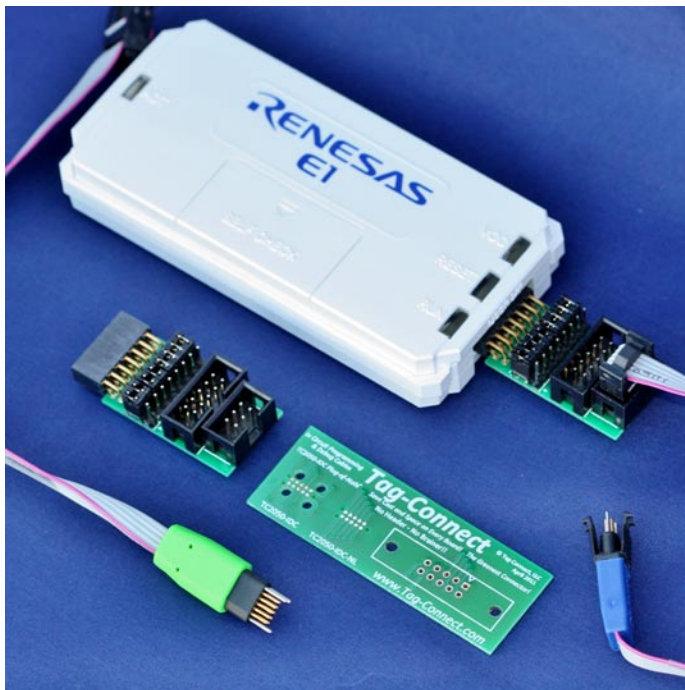


# Tag-Connect



## TC-Renesas Adaptor for E1 & E8A Debuggers

Allows all E1 / E8a Compatible Renesas MCU's to use Tag-Connect Plug-of-Nails™ Cables



*(Renesas E1 Debugger, Cables & Demo PCB are for illustrational purposes only and are not included with the adaptor)*

### **Tag-Connect! No Header - No Brainer!**

For use with all Renesas MCU's that are compatible with Renesas E1 or E8a debuggers (such as R8C, RL78 etc)

Jumpers configure the adaptor for use with the specific MCU family.

Designed for use with either **TC2030-IDC** or **TC2050-IDC** "Legged" or "No Legs" Plug-of-Nails™ Cables (which one depends on the specific MCU requirements).

Eliminates the usual 14-pin Box-Header required on each and every PCB and provides a zero component count target Programming / Debug connection!

PCB Footprint can be as small as 0.02 square inches (12 square mm) which is about the same board space that is required for an 0805 resistor).

## **Tag-Connect – Save Cost and Space on Every Board!**

The TC-Renesas adaptor plugs securely into your Renesas E1 or E8a debugger. Eight configuration jumpers configure the adaptor to provide the signals and emulator ground connections required for your specific Renesas MCU. Depending on how many signals are required, a 6-pin Tag-Connect TC2030-IDC or a 10-pin TC2050-IDC Plug-of-Nails™ cable plugs into the adaptor and the Tag-Connector (Plug-of-Nails™) end of the cable plugs directly to a tiny footprint of pads and holes in your target PCB, eliminating both cost and requirement for a mating PCB header component on each and every PCB.

Tag-Connect's Plug-of-Nails™ cables use high-reliability crown-tipped spring-pins to ensure a secure and reliable connection with your target MCU. The cables are available in a self-retaining "Legged" version (for prolonged debugging connections) and a "No Legs" version which is designed to facilitate an efficient hand-held programming operation in a production environment.

