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MR-BusIO-MAIN™ BusIO MAIN BOARD (10-PIN MRconnect© ready)
User Manual

Description

The MR-BusIO-MAIN is an experiment board which receives output signals from any microcontrollers. The signals then distribute to daughter boards for each experiment. It designed to connect directly with 10PIN MRconnect©. It is a quick and easy way to control up to 8 daughter boards.

The MR-BusIO-MAIN can receive 3 types of input: from 8-bit port of any microcontrollers to the board directly (10PIN MRconnect©), from I^2C bus through PCF8574 Expansion Port IC (optional), or from 34-pin header that have jumpers to select which pins to use to control the daughter boards. The block diagram in Figure 1 show the structure of the I/O pins for MR-BusIO-MAIN board.
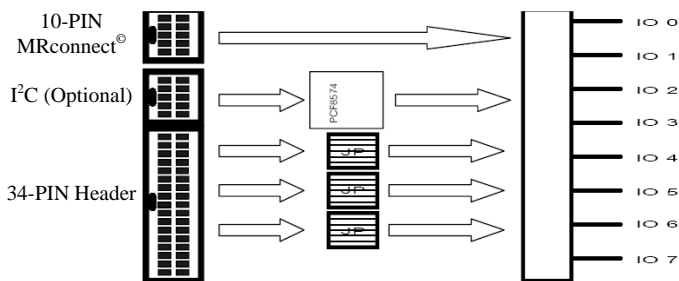

FIG1: System block diagram

There are three ways to connect to the board. User must choose only one way to connect. The signals then route to IO0-IO7 for all 8 daughter boards. PCB size is 6.0" x 3.5".

Interfaces

I^2C:

When using I^2C interface, user must connect PCF8574 IC on to the board. The jumpers to configure I^2C address must be set to appropriate setting base on the user code. In the event of user want to switch to use different input type, i.e. 10PIN MRconnect©, user MUST remove PCF8574 IC before attempt to connect.

34-PIN Header:

When using 34-PIN header, user must assign jumpers to select which port pins to use. There are three ports available to use A, B, or C. User can only select from one port.

10PIN MRconnect©:

When using 10PIN MRconnect©, user can connect directly to 10-PIN header without configure any things.

Power:

The card can be power by using the power from the 10PIN MRconnect©, 2-PIN header, pin 25 from 34-PIN header, or external 2.5mm, center negative, 9-16VDC wall adapter or pin 10 on I^2C input header. **When using external power supply, make sure it is +5VDC.**
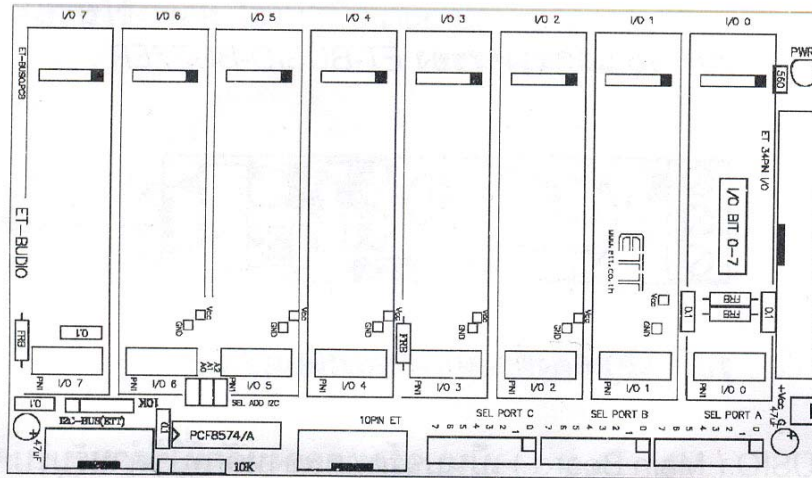
FIG 3: MR-BusIO-MAIN Board Layout
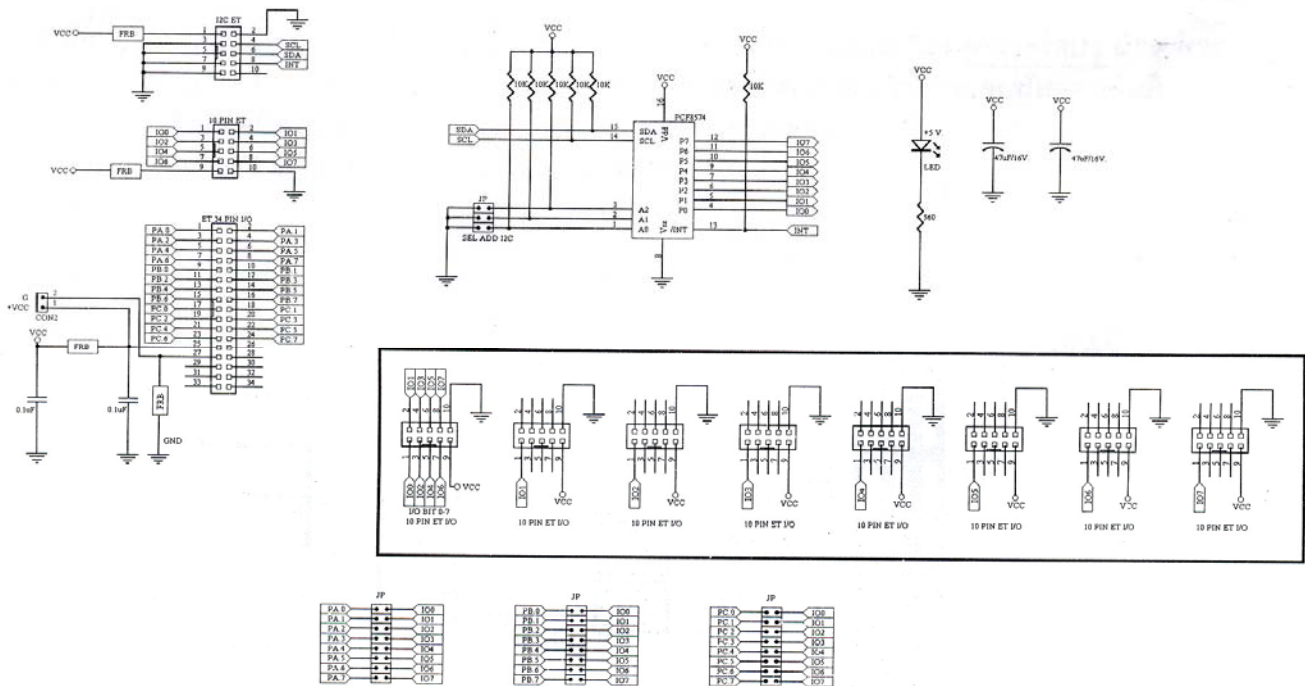
FIG 4: MR-BusIO-MAIN Schematic

