ATS-2

Single and Dual Scale Truck System

Version: 1.75

Manual Revision Date: 05/22/00

Installation/Operation Manual

RICE LAKE WEIGHING SYSTEMS

Industrial Solutions on a Global Scale®

ISO 9001 REGISTERED

48397

Contents

Version 1.75, May 2000

1.0 Introduction and System Overview

This manual provides reference information to install, configure, and use the ATS-2 Attended/Unattended controller.

All switches, buttons and keys appear in a **bold** font.

The Automated Truck Scale System is composed of TransAct® software running under Microsoft Windows® 3.1x/9x/NT with one or more ATS-2 remote terminals located at one or more truck scales. It provides a total solution for truck data management and flexible operation for almost any truck weighing application.

While this manual gives basic information about TransAct and the weight indicator configuration, it only addresses those settings that are important to the operation of the ATS-2 controller. For further information on the installation, configuration, and operation of these products, consult the *TransAct Installation and Operation Guide,* PN 50270, and the *IQ plus 800/810 Installation Manual,* PN 42100.

Note: *If you are using a weight indicator from another manufacturer, a technical manual should have accompanied the product. If not, contact your local distributor where the indicator was purchased.*

1.1 Overview

The truck scale system can be configured for inbound/outbound and outbound only transactions. The ATS-2 system supports multiple configurations as listed in Table 1-1.

Configuration	Scales	Traffic	Benefit
Single remote terminal	Single scale	Single direction	Simple, efficient for single scale with single directional traffic.
Dual remote terminal	Single scale	Bi-directional	Inbound and outbound terminals for bi-directional traffic.
Single remote terminal per scale	Multiple scales	Single direction per scale	For use with busy sites. Can have dedicated inbound and outbound scales, or use any scale for either transaction.

Table 1-1. ATS-2 Multiple Configuration Table

When TransAct is operated in the attended mode, the ATS-2 terminal only provides scale weight information to TransAct and all activity is manually entered into TransAct directly.

When using the system in the unattended mode, the ATS-2 remote terminal allows a subset of attended mode features to be used remotely from the scale. Transactions are started when the driver drives onto the scale and enters a truck badge number.

The TransAct truck management software controls the ATS-2 remote terminal or terminals in a master/slave relationship. TransAct acts as the master to continuously check for weight and status information from the ATS-2 terminal or terminals. The remote terminal or terminals let TransAct know when a truck is driven onto the scale and the badge number is entered.

Each truck weighed by the system is identified by a badge number, which the truck driver enters via a bar code scanner or a 12-key weatherproof aluminum numeric keypad. TransAct processes the transaction, requiring the remote terminal or terminals to prompt for category or multiple item responses (when enabled through TransAct). The ATS-2 prompts for this data and returns the responses to TransAct. TransAct then records the transaction.

A local kiosk printer at the outbound remote terminal prints outbound tickets for drivers using the scale.

1.2 Standard Features

This truck scale system includes the following:

Outbound Terminal (Standard)	Inbound Terminal
NEMA 4 mild steel control panel	NEMA 4 mild steel control panel
4 x 20 character VFD display	4 x 20 character VFD display
12-key weatherproof numeric keypad	12-key weatherproof numeric keypad
Welch Allyn Scan Team 6480 card scanner	Welch Allyn Scan Team 6480 card scanner
IQ plus 810 digital weight indicator	
Kiosk ticket printer	
System and printer front panel warning lights	

Table 1-2. ATS-2 Standard Features

Windows® is a registered trademark of Microsoft Corporation

Additional features include:

- Pentium class PC including:
  - TransAct software
  - TransAct or TransAct PLUS hardlock key
- OkiData Microline 320 Turbo parallel printer
- 50 pre-printed security badges
- Traffic light kit (one red/green light)

1.3 TransAct PC

TransAct provides flexible configuration for truck transactions and can be used for attended or unattended operation.

The customer must set up their truck badge numbers, customer information, and tickets through TransAct.

Note: *While the ATS-2 allows you to enter a 15 character badge number, only the right most ten digits are evaluated by TransAct for verification. If ten characters or less are entered at the remote terminal, all of the digits are used for the badge number.*

1.4 System Warnings and Concerns

Clean, reliable, and regulated 120 VAC power supply is required for the proper operation of Rice Lake Weighing Systems supplied equipment.

The ATS-2 system cannot compensate for a poorly designed or improperly installed system, or for external influences beyond the control of Rice Lake Weighing Systems.

Beldon #1421A or equivalent cable should be used for connectivity.

The maximum RS232 cable lengths to insure reliable communication are listed in the table below.

Baud Rate	Distance (Feet)	Distance (Meters)
1200	400	120
2400	200	60
4800	100	30
9600	50	15
19200	25	7.5

Table 1-3. RS232 Cable Lengths

1.5 System Diagram

The following diagram illustrates the main components of the TransAct/ATS-2 truck scale system.

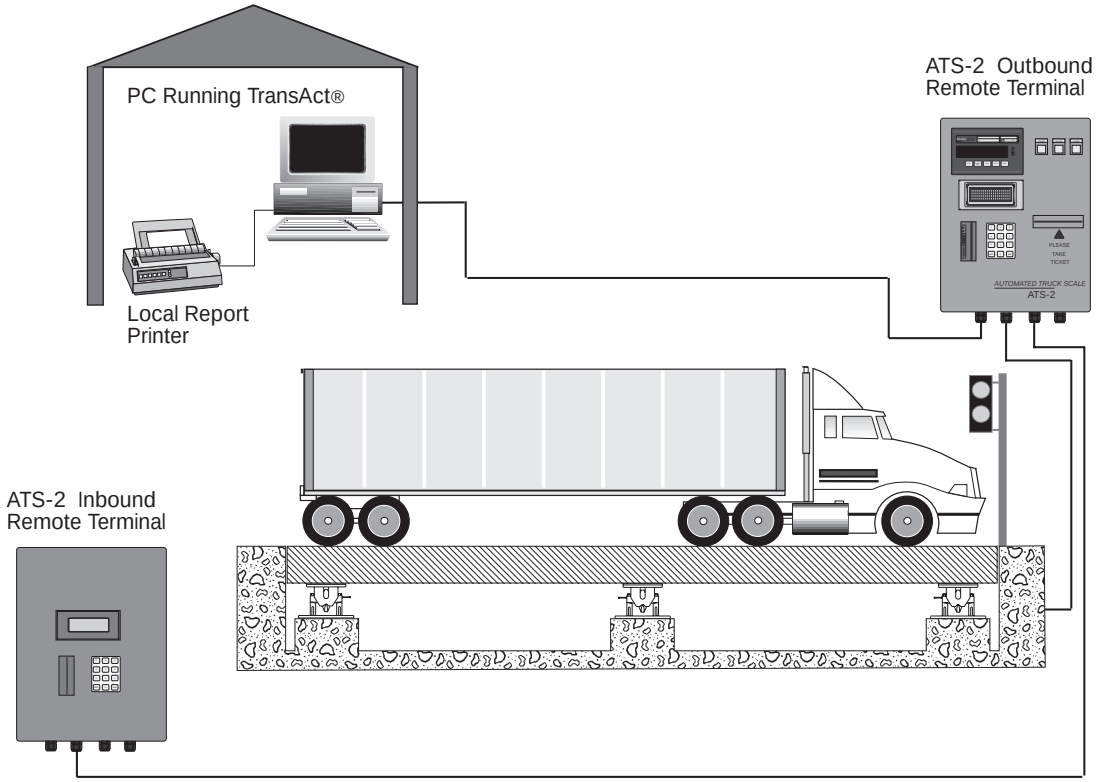
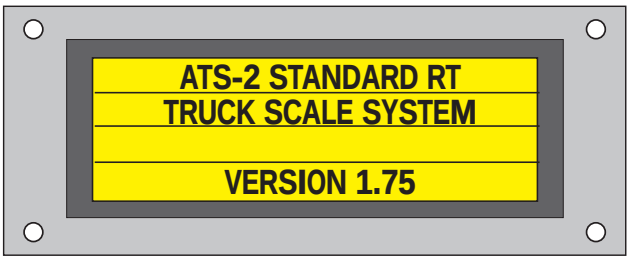


Figure 1-1. ATS-2 System Diagram

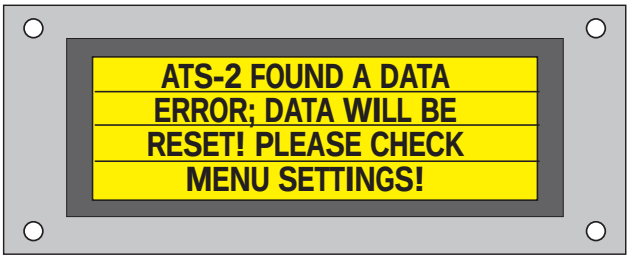
2.0 Remote Terminal Power Up

At initial power up the remote terminal displays the system information screen for about 5 seconds. If there are multiple scales using a remote terminal, they will also power up in this manner.

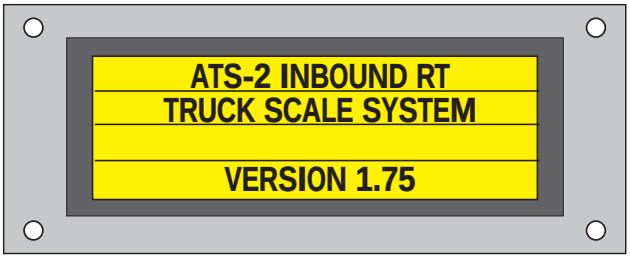


The ATS-2 powers up into unattended mode and is ready for transactions. This is useful if a power failure occurs during the unattended operation and is then restored, provided that TransAct has been protected from power outage.

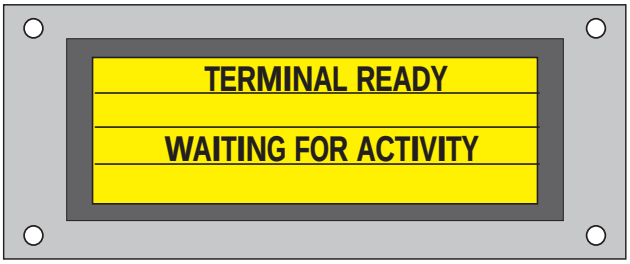
The ATS-2 verifies data integrity on powering up. Please verify all menu parameters are correct prior to using the system. If any data is invalid, which can occur when upgrading EPROMS, the system displays the following warning for approximately 5 seconds.



If your system includes an outbound and an inbound ATS-2, the inbound remote terminal will power up similarly:



It then goes to the following screen when ready:



The inbound terminal system is now ready to take direction from the outbound terminal for message display and prompting.

3.0 Setup Menu

The following section describes the parameter setup of the ATS-2 and the menu selections needed to operate the system correctly.

The remote terminal or terminals ship from the factory properly configured. However, it is necessary to understand the setup options and system test functions available should you ever need to troubleshoot or modify the system.

If you are sent an EPROM to upgrade an existing system, you need to reset the system data and possibly change any non-factory settings for your system. Until you reset the system data and parameters, the system may not communicate with peripheral devices.

Both the ATS-2 outbound and the ATS-2 inbound controllers require some setup in order to function. The outbound ATS-2 has more functionality, and this requires more setup parameters.

The DIP switch bank on the CPU board, found in both the inbound and outbound terminals, includes eight switches. All switches are in the off position. Only DIP switch 1 is ever used.

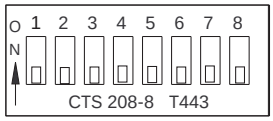
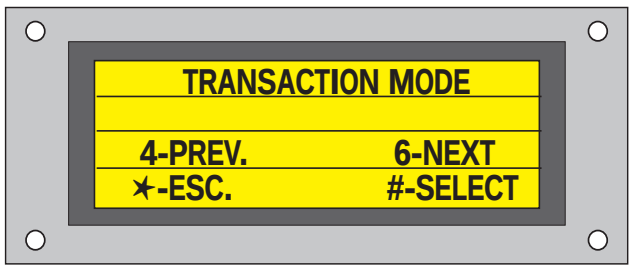


Figure 3-1. DIP switch numbering

3.1 DIP Switch 1 – The ATS-2 Menu

Switching DIP switch 1 to the on position causes the ATS-2 to display the menu. Here, the user is able to configure parameters necessary for the operation of the ATS-2 and test system devices. You may go into the ATS-2 menu when the system is in a ready state in attended or unattended modes. Having the DIP switch on during power up causes the ATS-2 to go directly to the menu.

The menu appears like this:



The 6 key is used to proceed to the next menu choice on the same hierarchical level as the current menu choice.

The 4 key is used to move back to the previous choice on the same hierarchical level as the current menu choice.

The # key acts like an enter key. This is used to select a given menu item or complete entry of a parameter value. Since the menu is arranged as a hierarchy of choices, you are able to traverse down the menu to a lower submenu.

The ✶ key acts similar to an escape key when navigating the menu. This allows you to traverse up the menu from a lower submenu. If you are editing a parameter value, this key acts as a backspace key.

If you are editing a system value and do not want to change it, you can press # while the cursor is on a blank line (For example: before entering another value) to retain the current value.

If you change any of the communication parameters, it is recommended that you reboot the system.

The outbound and inbound menu hierarchies are shown in Figure 3-2 and 3-3 on page 5.

The menu functions of both the outbound and inbound terminals are explained in detail in Sections 3.2 through 3.11.

