METTLER TOLEDO®

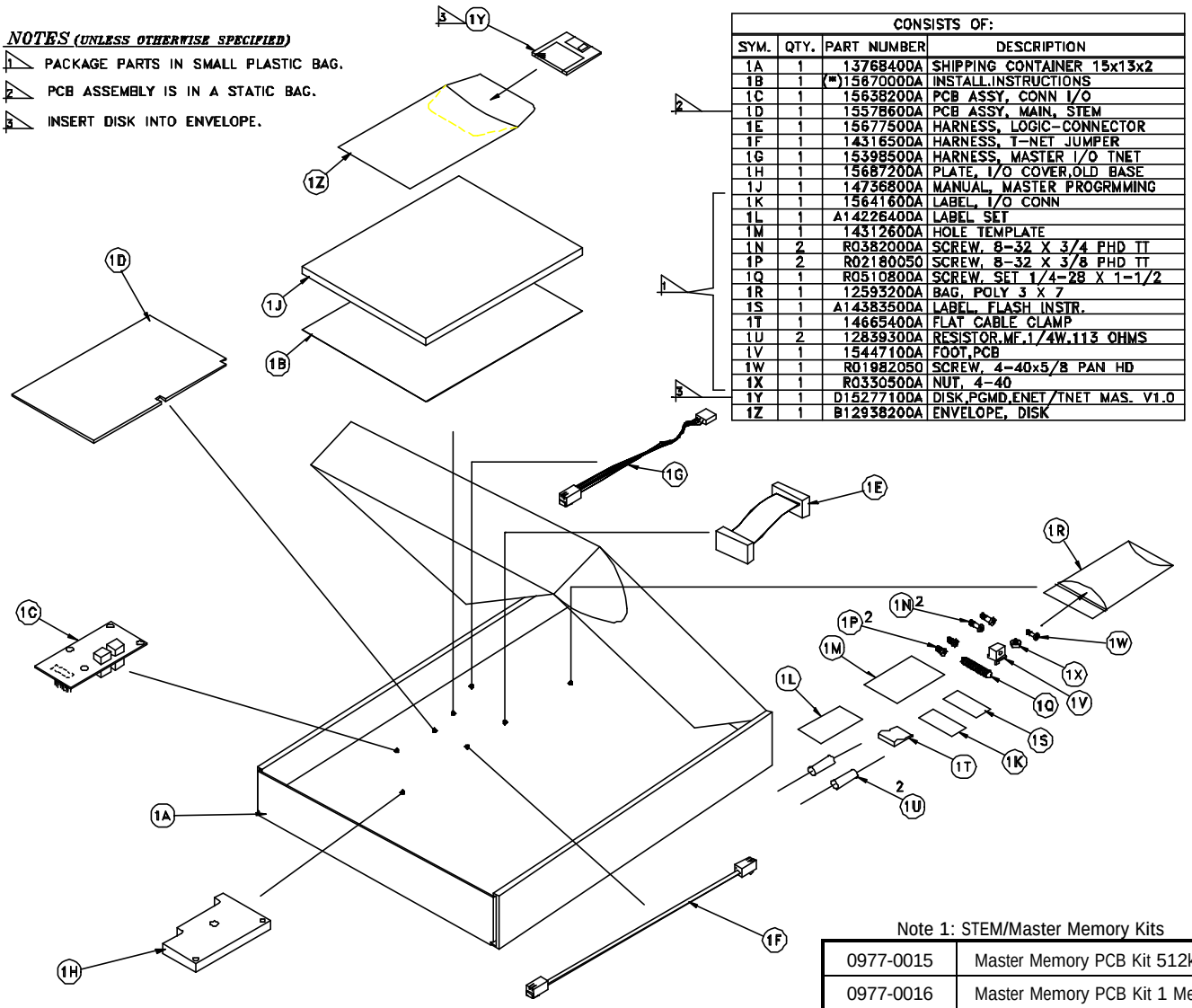
Installation Instructions

0977-0086

Description: STEM (**Smart*Touch*®** Ethernet Master) Kit
Kit Number: 0977-0086
For Model: 8460 (ZT Date Code or earlier)

This kit and a STEM/Master Memory PCB Kit (Note 1) will add the STEM (**Smart*Touch*®** Ethernet Master) to the Model 8460 Satellite with the old style base. The STEM will support both TNET Satellite scales and Ethernet Client scales. The old style base (using a bolt-on Overload Plate) was manufactured during or prior to December 1992 (ZT Date Code).

