TranScan 2

Revision TS2-T410.014 Software

TK 51805-2-OD (Rev. 0, 05-03)

Diagnostic Manual

IMPORTANT

**THERE ARE MANY DIFFERENT DIAGNOSTIC MANUALS AVAILABLE.
IT IS VERY IMPORTANT THAT THE CORRECT MANUAL BE USED.**

THIS MANUAL IS FOR:

TranScan 2

Revision TS2-T410.014 Software

Declaration of Conformity to European Council Directives

Cold Chain Instruments hereby declare that representative samples of the following products:

Models Transcan Trailer (4, 2 ADR, Sentinel)
Transcan Rigid (4, 2 ADR, Sentinel)

Manufactured by Cold Chain Instruments Ltd.
291 Tarring Road
Worthing
West Sussex, UK BN115JG

have been tested and found to comply with the essential requirements of the following European Council Directives:

Electromagnetic Compatibility 89/336/EEC (amended by 93/68/EEC)
Quick Frozen Foodstuffs 92/1/EEC (amended by 93/43/EEC)
Low Voltage Directive 73/23/EECAutomotive EMC Directive 95/54/EC

by application of the following harmonized European Standards:

Temperature Recorders EN12830:1999
Generic Emission Standard EN50081-1:1992
Generic Immunity Standard EN50082-1:1997
Environmental Testing (Vibration and Shock) EN60068:1993
Degrees of Protection provided by Enclosures EN60529:1992
Safety of Electrical Equipment EN61010-1:1993/A1:1995

provided that:

a. The product is correctly installed in accordance with the installation instructions supplied.
b. The product has not been modified in any way.
c. The product bears the CE mark.

An authorized copy of this declaration is retained at Cold Chain Instruments Ltd.

About This Manual

Section 1 - Safety Precautions

This section contains general safety precautions, specific TranScan 2 cautions, and safety information. Read this material carefully before working on any recording system.

Section 2 - Hardware

This section describes the system hardware, including special features and options. A Specifications table is also included at the end of this section.

Section 3 - Software

This section describes the system software and it's programmable features. It describes each feature separately and provides information about the software settings.

Section 4 - Operation

This section provides instructions for operating the TranScan 2.

Section 5 - Diagnostics

This section provides information for diagnosing system problems. It includes Alarm diagnostics and other symptom troubleshooting.

Section 6 - Service Procedures

This section includes step-by-step procedures to program and repair the recording system.

Section 7 - Service Information

This section provides interchange information and Service Part Numbers for the system hardware and software.

Section 8 - Schematics and Wiring Diagrams

List of Figures

Section 1
Safety Precautions

This section includes general safety precautions, specific TranScan 2 cautions, and first aid information. Read this material carefully before working on any components of the recording system.

The TranScan 2 Control Unit must be properly installed for safe operation. See the TranScan 2 Installation Manual TK #51809 for additional information.

Safety Definitions

The following types of safety precautions appear in this manual:

DANGER: Denotes the possibility of serious injury or death.

WARNING: Denotes the possibility of serious damage to equipment and/or serious injury to self.

CAUTION: Denotes the possibility of minor to severe damage to equipment and/or possible injury to self.

General Safety Practices

WARNING: Use caution when using ladders or scaffolding to install or service a unit. Always observe the manufacturer's safety labels and warnings.

CAUTION: Make sure all mounting bolts are tight and are the correct length for their particular application. Improper torque and incorrect bolt lengths can damage equipment.

CAUTION: The area behind the printer on in-cab mounted control units (models C and R) may become hot if the printer is run for an extended period and the ambient temperature is near the maximum recommended operating temperature of 122 F (50 C).

Electrical

Low Voltage

WARNING: Control circuits are low voltage (12 to 24 volts dc). This voltage potential is not considered dangerous, but the large amount of current available (over 30 amperes) can cause severe burns if shorted or grounded.

WARNING: Do not wear jewelry, watches or rings. These items can short out, damage equipment, and cause severe burns to the wearer.

Battery Removal

DANGER: When removing a battery, ALWAYS disconnect the negative battery terminal first. Then remove the positive terminal. When RECONNECTING THE BATTERY TERMINALS, CONNECT THE POSITIVE TERMINAL (+) FIRST, AND CONNECT THE NEGATIVE (-) TERMINAL LAST.

This is done because the frame is grounded to the negative battery terminal. If the negative terminal is still connected, a complete circuit exists from the positive terminal of the battery to the frame. If a conductive tool contacts the positive side and the frame simultaneously, a spark or arcing will occur. If there are sufficient hydrogen gases emitted from the battery, a battery explosion may occur, which can damage equipment and cause serious injury or even death.

Electrostatic Discharge Precautions

As with other similar electronic devices, the Tran Scan 2 control unit is vulnerable to damage from Electrostatic Discharge (ESD). This damage is not always immediately apparent. As a result of ESD, a circuit can be damaged but may continue to operate temporarily only to fail later.

A grounded wrist strap should always be used when handling a control unit circuit board or PROM Chip that is not grounded to the refrigeration unit. The control unit circuit board and PROM Chip should always be stored and shipped in an anti-static bag and protective packaging.

For additional information on electrostatic discharge, refer to the Electrostatic Discharge Training Guide (TK 40282) and Service Procedure A12A in Section 6 of this manual.

Welding Precautions

Precautions must be taken before electric welding is performed on any portion of the unit or the vehicle to which an air conditioning unit is attached. It is necessary to ensure that welding currents are not allowed to flow through the electronic circuits of the unit. For more information, see Service Procedure A26A in Section 6 of this manual.

Section 2
Hardware

System Description

The TranScan 2 ADR (Automatic Daily Recording System) records temperature and system events. Once installed, the system records information automatically. Records are stored in the form of daily files or "Journey Files" (a new Journey File is normally created at the beginning of each day of operation). Journey Files can be printed directly from the TranScan 2 printer or downloaded to a compatible remote computer.

NOTE: In some locations, Journey files must be retained for at least one year. The maximum interval for printing or downloading Journey Files is determined by the system configuration and the amount of recorder memory available. It is recommended to print or download Journey files monthly. Always store printed journey files in a clean and dry location to ensure they will be readable after one year.

Current temperature conditions can also be printed from the self-contained printer at any time in the form of a "Delivery Ticket".

The TranScan 2 is a self-contained recorder and printer system that operates independently of the refrigeration system controller.

The TranScan 2 is designed to meet the recommendations of Food Hygiene Regulations with regard to the transport and delivery of refrigerated (chilled) and frozen food items in refrigerated vehicles. The TranScan 2 meets EN 12830 requirements and the objectives of the Quick Frozen Food Directive 92/1/EEC (amended by 94/43/EEC).

System Features

Each TranScan 2:

- Records readings from up to four separate temperature sensors at intervals from 1 minute to one hour.
- Records three system events
  - Cargo area door openings
  - Defrost cycles
  - One user defined system event
- Includes a visible and audible alarm to warn of out-of-range temperature conditions
- Stores "Journey Files" for print or download to a compatible remote computer running WinTrac™ Software
- Prints "Journey Files" and "Delivery Tickets" from a self contained printer
- R:COM™ compatible (Thermo King wireless data retrieval system)
- Requires a 10-36 Vdc power supply

System Application

When properly installed, the TranScan 2 is suitable for recording storage and transport temperatures and is compatible with all Thermo King Truck and Trailer refrigeration systems.

See the TranScan 2 Installation Manual TK #51809 for additional information.

Control Unit

The TranScan 2 ADR consists of a control unit which includes a digital display panel, operator's keys and a printer. The control unit is available in 3 different models.

- TranScan 2T - for external installation
- TranScan 2C - for in-cab vertical surface installation
- TranScan 2R - for in-dash or standard DIN radio slot installation

Figure 1: TranScan 2T (shown with cover removed)

Figure 2: TranScan 2C

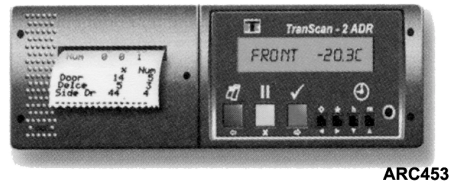


Figure 3: TranScan 2R

The system may includes up to 4 thermistor type temperature sensors (2 included as standard equipment).

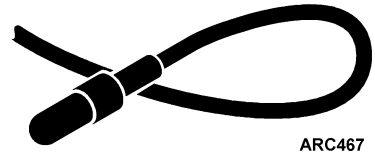


Figure 4: Thermistor Type Temperature Sensor

Memory (file storage)

The TranScan 2 Control Unit includes 512 K of memory for storing Journey Files. An internal battery is provided to maintain clock/calendar operation and retain the Journey Files stored in memory if the power to the Control Unit is interrupted.

When the Control Unit memory is full, the system will overwrite the oldest file in memory with new information. The number of files that can be retained in memory is determined by the recording interval and the amount of sensors enabled.

Display Panel

The digital display panel reports the current readings of all enabled temperature sensors up to 99.9 F (49.9 C). System event indicators and a recording indicator appear on the display panel. The digital display panel can be set to operate in 3 different display modes.

In addition to viewing current system readings, the display panel is used to select print options and configure the recording system.

See the "Software", "Operation", and "Diagnostics" Sections in this manual for additional information.

Operator Keys

A series of color coded operator keys are located below the digital display. With the exception of two Print keys, the operator keys for TranScan 2T and 2C models are located under a hinged protective cover. Each key may have one or more functions as indicated by the key symbol.

See "Operator Keys (operating mode)" on page 4-3 and "Operator Key Functions (configuration mode)" on page 3-5 of this manual for additional information on operator key functions.

A 1/8 in (3.5 mm) diameter 3 channel jack is located next to the operator keys for downloading Journey Files to a compatible remote computer running WinTrac™ Software.

See Service Procedure A50A in Section 6 of this manual for additional information on downloading Journey Files.

