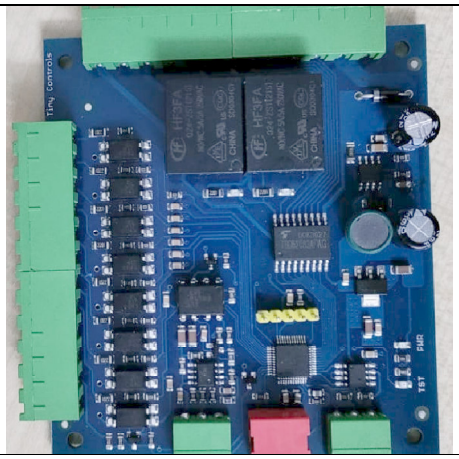
TIO-0808, Mixed signal Input-Output card with RS-485 interface.



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THIS MANUAL CONTAINS INFORMATION FOR INSTALLING AND OPERATING THE FOLLOWING PRODUCT:

TIO-0808, I/O CARD WITH RS485 INTERFACE (MAY BE REFERRED AS "IO-0808" IN THIS DOCUMENT)

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GENERAL DESCRIPTION

The Tiny Controls TIO–0808 is a general purpose I/O interface card with mixed type inputs and outputs with RS-485 interface.

IO-0808 can be used along with our other Rs-485 based products like stepper motor driver or other interface cards to build a versatile automation/control application that can be controlled through custom GUI based application on computer or can be used along with custom controller

PHYSICAL AND ELECTRICAL CHARACTERISTICS

Supply Voltages: *24 V DC*
Current Consumption : *< 100 mA with all outputs off*
Analog Input : *0-10V non-isolated*
PWM Output : *3.3v Duty and frequency variable, non-isolated*
Analog Output: *0-10V isolated (with 10v isolated supply input)*
Digital Inputs: *8 opto-isolated*
Outputs : *6 open collector for driving relays*
Relay : *2 on board relays with N/O connections*
Indicator : *Test LED blink rate can be manipulated over RS-485*
Address/Baud : DIP switch selectable
RS-485: *For programming parameters and working in Online mode*
Maximum operating Temperature: *70 degree Celsius (158 F).*

CONNECTIONS AND SETTING

Refer to below tables for device address, baud-rate settings

Card Address Selection			
Address	*S1*	*S2*	*S3*
17	*OFF*	*OFF*	*OFF*
18	*ON*	*OFF*	*OFF*
29	*OFF*	*ON*	*OFF*
20	*ON*	*ON*	*OFF*
21	*OFF*	*OFF*	*ON*
22	*ON*	*OFF*	*ON*
23	*OFF*	*ON*	*ON*
24	*ON*	*ON*	*ON*

Baud Rate	***S4***
9600	*OFF*
38400	*ON*

Download Demo software from our website, Refer to next section for RS-485 commands and protocol.

RS-485 Terminal: *Connect to RS-485 bus, maximum eight IO-0808 devices can be connected on the same BUS (8 device limit is only for this card, along with max 8 IO cards, other type of devices can be connected as our each type of RS-485 device have a different settable address range), make sure NO two devices on the BUS are set to same address.*

Always terminate with proper BUS resistor (120 ohm) at the last device on the BUS.

