and quick adjustments.

3. Place two more **Transparent GTL's** over the *middle* and *upper* 1/3 sections of the **Volume Bar**.

#### **Assigning the Proper RC68 IR Codes to the Transparent GTL's**

1. In the **Palette Editor Window** click the **RC68 Tab**.
2. Click the **Options Tab** on the **Virtual RC68 Palette** and choose **MRC88** from the **Xantech Model** dropdown.
3. Click the **RC68 Remote Tab** on the **Virtual RC68**.
4. In the **SPLCD System Window**, select the **Transparent GTL** placed on the *lower* 1/3 of the **Volume Bar**.
5. Click the **[80] Button** on the **Virtual RC68**. In the **Macro Command List Window** you should see the command: '**C (A8,10) (Xantech – MRC88)**'.
6. Repeat **Steps 4-5** with the RC68 **[48] Command** associated with the *middle* **Transparent GTL** and the **[10] Command** associated with the *upper* **Transparent GTL** as shown above.

## PROGRAMMING SPLCD FOR USE WITH MRC44 (ZONE CONTROL)

1. Open a new **SPLCD Project**.
2. Choose the **Base Unit** (3.9G, 6.4G/V).
3. Select the **Style**.
4. In the **System Window** place **4 Source GTL's** onto the **virtual SPLCD**.
5. In the **Palette Editor**, click the **RC68 Tab** to open the **RC68 Palette**.
6. In the **RC68 Command Window** click the **Options Tab**.
7. In the **Xantech Model** block, select **MRC44** and verify the **Code Group** setting is the same as that of the **MRC44** (Default Code Group = **48**). Click the **Palette TAB** to return to the **RC68 Palette**.
8. In the **SPLCD System Window**, click the **Source Button GTL** that will select the component connected to **Input 1** on the **MRC44** (i.e. **Cable** as shown in **Figure 57**).
9. On the **RC68 Palette**, select **Input 1** on the **RC68** (Button 00) and verify the proper command description is shown in the **Macro Command List: [(Input 1 (48, 00) (Xantech MRC44)]**
10. Repeat **Steps 8-9** for all **Source Input GTL's**.
11. Place a **Source GTL** for **OFF** (if desired). Some **Source GTL Style Groups** have **OFF** Buttons already made. Some will require adding a **Caption** in the **Button Properties Attributes Window** after the Blank Source GTL has been placed.
  - a. With the **OFF GTL** selected, on the **RC68 Palette** select **OFF** (button 68) and verify the proper command is shown in the **Macro Command List Window**.
12. On the **Home Page** place **Function GTL's** for **Volume and Mute Buttons**, and associate the appropriate **RC68** commands for each **GTL** on each **Source Page**.
13. On each **Source Page** place **Function GTL's** for all desired functions for the **device** connected to the associated **Input** (i.e. Input 1 = Cable, Input 2 = CD, etc.). Using the **Palette Editor Command Groups**, associate the appropriate **IR Commands** with the **Source Function GTL's** on each **Source Page**.