Printer

A printer is integrated into the control unit to the left of the display panel. The printer uses standard 1.75 in (44 mm) wide by 1.75 in (44 mm) diameter paper rolls. Each roll has 65 feet (20 m) of paper and an inside core diameter of 0.5 in (13 mm). When a ticket is requested, the paper will feed automatically. A red stripe on the edge of the printed ticket indicates the paper supply is low, and should be replaced with a new roll as soon as possible. The printer uses an Epson® ERC 05 ribbon cartridge.

NOTE: If the printer is exposed to moisture, it should be allowed to dry completely before use.

See Service Procedure A60A and Service Procedure A61A in Section 6 of this manual for additional information on replacing printer paper and ribbon cartridges.

NOTE: To ensure on demand printing, spare printer supplies should be available at all times. At recommended printer operating temperatures, 1 ribbon will clearly print at least 4 paper rolls.

Replacement paper #205-0251 and ribbons #205-0249 should be obtained from Thermo King Service Parts prior to placing the unit in service.

Cleaning and Maintenance

External surfaces may be cleaned with a damp cloth and a mild detergent.

Optional Hardware

Refrigeration Switch

A voltage free refrigeration switch or relay can be connected to enable the temperature out-of-range alarms feature only when the refrigeration system is operating and/or monitor refrigeration system operation as a user defined system event.

The refrigeration switch is an On/Off input from the refrigeration system that activates the alarm feature and/or the user defined system event only when the refrigeration system is switched On. This feature prevents any false alarms from being generated while the refrigeration unit is not in use.

Since the refrigeration switch must be a voltage free set of contacts, incorporating a relay (P/N 44-9111) into the refrigeration unit switched power circuit (#8 wire for TK truck and trailer units) is recommended.

For alarm control: The voltage free contacts of the refrigeration switch relay are connected to the Status (On/Off) Input 1 pins 7 & 8 on back of the control unit. See Figure 8 on page 2-6, Figure 9 on page 2-6, and the Wiring Diagram in Section 8 of this manual for additional information.

For a user defined system event: See "Spare Switch" on page 2-4 of this manual for additional information.

For both alarm control and a user defined system event: The voltage free contacts of the refrigeration switch relay are connected to the Status (On/Off) Input 1 pins 7 & 8, and a jumper wire is run from Status Input 1 pin 7 to Status Input 4 pin 1 on back of the control unit. See Figure 8 on page 2-6, Figure 9 on page 2-6, and the Wiring Diagram in Section 8 of this manual for additional information.

NOTE: The control unit can be configured to accept normally open (N.O.) or normally closed (N.C.) refrigeration switch or relay contacts.

Door Switch

The TranScan 2 ADR system can be configured to display, record, and print the cargo area door status (open or closed). To monitor cargo area door activity, a voltage free door switch must be connected to the control unit.

Since the door switch must be a voltage free set of contacts, installing a separate magnetic door switch (P/N 40-0814) is recommended. The voltage free contacts of the door switch are connected to the Status (On/Off) Input 2 pins 5 & 6 on back of the control unit. See Figure 8 on page 2-6, Figure 9 on page 2-6, and the Wiring Diagram in Section 8 of this manual for additional information.

NOTE: The control unit can be configured to accept normally open (N.O.) or normally closed (N.C.) door switch contacts.

Defrost Switch

The TranScan 2 ADR system can be configured to display, record, and print refrigeration system defrost cycles (On or Off). To monitor defrost cycles, a voltage free defrost switch or relay must be connected to the control unit.

The defrost switch is an On/Off input that changes when the refrigeration system is operating in Defrost Mode. This feature helps explain a change in temperature sensor readings caused by a refrigeration unit defrost cycle. The defrost switch must be a voltage free set of contacts.

On refrigeration units with a motor driven defrost damper, a separate magnetic switch (P/N 40-0814) can be installed on the defrost damper door. To simplify installation, the switch can be installed in either the defrost damper door open or closed position.

On refrigeration units with a solenoid driven defrost damper, a relay (P/N 44-9111) can be incorporated into the defrost damper solenoid circuit.

The voltage free defrost switch or relay contacts are connected to the Status (On/Off) Input 3 pins 3 & 4 on back of the control unit. See Figure 8 on page 2-6, Figure 9 on page 2-6, and the Wiring Diagram in Section 8 of this manual for additional information.

NOTE: The control unit can be configured to accept normally open (N.O.) or normally closed (N.C.) defrost switch or relay contacts.

Spare Switch

The TranScan 2 ADR system can be configured to display, record, and print an additional user defined system event (On or Off, open or closed). This feature allows monitoring the activity of a second cargo area door, or an additional refrigeration system operating mode.

The spare switch must be a voltage free set of contacts. A separate magnetic door switch (P/N 40-0814) can be installed to monitor a second cargo area door, or a relay (P/N 44-9111) can be incorporated into the refrigeration unit circuitry to monitor a refrigeration system event.

The voltage free contacts of the spare switch or relay are connected to the Status (On/Off) Input 4 pins 1 & 2 on back of the control unit. See Figure 8 on page 2-6, Figure 9 on page 2-6, and the Wiring Diagram in Section 8 of this manual for additional information.

NOTE: The control unit can be configured to accept normally open (N.O.) or normally closed (N.C.) spare switch or relay contacts.

Wiring Connectors

The following connectors are used with the TranScan 2 control unit. The connection labels shown here are for your convenience, and do not appear on the actual connectors. See the Wiring Diagram in Section 8 of this manual for additional information.

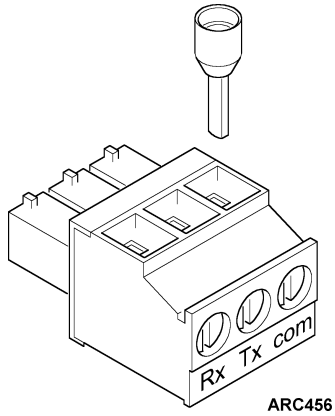


Figure 5: 3 Pin Connector (serial port for optional R-Com radio transmitter)

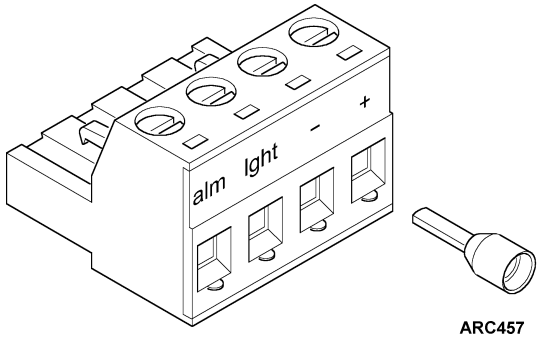


Figure 6: 4 Pin Connector (power inputs and lighting outputs)

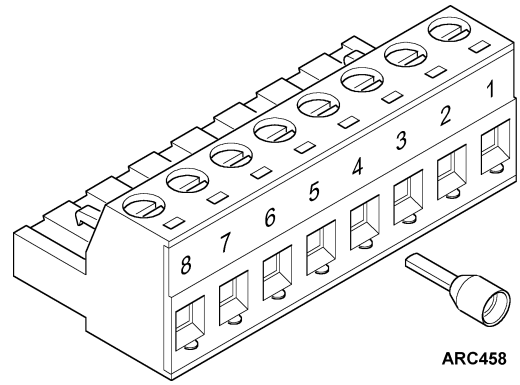


Figure 7: 8 Pin Connector (temperature and event inputs)

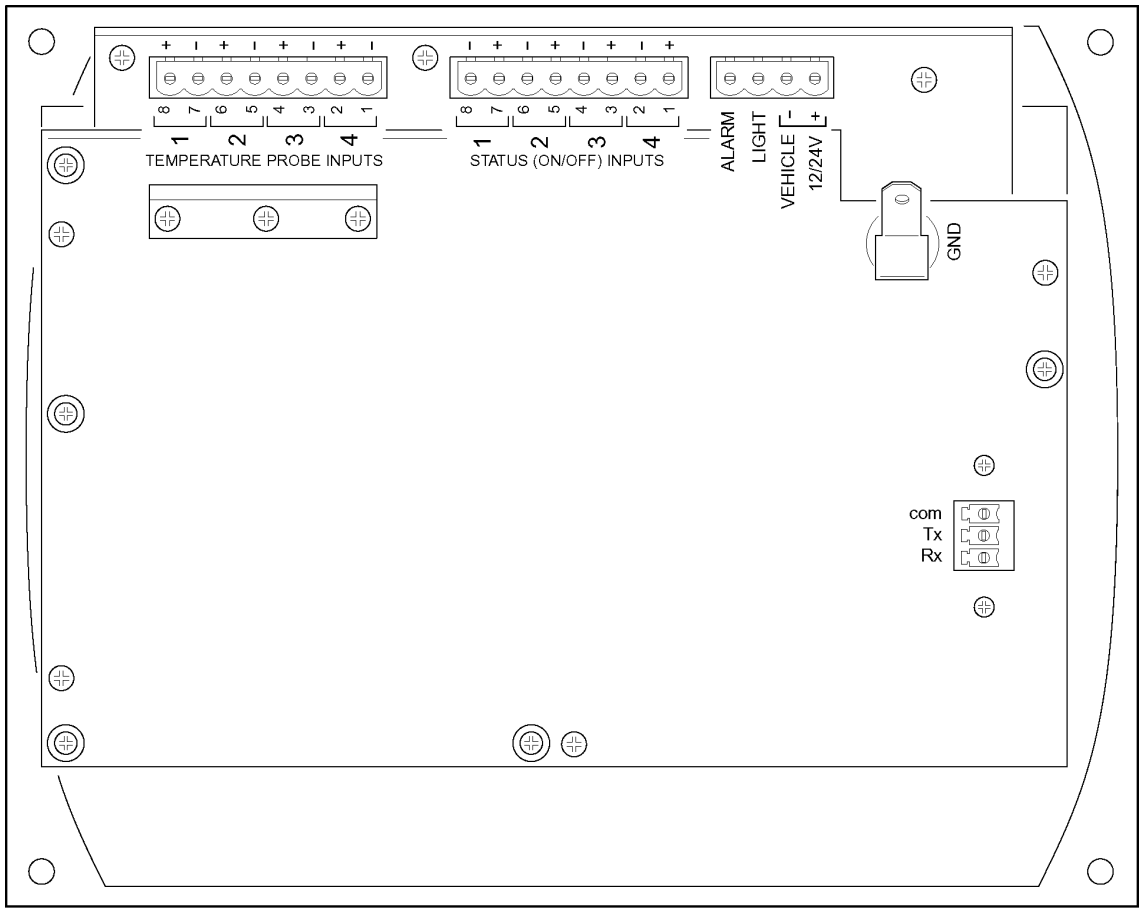


Figure 8: Model T and C Control Unit
(shown from back of unit with housing removed)

