

Replacing the CPU PROM and HART® PROM on the Thermo Scientific DensityPRO+ Gauge

Key Words

- Density gauge with transmitter
- Communication protocol
- Hardware upgrade


Purpose


A software upgrade has been released for Thermo Scientific DensityPRO+ gauges with the HART® communication option installed. This software makes communication via HART and the transmitter keypad more reliable and prevents the two forms of communication from conflicting with each other. The software upgrade requires an upgrade of the gauge CPU PROM and the HART board PROM as well. This technical bulletin provides the instructions for doing so.


Note: This document applies to DensityPRO+ systems with the HART communication option installed with CPU software prior to version 5.10 or HART software prior to version 1.13.

Note: You will need CPU PROM 595028 and HART PROM 595025 to perform this procedure.

PROM Replacement Procedure

 The product's installation and operation must comply with the product's safety certification as well as meet local codes and regulations. Contact Thermo Fisher Scientific with any questions.

 Ensure that power is off and the area is non-hazardous before performing this procedure.

 Close the shutter on the source housing before performing this procedure.

1. Both PROMs are located inside the gauge transmitter. Open the transmitter cover, and locate the HART board. It is piggybacked onto the I/O board, which is located to the right of the CPU. See Figure 1.

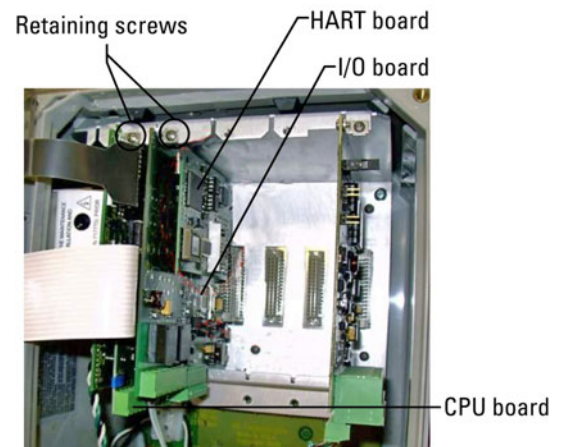


Figure 1. Inside the gauge transmitter

2. Remove the retaining screw holding the I/O board to the transmitter chassis (keep this screw for later use). Carefully pull the board slightly downward and outward to remove it from the transmitter.

3. With the I/O board removed, the CPU can now be accessed (Figure 2). Remove the retaining screw holding the CPU board to the transmitter chassis (keep this screw for later use). Hold the transmitter door so that the ribbon cables are not pulled tight. Carefully unplug the two ribbon cables from the CPU board.

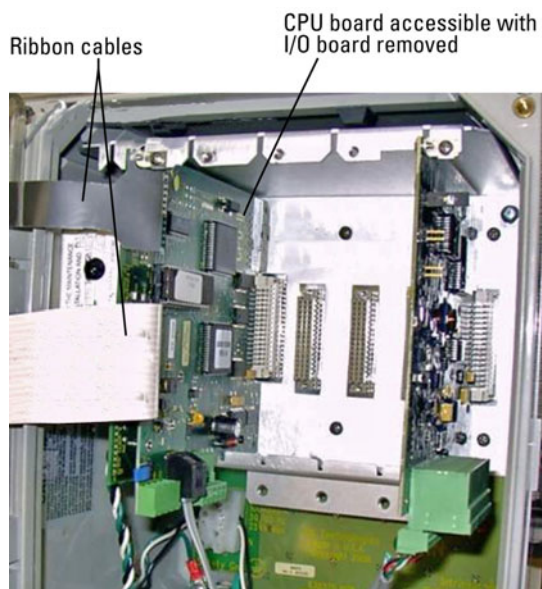


Figure 2. The CPU board and ribbon cables

Note: Handle the ribbon cables by the connectors on the ends to prevent damage.

4. Pull the CPU board slightly downward and outward to remove it from the transmitter chassis.
5. Remove the PROM from the HART board.

! It is strongly recommended that you use a PROM extraction tool like the one shown in Figure 3 to remove the PROM from its socket. These can usually be purchased from the local electronics supply store. Failure to use the proper tool can result in damage to the PROM socket, which would require replacement of the board.



Figure 3. PROM extraction tool

In critical situations, a small bladed screwdriver or curved tip tweezers can be used if an extraction tool is not available. There are slots in two corners of the PROM socket (Figures 4 and 5). These slots can be used to extract the PROM using the extraction tool or one of the other tools. Carefully pry up on each slotted corner a little at a time, going back and forth to extract the PROM evenly out of the socket.

! Be very careful not to crack or otherwise damage the socket!

