

Main System Board Installation for Tank Sentinel, AutoStik, BulkStik ATGs

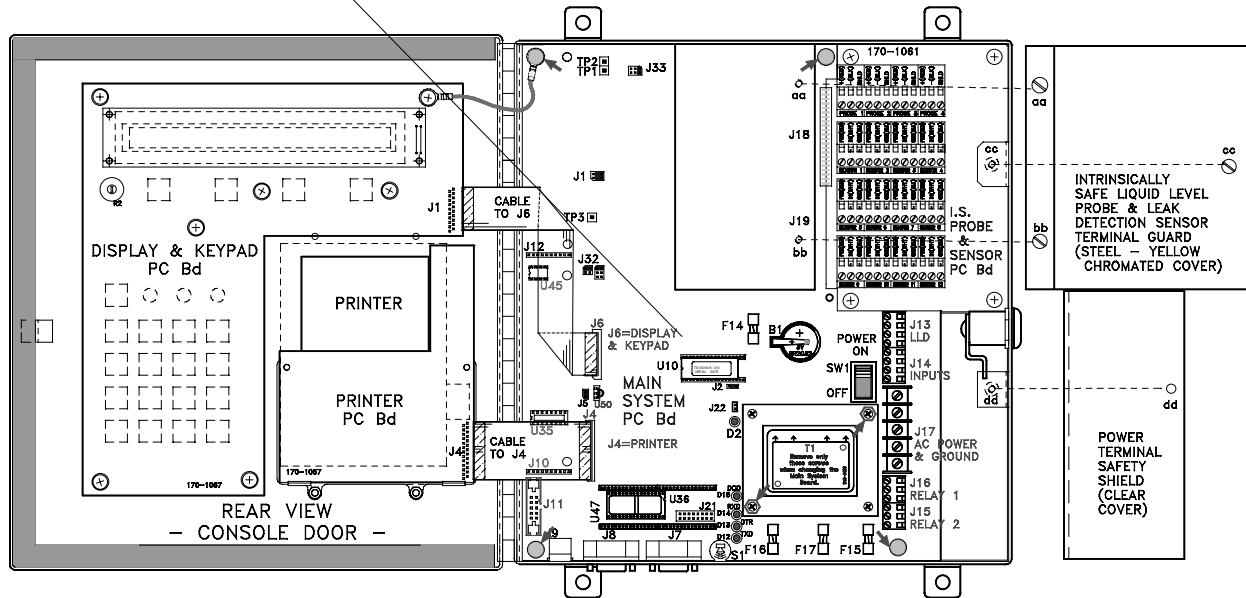


Diagram: A Tank Sentinel (Except TS-2001), AutoStik Jr, BulkStik, AutoStik II (1-4ch)