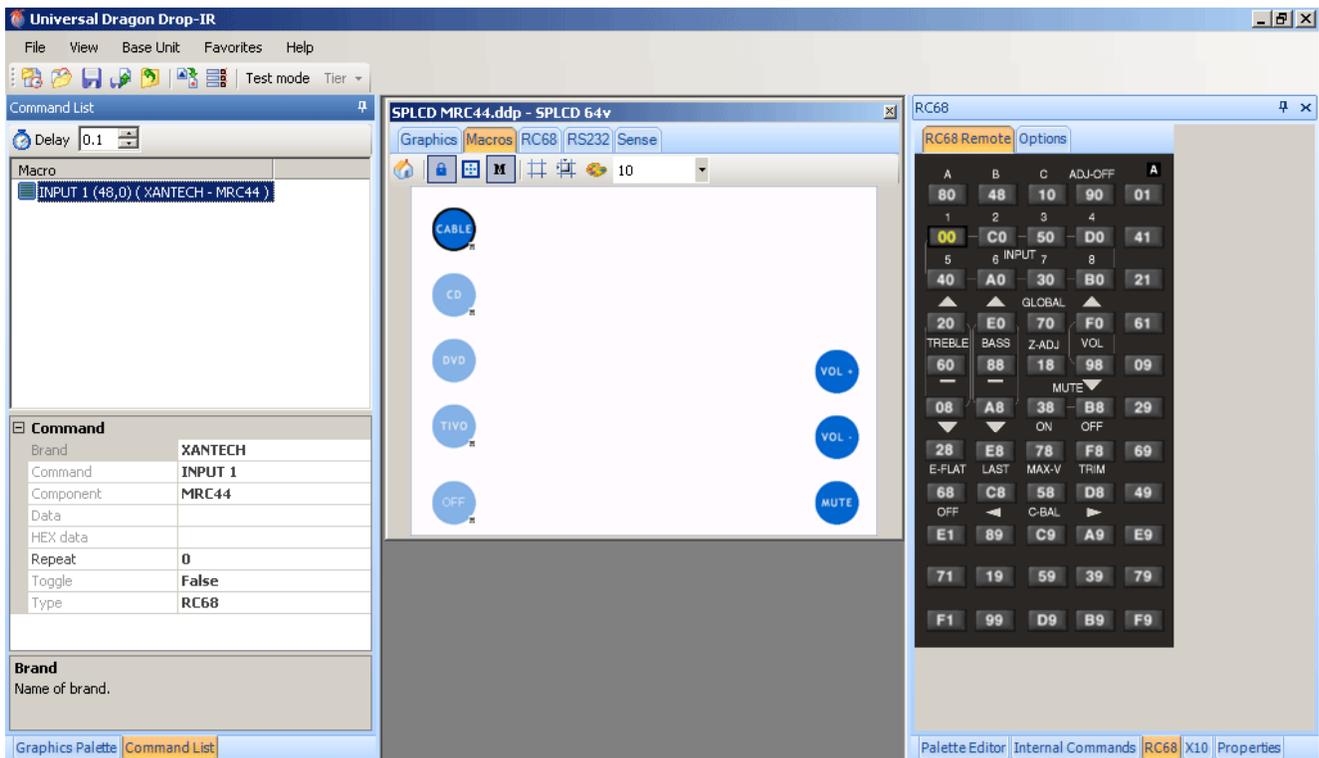


Figure 57 – SPLCD MRC44 IR Control Programming

**NOTE:** To create **Toggle Power** or **Mute Commands**, program the **MRC44** using the **Toggle Power** or **Mute Internal Amplifier Commands** as **RC68 Triggered Sequences**. (See: **MRC44 Installation Instructions; RC68+ IR Code Triggered Sequencer**) See **Figure 58** below. Place the **RC68 IR Trigger Commands** that are

associated with the Internal Amplifier Commands in the MRC, under the appropriate **GTL Buttons** when programming the SPLCD. (**Figure 58**) (i.e. In the **SPLCD** programming, the **ON/OFF Source GTL** will have the **RC68 80 Command** in the **48 Code Group** placed under it as an **IR Command** that will be output to the **MRC**. The **RC68 80 Command** in the **48 Code Group** will be configured in the **MRC** as a **RC68 Trigger**, so when the **80 Command** is received by the **MRC**, it will execute the **Zone Toggle Power Command**. (**Figure 59**)

