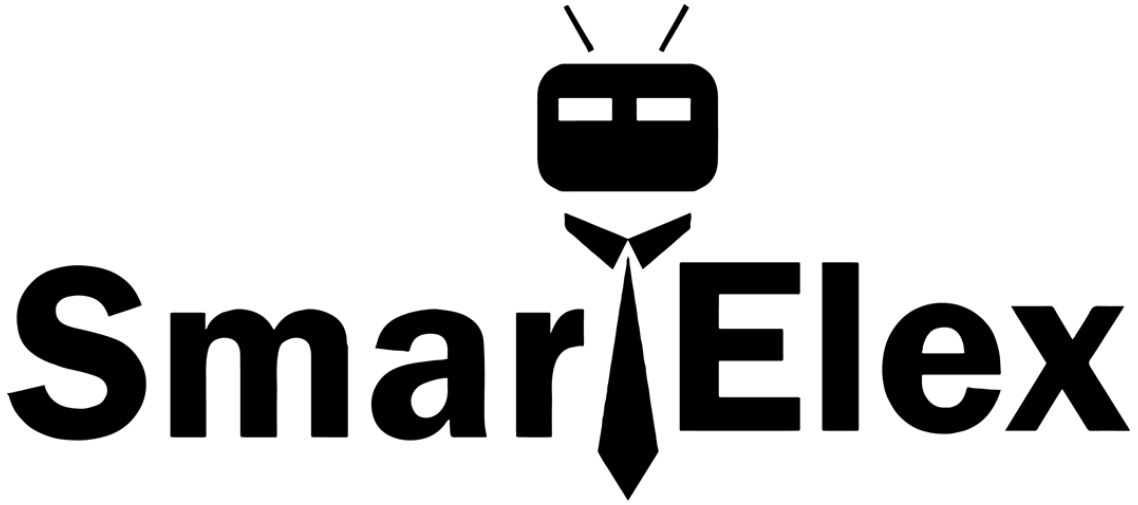


HMI Display

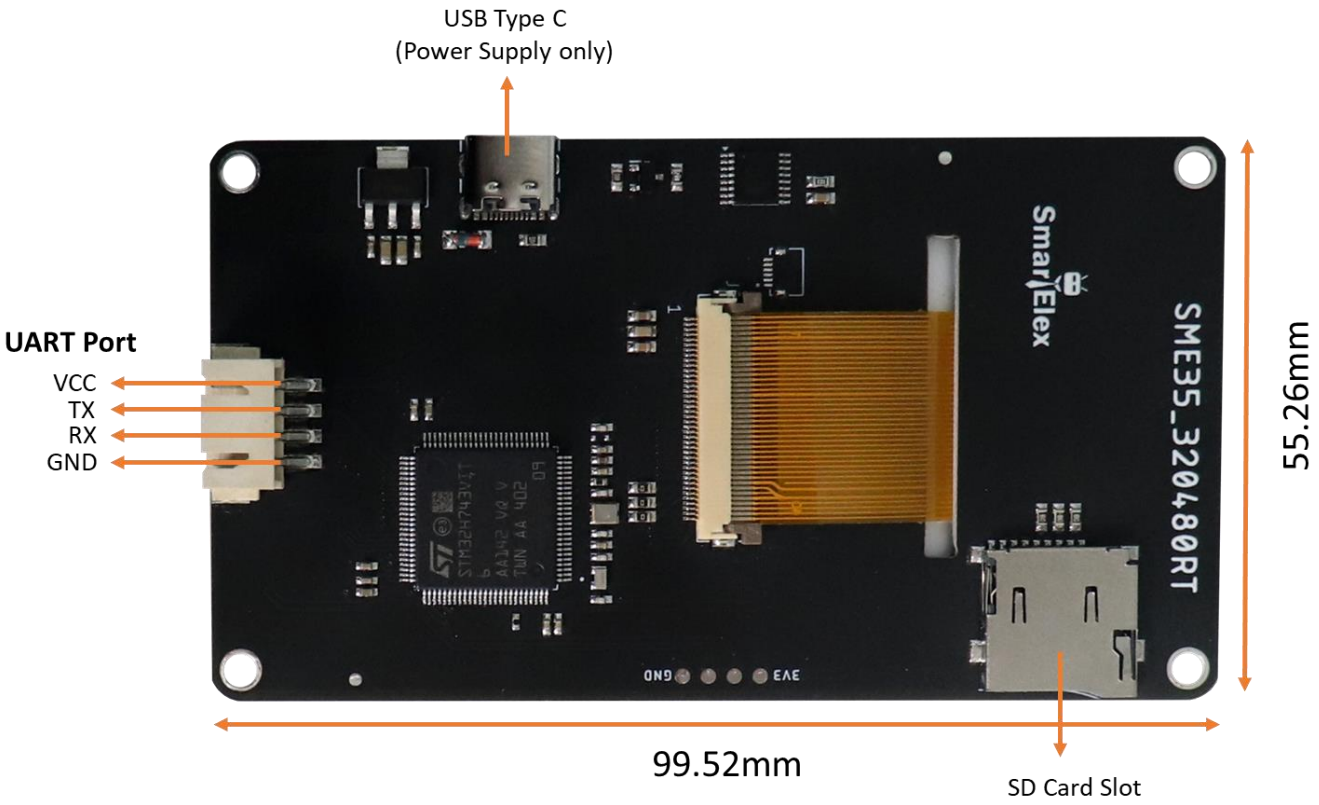
Powered By Robu.in

Table of Contents

1. Overview

Basic Series:

SME35_320480RT



2. UART Port

- Using UART port user can interface sensors with microcontroller to operate real time function.
- Pin connection of Display to Microcontroller,

Display UART	Microcontroller
VCC	5V
TX	RX
RX	TX
GND	GND

Table 1

- **UART data transmission and receiving format**

To interface an HMI display with a microcontroller using UART, use the following specifications:

- **Baudrate**: 115200
- **Buffer size:** 25 bytes for both transmission and reception

- **Data Transmission and Receiving Format**

For controls like SquareButton, Switch, Slider, ProgressBar, and Hotspot, the data format for sending and receiving strings through UART is:

P000T000I000V000000000000

Where:

- P is the Page number
- T is the Tool Type
- I is the Tool ID
- V is the Tool Value

Each variable is containing exact 3 digits value.

Example: To control LED brightness by using Slider,

- **Page (P)** = 001 (Page ID)
- **Type (T)** = 009 (Slider Type)
- **ID (I)**= 001 (Slider ID)
- **Value (V)** = 010 (The value changes based on the movement of slider bar)
- The remaining 9 digits will be set to '0', as the data (V) is only 3 digits in size.

The data string sent would be:

P001T009I001V010000000000

This string indicates that the LED brightness control by slider is on Page 1(Page ID), has (Slider) Type 9, (Slider) ID 1, and a value of (Slider) 10 ('10' is just an example, the actual value will vary when slider moves).

- **RealTimeText Data Transmission Format**

For the RealTimeText tool, the transmission format is

P000T000I000V000000000000

Where:

- P is the Page number
- T is the Tool Type
- I is the Tool ID

- V is real-time data (12 bytes in size)

Example: To display temperature data from a sensor on the HMI display's RealTimeText tool,

- **Page** = 002 (Page ID)
- **Type** = 001 (RealTimeText Type)
- **ID** = 000 (RealTimeText ID)
- **Value (V)** = "24.08"
- The remaining 7 digits will be set to '0', as the data (V) is only 5 digits in size.

The data string sent would be:
P002T001I000V24.080000000
This string indicates that RealTimeText is on Page 1(Page ID), has (RealTimeText) Type 1, (RealTimeText) ID 1, and a value of (RealTimeText) 24.08('24.08' is just an example, the actual value will vary as per temperature data).

Note: Ensure string format is exactly as shown; otherwise, the interface will not function correctly.

3. SD Card slot

- SD Card slot is used to insert micro-SD card in which *".tft"* project file and images which are used in respective project are stored.
- From Project directory copy *".tft"* project file and all images from **projectname_images* folder to SD card's root directory.
- If the project includes images, then SD card must remain in the SD card slot otherwise images will not display if SD card will be removed after flashing *.tft* file.
- If the project has no images, the user can remove the SD card after the project is flashed and the display will work fine.

4. Power Supply

- Power the screen with 5V DC power supply through the Type-C port.
- The power supply plays a very important role in the normal display of the screen. If the voltage is too small, the current is unstable, and the power is too low, it may cause abnormal display such as flickering and black screen.

5. Steps to Flash

1. From project directory copy the .tft file and images from the *project_images folder (if used in project) to SD card's root directory. (*Do not create any folders on the SD card and paste the file inside a folder)
2. Insert SD card into the HMI display's SD card slot.
3. Provide 5V power to the display using the Type-C port.
4. The project will be display on screen.

6. Steps to Run project using Microcontroller

1. From project directory copy the .tft file and images from the *projectname_images folder (if images used in project) to SD card's root directory. (*Do not create any folders on the SD card and paste the file inside a folder)
2. Insert SD card into the HMI display's SD card slot.
3. Connect UART pin to microcontroller *refer Table 1.*
4. The project will be display on screen.

7. Specification

	Data
Color	RGB565
Display Size	3.5 inch
Resolution	480 x 320
Touch Type	Resistive
Backlight	LED
Layout size	99.52(L) x 55.26(W) x 12.85(H) mm
Display Size	84.52(L) x 55.26(W) x 2.70(D) mm
Active Area	73.44(L) x 48.96(W) mm
Weight	53gm

8. Electronic Specification

	Test Conditions	Min	Max	Unit
Operating Voltage			5	V
Operating Current	VCC = +5, Brightness is 100%		650	mA
Power Supply: 5V, 1A, DC				

9. Working Environment & Reliability Parameter

	Test Conditions	Min	Typical	Max	Unit
Working Temperature	5V, Humidity 60%	-20	25	70	^{0}C
Storage Temperature		-30	25	85	^{0}C
Working Humidity	25^{0}C	10%	60%	90%	RH