Outbound (Standard) Terminal Menu Hierarchy

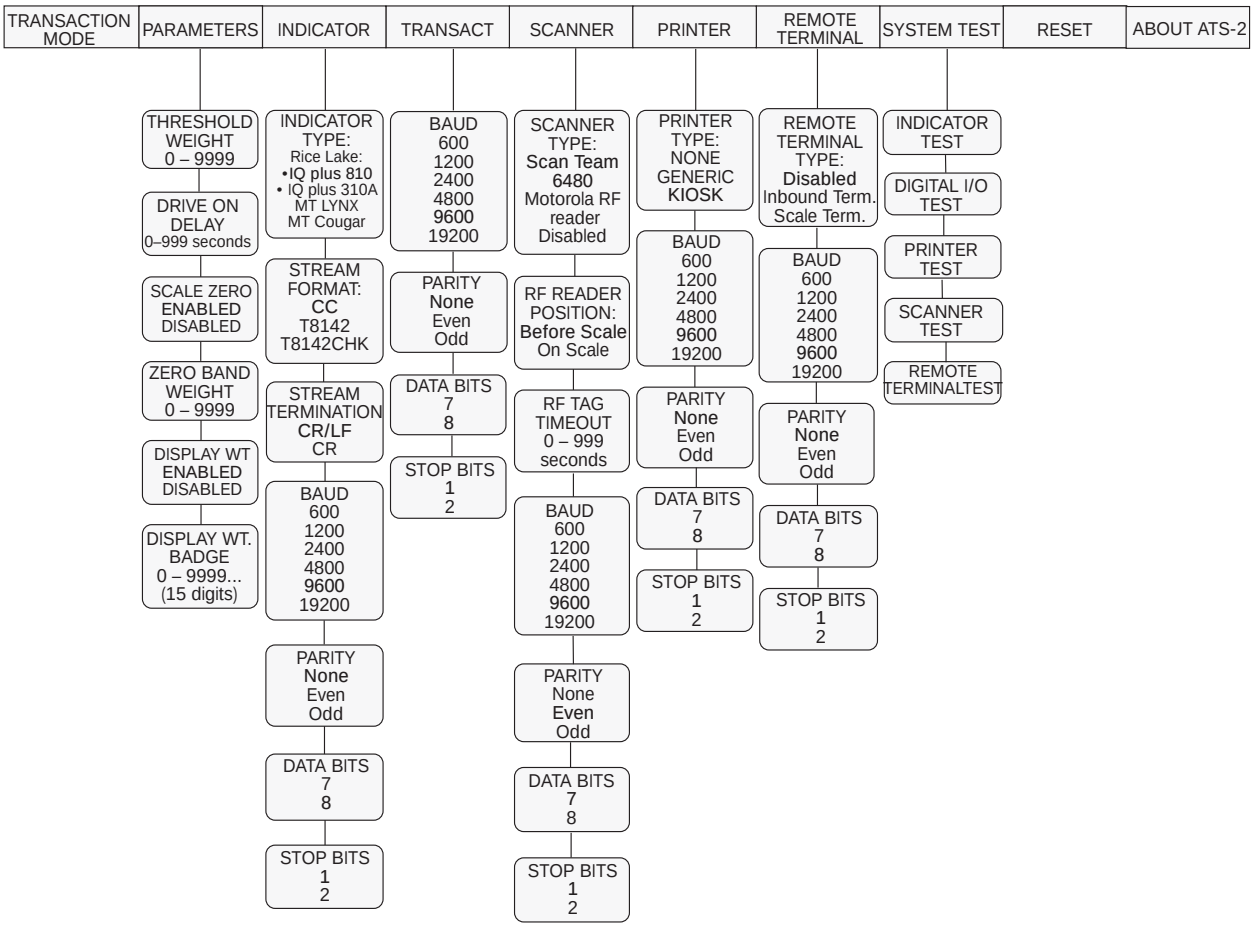


Figure 3-2. Standard Terminal Menu Hierarchy

Inbound Terminal Menu Hierarchy

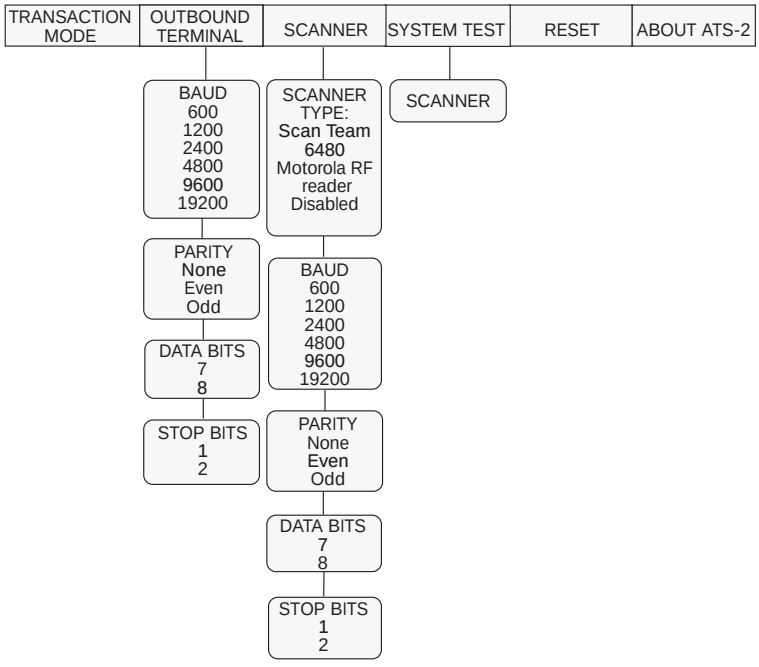
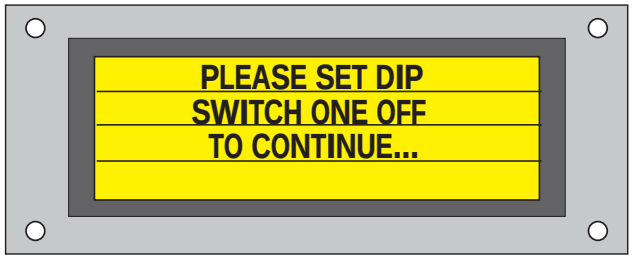


Figure 3-3. Inbound Terminal Menu Hierarchy

3.2 Transaction Mode

The transaction mode tells the system to exit the menu and process truck transactions. This is the normal operating mode of the ATS-2 system. Whether or not the ATS-2 system goes back into attended or unattended mode is dependant on previous commands received from TransAct.

If DIP switch 1 is still in the on position, a prompt alerts the user to turn DIP Switch 1 off.



3.3 Parameters

The parameters are those input fields that define the system features and functionality.

3.3.1 Threshold Weight

The threshold weight value is used by the system to recognize that a truck is on the scale. At this point, the system starts the drive on delay and then initiates a transaction by prompting for the badge number.

The default value is 5000 lbs.

3.3.2 Drive On Delay

The drive on delay allows the truck to drive fully onto the scale before the outbound direction traffic light turns red, directing the truck to stop. The system will not start prompting for a badge number until the drive on delay has expired.

The default value is 3 seconds.

3.3.3 Scale Zero

Use this option to enable the ATS-2 to zero the scale after each transaction. When a transaction is complete, the system looks for the indicator to go below the zero band weight (described below) and for the indicator to go into standstill. When these two conditions are met, the ATS-2 zeros the indicator to prepare for the next transaction.

The default is enabled.

Note: *This option must be enabled for Legal-For-Trade transactions.*

3.3.4 Zero Band Weight

The zero band weight is the weight at which the system knows that the truck has driven off the scale after a transaction has completed. This value is not used if the scale zero feature is disabled.

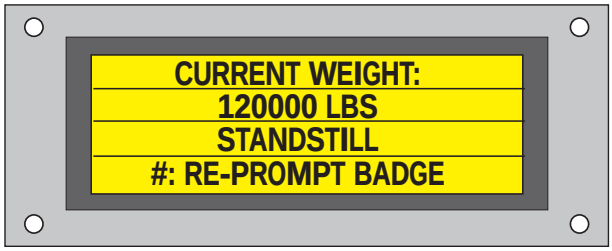
The default value for the zero band weight is 100 lbs.

3.3.5 Display Weight

The display weight can be either enabled or disabled. By enabling this feature, the badge specified in the display weight badge causes the system to display the current scale weight on the ATS-2 display until the driver drives ahead. No transaction is processed.

3.3.6 Display Weight Badge

If you choose to use this feature, you can display the weight on the remote terminal screen without processing a transaction as shown below.



If the user then decides to process the transaction, the driver can press the # (enter) key to have the ATS-2 terminal re-prompt for a badge. He then can enter a valid badge number. The transaction is then processed.

3.4 Indicator

This section defines communication parameters that the ATS-2 uses to communicate with the indicator. Table 3-1 shows the following default values used with the indicator:

Type	IQ plus 810
Stream Format	CC (consolidated controls)
Baud	9600
Parity	None
Data Bits	8
Stop Bits	1

Table 3-1. Indicator Parameters

Note: *If you are using the Mettler-Toledo Lynx or Cougar digital weight indicators, the following settings apply.*

The ATS-2 remote terminal must be set for:

Type	METTLER-TOLEDO LYNX/COUGAR
Stream Format	T8142
Baud	9600
Parity	None
Data Bits	8
Stop Bits	1

Table 3-2. Remote Terminal Parameters

The Mettler-Toledo Lynx /Cougar must be set for:

Frequency	A/D Synchronized
Format	Standard
Input	Command
Baud	9600
Parity	None
Data Bits	8
Stop Bits	1

Table 3-3. Mettler-Toledo Indicator Parameters

The following stream formats are associated with the ATS-2 system.

CC (Consolidated Controls) Data Format.

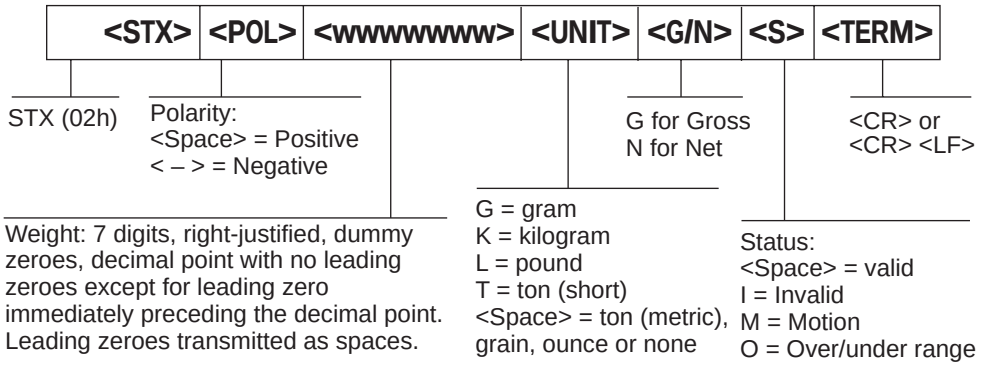
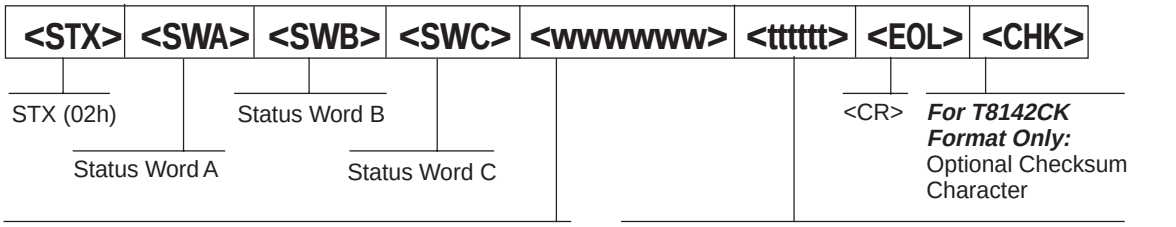


Figure 3-4. CC Data Format

Mettler-Toledo T8142 and T8142CHK Data Formats



7-digit gross or net weight, right justified, padded with leading spaces. Decimal points are not transmitted.

Six-digit tare weight. Dummy zeroes are transmitted, decimal points are not. Characters are always right justified and padded with leading zeroes, except when the gross weight is negative, in which case all characters are spaces.

Status Word A:

7	6	5	4	3	2	1	0
Parity	0	1	MUL1	MUL0	DP2	DP1	DP0

Even parity bit.
Requires EDP Port setup.

Disp. Div. MUL1 MUL0	Multiplier
0 1	x 1
1 0	x 2
1 1	x 5

DP2 DP1 DP0	Fixed Zero/Dec. Pt. Location
0 0 0	x 100 (2 fixed zeroes)
0 0 1	x 10 (1 fixed zero)
0 1 0	x 1 (No decimal point)
0 1 1	x 0.1 (1 decimal place)
1 0 0	x 0.01 (2 decimal places)
1 0 1	x 0.001 (3 decimal places)
1 1 0	x 0.0001 (4 decimal places)
1 1 1	x 0.00001 (5 decimal places)

Status Word B:

7	6	5	4	3	2	1	0
Parity	0	1					

Even parity bit:
Requires EDP Port setup.

0 = Gross Display Mode
1 = Net Display Mode

0 = Positive indicated weight value
1 = Negative indicated weight value

0 = In range
1 = Out of range

0 = lb
1 = kg

0 = Stable
1 = Motion

Status Word C: ASCII 20h (space)

7	6	5	4	3	2	1	0
Parity	0	1	0	0	0	0	0

Even parity bit: requires EDP Port setup.

Figure 3-5. Mettler-Toledo Data Format

3.5 TransAct/Outbound Terminal

This section defines the communication parameters that the ATS-2 uses to communicate with TransAct. With the inbound terminal, TransAct configures the communication settings for communicating with the outbound terminal. For the system to work correctly, TransAct and the outbound terminal must have the same settings as the ATS-2 controller. The default values are:

Baud	9600
Parity	None
Data Bits	8
Stop Bits	1

Table 3-4. TransAct Parameters

For the inbound terminal, these settings need to match the settings for the outbound ATS-2's remote terminal.

3.6 Scanner

This section defines the communication parameters that the ATS-2 uses to communicate and process badges with the bar code reader or RF tag reader. For the system to work correctly, the scanner must have the same settings as the ATS-2 controller.

The RF tag timeout and RF Reader Position are used when the Motorola RF Tag type is used.

If the RF Reader Position is set to *before scale*, a truck pulls up to the tag reader (before driving onto the scale), the tag is read and held in memory until the truck drives onto the scale and reaches the threshold weight or a timeout occurs. If a timeout occurs, the truck is assumed to have skipped the scale and a new tag must be read for a transaction to occur. This prevents accidental reads from taking place and the wrong truck number being applied to a transaction.

If the RF Reader is set to *on scale*, the ATS-2 system reads the RF tag as the truck drives near the ATS-2 remote terminal (already on the scale) and waits for the scale to achieve standstill before initiating a transaction with TransAct. The default values are:

Type	SCANTEAM 6480 (WELCH-ALLYN SCANTEAM 6480 CARD READER)
RF Reader Position	BEFORE SCALE
RF Tag Timeout	30 Seconds
Baud	9600
Parity	Even
Data Bits	7
Stop Bits	1

Table 3-5. Scanner Parameters

Note: *The default bar code used by the ScanTeam 6480 is 3 of 9. Since this bar code is dealt with in TransAct, any new badges you create should use this bar code.*

Also note that the inbound terminal does not have an RF Tag timeout parameter. This is because this device should not be used in an RF Tag configuration.

3.7 Printer

This section defines the communication parameters that the ATS-2 uses to communicate with the kiosk ticket printer. For the system to work correctly, the printer must have the same settings as the ATS-2 controller.

The default values are:

Type	Kiosk
Baud	9600
Parity	None
Data Bits	8
Stop Bits	1

Table 3-6. Printer Parameters

The type setting instructs the ATS-2 remote terminal how to gather printer status information. If NONE or GENERIC is selected, the remote terminal will not check for or display printer status information via the front panel lights.

3.8 Remote Terminal

This section defines the communication parameters that the ATS-2 uses to communicate with a remote terminal. There must be a remote ATS-2 unit set for inbound on the same scale, or in use at another scale. For the system to work correctly, the remote terminal must have the same settings as the ATS-2 controller.