10PIN MRconnect© Pinout:

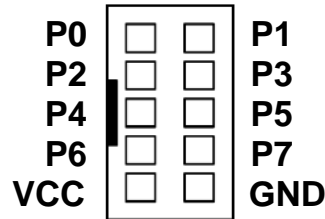| P0	☐ ☐	P1
P2	☐ ☐	P3
P4	☐ ☐	P5
P6	☐ ☐	P7
VCC	☐ ☐	GND

FIG 2: 10 PIN MRconnect©

Daughter Boards

All of the accessories are available for purchase via our website. If you don't see the item you need, please contract our sales department at sales@gravitech.us

- **MR-BusIO-ACIN**
  Experiment board for receiving 110-220VAC input and translates into TTL 5VDC level. It is using PC817 Photo-coupler IC to isolate high current and low current. It is best for monitoring the present of AC voltage.

- **MR-BusIO-BUZZER**
  Experiment board for buzzer output. The input signal is isolated from buzzer driver circuitry by PC817 Photo-coupler IC.

- **MR-BusIO-DCIN**
  Experiment board for receiving 5V, 12V or 24VDC input and translates into TTL 5VDC level. It is using PC817 Photo-coupler IC to isolate high current and low current. It is best for monitoring the present of DC voltage.

- ### MR-BusIO-DCOUT

  Experiment board for switching DC output voltage by using NPN Power Transistor 2SC1061. The advantage of this transistor is $V_{CE(sat)}$ = 1V (max.) at I_C = 2A and I_B = 0.2A. The output DC voltage is switching ON and OFF by TTL level 5VDC. It is using PC817 Photo-coupler IC to isolate high current and low current. It is best for controlling DC voltage for up to 50V at 3A.


- ### MR-BusIO-PHOTORELAY

  Experiment board for switching output by using AQV210E IC, PhotoMOS Relays. PhotoMOS Relays combined advantage of solid state relays and mechanical relays together, so efficient is perfect and better than other devices. The maximum peak value at the load is 350V, 130mA for both AC and DC.

- ### MR-BusIO-RELAY

  Experiment board for switching AC or DC output by using mechanical relay. The maximum controlling voltage is 250VAC at 5A or 24VDC at 10A. It is using PC817 Photo-coupler IC to isolate high current and low current. It is best for switching output load.
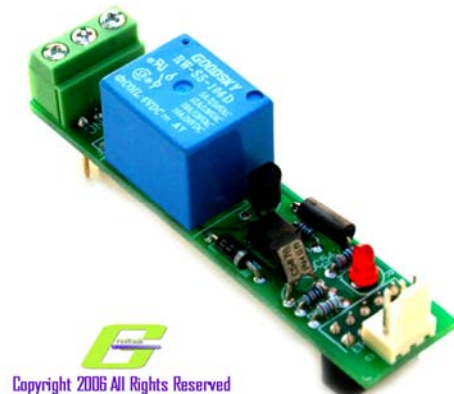
- ### MR-BusIO-SSRAC

  Experiment board for switching AC output voltage by using SSR (Solid State Relay). SSR is similar to mechanical relay that consists of inductor and surface contact. The internal structure of SSR uses semiconductor material to switching ON and OFF. The maximum controlling voltage is 400VAC at 6A. It is best for switching AC output voltage.

- **MR-BusIO-SW**

  Experiment board for receiving input from push button switch. When the switch has been pressed, the indicator LED is illuminated and status on I/O pin is LOW. Moreover, user can add DS18S20 IC, 1-Wire Digital Thermometer onto the board. It can send the temperature value via 1-Wire bus system to microcontroller (optional). It is best for sensing switch input and temperature reading.