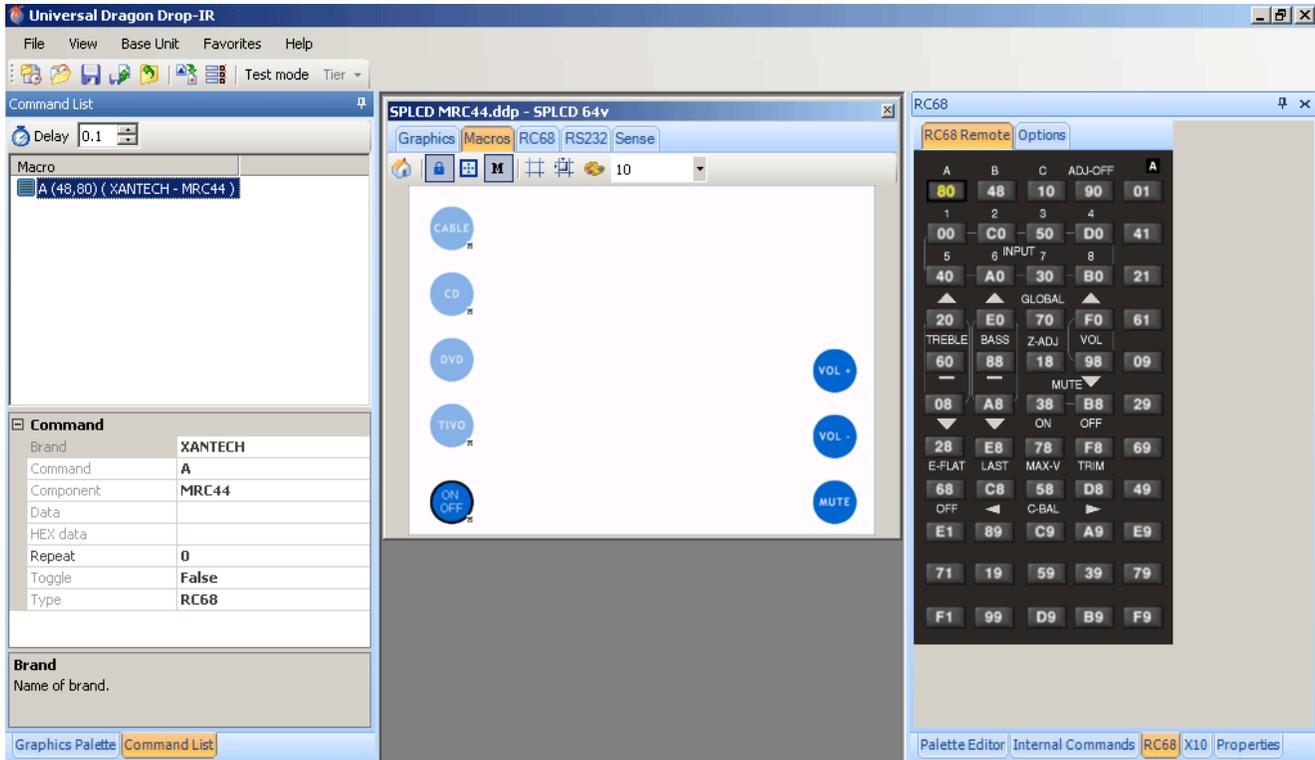


Figure 58 - SPLCD-MRC44 Zone Toggle Power Programming

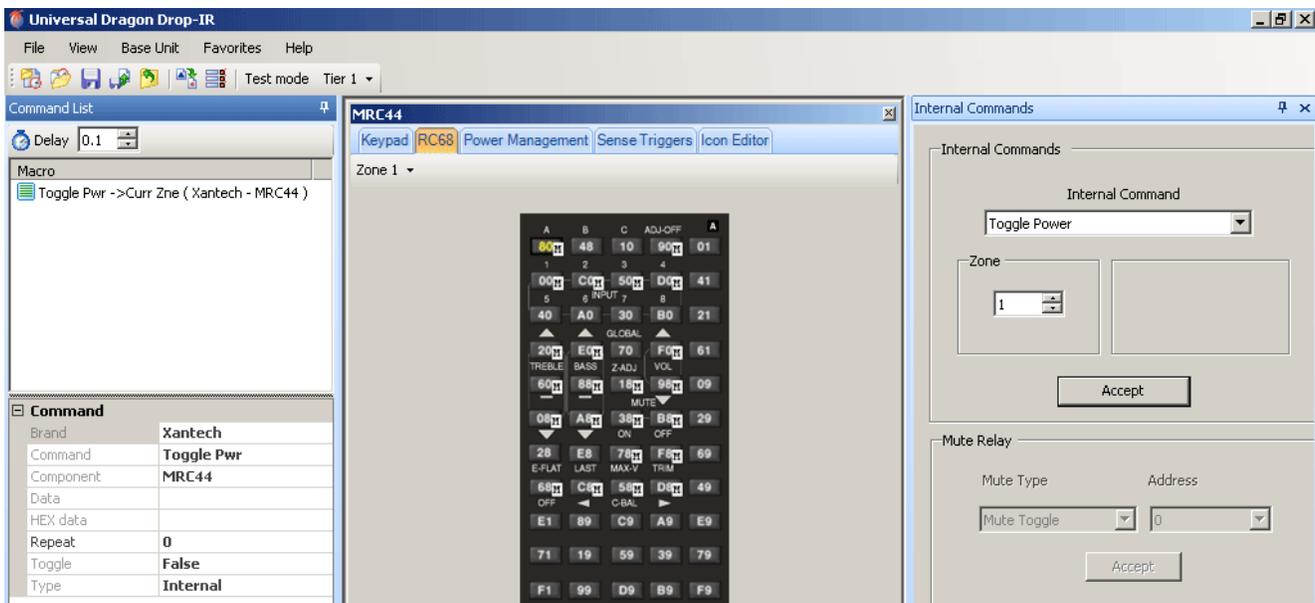


Figure 59 – MRC44 Toggle Power Programming

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## SPLCD 64V VIDEO CONNECTIONS & PROGRAMMING

The SmartPad LCD 64V includes the same features as the 64G (Graphics version) with the added features of **PiP** and a **Full Screen Video** display. When used with the 64V, **Transparent Button Overlays** present a clear and seamless integration of video menu navigation and device control.

**FIRMWARE NOTE:** In order to utilize all **SPLCD64V Features**, the unit must be configured with **Firmware Version 1.29** or above. (The SPLCD64V *can* be programmed with Xantech **Dragon Drop-IR (SPLCD) Version 1.2.0** or higher, but downloading **Universal Dragon** from [www.xantech.com](http://www.xantech.com) is highly recommended for programming this device.)

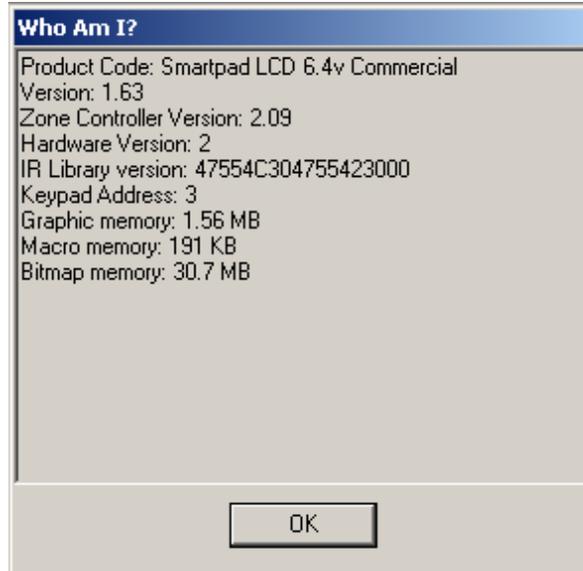


Figure 60 – Who Am I Window

### Checking Firmware Version

To check the SPLCD64V for proper firmware version, connect the **PC** running **Universal Dragon** to either the **Com Port** or **USB Port** on the **SPLCD Front Panel** using the appropriate included cable. In the **Menu Bar**, click the **Base Unit Menu** and select **Who Am I** from the drop-down.

**NOTE:** IT IS HIGHLY RECOMMENDED THAT THE **SPLCD** BE UPGRADED TO THE **LATEST FIRMWARE VERSION** BEFORE DOING ANY PROGRAMMING TO TAKE ADVANTAGE OF THE MOST CURRENT FIXES AND FEATURES. SEE SECTIONS: **WHO AM I** AND **SPLCD FIRMWARE UPGRADES** IN THIS MANUAL FOR ADDITIONAL INFORMATION.