The default values for the remote terminal are:

Remote Terminal Type	DISABLED
Baud	9600
Parity	None
Data Bits	8
Stop Bits	1

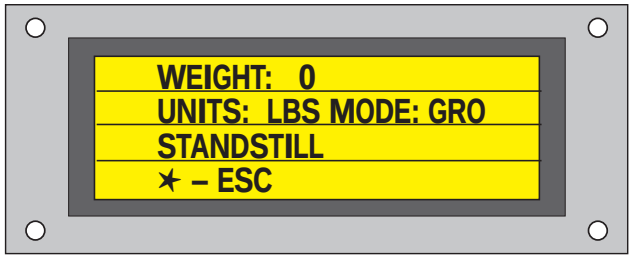
Table 3-7. Remote Terminal Parameters

3.9 System Test

The system test functions allow you to test the equipment installed with the ATS-2 system. It is useful for initial installation as well as troubleshooting.

3.9.1 Indicator Test

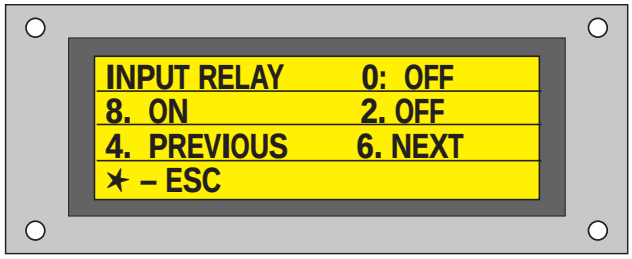
The indicator test allows you to test the connectivity between the ATS-2 system and the weight indicator. The system displays indicator information when working correctly, or displays an error message if there is a problem.



Note: *TransAct displays a communication error while in the indicator test screen. The system temporarily disables other tasks while in this screen.*

3.9.2 Digital I/O Test

The digital I/O test screen allows you to test various digitally controlled equipment, such as the traffic lights and front panel error lights.



When testing an output relay, use the 8 key to turn the relay on and use the 2 key to turn the relay off.

Please see drawing ATS-2-C on page 24 for details on the relay assignments.

Note: *When an input relay is being tested, the 8 key and 2 key have no effect, only the state of the relay is presented.*

Note: *TransAct will display a communication error while in the digital I/O test screen. The system temporarily disables other tasks while in this screen.*

3.9.3 Printer Test

The printer test allows the user to print out a small test page to ensure the printer is online and working correctly. The following is an example of a test print.

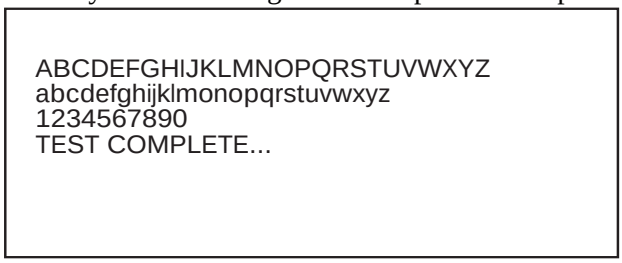
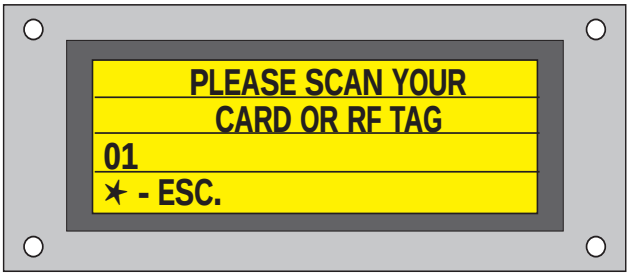


Figure 3-6. Test Print

3.9.4 Scanner Test

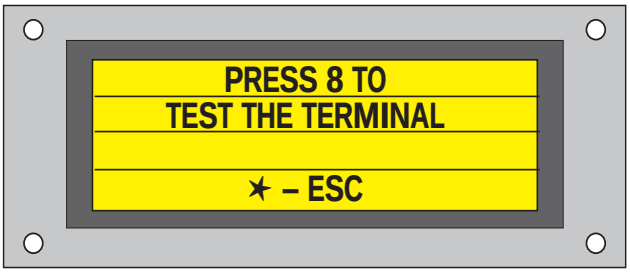
The scanner test allows the user to view if the card reader or tag reader is working. The following screen is displayed:



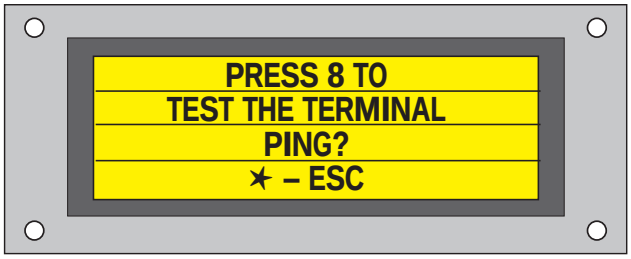
When a card or tag is scanned, the badge number appears on the third line of the display. It remains on the display until a new card or tag is scanned.

3.9.5 Remote Terminal Testing

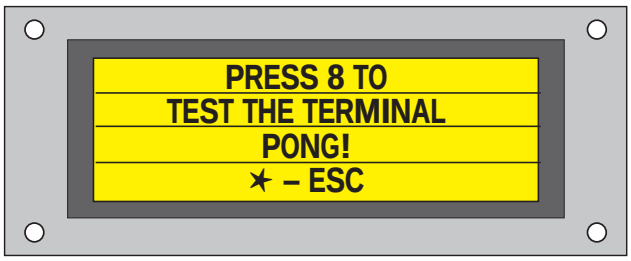
If another remote terminal is set up with the system, (whether it's an inbound station or another scale station), you can make sure the terminals are communicating using the remote terminal test. You can use the following screen:



When 8 is pressed, the terminal sends a ping to the remote terminal and waits 1 second for a response.



If the terminal responds, a pong message appears for 1 second:



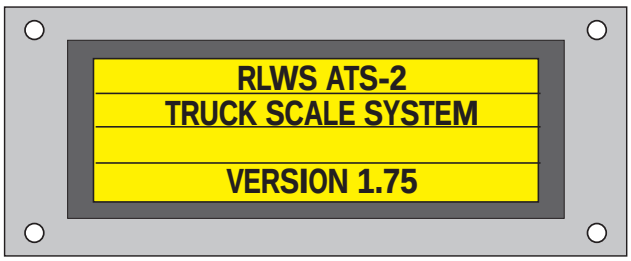
If no response is received in the timeout period, the third line of the display goes blank.

3.10 Reset

This restores all system parameters to their factory defaults. You will be prompted to continue or cancel after selecting this action.

3.11 About ATS-2

Displays program and version information. You can exit this screen by pressing any key on the keypad.



3.12 Outbound Terminal

This defines the communication parameters that the ATS-2 uses to communicate with the inbound terminal. For the system to work correctly, the remote terminal must have the same settings as the ATS-2 controller.

The default values are:

Type	Disabled
Baud	9600
Parity	None
Data Bits	8
Stop Bits	1

Table 3-8. Outbound Terminal Parameters

4.0 TransAct

This section lists the basic setup required for TransAct to work with the ATS-2 remote terminal. This section covers only the minimal configuration necessary for the remote terminal to work with TransAct. For further information on the installation, configuration, and operation of TransAct, please consult the *TransAct Installation and Operation Guide*, PN 50270.

Before performing the initial system test with TransAct, do the following:

1. Connect the serial communications between the TransAct PC and the ATS-2 inbound remote terminal. Refer to drawing ATS-2-H for RS232 wiring located on page 32.
2. Turn Windows 3.x/9x/NT power management OFF.
   - Click on Start | Settings | Control Panel | Power
   - Turn off all power management settings.
3. Turn BIOS power management OFF.
   - Enter setup when booting the PC – this will vary with PC manufacturers.
   - Turn off all power management settings.
4. Turn wallpaper and screen savers OFF (to improve performance).
   - Click on Start | Settings | Control Panel | Display

Although a complete ATS-2 system comes from the factory with the following parameters configured, it is recommended you review them to familiarize yourself with the operation of the TransAct program.

To configure TransAct do the following steps:

1. Set the port parameters within TransAct.

   (Admin | Preferences | Data Terminal Port)

   Baud Rate:9600

   Data Bits:8

   Parity:None

   Stop Bits:1

   Flow Control:None

   Device Type:ATS-2

   Connector:COM1 – COM4 (port connected to the remote terminal serial cable)
2. Test the serial communications between the ATS-2 controller and TransAct.

   (Admin | Preferences | Data Terminal Port | Test)

   - Set the unit number to 99.

   - Tab to the Data To Send field and enter RWC (request weight command). The Data Received field should display something similar to the following:

   99WRI 40.0,L
3. Set weight options within TransAct.

   (Weight | Options)

   List Order:By Code

   Tolerance:Should be greater than 0, typically 20.

   Multiple Items per Ticket. Click the box to weigh multiple items per ticket.

   If the scale is in-motion, TransAct does not allow the user to change modes from unattended to attended. Therefore, the tolerance value should be set so fluctuations caused by external conditions do not cause TransAct to interpret these fluctuations as motion. If the tolerance value is set too low and the scale is fluctuating, the Attended/ Unattended toolbar button will toggle from an active to an inactive state.

   When multiple items per ticket option are enabled, items for different category types and units of measure can be placed on the same ticket. Using a landfill application as an example, a single ticket could contain separate items for 2500 pounds of garbage, 1000 pounds of demolition material, and 5 appliances. A charge for each item is calculated and stored separately in the database. They can be grouped together and totaled when printing a ticket. For the example given above, four separate trips would be made across the scale: The weigh-in and one trip for each type of material.

4. Edit printer ticket file.

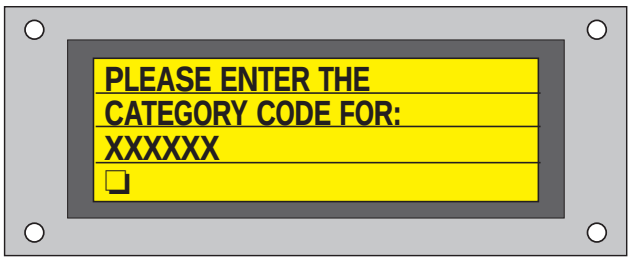
   For the kiosk printer in the ATS-2 controller to advance and cut the ticket, the ticket file must contain the correct control codes.

   When TransAct is installed, a file named **unattend.gtk** is placed in the transact directory. This file contains the correct kiosk printer control codes.

   For more information on creating custom format print tickets see the *TransAct Installation and Operation Guide*.

5. Set up the default categories with the customer account form:

   The operator can configure the system to prompt the driver to enter up to eight categories of information. The operator defines these categories with the TransAct PC program. TransAct then inserts these category prompts into the weighing sequence. The screen below shows an example of a category entry prompt.



   In order for the ATS-2 controller to prompt the user for categories, the default category in the Customer Account form must be set to –1, (None). For more information on setting up categories, see the Default Categories and Category descriptions in the Administration Section of the *TransAct Installation and Operation Guide*.

6. Set badge numbers for trucks.

   (Admin | Customer Accounts | Trucks)

   Each truck is assigned a badge number. Enter the badge number into the Badge Number Field and click the SAVE button.

   If tare weights are used, drivers will only have to swipe their badge one time (weigh out only transaction). Enter the tare weight into the Tare Weight field and click the SAVE button.

   If weigh-in/weigh-out transactions are used, drivers will have to swipe their badges twice – once for their inbound weighment and once for their outbound weighment. Make sure the Tare Weight field is zero and click the SAVE button.

7. Put TransAct into Unattended Mode and create sample transactions.

   (Weigh | Attended)

   TransAct must be in the Weigh Form in order for the Attended/Unattended button to be active.

   Click the Attended button to toggle TransAct into the unattended mode, the only menu buttons active will be the Unattended and Quit buttons.

   With a weight larger than the ATS-2 threshold weight on the scale, use a badge to start and complete a transaction. If using a load cell simulator, remember to turn the scale back to zero to complete the outbound weighment.

5.0 Truck Weighing Mode

The following is a breakdown of the truck weighing mode sequence of operation.

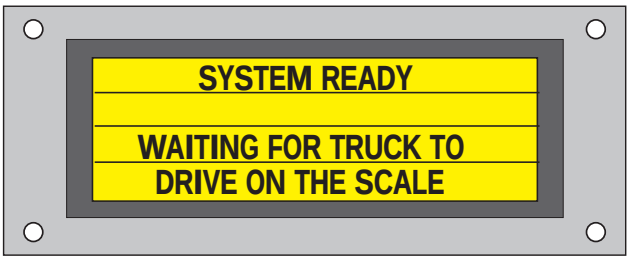
Note 1: *If the Motorola RF Tag type is selected, and the RF scanner position is set to Before Scale, the ATS-2 will read the tag just before the truck drives onto the scale. The weight indicator will be zeroed on the read, so it is important to position the reader about 15-20 feet before the actual scale. Scanning category code cards will not be possible since the RF Tag reader takes the place of the bar code scanner.*

2: *The terminal will process inbound and outbound traffic across the scale. The standard system comes equipped with only one set of traffic lights, but outputs to control two sets is standard. The sequence of operation below describes the operation of two sets.*

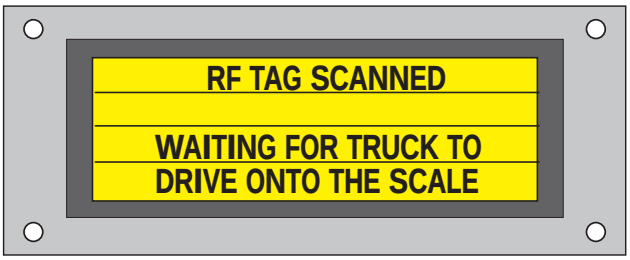
5.1 Weighing In

The weigh-in process is done on the inbound terminal in a two-terminal system, or on the ATS-2 if only one is set up in the system. It follows the sequence listed below:

1. While waiting for a truck, both the inbound and outbound traffic lights are green and the system displays the following screen:

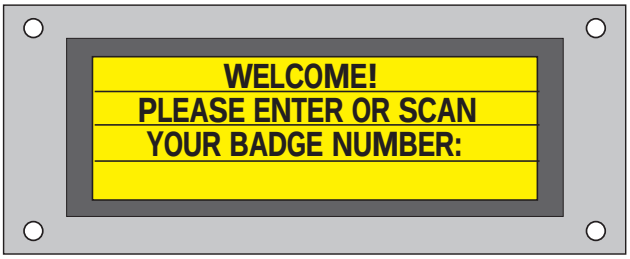


2. If the Motorola RF Tag option is used, the system reads the tag as the truck approaches the scale and displays the following screen:

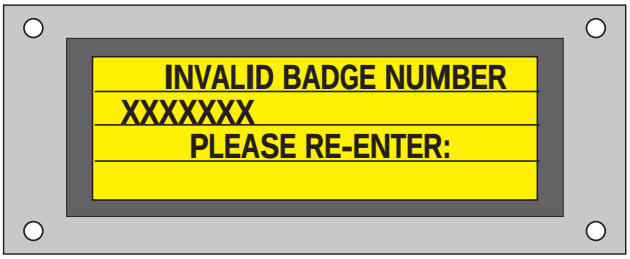


The system skips step 3 since the badge number has already been read and jumps down to step 5.

