Chapter 1 Introduction

1.1   About This Manual

This Technical Reference Manual contains information covering the Model 450 series weigh indicators, all operating instructions, available options, installation information, and technical information on system setups (i.e. check-weighing).

Its basic layout of the manual sub-divides each feature of the 450 indicator into separate chapters to allow for a more focused explanation. Where applicable, combining one feature with another is called out to the reader's attention. Quick setup or reference information is separated from the rest of the information in each chapter with a gray background. Even though not directly addressed, the 450 manual covers technical information which runs parallel to other GSE products. i.e. (Models 550, 551, 552, 553, 570, 574, 9250, etc.).

This manual is a comprehensive textbook on the operation and use of the GSE Model 450 series weigh indicators. Some chapters contain more technical information than the average user needs to know, or even cares about. As you begin to use this manual, keep one thing in mind. It is not necessary to read all of this manual. The manual has been designed to provide you with the technical information for which you are looking. Don't try to treat it like a novel which must be read from cover to cover.

In many sections of this manual it refers to the indicator as a "450". This by no means implies that the other indicators in the 450 *series* are excluded in the explanation. This strictly allows for simplicity in reading and writing this manual.

If you are a first time user of the GSE Model 450 indicator, we suggest reading the following chapters:

Chapter 1   Introduction
Chapter 2   Installation Instructions
Chapter 3   Basic Weighing Parameter Setup
                   Mode
Chapter 5   Weighing Mode, key pad operations
Chapter 7   Calibration Mode

If you are familiar with the GSE Model 450 indicator setups and applications, try these chapters:

Chapter 4   Parameter Setup Mode (Advanced)
Chapter 8   Communications
Chapter 10   Remote Keys
Chapter 14   Standard Program Operations
Chapter 15   Setpoints and Logic Outputs

All installation information is included in the pertinent chapter. i.e. Memory Expansion (chapter 17).

If you are diagnosing an indicator or system problem, read:

Chapter 21   Troubleshooting

1

Figure 1-1   Model 450 Indicator

Figure 1-2   Model 455 Indicator

This manual is subject to change without notice due to correction or enhancement. The information described in this manual is solely the property of GSE, Inc. No part of this manual may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording and sold for any monetary figure without the express written permission of GSE. This also includes both the software used for computer simulation of GSE hardware and its firmware. Custom setup files that have not been developed by GSE are neither the property nor the responsibility of GSE, Inc. It is highly recommended that all application software written for the 450 to be backed up on disk in ASCII text form.

GSE Scale Systems and the GSE logo are registered trademarks of GSE, Inc. Other trademarks listed in this manual include:

- IBM, PC/AT, PC/XT and PS/2 are registered trademarks of International Business Machines Corporation.

This is the third edition of the Technical Reference Manual and was released in January, 1996 as Version 3.0. It integrates and updates a variety of separate, previously released, manuals, updates, supplements and bulletins. The information contained in this manual has been prepared specifically for instruments with Main Board PC777C, PC792B, PC800B and PC824. The firmware release date of June, 1993 for PC777B and Main Board PC800, firmware release July 20. 1995. If your indicator contains earlier board revisions or release dates, refer to previously released technical reference documentation.

1.2   Common Applications

The focus of this manual is to provide operation, setup and customization information on the Model 450 series indicators. The following is a list of typical weighing applications for which other users have found the GSE model 450 series indicators beneficial:

- Standard weighing
- Truck IN/OUT
- Tank weighing
- Holding tank control

- Counting
- Truck Weighing (M455 only)
- Process industry weighing
- Check-weighing
- Filling to a target (dispensing)
- Floor and Hopper Scales
- Conveyor weigh systems control
- Batching (mixing)
- Etc.

Refer to Chapter 14 Standard Programming Operations for specific information on how to select the standard program features of the 450 series indicators to customize your own weighing system.

1.3   Features

The GSE Model 450 series weigh indicators are a precision instrument suitable for industrial environments. The following list shows the available features of this accurate and durable weigh system component:

Highly Visible Display
Brilliant 0.75 inch high 6 digit vacuum fluorescent display is clearly readable even at a distance.

Stainless Steel Washdown Enclosure and sealed elastomer keypad provides superior protection against chemicals and hostile environments.

Capable of powering up to 8 load cells (350 ohm) for demanding applications such as floor, tank and hopper scales.

Versatile Communications
Programmable RS-232

Versatile swivel stand for table or wall mounting.

Time and Date Clock (Battery backed optional)

Front panel calibration and linearization procedures.

