Chapter 25 Remote Display Operation

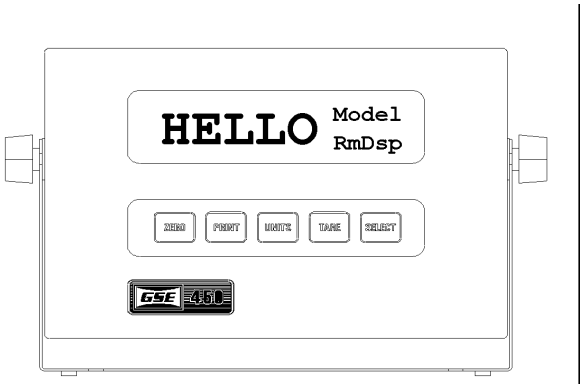

Figure 25-1 450 Remote Display Mode at Power-up

25.1 Introduction

P160.XX Model

This parameter allows the 450 to be configured as a remote display to another device. When used as a basic remote display, the 450 (slave) can display information transmitted by a master unit (GSE 450, 550, 650, 574, etc.) while also providing remote key functions. Advanced configurations allow multiple slave units to be cascaded in order to display several different types of information.

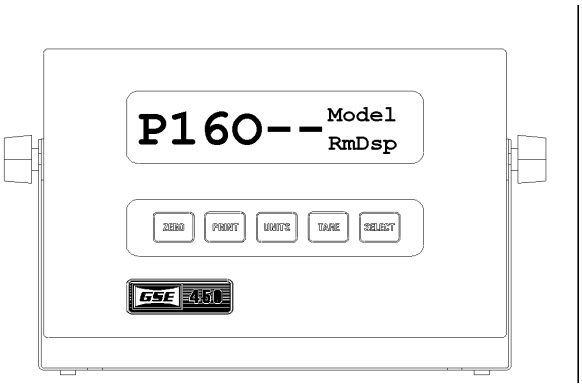

Figure 25-2 Parameter Mode to Select Remote Display

25.2 Select Remote Display Operation

To select remote display operation, key in the following code at parameter P160.XX:

9992 [ENTER]

The 450 will respond with ***Sure? ???***. Press **[ENTER]** to confirm. Refer to figure 25-2.

The 450 is now set for remote display operation. To revert P160 back to the standard ***Model 450*** operation, repeat the above procedure using the code **9990 [ENTER]**. The model specified at P160 will not be changed when performing a default setup at P65001 or P65002.

Note: Earlier versions of the model 450 referred to the Remote Display operation as ***Model 451***.

25.3 Remote Display Parameters

P270.X TmOut

Refer to figure 25-3.

Use of the ***Time Out*** parameter is used only in conjunction with the ***Display*** mode of operation described later in this chapter.

Enabling ***Time Out*** will toggle the messages ***Check Cable***, ***No Data*** if data transmissions to the slave unit have stopped.

Disabling ***Time Out*** will retain the last received information on the display.

In either case, if data is not being transmitted when the slave unit is powered up, ***Rmote Dsply*** will be displayed along with a blank numeric section until data is first received.

Note: The ***Time Out*** parameter for units with EPROMs dated 93-07-21 and earlier is P290.

P271.X Formt

This parameter sets the **format** of the remote display data. Selections are ***Display*** or ***Text***.

When set for ***Display***, information will be displayed on the remote unit exactly as it appears on the master.