Kit Contents



CONSISTS OF:			
SYM.	QTY.	PART NUMBER	DESCRIPTION
1A	1	13768400A	SHIPPING CONTAINER 15x13x2
1B	1	(*)15670000A	INSTALL.INSTRUCTIONS
1C	1	15638200A	PCB ASSY, CONN I/O
1D	1	15578600A	PCB ASSY, MAIN, STEM
1E	1	15677500A	HARNESS, LOGIC-CONNECTOR
1F	1	14316500A	HARNESS, T-NET JUMPER
1G	1	15398500A	HARNESS, MASTER I/O TNET
1H	1	15687200A	PLATE, I/O COVER,OLD BASE
1J	1	14736800A	MANUAL, MASTER PROGRMMING
1K	1	15641600A	LABEL, I/O CONN
1L	1	A1422640A	LABEL SET
1M	1	14312600A	HOLE TEMPLATE
1N	2	R0382000A	SCREW, 8-32 X 3/4 PHD TT
1P	2	R02180050	SCREW, 8-32 X 3/8 PHD TT
1Q	1	R0510800A	SCREW, SET 1/4-28 X 1-1/2
1R	1	12593200A	BAG, POLY 3 X 7
1S	1	A1438350A	LABEL, FLASH INSTR.
1T	1	14665400A	FLAT CABLE CLAMP
1U	2	12839300A	RESISTOR,MF,1/4W,113 OHMS
1V	1	15447100A	FOOT,PCB
1W	1	R01982050	SCREW, 4-40x5/8 PAN HD
1X	1	R0330500A	NUT, 4-40
1Y	1	D15277100A	DISK,PGMD,ENET/TNET MAS. V1.0
1Z	1	B12938200A	ENVELOPE, DISK

Figure 1: STEM Kit for 8460 Contents

Note 1: STEM/Master Memory Kits

0977-0015	Master Memory PCB Kit 512k
0977-0016	Master Memory PCB Kit 1 Meg
0977-0017	Master Memory PCB Kit 2 Meg
0977-0018	Master Memory PCB Kit 4 Meg
0977-0040	Master Memory PCB Kit 8 Meg
0977-0041	Master Memory PCB Kit 16 Meg

One of the above listed Memory Kits is required with the 0977-0086 kit.

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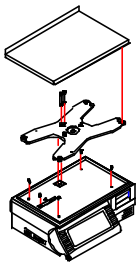
Installation Instructions

Before starting installation of the master kit, first turn the power switch to the off position, then disconnect the AC power cord from the outlet before proceeding.

Remove the platter and spider (on units with load cell) or the dead deck cover. Next, remove the top cover. Slightly lift the top cover and disconnect the customer display and LCD/IR keyboard connectors.



Plug the (*)15677500A Ribbon Harness (1 in Figure 2) into the (*)15638200A Connector PCB (2 in Figure 2). Install the Connector PCB Assembly (2) on the scale base as shown in Figure 2 using the two R02180020 3/8" screws.

Install the STEM/Master Memory PCB (3) from kit 0977-0015, 0977-0016, 0977-0017, 0977-0018, 0977-0040, or 0977-0041 on the STEM CPU PCB (4) by pressing the PCB onto connector J1 and seating the standoffs on the CPU. Make sure the connector and standoffs are fully seated. Install the (*)15447100A PCB Foot (5), using the R01982050 Screw (6) and R03330500A Nut (7).

