Commander **Architect** **Genius** **Builder**

Mates Studio User Manual

Introduction

Mates Studio is an Integrated Development Environment designed to be used with Breadboard Mates products. This software application is developed for Windows PCs.

The application includes multiple environments that users can utilize to design and develop simple and complex GUI applications for their prototyping needs.

System Requirements

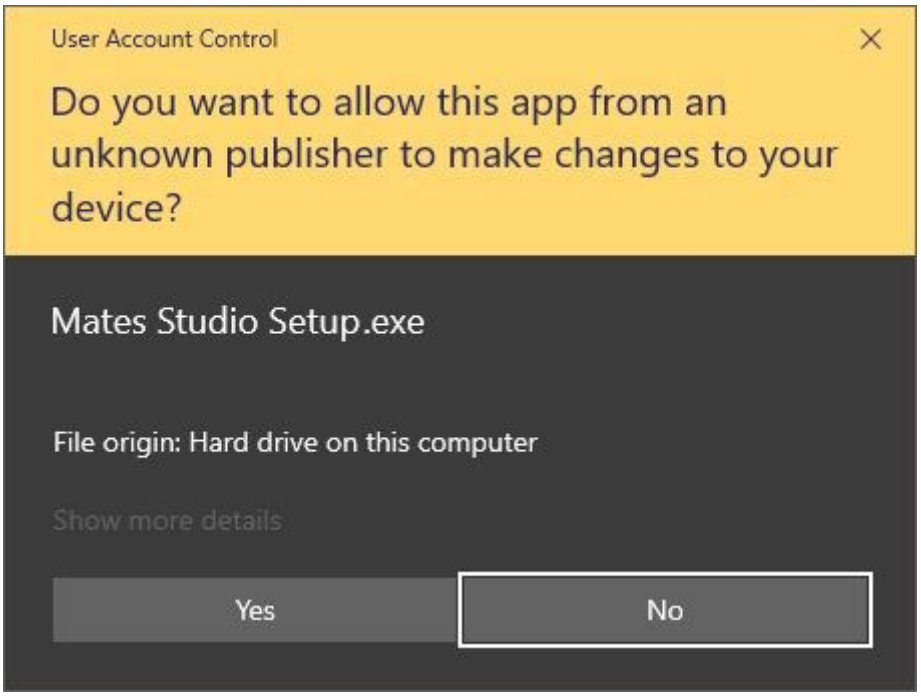
Mates Studio is currently available for 64-bit Windows PCs. Here are the requirements for installing the application:

- Windows 7 and later are supported, older operating systems are not supported (and do not work). Please note that the ARM version of Windows is not supported.
- An Intel Pentium 4 processor or later that's SSE3 capable.
- At least 300 MB of storage space
- Minimum 1GB of RAM (*depends on usage*)

Installation

Mates Studio can be installed for all users (system-wide) or only for the current user.

By choosing to install for all users, the installation will prompt for administrator privileges.



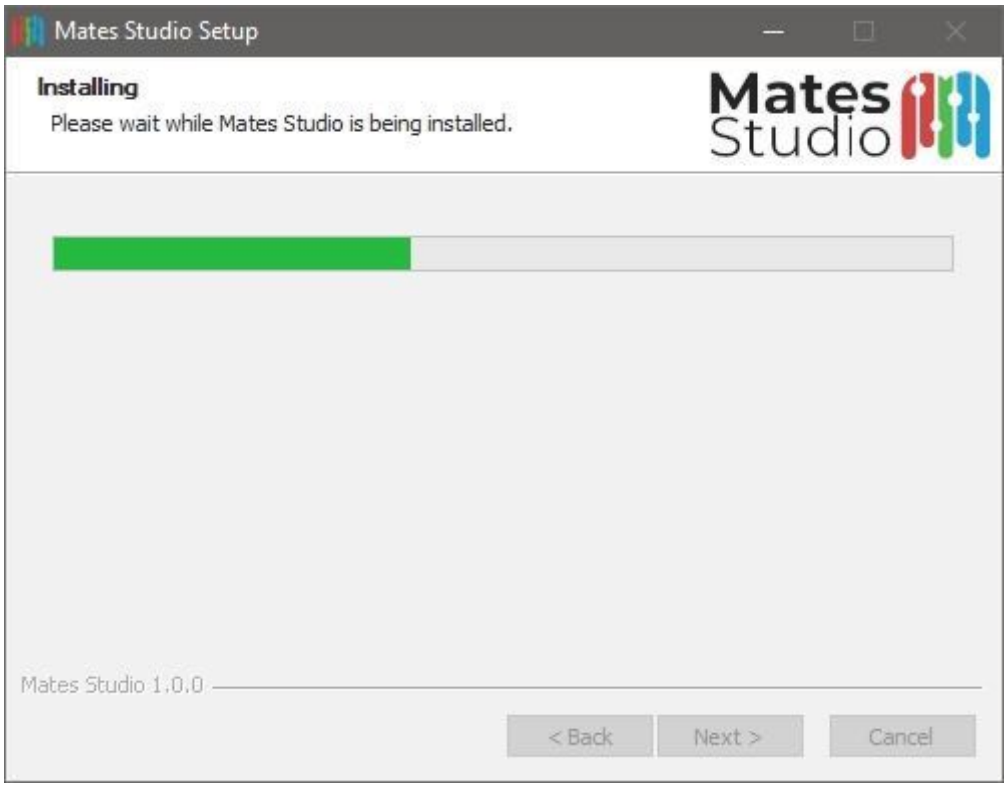
Once approved, the application will be installed in Program Files directory. The full path is typically:

```
C:\Program Files\Mates Studio
```