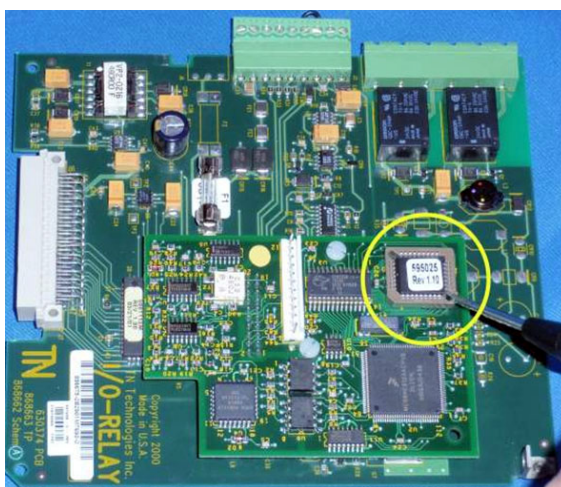


Figure 4. Extract the HART PROM

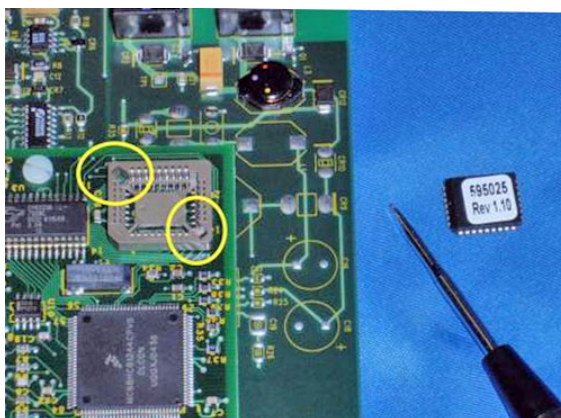


Figure 5. Slotted corners in PROM socket

- Align the replacement PROM on the socket so that the beveled corner of the PROM matches the beveled corner of the socket (Figure 6). Gently push down on the PROM until it snaps into place in the socket. If it becomes misaligned or difficult to push, stop and start over. Once the PROM snaps into the socket, it is installed.

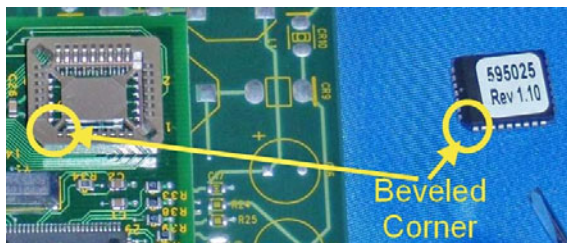


Figure 6. Align beveled corner of the PROM with beveled corner of the PROM socket

- Locate the CPU PROM on the CPU board (Figure 7).

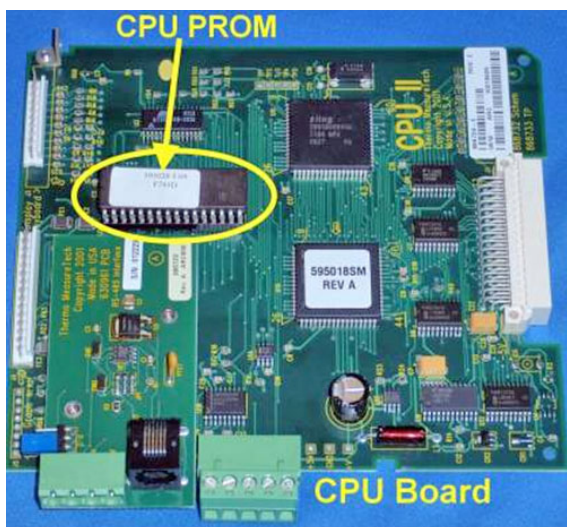


Figure 7. Location of CPU PROM

- Using the extraction tool or a small screwdriver, carefully pull the CPU PROM straight up out of the socket on the CPU board.

- Insert the replacement PROM into the socket, being careful to align the notch in the socket with the notch in the PROM (Figure 8). Take care to not bend the pins of the PROM.

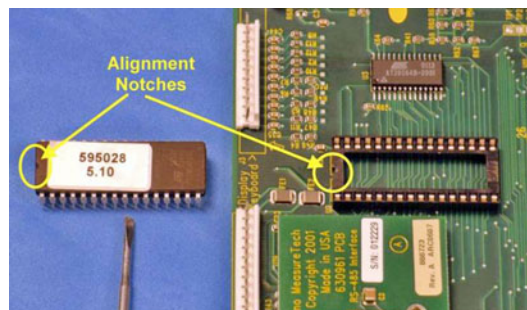


Figure 8. Alignment notches on the CPU PROM and PROM socket

- Install the CPU board back into the correct transmitter chassis slot. Secure it with the retaining screw removed earlier and connect the two ribbon cables to the board.
- Then install the I/O board back into the correct transmitter chassis slot. Secure it with the retaining screw removed earlier.
- Close and secure the transmitter cover.
- Once installation is complete, you will need to erase memory, reconfigure the gauge, and recalibrate. These procedures can be found in the DensityPRO+ gauge user guide (p/n 717819).

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