Connect the Battery Harness at J3 (8) on the STEM CPU PCB (4).

Connect the (*)15677500A Ribbon Harness (1) from the Connector PCB (2) to J4 on the STEM CPU PCB (4). Install the (*)15398500A Ethernet Harness (9) on J6 on the STEM CPU PCB (4) and to J6 (10) on the Connector PCB (2).

Plug the STEM CPU/Memory Assembly into J13 (11) on the Mother PCB.

Install the (*)15687200A Overload Plate (12) on the scale base using two R0382000A 3/4" screws. (Note: One corner of the Connector PCB will be held in place with the Overload Plate. the bottom overload stop must be adjusted. First calibrate the scale for 100 x .01 pounds. Adjust the base overload set screw (13) to engage the load cell at 77 pounds (±2 pounds). When complete, recalibrate the scale to 50 x .01 pounds.

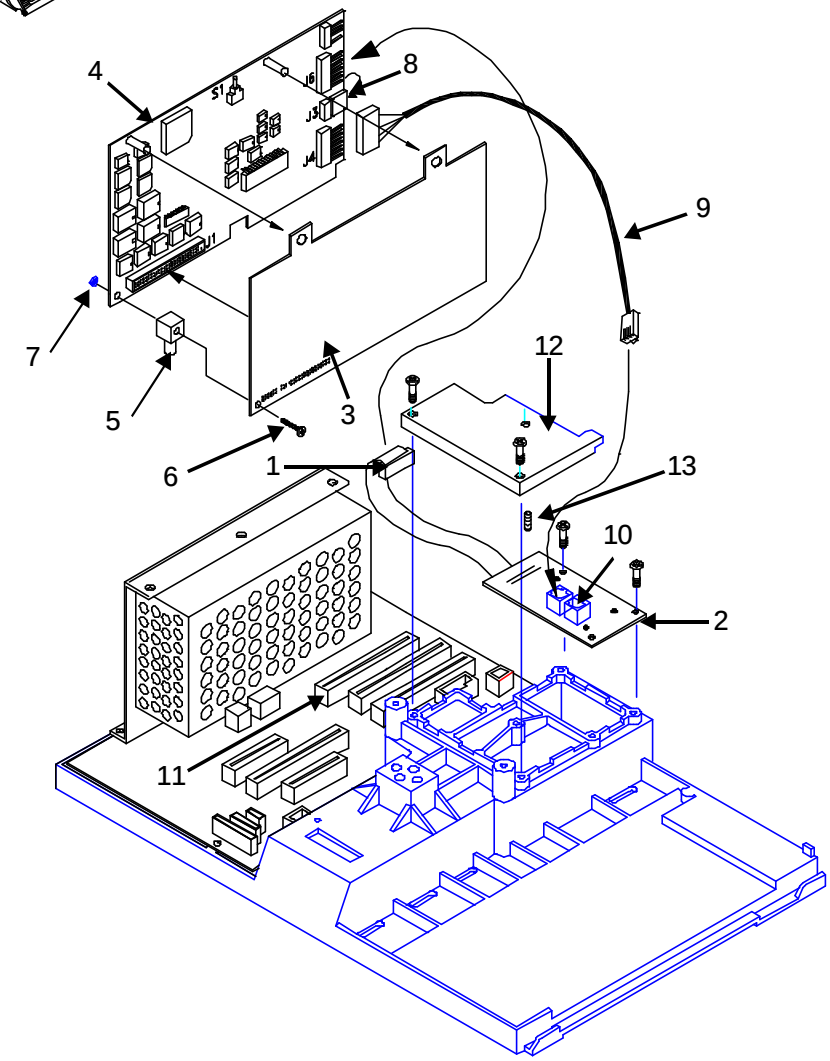


Figure 2: Installing STEM Kit
(Load Cell and Printer not shown for clarity)

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Figure 3 shows the connector layout of the STEM Connector PCB. Install I/O Label P/N (*)15641600A at the location shown in Figure 3. Note the orientation.