When set for ***Text***, the master unit may send customized

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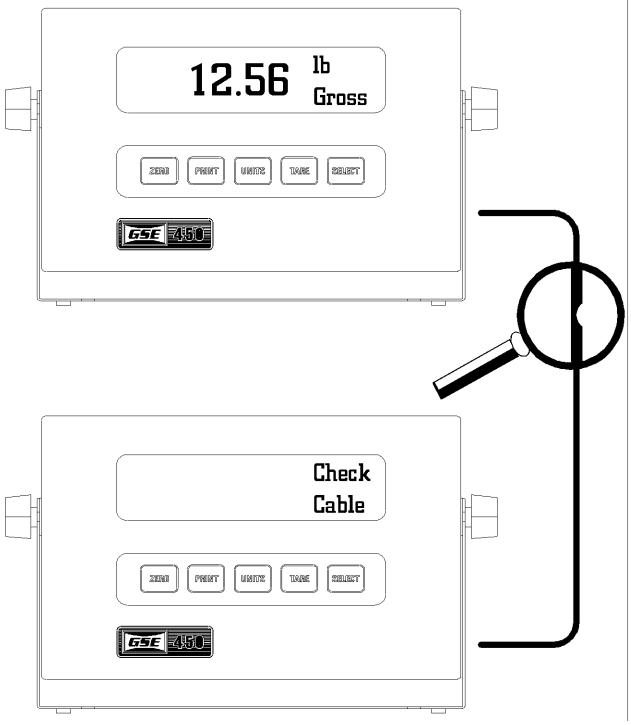

Figure 25-3 Check Cable if "Check Cable" is displayed on the Display

information to be displayed on the remote unit. Text data may be transmitted to the remote unit on a continual or "on demand" basis. The ***Time Out*** parameter P270 should not be enabled since transmissions may not occur at regular intervals when receiving text data.

Text format protocol for received data:

The 450 display has three parts; The main numeric portion, the upper auxiliary display (5 characters) and the lower auxiliary display (5 characters). Refer to figure 25-4.

Data transmitted to the remote unit must contain these three main fields with additional start/end control characters. A space character must separate the data fields. Typically, a custom transmit transmit table is defined in the master unit and is sent continually or on request to the remote unit.

The following shows how a custom ***text*** data stream should appear to be compatible with 450 remote display operation.

<START CHARACTER> <NUMERIC DATA> <SPACE>
<UNITS> <SPACE>
<MODE> <END CHARACTER>

A typical custom transmit might appear as follows:

<STX> <10000> <space > <lb> <space > <Gross> <ETX>

Start and end control characters may be omitted if ***none*** is selected for the start and/or end control characters at P274 and P275. If these control characters are omitted, a line feed (**<LF>**) must be included at the end of each transmission.

ie. <10000> <space> <lb> <space> <Gross> <LF>

Note: Units with EPROMs dated 93-07-21 and earlier do not support start and end control characters and must use the above transmission protocol.

P272.X Addr

This parameter is only accessible if parameter P271 is set for **Text format**. The address parameter allows each 450 indicator to have its own unique address selection. The address may be any ASCII character. Press **[ENTER]** to scroll through the ASCII characters or enter the ASCII number directly. Use of addressing will allow 450 indicators to be cascaded together, letting specific information to be directed to individual 450 units. The **Address** character must be transmitted following the **Start** character. Remote key operation should not be used when cascading 450 indicators; parameters P280 thru P287 should be disabled. These parameters allow for individually disabling the front panel keys from sending out serial commands to remotely effect the master unit. In the case of cascading 450 units, these serial commands would be sent to the adjacent 450 which might not be desirable.

A typical custom transmit using the ***Address*** feature might appear as follows:

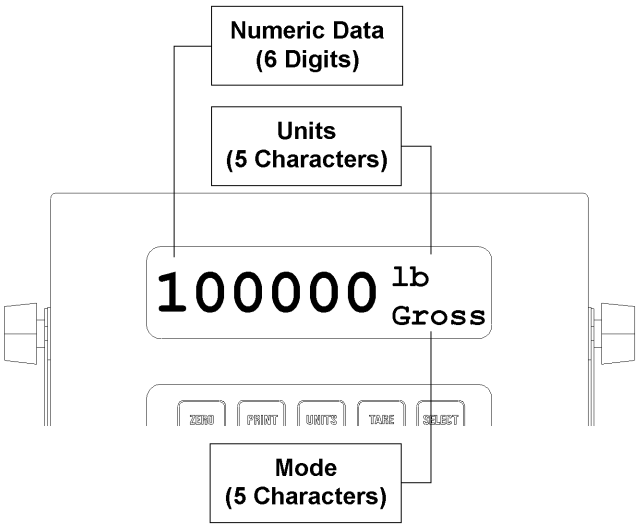

Figure 25-4 Three part display information received from master unit

Received Format:

<START CHARACTER> <ADDRESS CHARACTER> <NUMERIC DATA> < SPACE> <UNITS> <SPACE> <MODE> <END CHARACTER>

Format example, only a remote unit with an address of "A" would display the following received data:

<STX> <A> <10000> <space > <lb> <space > <Gross> <ETX>

Note: Units with EPROMs dated 93-07-21 and earlier do not support addressing.

Cascading Connections:

Remote display operations generally require no handshake lines. A transmit line and a ground line are sufficient. This will make cascading 450 units easier.

Connect the (TX) line from the sending device to the (RX) connection on the 450 COMM Port (J6). Connect the ground line from the sending device to the ground connection on the 450 COMM Port (J6). If setpoints are not used, any of the two ground connections can be used. Otherwise, two ground wires will have to be fitted into one pin connection for the next cascaded 450.

The next cascaded 450 should be connected from the previous 450's (TX) connection to its (RX) connection. The ground line should be connected between the two units.

P273.X TxUse

This parameter determines the use of the Comm Port transmit (Tx) line. If set for ***Pass***, all data which is not recognized as determined by the Start, End and Address characters of the remote unit will be "passed" out the comm port (Tx) to the next device.

If set for ***Keys***, then pressing a key on the remote unit will transmit the command for that key to the master unit. This selection should not be used if cascading remotes.

Note: Units with EPROMs dated 93-07-21 and earlier do not have a **TxUse** parameter and will operate in the ***Keys*** mode described above.

P274.X Start

This parameter allows for setting the **Start** character received from the master unit. The **Start** character is used for both the **Display** and **Text** format modes. Press the **[ENTER]** key to scroll through all selections. This selection must match the **Start** character selection set at P291 in the master unit.

Note: Units with EPROMs dated 93-07-21 and earlier do not support start and end control characters.

P275.X End

This parameter allows for setting the **End** character received from the master unit. The **End** character is used for both the **Display** and **Text** format modes. Press the **[ENTER]** key to scroll through all selections. This selection must match the **End** character selection set at P292 in the master unit.

Note: Units with 450 EPROMs dated 93-07-21 and earlier do not support start and end control characters.

25.4 Remote Keys

Keys on a remote 450 unit may be enabled to act upon the master unit. Thus it is possible to zero or tare the master unit by pressing **[ZERO]** or **[TARE]** on the remote. Note that bi-directional capabilities must be fully intact in order for the master unit to receive the remote key commands.

Note: Units with 450 EPROMs dated 93-07-21 and earlier are not capable of key disabling.

The following parameters allow for disabling individual remote keys (P280 thru P287).

P280.X ZERO

This parameter allows for enabling or disabling the remote 450's **[ZERO]** key. When this key is pressed it will send a **zero** command which is recognized by another GSE indicator. The Tx, Rx and GND line must be connected between the COMM Ports of the master and remote unit. If this parameter is disabled the **[ZERO]** key will have no effect on the master unit.

P281.X UNITS

This parameter allows for enabling or disabling the remote 450's **[UNITS]** key. When this key is pressed it will send a **units** command which is recognized by another GSE indicator. The Tx, Rx and GND line must be connected between the COMM Ports of the master and remote unit. If this parameter is disabled the **[UNITS]** key will have no effect on the master unit.

NOTE:

Make sure that all remote keys in the receiving 450 indicator are disabled when cascading 450 units. Remote Keys can be individually disabled at parameters P280 thru P287. Remote Key operation is generally used for **single** remote display operation.

P282.X SELCT

This parameter allows for enabling or disabling the remote 450's **[SELECT]** key. When this key is pressed it will send a **select** command which is recognized by another GSE indicator. The Tx, Rx and GND line must be connected between the COMM Ports of the master and remote unit. If this parameter is disabled the **[SELECT]** key will have no effect on the master unit.

P283.X ID ([PRINT] + [UNITS])

This parameter allows for enabling or disabling the remote 450's **[PRINT] + [UNITS]** key combination. When this key is pressed it will send a **%i** operation command recognized by another GSE indicator to step backwards one step in the ASCII table selection. The Tx, Rx and GND line must be connected between the COMM Ports of the master and remote unit. If this parameter is disabled the **[PRINT] + [UNITS]** key combination will have no effect on the master unit.

P284.X PRINT

This parameter allows for enabling or disabling the remote 450's **[PRINT]** key. When this key is pressed it will send a **print** command which is recognized by another GSE indicator. The Tx, Rx and GND line must be connected between the COMM Ports of the master and remote unit. If this parameter is disabled the **[PRINT]** key will have no effect on the master unit.

P285.X TARE

This parameter allows for enabling or disabling the remote 450's **[TARE]** key. When this key is pressed it will send a **tare** command which is recognized by another GSE indicator. The Tx, Rx and GND line must be connected between the COMM Ports of the master and remote unit. If this parameter is disabled the **[TARE]** key will have no effect on the master unit.

P287.X CLEAR

This parameter allows for enabling or disabling the remote 450's **[CLR]** key. When this key is pressed it will send a **clear** command which is recognized by another GSE indicator. The Tx, Rx and GND line must be connected between the COMM Ports of the master and remote unit. If this parameter is disabled the **[CLR]** key will have no effect on the master unit.

25.5 Abort Remote Display Operation

Note: Transmissions to the remote unit should be suspended prior to aborting the remote display operation. This may be accomplished by:

1) disconnect the communication cable,
2) entering the setup mode at the master unit,
3) or removing power to the master unit.

Failure to suspend transmission will likely result in an ***ovrun error*** at the remote unit.

To abort the Remote Display operation of the 450 and re-enter the setup mode, press **[ZERO] + [SELECT]** simultaneously. Enter the standard 450 access code.

[SELECT] [ZERO] [PRINT] [UNITS] [TARE]

To change the unit back to a standard 450 configuration, proceed to parameter 160. Key in **[9990] [ENTER] [ENTER]**.

25.6 Setting up a Master Unit

Any GSE 450 series, 550 series, 574, or 650 series may be used as a master to a 450 remote display.

When using the ***Display*** mode (P271) for the remote unit, simply enable the ***echo*** (P290) of the master. Be sure to specify the port out which transmissions will occur. (In the case of a 450 used as a master, only the comm port is available.)

Note: Units with 450 EPROMs dated 95-07-20 and earlier are not capable of master ***Display*** mode operation.

When using the ***Text*** mode (P271) for the remote unit, a custom transmit may be configured in the master unit to be transmitted continually or on request. Be sure to specify the port out which transmissions will occur. (In the case of a 450 used as a master, only the comm port is available.) See the ***Text*** mode of operation (P271)

earlier in this chapter for custom transmit protocol.

25.7 M450 with Bad A/D

The 450 will function as a remote display without an A/D converter or with a faulty A/D.

25.8 Additional Notes

Pressing a remote key on a slave 450/455 will invoke the remote key function of the master 450/455 as determined by P800 of the master.

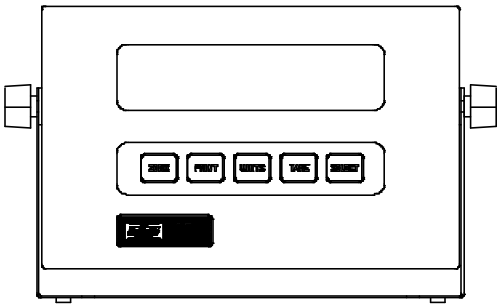

Figure 25-5 Remote 450 setup to echo the master unit