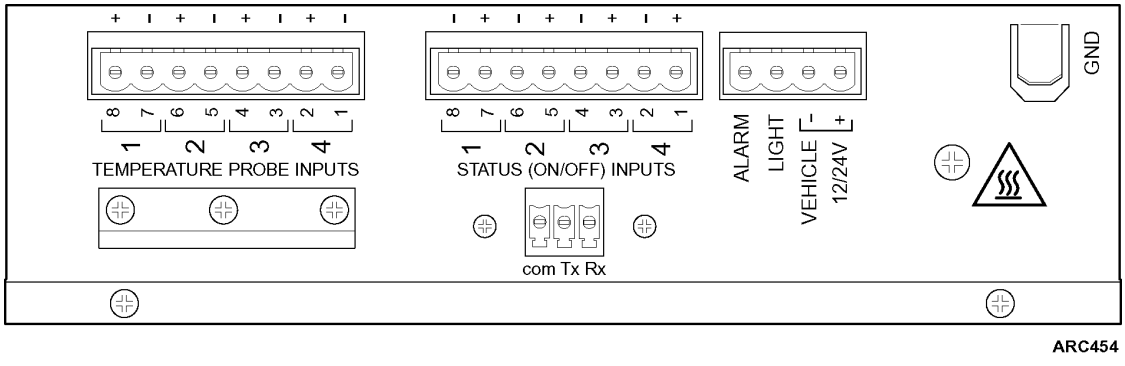


Figure 9: Model R Control Unit
(shown from back of unit)

Specifications

Control Unit Environment

Recorder	
Operating Temperature (recording)	-22 F to 158 F (-30 C to 70 C)
Transport and Storage (unpowered)	14 F to 185 F (-10 C to 85 C)
Moisture Protection (recorder unit only - not printer)	IP65 (external mount model 2T) IP22 (internal mount model 2R and 2C)

Printer	
Operating Temperature (printing)	-14 F to 122 F (-10 C to 50 C)
Paper	1.75 in (44 mm) wide by 1.75 in (44 mm) diameter 65 feet (20 m) of paper per roll inside core diameter 0.5 in (13 mm)
Ribbon (ink)	Epson ERC 05 ribbon cartridge

Data Collection

Temperature Measurement	
Certified Range	-22 F to 86 F (-30 C to 30 C)
For Germany	-31 F to 77 F (-35 C to 25 C)
Available Range	-58 F to 122 F (-50 C to 50 C) ***Note: Temperatures over 99.9 F appear as [++] on the control unit display panel. Temperatures below -57.9 F appear as [--] on the control unit display panel.***
Accuracy	Class 1 (1.0 C at a resolution of 0.5 C)
EMC	Conforms with EN50081-1 and EN50082-1 with a radiated immunity of 10v/m when properly installed

Time Measurement		
Recording Interval	User defined from 1 to 60 minute intervals. Program includes 1, 2, 5, 10, 15, 20, 30, and 60 minute presets ***Note: To comply to current German legislation, the recording interval must not exceed 15 minutes.***	
Recording Duration (15 minute recording interval)	512 K memory	988 days (1 or 2 sensors) 640 days (3 or 4 sensors)
Accuracy	Relative error - less than 0.1% (less than 15 minute in 7 days) Typical error - less than 0.01% (less than 1 minute in 7 days)	

Electrical

Power Supply	
10 Vdc to 32 Vdc	From vehicle battery with in-line fuse (Bussmann TDS501-2A or equivalent T2A fuse approved to EN60127) From approved mains operated SELV power supply (3A to 100 VA output suitable for IEC installation category II)
Surge Protection	Conforms with BS AU 243 (ISO07637-1) grade 4
Electrical Safety	Conforms with EN61010-1

Internal Battery	
Lithium Thionyl Chloride 1/2 AA battery	10 year retention of data and clock/calendar (unpowered) ***Note: The battery is not user replaceable.***

Amperage Draw	
Control Unit with no Backlight	20 to 25 mA
Control Unit with Backlight	40 to 45 mA
Control Unit Printer (peak)	1.0 to 1.5 A

Temperature Sensor Resistance	
Sensor Temperature:	
68 F (20 C)	2.82 K Ohm
50 F (10 C)	4.54 K Ohm
32 F (0 C)	7.40 K Ohm
-4 F (-20 C)	22.0 K Ohm

Section 3
Software

Description

The software is a complex set of instructions used to operate the TranScan 2 ADR control unit. The control unit examines the conditions of all the inputs, compares them to the instructions contained in the software, and reacts accordingly.

The software can be changed by replacing the PROM Chip in the control unit. See Service Procedure A13A in Section 6 of this manual for additional information.

Revisions

There are several revisions of software used with the TranScan 2 ADR system. In addition, upgrade software may be made available that incorporates new features. It is very important that the correct revision of software be installed in the control unit.

To check the current software revision, see Service Procedure A06A in Section 6 of this manual.

Always consult Service Information A16A "Software (PROM Chip) interchange and Service Part Numbers" in Section 7 of this manual when replacing software or control units.

Programmable Features

The TranScan 2 ADR includes many programmable features. These features are designed to allow end users to configure each control unit to local, regional, or their own special requirements.

NOTE: The unit is factory set to record continuously 24 hours a day 7 days a week.

Programming (configuration) Aids

When programming a new control unit, it is wise to obtain and complete a copy of the Setup Information Sheet found at the end of Service Procedure A02A in Section 6 of this manual. Be certain all customer specified settings are included when completing the setup sheet. Use the completed setup sheet to confirm that each setting is programed as desired.

When working with an existing control unit, obtain a Parameter Ticket. See Service Procedure A02A in Section 6 of this manual for additional information.

If a quick comparison of the configuration settings for a number of control units with the same software revision is necessary, a Configuration Signature feature is available. See Service Procedure A70A in Section 6 of this manual for additional information.

Temperature Out-of-Range Alarms

This feature records, displays, and sounds an alarm if a temperature sensor reading raises above or drops below the desired temperature range.

Keep the following steps in mind when setting up the temperature out-of-range alarms feature:

1. Program when to automatically start and stop monitoring the system for alarms. The system can be configured to start and stop monitoring for alarms manually, or automatically by incorporating a refrigeration switch. These settings are different then the recording start and stop times.

   See "Enable Temperature Out-of-Range Alarm" and "Enable Extended Alarm Monitoring" beginning on page 3-11 for additional information.

2. Program the conditions for one or both of the available alarm sets.

   See "Enable Alarm Set #" beginning on page 3-13 for additional information.

3. Program which sensors should be monitored for alarms. Any, all, or none of the available sensors can be monitored.

   See "Enable Sensor T# Alarms" beginning on page 3-15 for additional information.

4. Program which alarm sets (conditions) are available for each sensor being monitored. In addition to alarm sets, 1 and 2, Auto Alarm (alarm set 1 and 2 conditions combined) and No Alarm (alarm disabled) can be made available for a sensor. Once the alarm sets are made available to a sensor, they can be easily selected by the Driver or Operator as load types (fresh, frozen, ambient) change.

   See "Alarm Set 1, 2, and Auto Alarm Available to Sensor T#" and "Disable Alarm Monitoring Available to Sensor T#" beginning on page 3-15 for additional information.