3. The driver pulls up onto the scale, which triggers the threshold weight. The inbound traffic light turns red. After the drive on delay times out, the outbound traffic light turns red to direct the trucker to stop. If the RF Tag option is not used, the following screen appears:

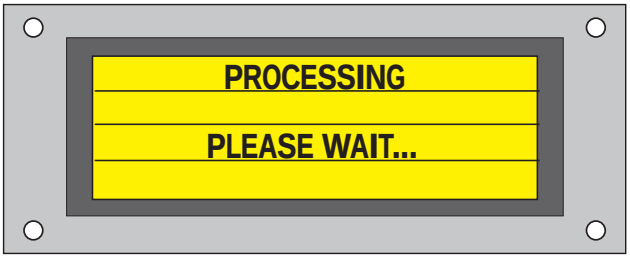


4. The driver enters the badge number using the keypad or by scanning a bar code badge. If the badge number is not recognized by TransAct, the following screen appears:

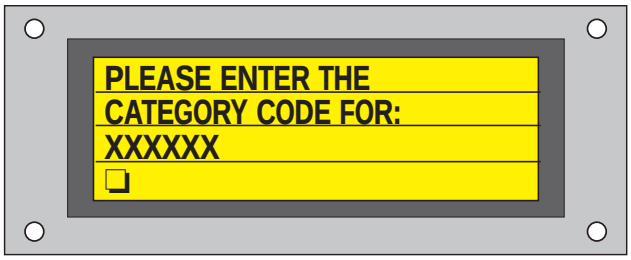


If the driver believes the entered badge number is correct, the PC operator should check the database to verify that the account information is set up correctly.

5. The system begins processing the truck and displays the message:

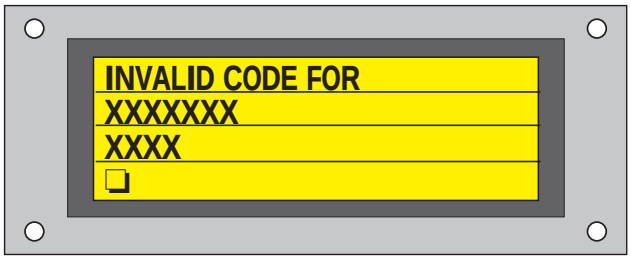


If the operator has configured the system accordingly, the system prompts the driver to enter category information (up to eight categories). The display prompts:



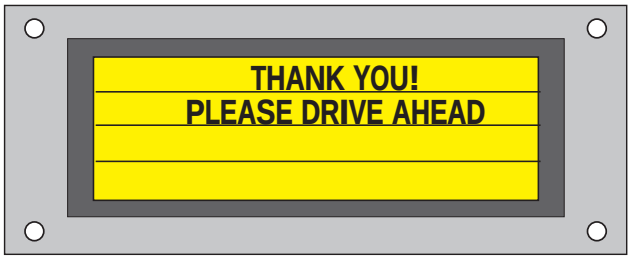
Key in the code and press # (enter) or scan an appropriate badge.

If the entered category is incorrect, the following screen appears:



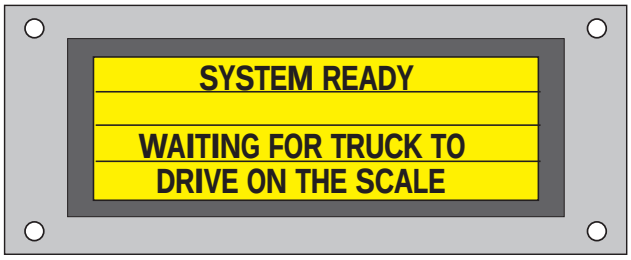
If the driver believes the category code entered is correct, the PC operator should check the database to verify that the category information is set up correctly.

Once this is complete, or if no categories are set up for prompting the driver, the ATS-2 displays the following message:



At this time, the outbound traffic light turns green directing the driver to pull ahead.

6. The system waits until the scale weight drops below the zero band value, then displays the message:

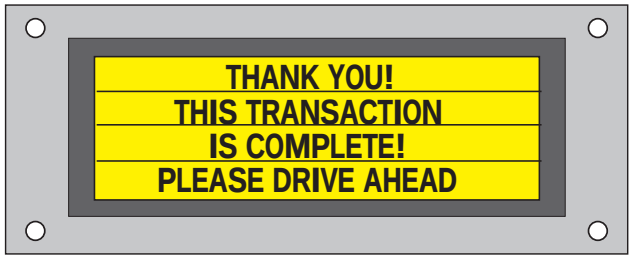


At this time the inbound traffic light turns green and the ATS-2 remote terminal will zero the indicator if that option is enabled.

5.2 Weighing Out

The weigh-out process follows either Section 5.2.1 or 5.2.2 depending on whether the multiple items per ticket option is enabled in TransAct. It is always performed on the outbound terminal in a two-way terminal system.

Whenever a transaction is complete, if TransAct is switched over to attended mode and then back to unattended mode, the ATS-2 displays:

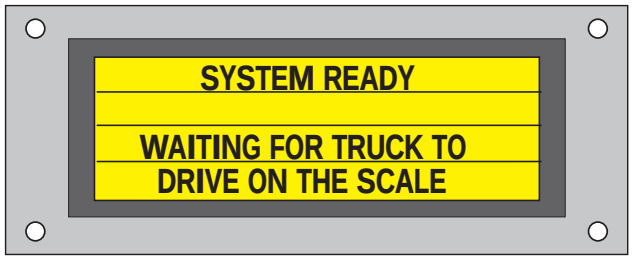


The ATS-2 then waits for the truck to leave the scale. This assures that trucks do not attempt multiple transactions based on one weighment.

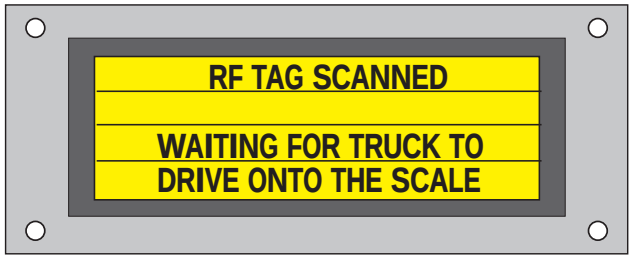
5.2.1 Multiple Items per Ticket not Enabled

The weigh-out process follows the sequence below:

1. While waiting for a truck, both the inbound and the outbound traffic lights are green and the system displays the following screen:

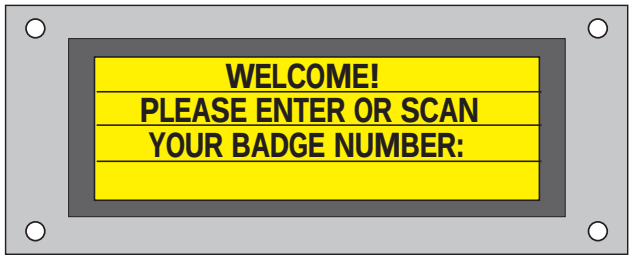


2. If the Motorola RF Tag option is used, the system reads the tag as the truck approaches the scale and displays the following screen:

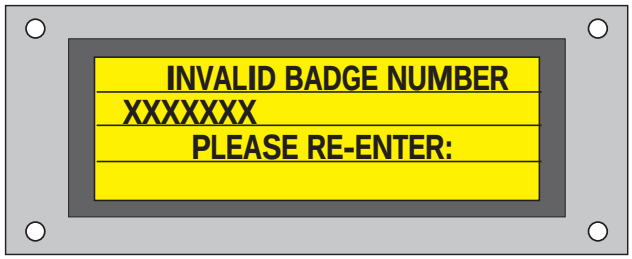


   The system skips step 3 since the badge number has already been read and goes to step 5.

3. The driver pulls up onto the scale, which triggers the threshold weight. The inbound traffic light turns red. After the drive on delay times out, the outbound traffic light turns red to direct the trucker to stop. The following screen appears:

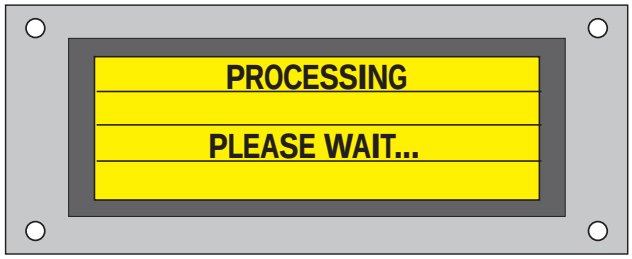


4. The driver enters the badge number using the keypad or by scanning a bar code badge. If the badge number is not recognized by TransAct, the following screen appears:

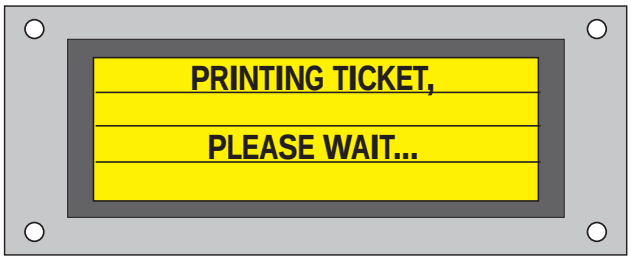


   If the driver believes the entered badge number is correct, the PC operator should check the database to verify that the account information is set up correctly.

5. The system weighs the truck and displays the message:

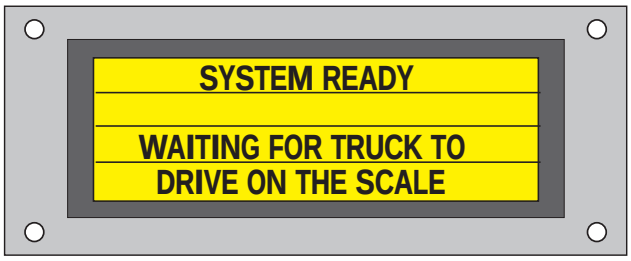


6. The system starts printing the outbound ticket and displays:



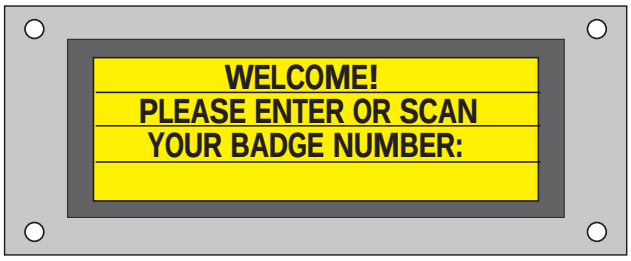
The outbound traffic light turns green at this time directing the driver to drive ahead.

7. The system waits until the scale weight drops below the zero band weight. The inbound traffic light turns green.

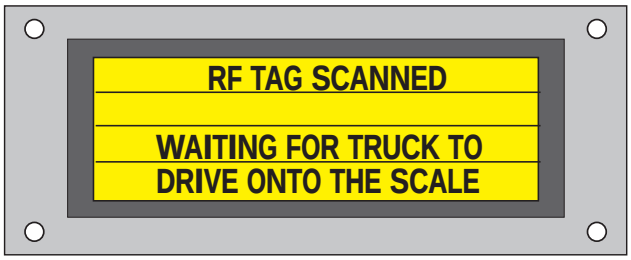


5.2.2 Multiple Items per Ticket Enabled

1. The driver pulls onto the scale, which triggers the threshold weight. The inbound traffic light turns red at this time. After the drive on delay times out, the outbound traffic light turns red and the following screen appears.

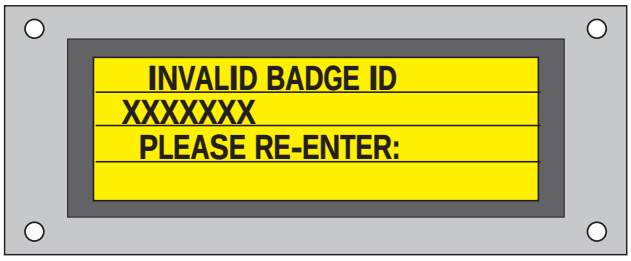


2. If the Motorola RF Tag option is used, the system reads the tag as the truck approaches the scale and displays the following screen:



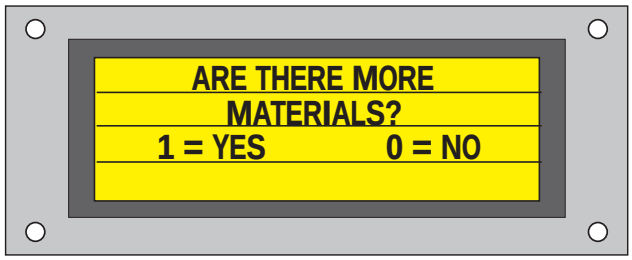
The system skips step 3 since the badge number has already been read and goes to step 5.

3. The driver enters the badge number using the keypad or by scanning a barcode badge. If the entered badge number is incorrect the following screen appears:



If the driver believes entered badge number is correct, the PC operator should check the database to verify that the account information is set up correctly.

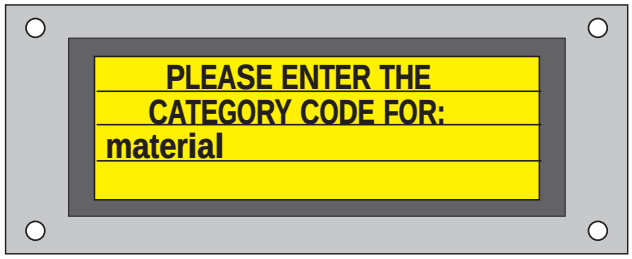
4. The system asks if there are more materials to be processed for this transaction:



Press 1 if there are more materials to be weighed on this ticket.

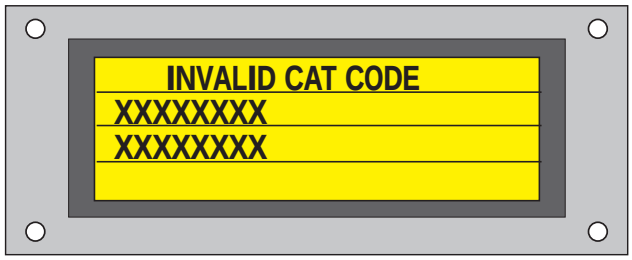
Press 0 if there are no more materials to be weighed on this ticket. At this time a ticket is printed and the driver is instructed to move ahead.