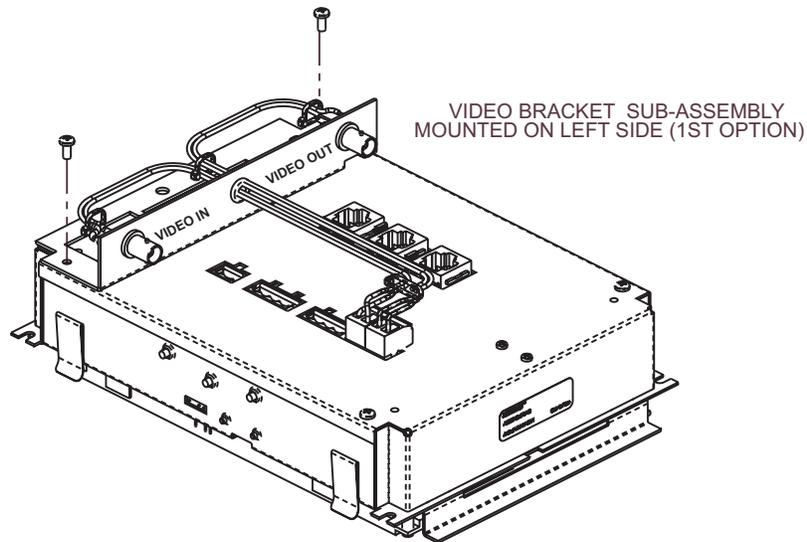


Figure 61 – Video Bracket Sub-Assembly

#### Video Bracket Sub-Assembly

1. Attach the **Video Bracket Sub-Assembly** to the **SPLCD64V Rear Panel** as shown in **Figure 61**.
2. Connect the **Video IN Harness** to the **Video IN** and **GND Video Terminals**.
3. Connect the **Video OUT Harness** to the **Video OUT** and **GND Video Terminals**.

#### Video Connections

**VIDEO IN:** Connect the zone *composite* video signal to the **Video IN BNC Connector** on the **Video Bracket Sub-Assembly**, attached to the **SPLCD64V Rear Panel**.

**VIDEO OUT:** A buffered composite video signal can also be run *out* of the panel to a main **Video Monitor** in the zone if desired. To do this, connect a **RG-6 quad-shield coaxial** or other **shielded video cable**, terminated with a **BNC Connector**, to the **Video Out BNC Connector** on the **Video Bracket Sub-Assembly**, attached to the **SPLCD64V Rear Panel**.

#### Picture-In-Picture Mode (PiP)

A PiP window can be placed on any **Page** *except* the **Home Page**. To enable a PiP:

1. In the **SPLCD System Window**, *navigate* to the **Page** on which the **PiP** is to be placed.
2. In the **virtual SPLCD**, right click on a **blank space** (no GTL) and select **Enable PiP** from the **pop-up**.
3. Click & Drag the **PiP** to the desired location on the **GTL Page**.
4. To *resize* the **PiP**, click on the **PiP**. In **Button Attributes** click the '+' next to **Size**. Double click **Width** and **Height** to change the values to resize the **PiP**.

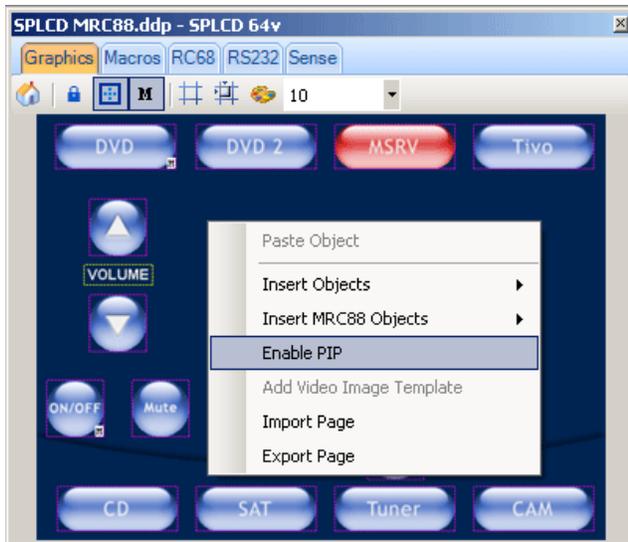


Figure 62 – Enable PiP

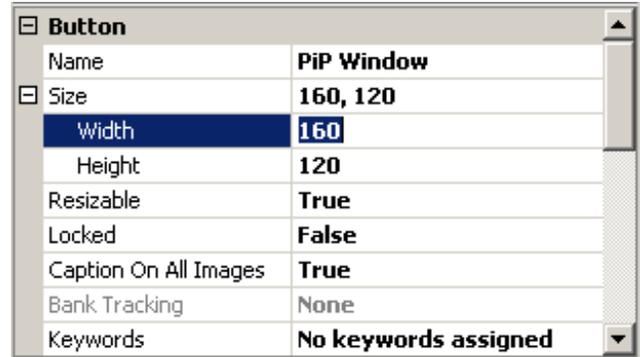


Figure 63 – Resize PiP Window

**Enabling Full-Screen Video Mode**

Once the project is downloaded to the **SPLCD64V**, pressing the **PiP** will enable **Full Screen Video Mode**.