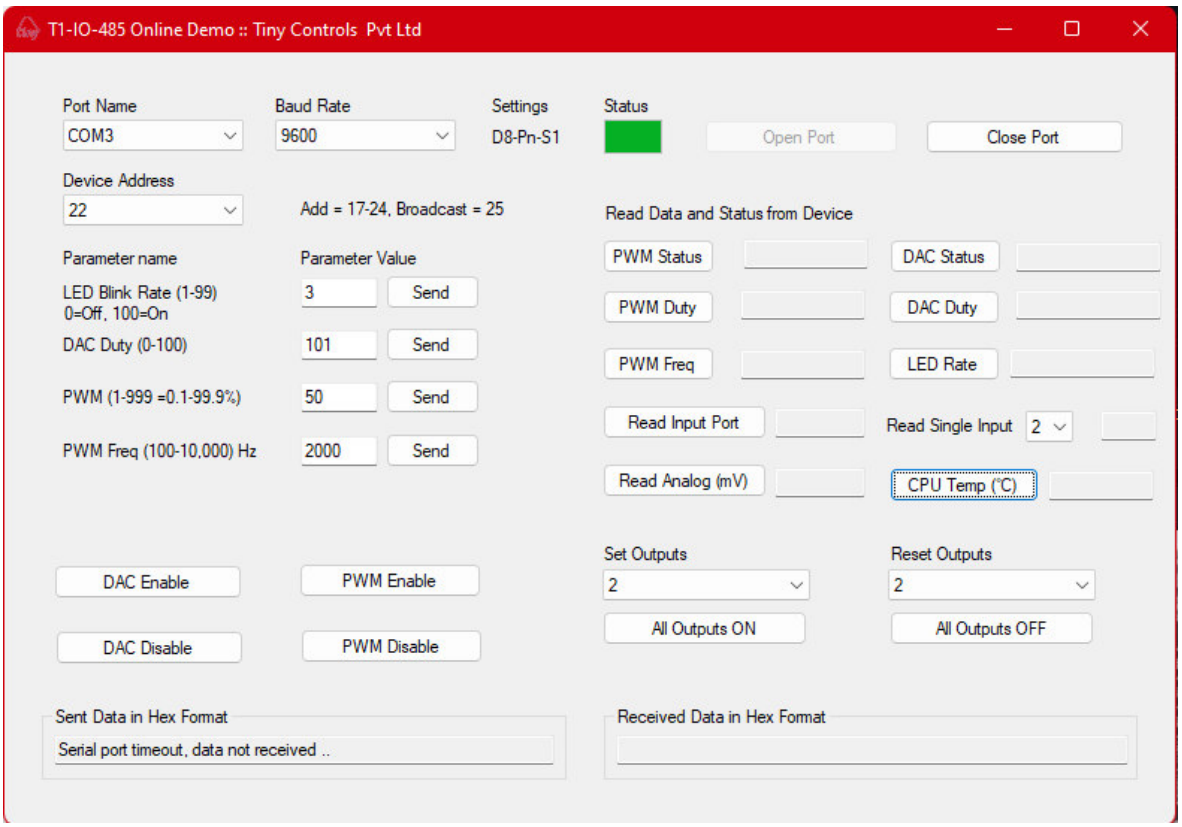
RS-485 Frame format and command structure

RS-485 frame consists of 8 bytes (0x denotes a hex number, but decimal equivalent number can be sent):

- *Start byte, always 0x5A followed by*
- *One Address byte (0x00 to 0x0f) followed by*
- *One byte Parameter Number (or Command Number) followed by*
- *Four bytes Parameter Value (Least significant byte first) followed by*
- *End byte, always 0xA5*