5. If 1 was selected, the ATS-2 remote terminal prompts for the next material code.



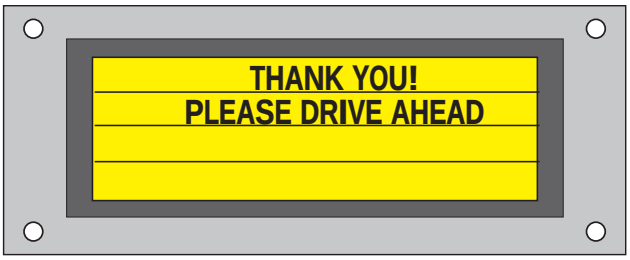
Key in the code and press # (enter) or scan an appropriate badge.

If the entered category code is incorrect, the following screen appears:

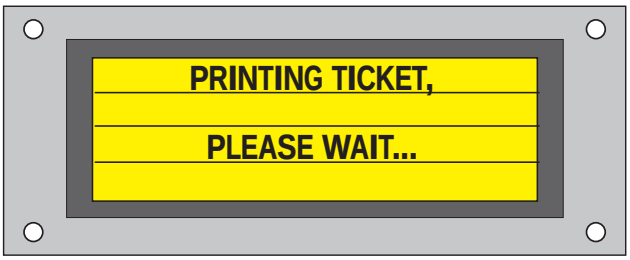


If the entered category code is correct, the PC operator should check the database to verify that the category code is set up correctly.

After all the configured category information has been entered, the outbound traffic light turns green and the display shows the following message:

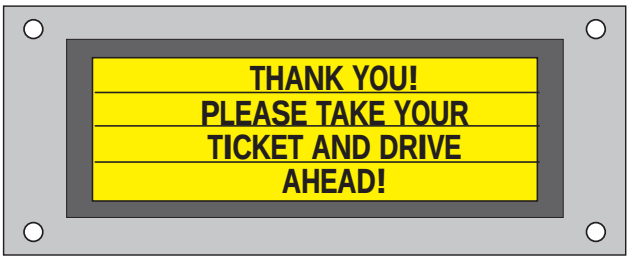


6. The system starts printing the outbound ticket and displays:

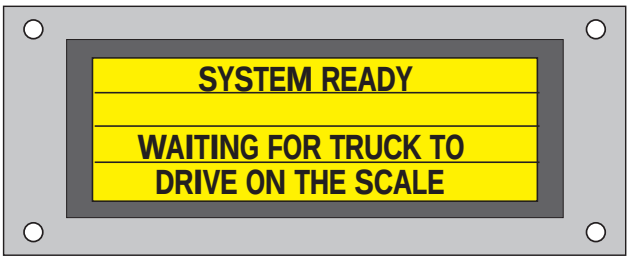


The outbound traffic light turns green at this time directing the driver to drive ahead.

7. If 0 was selected, a ticket is printed and the following message appears:



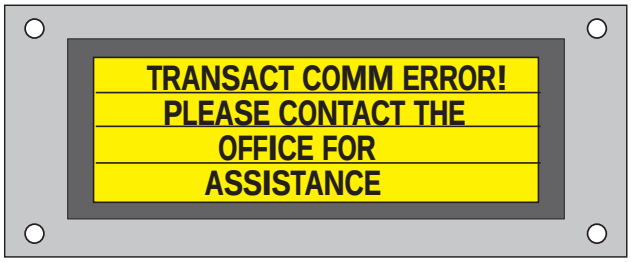
The system waits until the scale weight drops below the zero band weight. The inbound traffic light turns green and the display shows the following message:



6.0 Appendix

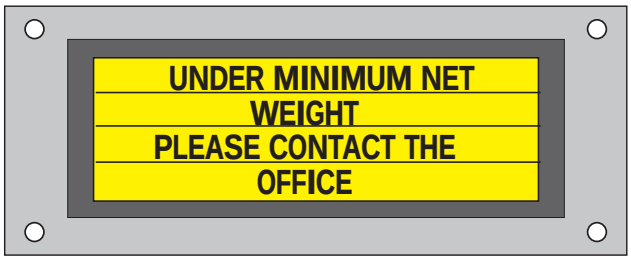
6.1 Error Messages

The driver may encounter the following errors during a transaction.



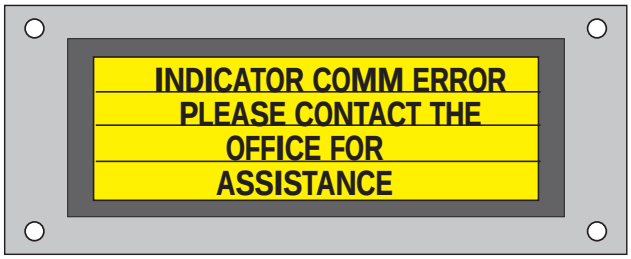
Problem:
The ATS-2 controller and TransAct are not communicating.

Solution:
Check connections. This can also be observed when the PC operator is making changes to the TransAct configuration. The ATS-2 should recover when the PC operator clicks on the weigh button.



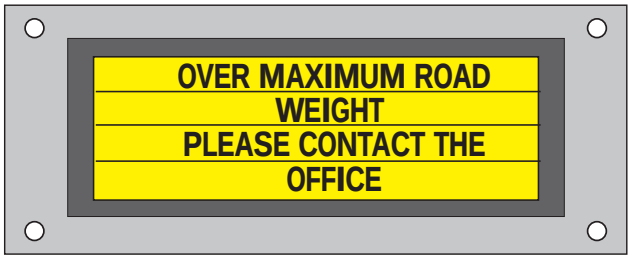
Problem:
The net truck weight is not large enough to qualify as a loaded truck.

Solution:
The truck may be empty. If the truck is loaded, the PC operator should adjust the Minimum Net Weight (see the *TransAct Installation & Operation Guide* for more information about the Minimum Net Weight parameters).



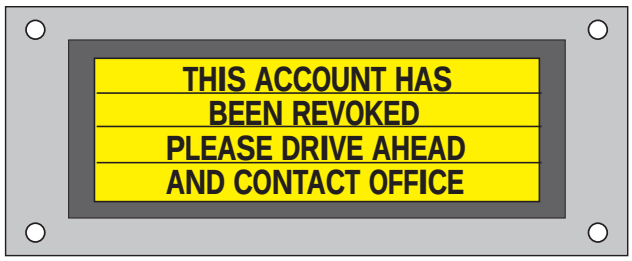
Problem:
There is no communication between the ATS-2 control board and the weight indicator.

Solution:
Check the serial communication with the indicator and/or reset the system.



Problem:
The truck weight exceeds the limit for the road on which the truck is driven.

Solution:
The driver should exit the scale. If necessary, the PC operator can change the Max. Weight settings for the truck.



Problem:
The driver's account is revoked.

Solution:
The driver should exit the scale and contact the office. Only a system administrator or supervisor can renew or validate a revoked account.

6.1.1 Front Panel Error Messages

The front panel of the outbound remote terminal contains three pilot lights.

- Paper low
- Printer error
- System error

Should there be a problem with any of the above mentioned items, the appropriate pilot light is illuminated and alerts the user of the problem.

The inbound terminal has one pilot light (system error only), and is illuminated if there is a problem.

Paper Low
When the paper low light is illuminated, the printer is running out of paper. It should be noted that the system still functions and TransAct still records and stores transactions even if there is a paper low error signal. No message appears on the VFD display.

Printer Error
When the printer error light is illuminated, the outbound terminal is experiencing a problem with the printer. As with the paper low warning, the system still functions and TransAct still records and stores transactions even if there is a printer error signal. Again, no message is displayed on the VFD display.

System Error
When the system error light is illuminated, the remote terminals are experiencing a communication problem with TransAct or the weight indicator.

6.2 Traffic Light Sequence

The ATS-2 comes equipped to handle two sets of traffic lights. The lights can be wired to direct traffic for incoming movement onto the truck scale, outgoing movement, or both. In the standard ATS-2 program, it is assumed that all traffic is one way across the scale.

6.2.1 Incoming Traffic

The incoming traffic light is mounted near the entrance of the truck scale. As the truck approaches the scale, the lights direct the truck. The light is green when the truck is allowed to drive onto the scale and turns red when a truck is on the scale indicating whether a truck may proceed onto the scale or must wait for a current transaction.

6.2.2 Outgoing Traffic

The outgoing traffic light is mounted near the end or exit area of the truck scale. It remains green when a truck drives onto the scale. When the truck threshold weight is met, a drive on delay begins that allows the truck to drive fully onto the scale. The light then turns red directing the truck to come to a full stop. The transaction is performed and the traffic light turns green directing the truck that the transaction is complete and the driver may exit the scale. The outgoing traffic light remains green until another truck is driven onto the scale and the drive on delay again expires.

6.3 Wiring Diagrams

The reference numbers for the wiring and layout drawings included with this manual are listed below.

Outbound Terminal

A–Front Panel Layout and Dimensions

B–Back Panel Layout

C–Relay Rack Diagram

D–Terminal Strip Wiring Diagram

E–Block Diagram

Inbound Terminal (Optional)

F–Front Panel Layout and Dimensions

G–Back Panel Layout

H–Terminal Strip Diagram

I–Block Diagram

Extra Diagrams

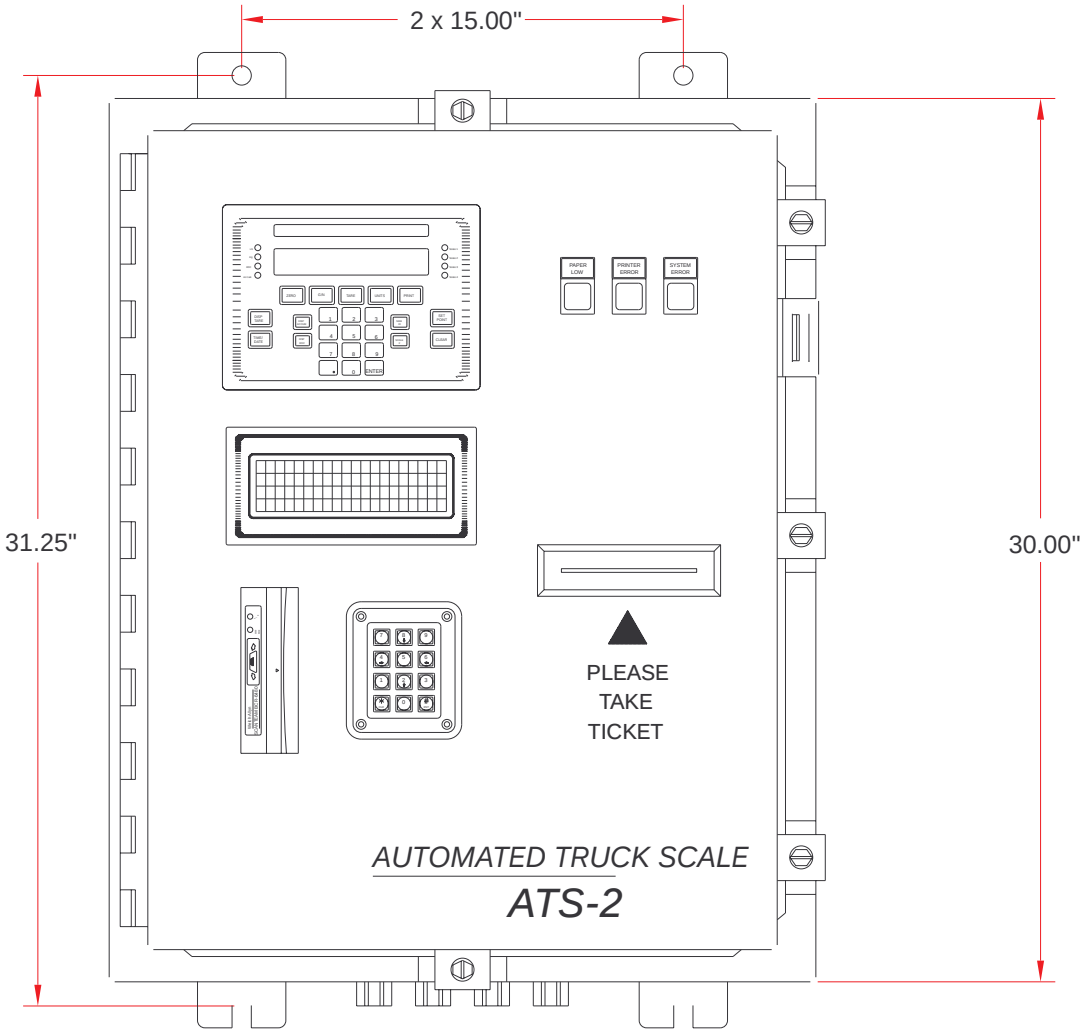
J –CPU and Expansion Board Diagram

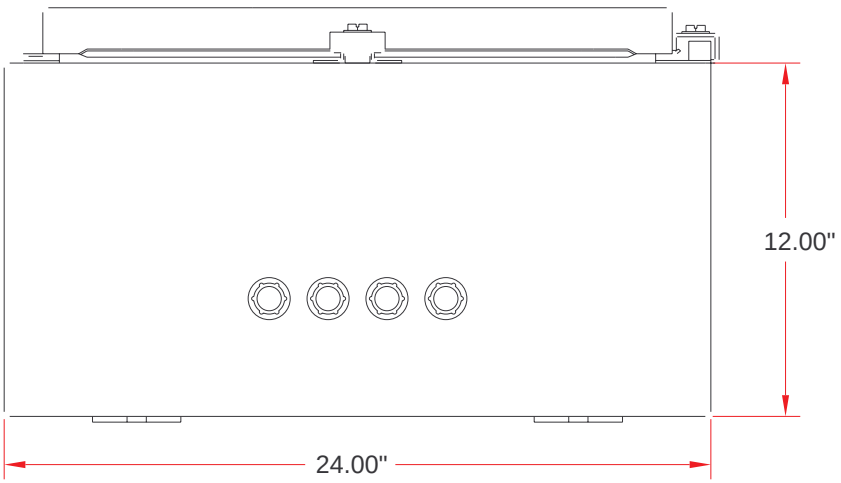
K–TransAct PC to ATS-2 RS232 Cable Diagram

Note: *An ATS-2 system that is equipped with only one remote (outbound) terminal will have outbound terminal diagrams listed A–E and drawing references to the inbound terminal can be ignored.*