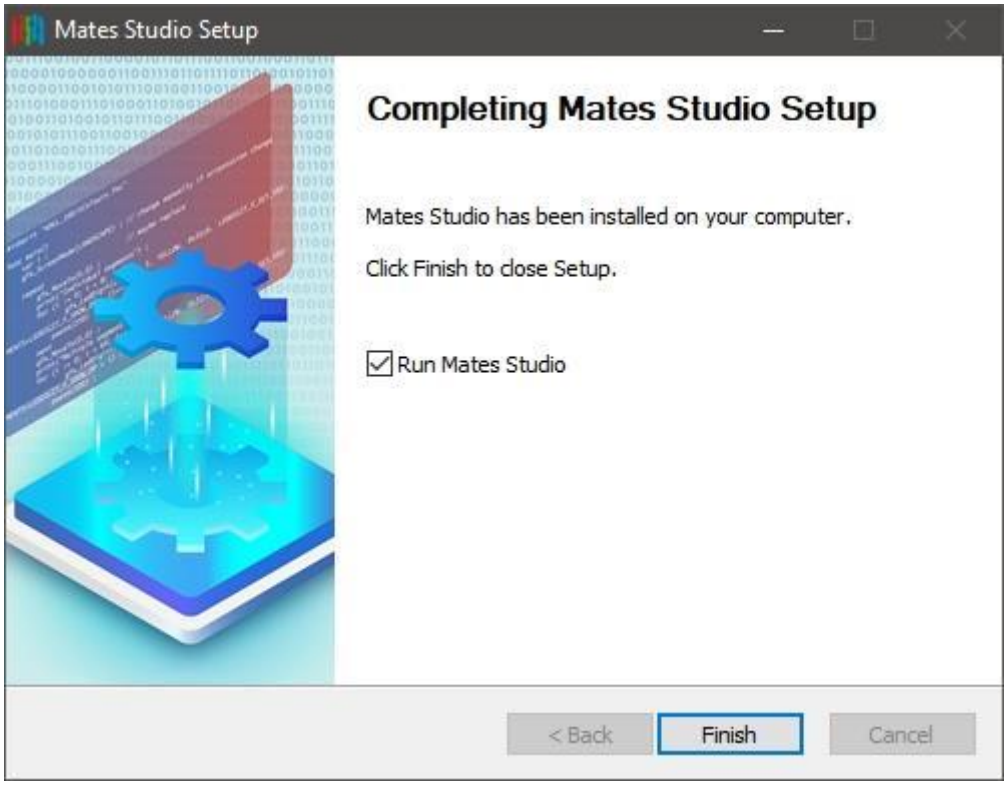
If the application is installed only for the current user, the application will be in the current user's AppData Local Programs directory. In that case, the full path is:

```
C:\Users\%USERNAME%\AppData\Local\Programs\Mates Studio
```

The installer will provide a visual progress bar until the installation completes.



After successfully installing Mates Studio, the installer will prompt to optionally launch the application.