**Return to PiP Mode**

Press the middle of the **video screen** to return to **Pip Mode**. The Return to PiP Window can be moved and resized as needed. The default location is in the middle of the screen in Full Screen Mode.

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**TRANSPARENT BUTTON OVERLAY: FEATURES & PROGRAMMING**

**TRANSPARENT BUTTON GTL OVERLAY FEATURE**

This feature allows for *invisible* **Transparent Button GTL's** to be placed on the video screen during *Full-Screen Video* mode or any screen desired. This is extremely useful for Music Server Control with feedback display on units that output a Video Menu (theme) with buttons imbedded in the video. This is also useful for *hiding* Volume UP & DOWN or Channel UP & DOWN Buttons while maintaining functionality even when in Full-Screen Video mode.

**Placing Transparent Button GTL's in Full Screen Video Mode**

1. Right click on the **Pip Screen** and select **Navigate** from the **pop-up**.  
**NOTE:** A **Full Page Screen** will appear with a **Transparent Button Object** displayed in the middle. This object is the **Return To PiP Button** and cannot be removed. This button can however, be resized and moved to any desired location.
2. To place a **Transparent Button GTL**, right click anywhere on the blank area of the screen (anywhere other than the Return To PiP Object), in the **pop-up**, select **Insert Object**, then select **Insert Transparent Button**. A **Transparent Button GTL** will appear outlined on the screen.
3. Click-and-drag the **button** to the desired location (The **SPLCD System Window** must be in **Graphics Mode**).
4. The button can be re-sized by rolling over the **button outline** until the double arrow appears and *dragging* the side of the button to the desired size; or in the **Properties Window**, change the **Size** in the **Button Attributes**.

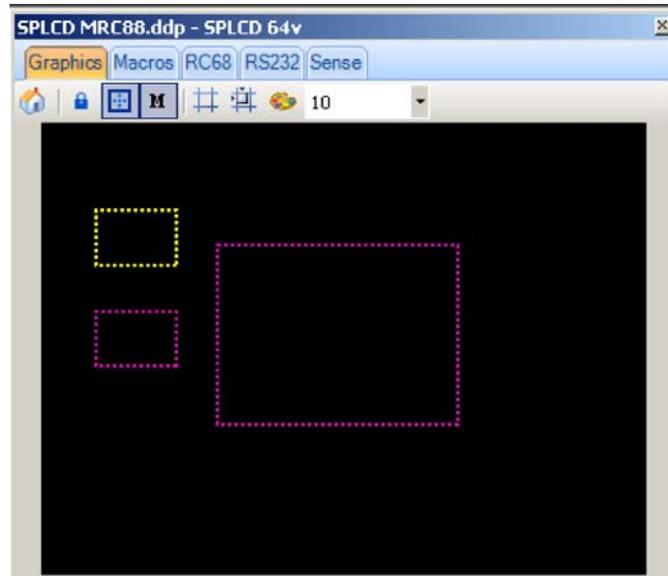


Figure 64 – Placing Transparent GTL's

5. After all required **Transparent Buttons** are placed and sized appropriately on the **Video Screen**, you can now assign **IR** and/or **RS232 Commands** to these buttons in the same manner as a standard **Function GTL** by associating **Commands** from the **Palette Editor Command Groups**.  
**NOTE:** In the example, **Transparent Buttons** for **Volume UP/DOWN** have been placed in the *same position* as the **Volume Buttons** in **PiP Mode (Figure 64)**, making the display more intuitive to the user. To position the **Transparent Buttons** to the *same locations* as the regular **Volume Buttons**, in **PiP Mode**, click the **Volume UP Button** and note the **Button X/Y Coordinates** in the **Information Bar** at the bottom of **Universal Dragon**. *Navigate* to **Full Screen Mode**, click the **Transparent GTL** for **Volume UP** and use the **arrow keys** on the keyboard to *position* the **Button** to the matching **X/Y values**. Repeat for **Volume DOWN** and any other **Transparent GTL's** as appropriate. Some users may prefer to have the transparent Volume UP/DOWN and Channel UP/DOWN buttons in the four corners of the screen in Full Video Mode.