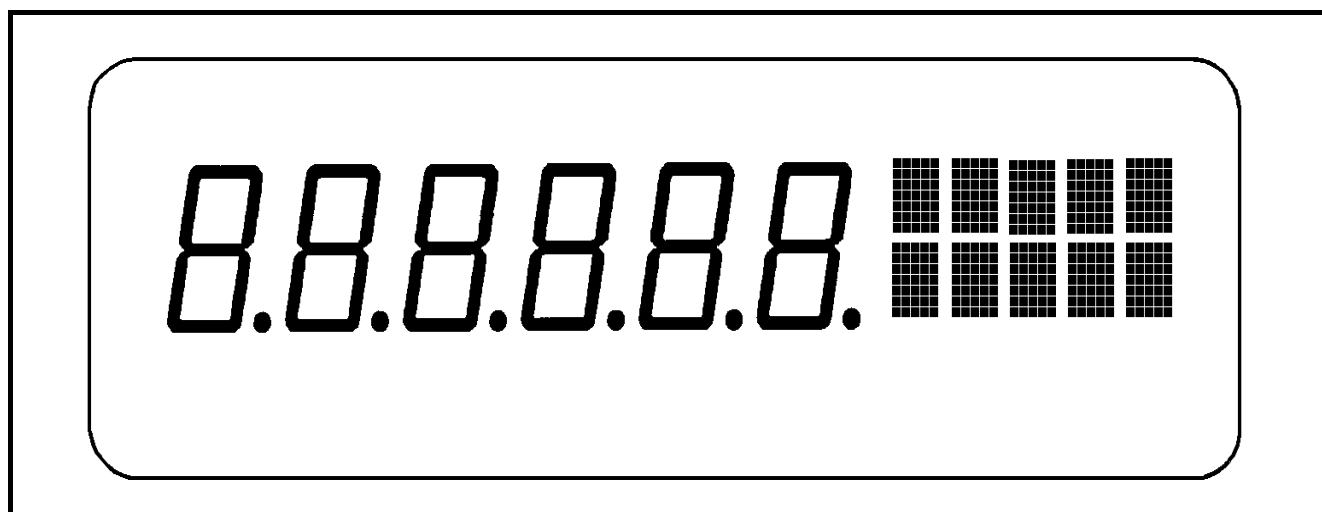Full scale response time from 0.06 to 8 seconds

Figure 1-3   Front Panel Display

1

Two Open Drain (FET) logic setpoint outputs

Selectable weighing units: lb., kg., oz, g, etc.

AC power operation (90 - 250 VAC) (**On select models only**).

DC or AC power operation (10 - 28 VDC and VAC) (**On select models only**).

Weighing increments: 1, 2, 5, 10, 20, 50, 100, 200 and 500.

Remote key activation
Remote Display capability.

Expandable memory for increased setup storage.

1.4   Display

There are two sections to the display on the Model 450 series indicators: a large numeric display and a smaller two line 10 character dot matrix display to the right of the numeric display. Refer to Figure 1-3, Front Panel Display.

The six large numeric digits are used to display numeric data, such as Gross Weight, Net Weight or Tare Weight.

The dot matrix display has several purposes. Typically, the first two characters of the upper line will show the weighing units of the displayed data. The last three characters indicate a CENTER ZERO condition when applicable (**-->O<--**). The lower line of the dot matrix portion of the display will specify the type of data, such as Gross, Net, Tare, etc.. The dot matrix display is also used for specific messages during operation and setup.

1.5   450 Series Keyboards

The following sections cover a brief explanation of the different keypads of the 450 series instruments. The Model 450 indicator keyboard is shown in Figure 1-4 and the 455 indicator keyboard is shown in Figure 1-5.

1.5.1   450 Keyboard

The Model 450 features a simplified keyboard for operator interface. The function of each key is described below.   Some of these keys have additional functions when in the Setup Mode.

[ZERO]   Press to reset the current weight reading to zero. This key also doubles as a **[CLR]** key. Press this key to

correct a number entry mistake prior to entering it in memory.

[UNITS]   Press to select the available displayed units, such as pounds, ounces, grams, kilograms, etc.

[SELECT]   Press to select the programmed operating mode such as NET Weight, TARE Weight, GROSS Weight, Time-Date, etc.

[PRINT]   Press to send data to a printer, computer or other device.

[TARE]   Press to establish a Tare Weight.
This   key also doubles as an **[ENTER]** key. Press this key after making an entry.

[UNITS]
and [PRINT]   Keys are also used when making character entries to create Custom Transmits, etc.. Refer to
Chapter 8   for custom transmit setups.

1.5.2   455 Keyboard

The Model 455 keyboard is shown in Figure 1-5. Note that there are several keys which perform multiple functions. The function the specific key will perform is dependent on what mode of operation the indicator is in.
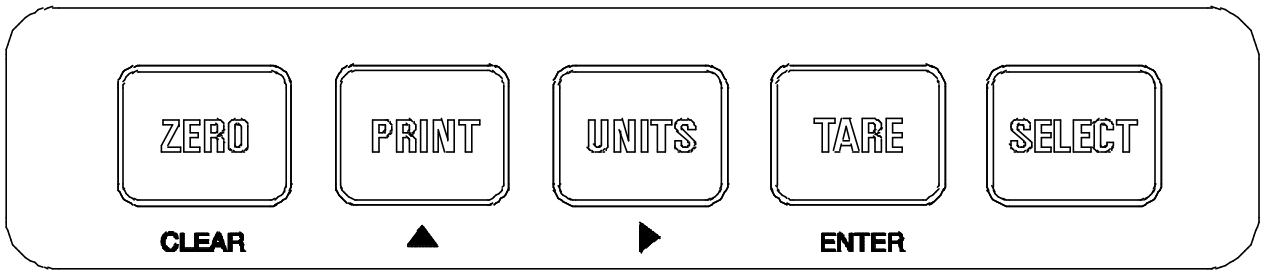
The Model 455 features a simplified keyboard for operator interface. The function of each key is described below. Some of these keys have additional functions when in the Setup Mode.

