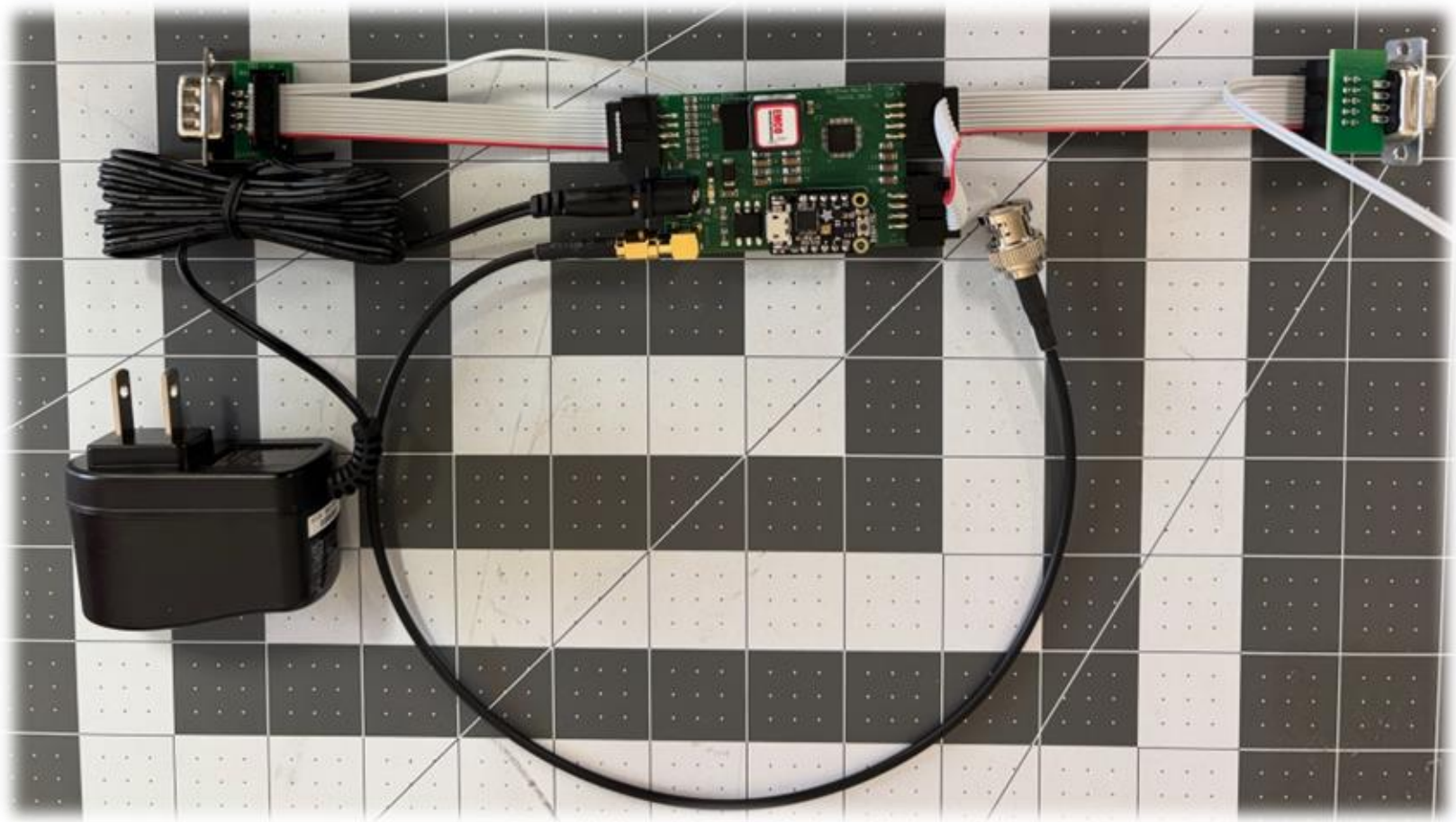
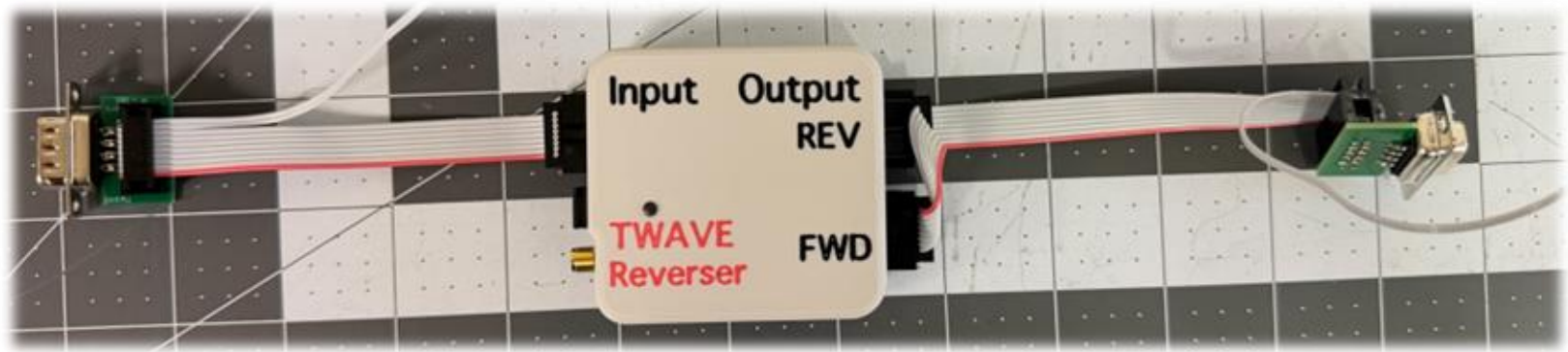


