

# 838-10 PLUS Version 1.0

## NEW FOR 2022!



***Note: shown with optional 838-32K-SC memory expansion module***

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## Description

Congratulations on your purchase of the new 838-IO Plus peripheral expansion card.

This card is a direct replacement for the Flex Cable Interface for the TI-99/4 and TI-99/4A home computers.

The card removes the large firehose cable and elephant foot interface card from the side of the TI-99/4 and TI-99/4A computers. It is replaced with a vertical standing card and a new DB37 double shielded twisted paired cable that is now connected from the back of the unit. This will free up desk space for your TI computer!

There is also an optional 32k module that mounts on the actual 838-IOP card that plugs into the side port TI bus, which frees up an PEB slot!

More expansion cards are planned in the near future.

## Installation

1. Ensure the 838-IOP packages includes:
  - a. 838-IO Plus PEB card
  - b. 838-IO Plus side-port card
  - c. DB37 double-shielded twisted pair (male to male) cable if purchased from SHIFT838.
  - d. 838-IO Plus side-port card 3D printed case (if purchased from SHIFT838)
  - e. Optional 838-32K-SC (side-port 32K memory expansion module)
    - i. If using the 838-32K-SC, please ensure all other memory expansion cards are removed from your system.
2. Ensure both the TI-99/4 or TI-99/4A and Peripheral Expansion Box are powered off.
3. Unplug the power cable from the peripheral expansion box.
  - a. *If the PEB was powered up then leave the power off for at least 2 minutes.*
4. Unplug the side port card of the Flex Cable Interface from the TI-99/4A or TI-99/4 computer.
5. Remove the top of the PEB
6. Remove the old Flex Cable Interface card if it is installed

- a. You may need to remove a mount screw from the back of the unit that is mounted to the back of the PEB.
7. Insert the new 838-IO Plus card into slot #1 (far left) of the PEB
8. If using the new 838-32K-SC expansion module plug the expansion module on top of the 838-IO Plus side card
  - a. Ensure that the power jumper/switch is set to the **INT** for internal power as it will be powered by the 838-IO Plus PEB card.
  - b. Ensure the 838-32K-SC ON/OFF switch is set to the **ON** position. (This switch turns the 32K module on or off. When mounted in the 838-IO Plus Case move the switch to the UP position to turn the card on.



**Note: The system can only have one memory expansion enabled at any one time. Do not try to have the 838-32K-SC, a PEB memory expansion card or an internal memory expansion such as the 32k internal MOD being used at the same time. This may result in damage to your system!**

9. Plug the new 838-IO Plus Side-card onto the TI-99/4 or TI-99/4A side-port bus connector.
10. Connect the 838-IOP DB37 cable between the two cards.
11. Tighten the mount screws on the cable connectors on both ends to secure the cable.
12. Double-check all connections
13. Put top cover of PEB back on
14. Plug power cable back into PEB
15. Power up PEB
16. Verify the IOP link/power led is on.
  - a. This is the bottom LED on the 838-IO Plus Side-card. This LED should be GREEN.
17. If the 838-32k-SC module is installed then the top yellow LED will be lit before the console is powered up. Once powered up the LED will turn off and only engage when the 32k is being used.

**Note: The 838-32k-SC module is powered by the 838-IO Plus and not the console. To use this module inside the 838-IO Plus SC the PEB must be powered on.**

18. Power up your TI-99/4 or TI-99/4A computer

## Wiring Diagram

# 838-10 Plus Cable Wiring

Some signals must be paired with a ground signal. It easiest to tie all grounds together by soldering one connector side of the grounds to the DB37 metal housing.

Also some signals must be away from others in order for the inteface card to work correctly. Please follow the color codes below as they have been proven to work. Photos of a finished cable end is at the bottom of the document to help better identify what colors are what.