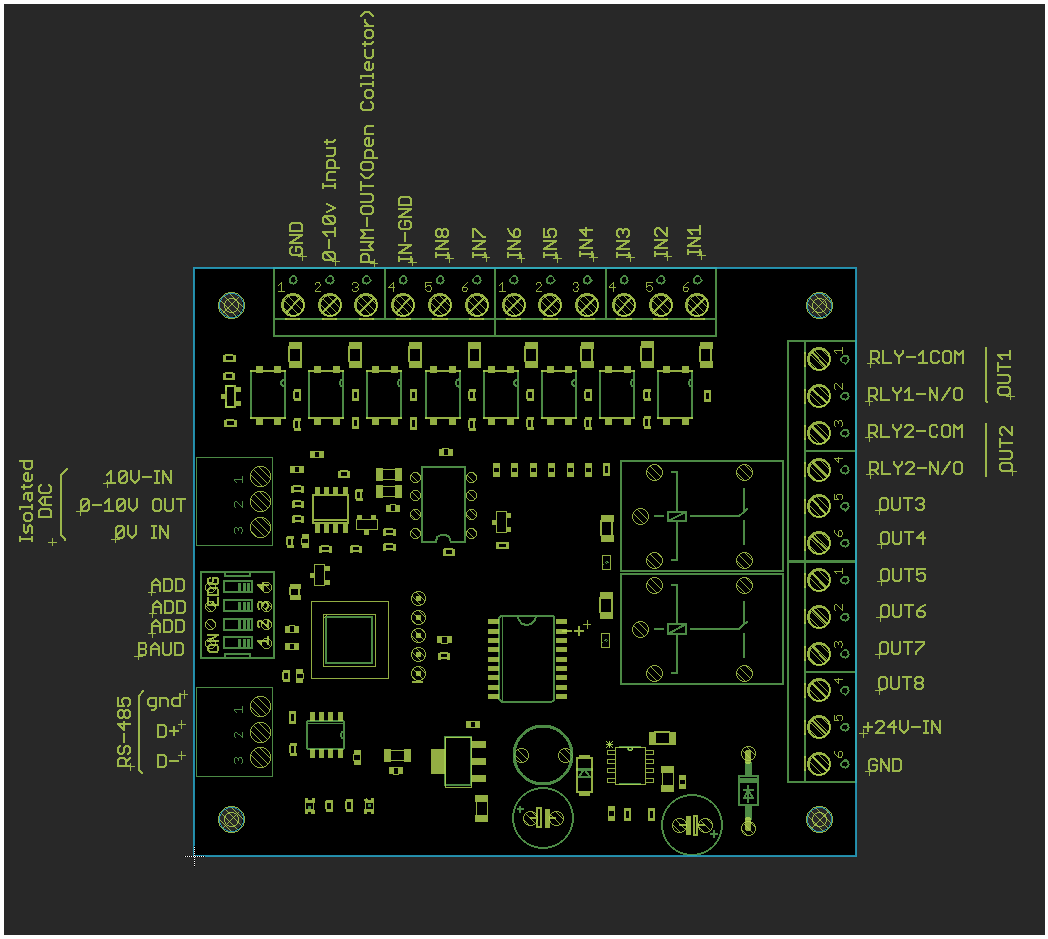
Command List			
Command Type	*No*	*4 bytes of Data*	*Data Range*
***Write* Commands**			
Set Analog(DAC) Duty	*0x00*	*0xNNNNNNNN*	*1 to 99% of isolated voltage*
Set Analog (DAC) Enable	*0x01*	*0xNNNNNNNN*	*0 =Disable* *1 = Enable*
Set PWM Frequency	*0x02*	*0xNNNNNNNN*	*100 ~10,000Hz*
Set PWM Duty	*0x03*	*0xNNNNNNNN*	*1~99.9%*
Set PWM Enable	*0x04*	*0xNNNNNNNN*	*0 =Disable* *1 = Enable*
Set Output Pin ON	*0x05*	*0xNNNNNNNN*	*1 ~ 8*
Set Output Pin OFF	*0x06*	*0xNNNNNNNN*	*1 ~ 8*
Set Output Port	*0x07*	*0xNNNNNNNN*	*0x00 = All Off, 0xFF = All On* *(or any combination in between)*
Set LED Blink Rate	*0x0A*	*0xNNNNNNNN*	*1~99 per sec* *(0=Off, 100=On)*
Read Commands			
Read Analog(DAC) Duty	*0x10*	*0xNNNNNNNN*	*Sent data irrelevant* *(Return value 0 to 100%)*
Read Analog (DAC) Status	*0x11*	*0xNNNNNNNN*	*Sent data irrelevant* *(Return value 0 =Disabled, 1 = Enabled)*
Read PWM Frequency	*0x12*	*0xNNNNNNNN*	*Sent data irrelevant* *(Return value 100 ~10,000Hz)*
Read PWM Duty	*0x13*	*0xNNNNNNNN*	*Sent data irrelevant* *(Return value 1~99.9%)*
Read PWM Status	*0x14*	*0xNNNNNNNN*	*Sent data irrelevant* *(Return value 0 =Disabled, 1 = Enabled)*
Read Input Pin	*0x18*	*0xNNNNNNNN*	*1 ~ 8* *(Return value 0 =Disabled, 1 = Enabled)*
Read Input Port	*0x19*	*0xNNNNNNNN*	*Sent data irrelevant* *(Return value between 0x00 ~ 0xFF)*
Read Analog Input	*0x1B*	*0xNNNNNNNN*	*Sent data irrelevant* *(Return value Voltage (mV))*
Read CPU Temperature	*0x1C*	*0xNNNNNNNN*	*Sent data irrelevant* *(Return value Degree Celsius)*

Demo Software:



Visit our Website at https://www.tinycontrols.com to download demonstration software as shown above and setup our product in minutes.

Connection Diagram:



USER NOTES: