METTLER TOLEDO

IND560dyn
and
IND9D56
Terminals
Technical Manual

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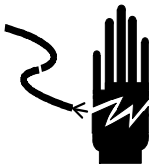

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IND9D56 Controller and IND560dyn Terminal

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Contents

Chapter 1

Introduction

Overview: IND560dyn Versions

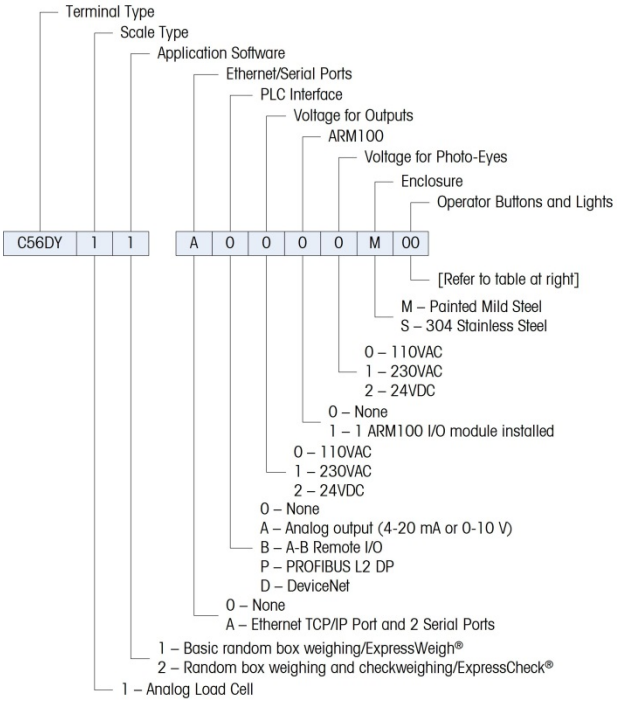
The IND560dyn and IND9D56 terminals are specialized application solutions used for in-motion weighing of conveyor-born packages. They can be used with up to four 350 Ω load cells, and are compatible with the METTLER TOLEDO 9477 weighing conveyor. The IND560dyn is a stand-alone unit; when packaged with a variety of I/O options, it is known as the IND9D56. Both types are equipped with Dyn-560 software, which can be specified in either ExpressWeigh® or ExpressCheck® form.

ExpressWeigh functionality provides accurate in-motion package weighing with ID and additional data input. **ExpressCheck** includes an enhanced version of ExpressWeigh, and adds the ability to perform three-zone over/under checkweighing, using comparisons with a Target Table.

Detailed information on the basic features, functions, operation and configuration of the base IND560 terminal may be found in the IND560 **User's Guide** and **Technical Manual**, provided on the documentation CD-ROM. This manual includes information on those features specific to the IND560dyn and IND9D56.

Model Identification

The model number and serial number are located on the data plate on the back of the terminal. Refer to Figure 1-1 to verify the IND9D56 that was ordered, and Figure 1-2 for the IND560dyn.



Code	Buttons	Status Indicators
00	None	None
01	None	Alarm light
02	None	Alarm horn
03	None	Running
04	None	Out of tolerance
05	None	Scale empty
06	None	3-zone light bar, top mount
07	None	Alarm light, running
08	None	Alarm light, out of tolerance
09	None	Alarm light, running, out of tolerance
10	Run Permissive	None
11	Run Permissive	Alarm light
12	Run Permissive	Alarm horn
13	Run Permissive	Running
14	Run Permissive	Out of tolerance
15	Run Permissive	Scale empty
16	Run Permissive	3-zone light bar, top mount
17	Run Permissive	Alarm light, running
18	Run Permissive	Alarm light, out of tolerance
19	Run Permissive	Alarm light, running, out of tolerance
20	Silence Alarm	Alarm horn
21	Run Permissive + Silence Alarm	Alarm horn

Figure 1-1: IND9D56 Model Identification Numbers

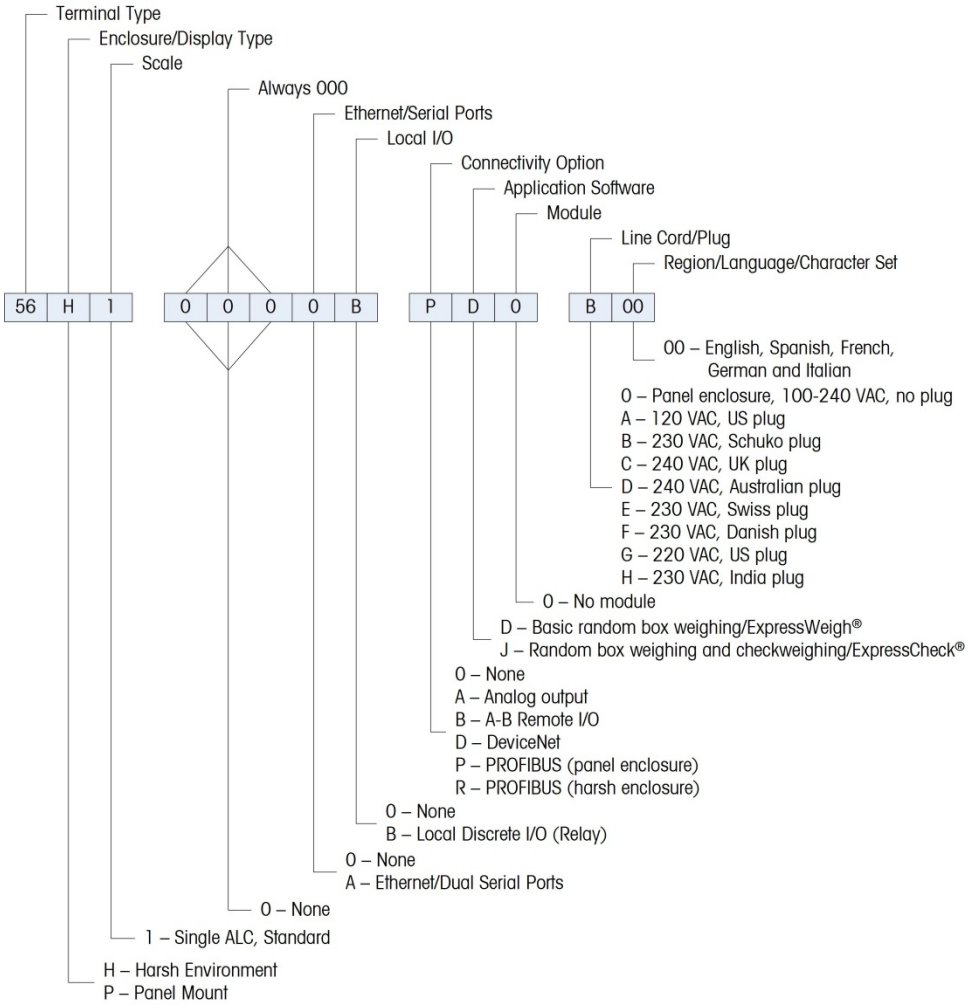


Figure 1-2: IND560dyn Model Identification Numbers

Internal Components

Figure 1-3 indicates the layout of the main components inside a typical IND9D56 enclosure.

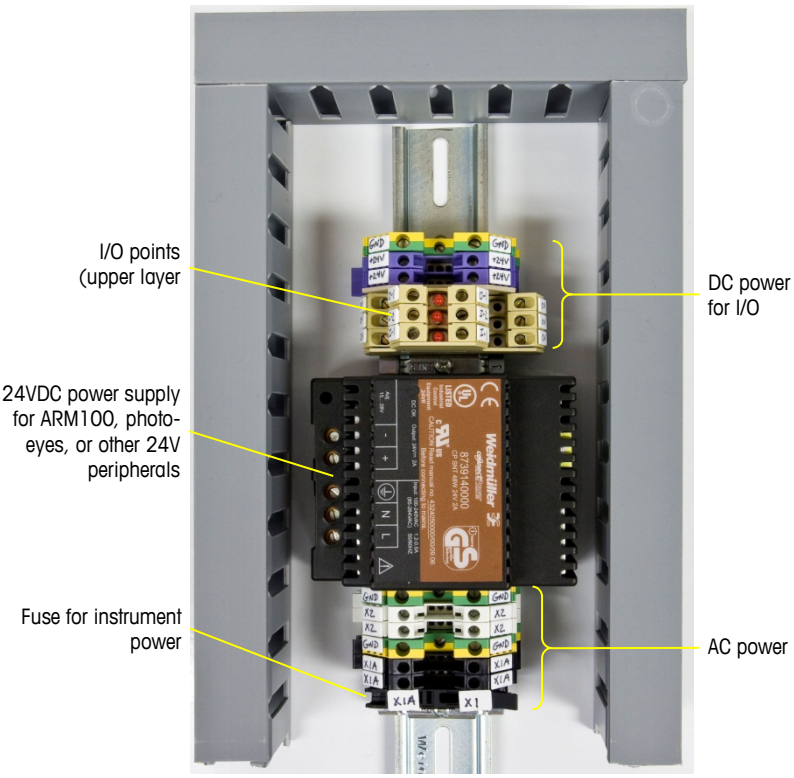


Figure 1-3: IND9D56 Internal Layout

Software Features

The sections below summarize the main functional differences between the base model IND560 and the Dyn-560 application.

Dyn-560 Features

Dedicated inputs for photo-eyes

- Automated triggering of weighment
- Adjustable threshold settings to prevent unintentional triggering of photo eyes
- Ability to accurately weigh packages in motion, even if more than one package is on the scale at one time. (Timing requirements still apply)
- Available buffering and deferred transmission of weighment data, triggered by down-stream photo-eye

Additional filtering capabilities

- Tunable notch filter –eliminates natural resonances from conveyor equipment
- AutoTune feature – calculates weighing filtering parameters based on worst-case package sample
- Dynamic Adjust feature – compensates for high-speed conveyor operation. Calculates offsets based on sample weighments of the longest and shortest package sizes

Enhanced ID processing

- Two independent input sources to store barcode and dimensional data with the transaction record
- IDs can be added to the printed or stored transaction record

Enhanced Transaction Recording

- 60,000-record transaction table, including package data captured during weighment
- Easy export via FTP for off-line analysis and archiving

Checkweighing

- 25 stored targets
- Adjustable reject output delay and duration timer for each target ID

5-Zone Application Features

In addition to the standard features listed above, the installation of the 5-Zone TaskExpert program enhances the system's functionality as follows:

- Refined identification of weighments within the "OK" zone, to show whether weighments, though stil within tolerance, are above or below the target value. The OK+ and OK- zones are associated with two new discrete outputs, and are also indicated on-screen. This assists troubleshooting and predictive maintenance for the weighing system, as trends toward higher or lower values may indicate that a component requires adjustment.
- 5-Zone target table includes optional tare value, automatically applied when dynamic weighing is run using an ID that includes tare.
- Target tare can be used as pre-set tare or additive tare.

IND560 Features Unavailable or Changed in Dyn-560

Tare functions changed

The tare table, keyboard and pushbutton tare are not available while the Dyn application is running. However, a tare may be entered on the keypad, or a pushbutton tare performed, from the home screen while the Dyn-560 application is not running. If a tare is set, Dyn-560 will use that tare for all transactions until the application is stopped and the tare cleared. When running the 5-Zone TaskExpert application, a tare value can be defined for each target ID. When operating with a tare, the Net symbol "N" will be displayed above the weight unit on the terminal display.

5-Zone Application Tare Modes

Pre-Set Tare Mode

When running the 5-Zone TaskExpert application, a tare value is defined for each Target ID. This preset tare will override any current tare value. If the preset tare is set to 0 (zero), then tare is cleared on entry into the Dyn run-time task.

Additive Tare Mode

In this mode, the pre-set tare value is added to the target value, and the resulting sum is used as the basis for comparison to the threshold values (Under, OK-, OK+ and Over). The scale does not automatically enter or clear the Net mode, which permits the use of pushbutton zero while the 5-zone Dyn-560 application is running.

Alibi Memory disabled

When the Dyn-560 application is running, the enhanced Transaction Table stores critical data about weighments.

ID function unavailable

When the Dyn-560 application is running, the ID function is not available. ID prompts can still be run from the home screen using a defined softkey.

Motion detection disabled

When the Dyn-560 application is running, the motion detection option is not available.

Chapter 2

Operation

Introduction

This chapter provides information about general operation of the IND560dyn and IND9D56 terminals. It is assumed that the user of this manual has reviewed and understands the operation of the standard IND560.

Operation of the terminal depends on enabled function and setup parameters. Functionality and configuration parameters are programmed in Setup mode and can be modified as necessary by users with appropriate access levels.

Security

The IND560dyn/IND9D56 support multiple users/passwords for setup security. The terminal is pre-configured at the factory with two user names, "admin" and "anonymous." The factory default passwords are null (no password). The terminal, as configured at the factory, requires no login or password entry to enter the setup mode. The pre-configured user (admin) cannot be changed, except to add or change a password.

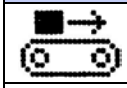
Passwords

Once a password is set, be sure to remember it. If the password is changed or forgotten, access to the setup menu will not be available. Also, keep the password from unauthorized personnel – it provides access to the entire setup menu, unless the metrology switch is placed in the approved position. If the switch is set to approved, access to the scale and other metrologically significant areas is not permitted. Please refer to the **IND560 Technical Manual** for additional information concerning Security and the multiple classes of users available with the IND560.

Softkeys and Icons

The IND560dyn/IND9D56 use the flexible softkey concept of the standard IND560 terminal, to provide softkeys specific to the Dyn-560 application. Table 2-1 explains these softkeys.

Table 2-1: Dyn-560 Softkeys

Icon	Function	Explanation
	START DYN-560	Runs the Dyn-560 application. Can be assigned in setup at **Terminal > Softkeys**.
	EXIT DYN-560	Exits Dyn-560 application and returns to standard IND560 mode. Displayed in the center softkey position, only when the Dyn-560 application is running.

Starting the Dyn-560 Application

The application can begin operation in two different ways – Manual or Auto Start. By default, the IND560dyn application is set up for Manual Start operation.