TWAVE Reverser, Rev 4.0

GAA Custom Electronics, LLC



TWAVE Reverser in Enclosure

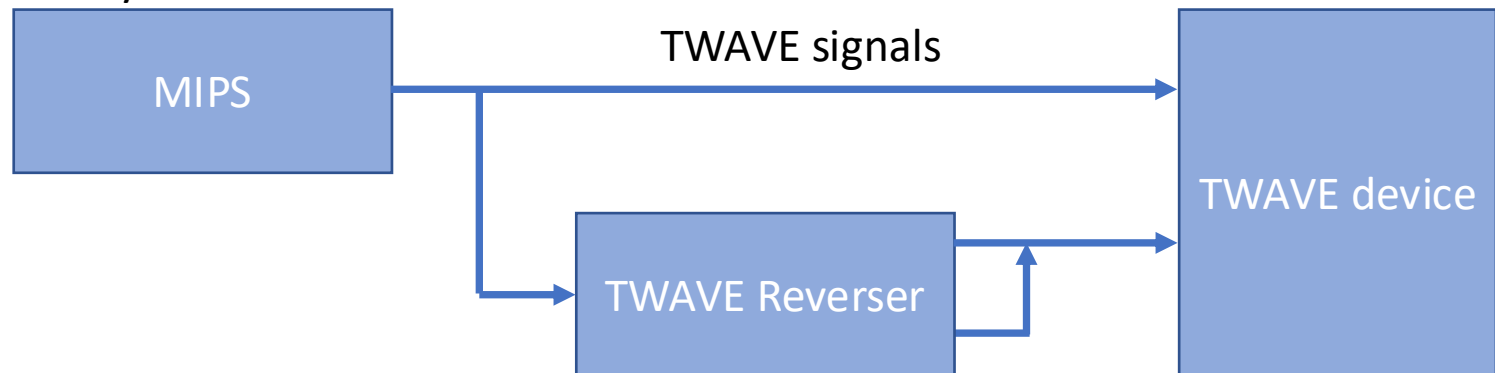


TWAVE Reverser Usage

The TWAVE Reverser does not generate TWAVE signals. The switch passes a set of TWAVE signals straight through, or reverses the signal order to reverse the direction of the traveling wave. This is useful in traveling wave ion manipulation devices where you need to control the direction of the ions without adding a second set of TWAVE signals.