Re-install the top cover and display harnesses. Remove the label with the same Factory Number as the kit from Label Set, A14226400A, and place the label near the data plate.

Connect one end of the (*)14316500A TNET Jumper Harness to the Satellite TNET jack on the Main PCB (located on the bottom of the scale). Connect the other end of the harness to one of the STEM TNET jacks on the Connector PCB. (Figure 3). The other TNET jack will be used to connect the Master and Satellite to the network.

Make sure the power switch is off, then connect the power cord to the AC outlet.

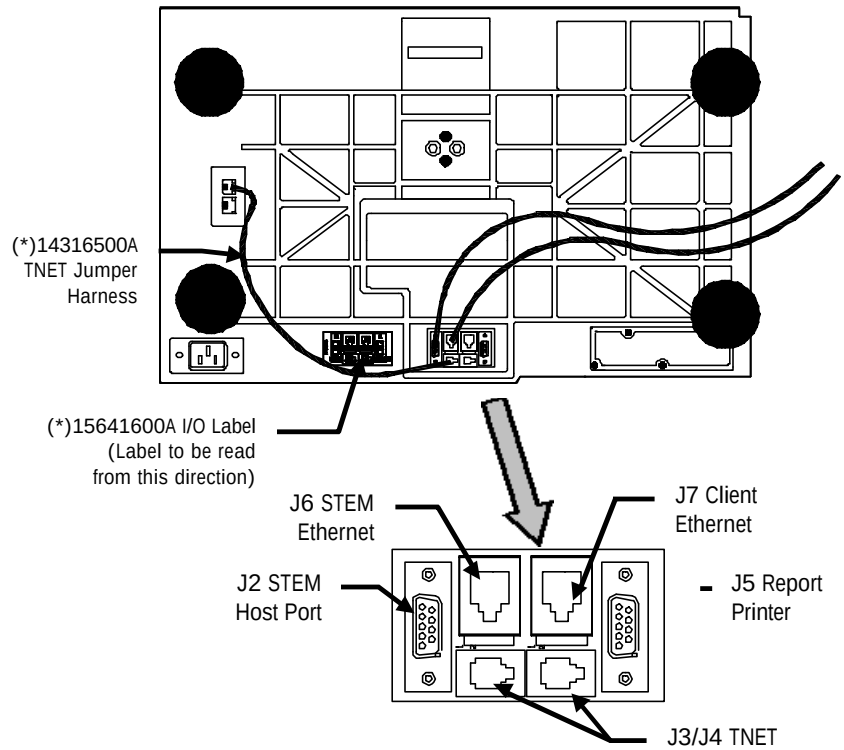

Figure 3: STEM I/O Connector PCB

Figure 4 shows a typical RS232 connection to a PC serial port.