- To access the Menu Tree, the Dyn-560 application must be stopped so that home screen softkeys become available. If the terminal is in Manual Start mode, the application must be restarted once the operator exits setup and returns to the home display.

Figure 2-1 shows the IND560 home screen with the START DYN-560  and TARGET  softkeys showing.

Figure 2-1: Dyn-560 and Target Selection Softkeys Displayed

Once the Dyn-560 application is started, a screen like the one shown in Figure 2-2 displays. Note the EXIT DYN-560 softkey displayed in the center position.

Figure 2-2: Dyn-560 Initialization Screen

Once the application has loaded, it waits for the scale to zero (Figure 2-3) before entering its run state.

Figure 2-3: Dyn-560 Waiting for Zero

After the scale is zeroed, the application starts to run, in the mode configured in setup.

Figure 2-4: Dyn-560 Running

Manual Start

Manual Start requires an operator to start the Dyn-560 application from the Home display with a softkey press, or a remote input via a serial or Ethernet connection to the SDV server.

The softkey method requires the START DYN-560 softkey  to be added to the terminal's home screen, at Setup > Terminal > Softkeys.

Auto Start

Setting the application for Auto Start (in Setup at Operation > TaskExpert > Custom Setup) automatically initiates the Dyn-560 application when the system is turned on, and when the user exits the setup Menu Tree.

Basic (ExpressWeigh®) Operation

Operation of the IND560dyn/IND9D56 typically requires very little operator input or intervention. Where input is required, the Dyn-560 application provides specific prompts in order to assure consistent processing.

Random Weighing using Photo-eyes

Sequence of Operation

This mode requires no external interaction. With the Dyn-560 application running and the conveyor in motion:

1. A package breaks the beam of (upstream) Photo-eye 1, for more than the minimum time and less than the maximum time configured in setup at Application > PAC > Photo-eyes. The application interprets this as the entry of a package onto the scale.
2. The beam of Photo-eye 1 is restored as the package passes onto the scale.
3. Weighment starts.
4. When the package breaks the beam of (downstream) Photo-eye 2 for more than the minimum configured time, or another package breaks the upstream photo eye beam the weighment ends.
5. Depending on how the system is configured, information is displayed and/or output through a communication port.

Random Weighing using ASCII Input

In this mode, the IND560dyn/IND9D56 begins weighing on receiving an ASCII B command from a central controller, and stops the weighing cycle when it receives

an ASCII E command. The terminal then returns the processed weight to the controller automatically. Refer to Appendix D for further details.

Note: In this mode, all timing is handled by the external device and not by the IND560dyn/IND9D56. Therefore, the central controller's B and E commands must be sent far enough apart to avoid triggering a Short Weigh Time error. It is also the central controller's responsibility to ensure that commands are issued while the entire package is on the conveyor scale.

Other commands processed in this mode:

- Z Zero the scale. IND 560 returns an <ACK>
- W Returns instantaneous weight including the weight unit, and whether the scale was in motion or at the center of zero
- S Returns the scale status

Any available serial communication port can be configured as the interface to the central controller.

Advanced (ExpressCheck®) Operation

Advanced operation includes all the features of Basic operation, and adds an optional third Photo-eye, downstream of the scale, to trigger delayed transmission of weighment information or count the number of packages that cros the scale in a fatal error condition. This mode also permits simple three zone check weighing.

Check Weighing Mode

For check weighing mode, a target – with associated over and under tolerances – is selected from the DYN target table before starting the Dyn-560 application.

A comparison mode must be selected – Target Deviation or % of Target – at Application > Memory > Target Table.

- Do not change the tolerance type parameter if there are records in the dyn target table.
- The 5-Zone dynamic weighing application does not use the standard Target Table. For information about adding target data for this application, refer to Appendix C.

All targets should be entered into the DYN Target Table to allow for accumulative functions and reject operation. This is accomplished through the menu item Application > PAC > DYN Target Table. It is possible to configure a target by using the TARGET softkey and entering a target weight and deviation specifications; however, accumulation statistics and reject operation will not work as expected.

- When the 5-Zone dynamic weighing application is used, the Task 2 softkey is used instead of the TARGET softkey. Both softkeys use the same icon, but Task 2 displays a table view that includes OK+ and OK- parameters, and that

allows the values to be inspected but **not** edited. Target editing must be performed in setup at **Application > TaskExpert > Custom Setup**.

Important: It is strongly recommended that targets be modified in the Dynamic Target Table, and *not* by accessing a target record from the TARGET softkey, for the following reasons:

- The procedure creates a one-time target for which no statistics are accumulated.
- Unless the description field is changed, the original target's name will display on-screen, even though target and tolerance values may have been changed.
- The reject parameters set for the original target will be used, and cannot be modified.

- The 5-zone Dyn application ignores changes made using the Target softkey.
- You can configure the DYN Target Table only when the system type is set for checkweigh in **Application > PAC > System**.
- To simplify target selection before checkweighing is started, the TARGET TABLE softkey should be assigned to the home screen. Targets can also be selected while the Dyn-560 application is running by using an input device providing data to ID1, with ID1 mapped to Target ID. Refer to the ID1 and ID2 section in Chapter 3, **Configuration**.
- The operator can also clear accumulated target totals by exiting the Dyn-560 application and entering setup, to access Application > PAC > DYN Target Table.

Another method of selecting the active record from the Dyn Target Table is to use a communication connection to an external data source such as a bar code scanner reading an ID on the package being weighed. The connection can be configured to make all or part of the input the Dyn Target Table ID. Note that the DYN target table ID must be 8 or fewer numeric characters only. This configuration is accomplished in the Application > Pac > ID1 branch, and by setting up a connection at Communication > Connections. To set up the compare mode, the user must access Application > Memory > Target Table. The mode should be set to Over/Under, and tolerance type to either target deviation or % target.

- When exiting the configuration menu for the first time after setting the mode to checkweigh, an "Invalid Parameter" message may appear in the print line of the display. This is because no active target is selected. It is important to select a target prior to the first transaction using any of the methods outlined below.

Dyn Target Table ID Input

There are two ways to set the DYN Target Record on the IND560dyn:

- Keypad entry of the ID followed by pressing the TARGET TABLE softkey.
- Via a communication connection to another source of the ID.

- The 5-Zone dynamic weighing application does not use the standard Target Table. For information about adding target data for this application, refer to **Appendix C**.

- When the 5-Zone application is used, the active target record cannot be selected via an external interface, such as a bar code reader. To change the active target, the application must be stopped by pressing the EXIT DYN-560 softkey, a new target selected using the TARGET TABLE softkey, and the application restarted using the START DYN-560 softkey.

Entry by Keypad

To enter an ID from the keypad, a TARGET TABLE softkey must be configured in setup at Terminal > Softkeys. For details, refer to **Appendix E, Softkey Mapping**, of the **IND560 Technical Manual**. Simply key in the numeric DYN Target ID and press the TARGET TABLE softkey. The record with the matching ID will be loaded into the active record.

Entry Via a Communication Connection

Another way to select a Target is to use a communication connection. Two items must be configured to make this method work:

- The Dyn Target ID must be set up.
- A connection must be configured.

These settings are described in the next two sections.

Dyn Target ID Setup

First, **Application > PAC > ID1 > Data Type** must be set for DYN Target ID. When this option is selected, other parameters will appear on the screen that will help to parse the ID string from the communication string.

Note: When a communication connection is used to input an ID, the system **must be** configured so that at least 200 mS elapses between the receipt of the final character and the completion of the weighment. If this requirement is not observed, the ID input may not be parsed in time to be included in the weighment. The delay is especially important if the ID input is being used as the Dyn Target Table ID, since this requires additional time to look up the target.

The **first character** parameter is used to strip header information from the input. For example, when a string "**101<CR>" is received, the first digit's position is 3.

Length defines how long the ID is supposed to be. If the length is set to 2, the ID read from the previous example would be "10".

Mode defines how the ID is to be updated during operation. Three different modes can be selected: Required/Fill, Delete/Fill and Use Last.

When **Required/Fill** is selected, the communication connection must provide a valid ID before the termination of the weighment. If no ID is provided, a non-fatal error (-9912) will be displayed and transmitted with the transaction data. If an ID is received, but does not match an entry in the Dynamic Target Table, a non-fatal

error (-9913) will be displayed and transmitted with the transaction data. An application of this mode would be for check weighing various different products simultaneously on one line. One package may be a 5 lb. bag of cat food and the next a 25 lb. bag of dog food. In this application, it is important to know which target value is to be used for comparison in each transaction.

The **Delete/Fill** mode deletes the ID information from the previous weigh cycle and fills the ID with the fill character set by the user. If a new ID is not provided before the end of the current weighment, the ID is shown as a repeating string of the fill character, and the comparison is based upon the last active record used. This would be useful in a situation where products with the same weight are being checked simultaneously, but an error (and unchecked) package should not be allowed to move through. For instance, you are checkweighing 5 lb. bags of dog and cat food, it may be useful to keep statistics on how much dog food vs cat food was checkweighed. Both packages have the same check weight targets, just different statistics. If an ID is missed for some reason, the package can still be accurately checkweighed, even though the statistic may be recorded in the wrong table.

The **Use Last** mode is useful on a line that check weighs one weight per lot or batch. This is the mode that would be best suited for manually selecting the ID from the Dynamic Target Table. Once an active record is selected, that record will be used either until a new ID is input on the communication connection or until the operator stops the control, selects a new active record for the target softkey, and restarts the control.

Connection Configuration

A connection must be made to the ID input source. The connection is set up at Communication > Connections. Create a new connection to the port, and select Input ID1 as the connection's assignment. For further details on creating connections, refer to Chapter 3, **Configuration**, in the **IND560 Technical Manual**.

Reject Output

The checkweigh mode also supports a reject device that can be activated if a weighment is out of tolerance. To configure the reject output, first enable reject in setup at **Application > Pac > System > Reject enable**. Next, assign a discrete output in **Application > Discrete I/O > Outputs**. In order to use the reject output, the delay and duration must be set up in the Dyn Target Table (or, if the 5-Zone application is being used, in its dedicated table at **Application > TaskExpert > Custom Setup**). The reject output will **not** work when the target is entered using a keypad.

Once configured, the reject output will cycle when a weighment is classified as Over or Under, or if a weighing error occurred during the transaction.

Checkweigh Application Running

Once the Dyn-560 application is running, each weighment will be accompanied by an on-screen display of its relationship to the target – over, OK and under, as shown at the left of the screens in Figure 2-5.

Figure 2-5: Checkweighing Weighment Status Indications – Over, OK and Under

Press the Dyn-560 CLOSE softkey to exit the application.

Photo Eye 3 Configurations

With the Advanced ExpressCheck® firmware, a third photo eye can be configured to perform fatal error counting or provide a delay of data transmission until the package arrives at a point downstream from the scale.

- Using PE3 will disable the Auto Clear Alarms feature.

Using PE3 to Count Fatal Errors

When a fatal error occurs, package weighing is stopped and remains stopped until the problem is resolved. The conveyor system will continue to run and may allow additional packages to pass the scale without being weighed. If PE3 is configured to count errors, every time its beam is broken the IND560dyn increments the fatal error count in the error log. Once the problem that caused the error is cleared, the

operator can refer to the error log to see how many downstream packages must be reprocessed.

To enable fatal error package counting, first enable the error log located in setup at Application > PAC > Error Config. Next, set **Transmit PE3** in Application > PAC > System to 'Errors'.

Using PE3 as a Trigger to Transmit Data

There are applications where a package is weighed, but this information isn't needed until the package reaches another station downstream. The IND560dyn will queue up to 99 records in a FIFO fashion, recalling each one in turn as PE3's beam is broken.

To configure the IND560dyn for Transmit PE, first be sure that a communication connection is established. Refer to **Chapter 3, Configuration**, of the **IND560 Technical Manual** for details on communication connections. The **Transmit PE3** parameter (at Application > PAC > System) must be set to **Transmit**.

The number of packages that can be recorded in the queue depends on the size of each record. The maximum number is 99 divided by the number of demand outputs. With a single demand output, the maximum is 99 packages, but if multiple demand outputs are configured each record will be larger, and fewer packages can be queued. If the limit is exceeded, a fatal error **-9906** will be issued. To avoid this, be sure to limit the number of packages that can accumulate between the scale and PE3.

Transmit Delay

The Advanced ExpressCheck® firmware also allows the use of a timed transmit delay. This feature is beneficial in applications that require a delay in the transmission of weight data without the addition of a third photo eye downstream.

To configure Transmit Delay, enter the appropriate delay must be entered in the Transmit Delay field in Application > PAC > System. The transmit delay may be set from 0 to 9.9 seconds. A setting of 0 seconds disables the feature.

When enabled, after a package is weighed, any demand outputs are put into a buffer and a timer is set to the configured Transmit Delay Value. When the timer expires, all demand outputs for that transaction are transmitted. The starting trigger for the timer is the completion of the weighment. If another package is weighed before the previous package is transmitted, its associated demand outputs will be queued. Depending on the number of demand outputs, the queue size can be as large as 20.

Using the Tare Functions

Tare functions are still available for use with the Dyn application, but can only be changed or cleared while the IND560 home screen is displaying. When a tare is set, the Dyn-560 will use that tare for all transactions until the application is

stopped and the tare is changed or cleared. When operating with a tare, the Net symbol "N" will be displayed above the weight unit on the terminal display.

- When running the 5-Zone TaskExpert application, a tare value is defined for each target ID. This preset tare will override any current tare value. If the preset tare is set to 0 (zero), then tare is cleared on entry into the Dyn runtime task.

Using the ID Prompt Feature

ID Prompts are still available, but can be accessed only by softkey while in the IND560 home screen, or by shared data variable access. ID prompts allow operators to enter information such as lot number, operator name/number, and shift information.

Clearing Fatal Errors

Both the ExpressWeigh® and ExpressCheck® firmware have an Auto Clear Alarms function. If the downstream photo eye (PE3) is not present, Auto Clear Alarms can be enabled (in setup at Application > PAC > Alarm Outputs) to recover from a fatal error automatically.