The TWAVE Reverser has two sets of outputs: a normal, non-reversed output and a reversed output. When one set of outputs is active, the other is high impedance. To make a simple reverser, the two output sets are connected together.

In a typical application, an existing set of TWAVE outputs is connected to the switch as well as to your device. The TWAVE Reverser outputs are then connected to the section you wish to reverse.



TWAVE Reverser Features

- 16-pole analog bi-directional switch
- Two modes
 - Straight through — signals pass to the normal output connector
 - Reverse — TWAVE signal order is reversed and sent to the reverse output connector
- 100 V_{p-p} maximum differential voltage between TWAVE signals
- Signal shapes are preserved through the switch — sine, pulse, triangle, etc
- Signal amplitudes are preserved through the switch
- Input TWAVE signals can be floated
- Isolated control input
- Input control 0 to 5 volts
 - 0 volts = straight through
 - 5 volts = reverse
- Powered from a 12 VDC wall supply
 - Apply power to the switch before applying TWAVE signals

TWAVE Reverser Connections

TWAVE input

8 Pin IDC

Pin 1 – TW 1

Pin 2 – TW 2

Pin 3 – TW 3

Pin 4 – TW 4

Pin 5 – TW 5

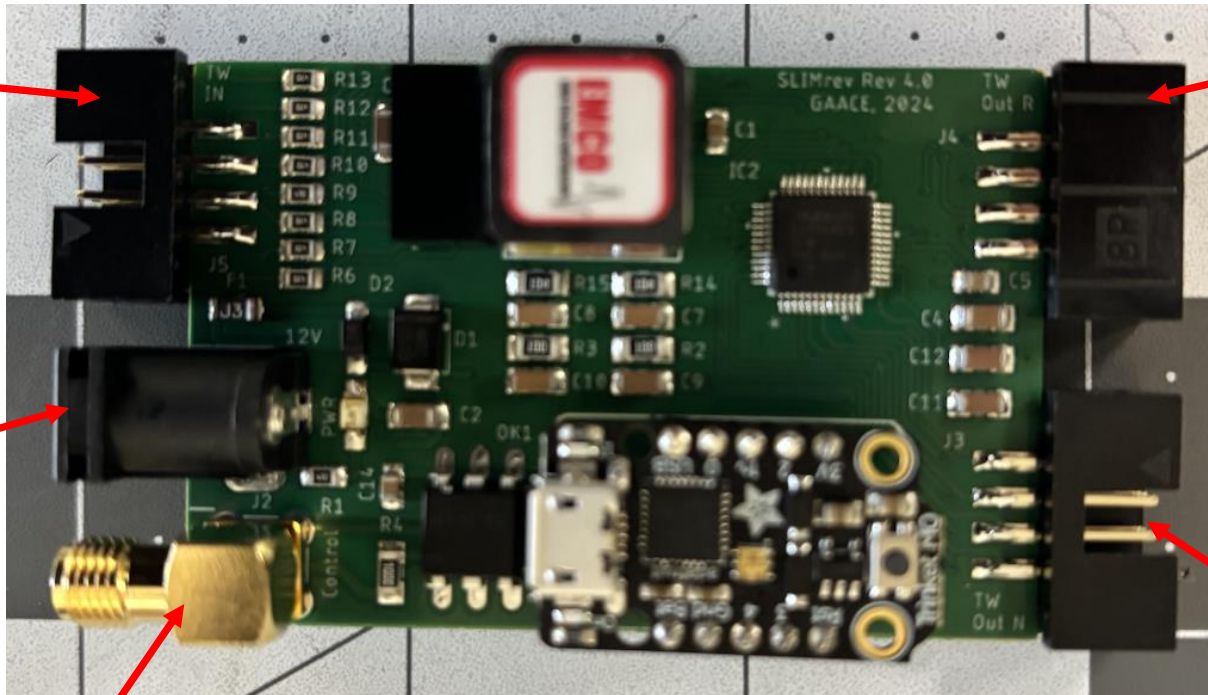
Pin 6 – TW 6

Pin 7 – TW 7

Pin 8 – TW 8

+12VDC
power

SMA control
Input, 0 to 5V,
isolated



TWAVE out R

8 Pin IDC

Pin 1 – TW 8

Pin 2 – TW 7

Pin 3 – TW 6

Pin 4 – TW 5

Pin 5 – TW 4

Pin 6 – TW 3

Pin 7 – TW 2

Pin 8 – TW 1

TWAVE out N

8 Pin IDC

Pin 1 – TW 1

Pin 2 – TW 2

Pin 3 – TW 3

Pin 4 – TW 4

Pin 5 – TW 5

Pin 6 – TW 6

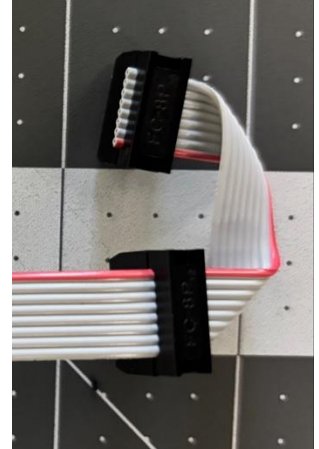
Pin 7 – TW 7

Pin 8 – TW 8