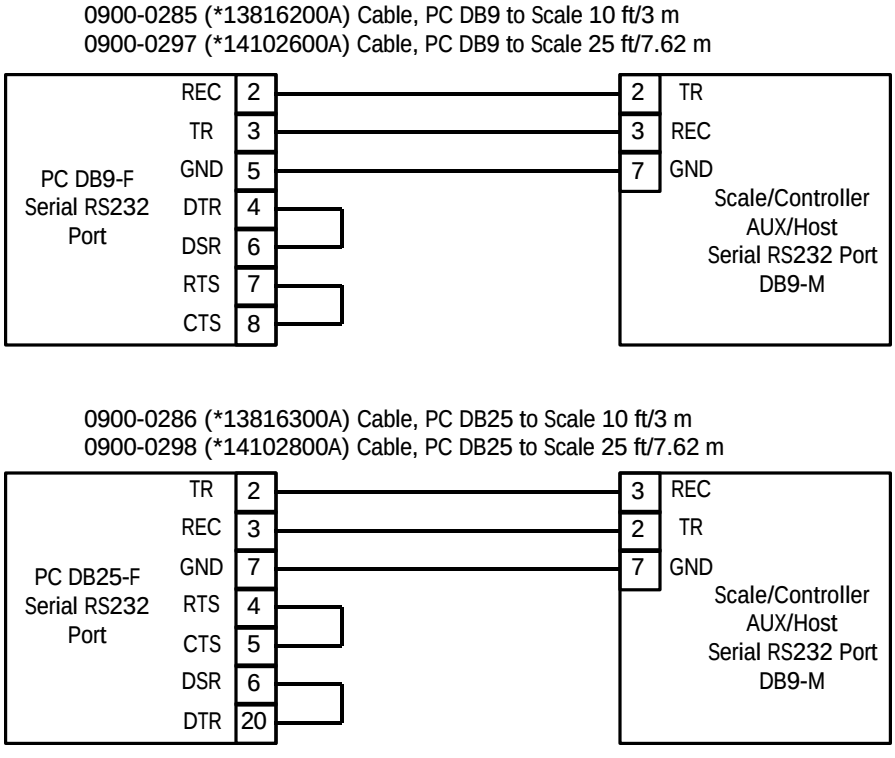

Figure 4: Host RS232 Cables

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Flashing New Software

The STEM software must be flashed into the STEM CPU PCB's EEPROM using a file from the supplied Software disk. The software is installed using a PC and a downloader program called FLASHPRO. Cables are the same as used with Databack and are shown in
Figure 4. NOTE: SETUP DATA MAY BE ERASED WHEN THE SOFTWARE IS UPDATED! The Software file on the distribution disk is compressed. Copy the file to a subdirectory on your hard disk drive. Make the directory your default, then type the file name to uncompress and create a new file. The new uncompressed file will be the software file that can be downloaded using Flashpro.

(*) = May have revision letter prefix.

First, press the Model 8460 power switch to OFF. Connect the cable end marked PC to the PC's serial port and the other end to the STEM Host Port J2 (Figure 4). Press and hold the STEM Setup switch (Figure 5), then turn the power switch to ON. Hold the button for five seconds and release it. There will be no status displayed on the Model 8460 while the master software is flashed.

Next, type in the FLASHPRO command line (or batch file name) and press ENTER. The FLASHPRO command line to is as follows:

```
flashpro -t123456.mng  -B115.2 -COM1 -PE -D7 -S2
```

Replace 123456.mng with the software file name. Always check the file name. If the file has a letter prefix, type the letter before the file name. FLASHPRO uses the COM1 RS232 Serial Port as a default. If COM2 is required, you will need to change the -COM1 to -COM2 in the command line. Typing FLASHPRO alone displays a help screen.

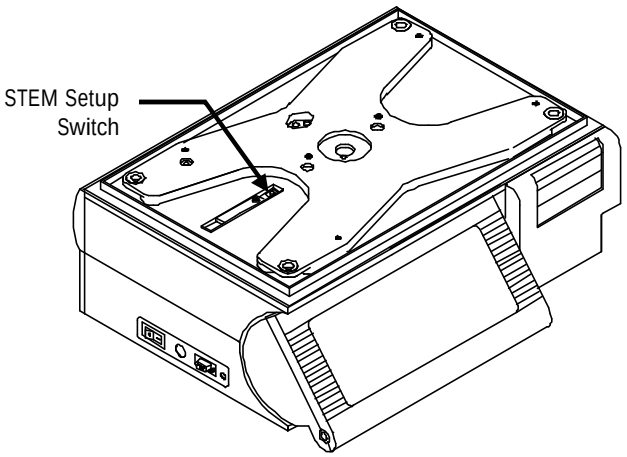

Figure 5: STEM Setup Switch

If a UART Error is displayed, check that the cable is connected to the correct serial port, and the correct cable is used. You should see Acknowledgment on the PC screen, then A's (Acknowledgment) indicating a successful download has started. When the download is complete, FLASHPRO will display the message "File Successfully Transferred". After flashing in the software, you must configure the master.