Note: This option is **not** selectable in ExpressCheck if Application > PAC > System > Transmit PE is set to anything but none, or if Application > PAC > System > Transmit Delay is not set to zero.

If Auto Clear Alarms is not configured, the Fatal Error must be cleared either by cycling the run permissive, or by exiting and restarting the dynamic application.

Packaged I/O and Indicator Lights

The IND9D56 may be ordered with a number of task-specific indicator lights and alarms. The following is a brief explanation of the most common options:

Status	Explanation
Unit Running	This indicator shows that the terminal is actively running the dynamic software and that a run permissive (if configured) is present. If the terminal is in a non running state such – for example, run permissive is false or a fatal error has occurred – the indicator will be extinguished.
Alarm	This indicator can be configured either as an indicator light or as an audible alarm. It is used to draw attention to a fatal error situation that requires operator intervention. The alarm may be silenced without clearing the fault, if the terminal is equipped with an optional Silence Alarm operator. The alarm will reset once the fault condition has been cleared by one of the following conditions: • Auto Clear Alarms is enabled. • The optional run permissive input has been turned off and on. • The dynamic software has been stopped and restarted using the softkeys.
Scale Empty	This optional indicator is used to monitor when the photoeye logic declares the scale platform empty of packages.
Out of Tolerance [ExpressCheck Only]	This indicator is used to show that a package does not conform to the target established in the active record. The indicator will remain on until the start of the next weighment. Note: This Indicator is a logical 'or' of the over and under outputs.
Over [ExpressCheck Only]	This indicator shows when a weighment exceeds the tolerance defined in the active record for that weighment. The indicator will remain on until the start of the next weighment.
Under [ExpressCheck Only]	This indicator shows when a weighment is less than the tolerance defined in the active record for that weighment. The indicator will remain on until the start of the next weighment.
Three Zone Indicator [ExpressCheck Only]	This optional indicator provides Under/OK/Over indication in one package. The light bar mounts horizontally on top of the ExpressCheck terminal enclosure. • White indicates under weight • Green indicates in tolerance • Red indicates over weight The appropriate indicator will remain on until the start of the next weighment.

User Inputs

The IND9D56 also allows for two standard user inputs and one custom input:

Input	Explanation
Run Permissive	This is a two-position selector switch. In its ON position, it puts the dynamic software in the running mode. Moving the selector switch to OFF will put the dynamic software into a standby mode. The run permissive is also used to clear fatal alarms.
Silence Alarm	This pushbutton operator will cancel the alarm output to silence an audible alarm. It does not, however, clear the alarm condition.
Clear Fatal Alarm*	This pushbutton operator will perform the same task as the Silence Alarm input, but additionally will clear the fault condition and resume running mode without having to clear the scale and wait for a zero weight on the scale platform.

* Requires ARM100 I/O module – refer to the IND9D56 configurator, Figure 1-1 in Chapter 1.

Tables and Logs

Transaction Table

The transaction table can contain 60,000 records. Because of its size, the transaction table must be saved as a binary file, and cannot be converted to a .csv file prior to FTPing. Once the binary file has been retrieved via FTP, an external utility can be used to convert it into a .csv file. Once exported and converted, the table can be viewed, analyzed and archived. Export requires installation of the IND560 Ethernet/Serial option board – refer to Chapter 5, **Parts and Accessories**.

The transaction log can also be viewed on the terminal or printed, by using the REPORTS softkey.

The transaction table includes the following information for each weighment: date and time, transaction number, package weight, and weight units. In ExpressCheck systems, the target ID and the package weight's relationship to it (under/ok/over) are also recorded.

File Conversion Utility

A utility named **convert_log.exe** is provided to convert the exported binary file into a .csv (comma separated values) file, which can be formatted for use in spreadsheet or database programs.

Error Log

If enabled, the error log saves up to 500 errors, assigning each one a sequential number. Each record also includes the transaction counter of the last good weighment, number of errors, error code and time and date.

The transaction counter is incremented only after a successful weighment has occurred, so it is possible for there to be multiple error log entries with the same transaction number if they occurred back to back.

The number of errors is the number of packages that crossed the scale for that particular error. This feature requires the ExpressCheck® application, and a third photoeye must be added to the system and the appropriate parameter set in the configuration. Non-fatal errors are always a count of 1. If a fatal error occurs, the log will update the current record in the error log with the number of packages that break the optional third photoeye.

For instance, if a package hangs up on the scale and causes a long weigh time error (-9905), then breaks free and allows *n* subsequent packages to cross, the system will remain in an error state with the entry and exit photoeyes disabled. No valid transaction data will be captured until the error is cleared. However, the third photoeye will count the **n** additional packages. The record in the error log would show **n**+1 as the number of errors in that particular error record, indicating that a total of **n**+1 packages must be reprocessed once the error is cleared.

Note that, due to the nature of fatal errors, an exact count of faulted packages is sometimes not possible. This count should be used as a reference only.

For a complete account of error codes, refer to Chapter 4, **Service and Maintenance**. Once 500 errors have been recorded, the log begins to over-write the oldest records. The log can be downloaded from the terminal via an ftp connection, which requires the installation of an optional Ethernet/Serial board – refer to Chapter 5, **Parts and Accessories**.

Dynamic Target Table

The Dynamic Target Table is used only in ExpressCheck weighing mode. It is accessible from the home page if the TARGET TABLE softkey is assigned, and through setup at Application > PAC > Dyn Target Table. Once accessed, the table can be modified and printed – refer to Chapter 3, **Configuration**. For general information about table searches and reports, refer to Appendix C, **Table and Log File Structure**, of the **IND560 Technical Manual**.

- The 5-Zone dynamic weighing application does not use the standard Target Table. For information about adding target data for this application, refer to **Appendix C**.

The Dyn Target Table contains the weighment information, and also allows the user to accumulate basic statistics. When the Table is accessed by pressing the REPORTS softkey, the following information is available for each record:

- Dyn Target Table ID
- Target description
- Target weight
- Target weight units
- Positive tolerance
- Accumulated weight of all in-tolerance weighments
- Reject output delay
- Reject output duration
- Maximum weight recorded for this ID
- Minimum weight recorded for this ID

- Negative tolerance
- Number of weighments within tolerance
- Number of weighments below tolerance
- Number of weighments above tolerance

To clear the statistics, press the C* softkey C* under the reports softkey. A dialog box will appear, asking for confirmation before clearing numbers and totals. To clear all numbers, totals, max, min, under counts and over counts from all records in the Dyn Target Table, select OK OK; otherwise, press the exit key ↖ to leave the reports screen.

Chapter 3

Configuration

Overview

This chapter provides information about how to configure the Dyn-560 application. It describes access to the setup mode, where functions can be enabled, disabled, or defined by entering parameter values in specific setup screens.

Entering and Exiting Setup Mode

Entering Setup Mode

Terminal configuration is accessed by the SETUP softkey. If security has not been enabled, pressing this softkey will provide direct access to the setup menu tree. If password security has been enabled, pressing the softkey displays a login screen where the operator must enter a valid user name and password in order to access setup. (Refer to the Security section in **Chapter 2.0** of the **IND560 Technical Manual** for further information about password setup and security.) When the login screen is shown, it is possible to exit back to the home screen without entering any login information by pressing the ESCAPE softkey.

Exiting Setup Mode

To exit the setup mode, select Home from the setup menu tree and press ENTER. The default IND560 home screen displays.

As an alternative, press the first (left-most) softkey any time the menu tree is displayed to exit the menu tree.

IND560dyn Setup Menu Tree

The terminal's setup menu includes all the elements and functionality of the default configuration (detailed in Chapter 3 of the **IND560 Technical Manual**, **Configuration**), together with some additional or modified screens. Figure 3-1 shows the tree with new or modified leaf nodes (in the Application, Terminal and Communication branches of the tree) expanded and colored red. The Dyn Target Table, indicated in bold, is accessible only with the ExpressCheck version of the Dyn-560 application. Unchanged branches are not expanded. The functions and

parameters of each of the affected screens are detailed in the Configuration Options section, immediately below.

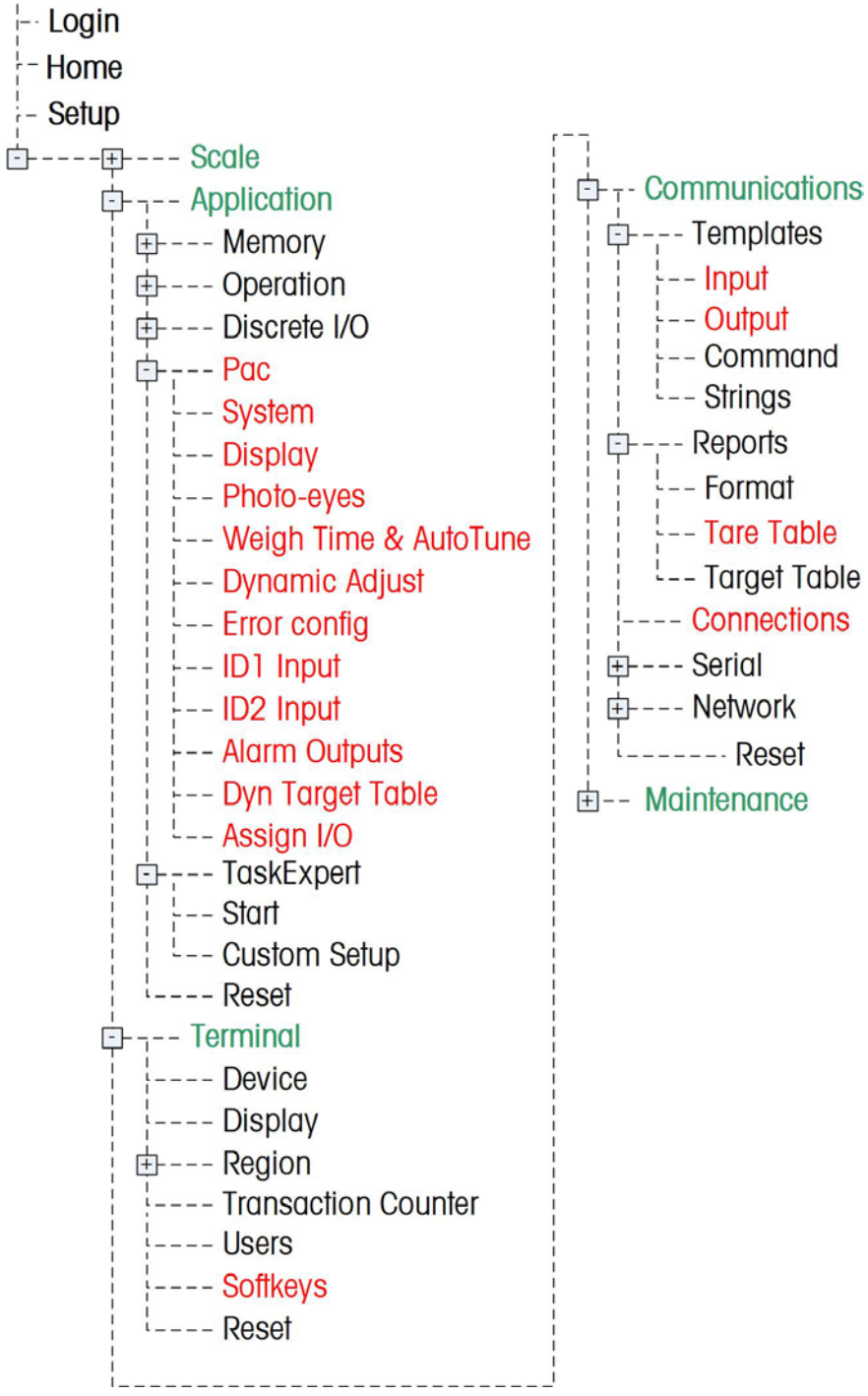


Figure 3-1: IND560 Menu Tree: Branches and Pages Specific to Dyn-560

Configuration Options

- In the sections below, default values are indicated with an asterisk (*).
- Refer to Appendix C for configuration options specific to the 5-Zone dynamic weighing application. Some standard functionality is changed when this application is run.

General Setup

Terminal > Display

It is recommended that a screen saver be configured here.

Terminal > Softkeys

In order to start the Dyn-560 software from the front panel, a softkey must be assigned. Add a softkey to any of the home screen softkey locations, selecting **Dynamic Start** as its assignment.

Application > Memory > Alibi

If a transaction log is required, it must be enabled from this screen. Select **Transaction Log** from the pull down list for Alibi Memory.

Important: By default, the Transaction Log and the Error Log (Application > PAC > Error Config) are **disabled**. If either type of record is required, they **must** be enabled in setup.

- The Alibi Memory selection cannot be used when running the IND560Dyn software.

Application > Memory > Target Table

When using the IND560Dyn as a checkweigher, Over/Under mode must be selected. This parameter is automatically changed to Over/Under when the system is configured as a checkweigher in Application > PAC > System. With Over/Under mode selected, the tolerance type can be set to Target Deviation or % of Target.

- Do not change the tolerance type if there are records in the Dyn Target Table, as the contents of the table will not be converted from deviation to percentage, or vice versa.

Application > Operation > Target

If the IND560Dyn is configured as a checkweigher, the Source must be AVG WT. This parameter is automatically changed to AVG WT when the system is configured as a checkweigher in Application > PAC > System. It is also important to ensure that motion check is disabled, because the firmware is designed to weigh items using an unstable scale base.

Application > Discrete I/O

This menu branch is where discrete inputs and outputs are assigned.

Inputs

The following table shows the default inputs configuration for the IND560Dyn:

Address	Polarity	Assignment
0.1.3	+	Run Permissive
0.1.4	+	Silence Alarm

Inputs 1 and 2 are dedicated photo eye inputs, and are not configurable.

Run Permissive is used to allow the Dyn application to switch between running and standby states. If run permissive is configured, there must be a logical true input to allow the Dyn application to get from standby to running. This can be accomplished by assigning the polarity of the input to "-". If there is no need for run permissive in the system, the input can be deleted from the list.

Silence Alarm is used to cancel the Alarm outputs and thus quiet an audible alarm. The input silences the output, but does not cause the control to clear the fault.

Other inputs provided by the Dyn Pac

Clear Fatal Alarm This input will cause an error condition to be cleared immediately without the need for the run permissive to be cycled or the Dyn application stopped. In addition, it does not require the scale to be empty or the photo eyes to be clear.

Photoeye 3 This is the third photoeye, available in the Advanced Pac. It can be configured for remote transmission of data, or to count the number of packages that cross the scale during a fatal error.

For other available input options, refer to the **IND560 Technical Manual**.

Outputs

The following table shows the default output configuration for the IND560dyn:

Address	Assignment
0.1.1	Running
0.1.2	Scale Empty
0.1.3	Weigh Complete
0.1.4	Alarm: Fatal
0.1.5	Alarm: Non-Fatal
0.1.6	Unassigned

The assignments function as follows:

Running Indicates that the Dynamic application is running, the run permissive is true, and the scale was zeroed at least once.

Scale Empty Indicates that the photoeye logic declares the scale platform free of packages. This does not indicate that the scale is at zero.

Weigh Complete A momentary toggle that can be used to notify a PLC that new weighment data is available. This output is asserted whether the transaction was good or in error.

Alarm : Fatal An indication that a fatal error has occurred. This output will remain on until one of the following has occurred:

1. The run permissive has been turned off.
2. The Dyn application has been stopped
3. The Silence Alarm input has been asserted
4. The Clear Fatal Error input has been asserted
5. AutoClear errors has been enabled, the scale is at zero weight and the photoeyes are clear of packages

Alarm : Non-Fatal A momentary output that is turned on when a non-fatal error occurs during a weighment. The timing is based on the duration set at Application > PAC > Display > Display Time.

Note: If the Display time is set to 0, the alarm: non-fatal output will be asserted until the next weighment begins.

Other Outputs provided by Dyn-560:

Dynamic OK A momentary output that indicates that the last weighment was within the tolerance defined by the active record. The duration of this output is controlled by the Display Time parameter at Application > PAC > Display. This output is only used by the advanced PAC in checkweigh mode.

Dynamic Over A momentary output that indicates that the last weighment was over the tolerance defined by the active record. The duration of this output is controlled by the Display Time parameter at Application > PAC > Display. This output is only used in the advanced PAC in checkweigh mode.

Dynamic Under A momentary output that indicates that the last weighment was under the tolerance defined by the active record. The duration of this output is controlled by the Display Time parameter at Application > PAC > Display. This output is only used in the advanced PAC in checkweigh mode.

ID1 Updated A momentary output that indicates that ID1 received new data from it's configured communication connection. The timing is not associated with the Display Time parameter.

ID2 Updated A momentary output that indicates that ID2 received new data from it's configured communication connection. The timing is not associated with the Display Time parameter.

Reject Output With the Advanced version of the application in checkweigh mode, this output is activated when a weighment is out of the tolerance. The delay from the end of the weighment and duration are configured at Application > PAC > Dyn Target Table menu branch.

For other output options that come standard with the IND560, refer to the **IND560 Technical Manual**.

Application > PAC: Basic Functionality

System

Settings available in this screen are:

System Type	Random PE*, Random ASCII Random PE – Uses photo-eyes in random package weighing mode. Random ASCII – Uses ASCII input on an available COM port in random package weighing mode.
Port **[If Type = Random ASCII]**	Permits selection of an available serial port to which the source of the ASCII input is connected.

Display

Settings and functions available in this screen are:

Display Time	0* - 9.9 secs. Time for which processed weight is displayed on the IND560dyn terminal after weighment is completed. Once **Display Time** elapses, current live weight is displayed. If set to 0, processed weight will be displayed until next weighment is complete, and live weight display is suppressed.
Display Info	ID1, ID2, Literal*, Transaction Sets the information that is displayed in the bottom line of the diplay once a weighment is completed. ID1/ID2 – Terminal's first and second ID inputs. Only available if System Type = **Random PE**. Literal – The string entered in **Display Literal**, below. Transaction – The IND560dyn assigns a transaction number to each weighment. Only available if System Type = **Random PE**.
Display Literal **[If Display Info = Literal]**	"Processed Weight"* 20 character alphanumeric string entered by operator, to be displayed when **Literal** is selected from **Display Info**.

Photo-eyes

This branch of the setup tree is available only when **Random PE** is selected in **System I Type**. Settings available in this screen are:

PE 1 Timer	150 mS*	Sets the time during which the first Photo-eye's beam must be broken to establish that a package has entered the scale. Ensures that brief interruptions are not misinterpreted as packages. Range is 25-999 mS.

PE 2 Timer	50 mS*	Sets the time during which the second Photo-eye's beam must remain broken to establish that the package has begun to leave the scale. Ensures that brief interruptions are not misinterpreted as packages. Range is 25-999 mS.
PE1 to PE2 Timer	3 Sec*	Sets the maximum amount of time a package is allowed to be on the scale, measured from when PE1's beam is unbroken after entry to when PE2's beam is broken. This measurement is used to detect packages that may be stalled on the scale. Range is 0.0-9.9 seconds. A setting of 0.0 seconds will disable this check.
PE1 and PE2 Maximum	5 Sec*	Sets the maximum amount of time either Photo-eye's beam can remain broken (i.e. interrupted by a package) before an error is generated. Range is 0.0-9.9 seconds. A setting of 0.0 seconds will disable this check.

Weigh Time & AutoTune

Weigh Time & AutoTune permit the establishment of optimum data acquisition time as packages pass over the scale.

Settings and functions available in this screen are:

Weigh Time		300 mS*, 100-999 mS Field for manual entry of time value.
START	◇	On-screen message reads "Press START to Begin AutoTune Sequence" – a sequence of prompts defining the procedure to set the **Weigh Time** parameter automatically.

The AutoTune sequence requires the operator to run the longest package to be weighed across the scale. The dyn-560 application calculates the optimum weighing time and updates the **Weigh Time** parameter accordingly. If the test package produces a value below 150 mS, an error is displayed and the existing value is kept.

Tip: When running AutoTune, it is advisable to subtract 50mS from the indicated time from the test. This will take into account timing errors caused by situations such as packages that are not perfectly parallel to the conveyor. A -9910 error could result from a weigh time specification that is too tight.

Dynamic Adjust

Dynamic Adjust is another self-tuning feature. It is designed to compensate for weight offsets caused by rapid conveyor operation. Its use is not recommended for conveyor speeds below 200fpm (feet per minute).

Settings and functions available in this screen are:

Dynamic Adjust	Disabled*, Enabled If Enabled, on-screen message appears: "Press START to Begin Dynamic Adjustment"

START ◈	Starts the Dynamic Adjust process.

The Dynamic Adjust sequence requires the operator to the longest and the shortest package sizes across the scale five times. Time statistics are gathered during this process, after which corrections factors are calculated for the range of package sizes.

When the START ◈ softkey is pressed, the operator is prompted to run the longest package 5 times, then the shortest package 5 times, then to stop the conveyor and weigh the longest and shortest packages in turn. Once this process is complete, the dyn-560 application displays the Dynamic Adjust calculations and statistics that it will use to calculate the correction factor.

Error Config

This screen controls the way errors appear in the transmitted output of the transaction – either in the form of an error code, or as a customized string.

Log Errors	Disabled*, Enabled If Enabled, the IND560dyn will store the most recent 500 errors in an ftp-accessible (FIFO) error log.
Send Error Code	Disabled*, Enabled If Enabled, when an error occurs during a transaction the error code is transmitted in place of the processed weight data. For detailed information about error codes, refer to Chapter 4.0, **Service and Maintenance**. Note that when an error code is transmitted, the placement of the decimal point will be preserved – e.g., error -9910 will be sent as -99.10lb. The addition of the minus sign indicates that the transmission is an error code and not a weighment. If Disabled, when an error occurs during a transaction the text defined in **Error String** is transmitted in place of the processed weight data.
Error String **[When Send Error Code = Disabled]**	<Empty>* Defines the text (maximum 8 characters) to be sent in place of processed weight data when an error occurs. If Send Error Codes is disabled, it is recommended that an Error String be defined, to make it clear that an error has occurred. Otherwise, only a blank string is sent in the event of an error.

ID1 and ID2 Inputs

The ID1 and ID2 input options are identical. For convenience, the functions and parameters described here refer to ID1. For ID inputs from bar code scanners, package dimensioners, and other external equipment, the Ethernet/Serial option board must be installed – refer to Chapter 5.0, **Parts and Accessories**.

These inputs are used by the Display options (above, on page 3-6) and in output templates – refer to the **Templates** section of Appendix B, **Default Settings**.

Data Type	None*, ID1 None – ID1 not used. ID1 – the ID1 input will be used as a label available for output templates and display options. For external ID input, a connection must be configured in setup at **Communication > Connections**.
1st Character [If Data Type ≠ None]	1*. Numeric string Defines the position in the input string that defines the beginning of the ID1 string. e.g. In "*Hello World*", if **1st Character** = 1, then ID1 begins with "*". If **1st Character** = 2, then ID1 begins with "H". The first character must be between 1 and 40 characters from the start of the input string.
Length [If Data Type ≠ None]	1-40 characters. 20* Defines maximum length of ID1 captured from the input string. For example, if the string "*The hounds of spring are on winter's traces*" is input, 1st Character = 2 and Length = 20, then ID1 would be captured as "The hounds of spring".
Mode [If Data Type ≠ None]	Use Last*, Delete/Fill, Required/Fill Use Last – All transactions after the first input string will use the same ID1, until a new input string is received. Delete/Fill – If no new string is input before the end of the transaction, the ID1 string is filled with a **Fill Character**, defined below. Required/Fill – If no new string is input before the end of the transaction, the ID1 string is filled with a **Fill Character**, defined below. In this case, a non-fatal error is reported for the transaction.
Termination Character	<CR>*, other standard control characters (Refer to the **IND560 Technical Manual**, Appendix G, **ASCII Standard and Control Characters**.) If the termination character is received in the input string, the ID1 capture is terminated before the configured **Length** (see above).
Fill Character [If Mode ≠ Use Last]	This character is repeated 1 to 40 times, as defined in **Length**, and entered as the default ID1, if **Mode** is not None, and no string is input before the end of the transaction.

Alarm Outputs

The Alarm Output settings control the IND560dyn's behavior when alarms are generated. These options are available only once the system is correctly configured to output alarms, in setup at Application > Discrete I/O > Outputs.

Refer to the Alarms section of Chapter 4.0, **Service and Maintenance**, for an interpretation of fatal and non-fatal alarms.

Fatal Alarm Output	Disabled*, Enabled Enabled – Permits the occurrence of a fatal alarm to turn on a digital output (e.g. to an indicator light). A digital output must be assigned to this function in setup at **Application > Discrete I/O > Outputs**.
Non-Fatal Alarm Output	Disabled*, Enabled Enabled – Permits the occurrence of a non-fatal alarm to turn

	on a digital output (e.g. to an indicator light). A digital output must be assigned to this function in setup at **Application > Discrete I/O > Outputs**.
Auto Clear Alarms	Disabled*, Enabled Enabled – Alarms will be cleared automatically when the scale returns to zero and both photo-eyes are clear.

Assign I/O

This screen provides an OK softkey, to reset the Discrete I/O assignments to their defaults, and an EXIT softkey to return to the menu tree. Note that this function resets only local IND560 ports; ARM100 ports must be reset separately.

- The Assign I/O feature automatically assigns the **NonFatal** and **Fatal Error** outputs to CPU OUT4 and CPU OUT5. This assignment interferes with the 5-Zone dynamic **OK+** output, which also uses CPU OUT4 and OUT5. The assignments to Outputs 4 and 5 must be deleted manually after using the Assign I/O function.

  If anything is assigned to CPU OUT4, OUT5 or OUT6, then an I/O assignment error will be reported when Dyn run mode is entered.

The Discrete I/O defaults are listed in Table 3-1.

Table 3-1: Discrete I/O Default Values

Input/Output	IND560 controller I/O
Photo eye 1 (entrance)	CPU IN1
Photo eye 2 (exit)	CPU IN2
Run Permissive	CPU IN3
Silence Alarm	CPU IN4
Running Output	CPU OUT1
Scale Empty	CPU OUT2
Weighment Complete	CPU OUT3
Alarm: Fatal Output	CPU OUT4
Alarm: Non-Fatal Output	CPU OUT5
Available for Reject Output (user selected)	CPU OUT6

Application > PAC: ExpressCheck® (Advanced) Functionality

This section details configuration options available only in the advanced (ExpressCheck®) version of the IND560dyn. Only ExpressCheck-specific options are included here; for basic (ExpressWeigh®) functionality, refer to the section beginning on page 3-3.

System

Advanced settings available in this screen are:

System Type	Random PE*, Random ASCII, Checkweigh Random PE – Uses photo-eyes in random package weighing mode. Random ASCII – Uses ASCII input on an available COM port in random package weighing mode. Checkweigh – Selects CheckWeigh™ mode, using photo-eyes, targets and tolerances.
PE3 **[If Type = Random PE]**	None*, Error, Transmit Error – The terminal will count the number of times the photoeye is broken to produce a record of the number of packages that crossed the scale during the fatal error condition. Transmit – Information from the transaction is not transmitted until Photo-eye 3, downstream, is broken. Up to 99 transactions are stored in a temporary table, to be retrieved (FIFO) when Photo-eye 3 is broken. Exceeding 99 entries in the temporary table will generate a fatal error.
Transmit Delay	0*-9.9 secs. Sets time delay between end of transaction and transmission of output. 0 sets no delay.
Port **[If Type = Random ASCII]**	Permits selection of an available serial port to which the source of the ASCII input is connected.

Display

The following additional options are available in the advanced version:

Display Info	ID1, ID2, Literal*, Target Desc, Target Value, Transaction Sets the information that is displayed in the bottom line of the diplay once a weighment is completed. ID1/ID2 – Terminal's first and second ID inputs. Only available if System Type = **Random PE**. Literal – The string entered in **Display Literal**, below. Target Desc – The string assigned to the current active records description field in the Dyn Target Table Target Value – This is the target weight value of the transaction's active record Transaction – the IND560dyn assigns a transaction number to

each weighment. Only available if System Type = **Random PE or Checkweigh**.

ID1 Input

Advanced settings available in this screen are:

Data Type

None*, ID1,Dyn Target ID

Target ID – If **System Type** = **Checkweigh**, and a target table is being used, the input ID1 can be used as a look-up for the target record of the current transaction. In this case, the ID string must be numeric and limited to 8 digits.

Dynamic Target Table

This table is only available in the advanced version of Dyn-560. It stores target data used by the Checkweighing function.

- The Dynamic Target Table is not used with the 5-zone dynamic weighing application. Refer to Appendix C, **5-Zone Application**, for details.

The initial setup screen offers the usual table search parameters, and a VIEW TABLE softkey . Pressing this softkey opens the DYN TABLE VIEW screen, from which it is possible to edit, add and delete target records, and to print the view – either the entire table, or the sub-set of it defined by the search parameters.

The table includes columns for ID, Description, Target value, Target units, positive and negative Tolerances, n (number of times the target has been used), Total (sum of weighments made using this target), Reject Delay and Reject Duration.

- The units used in the DYN Target Table must match the units configured at **Scale > Capacity & Increment > Primary Units**, and **Scale > Units > Second Unit and Third Unit**. If they do not match, a pop-up box stating "Unit Mismatch" will be displayed and the record will not be selected from the Dyn Target Table.

Reject Timer

Reject Delay and Reject Duration set the delay before the Reject Output (over or under) is activated on the configured discrete output, and the duration of the activated output, respectively. For the Reject output to work, the delay and duration must both be non-zero. Also, be sure to set a discrete output as "Reject Output".

Communication

PLC Options

The IND560dyn and IND9D56 terminals can be equipped with one of an array of PLC interfaces, to facilitate communication with the application. These include:

- A-B RIO
- PROFIBUS L2 DP
- DeviceNet

Refer to the **IND560 PLC Interface Manual** for details about these options and their installation and configuration.

Connections

Demand Output — Demand output is the same as in the IND560, except for a new trigger selection: Avg. Wt. (Average Weight). This allows the scale to output the information using the selected output template when an in-motion weighment is complete. Avg. Wt. must be selected to trigger the demand output based on the Dyn-560 application.

Reports — Configuring the IND560dyn/IND9D56 to print reports is the same as in the IND560. The Dyn Target Table, Error Log, Tare Table, and Transaction Log may be viewed and/or printed. The Target Table are shown as options, but are not used in the Dyn-560 application.

ASCII Input — This connection can be used to capture ASCII characters from a communication channel for use as a command. Refer to the **IND560 Technical Manual** for a more complete account of this function.

Input ID1/Input ID2 — This allows a communication channel to provide a string that can be parsed into the ID string (1 or 2 respectively) used by the Dyn-560 software.

Input ID1 & ID2 — This allows a single communication channel to allow information for both ID1 and ID2 to come in one a single communication channel at one time. ID1 and ID2 are configured in setup at Application > PAC > ID1 / ID2.

Chapter 4

Service and Maintenance

This chapter provides troubleshooting procedures and detailed information about error codes and messages for the IND560dyn.

Error Codes and Error Messages

- For Error codes and messages used by the 5-Zone TaskExpert application, please refer to Appendix C.

Error Codes and Responses

Code	Type	Interpretation	Cause	Response
-9901	Fatal	Max weigh time exceeded	The PE1 to PE2 time exceeds value set at Application > PAC > Photoeyes > PE1 to PE2 Timer	Input a 'clear fatal alarm' to reset, anc clear package to return scale to zero
-9902	Fatal	Spacing error	Terminal detects that more than one packages is on the scale	Input a 'clear fatal alarm' to reset, and clear package to return scale to zero
-9903	Fatal	Weight of package less than zero	Problem with scale base	Check scale and scale connection
-9904	Fatal	New weighment print requested before previous print request completed	Printer not keeping up with data stream	Increase time between weighments
-9905	Fatal	PE1 or PE2 blocked longer than values set at Application > PAC > Photoeyes > PE1 and PE2 Maximum	Indicates a package is stuck on entrance or exit photo eye	Clear package
-9906	Fatal	PE3 Transmit Queue Overflow	More than 99 weighments are queued	PE3 failure, Length of conveyor between scale and PE3 allows too many packages

Code	Type	Interpretation	Cause	Response
-9910	Non-fatal	Short weigh time	Package is too long to acquire an accurate measurement at the current belt speed	Reduce belt speed. Ensure packages conform to maximum length. Run Dynamic Adjust utility again
-9911	Non-fatal	Scale overload	Package too heavy	Ensure package weights are within scale capacity
-9912	Non-fatal	No ID when in required/fill ID mode	No ID entry made	Ensure data source for ID is connected and working properly
-9913	Non-fatal	Invalid ID when in Required/Fill ID mode	ID received prior to or during weighment does not match an entry in the Dynamic Target Table	Ensure that the Dynamic Target Table contains the ID of the item being checkweighed

Error Messages

Message	Interpretation
Invalid parameter	This can occur when in checkweigher mode and there is no current record loaded.
No Demand Output	A demand print connection has been created, but the trigger is set for something other than Avg. Wt.

Pop Up Message Box Errors

Message	Interpretation
ID>0	An attempt was made to save a record with a null (blank) ID into the DYN Target Table. Make sure the ID for the target record has at least one unique character.
Record Already exists	An attempt was made to save a record with a duplicate ID into the DYN target table. Make sure target has a unique ID.
Application Key Fault	iButton has been removed, changed or damaged
Line 0: Application failed to start	TE program has been corrupted or deleted from flash memory. Consult customer service.

Chapter 5

Parts and Accessories

This chapter lists parts and accessories that may be ordered from METTLER TOLEDO for the IND560dyn and IND9D56 terminals.

Part Description	Part Number
IND560 main PCB with ALC interface plus Dyn-560 .cpt files (no iButton)	64064960
24VDC DIN rail mount power supply, 2A	64066179
Pack of 5 fuses, 3A, 250V	64084737

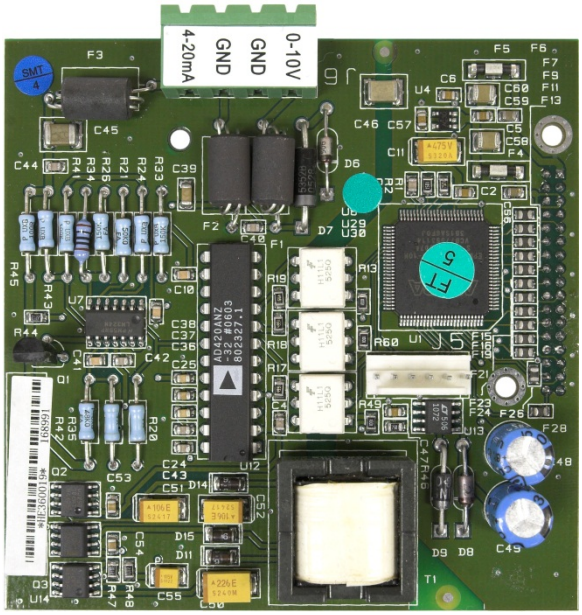
ARM100 Remote I/O Relay Module

Part Description	Part Number
ARM100 Module	71209352
24 VDC Power Supply (85 - 264 VAC universal)	64066179

Wall-Mounting Brackets (Harsh Enclosure)

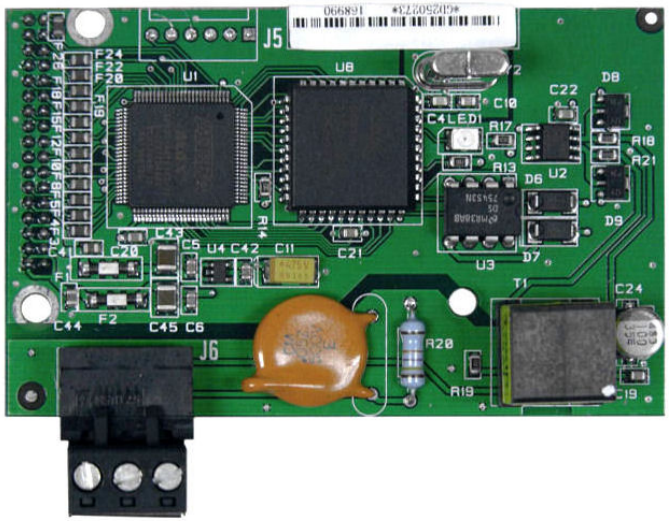
Part Description	Part Number
Wall-mounting Kit	71209353

Analog Output Option



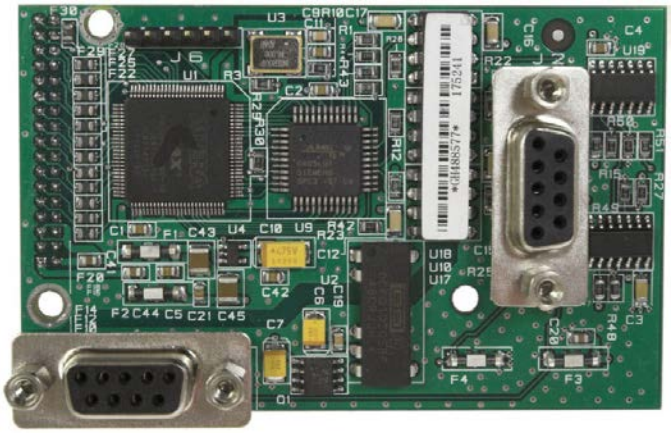
Part Description	Part Number
Analog Output Option	71209099

Allen-Bradley Remote I/O PLC Option



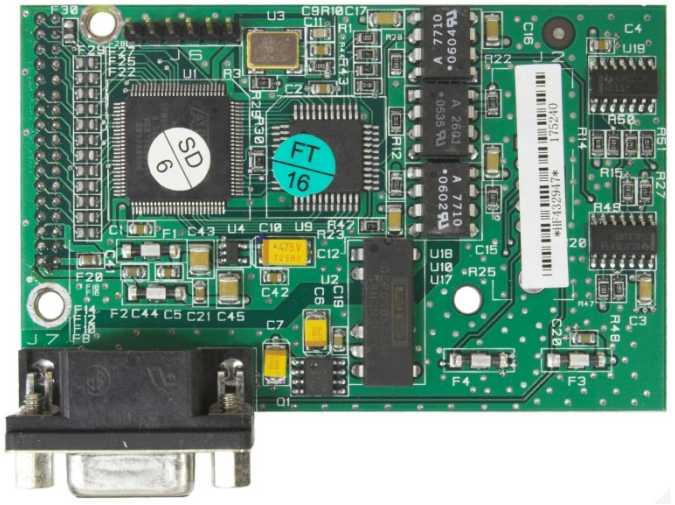
Part Description	Part Number
A-B RIO Option	71209098

PROFIBUS PLC Option (Harsh Enclosure)



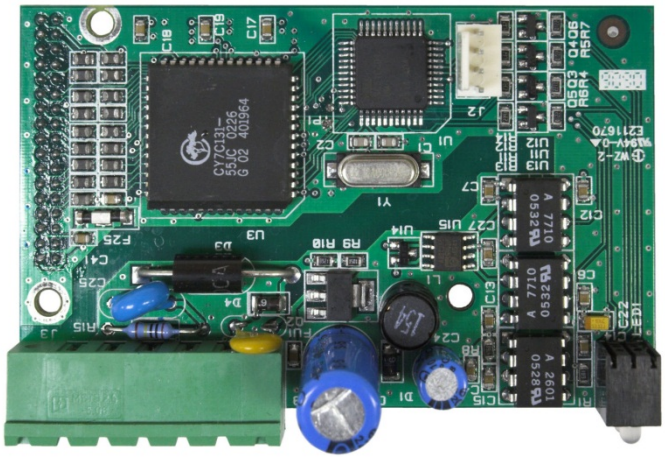
Part Description	Part Number
PROFIBUS PLC Option (vertical header – harsh enclosure)	71209096

PROFIBUS PLC Option (Panel-Mount Enclosure)



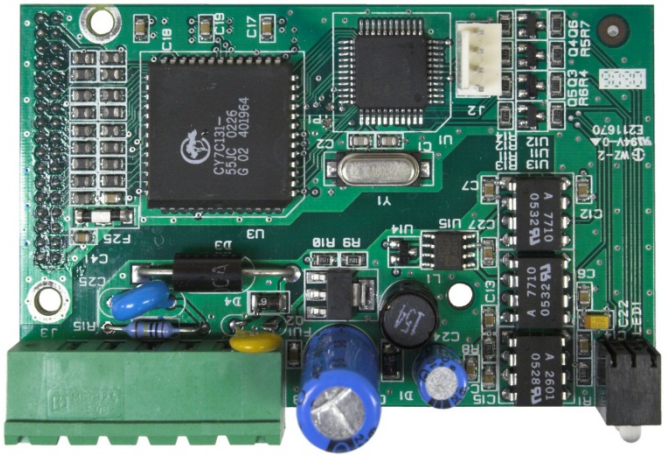
Part Description	Part Number
PROFIBUS PLC Option (horizontal header – panel enclosure	71209097

DeviceNet PLC Option



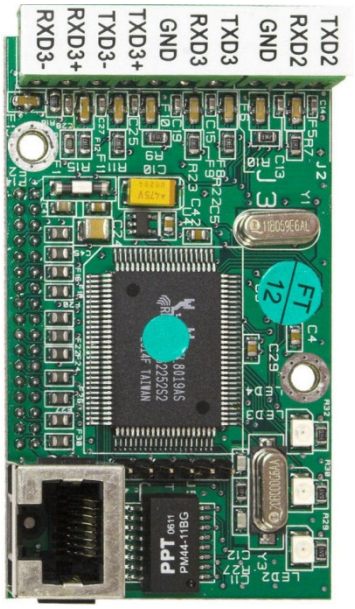
Part Description	Part Number
DeviceNet PLC Option	72193580

DeviceNet PLC Option



Part Description	Part Number
DeviceNet PLC Option	72193580

Ethernet/COM2 and COM3 Option



Part Description	Part Number
Ethernet with COM2 & COM3 Serial Port Option	71209095

5-Zone Application Option

Part Description	Part Number
5-Zone Application Option	64088745

Appendix A

Installation

Special Software and Hardware Requirements

Required Firmware Version

The Dyn-560 application was created using TaskExpert™. To run a TaskExpert application, the IND560 **must** have version 3.xx firmware or higher installed.

Required Mainboard Version

In addition to the software, the IND560 **must** have a main board version (V0.8) installed. V0.8 main boards include 8MB of Flash Memory. The version can be checked by pressing the Recall Info softkey then the System Information softkey **i**, and looking at the details for the analog or IDNet board under Hardware. If there is a (V0.8) after the Analog L/C or IDNet text, the main board contains the 8MB Flash Memory and will support running a TaskExpert application. If the version is (V0.2) or there is no version shown, there is only 4 MB of Flash Memory on the main board and the board must be replaced with a V0.8 version before running a TaskExpert application.

Main boards with the smaller, 4MB, Flash Memory **will** support v3.00 firmware. However, they **will not** support TaskExpert based applications such as the Drive-560 and Dyn-560.

Installation Method

The following procedure describe the method for installing version 3.xx firmware, the TaskExpert file(s), and bitmap images.

1. Load version 3.xx firmware into the IND560 (refer to the **IND560 Technical Manual**).
2. The TaskExpert file(s) and .bmp file(s) can be loaded using either and FTP or a Serial connection:

Loading via FTP:

a. Connect to IND560 using any FTP utility (user **admin**, password **admin**)

b. Place all desired Application files (.cpt and .bmp) into the root directory which is the default FTP location.

Loading via Serial:

a. Place IND560 into Test Mode, with SW2-1 set to ON.

b. Connect to IND560 using HyperTerminal, set to 115200 bps, 8 bits, No parity, 1 Stop bit, No flow control.

c. Log in to the IND560 shared data server – type: user admin, then press <enter>, as shown in Figure A-1.

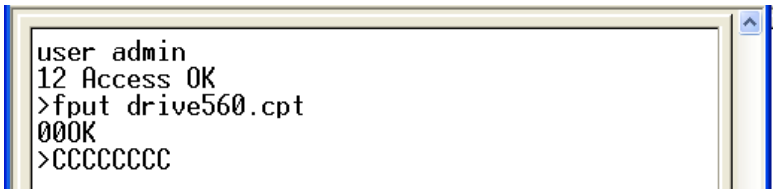


Figure A-1: Logging In to Shared Data Server

d. Use the fput command to notify IND560 of the incoming file.

Note: Do not enclose the filename in quotes (" ").

e. Once the "CCCC…" displays (Figure A-1), access the Transfer > Send File menu in Hyperterminal.

f. Select the file to send – for example, Dyn560.cpt.

g. Select the 1K Xmodem protocol.

h. Press Send. Once the file has been completely sent, the IND560 will return an <OK> back to HyperTerminal.

i. Perform the same process for each required file (e.g. fput tempid.bmp).

3. Once all the files are loaded, the application can be set either to Manual Start or to Auto Start, in the IND560 setup menu at Application > TaskExpert > Start

Note: If you have loaded the Dyn-560 Application onto a V0.2 main board, attempts to start up the Application will generate the on-screen error message shown in Figure A-2.

Figure A-2: Error Message – Application Failed to Open

Mounting the Packaged Enclosure

The IND9D56 is intended for wall mounting. The enclosure should be attached to the wall using the mounting brackets supplied with the device (Figure A-3, left). First, the brackets are attached to the enclosure, two at the top and two at the bottom. The assembly is then mounted to the wall (Figure A-3, right), as described in the following sections.

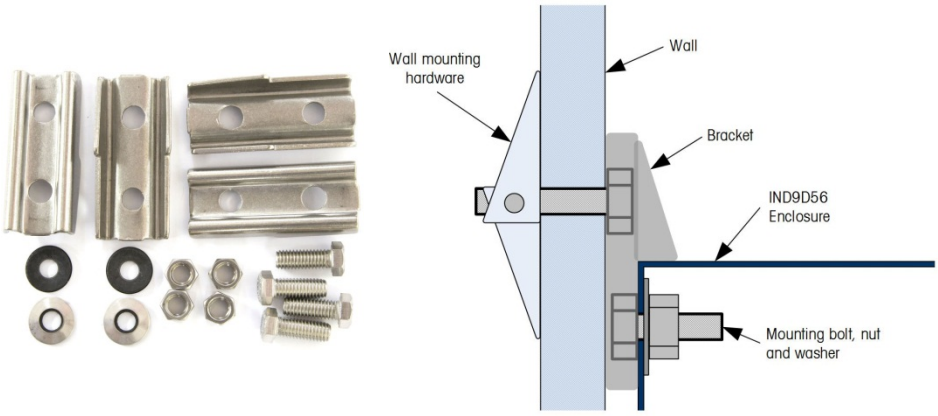


Figure A-3: Wall Mounting Bracket Kit (left) and Mounting Method (right)

The IND9D56 is designed to mount on a flat surface, either vertically or horizontally. Depending on the surface to which it is mounted, fasteners may include wood screws, concrete wall anchors and dry-wall anchors.

Preparation for Mounting

To prepare the IND9D56 for wall mounting, follow these steps:

- Mark attachment points
- Install mounting brackets
- Mount terminal on brackets

Note: First attach the brackets to the enclosure.

With the brackets attached to the enclosure, use the assembly as a template to mark the position of the mounting holes on the mounting surface.

Once the mounting hole positions are established, perform one of the following procedures, depending on the type of wall surface.

Note: The hardware to mount the terminal to the vertical surface is not included with the terminal – it must be supplied locally. Ensure that the mounting hardware is capable of supporting the weight of the terminal, which is approximately 40 lb (18 kg).

⚠ CAUTION!

WHEN CARRYING OUT THE FOLLOWING PROCEDURES, WEAR PROPER BODILY PROTECTION, SUCH AS APPROVED SAFETY GOGGLES, EAR PROTECTORS AND GLOVES.

Wall Mounting, Concrete and Cement Blocks

When mounting the IND9D56 to a cement block, poured concrete or similar wall, the recommended mounting bolt is:

- UL-listed concrete sleeve anchor, size 1/4″ (6 mm), minimum embed 1/2″ (12.7 mm), minimum pullout force of 500 lb (266 kg).

Figure A-4 shows an example of mounting hardware.

Figure A-4: Sample Mounting Hardware, Concrete or Cement

4. Drill a hole through each of the measurements/locations you marked in the Preparation for Wall Mounting section. Use a carbide bit conforming to ANSI B94, 12-77 with the same size bit as anchor diameter (typically 5/16″ [8 mm]). The depth of the hole should be deeper than 1/2″ (12 mm).
5. Clean the holes with a wire brush.
6. Make sure the head of the bolt is flush with the top threaded part of the anchor then insert the anchor assembly through the mounting hole in the bracket and into the base material.
7. Push anchor assembly until washer is snug against the wall.
8. Tighten each bolt with a wrench (use a screwdriver for flat/round heads), approximately three or four full turns or until anchor is tightly secured to the base material.

Wall Mounting, Wood Surface

When mounting the IND9D56 to a wooden wall or similar surface, use four #12 screws of at least 1 1/4″ (30 mm) length, each with a flat washer of minimum 1/2″ (12 mm) diameter.

Positioning Terminal on Fasteners

Place the fasteners through the holes in the enclosure mounting brackets and insert them into the holes drilled to receive them. Tighten the bolt to expand the toggle nut, and continue tightening until the bracket is snug against the surface. Figure A-5 shows the relationship between bracket, hardware and wall.

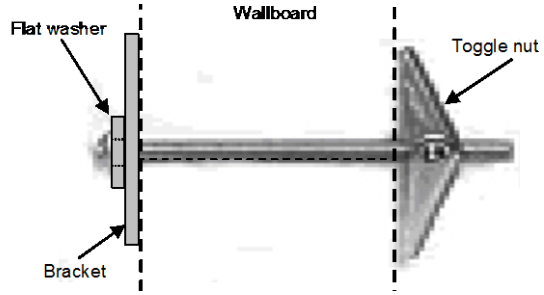


Figure A-5: Wallboard or Drywall Installation

Periodically inspect the enclosure to insure that it is securely anchored to the wall. If it is not, retighten the mounting bolts.

Installing Cables and Connectors

Wiring Connections for Instrument Power

All IND9D56 configurations come with provisions to provide power to the IND560 terminal and the 24VDC power supply. Instrument power will always be labeled X1, X2 and GND.

X1 is live on a single-phase system

X2 is either neutral in a single-phase system, or L2 in a two-phase system

GND is earth ground regardless of the power distribution

For best system performance, instrument power must be connected to a clean, dedicated AC branch circuit. Avoid running power lines in a conduit that also carries lines to "noisy" AC equipment such as motors, welders and solenoids.

X1 is fused with a 3A 250VAC normal blow fuse. Once X1 has been fused, the label is changed to X1A to denote that the circuit is protected.

For best performance, do not add any other AC loads to the Instrument Power.

Wiring Connections for Control Power

On IND9D56 systems that have switched output loads such as line voltage reject devices, sonic alarms, etc, a separate power connection is provided to isolate the Instrument power away from other sources of conducted noise. Control power is identified as terminal blocks with X3, X4 and GND labels.

X3 is hot on a single phase system

X4 is either neutral in a single phase system, or L2 in a two phase system

GND is earth ground regardless of the power distribution.

These connections should also be connected to a clean AC branch circuit, separate from the Instrument Power. If it is absolutely necessary, the unfused side of the instrument power can be jumpered to the unfused side of the control power for a single power source application. This should only be done if a separate control power circuit is not available.

X3 is fused with a 3A 250VAC normal blow fuse. Once X3 has been fused, the label is changed to X3A to denote that the circuit is protected.

Wiring Connections for Digital I/O Options

24 VDC Inputs and Outputs

For low voltage DC Inputs and Outputs, LED indicating terminal blocks will be provided for convenience. These blocks have two terminal levels associated with them. The top terminals are the actual I/O connection. The lower set of terminals is the 0V (also known as 24V Return). When 24VDC is applied to that I/O point, the LED will illuminate. This feature facilitates diagnosis of photoeyes and output circuits.

Terminal Blocks used for Digital I/O will be labeled using the following convention:

X-Y

where

X = I for Input; O for Output

Y is the IND560 Local I/O Point

For example, a 24VDC photo eye input will always be labeled I-1.

Line Voltage Inputs

Inputs that are at line voltage (110-240VAC) will be terminated directly to an isolation block, shown in Figure A-6.

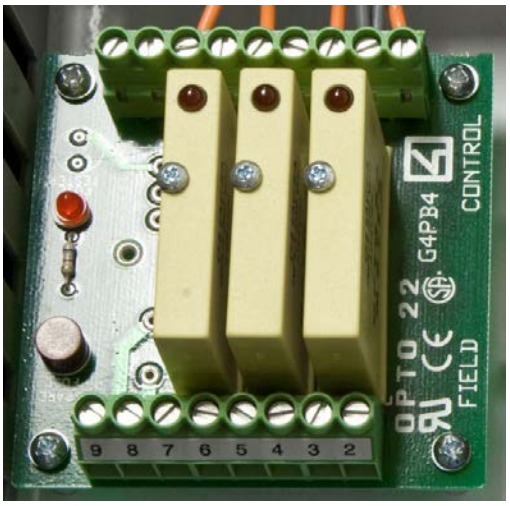


Figure A-6: Line Voltage Input Isolation Block

The switched AC pole (L1) would be wired to the even numbered field terminal that corresponds to the channel. For example, a high voltage entrance photo eye would be wired to Terminal #2. The AC return (N or L2) would be wired to terminal #3.

Line Voltage Outputs

When using line voltage outputs directly from the IND560Dyn, the labeling convention of O-*n* will still be used. The terminal blocks used will be red to indicate line voltage outputs. The diagnostic LED terminal blocks are not available for line voltage outputs.

ARM100 Connections

With the exception of line voltage inputs, which must be isolated, all I/O points will originate or terminate at the ARM100 terminals. Refer to the **ARM100 Technical Manual** for further details.

Closing the Enclosure

To ensure that the IND9D56 provides continuous protection against the ingress of moisture and dust, be sure the following steps are taken:

Ensure cord grips are appropriate for the outer diameter of the cable used. If there is too much gap, replace the cord grip with an appropriate grip range.

If a cord grip is not being used, be sure to install a plug to prevent debris from entering the enclosure.

When adding cable entrances, avoid placing them in the top surface of the enclosure. Whenever possible, the bottom of the enclosure is the preferred location for cable entrances. Sides are the next best choice.

Be sure that the quarter-turn latch is completely engaged when the enclosure door is closed. Watch for field-installed cabling getting caught in the door gasket. This

can cause damage to the wire, and will also produce gaps in the seal that allow moisture and debris into the enclosure.

Appendix B

Default Settings

Setup Parameters

Table B-1 lists default values for all settings that are specific to the IND560dyn, or that differ from those for the standard IND560. Default settings for IND560 basic functionality are listed in Appendix B, **Default Settings**, of the **IND560 Technical Manual**. As noted in the table below, some settings are available only in the advanced (ExpressCheck®) version of the application.

