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# Introduction

Mates Studio's Commander and Architect Environment program the BBM modules with a simple [serial command protocol](#). This protocol can be followed by any chosen host microcontroller to control and interact with the module easily, as long as the host controller features UART interface.

For an added convenience, both Commander and Architect offers a simple controller interface that serves as a simulation tool for any host controller. This is useful when testing the capabilities and functionalities opened to the host controller before the actual deployment or host-side development. This manual discusses how to use the tool.

## Opening the Tool

### Commander

In a Commander project, the tool is accessible by simple clicking the [Control tab](#).



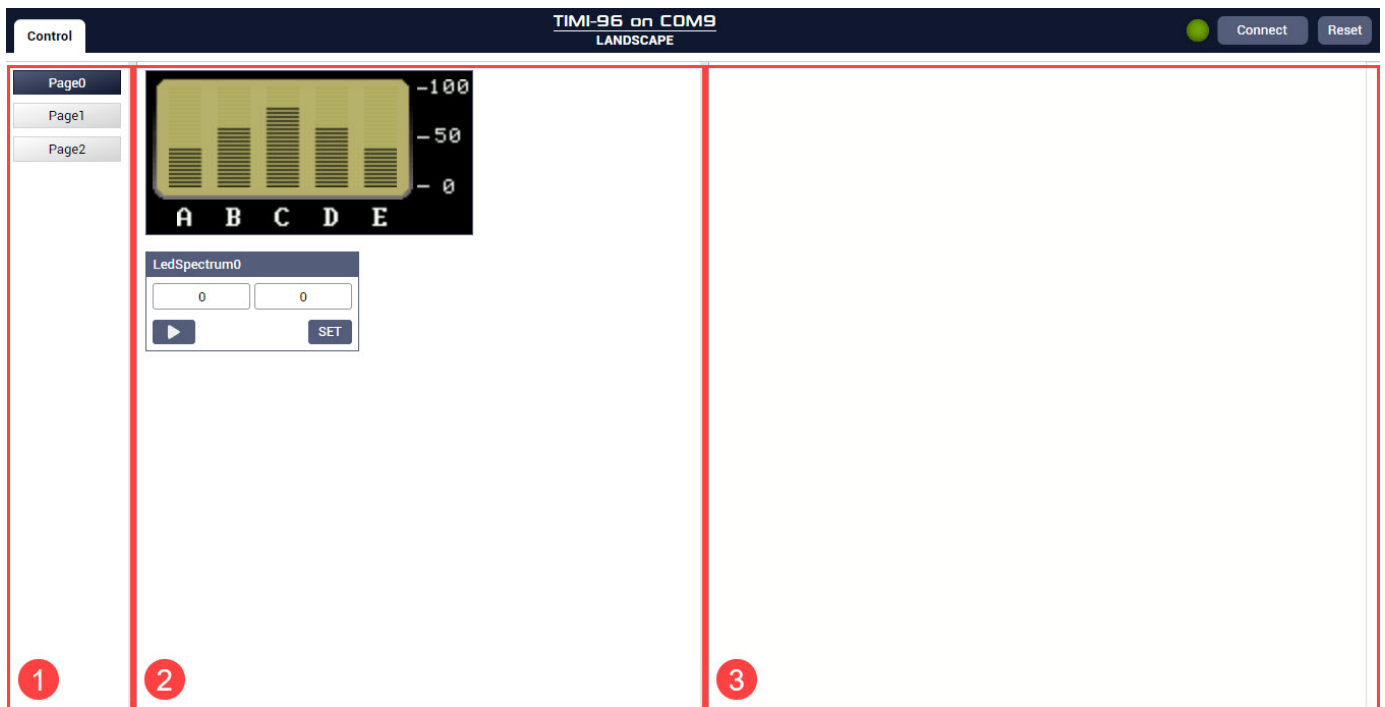
### Architect

In an Architect project, the tool is accessible by simple clicking the **Control** button. This will open a separate window.



# User Interface

The Mates Controller tool can be divided into three separate areas.