Set the STEM IP Address

After the STEM is flashed with new software, the IP address and TCP port number will be set to all zeroes. Ethernet communications will not be possible until the IP address and port number are setup. The IP address is set using a PC connected to the STEM RS232 Host Port with a PC program (supplied by METTLER TOLEDO® on the software disk called LOAD_IP.EXE). Once the IP address and TCP port number are entered via LOAD_IP, no further actions are required unless you desire to change either one of these parameters. To change the IP address or TCP port number (or both), simply run LOAD_IP as before. Any existing Ethernet connections will not be affected. Once the changes have been entered, cycle the power on the STEM for the new IP address and TCP port number to take effect.

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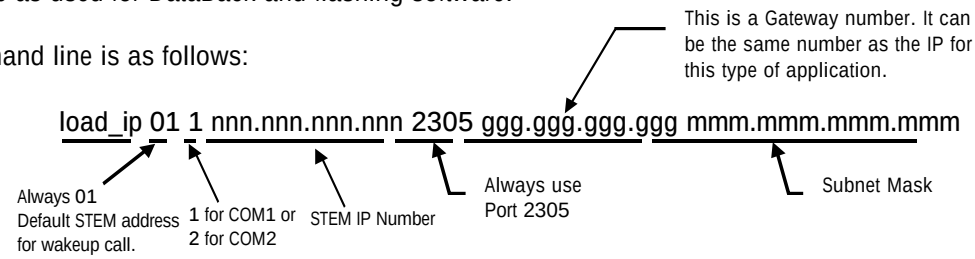
To set the STEM IP, connect an RS232 Serial cable to COM1 or COM2 on the PC and to the STEM Host Port (Figure 5). The cables are the same as used for DataBack and flashing software.

The LOAD_IP command line is as follows:



An example command to set the STEM IP number to 207.142.140.100 would be as follows:

load_ip 01 1 207.142.140.100 2305 207.142.140.100 255.255.255.0

A batch file is recommended to do this automatically. Always wait at least 30 seconds after powering the STEM up before using LOAD_IP. When the IP number is sent successfully, the PC screen should be similar to the following example.

```
C:\STEM\>load_ip 01 1 207.142.140.100 2305 207.142.140.100 255.255.255.0
Scale address [01]; Local port [COM1]; ip address [207.142.140.100] port [2305]

      default gateway [207.142.140.100] subnet mask [255.255.255.0]
Scale returned ACK to wake-up call
Scale returned ACK to IP command.

C:\Flash\STEM\LoadIP>
```

If LOAD_IP reports ACK, the IP was set successfully. If LOAD_IP reports NACK, an error occurred. In this case power down the unit, then retry LOAD_IP. If you get a blinking cursor after running the LOAD_IP command, cycle power to the scale and wait at least 30 seconds before attempting to run LOAD_IP.

Ethernet Wiring

METTLER TOLEDO® Client Scales and STEM require standard UTP (unshielded twisted pair) 10BASE-T cables, Category 5 (CAT 5) or higher, wired in a Star topology. Each node on the 10BASE-T network has its own cable that connects to a common hub. The cable from the node to the hub (segment) can be up to 100 meters (328 feet) in length.

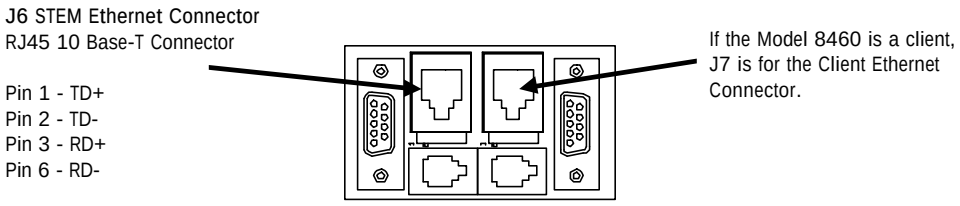


Figure 8: STEM Ethernet Connector

Refer to the METTLER TOLEDO® Connectivity Guide or the Model 8461 Service Manual for additional details on Ethernet.

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