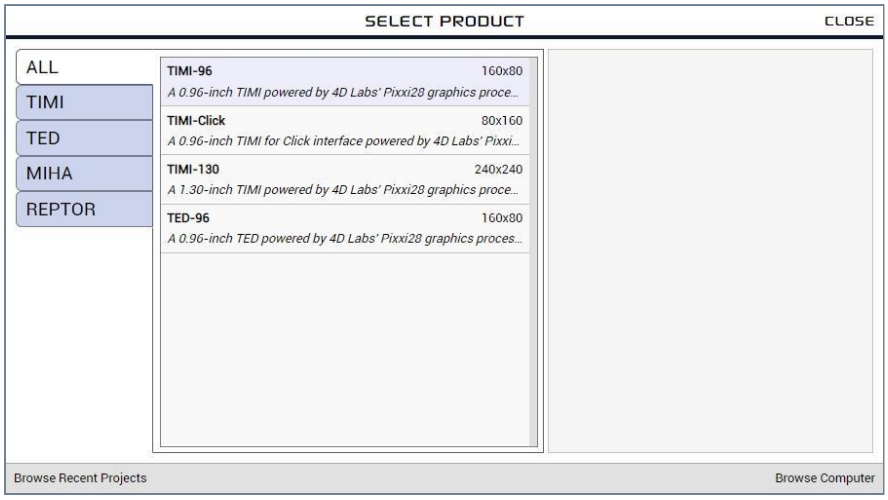


Tick *Run Mates Studio* to launch Mates Studio after installation if desired.

Creating a New Project

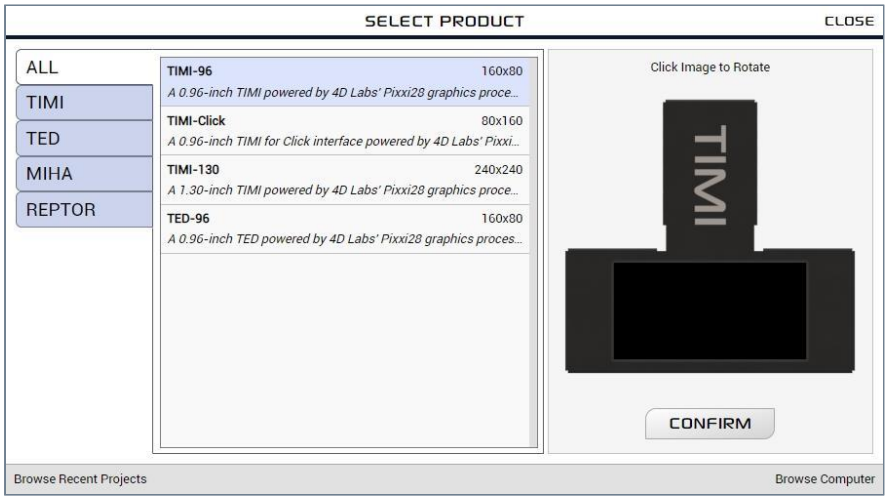
Selecting Product and Orientation

When the application opens, it will show the splash screen followed by the setup window.

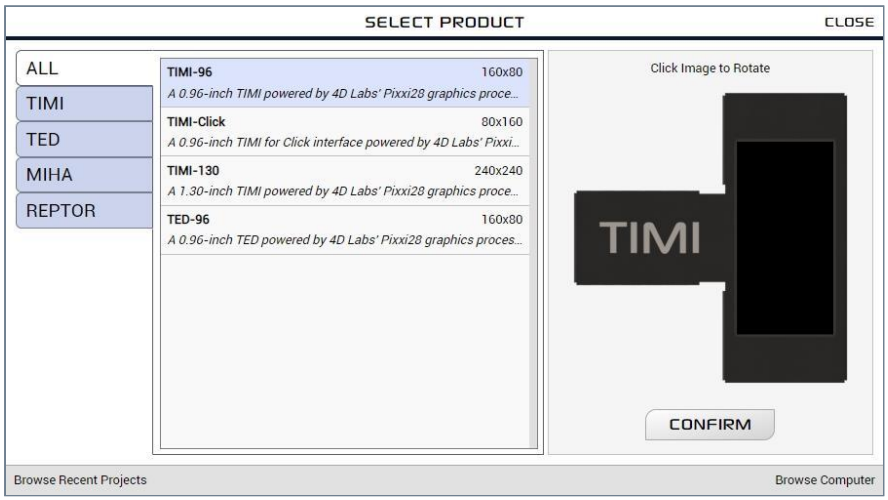


Products can be filtered by choosing the category tabs on the left-hand side. The center column provides a filtered selection of products. By selecting a product from the list shown in the

center column of the window, a preview of the product will be shown on the right-hand side.