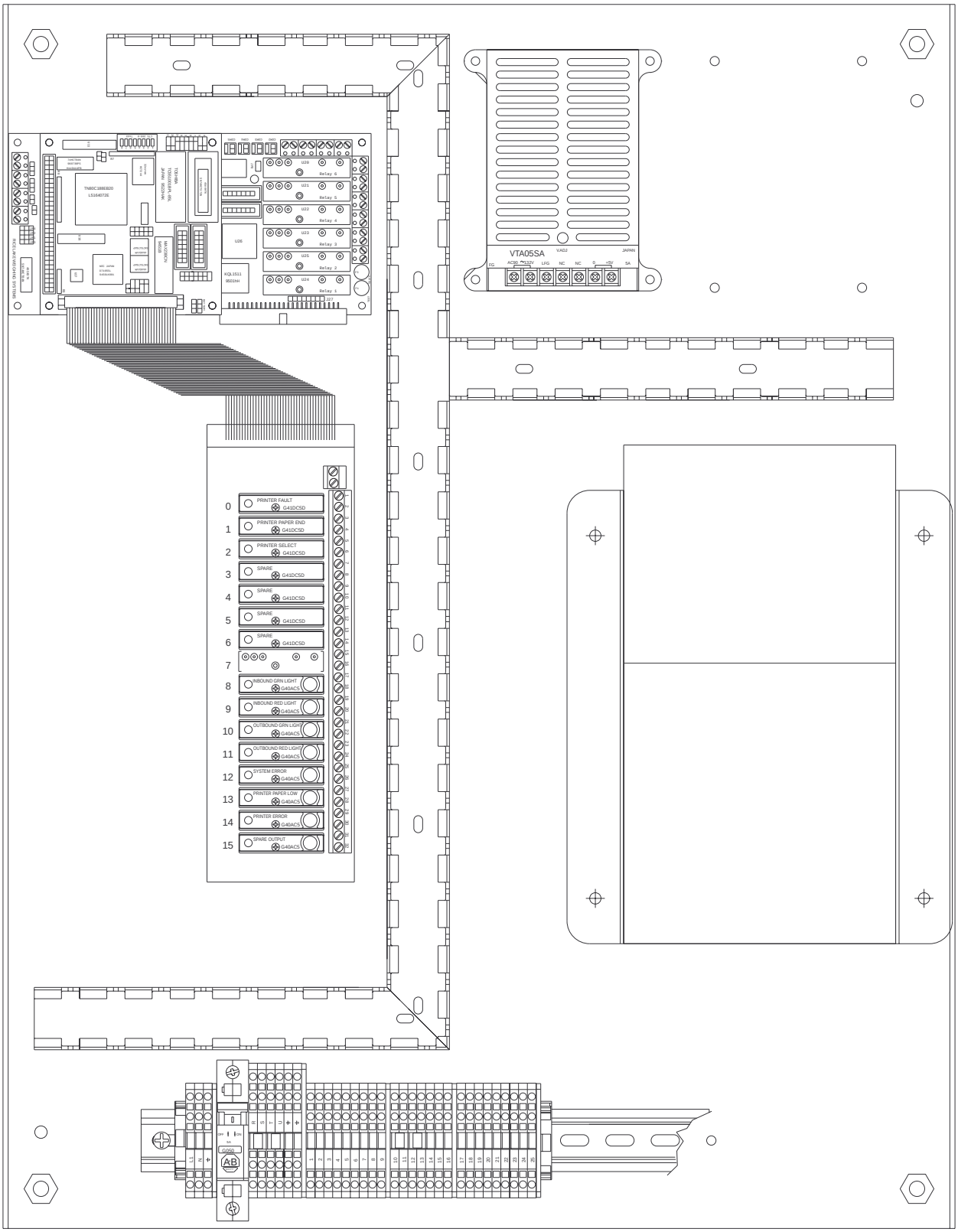
For systems having both outbound and inbound terminals, please refer to the attached diagrams in the Appendix section of this manual.

A–Outbound Terminal Front Panel Layout and Dimensions

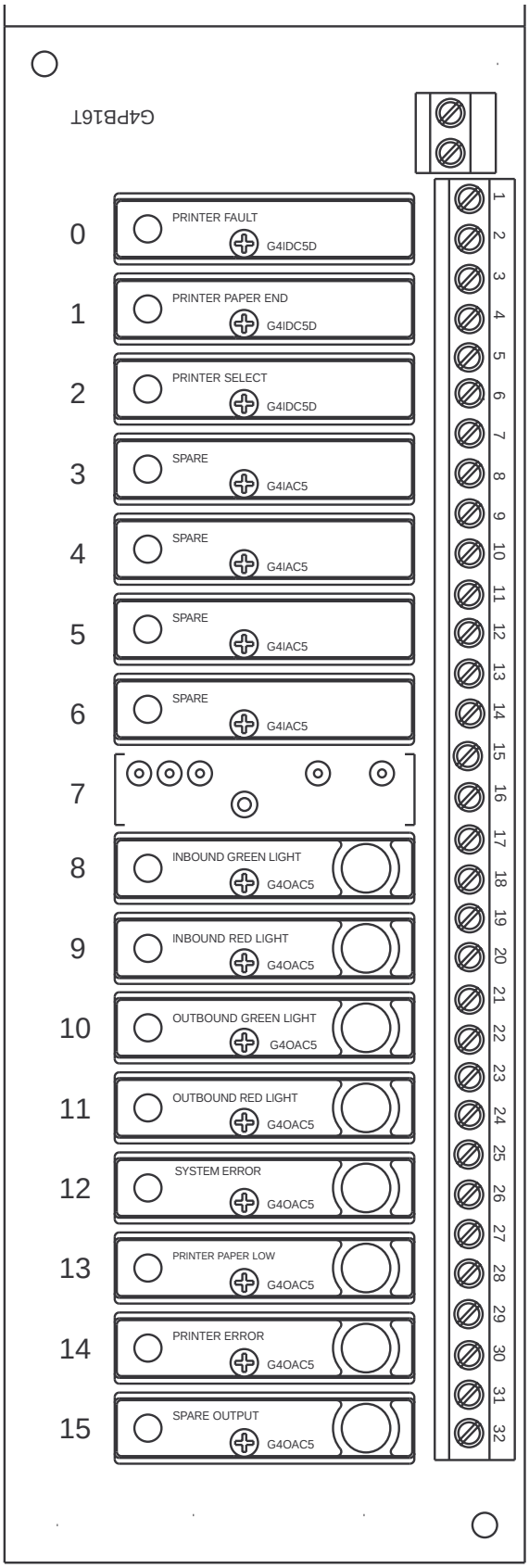




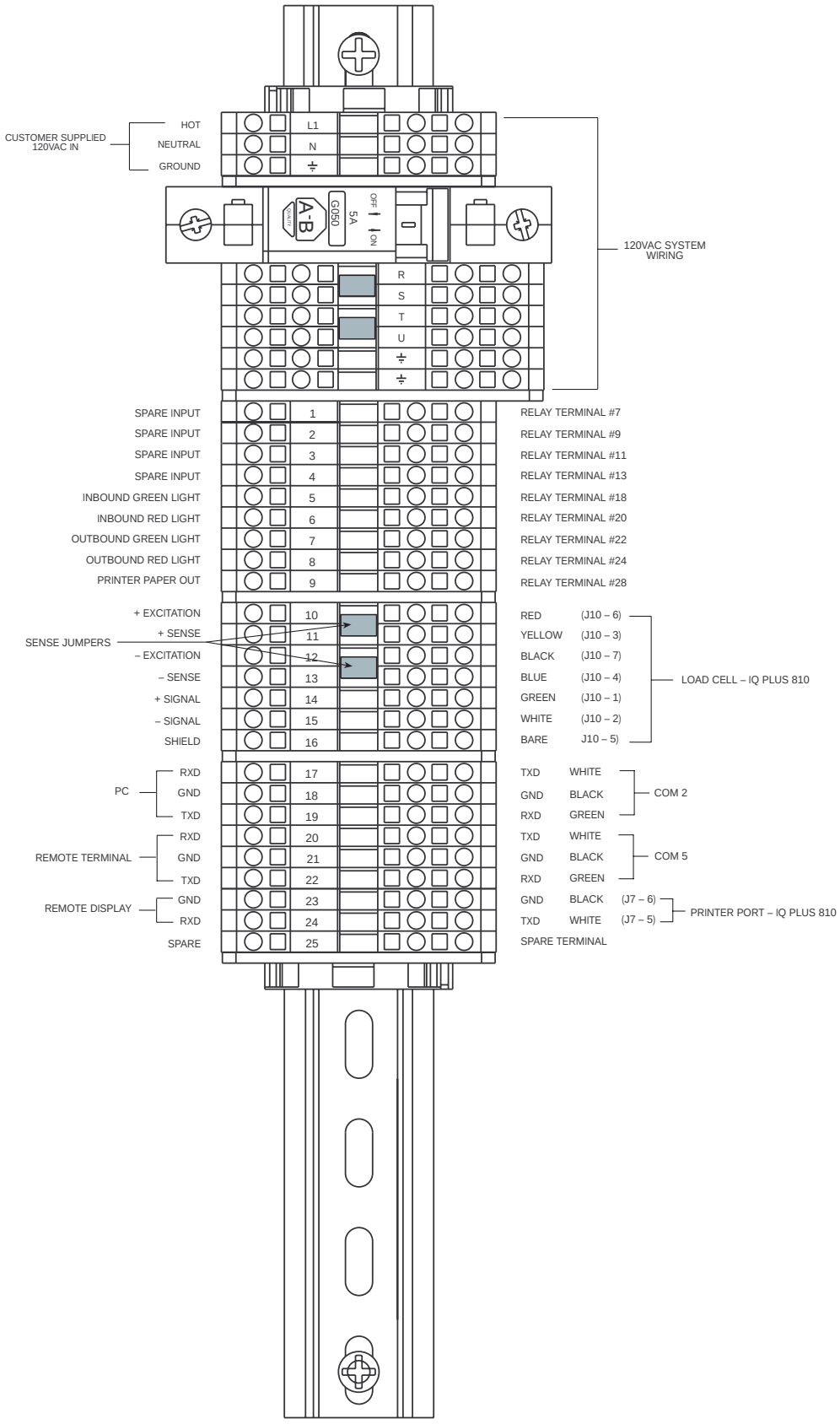
B–Outbound Terminal Back Panel Layout



C–Outbound Terminal Relay Rack Diagram



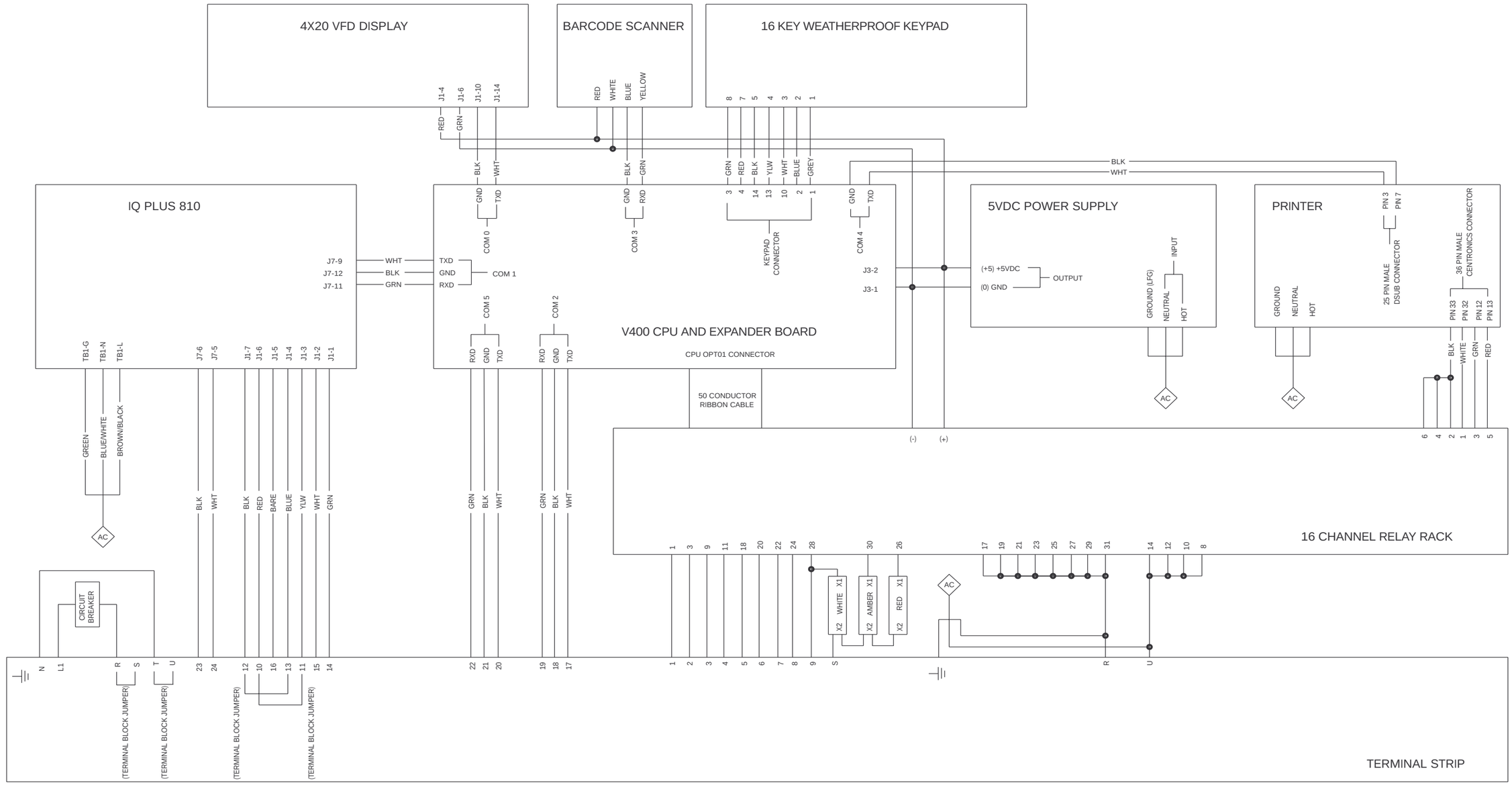
D–Outbound, Terminal Strip Wiring Diagram