Table B-1: Dyn-560 Default Settings

Setup Feature	Default Value
Application – Pac – System	
System Type	Random PE
Port [If Type = Random ASCII]	COM1
Transmit PE3 [If Type = Checkweigh]	Disabled
Transmit Delay [If Type = Checkweigh]	0
Application – Pac – Display	
Display Time	0
Display Info	Literal
Display Literal [If Display Info = Literal]	<empty string>
Application – Pac – Photo-eyes	
PE 1 Timer	150 mS
PE 2 Timer	50 mS
PE 1 to PE 2 Timer	3 Sec
PE 1 and PE 2 Maximum	5 Sec
Application – Pac – Weigh Time & AutoTune	
Weigh Time	300 mS
Application – Pac – Dynamic Adjust	
Dynamic Adjust	Disabled

Setup Feature	Default Value
Application – Pac – Error config	
Log Errors	Disabled
Send Error Code	Disabled
Error String [If Send Error Code = Disabled]	<Empty string>
Application – Pac – ID1 Inputs	
Data Type	None
1st Character [If Data Type ≠ None]	1
Length [If Data Type ≠ None]	20
Mode [If Data Type ≠ None]	Use Last
Termination Character	<CR>
Fill Character [If Mode ≠ Use Last]	Any alphanumeric character
Application – Pac – Alarm Outputs [Only if Discrete Outputs configured for alarms]	
Fatal Alarm Output	Disabled
Non-Fatal Alarm Output	Disabled
Auto Clear Alarms	Disabled
Application – Pac – Dyn Target Table	
Dynamic Target Table	<empty table>

Appendix C

5-Zone Application

Introduction

This Appendix provides configuration and operation information specifically for the specialized 5-zone dynamic weighing application. In some cases, configuration of the standard IND560dyn/IND9R56 is modified by the installation of this TaskExpert application. Where standard setup and functionality are affected, these changes are noted in appropriate sections of this document.

Modified Functionality

The 5-zone application modifies the existing IND560dyn software. To the existing **Target**, **Tol+** and **Tol-** target definition fields, it adds two additional parameters – **OK+** and **OK-** – with associated discrete outputs and on-screen indication. This refines the software's ability to discriminate between weights that are within the target's tolerance range, but fall a specified amount either above or below the target. The information is useful in determining whether other parts of the weighing system need to be adjusted.

During operation, after a weighment within the target tolerance range, one of the three zone indications shown in Figure C-1 will appear at upper left of the display,

Figure C-1: On-Screen Indication of Weighments in OK+, OK and OK- Zones

Note that the 5-Zone application has its own Target Table. Because the standard IND560dyn Target Table is not used, Table editing must be carried out under the **Application > TaskExpert > Custom Setup** branch in setup, and not at **Application > PAC > Dyn Target Table**.

Installation

To install the IND560dyn 5-Zone application, the terminal must first be reset to its default state, and a set of files loaded into it. Follow this procedure:

Master Reset

To restore the terminal software to its factory default values:

1. Remove power from IND560.
2. Install iButton PN 46001058 into IND560.
3. Set PCB switches for master reset:

   SW1-1 ON

   SW1-2 ON

   SW2-1 OFF

   SW2-2 OFF

4. Apply power to the IND560.
5. Wait for **Master Reset** dialog box to appear.
6. Press the ENTER key.
7. Wait for Master Reset process to complete – the screen displays scale weight.
8. Remove power from IND560.
9. Clear PCB switches from master reset:

   SW1-1 OFF

   SW1-2 OFF

   SW2-1 OFF

   SW2-2 OFF

10. Apply power to the IND560.
11. Enter Setup and access **Maintenance > Reset All**.
12. Press OK to reset all setup blocks.
13. Exit setup mode.

Load Files

- This procedure assumes that the 5-Zone application files have been saved on the PC used for installation.

To install the 5-Zone TaskExpert application files in the terminal:

1. Remove power from IND560.
2. Configure the PC Ethernet port for connection to IND560. The IND560 defaults are:
   - Ethernet address: 192.168.0.1
   - Submask: 255.255.255.0.
3. Connect the IND560's Ethernet port to the PC.
4. Apply power to the IND560.
5. Open Windows Explorer (or My PC) and navigate to the folder containing the Dyn 5-Zone files.

6. Double click LoadRelease.bat file.
7. A DOS window will open and the following files will be sent to the IND560 using FTP:
   - put dtc.cpt dtc.cpt
   - put dtc5.cpt dtc5.cpt
   - put tesetup.cpt tesetup.cpt
   - put bkram.dmt gen:/bkram.dmt
   - put flash.dmt gen:/flash.dmt
   - put blank.bmp blank.bmp
   - put addtare.bmp addtare.bmp
   - put binoc.bmp binoc.bmp
   - put clear.bmp clear.bmp
   - put delete.bmp delete.bmp
   - put dynstop.bmp dynstop.bmp
   - put edit.bmp edit.bmp
   - put escape.bmp escape.bmp
   - put exit.bmp exit.bmp
   - put inmot.bmp inmot.bmp
   - put new.bmp new.bmp
   - put ok.bmp ok.bmp
   - put okminus.bmp okminus.bmp
   - put okplus.bmp okplus.bmp
   - put over.bmp over.bmp
   - put presettare.bmp presettare.bmp
   - put star.bmp star.bmp
   - put table.bmp table.bmp
   - put task2.bmp task2.bmp
   - put under.bmp under.bmp
8. Wait for the DOS ftp window to close.
9. Remove power from the IND560, then reapply power to re-start the terminal.

Preparing to Run the Application

The following steps must be taken before the 5-Zone application can be run:

- Configure Dyn PAC setup parameters as required – refer to Chapter 3, **Configuration**. Note the special use of Discrete I/O assignments, described in the Discrete I/O section on page C-4.
- Create a target table entry in setup at **Application > TaskExpert > Custom Setup**. Refer to the **TaskExpert > Custom Setup** section, starting on page C-5.
- Select an active target using the TARGET TABLE  softkey.

Configuration

This section describes configuration parameters used by the 5-Zone application, both in the standard setup screens and in its own Custom Setup branch.

Application Setup, Standard

Discrete I/O

Outputs 0.1.4, 0.1.5 and 0.1.6. are used by the 5-Zone application to represent the **OK**, **OK+** and **OK-** zones. If the standard IND560dyn **Application > PAC > Assign I/O** function is used, the assignment to 0.1.4 must be cleared before the 5-Zone application can be run.

If anything is assigned to Output 0.1.4, 0.1.5 or 0.1.6, an I/O Assignment error will be reported when Dyn run mode is entered. It will be necessary to enter setup and delete these output assignments in order to run the application.

PAC

The Dyn Target Table located under the PAC branch is not used by the 5-zone application. Create and edit targets at **Application > TaskExpert > Custom Setup**.

TaskExpert

When the 5-Zone application is installed, two **TaskExpert > Start** options appear in the **TaskExpert View** screen – DTC.CPT for standard IND560dyn functionality, and DTC5.CPT for the 5-Zone application.

Setup > Terminal

Softkeys

Mandatory Softkeys

To run the 5-Zone application, the following softkeys **must** be assigned:

TARGET TABLE		Accesses the 5-Zone-specific Target Table, for run-time selection of targets
DYNAMIC START		Starts dynamic weighing

Optional Softkeys

Other softkeys that can be assigned are:

TASK 2

Views the active table data. This softkey uses the same icon as the standard Target softkey, but the data displayed includes the OK+ and OK- fields. If the standard Target softkey is assigned, it will work, but will not display the extra two fields.

If both Keyboard Tare and Pushbutton tare are disabled in setup, the target setup screen Tare field will indicate this:

REPORTS

Displays statistical data. For the 5-Zone application, this information includes weight and count values for the OK+ and OK- zones.

Note: If the statistics provided by the Reports function are required, do not use alternate weight units when running the 5-Zone application. The values in Report statistics are not converted to target table units when they are recorded, so a mix of un-defined values may appear if alternate units are used.

Application Setup, TaskExpert

TaskExpert > Custom Setup

The Custom Setup branch of the Application menu is used to configure the 5-Zone application's target table. This table exists in parallel with the standard Target Table, but includes the additional OK+ and OK- parameters.

When the Custom Setup branch is accessed, the Dyn 5-Zone Setup screen is displayed:

Figure C-2: Dyn 5-Zone Setup, Additive Tare

Press the ADD TARE softkey to toggle from Additive Tare to Preset Tare mode. The softkey label will change to indicate which Dyn Tare mode is selected:

Figure C-3: Dyn 5-Zone Setup, Preset Tare

Press the TABLE VIEW softkey  to access the table view screen.

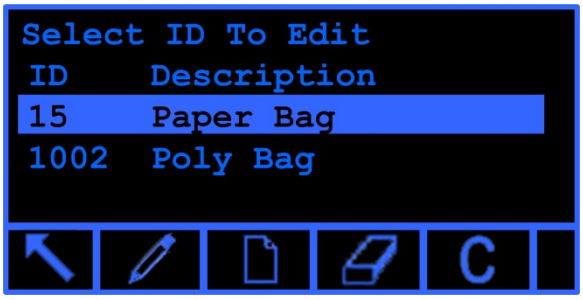


Figure C-4: Dyn 5-Zone ID Table View

A list of existing table entries is displayed. Use the RIGHT arrow navigation key to scroll the view and display the parameters configured for each ID. In Figure C-4, two entries exist.

From this screen, the following operations can be performed:

EXIT		Returns to the setup menu tree.
EDIT		Opens the target configuration screen shown in Figure C-5, and permits editing of parameters except ID.
NEW		Creates a new table entry, and opens the target configuration screen shown in Figure C-5.
DELETE		Deletes currently selected table entry.
CLEAR		Clears all table entries.

The EDIT and NEW softkeys open the same configuration screen, except that in the EDIT screen the ID number cannot be modified, and existing parameter values are displayed.

- Editing or deleting the currently-selected target ID clears the Target Table selection. A target must be selected using the TABLE VIEW softkey from the home screen before dynamic weighing can be started.

The first page of the target configuration screen is shown in Figure C-5.

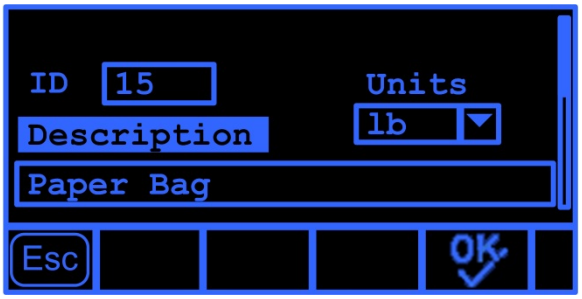


Figure C-5: Target Configuration Screen, 1

Here, the **ID** can be assigned (NEW) or is displayed (EDIT), the **Units** selected (note that these must match the terminal's primary units in order to record reliable weight data for the Reports display) and a **Description** entered.

The ID assigned in the NEW screen cannot be zero. If the number selected already exists in the table, an **Invalid ID Entry** popup will appear.

Press the ENTER key to move between fields, or the DOWN arrow key to move to the second target configuration screen.

Figure C-6: Target Configuration Screen, 2

The following parameters can be configured here, values reflecting the **Units** selected in the first page:

Parameter	Description
Target	Sets the absolute value of the target.
Tol+ / Tol-	Sets the range around the target within which the weight is considered OK.
OK+ / OK-	Set two additional ranges within the OK range. When a weighment falls within the Tol- to Tol+ range, but outside the OK- to OK+ range, the system indicates (with a discrete output and an on-screen display) whether the weight is high or low relative to the target. If these values are set to 0, then the system runs as if in its standard 3-zone mode.

Parameter	Description
Tare	If a container tare is required, it can be entered here. When Dynamic Weighing is started using this ID, this preset tare will be automatically used. For further details about tare operation in the 5-zone application, refer to the **5-Zone Dyn Additive Preset Tare Mode** section on page C-12.

The third page of the target configuration screen (Figure C-7) sets values, in seconds, for the Reject function. Refer to the **Check Weighing Mode** section of Chapter 2 for details on this functionality. Set these values to 0 if the Reject function is not required.

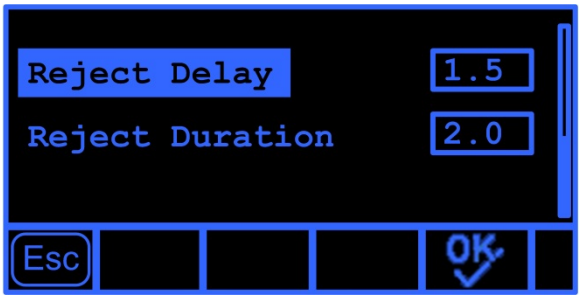


Figure C-7: Target Configuration Screen, 3

Once the ID is fully configured, press OK to save changes and exit the screen, or ESC to exit without saving the ID (NEW) or modifications to an ID (EDIT).

Error Messages and Responding to Errors

Runtime Errors

The 5-Zone application includes a number of new error messages that may display when the DYNAMIC START softkey is pressed to start dynamic weighing using the application. This section details these messages, and indicates the appropriate responses to them.

I/O Assignment Error

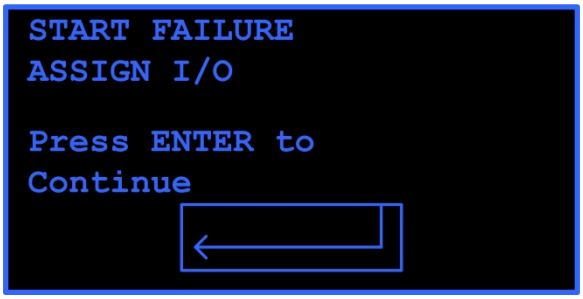


Figure C-8: I/O Assignment Error Message

This error will display if an attempt is made to run the 5-Zone application while Discrete Outputs 0.1.4, 0.1.5 or 0.1.6 are assigned to signals (in setup at Application > Discrete I/O > Output).

- To clear the error and run the application, these assignments must be deleted.

No Target Table Error

Figure C-9: No Target Table Error Message

This error will display if the 5-Zone application is run before table data has been configured. The 5-Zone target table is created when the Custom Setup function is accessed for the first time.

- To clear this error, create a Target Table entry in setup at Application > TaskExpert > Custom Setup.