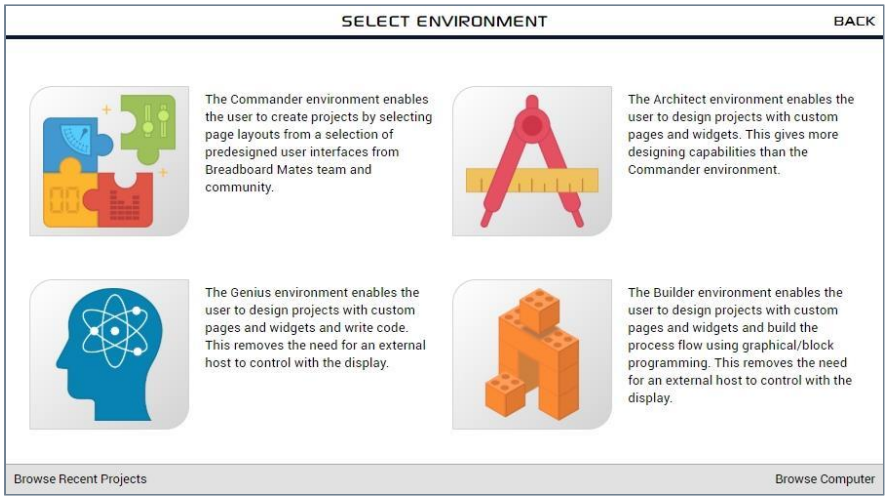
By clicking on the preview, the project orientation can be set.



After selecting the product and desired orientation, continue by clicking on the **CONFIRM** button.

Selecting Environment

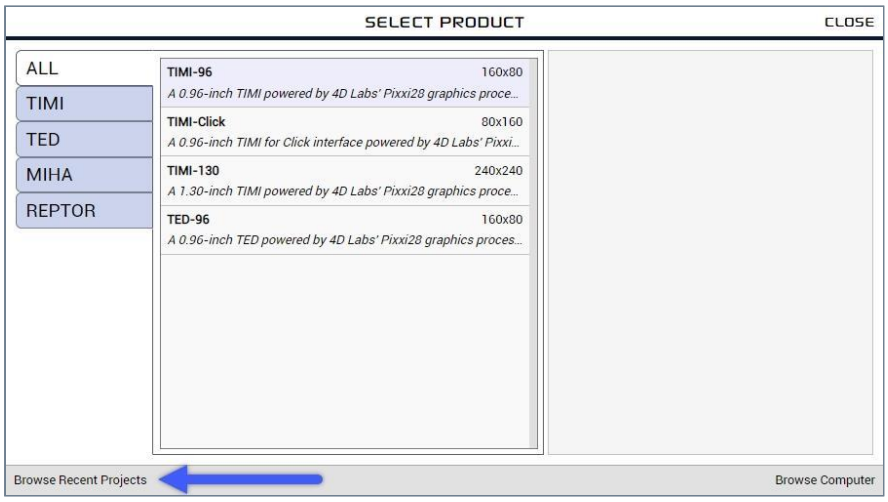
After confirming the product, the target environment needs to be selected to start a new project.