E–Outbound Terminal Block Diagram

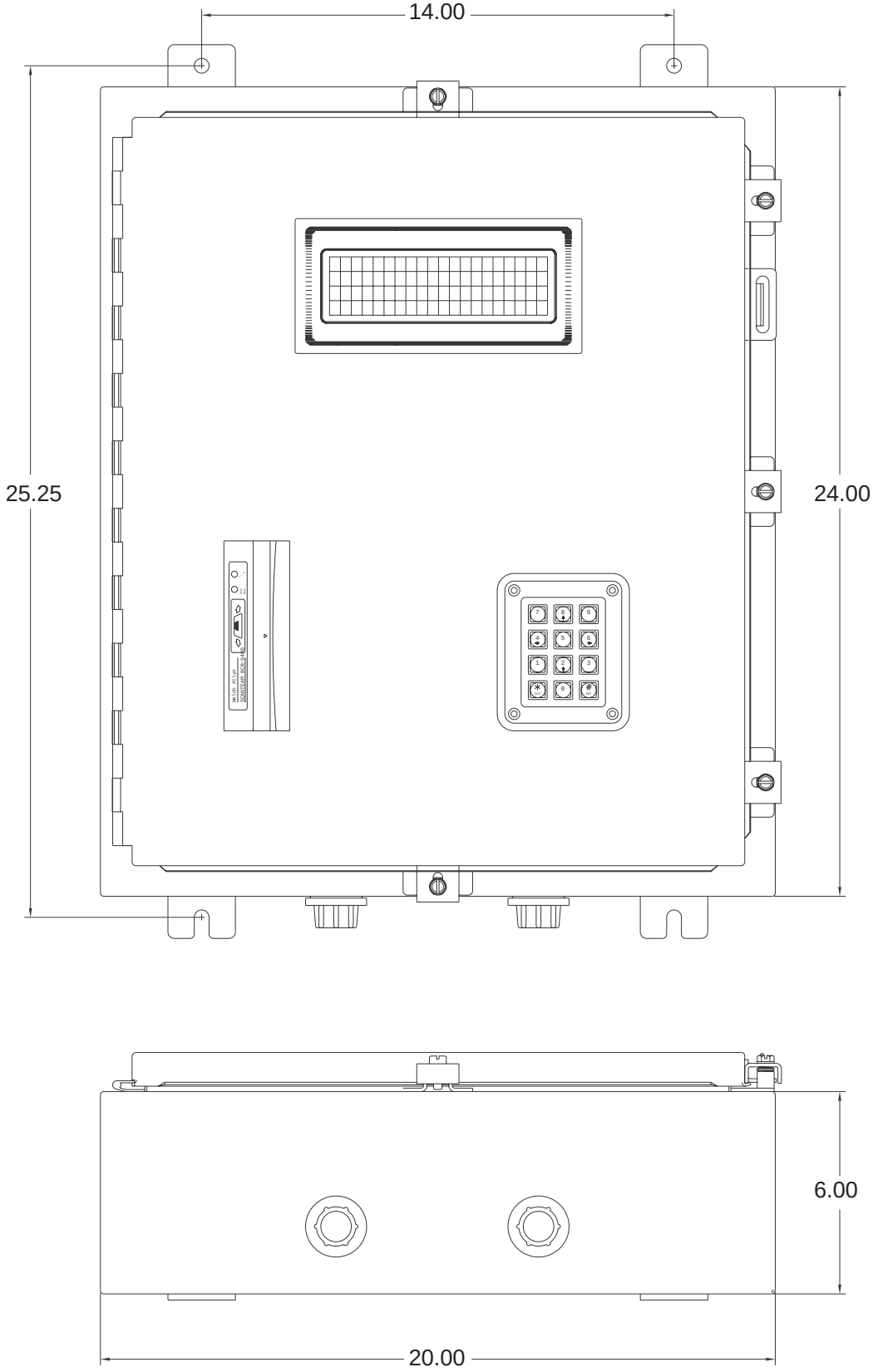
The following foldout diagram illustrates the block diagram for the outbound terminal ATS-2 system.

REVISIONS			
REV	REFERENCE	INIT	DATE

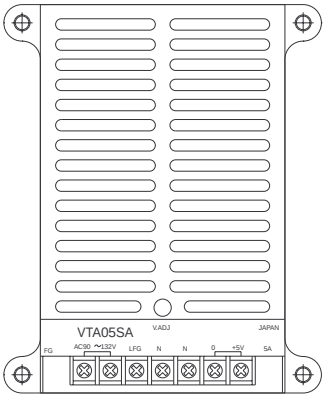


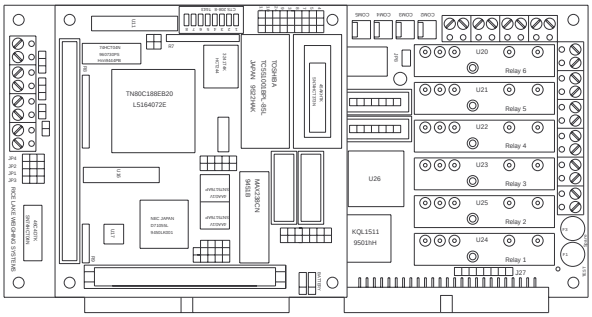
MATERIAL: SEE BILL OF MATERIAL	UNLESS OTHERWISE SPECIFIED UNITS TO BE INCHES ALL THREADS TO BE CLASS ALL DIMENSIONS APPLICABLE AFTER TREATMENT	THIS DRAWING AND ALL INFORMATION CONTAINED HEREIN IS AND REMAINS THE PROPERTY OF RICE LAKE WEIGHING SYSTEMS INC. AND IS CONFIDENTIAL. IT IS SUBMITTED AND MAY BE USED ONLY IN CONNECTION WITH RICE LAKE WEIGHING SYSTEMS' PROPOSAL AND/OR ITS CUSTOMERS' ORDERS. IT SHALL NOT BE DISCLOSED TO OTHERS OR COPIED WITHOUT RICE LAKE WEIGHING SYSTEMS' SPECIFIC WRITTEN CONSENT AND SHALL BE IMMEDIATELY RETURNED UPON REQUEST.	
TREATMENT: NONE	DO NOT SCALE DRAWING FOR RLWS USE ONLY	DRAWING TOLERANCES UNLESS OTHERWISE SPECIFIED SURFACE FINISH TOL. / DECIMAL 2 PLC – – – 3 PLC – – – ANGLE – – –	TITLE: AUTOMATED TRUCK SCALE WIRING DIAGRAM
THIRD ANGLE PROJECTION	MFG.ENG. APPROVED DES.ENG. APPROVED	CKD. DR.BY EJS 7/9/98	RICE LAKE WEIGHING SYSTEMS SCALE 1:1 SHEET 5 OF 5
			DWG NO 43805 REVISION E

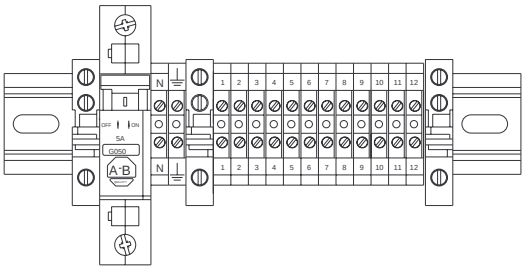
F–Inbound Terminal Front Panel Layout and Dimensions



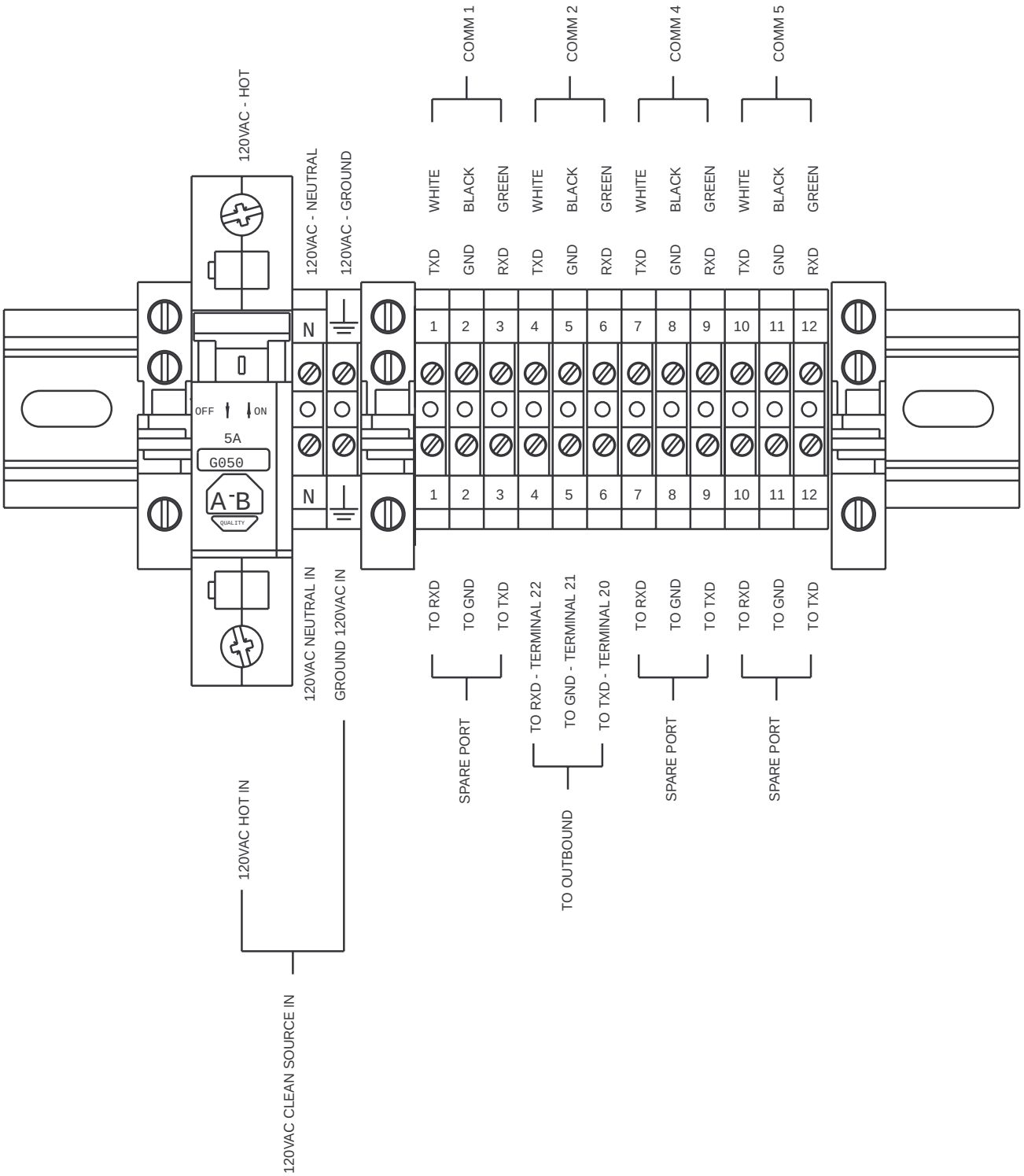
G–Inbound Terminal Back Panel Layout







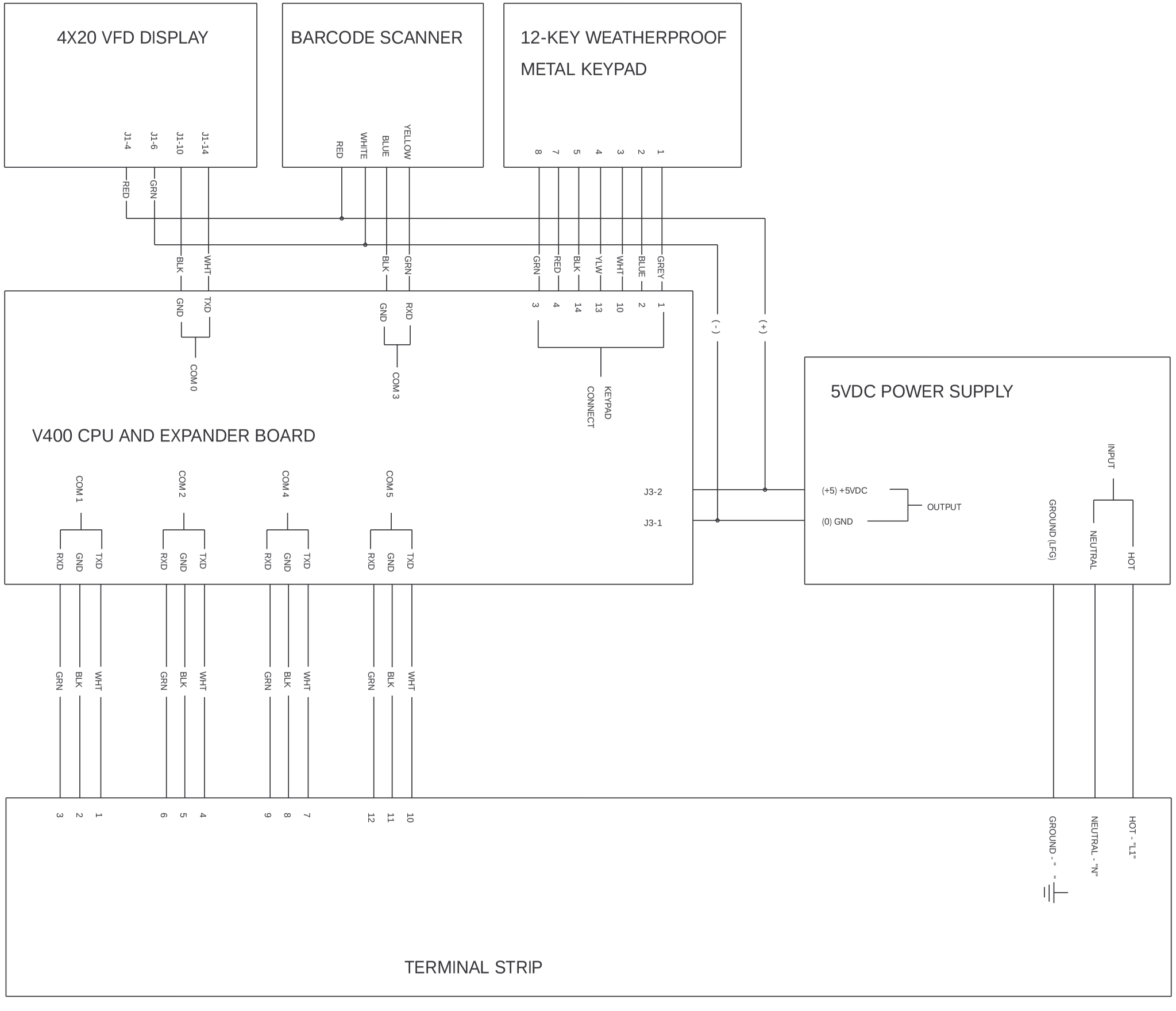
H-Inbound, Terminal Strip Diagram



I–Inbound Terminal Block Diagram

The following foldout diagram illustrates the inbound terminal block diagram for the ATS-2 system.