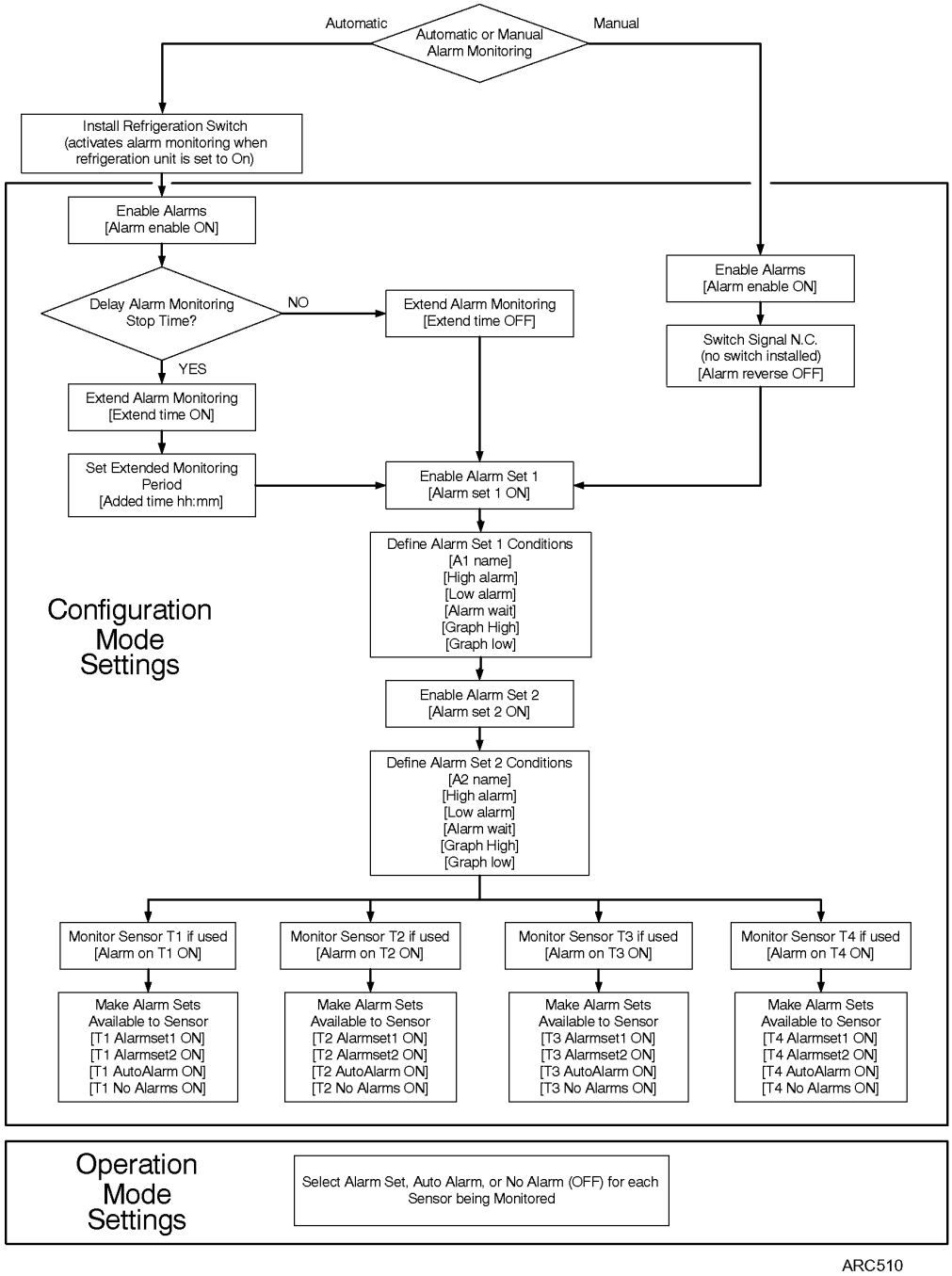


Figure 10: Temperature Out-of-Range Alarm Setup

5. From Operating Mode, select the appropriate alarm set (conditions) for each sensor being monitored based on current load type.

   See “Selecting Alarm Settings” on page 4-7 for additional information.

   NOTE: Once steps are 1 thru 4 are completed, step 5 should be the only step required to start and stop alarm monitoring.

User Options Mode

The TranScan 2 ADR includes user options for:

- Display language (English, Francias, Deutsh, Nederlands, Espanol, Portugues, Italiano)
- Print orientation (fwd or rvse)
- Control Unit model (R or T/C)
- Unit of measure (degrees C or F)

User Options Mode can only be accessed using the Operator Keys.

Setting the Display Language

From the Operating Display:

1. Press ◇ and h simultaneously.

   [Set User Options] will appear on the display panel.

2. Press ◇ as needed until the desired language appears on the display panel.

3. Press ✓ to accept the change.

   The display will show [Set User Options].

The control unit automatically returns to the Operating Display in 5 seconds.

Setting the Print Orientation

From the Operating Display:

1. Press ◇ and h simultaneously.

   [Set User Options] will appear on the display panel.

2. Press ✳ as needed until the desired print orientation appears on the display panel.

3. Press ✓ to accept the change.

   The display will show [Set User Options].

The control unit automatically returns to the Operating Display in 5 seconds.

Setting the Control Unit Model

From the Operating Display:

1. Press ◇ and h simultaneously.

   [Set User Options] will appear on the display panel.

2. Press h as needed until the desired Control Unit model appears on the display panel.

3. Press ✓ to accept the change.

   The display will show [Set User Options].

The control unit automatically returns to the Operating Display in 5 seconds.

Setting the Display Unit of Measure

From the Operating Display:

1. Press ◇ and h simultaneously.

   [Set User Options] will appear on the display panel.

2. Press m as needed until the desired unit of measure appears on the display panel.

3. Press ✓ to accept the change.

   The display will show [Set User Options].

The control unit automatically returns to the Operating Display in 5 seconds.

Configuration Mode

The TranScan 2 ADR control unit has 2 primary modes of operation, Operation Mode and Configuration Mode. For Operating Mode information, see “Operating Mode” on page 4-3 of this manual.

Programmable features are accessed from Configuration Mode by using the Operator Keys, or by using a remote computer running WinTrac™ 4 software.

Enter Configuration Mode using the Operator Keys

NOTE: For step-by-step instructions on programming all Configuration Mode settings using the Operator Keys, see Service Procedure A04A in Section 6 of this manual.

Entry to Configuration Mode is usually password protected through the use of a 4 digit Personal Identification Number (PIN).

1. Press and simultaneously.

   If no PIN code is required, the configuration menu screen that was last viewed or modified will appear on the display panel.

   If a PIN code is required [Enter PIN code] will appear on the display panel.

2. Use the following keys to enter the correct 4 digit PIN code if necessary:

   and pressed simultaneously = 0

   = 1 = 2 = 3 = 4

   = 5 = 6 = 7

   and pressed simultaneously = 8

   and pressed simultaneously = 9

   NOTE: The factory default PIN code is 1111.

3. When the correct pin code is entered, [Start time hh:mm] (the first configuration menu screen) will appear on the display panel.

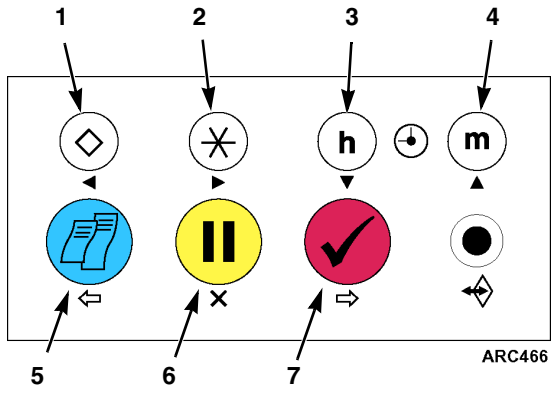
If no other key is pressed within 3 seconds the control unit will automatically return to the Operating Display.

To exit Configuration Mode, press . The control unit will accept any changes, exit Configuration Mode and return to the Operating Display.

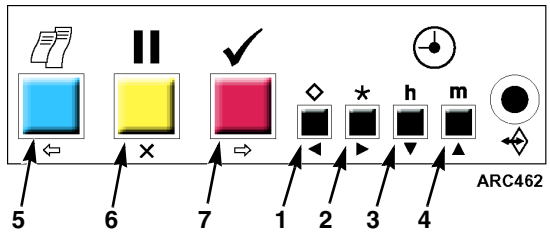
The control unit will automatically exit Configuration Mode, reset any changes and return to the Operating Display if no key is pressed within 75 seconds.

Operator Key Functions (configuration mode)

The keys have different functions based on the control unit mode. The following descriptions explain the key functions while in Configuration Mode. The symbol for each configuration mode key function is located below the key.



Model T and C



Model R

1.	Previous Screen (blue)	5.	Move Cursor to Right or Toggle On/Off
2.	Exit Configuration Mode (yellow)	6.	Scroll Selections Backward
3.	Next Screen (red)	7.	Scroll Selections Forward
4.	Move Cursor to Left or Toggle On/Off		

Figure 11: Configuration Mode Keys

⇦ Previous Menu Screen

Use this key to display the previous available configuration menu screen and its current setting.

⇨ Next Menu Screen

Use this key to display the next available configuration menu screen and its current setting.

◀ Move Cursor Position to Left or Toggle Between On and Off Values

On menu screens that require a numeric or alphabetic entry, use this key to move the cursor (horizontal bar at the bottom of the display indicating current entry location) to the left.

On menu screens that require an On or Off entry, use this key to toggle between On and Off.

▶ Move Cursor Position Right or Toggle Between On and Off Values

On menu screens that require a numeric or alphabetic entry, use this key to move the cursor (horizontal bar at the bottom of the display indicating current entry location) to the right.

On menu screens that require an On or Off entry, use this key to toggle between On and Off.

▲ Scroll Backward Through Available Values

On menu screens that require a numeric or alphabetic entry, use this key to scroll backward through the available selections.

▼ Scroll Forward Through Available Values

On menu screens that require a numeric or alphabetic entry, use this key to scroll backward through the available selections.

✖ Exit Configuration Mode

Use this key to accept changes, exit configuration mode and return to the Operating Display.

Enter Configuration Mode using a Remote Computer

NOTE: For step-by-step instructions on programming all Configuration Mode settings using a remote computer, see Service Procedure A04B in Section 6 of this manual.

1. Connect the download cable to the (download) jack of the TranScan 2 ADR Control Unit and to the remote computer.

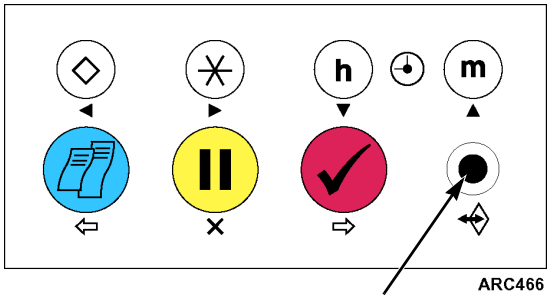


Figure 12: Download Jack (model T and C)

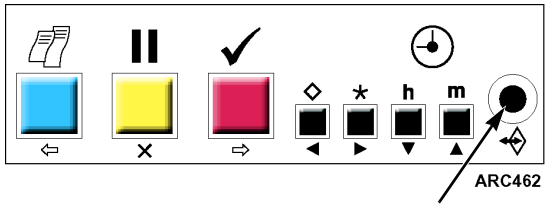


Figure 13: Download Jack (model R)

2. Open WinTrac on the remote computer. The Thermo King WinTrac 4 Menu will appear.

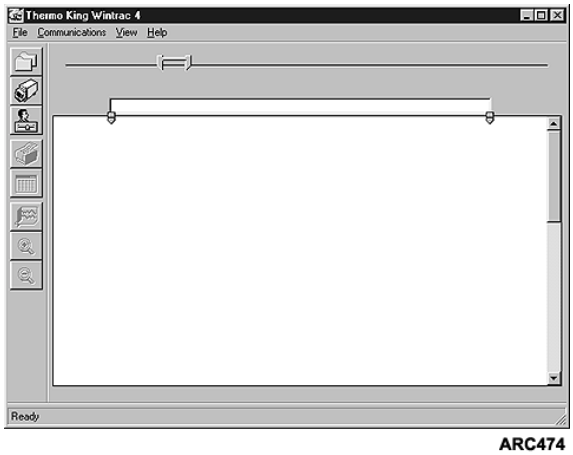


Figure 14: Thermo King WinTrac 4 Menu

3. Click the icon or select Seek Device from the WinTrac Communications Menu.

   NOTE: Make sure the Com Port selected on the WinTrac Global Settings Communications tab is the same as the Com Port used to connect the download cable.