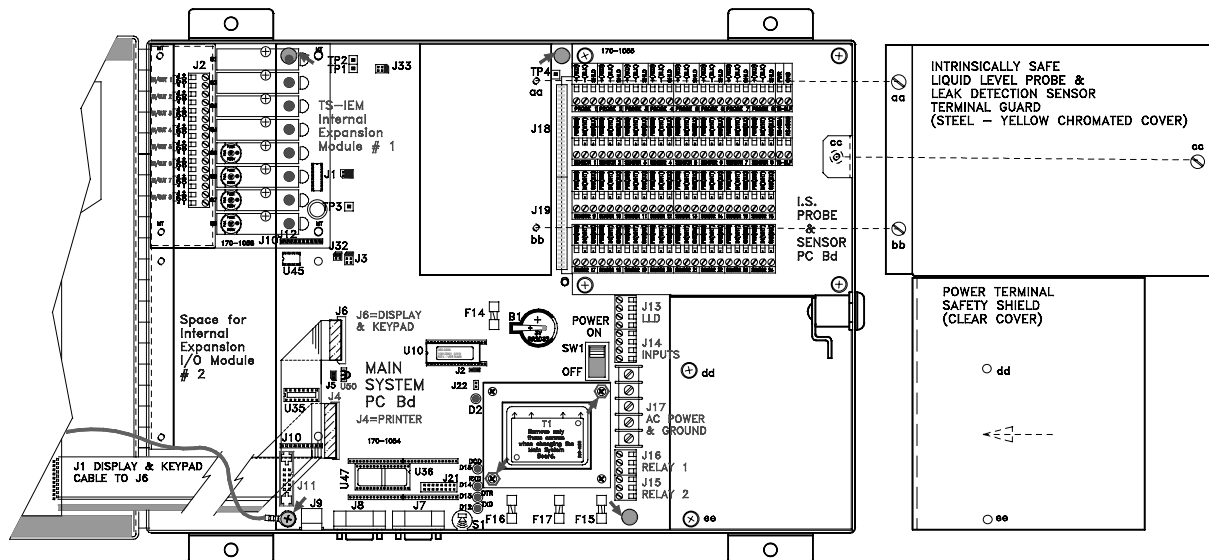


Diagram: B TS-2001, AutoStik II (8 Ch)

Need: *Digital multimeter to read Voltage, screw drivers, and marking tape and pen.*

Parts Supplied (Documents 000-0200, -0205, -0206, 0207, -0211, -0212, -0213) and:

- 1.) Main System Board (**MSB**) for Tank Sentinel, AutoStik Jr, BulkStik console (See Diagram A)
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- 2.) Main System Board (**MSB**) for the TS-2001, & AutoStik II (See Diagram B) and
- 3.) Packaging and Large Electronic Component **anti-static bag** (reuse to ship the old **MSB** back to INCON... after receiving RMA paper work.)

Recommended:

Printout the complete System Setup Report and Tank Setup reports for all tanks (or up-load the Setup configuration). Print this data before you proceed. You must cold boot and reprogram the entire tank gauge after the **MSB** is replaced (the setup configuration reports down-load will save a lot of the required time to reprogram a system console).

Removal & Installation Steps (with **all** Tank Gauge **POWER OFF**):

Removal of the old Main System Board



DANGER Electrical Shock Hazard. Locate and disconnect / turn off **all** external power sources before working on or servicing these circuits (Relay Output terminals and main system power terminals, and – in the case of TS-2001 consoles – the power going to the TS-IEM module terminals).

- 1.) Remove the golden metal probe & sensor terminal guard & power safety-shield.
- 2.) Remove the external communication cables from the bottom of the console at: J9, J8 and J7.
- 3.) Remove the external BriteBox Interface Cable at Connector at J11. Push the two side tabs out, grasp the connector, and pull it out of its socket.
- 4.) **Verify that no voltage / power is present** at the lower right set of vertically arranged terminals ...**check all terminals / circuits before removing any wires.**
- 5.) Tape and mark all wires at the lower right set of terminals so they can be correctly reinstalled later.
- 6.) Remove the tagged and marked power wires at the lower right side of the Main Circuit Board (**J13 TS-LLD, J14 INPUTS, J17 POWER & SAFETY GND, and J15 & J16 RELAY 1 & 2 OUTPUTS**).

DO NOT remove the probe or sensor wires (this interface board will remain in place because it is beneath, or at a lower level than the **MSB**).