INBOUND TERMINAL BLOCK DIAGRAM



J–CPU and Expansion Board Diagram

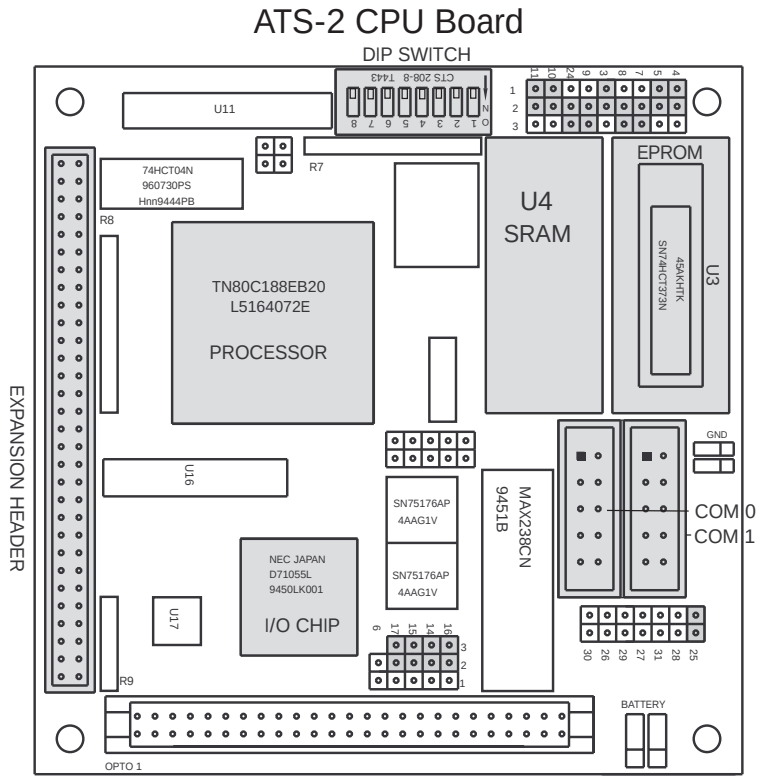


Figure 6-1. ATS-2 CPU Board Diagram

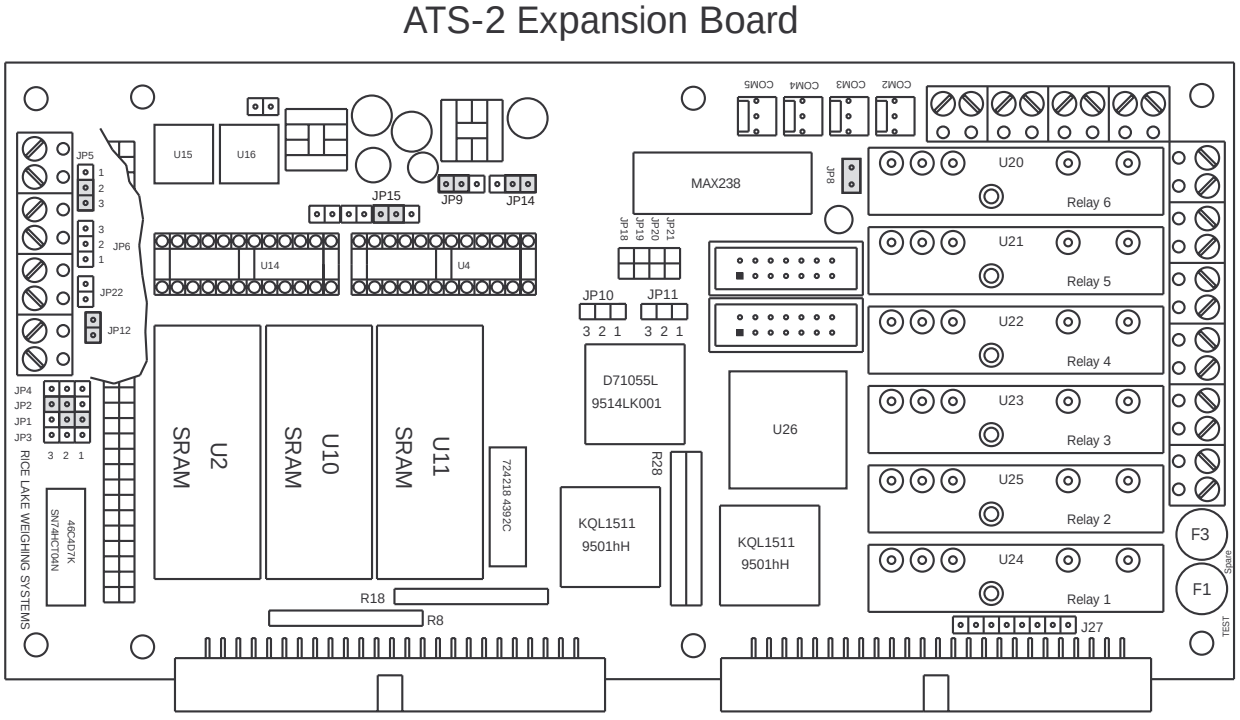


Figure 6-2. ATS-2 Expansion Board Diagram

K–TransAct PC to ATS-2 RS232 Cable Diagram

The standard ATS-2 system ships without an RS232 cable for connecting your PC to the ATS-2. Use the information below to construct a cable to the necessary length.

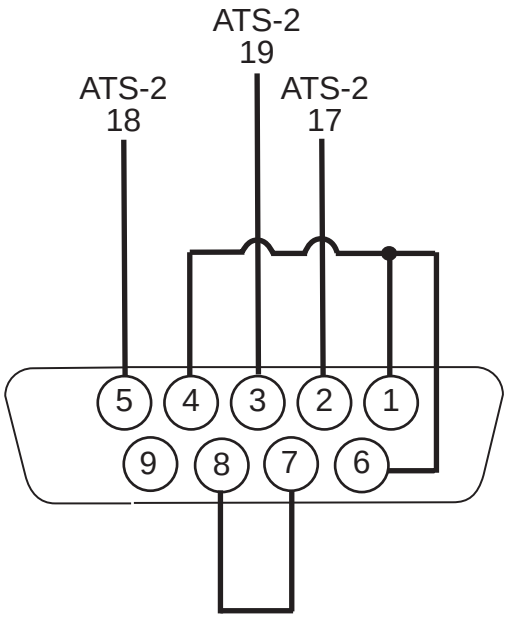


Figure 6-3. DB-9 COM Port Connector for PC

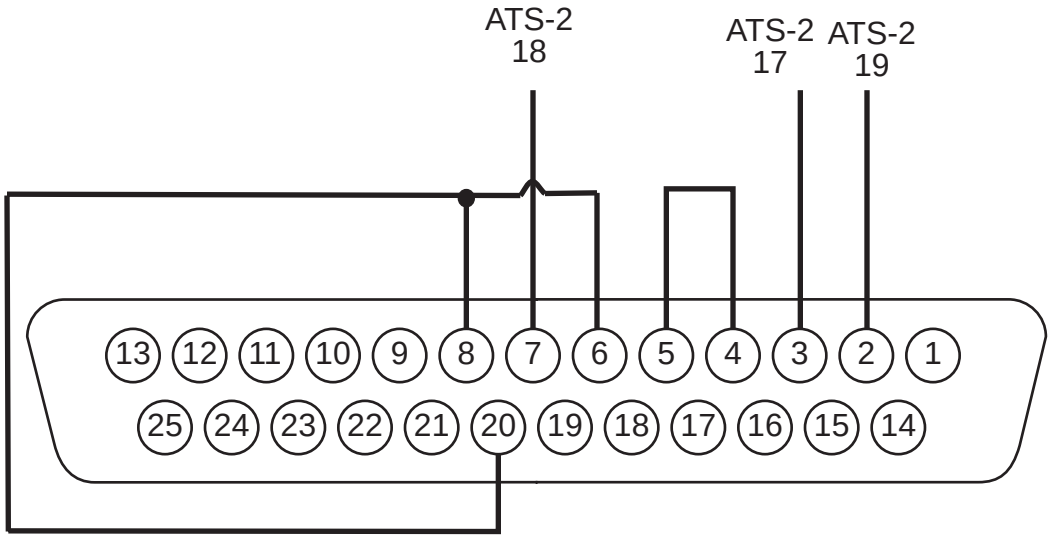


Figure 6-4. DB-25 COM Port Connector for PC

6.4 Replacement Parts List

The table below lists the recommended replacement parts for this equipment. These parts are available through your authorized Rice Lake Weighing Systems distributor.

RLWS Part Number	Part Description
47720	ATS-2 CPU board with SRAM installed
43641	128k EPROM programmed with the ATS-2 program
33596	128k RAM for ATS-2 CPU and expansion board
47722	ATS-2 expansion board w/ SRAM installed
45315	Battery, 3V coin type
33201	5VDC 5A power supply
33206	16 channel OPTO22 relay rack
45079	2.5-28VDC input relay, white, G41DC5D
15971	12-140VAC 3A output relay, black, G40AC5
15972	90-140VAC input relay, yellow, G4IAC5
36566	Circuit breaker, 5A
36915	4 x 20 VFD display
36520	4 x 20 VFD overlay
36914	12-key anti-vandal keypad
36966	Hoffman DesignAire heater (optional)
43799	Badge scanner, bar code
21159	AC transient protection board (optional)
21735	Relay fuse 4A

Table 6-1. ATS-2 Replacement Parts List

7.0 Parts Replacement

The following sections describe procedures for parts replacement.

Caution *Use a wrist strap to ground yourself and protect components from electrostatic discharge (ESD) when working inside the indicator enclosure.*

7.0.1 Replacing the VFD

If the VFD becomes damaged, use the following steps to replace it:

1. Disconnect the 10-pin connector from terminal J1 on the VFD.
2. Remove the four 6/32nuts holding down the VFD. Do not lose the nylon washer that is under each nut.
3. Remove the new VFD from its protective packaging and install it into the ATS-2. Secure with the four 6/32 nuts and washers.
4. Reconnect the 10-pin connector to terminal J1 on the VFD. See the following diagram for proper placement.

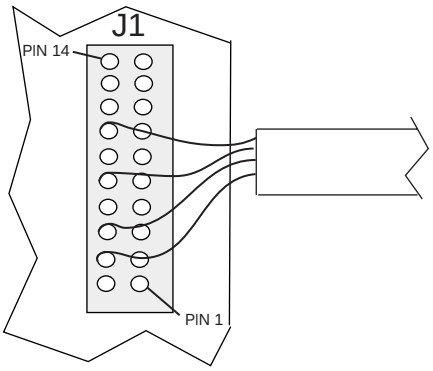


Figure 7-1. Jumper Pin Placement

5. Verify the proper jumper settings.

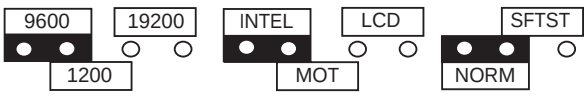


Figure 7-2. Jumper Settings

7.0.2 Replacing the Barcode Badge Scanner

To replace the badge scanner, follow these steps:

1. Follow the scanner's cable back to the control board and remove all wire ties holding down the cable.
2. Disconnect the cable from the COM3 (3 position Molex connector), +5VDC (red wire), and GND (white wire) connections on the controller expansion board.
3. Remove the two 6/32 screws and washers that are holding down the scanner.
4. The hold for the scanner cable is filled with a silicone sealant. Slowly pull the scanner away from the door to break the seal and then remove the rest of the scanner cable from the enclosure.
5. Clean the cable hole of any remaining sealant.
6. Remove the new scanner from its packaging.
7. Insert the scanner cable through the cable hole.
8. Reinstall the two 6/32 screws and washers.
9. Connect the cable to the appropriate connections on the control board.
10. After all connections have been made and the operation of the scanner has been verified, reseal the cable hold with silicone sealant and wire-tie the cable bundle.

7.0.3 Replacing the CPU Board

If it becomes necessary to replace the controllers CPU board, use the following steps to replace it:

1. Disconnect the connectors on COM0 and COM1.
2. Remove the four 6/32 screws holding down the board. Do not lose the washers at the top and bottom of the board for each screw.
3. Once the screws have been removed, disconnect the CPU board from the expansion board.
4. Remove the new CPU board from its protective packaging.
5. Use the old board (and drawing ATS-2 - D) as a guide, set the appropriate DIP switches and jumpers.
6. Install the new board using the screws and washers removed in step 2.

Note: *The washers must be installed to prevent damage to the board.*

7. Reinstall the connectors on COM0 and COM1.

7.0.4 Replacing the Expansion Board

To replace the controllers expansion board:

1. Before removing the expansion board, the CPU board must be removed first. Refer to steps 1, 2, and 3 in section 7.0.3 to remove the expansion board.
2. Once the CPU board has been removed disconnect the connectors on COM2 - COM5, the 16-channel relay rack ribbon cable, the power connections, and the keypad connector (KEY).
3. The two 6/32 screws and the four standoffs should be removed and set aside. Do not lose the washers at the top and bottom of the board for each mounting point.
4. Remove the new expansion board from its protective packaging.
5. Using the old board (and/or drawing ATS-2 Figure 6-2) as a guide, set the appropriate jumpers.
6. Install the new board using the screws, standoffs, and washers removed in step 3.

Note: *The washers must be installed to prevent damage to the board.*

7. Reconnect COM2 - COM5, the 16-channel relay rack ribbon cable, the power connections, and the keypad connector (KEY).
8. Refer to steps 6 and 7 in section 7.0.3 to reinstall the CPU board.

7.0.5 Replacing the Battery

To replace a battery with low voltage:

1. To gain access to the battery, both the CPU and expansion board must be removed. Follow steps 1, 2, and 3 in section 7.0.3 to remove the CPU board.
2. Once the CPU board has been removed, disconnect the 16-channel relay rack ribbon cable from the expansion board.
3. Remove the two 6/32 screws and then four standoffs, and set aside. Be careful not to lose the washers at the top and bottom of the board for each mounting point.
4. Rotate the expansion board up to access the battery clip. Replace the battery.
5. Reinstall the expansion board using the screws, standoffs, and washers removed in step 3.

Note: *The washers must be installed to prevent damage to the board.*

6. Reconnect the ribbon cable for the 16-channel relay rack.
7. Refer to steps 6 and 7 in section 7.0.3 to reinstall the CPU board.

8.0 ATS-2 Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor of Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for one year.

RLWS warrants that the equipment sold hereunder will conform to the current written specification authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair, or replace such good returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, “Protecting Your Components From Static Damage in Shipment,” available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

THESE WARRANTIES EXCLUDE ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WITHOUT LIMITATION WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NEITHER RLWS NOR DISTRIBUTOR WILL, IN ANY EVENT, BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

RLWS AND BUYER AGREE THAT RLWS’S SOLE AND EXCLUSIVE LIABILITY HERUNDER IS LIMITED TO REPAIR OR REPLACEMENT OF SUCH GOODS. IN ACCEPTING THIS WARRANTY, THE BUYER WAIVES ANY AND ALL OTHER CLAIMS TO WARRANTY.

SHOULD THE SELLER BE OTHER THAN RLWS, THE BUYER AGREES TO LOOK ONLY TO THE SELLER FOR WARRANTY CLAIMS.

No terms, conditions, understanding, or agreements purporting to modify the terms of this warranty shall have any legal effect unless made in writing and signed by a corporate officer of RLWS and the Buyer.