The switch signals are bi-directional — either side of the switch can be inputs or outputs

Configuration options

- The reverser has a normal (non-reversed) output connector and a reversed output connector. When one set of outputs is active, the other is high impedance. To enable the reverse function, these two outputs are tied together. This can be done with an IDC crimp cable, as shown.
- The connectors allow you to generate unique reversal configurations to suit your specific system. For example: if the normal connector has conductors 1 through 8 crimped to connector pins 1 through 8, and the reverse connector swaps conductors 1 through 4 with 5 through 8, the reversal will be 1-8, 2-7, 3-6, 4-5, 5-4, 6-3, 7-2, 8-1. Any desired output can be achieved by selecting the proper conductor-to-pin assignment. Flat cable conductors can easily be separated and repositioned in the crimp connector before crimping to the cable.



9-Pin D to 10-Pin IDC Adapters

9 Pin D

Pin 1 – TW 1

Pin 2 – TW 2

Pin 3 – TW 3

Pin 4 – TW 4

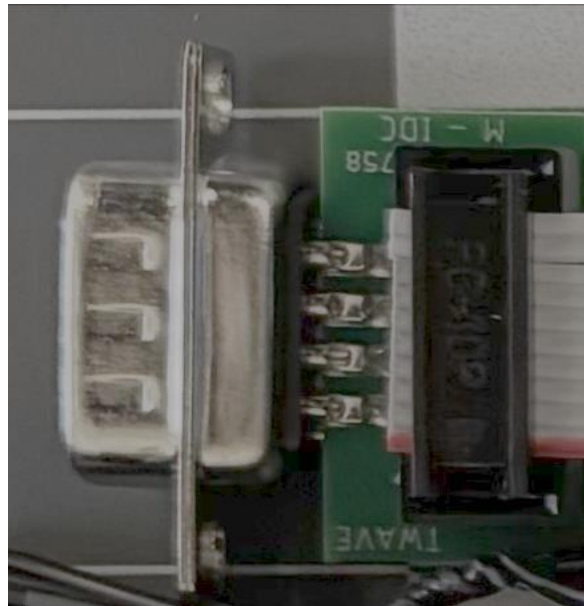
Pin 5 – TW 5

Pin 6 – TW 6

Pin 7 – TW 7

Pin 8 – TW 8

Pin 9 – Common



10 pin IDC

Pin 1 – TW 1

Pin 2 – TW 2

Pin 3 – TW 3

Pin 4 – TW 4

Pin 5 – TW 5

Pin 6 – TW 6

Pin 7 – TW 7

Pin 8 – TW 8

Pins 9 and 10 – Common

Both male and female 9-pin D to 10-pin IDC adapters are provided. These adapters allow you to connect the 8-conductor cable to the reverser connectors. The 10-pin IDC also provides two common (ground) conductors, 9 and 10. The reverser does not require the ground conductors; it establishes its reference from the incoming TWAVE signals.

TWAVE Reverser Logic Diagram

TWAVE Input
8 pin IDC connector

TWAVE Out N
8 pin IDC connector