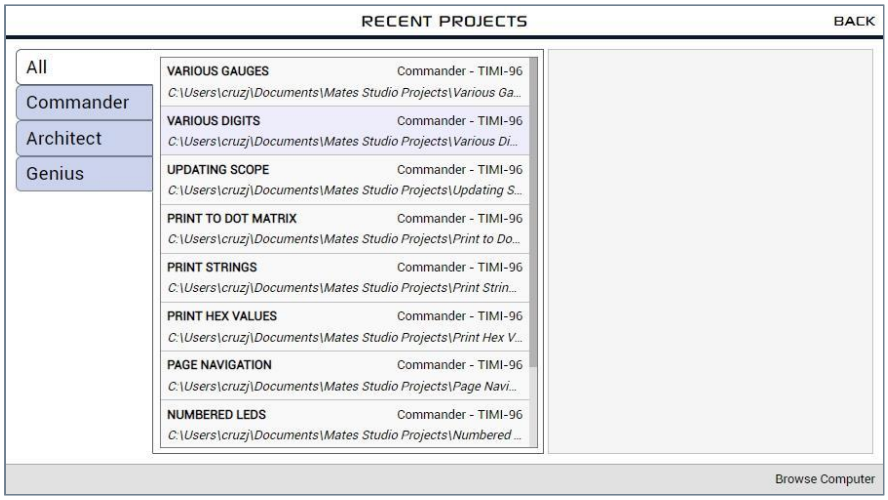
Opening Projects

Browsing Recent Projects

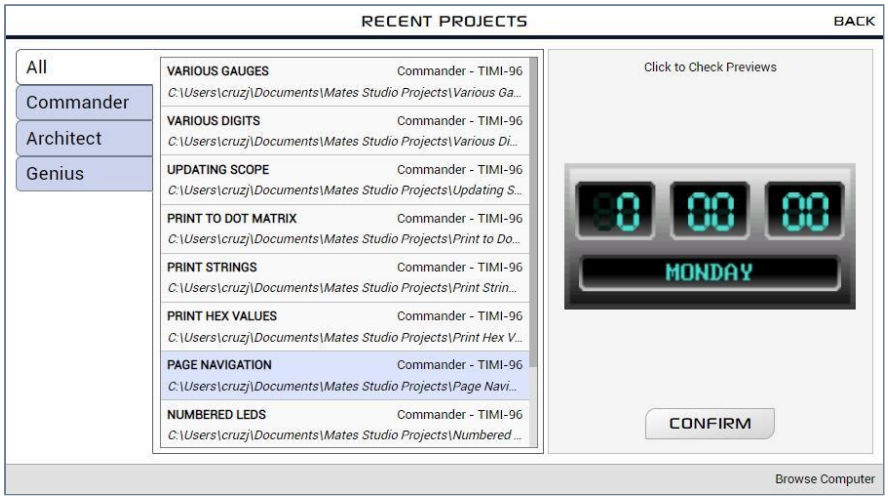
While in the setup window, recent projects can be browsed by clicking on the Browse Recent Projects button.



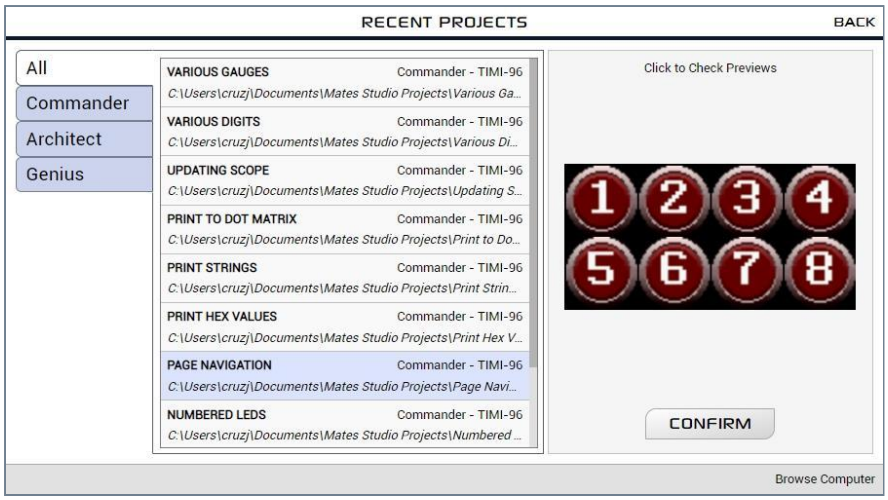
Recent projects can be filtered by choosing the category tabs on the left-hand side.



By selecting a project from the list shown in the middle column of the window, a preview of the project will be shown on the right-hand side.



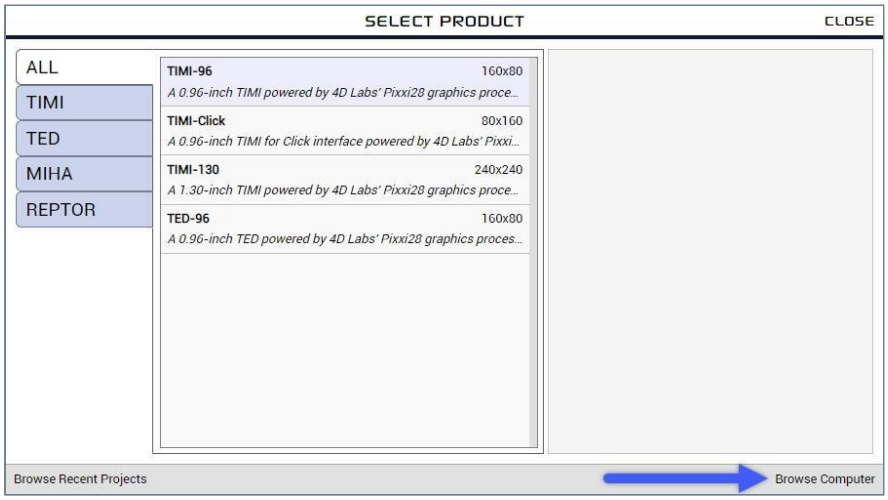
By clicking on the preview, the other project pages can be browsed.