- 7.) Remove the TS-2001/AutoStik II: TS-IEM Power Safety Shield and **verify that no voltage / power is present...** disconnect all power before proceeding.
DO NOT remove wires terminating at the TS-2001 TS-IEM PC Board(s) ...the TS-IEM interface board(s) will not be taken out-of the console.
- 8.) Remove the support hardware from the TS-IEM PC Board(s) and unplug these from the **MSB** (see P/N 000-0212 for instructions).
- 9.) Pull the Display and Printer cables out of connectors J6 and J4 at the **MSB**.
- 10.) Remove both the ID chip in U50 (see 000-0213 for instructions) and the EPROM in U10 (see 000-0211 for instructions) save them for use in the new **MSB**.
- 11.) If present, remove the: TS-FDM2 Fax / Modem assembly from U47. IF installed, remove the U36 EPROM, and the 8 blue jumper links at J21 (see P/N 000-0207 for instructions).
- 12.) Use a flat-bladed screwdriver to remove the lower left and upper right hold-down the brass screws at transformer (T1). Use a Phillips bladed screwdriver to remove the metal hold-down screws from the four corners of the **MSB**. The fasteners to remove are indicated by arrows in the diagrams. Note that one of these will also have a green ground wire attached to it.
- 13.) Using a flat bladed screwdriver, pry the **MSB** up under the upper right corner where it meets the Probe and Sensor PC Board.
- 14.) Grasp the **MSB** at the left and right side and pull out in a side-to-side rocking motion until the board unplugs and is free.
- 15.) Pull the **MSB** out about two inches at the top and move upwards to clear the lower communication socket openings (at the bottom of the console).

Installation of the new Main System Board

- 1.) **Ground yourself** – *to eliminate static electricity* – touch the bare metal of a metal conduit **and remove the MSB** from the anti-static bag.
- 2.) Remove upper right and lower left nuts from transformer T1 hold-down screws on the new **MSB** (or from the back-side, remove the upper left and lower right nuts). Do not remove the hold-down screws because these keep the spacers in-place.
- 3.) With the top of the new **MSB** tilted forward, insert it into the console so the communication connectors at the bottom of the **MSB** are inserted through their respective openings.
- 4.) Push the **MSB** down to seat it into the Probe and Sensor PC Board.

- 5.) Use a flat bladed screwdriver to install the upper right and lower left hold-down screws at transformer T1 (verify that all 4 tubular nylon spacers are still in place).
- 6.) Use the Phillips bladed screwdriver to install the four metal hold-down screws into the four corners of the **MSB**. Make sure the green ground wire, ring-lug, is also held-down by one of these screws.
- 7.) **Ground yourself again** – touch the bare metal of a metal conduit.
- 8.) Reinstall the ID chip into the U50 socket (see 000-0213) and the EPROM into the U10 socket (see 000-0211) of the new **MSB**. Verify that the B1 Battery is installed in the MSB.
- 9.) If a BriteBox is present, then reinstall the gray ribbon cable at J11 on the **MSB** with the red-stripe facing down.
- 10.) Reinstall the Display & Keypad cable and the Printer cable at J6 and J4. Note that the silver conductor side must face left and the glossy side must face right.
- 11.) Reinstall the communications cables into connectors: J9, J8 and J7.
- 12.) Re-terminate all of the marked wires correctly at J13 TS-LLD, J14 INPUTS, J17 POWER & SAFETY GND, and J15 & J16 RELAY 1 & 2 OUTPUTS.
- 13.) **Ground yourself again** – touch the bare metal of a metal conduit.
- 14.) Reinstall the TS-FDM2 Fax / Modem **if present** (see P/N 000-0207 for instructions).
- 15.) **Ground yourself again** – touch the bare metal of a metal conduit and **if present in a TS-2001/AutoStik II console:** reinstall the TS-IEM PC Board(s) back into the **MSB** (see P/N 000-0212 for instructions).
- 16.) Check all wires for proper termination... are the terminal hold-down screws tight?
- 17.) Reinstall all safety shields before turning the external power back on.
- 18.) Cold boot and Reprogram (setup) the Tank Sentinel console per the Setup Programming Guide (P/N 000-1053), or download saved configuration setup to the tank gauge.
- 19.) Test the system operation to verify that it is working properly and that it is, or will be in compliance with all applicable regulations.
- 20.) Lastly, return the MSB to INCON... call Tech. Service @ 1-800-984-6266 for the return shipping address, RMA number, & other special instruction.

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