4. The Communicating screen should appear in a few moments. [Self Test O.K.] will appear on the control unit display panel during download.

   NOTE: WinTrac is used to communicate with a variety of Thermo King devices. You can track the device search by viewing the status bar at the bottom of the screen. Connection to the TranScan 2 Control Unit should occur during the "Searching for CCI Devices" phase.

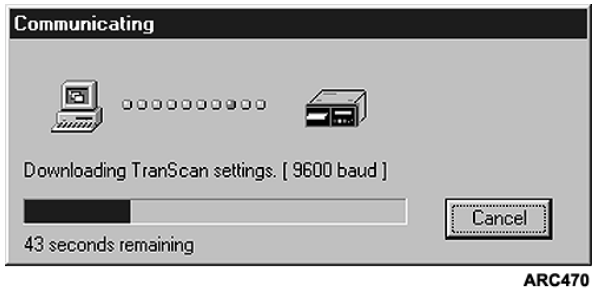


Figure 15: Communicating Screen

5. Once the TranScan settings have been downloaded (about 1 minute), the TranScan Settings Menu General Info Tab will appear.

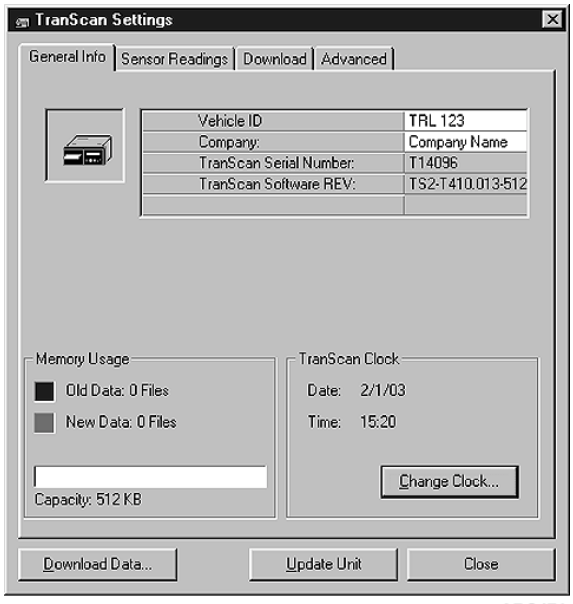


Figure 16: TranScan Settings Menu General Info Tab

6. The system calender and clock can be adjusted from this screen. See Service Procedure A05B in Section 6 of this manual for additional information.

   The vehicle identification and the company name can also be adjusted from the General Info Tab.

   NOTE: The company name in the General Info Tab is the combination of Title1 and Title2 from the Advanced Tab.

7. Select the Advanced Tab of the TranScan Settings Menu. With the exception of the system calender and clock, this screen displays and allows modification of the configuration mode settings.

   Use the scroll bar to the right of the Values column to advance the list of parameters forward or backward as needed.

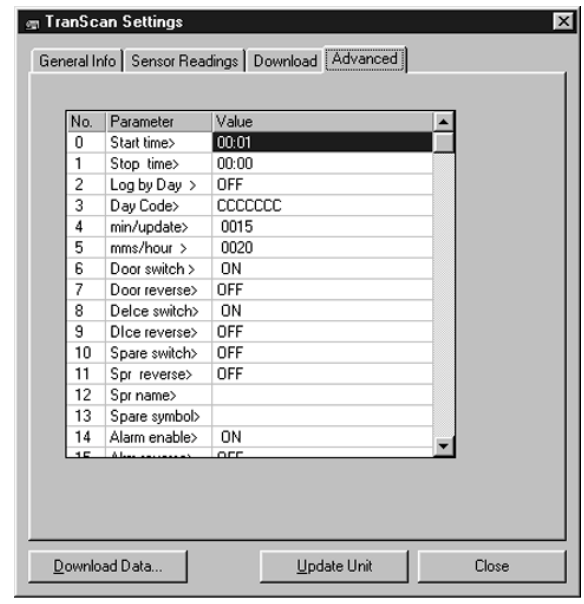


Figure 17: TranScan Settings Menu Advanced Tab

8. To adjust a setting:

   a. Click on the parameter value with your cursor. The selected value will appear against a blue field.

   b. For parameters with ON/OFF values, an ON/OFF pop-up menu will automatically appear. Select the desired setting from the pop-up menu. Press the computer Enter key accept the change.

      For parameters with numeric values, press the ▼ button to expose a preset values pop-up menu. Select the desired setting from the pop-up menu or use the computer keyboard to enter the desired value. Press the computer Enter key accept the change.

      For parameters with text values, use the computer keyboard to enter the desired value. Press the computer Enter key accept the change.

   c. Click “Update Unit” on the Advanced Tab of the TranScan Settings Menu to accept any changes and update the control unit.

   NOTE: To reset all values without updating the Control Unit, click “Close” on the Advanced Tab of the TranScan Settings Menu. The Thermo King WinTrac 4 Menu will appear.

9. Click “Close” on the Advanced Tab of the TranScan Settings Menu to return to the Thermo King WinTrac 4 Menu.
10. Exit WinTrac by selecting “Exit” from the File Menu.

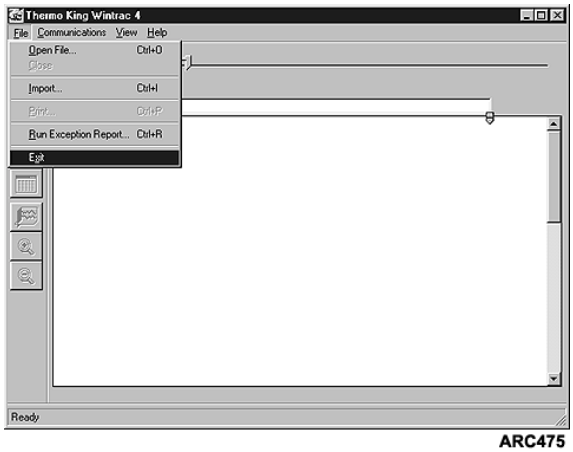


Figure 18: Exit WinTrac

11. Disconnect the download cable from the control unit.

Configuration Menu

The following information includes all the programmable features available as part of the TranScan 2 ADR equipped with revision TS2-T410.014 software. Programming choices, the default (factory) setting, and a description of each menu screen is presented in the order they appear in the Configuration Menu.

Unless otherwise noted, all Configuration Menu Screens are available by using the Operator Keys, or by using a remote computer running WinTrac 4 software.

For quick reference, see the “TranScan 2 Configuration Mode Menu Revision TS2-T410.014 Software Flowchart” on page 3-21.

IMPORTANT: The menu screen descriptions include the following symbols and characters:

[ ] = appears on the display panel
h = user controlled selection of hours
m = user controlled selection of minutes
X = user controlled selection of any available character, symbol, value, preset name, or ON and OFF
 # = sensor or alarm set number

NOTE: Before changing any of the programmable features, obtain a list of the current feature settings. See Service Procedure A02A in Section 6 of this manual for additional information.

[Start time hh:mm]
Set Recording Start Time
Programming Choices:
00 to 23 hours, 00 to 59 minutes
Default Setting: 00:00

This screen defines the start time for daily recording.

[Stop time hh:mm]
Set Recording Stop Time
Programming Choices:
00 to 23 hours, 00 to 59 minutes
Default Setting: 00:00

This screen defines the stop time for daily recording.

[Log by Day XXX]
Select Weekly Recording Schedule
Programming Choices: ON or OFF
Default Setting: OFF

This screen enables recording on a weekly schedule. When set to On, recording is controlled by separate settings for each day of the week, see next menu screen for additional information.

If set to Off, recording will automatically start and stop every day based on the programmed start and stop times.

[Day Code XXXXXXX]
Set Days for Weekly Recording Schedule
Programming Choices: 0, 1, S, T, and C, for each day of the week starting with Sunday
Default Setting: CCCCCCC

Each of the seven spaces on this screen controls the recording activity for each of the seven days of a weekly recording schedule beginning with Sunday. Select any one of the following recording options for each day:

0 = Do not record
1 = Record for 24 hours
S = Start recording at programmed start time
T = Stop recording at programmed stop time
C = Start and stop recording at programmed start and stop times

Example 1:
The setting [Day Code 0CCCCC0] will start and stop recording data at the programmed times on Monday through Friday. This setting creates a separate Journey Ticket or file for each day of the week except Saturday and Sunday.

Example 2:
The setting [Day Code 0S111T0] will start recording data at the programmed start time on Monday, and continue uninterrupted recording until the programmed stop time on Friday. This setting creates a single Journey Ticket or file for the entire period Monday through Friday.