#### Transparent Button GTL and Music Server Integration

To interface to a Music Server Video Menu Screen (or any other product's Video Menu Screen), follow the steps below. If the interfacing product has a BMP or PNG file for reference, you can display this image in the software and place transparent buttons over it for seamless control of the device.

1. Right click on the **PiP Screen** and select **Navigate** from the **pop-up**.  
**NOTE:** A **Full Screen Video Page** will appear with a transparent button object displayed in the middle. This object is the **Return To PiP Button** and cannot be removed. This button can be resized and moved to any desired location.
2. Right click on a blank area of the screen (No **GTL** or **Return To PiP Button**) and select **Add Video Image Template** from the **pop-up**. The **Open Window** will appear.

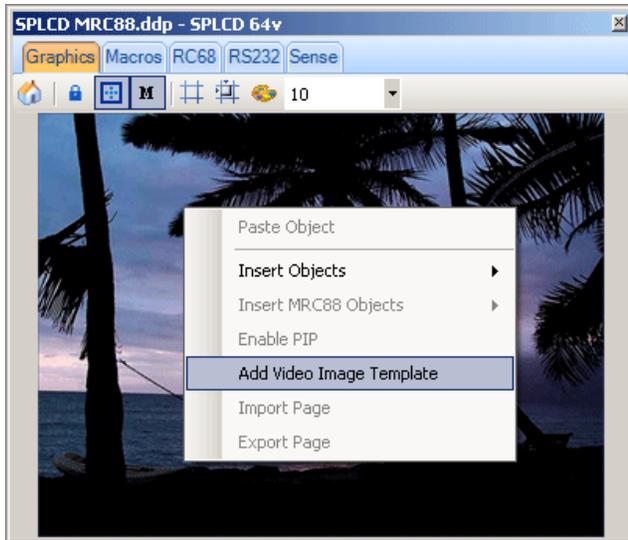


Figure 65 – Add Video Image Template



Figure 66 – XMUSIC Server BMP Image

3. Navigate to where the **BMP** or **PNG Image** is saved on the **PC** and select the **BMP/PNG Image** that represents the **video menu** to be displayed.
4. Follow **Steps 2-5** in the previous section to add **Transparent GTL's** over the **graphic buttons** on the **Image in Full Screen Mode** and associate the appropriate **IR/RS232 Commands** to the **GTL's** for control of the device shown on screen.

### CUSTOM BACKGROUNDS AND TRANSPARENT GTL'S

The transparent GTL feature is available for use on ALL versions of SmartPad LCD™ Controllers (SPLCD39G, 64G, 64V and TS57G). Transparent GTL's can be placed anywhere over an object such as a picture of an A/V Rack, Volume Bars or for the full effect, images of rooms with windows, lights, A/V equipment, thermostats, etc. Anything that can be controlled via the SPLCD (IR/RS232) and that can have a BMP or PNG image associated as a Custom Background can be part of a truly custom control system.

**NOTE:** Scanned images and photographs can easily be converted to BMP or PNG Files using **My Pictures** on your **PC** by selecting an image and performing a 'Save As' and selecting BMP or PNG as the file type. Third Party software applications such as Adobe Photoshop® can also be used.)

The example below illustrates how **Transparent GTL Buttons** can be placed over areas of the **Custom Background** image of an A/V Entertainment Center for realistic visual functionality. First, the Custom Background will need to be imported.

#### Importing Pictures as Custom Backgrounds

**NOTE:** This is best performed on the SPLCD64G and SPLCD64V units due to increased screen resolution (640x480). The TS57G and SPLCD39G have screen resolutions of (320x240).

To import user-defined BMP or PNG images for use as **Custom Backgrounds**:

1. The image must be sized to **640x480 (SPLCD64G, 64V)**; or **320x240 (SPLCD39G, TS57G)** pixel resolution.
2. **Save the image** in the desired **Style Background Folder** by navigating to the appropriate location depending upon *which version* of **Universal Dragon** you are running as detailed below:  
**NOTE:** The examples show **Contemporary** as the **Style Folder** for *example only*. **Custom Backgrounds** can be saved to *any Style Folder*.