**For technical support and product information please visit: [www.Tag-Connect.com](http://www.Tag-Connect.com)**

TC2030-IDC and TC2050-IDC Plug-of-Nails™ Connectors are protected under U.S. Patent No. 7,878,834. International Patent Pending

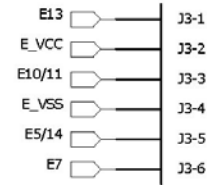
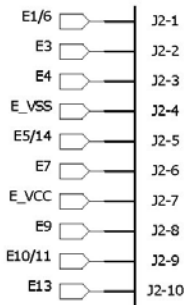
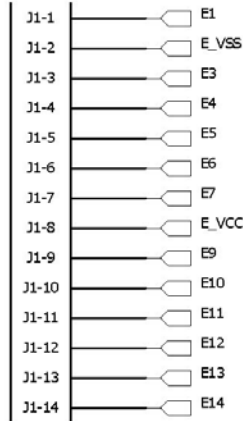
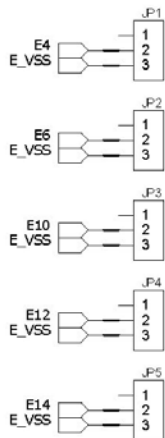
TC2030-IDC-NL and TC2050-IDC-NL cables are patent pending.

# Application Notes (also see [www.Tag-Connect.com](http://www.Tag-Connect.com))

E1 / E8a 14-pin

TC2050-IDC

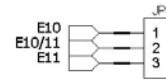
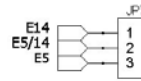
TC2030-IDC



10-Pin Header

6-Pin Header

Ground Jumpers



All default jumper positions are 2-3

Signal Selection Jumpers

## Jumper Configuration Steps:

1. Lookup the E1 or E8a connection requirements for your MCU at Renesas.com. Because each family of Renesas MCU's use a different set of signals and signal names and on different pins, you need to refer to the signals by their 14-pin E1 / E8a connector pin numbers. List the signals you need to connect to your MCU by E1/E8a connector pin number. We prefix each pin number with the letter E to refer to the signal on that pin.
2. Determine the E1 / E8a pins that are required to be ground (Vss) connections and set Ground Jumpers JP1-5 accordingly. E2 is always connected to Vss and doesn't need to be set by a jumper. The ground jumpers are the five rightmost jumpers with the E signal number above. (From right to left JP1-E4, JP2-E6, JP3-E10, JP4-E12 and JP5-E14). When the jumper is in the lower position, that signal is connected to Vss (as marked on the PCB).
3. Vss (E2), E7 (Varies by MCU), Vcc (E8) and E13 (RESET) are always connected to both Tag-Connect footprints. Additionally E3, E4 and E9 are always connected to the 10-pin (TC2050-IDC) header. If you need any of E1, E3, E4, E6 or E9 you should use a TC2050-IDC(-NL) cable connected to the 10-pin Header (J2). Otherwise you should be able to use the subset of signals provided by the 6-pin (TC2030-IDC) header.
4. The three leftmost jumpers each select which of two signals is routed to the 6 and / or 10-pin Headers. JP6 selects between E1 (upper position) or E6 (lower position). JP7 Selects between E14 (upper position) and E5 (lower position). JP8 selects between E10 (upper position) and E11 (lower position). If you don't need either signal, the jumper position is unimportant. So far as we are aware, all E1 and E8a compatible MCU's can be used, however, on some devices (RX610, RX621, RX62N, RX62T, RX630, RX631, RX63N and RX210) there are some optional signals that may not be able to all be connected using this solution.

## Example Configurations:

E1/E8a MCU Connector	Ground Selection Jumpers (Jumper 2-3 to connect to Vss)					Signal Selection Jumpers		
	JP1(E4)	JP2(E6)	JP3(E10)	JP4(E12)	JP5(E14)	JP6(E1/E6)	JP7(E14/E5)	JP8(E10/E11)
E8a R8C/28 6-pin TC2030	2-3 (Vss)	2-3 (Vss)	2-3 (Vss)	2-3 (Vss)	1-2(used for target detect)	(either)	1-2 E14 Connect to Vss on target footprint	(either)
E1 RL78 10-pin TC2050	1-2 (not Vss)	1-2 /TRESET (not Vss)	1-2 /RESET (not Vss)	2-3 (Vss)	2-3 (Vss)	/TRESET 2-3 E6	TOOL0 2-3 E5	1-2 E10 /RESET

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