[min/update 00XX]
Set Recording Interval
Programming Choices: 1 to 60 minutes in 1 minute increments
Default Setting: 0010

The recording interval represents the rate at which the recordings are made. The value written to memory is the average temperature over the recording interval calculated from samples taken every few seconds.

The recording interval can also be set to 1, 2, 5, 10, 15, 30, and 60 minute preset intervals through Operating Mode. See “Adjusting Recording Interval” on page 4-7 for additional information.

NOTE: Note: To comply to current German legislation, the recording interval must not exceed 15 minutes.

[mms/hour 00XX]
Set Graph Print Density
Programming Choices: 1 to 60 millimeters in 1 mm increments
Default Setting: 0020

This screen controls the density (distance between hours) for a graph on any printed ticket.

NOTE: 1 inch = 25.4 mm

[Door switch XXX]
Enable System Event - Door
Programming Choices: ON or OFF
Default Setting: OFF

One of the pre-programmed system events is monitoring a cargo area door. Set this feature to On if a voltage free door switch is used. See “Door Switch” on page 2-4 for additional information.

The voltage free contacts of the door switch are connected to Status (On/Off) Input 2 pins 5 & 6 on back of the control unit. See Figure 8 on page 2-6, Figure 9 on page 2-6, and the Wiring Diagram in Section 8 of this manual for additional information.

[Door reverse XXX]
Reverse Door Switch Signal
Programming Choices: ON or OFF
Default Setting: OFF

This screen only appears when [Door switch XXX] is set to On.

Set this feature to Off when a normally closed (N.C.) door switch is used. The control unit will assume the door is closed when the switch contacts are closed and the circuit is complete.

Set this feature to On when a normally open (N.O.) door switch is used. The control unit will assume the door is closed when the switch contacts are open and the circuit is interrupted.

[DeIce switch XXX]
Enable System Event - DeIce (Defrost)
Programming Choices: ON or OFF
Default Setting: OFF

One of the pre-programmed system events is monitoring the refrigeration system defrost cycles. Set this feature to On if a voltage free defrost switch or relay is used. See “Defrost Switch” on page 2-4 for additional information.

The voltage free defrost switch or relay contacts are connected to Status (On/Off) Input 3 pins 3 & 4 on back of the control unit. See Figure 8 on page 2-6, Figure 9 on page 2-6, and the Wiring Diagram in Section 8 of this manual for additional information.

[DIce reverse XXX]
Reverse DeIce (Defrost) Switch Signal
Programming Choices: ON or OFF
Default Setting: ON

This screen only appears when [DeIce switch XXX] is set to On.

Set this feature to On when a normally open (N.O.) defrost switch or relay is used. The control unit will assume the refrigeration system is operating in Defrost Mode when the switch or relay contacts are closed and the circuit is complete.

Set this feature to Off when a normally closed (N.C.) defrost switch or relay is used. The control unit will assume the refrigeration system is operating in Defrost Mode when the switch or relay contacts are open and the circuit is interrupted.

[Spare switch XXX]
Enable System Event - Spare
Programming Choices: ON or OFF
Default Setting: OFF

Monitoring one user defined system event is available. Set this feature to On if an additional cargo area door switch, or another type of event relay is used. See “Spare Switch” on page 2-4 for additional information.

The voltage free contacts of the spare switch or relay are connected to Status (On/Off) Input 4 pins 1 & 2 on back of the control unit. See Figure 8 on page 2-6, Figure 9 on page 2-6, and the Wiring Diagram in Section 8 of this manual for additional information.

[Spr reverse XXX]
Reverse Spare Switch Signal
Programming Choices: ON or OFF
Default Setting: OFF

This screen only appears when [Spare switch XXX] is set to On.

Set this feature to Off when a normally closed (N.C.) switch or relay is used. The control unit will assume the event being monitored is Off or closed when the switch or relay contacts are closed and the circuit is complete.

Set this feature to On when a normally open (N.O.) switch or relay is used. The control unit will assume the event being monitored is Off or closed when the switch or relay contacts are open and the circuit is interrupted.

[Spr name XXXXXXX]
Spare Switch Name
Programming Choices: Any combination of up to 7 available characters, numerals, symbols, and spaces
Default Setting: (user defined)

This screen only appears when [Spare switch XXX] is set to On.

This screen sets the name used to represent the user defined spare switch.

[Spare symbol X]
Spare Switch Event Indicator Symbol
Programming Choices: Any 1 available symbol, character, or numeral
Default Setting: Door Symbol

This screen only appears when [Spare switch XXX] is set to On.

This screen sets the display panel Event Indicator symbol used to represent the user defined spare system event. See "Display Panel Indicators" on page 4-2 for additional information.

NOTE: The door symbol (rectangle) is selected by using a space (blank).

[Alarm enable XXX]
Enable Temperature Out-of-Range Alarm
Programming Choices: ON or OFF
Default Setting: OFF

Set this Screen to On if the temperature out-of-range alarms feature is desired, and a voltage free refrigeration switch relay is used. See "Refrigeration Switch" on page 2-3 for additional information.

The refrigeration switch is an On/Off input from the refrigeration system that activates the alarm feature only when the refrigeration system is switched On. This feature prevents any false alarms from being generated while the refrigeration unit is not in use.

The voltage free contacts of the refrigeration switch relay are connected to the Status (On/Off) Input 1 pins 7 & 8 on back of the control unit. See Figure 8 on page 2-6, Figure 9 on page 2-6, and the Wiring Diagram in Section 8 of this manual for additional information.

[Alarm reverse XXX]
Reverse Refrigeration Switch Signal
Programming Choices: ON or OFF
Default Setting: ON

This screen only appears when [Alarm enable XXX] is set to On.

Set this feature to On when a normally open (N.O.) refrigeration switch relay is used. The control unit will assume the refrigeration system is operating when the refrigeration switch relay contacts are closed and the circuit is complete.

Set this feature to Off when a normally closed (N.C.) refrigeration switch is used. The control unit will assume the refrigeration system is operating when the refrigeration switch relay contacts are open and the circuit is interrupted.

NOTE: If a refrigeration switch is not installed, and this feature is set to Off, alarm monitoring may be controlled manually through Operating Mode. See "[Alarm on T# XXX] Enable Sensor T# Alarms" on page 3-15 of this manual for additional information.

[Extend time XXX]
Enable Extended Alarm Monitoring
Programming Choices: ON or OFF
Default Setting: ON

This screen only appears when [Alarm enable XXX] is set to On.

Setting this screen to On allows the control unit to continue monitoring temperature out-of-range alarms for a programmed period of time after the refrigeration unit is turned Off. The amount of time is determined by the [Added time hh:mm] screen. This feature is ideal for applications that switch the refrigeration unit Off during deliveries.

[Added time hh:mm]
Set Extended Alarm Monitoring Period
00 to 23 hours, 00 to 59 minutes
Default Setting: 00:45

This screen only appears when [Extend time XXX] is set to On.

This screen sets the amount of time after the refrigeration unit is turned Off that the control unit will continue to monitor temperature out-of-range alarms.

[Graph high X00XX]
Graph Print High Limit
(alarm sets disabled)
Programming Choices:
–0050 to 0050 degrees F or C
Default Setting: 0010

This screen controls the upper temperature limit (highest temperature) that can be printed on any graph style ticket when no alarm sets are enabled. If an alarm set is enabled, this setting is controlled by the Graph High setting for that alarm set.

[Graph low X00XX]
Graph Print Low Limit
(alarm sets disabled)
Programming Choices:
–0050 to 0050 degrees F or C
Default Setting: –0030

This screen controls the lower temperature limit (lowest temperature) that can be printed on any graph style ticket when no alarm sets are enabled. If an alarm set is enabled, this setting is controlled by the Graph Low setting for that alarm set.

[Preset names XXX]
Preset Sensor and Alarm Set Names
Programming Choices: ON or OFF
Default Setting: ON

Setting this feature to On makes a series of preset names available for sensor and alarm set assignment.

Preset Temperature Sensor Names Available:

Front, Rear, Air Ret, Product, Fr ARet, Rr ARet, Centre, Chill, Freeze

Preset Alarm Set Names Available:

Chill, Frozen, Alarm

Setting this feature to Off allows any combination of up to 7 available characters, numerals, symbols, and spaces to be assigned to each enabled temperature sensor and alarm set.

NOTE: All preset sensor and alarm set names automatically translate when a different display language is selected.

IMPORTANT: The following 2 screens are available for each temperature sensor. # is used to represent the temperature sensor number.

[Temperature# XXX]
Enable Temperature Sensor T#

Programming Choices: ON or OFF
Default Setting: T1 = ON, T2 = ON, T3 = OFF, T4 = OFF

Set this screen to On if displaying and recording temperature readings from sensor T# is desired. The temperature sensors are connected to Temperature Probe Inputs 1-4 on back of the control unit. See Figure 8 on page 2-6, Figure 9 on page 2-6, and the Wiring Diagram in Section 8 of this manual for additional information.

Set this screen to Off if displaying and recording temperature readings from sensor T# is not desired, or if no sensor is connected to the corresponding Temperature Probe Input on back of the control unit.

[T# name XXXXXXX]
Temperature Sensor T# Name

Programming Choices: Any combination of up to 7 available characters, numerals, symbols, and spaces, or the preset names (if enabled)
Default Setting: T1 = Front, T2 = Rear, 3 = Air Ret, T4 = Product

This screen only appears when [Temperature# XXX] is set to On.

To clarify displayed, recorded, and printed information, each temperature sensor should have a name assigned to it. This screen sets the name used to represent temperature sensor T#.

IMPORTANT: The following 7 screens are available for each alarm set. # is used to represent the alarm set number.