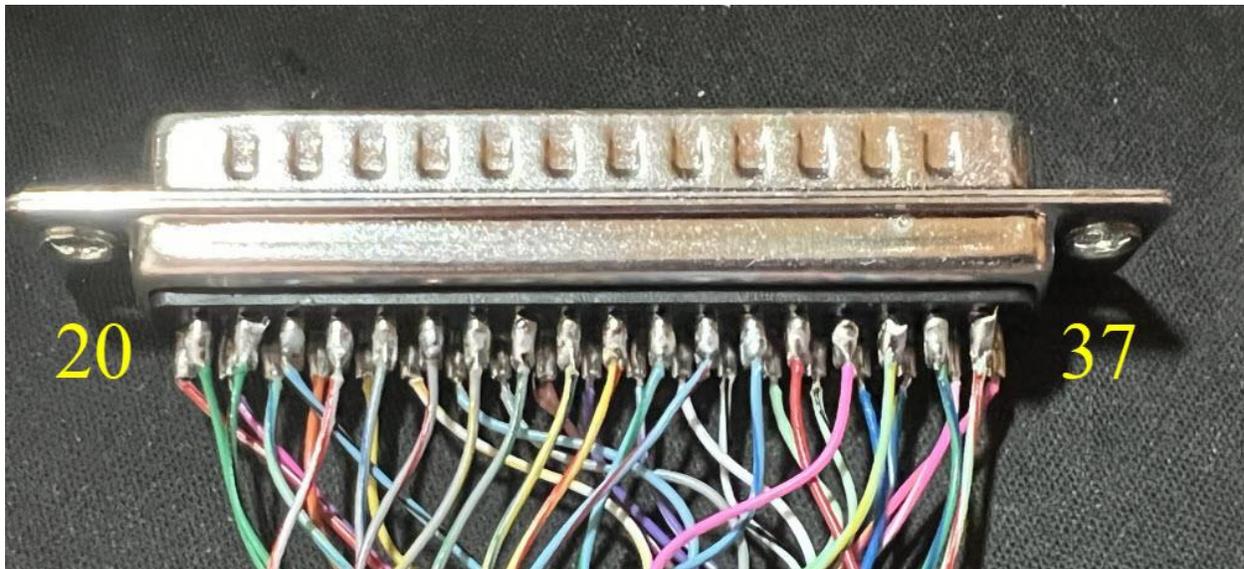
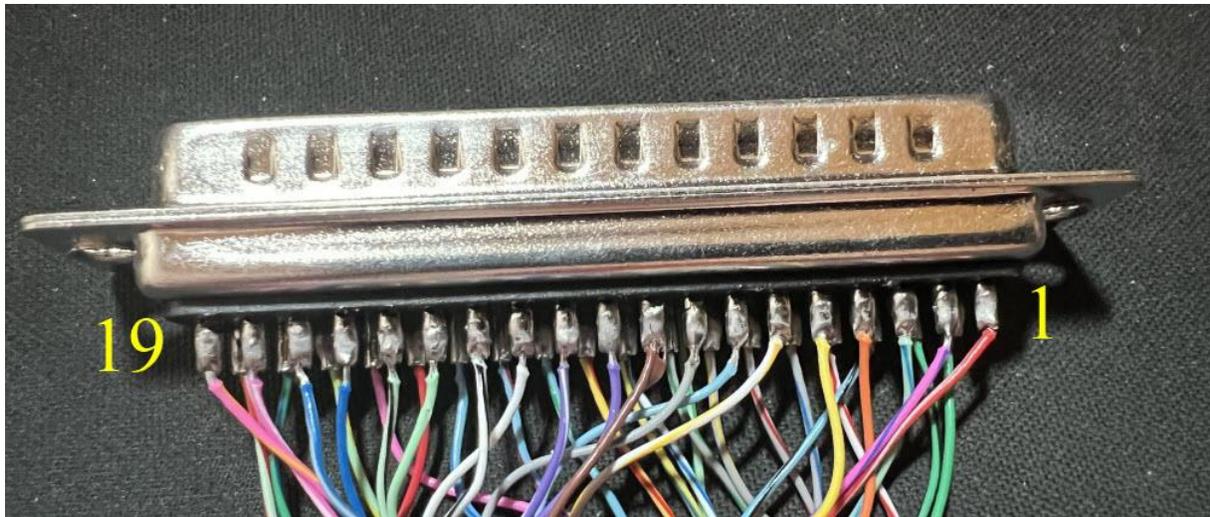
Using the recommended 50 pair twisted pair double shielded cable allows for only one side of the grounds to have to be connected because along with the shield ground wire connected to the metal housing then all become grounded since the 838-10 Plus boards DB37 mounting poins are also grounded in the circuit.