[ZERO]   Press to reset the current weight reading to zero.

[UNITS]   Press to select the available displayed units, such as pounds, ounces, grams, kilograms, and so on.

[SELECT]   Press to select the programmed operating mode such as NET Weight, TARE Weight, GROSS Weight, Time-Date, and so on

[ID]   Press to enter, store and use the **ID** parameters. ID's are used for the Truck IN/OUT mode and also APW ID operation.

[TARGET]   Press this key to key in a new target value. The target value is directly associated with setpoints and hardware outputs (relays).

[TARE]   Press to establish a Tare Weight.

Figure 1-4   Model 450 keyboard

[PRINT/ENTER]   Press to enter and store ID information. Press to send data to a printer, computer or other device. This key is also used when making character entries to create Custom Transmits, etc. Refer to Chapter 8 for custom transmit setups.

1.6   Available Options

Not all of the total capability and functionality of the Model 450 series indicators is included in the standard version of these instruments. To take advantage of additional functionality, field installed options are available from GSE. These options consist of hardware and software, and can be installed in the field. It is **not** necessary to return the instrument to GSE for installa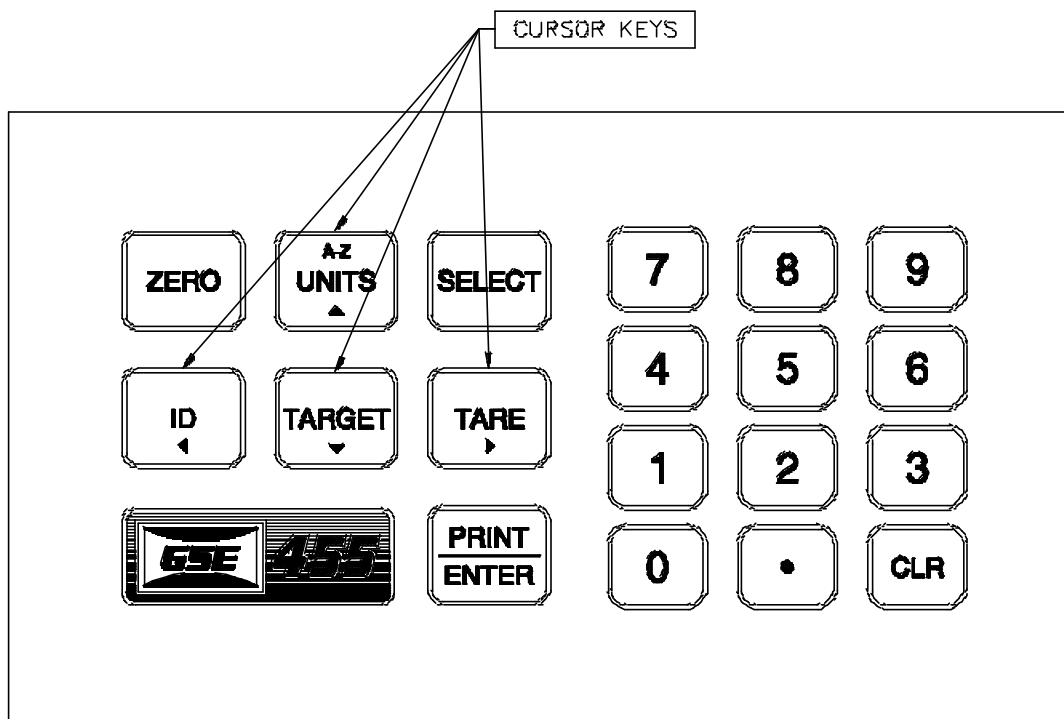tion of options. Refer to the options respective chapter for details of the options installation instructions (Chapters 15 thru 19). The following listing details all available options for the model 450 series indicators:

Compatible Peripheral Options:
Scanner (Laser Pen)
Label Printer (Thermal)
Document Printer (Dot Matrix)

Cable Options:
Scanner / Keyboard Cable
Thermal (Label or Bar Code) Printer (Eltron)
RS-232 Cable Option

Memory Expansion Option:
Increases internal memory from 512 bytes to 2.48Kb using E2 memory. Contact GSE for information on further memory expansion beyond 2.48Kb (if option is available).

Relay Module Option:

1

Figure 1-5   Model 455 keyboard

External box permitting the indicator to drive 2 relay outputs

Time & Date Option:
Adds capability of battery backed time of day and date.

1.7 Operating Modes (Brief Explanation)

In the 450 series indicators, there are four modes of operation available to you: The Weighing mode, Calibration mode, Accumulation mode and the Setup mode. The model 455 has a fifth and sixth mode of operation - Truck I/O and Counting.

The Setup Mode provides access to the seventeen groups of Parameter registers physically resident within the indicator. By entering data in the Parameter registers, you can customize your weighing operation according to your particular weighing application.

1