[Alarm set # XXX]
Enable Alarm Set #

Programming Choices: ON or OFF
Default Setting: ON

An alarm set is a collection of programmable conditions used by the Temperature Out-of-Range Alarms feature. Two alarm sets are available. One alarm set is usually programmed for Frozen load conditions, and the other for Chilled or Fresh load conditions. The programmable conditions for each alarm set are:

Alarm Set Name
High Temperature Alarm Limit
Low Temperature Alarm Limit
Alarm Delay Period
Graph Print High Limit
Graph Print Low Limit

Setting this screen to On enables the alarm set. Once the alarm set is enabled, menu screens for the programmable alarm set conditions will appear in the order shown. The enabled alarm set can then be made available for any enabled sensor.

The alarm sets/features that are available for a sensor can be selected from Operating Mode as needed. See “Selecting Alarm Settings” on page 4-7 for additional information.

[A# name XXXXXXX]
Alarm Set # Name

Programming Choices: Any combination of up to 7 available characters, numerals, symbols, and spaces or the preset names (if enabled)
Default Setting: Set 1 = Chill, Set 2 = Frozen

This screen only appears when [Alarm set # XXX] is set to On.

To clarify displayed, recorded, and printed information, each alarm set should have a name assigned to it. This screen sets the name used to represent the alarm set.

[High alarm X00XX]
High Temperature Alarm Limit

Programming Choices:
–0057 to 0099 degrees F or C
Default Setting: Alarm Set 1 = 0005, Alarm Set 2 = –0015

This screen only appears when [Alarm set # XXX] is set to On.

When the alarm set is selected, and the temperature sensor reading climbs to this setting, the temperature sensor is considered outside of the desired operating range. When the temperature sensor reads out-of-range throughout the duration of the Alarm Delay Period, the control unit will record, display, and sound an alarm.

[Low alarm X00XX]
Low Temperature Alarm Limit

Programming Choices:
–0057 to 0099 degrees F or C
Default Setting: Alarm Set 1 = 0001, Alarm Set 2 = –0025

This screen only appears when [Alarm set # XXX] is set to On.

When the alarm set is selected, and the temperature sensor reading falls to this setting, the temperature sensor is considered outside of the desired operating range. When the temperature sensor reads out-of-range throughout the duration of the Alarm Delay Period, the control unit will record, display, and sound an alarm.

[Alarm wait 0XXX]
Alarm Delay Period

Programming Choices:
000 to 120 minutes in 1 minute increments
Default Setting: 0030

This screen only appears when [Alarm set # XXX] is set to On.

When the alarm set is enabled, this setting controls the amount of time between the sensor reading going out-of-range and the control unit recording, displaying, and sounding an alarm.

NOTE: Set the alarm delay period to an amount of time slightly greater than the programmed defrost cycle duration to help prevent generating alarms during regular defrost cycles.

[Graph high X00XX]
Graph Print High Limit (alarm set enabled)

Programming Choices:
–0050 to 0050 degrees F or C
Default Setting: Alarm Set 1 = 0010, Alarm Set 2 = –0010

When the alarm set is selected, this screen controls the upper temperature limit (highest temperature) that can be printed on any graph style ticket. If the alarm sets are disabled, this setting is controlled by the Default Graph High Limit setting.

[Graph low X00XX]
Graph Print Low Limit (alarm set enabled)

Programming Choices:
–0050 to 0050 degrees F or C
Default Setting: Alarm Set 1 = –0010, Alarm Set 2 = –0030

When the alarm set is selected, this screen controls the lower temperature limit (lowest temperature) that can be printed on any graph style ticket. If the alarm sets are disabled, this setting is controlled by the Default Graph Low Limit setting.

IMPORTANT: The following 6 screens are available for each temperature sensor. # is used to represent the temperature sensor number.

[Print T# XXX]
Print Sensor T# Data
Programming Choices: ON or OFF
Default Setting: T1 = ON, T2 = ON, T3 = OFF, T4 = OFF

When set to On, the temperature data for the sensor will appear on Delivery Tickets and on both styles (values or graphs) of Journey Tickets.

Set this screen to Off if the sensor is not enabled, or if you do not want the data for this sensor to appear on any of the printed tickets.

[Alarm on T# XXX]
Enable Sensor T# Alarms
Programming Choices: ON or OFF
Default Setting: OFF

For the Temperature Out-of-Range Alarm feature to function properly, alarm sets must be made available for each sensor. The available alarm sets are:

Alarm Set 1
Alarm Set 2
Auto Alarm Set
(combines conditions of alarm set 1 and 2)
No Alarms

Setting this screen to On enables the Temperature Out-of-Range Alarm feature for the individual sensor. Once enabled, menu screens for the alarm sets will appear in the order shown.

Once the alarm sets/features are made available for the sensor, the alarm set/feature desired can be selected from Operating Mode as needed. See "Selecting Alarm Settings" on page 4-7 for additional information.

[T# AlarmSet1 XXX]
Alarm Set 1 Available to Sensor T#
Programming Choices: ON or OFF
Default Setting: ON

This screen only appears when [Alarm on T# XXX] is set to On.

Set this screen to On if you want to make alarm set 1 available for Operating Mode selection.

The alarm sets/features that are available for a sensor can be selected from Operating Mode as needed. See "Selecting Alarm Settings" on page 4-7 for additional information.

[T# AlarmSet2 XXX]
Alarm Set 2 Available to Sensor T#
Programming Choices: ON or OFF
Default Setting: ON

This screen only appears when [Alarm on T# XXX] is set to On.

Set this screen to On if you want to make alarm set 2 available for Operating Mode selection.

The alarm sets/features that are available for a sensor can be selected from Operating Mode as needed. See "Selecting Alarm Settings" on page 4-7 for additional information.

[T# AutoAlarm XXX]
Auto Alarm Set Available to Sensor T#
Programming Choices: ON or OFF
Default Setting: ON

This screen only appears when [Alarm on T# XXX] is set to On.

The auto alarm feature combines the conditions from both alarm set 1 and alarm set 2. Set this screen to On if you want to make the auto alarm feature available for Operating Mode selection.

When combined with a refrigeration switch used to control alarm monitoring, this feature allows accurate monitoring of a variety of loads without any Operator interaction.

The alarm sets/features that are available for a sensor can be selected from Operating Mode as needed. See “Selecting Alarm Settings” on page 4-7 for additional information.

Example:
Alarm Set 1 is set for the following Chilled or Fresh conditions:

High Temperature Alarm Limit = 5
Low Temperature Alarm Limit = 1

Alarm Set 2 is set for the following Frozen conditions:

High Temperature Alarm Limit = –15
Low Temperature Alarm Limit = –25

If the Auto Alarm Set feature is available and selected for a sensor, a temperature out-of-range alarm will occur when the temperature sensor is reading:

above 5
between 1 and –15
below –25

[T# No Alarms XXX]
Disable Alarm Monitoring Available to Sensor T#
Programming Choices: ON or OFF
Default Setting: ON

This screen only appears when [Alarm on T# XXX] is set to On.

The no alarms feature allows the driver or operator the ability to disable alarm monitoring for a sensor by selecting this feature from Operating Mode. Set this screen to On if you want to make the no alarms feature available for Operating Mode selection.

The alarm sets/features that are available for a sensor can be selected from Operating Mode as needed. See “Selecting Alarm Settings” on page 4-7 for additional information.

[Print Door XXX]
Print Door Switch Data
Programming Choices: ON or OFF
Default Setting: OFF

When set to On, the data for the door switch (if enabled) will appear on Journey Tickets.

Set this screen to Off if a door switch is not enabled, or if you do not want the data for this system event to appear on the journey tickets.

[Print De-Ice XXX]
Print DeIce (Defrost) Switch Data
Programming Choices: ON or OFF
Default Setting: OFF

When set to On, the data for the defrost switch (if enabled) will appear on Journey Tickets.

Set this screen to Off if a defrost switch is not enabled, or if you do not want the data for this system event to appear on the journey tickets.

[Print Spare XXX]
Print Spare Switch Data
Programming Choices: ON or OFF
Default Setting: OFF

When set to On, the data for the spare switch (if enabled) will appear on Journey Tickets.

Set this screen to Off if a spare switch is not enabled, or if you do not want the data for this system event to appear on the journey tickets.

[ENG Display XXX]
View Additional Screens and Settings
Programming Choices: ON or OFF
Default Setting: OFF

NOTE: This screen is not visible on the Advanced Tab of the TranScan Settings Menu in WinTrac. This screen can only be accessed by using the Operator Keys.

Setting this screen to On allows access to the following menu screens:

[R standard]
[T1 cal val]
[T2 cal val]
[T3 cal val]
[T4 cal val]
[PIN number]
[Unit ID]
[Baud rate]
[Date]
[Auto Clk Adj]
[Clk Protect]

After initial system setup, set this screen to Off.

[R standard XXXX]
Standard Calibration Constant
Programming Choices: 0100 to 9999
Default Setting: 9090

NOTE: This screen is not visible on the Advanced Tab of the TranScan Settings Menu in WinTrac. This screen can only be accessed by using the Operator Keys.

This screen only appears when [ENG Display XXX] is set to On.

This screen represents a standard calibration constant for the TranScan 2. This screen must be set to the value 9090.

IMPORTANT: The following 4 screens are available for each temperature sensor. # is used to represent the temperature sensor number.

[T# cal val XXXX]
Sensor T# Standard Calibration
Programming Choices: 0001 to 9999
Default Setting: 2252

NOTE: This screen is not visible on the Advanced Tab of the TranScan Settings Menu in WinTrac. This screen can only be accessed by using the Operator Keys.

This screen only appears when [ENG Display XXX] is set to On.

This screen represents the standard calibration value for the thermistor type temperature sensors supplied with the TranScan 2 ADR system. This screen must be set to the value 2252.

NOTE: If a different sensor is used with the TranScan 2 ADR system, it must be calibrated accordingly.

[PIN number XXXX]
Set Security Code
Programming Choices:
0000 and 1111 to 7777 (recommended)
Default Setting: 1111

NOTE: This screen is not visible on the Advanced Tab of the TranScan Settings Menu in WinTrac. This screen can only be accessed by using the Operator Keys.