Bad Target Table Error

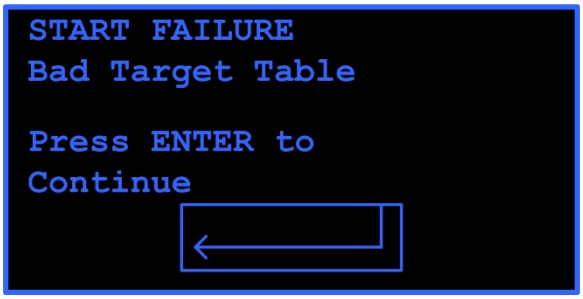


Figure C-10: Bad Target Table Error Message

This error will display if the 5-Zone application target table is improperly configured.

- This error should occur only if the table data has been manually modified. If the application's target table becomes corrupted, repeat the installation procedure described starting on page C-1.

Target ID Not Found Error

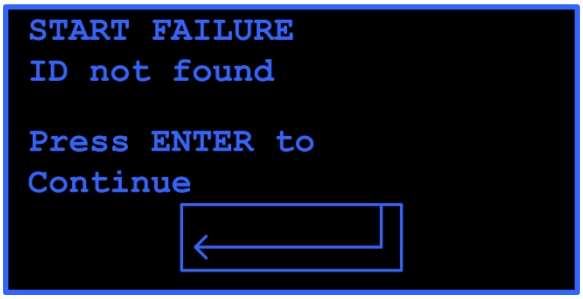


Figure C-11: ID Not Found Error Message

This error will display if an attempt is made to run the application without selecting an active ID using the TARGET TABLE softkey. Note that the active target is cleared automatically when the active target ID is edited or deleted in setup at Application > TaskExpert > Custom Setup.

- Before running the application, select an active target.

Invalid Weight Unit Error

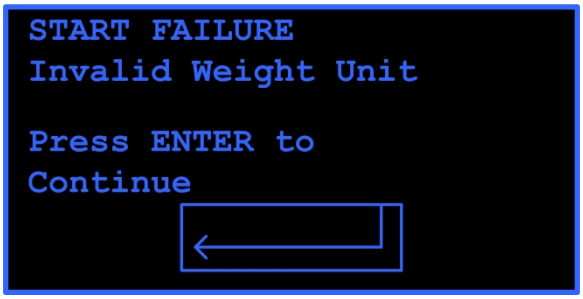


Figure C-12: Invalid Weight Unit Error Message

This error will display if the Target Weight Units do not match the current weight units, and the alternate units are disabled (shared data variable ax0198 is set to 1).

This error is included to prevent a units mismatch for applications that use statistical report data. The accumulated weight data will be incorrect if target and current weight units do not match.

- Set shared data variable ax0198 to 0 [zero], to permit different target and current weight units.

Configuration Errors

These errors may appear when a Target Table record is being configured.

Invalid ID Error

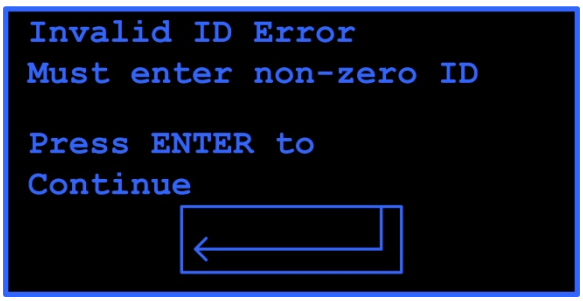


Figure C-13: Invalid ID Error Message

This error will display during ID configuration if the OK softkey is pressed but the ID field is blank or is set to 0 (zero).

- Assign a non-zero ID to the target.

Duplicate ID Error

Figure C-14: Duplicate ID Error Message

This error will display during ID configuration if the OK softkey is pressed and the ID entered already exists in the target table.

- Assign a unique ID to the target.

Shared Data for the 5-Zone Application

Refer to Shared Data Variables in **Appendix D**, **Communications**, for details on the use of shared data in the 5-Zone Application. Note that, with the exception of settings for the two additional zones, target data written to the special target table, which uses Table A5, is simultaneously written to the standard Target Table, Table A3.

5-Zone Dyn Additive Preset Tare Mode

Dyn Additive Preset tare mode is not a true tare. When it is selected, the pre-set tare value is added to the target weight value and the resulting sum is used when calculating the Under, OK-, OK+ and Over thresholds, and gross/net status is not changed on entry to the runtime application.

For example:

With the following target values:

- Target = 10 lb
- Preset Tare = 3 lb
- Tol- = 1 lb
- OK- = 0.5 lb
- OK+ = 1.5 lb
- Tol+ = 2 lb

The thresholds are calculated as follows:

Under Weight Limit	=	10 + 3 – 1	=	12.0 lb
OK_Minus Weight Limit	=	10 + 3 - 0.5	=	12.5 lb
OK_Plus Weight Limit	=	10 + 3 + 1.5	=	14.5 lb
Over Weight Limit	=	10 + 3 + 2	=	15.0 lb

Additive tare works whether keyboard and pushbutton tare settings are configured as enabled or disabled in setup. If keyboard and pushbutton tare are enabled, any tare entry is combined with the preset values, as in this example:

With the following target values:

- Pushbutton Tare = 5 lb
- Target = 10 lb
- Preset Tare = 3 lb
- Tol- = 1 lb
- OK- = 0.5 lb
- OK+ = 1.5 lb
- Tol+ = 2 lb

The thresholds are calculated as follows:

Under Weight Limit	=	10 + 3 – 1	=	12.0 lb net or 17 lb gross
OK_Minus Weight Limit	=	10 + 3 - 0.5	=	12.5 lb net or 17.5 lb gross
OK_Plus Weight Limit	=	10 + 3 + 1.5	=	14.5 lb net or 19.5 lb gross
Over Weight Limit	=	10 + 3 + 2	=	15.0 lb net or 20.0 lb gross

If Keyboard or PB tare are not required for use with Dyn Additive Preset Tare mode, disable them in Setup at Scale > Tare > Types. This is the default setting for tare enable when the LoadRelease.bat batch file is used.

Appendix D

Communications

Demand Output Mode

Trigger

In order for the IND560dyn software to work properly, a demand output must be configured with Avg. Wt. as the trigger. The demand output must be configured, but does not need to be physically connected to a communication device as long as flow control is turned off.

Note: Any additional demand outputs should be configured with "Avg. Weight" as their trigger.

Output Templates

Output Templates 1, 2 and 5 are configured as for the basic functionality version of the IND560. Output Template 3 is set up for ExpressWeigh functions, and Output Template 4 for the ExpressCheck application. These templates are described below.

For more detailed information on creating and modifying Output Templates, please refer to Appendix D, **Communications**, of the **IND560 Technical Manual**.

Output Template 3

Output Template 3 is set up to produce a record for transactions for the Dyn-560 ExpressWeigh application. Table D-1 details the elements present in this Template.

Table D-1: Output Template 3 Definition

Element	Explanation
Iw0104	Processed Average Weight
Wt0103	Displayed Units
CR/LF	Carriage return/line feed

Output Template 4

Output Template 4 is set up to produce a record for transactions using the advanced (ExpressCheck) application. Table D-2 details the elements present in the Output Template 4.

Table D-2: Output Template 4 Definition

Element	Explanation
IW0104	Processed Average Weight
Wt0103	Displayed Units
"<SP>"	1 Space
Ak0118	Weighment Classification
CR/LF	Carriage return/line feed

Remote Discrete I/O (ARM100)

In order to configure an ARM100 in the system, create a connection with an assignment of "Remote Discrete I/O". Note that, in order to support RS-485, the COM port selected must be either COM1 or COM 3. Next, select the number of nodes that are to be connected. Up to three ARM100s are supported. To complete the connection, be sure to set the address dip switches on the ARM100 appropriately. Refer to the **ARM100 Technical Manual** for further details.

PLC Options

To configure a PLC connection, refer to the **IND560 PLC Interface Manual** for details.

ASCII Input

The following ASCII commands are used by the IND560dyn.

<S> Status request – Returns current terminal error

Table of errors:

00 No error condition
03 Gross weight less than zero
10 Can not process command due to insufficient weight data (typically indicates that weigh time is too short)
11 Scale is in overload condition
20 A/D Faulted (Internal failure)
21 Unrecognized command (typically caused by a communication fault)

<W> Send Weight Data – Returns the current instananeous weight

Response format:

Wsddddddduu	s = Scale status	<space> - Stable, non-zero weight <Z> - Center of Zero <M> - Scale is in motion
ddddddd	Right-justified weight, including decimal point	
uu	Units	"lb" "kg"

<B> Begin dynamic weight measurement – returns <ACK> (0x06)

<E> End dynamic weight measurement – returns the processed weight initiated by the last <B> command

Response format – No Error:

Esddddddduu	s = Scale status	<space>
ddddddd	Right justified processed weight, including decimal point	
uu	Units	"lb" "kg"

Response format – Error Condition:

Esxx	xx = Error code	00 – No error condition 03 – Gross weight less than zero 10 – Can not process command due to insufficient weight data 11 – Scale is in overload condition 20 – A/D Faulted (Internal failure) 21 – Unrecognized command

<Z> Set Zero – Zeros scale and returns an <ACK>

Shared Data Variables

Standard Dyn Application

Table D-3 lists the shared data variables used by the Dyn-560 application. Note that some of these variables are used only by the advanced (ExpressCheck®) version of the dyn-560 application.

Table D-3: Shared Data Variables for Standard Dyn Application

Function	Shared Data Name
System Type	ax0101
Transmit PE3	ax0111
Transmit Delay	ay0103
Reject	ax0109
Port	ax0132
Display Time	ay0104
Display Info	ax0112

Function	Shared Data Name
Display Literal	az0102
PE1 Timer	ax0107
PE2 Timer	ax0108
PE1 to PE2 Timer	ay0102
PE1 & PE2 Maximum	ay0105
Weigh Time	ax0110
Filter Pole	ax0129
Filter Frequency	ay0106
Dynamic Adjustment	ax0128
Adjustment Maximum Time	ax0130
Adjustment Minimum Time	ax0131
Adjustment Maximum Dev	ay0108
Adjustment Minimum Dev	ay0109
Log Errors	ax0105
Send Error Code	ax0106
Error String	az0101
ID1 Data Type	ax0113
ID1 First Character	ax0117
ID1 Length	ax0119
ID1 Mode	ax0121
ID1 Fill Character	ax0123
ID1 Termination Character	ax0125
ID2 Data Type	ax0114
ID2 First Character	ax0118
ID2 Length	ax0120
ID2 Mode	ax0122
ID2 Fill Character	ax0124
ID2 Termination Character	ax0126
Fatal Alarm Output	ax0103
Non-Fatal Alarm Output	ax0104
Auto Clear Alarms	ax0102
Discrete input:	
Run Permissive	ac0101
Silence Alarm	ac0102
Photo Eye 3	ac0103
Clear Alarm	ac0104
PE3 Clear Queue	ac0111
Discrete output:	
Running	as0101
Alarm Fatal	as0102

Function	Shared Data Name
Scale Empty	as0103
Reject Output	as0104
Weighment Complete	as0105
Alarm Non-Fatal	as0106
ID1 Update	as0107
ID2 Update	as0108
Dynamic Over	as0109
Dynamic OK	as0110
Dynamic Under	as0111
Miscellaneous:	
Complete Output Delay	ay0110
ID output Delay	ay0111
ID1 Response	ak0110
ID2 Response	ak0111
Processed Weight	iw0104
Special Format Processed Weight (5 position string leading zeros, no decimal point)	ak0117
Weighment Classification (String)	ak0118

5-Zone Application

Table D-4 lists runtime shared data variables whose function is **changed** by the 5-zone dynamic weighing application, and **new** variables which are exclusive to it.

Table D-4: Shared Data Variables for 5-Zone Application

Function	Shared Data Name
Active Target ID (additional usage). Set by Target Table task, used by DTC and DTC5 tasks to determine which target ID is currently selected.	ai0102
TOL+ (set by Target task, but no longer used otherwise)	aj0102
TOL- (set by Target task, but no longer used otherwise)	aj0103
Over Weight Limit (new)	aj0105
Under Weight Limit (new)	aj0106
OK+ Weight Limit (new)	aj0107
OK- Weight Limit (new)	aj0108
Preset Tare value (new)	aj0109
Dynamic OK Plus Status Flag (new)	as0120
Dynamic OK Minus Status Flag (new)	as0121

Function	Shared Data Name
Dynamic Tare Mode (new) 0 = Normal preset tare mode. On entry to Dyn Runtime Mode: If Target Preset Tare = 0, then tare is cleared. If Target Preset Tare > 0, then the scale enters Net mode and the preset tare weight value replaces any existing tare value. 1 = Additive preset tare mode. Target Preset Tare value is added to target weight limit values. Gross/Net mode is not changed on entry to Dyn Runtime Mode.	ax0197
Alternate Units Disabled. (new) 0 = Primary and alternate weight units are supported. 1 = Primary weight units only supported. DTC displays an error message and exits if the target table entry weight unit is different from the current weight unit.	ax0198
ColdStart. (new) Flag used to trigger creation of Table A5. This occurs the first time TESetup.CPT or DYN5.CPT (Task 2) is run.	Ax0199

5-Zone Application Table Structure

The 5-zone application employs Table A5 to store target data. The fields in this table are defined in Table D-5. All other shared data variables are used as previously defined.

Table D-5: Table A5, As Used in 5-Zone Application

Database Field	Row ID	Name	Length	Description
index	dd0601	Index	8	Record Index Number (PKEY)
short id	dd0602	ShortID	4	Target ID
description	dd0603	Description	20	Target Description
data 1	dd0603	TargetWeight	6	Target Weight
data 2	dd0604	Units	3	Units for All Weight Values
data 3	dd0605	TOL+	6	Over Limit deviation from Target Wt
data 4	dd0606	TOL-	6	Under Limit deviation from Target Wt
data 5	dd0607	OK+	6	OK+ Limit deviation from Target Wt
data 6	dd0608	OK-	6	OK- Limit deviation from Target Wt
data 7	dd0609	RejectDel	3	Configured Reject output delay

Database Field	Row ID	Name	Length	Description
data 8	dd0610	RejectDur	3	Configured Reject output duration
data 9	dd0611	Tare	6	Preset Tare Weight

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