When the cable is complete you should have 49 connections + shield ground wire.

| DB37 Male |        | Wire Pair Colors         |
|-----------|--------|--------------------------|
| Pin #     | Signal |                          |
| 1         | +8VCC  | Red - White Stripe       |
| 2         | MEMEN  | Pink - Purple Stripe     |
|           | GND    | Pink - Red Stripe        |
| 3         | CRUIN  | Mint Green - Blue Stripe |
|           | GND    | Green - White Stripe     |

|    |        |                            |
|----|--------|----------------------------|
| 4  | WE     | Orange                     |
|    | GND    | Orange - Black Stripe      |
|    |        |                            |
| 5  | CRUCLK | Yellow                     |
|    | GND    | Yellow - Black Stripe      |
|    |        |                            |
| 6  | DBIN   | White - Yellow Stripe      |
|    | GND    | White - Green Stripe       |
|    |        |                            |
| 7  | INTA   | Light Blue                 |
| 22 | A13    | Light Blue - Black Stripe  |
| 8  | CLKOUT | Gray                       |
|    | GND    | Gray - Black Stripe        |
|    |        |                            |
| 9  | A00    | Brown                      |
|    | GND    | Brown - White Stripe       |
|    |        |                            |
| 10 | A01    | Purple                     |
| 11 | A02    | Purple - White Stripe      |
|    |        |                            |
| 12 | A03    | White                      |
| 13 | A04    | White - Black Stripe       |
|    |        |                            |
| 14 | A05    | Mint Green                 |
| 15 | A06    | Mint Green - Black Stripe  |
|    |        |                            |
| 16 | A07    | Blue                       |
| 17 | A09    | Blue - White Stripe        |
|    |        |                            |
| 18 | A10    | Light Pink - White Stripe  |
| 19 | A11    | Light Pink - Yellow Stripe |
|    |        |                            |
| 20 | A12    | Green                      |

|    |            |                            |
|----|------------|----------------------------|
| 21 | A12        | Green - Black Stripe       |
|    |            |                            |
| 23 | D7         | White - Red Stripe         |
|    | GND        | White - Blue Stripe        |
|    |            |                            |
| 24 | D6         | Gray - Blue Stripe         |
| 25 | D5         | Gray - Red Stripe          |
|    |            |                            |
| 26 | D4         | Gray - Yellow Stripe       |
| 27 | D3         | Gray - Green Stripe        |
|    |            |                            |
| 28 | D2         | Yellow - Green Stripe      |
| 29 | D1         | Yellow - Red Stripe        |
|    |            |                            |
| 30 | D0         | Light Blue - Green stripe  |
|    | GND        | Light Blue - Yellow stripe |
|    |            |                            |
| 31 | RDBENA.A   | Light Blue - Red Stripe    |
| 32 | A15/CRUOUT | Light Blue - Blue Stripe   |
|    |            |                            |
| 33 | A14        | Red                        |
|    | GND        | Red - Black Stripe         |
|    |            |                            |
| 34 | READY      | Pink                       |
|    | GND        | Pink - Black Stripe        |
|    |            |                            |
| 35 | AUDIOIN    | Yellow - Green Stripe      |
|    | GND        | White - Green Stripe       |
|    |            |                            |
| 36 | GND        | Green - Blue Stripe        |
| 37 | RESET      | Light Green - Red Stripe   |



## Testing

You can access the PEB interface and other cards within the PEB as you would with a standard Flex Cable Interface card.

In Extended Basic typing `SIZE` and press enter will show you the amount of memory available for base and expanded.

Accessing storage devices such as floppy disk, hard disk and ram disk all work as you are used to.

To verify access to other PEB cards then use the standard commands from TI Basic/Extended Basic/Editor Assembler or other utilities to access your systems expansion cards.

## Support

For all support related questions please send an email to [shift838sup@gmail.com](mailto:shift838sup@gmail.com)

SHIFT838 Website

<http://shift838.99er.net>

SHIFT838 Store:

[shift838.fwscart.com](http://shift838.fwscart.com)