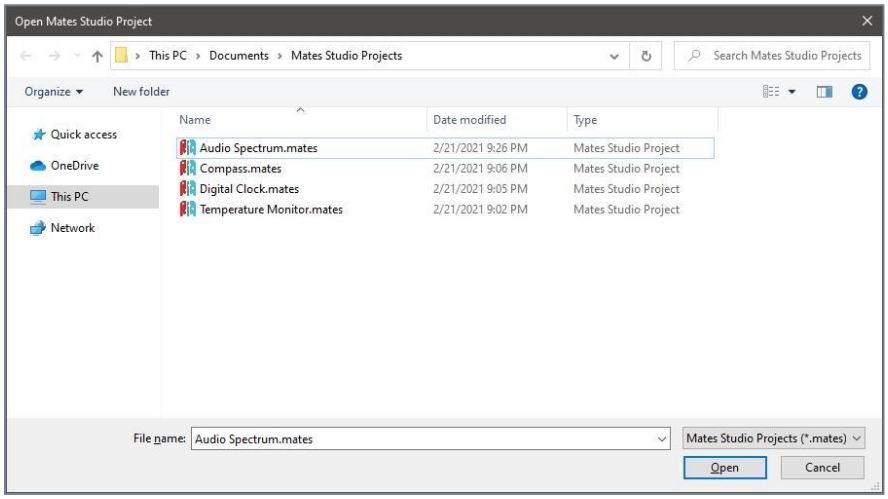
After confirming the project, it can be opened by clicking on the **CONFIRM** button.

Browsing the Computer

While in the setup window, the computer can be browsed for projects by clicking on the Browse Computer button.



Mates Studio will open a file selection window which can be utilized to find and open a project anywhere in the computer.



Environments

Commander

Commander is the simplest among all Mates Studio environments. It allows users to select and utilize different page designs/layouts from a built-in collection provided by the Breadboard Mates team and its community. This allows development of GUI applications in seconds.

This environment is designed to program Breadboard Mates modules to be used with a host controller using the Mates Controller Command

Protocol. This allows users to control the display using their favorite microcontrollers through Serial UART.

This environment also includes a Mates Controller Interface that simulates a microcontroller controlling the display module programmed with a Commander project.

Architect

Similar to Commander, the Architect environment was designed to program modules to be used with a host controller and features Mates Controller Command Protocol. It also provides the Mates Controller Interface to simulate a host controller.

The main advantage of Architect over Commander is the increased flexibility with designing their projects by featuring a Graphics Editor which allows custom widget and page designs.

Genius

The Genius environment is designed to allow user to write their own custom programs for Breadboard Mates module. This allows Breadboard Mates modules to work as standalone devices.

It features a Graphics Editor allowing custom widget and page designs and a Code Editor to write the program in 4D Graphics Language (4DGL). This provides direct control of the widgets and the unused device peripherals allowing custom functionalities that users need which Commander and Architect are not able to provide.

Builder

Similar to Genius, the Builder environment is designed to allow user to develop custom programs for their Breadboard Mates modules.

It also features a Graphics Editor allowing custom widget and page designs. But instead of a code editor, it features a Blocks Editor. This also provides direct control of the widgets and the unused device peripherals allowing custom functionalities that users need which Commander and Architect are not able to provide.

This environment is designed mainly for inexperienced 4DGL developers but can also be used by seasoned developers. This environment can be used to develop varying complexity of projects.

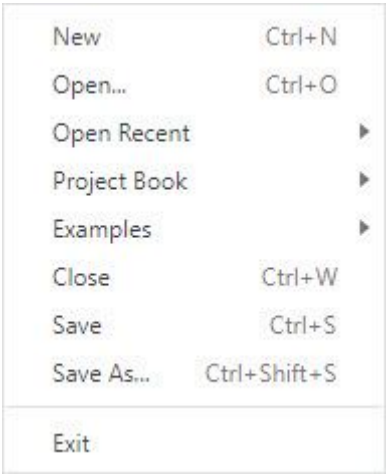
However, as the project becomes increasingly complicated, writing the code in Genius can prove to be more manageable for experience developers.

Application Menus

Excluding Commander, all Mates Studio environments use a traditional dropdown menu bar. These three environments have almost identical menus. This section discusses the menu bar including which environment certain items apply.

File Menu

The File Menu group includes items that can be used for file management. It includes the following:

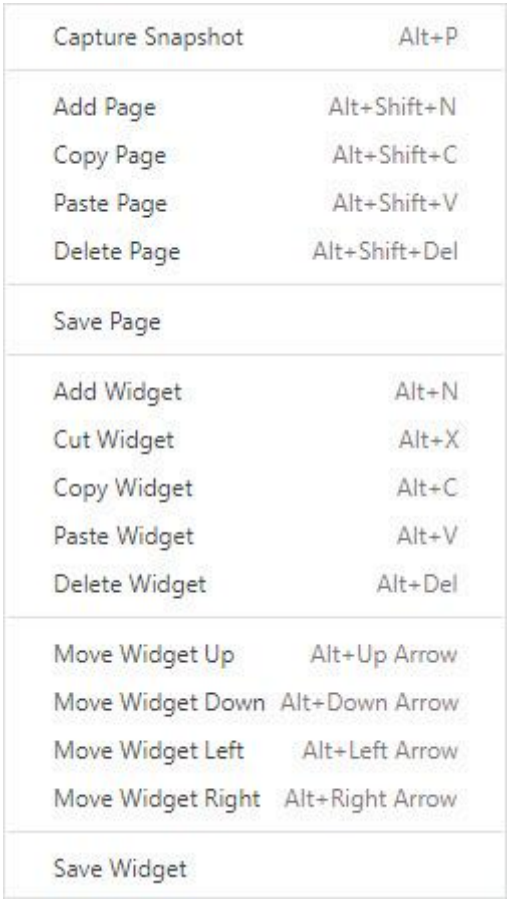


Item	Description
New	Opens the Setup Window to create new project
Open...	Opens a window prompting to select a project file to open
Open Recent	Provides a list of recently opened projects
Project Book	Provides a list of projects found in the default save location

Item	Description
Examples	Provides a list of examples included with Mates Studio
Close	Closes the current project
Save	Saves the project
Save As...	Saves the project to a different location and/or filename
Exit	Exits Mates Studio

Graphics Menu

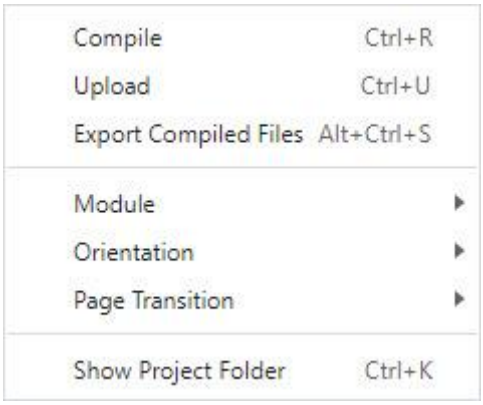
The Graphics Menu group includes items that can be used for managing the UI design. This includes page and widget management tools and options as shown:



Item	Description
Capture Snapshot	Saves a snapshot of the selected page as an image file
Add Page	Opens a Select Page Template window
Copy Page	Copies the selected page for pasting
Paste Page	Pastes the recently copied page to the current project
Delete Page	Deletes the selected page
Save Page	Saves the active page as a configuration file
Add Widget	Opens a Select Widget window
Cut Widget	Copies the selected widget for moving to another page
Copy Widget	Copies the selected widget for pasting
Paste Widget	Pastes the recently copied widget
Delete Widget	Deletes the selected widget
Save Widget	Saves the selected widget as a configuration file

Project Menu

The Project Menu group includes items that can be used for managing the project itself. This includes project compilation, upload and project settings as shown:



Item	Description
Compile	Compiles the project to check for errors
Upload	Compiles and upload the project if there are no errors
Export Compiled Files	Compiles and exports project files if there are no errors
Module	Provides option to change target module
Orientation	Provides option to change module orientation
Page Transition	Provides option to select transitioning effect
Baud Rate	Provides option to set baud rate for communicating
Show Project Folder	Opens the location of the project

Note

Baud Rate is only available in Architect Environment

Edit Menu

The Edit Menu group includes items that can be used with the code/ text editor of the Genius environment. This includes basic editing functionalities such as copying and pasting, undo and redo, etc.

Item	Description
Undo	Cancel previous text editor action
Redo	Redo previously cancelled text editor action
Cut	Copies the highlighted text for moving to another location
Copy	Copies the highlighted text for pasting
Paste	Adds previously copied text to the current cursor position
Select All	Select all text available in the text editor
Find	Opens the search tool of the text editor
Find Next	Moves to the next occurrence of the text
Find Previous	Moves to the previous occurrence of the text

Note

Edit Menu is only available in Genius Environment

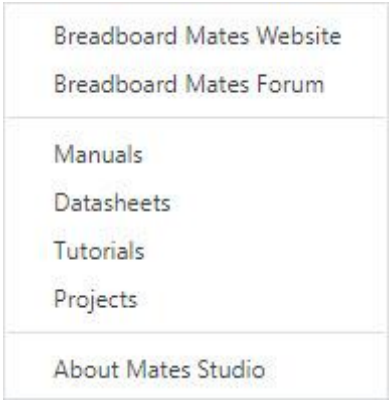
Tools Menu

The Tools Menu group includes helpful items that can be utilized during development.