## 1. Page Navigation

This provides a simple way to change between the pages present in the project

## 2. Main Control Area

This area displays all widgets that can be interacted with

## 3. Command Viewer Area

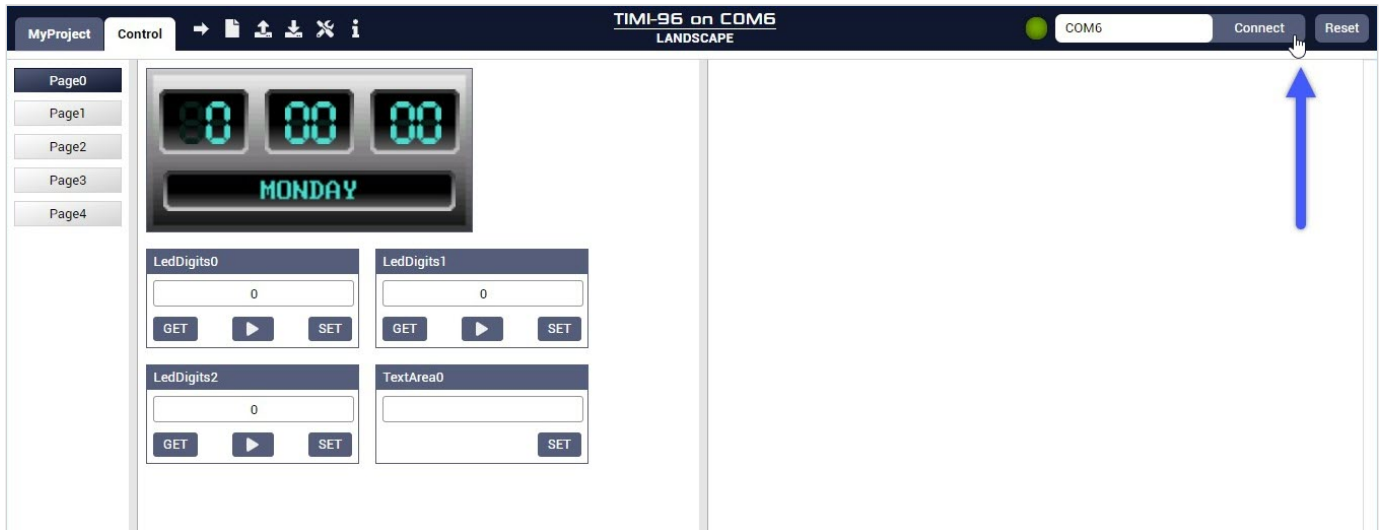
This shows all the commands sent by during the simulation

# Controlling a Module

After uploading a Commander or Architect project, the Controller interface can be used to control the connected display module. This effectively provides a demonstration of what a host controller can do together with a Breadboard Mates display module.

## Establishing Connection

To communicate and control the display, the application needs to first connect to the module. After confirming the selected port, click the **Connect** button to establish connection.



The status indicator will display a bright color after successfully establishing connection.



It is **IMPORTANT** to ensure that the module sends the ready signal before using the controls. This can be checked from the Command Viewer area as shown:

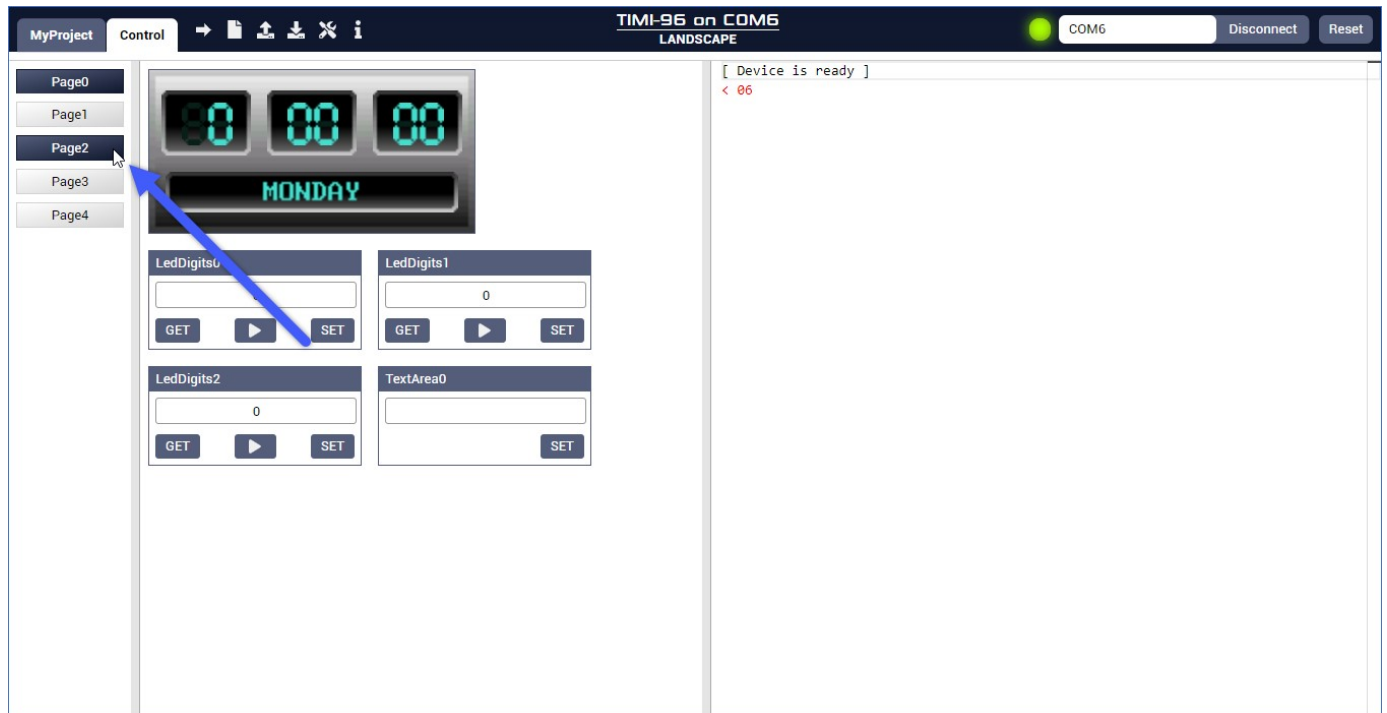


### Tip

Connecting to the display can be used to ensure that the port is not busy and is safe for reprogramming. If an error occurs when trying to connect, the port is being used by another software or another Mates Studio window.

## Navigating the Pages

The display will always show the first page, Page0, initially. Other pages included in the project can easily be activated by using clicking the corresponding item in the **Page Navigation** area.



After activating another page, the **Main Control** area will show the widgets present in the active form and the **Command Viewer** area will show the data exchanged that happened to change the active page.



## Controlling the Widgets

Different control interfaces are provided for different type of widgets. Here are some of the control interfaces for the available widgets.



### 1. GET

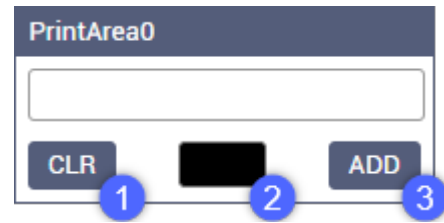
Retrieves the current value of the widget.

### 2. ANIMATE

Starts and ends widget animation.

### 3. SET

Sends the value specified by the input box.



### 1. CLR

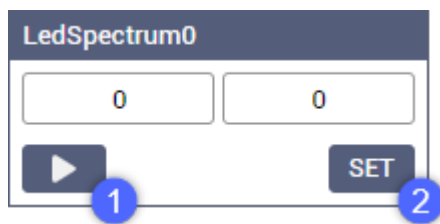
Clears the printed values

### 2. COLOR

Sets the font color to use in next print.

### 3. ADD

Appends the value in the input box.



### 1. ANIMATE

Starts and ends widget animation.

### 2. SET

Sends the value specified by the input box.



### 1. SET

Sends the value specified by the input box

## Resetting the Module

The controller interface includes an option to reset a connected display. Resetting the display involves disconnecting to the display and reconnecting.