Figure 67 – Background Location v2.1 & Previous

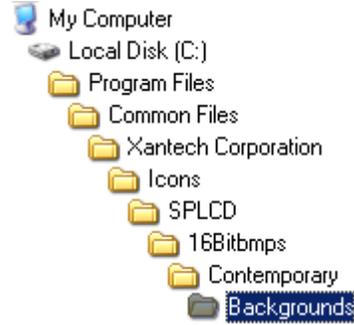


Figure 68 – Background Location v2.3 & Above

3. Re-start **Universal Dragon** and in the **Graphics Palette**, select the **Style** the **Custom Background** was imported to. Click the **Backgrounds Tab** and scroll to the imported **Custom Background**. After the desired background is placed in the **SPLCD System Window**, place **Source Buttons** as you would normally and then follow the instructions below for adding **Transparent Button GTL's**:

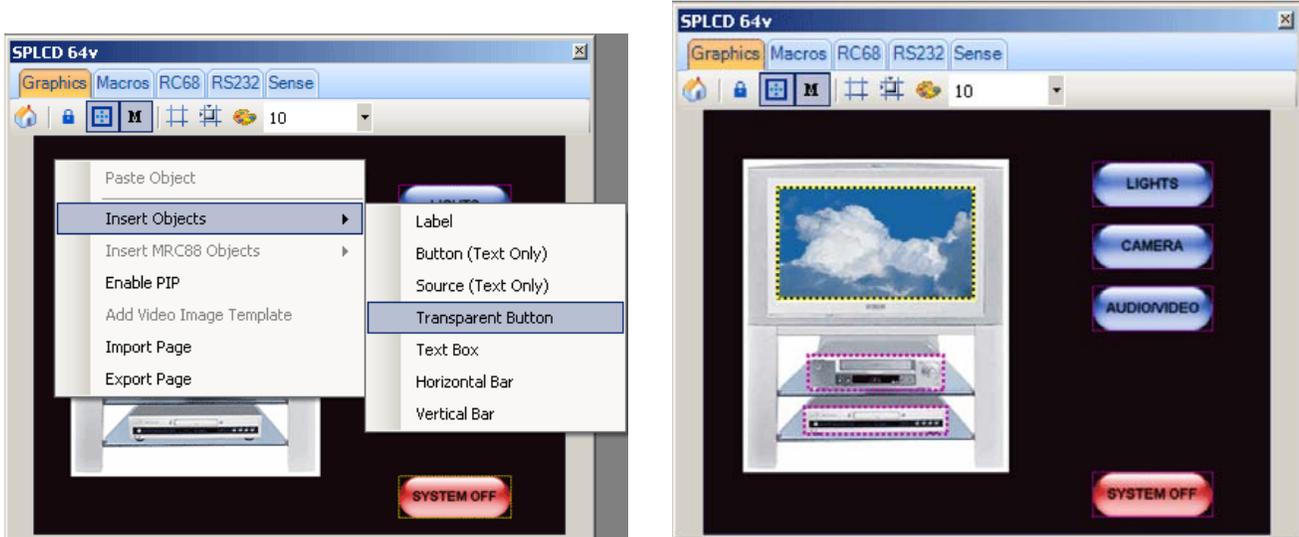


Figure 69 – Transparent GTL's Over a Custom Background

5. To place a **Transparent Button GTL** right click anywhere on the *blank* (not a GTL) area of the screen and select **Insert Object**, then **Transparent Button** from the **pop-up**. A **Transparent Button GTL** will appear outlined on the screen.
6. Click-and-drag the **button** to the desired location (i.e. over the Video Display, A/V Receiver, DVD Player).
7. Re-size the **Button** to the shape of the **device** by rolling over the sides of the **GTL** until the **double arrow** appears, then click and drag the selected side to the appropriate size.
8. Program the **Source** and **Transparent GTL's** in the normal fashion, using the **Palette Editor Command Groups**. Single **IR** and **RS232 Commands** or **Macro Sequences** can be associated with all placed **GTL's**.

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