Item	Description
Port	Provides the option to scan and select COM port to use
Open Serial Tool	Opens Terminal tool for Genius and Builder or Mates Controller for Architect
Get Module Info	Checks the module connected in the selected port
Load PmmC	Opens the Load PmmC window for updating firmware
Activate License	Provides the option to activate full version of the environment

Help Menu

The Help Menu group includes external references and support links.



Item	Description
Breadboard Mates Website	Opens Breadboard Mates Website using the default web browser
Breadboard Mates Forum	Opens Breadboard Mates Forum using the default web browser
Manuals	Opens Breadboard Mates Resource Centre Manuals using the default web browser
Datasheets	Opens Breadboard Mates Resource Centre Datasheets using the default web browser
Tutorials	Opens Breadboard Mates Resource Centre Tutorials using the default web browser
Projects	Opens Breadboard Mates Resource Centre Projects using the default web browser
About Mates Studio	Shows the version information of Mates Studio

Release Notes

Mates Studio Release Notes

```
1.0.14 : 5 May 2022
    - Fixed issue when opening projects by double
clicking the file

1.0.13 : 14 April 2022
    - Changed TIMI-Click to TIMI-MB

1.0.12 : 5 April 2022
    - Fixed copy and paste issue in non-touch modules

1.0.10 : 23 February 2022
    - Fixed issue with DotMatrix and TextArea not
updating

1.0.9 : 21 February 2022
    - Added 240x240 page designs
    - Added auto update feature
    - Increased UART receive buffer size for
Commander and Architect projects

1.0.8 : 15 January 2022
    - Added 240x240 page designs
    - Fixed display issues when image and page
background image when
        there is no other inherent and GCI widget
included

1.0.7 : 05 January 2022
    - Added 240x240 page designs
    - Added swipe event logging system
    - Added new functions/commands:
        - *getSwipeEventCount*: counts the number of
swipe events that hasn't been read
        - *getNextSwipeEvent*: reads the next swipe
event, returns -1 if no event to read

1.0.6 : 14 December 2021
    - Added support for REPTOR devices
    - Added automatic touch handling for input widgets
    - Added different modes for button widgets
(toggle, momentary and navigation)
    - Added button event log system for momentary
buttons
    - Added new functions/commands:
        - *getButtonEventCount*: counts the number of
button events that hasn't been read
        - *getNextButtonEvent*: reads the next button
event, returns -1 if no event to read
    - Implemented Query (getButtonEventCount,
getNextButtonEvent) command in
```

```
        Control window/tab of Architect and Commander
environments

1.0.5 : 03 December 2021
    - Prevented input widgets from being used in non-
touch modules
    - Changed MediaGaugeA to have the thumb option
from MediaSlider
    - Fixed Commander documentation scroll issue
    - Fixed Page designs that uses sliders and knobs
as gauges and buttons as LEDs
    - Fixed RotaryGauge behaving as an input widget
    - Fixed DLL missing from other Windows PCs

1.0.4 : 17 November 2021
    - Fixed Inherent resource updates for gauges

1.0.3 : 14 November 2021
    - Fixed MediaGaugeB compile and display error

1.0.1 : 08 November 2021
    - Fixed Dot Matrix gradient issue caused by
incorrect use of the widget's position
    - Fixed Media Gauge D incorrect range computation

1.0.0 : 13 October 2021 (Initial Public Release)
    Supported Products
        - TIMI-96
        - TIMI-Click
        - TIMI-130
        - TED-96
    Available Widgets
        - Label
        - Scale
        - Panel
        - Media Panel
        - Symbol
        - Image
        - Led
        - Media Led
        - Media Color Led
        - Fancy Led A
        - Led Digits
        - Led Spectrum
        - Media Spectrum
        - Dot Matrix
        - Gauge A
        - Gauge B
        - Gauge C
        - Gauge D
        - Gauge E
        - Gauge F
        - Angular Meter
```

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        - Ruler Gauge
        - Media Gauge A
        - Media Gauge B
        - Media Gauge C
        - Media Gauge D
        - Media Thermometer
        - Rotary Gauge
        - Slide Show
        - Animation
        - Symbols
        - Led Digits
        - Scope
        - Button A
        - Button B
        - Switch A
        - Switch B
        - Media Button
        - Fancy Button A
        - Slider A
        - Slider B
        - Slider C
        - Slider D
        - Slider E
        - Slider F
        - Media Slider
        - Knob
        - Media Rotary
        - Text Area
        - Print Area
```