This screen only appears when [ENG Display XXX] is set to On.

To prevent unauthorized modification of any programmable feature, entry to Configuration Mode may be password protected through the use of a 4 digit Personal Identification Number (PIN).

Entering a PIN number of 0000 disables this security feature.

NOTE: Avoid using 0, 8, or 9 in the PIN number (except for 0000).

Do not use PIN number 1212 as this sequence prints a list of all current parameter settings.

[Unit I/D XXXXXX]
Control Unit Identification Number

Programming Choices: Any combination of up to 6 available characters, numerals, symbols, and spaces
Default Setting: (control unit serial number)

NOTE: This screen is not visible on the Advanced Tab of the TranScan Settings Menu in WinTrac. This screen can only be accessed by using the Operator Keys.

This screen only appears when [ENG Display XXX] is set to On.

This screen represents the individual control unit identification number, and is factory set to match the control unit serial number. To clarify and organize recorded and printed information, the control unit identification number is included with recorded data and appears on the third line of Delivery Tickets and Journey Tickets.

NOTE: The control unit serial number is printed on the identification label found on back of the control unit. Depending on model, the control unit may need to be removed from the housing to view the identification label.

[Baud rate XXXX]
Serial Port Communication Speed

Programming Choices: 0300 to 9600
Default Setting: 9600

NOTE: This screen is not visible on the Advanced Tab of the TranScan Settings Menu in WinTrac. This screen can only be accessed by using the Operator Keys.

This screen only appears when [ENG Display XXX] is set to On.

This screen represents the speed of communication when the control unit is connected to a remote computer via the serial port.

[Date DD Mon' YY]
Set System Calendar

Programming Choices: 01 to 31 day, Jan-Dec month, 00 to 99 year

NOTE: This screen is not visible on the Advanced Tab of the TranScan Settings Menu in WinTrac. This screen can be accessed through the Change Clock button on the General Info Tab of the TranScan Settings Menu in WinTrac. See Service Procedure A05B in Section 6 of this manual for additional information.

This screen only appears when [ENG Display XXX] is set to On.

The system calendar is set at the factory and maintained by an internal battery. The system assumes a setting of 50 to 99 represents the years 1950 to 1999, and a setting of 00 to 49 represents the years 2000 to 2049. The system calendar is pre-programmed up to the year 2049. Use this screen to adjust the system calendar if needed.

NOTE: Adjustments to the system calendar will automatically start a new Journey File, [NEW FILE] will appear on the display panel for 5 seconds.

[Set clock hh:mm]
Set System Clock

Programming Choices:
00 to 23 hours, 00 to 59 minutes

NOTE: This screen is not visible on the Advanced Tab of the TranScan Settings Menu in WinTrac. This screen can be accessed through the Change Clock button on the General Info Tab of the TranScan Settings Menu in WinTrac. See Service Procedure A05B in Section 6 of this manual for additional information.

This screen only appears when [ENG Display XXX] is set to On.

The system clock is set at the factory and maintained by an internal battery. Use this screen to adjust the system clock when the Clock Protect feature is set to On. If the clock protect feature is set to Off, the system clock may be adjusted from this screen or through Operating Mode.

The system clock includes an automatic adjustment feature for Daylight Saving Time as observed by the European Union. See "[Auto Clk Adj XXX] Automatic Clock Adjustment" on page 3-19 for additional information.

NOTE: Any adjustments to the system clock from the Configuration Menu will automatically start a new Journey File, [NEW FILE] will appear on the display panel for 5 seconds.

[Auto Clk Adj XXX]
Automatic Clock Adjustment

Programming Choices: ON or OFF
Default Setting: ON

NOTE: This screen is not visible on the Advanced Tab of the TranScan Settings Menu in WinTrac. This screen can only be accessed by using the Operator Keys.

This screen only appears when [ENG Display XXX] is set to On.

When set to On, this feature automatically adds one hour to the set time between 02:00 on the last Sunday in March to 02:00 on the last Sunday in October. This period is Daylight Saving Time for the European Union.

NOTE: Most areas of The United States observe Daylight Saving Time from 02:00 on the first Sunday in April to 02:00 on the last Sunday in October.

[Clk Protect XXX]
Clock Adjustment Protection

Programming Choices: ON or OFF
Default Setting: OFF

NOTE: This screen is not visible on the Advanced Tab of the TranScan Settings Menu in WinTrac. This screen can only be accessed by using the Operator Keys.

This screen only appears when [ENG Display XXX] is set to On.

This feature can be used to prevent any unauthorized adjustment of the clock settings. When set to On, the only method of clock adjustment is through Configuration Mode, and entry to Configuration Mode can be password (PIN) protected.

When this feature is set to Off, the clock may be adjusted from Operating Mode as well as from Configuration Mode. See Service Procedure A05A & Service Procedure A05B in Section 6 of this manual for additional information.

[Vehicle XXXXXXXX]
Vehicle Identification Number
Programming Choices: Any combination of up to 8 available characters, numerals, symbols, and spaces
Default Setting: (user defined)

This screen represents the vehicle or trailer identification number, and is commonly set to match the vehicle or trailer registration number. To clarify and organize recorded and printed information, the vehicle identification number is included with recorded data and appears on the second line of Delivery Tickets and Journey Tickets.

[Title1 XXXXXXXX]
Ticket Heading (1st 8 of 16 digits)
Programming Choices: Any combination of up to 8 available characters, numerals, symbols, and spaces
Default Setting: Company

This screen represents the first half of the ticket heading. When combined with the [Title2] setting, 16 total digits are available. The ticket heading is commonly set to match the refrigerated transport company's name. To clarify and organize printed information, the ticket heading appears on the first line of Delivery Tickets and Journey Tickets.

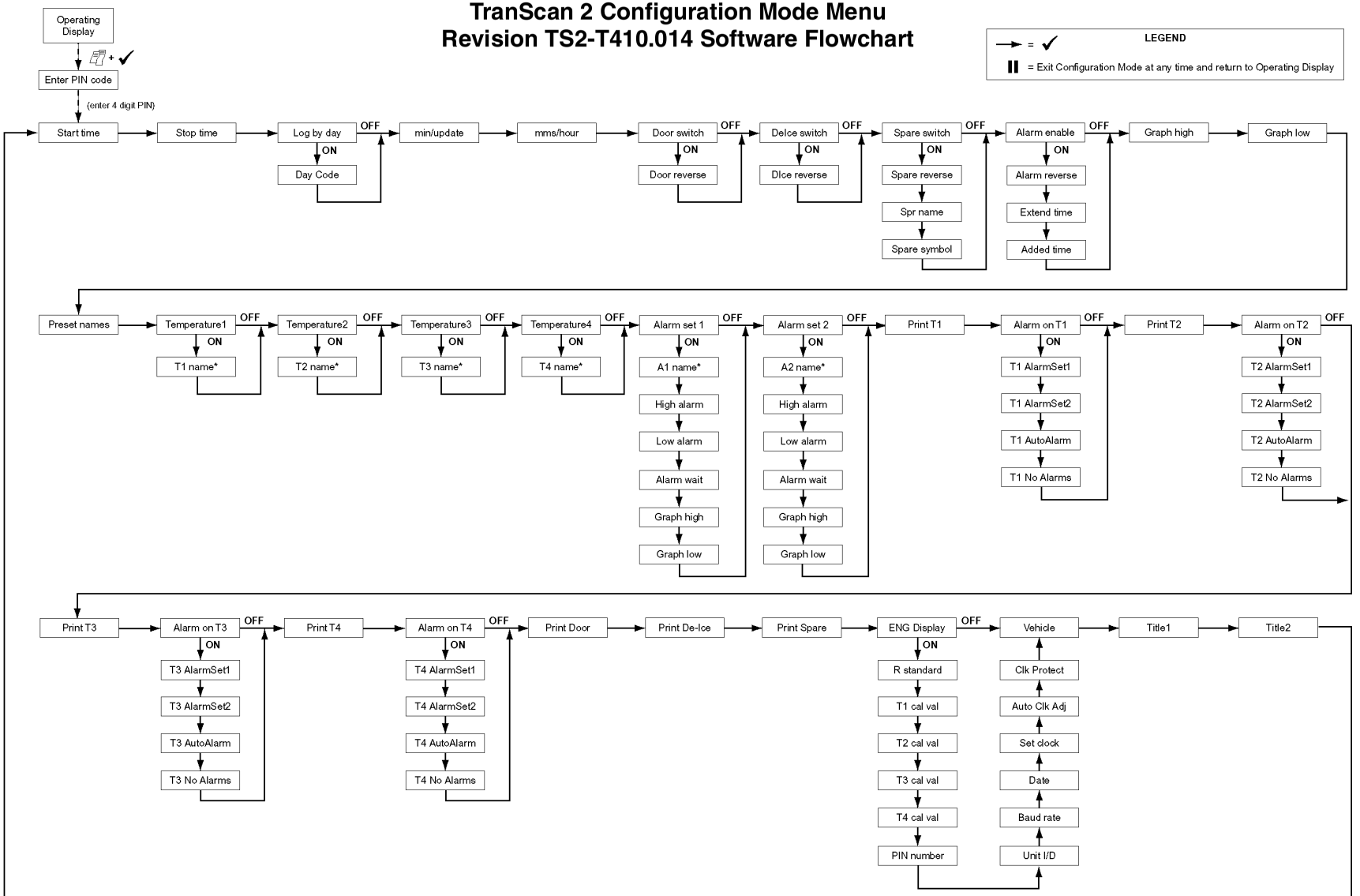
[Title2 XXXXXXXX]
Ticket Heading (2nd 8 of 16 digits)
Programming Choices: Any combination of up to 8 available characters, numerals, symbols, and spaces
Default Setting: Name

This screen represents the second half of the ticket heading. When combined with the [Title1] setting, 16 total digits are available. The ticket heading is commonly set to match the refrigerated transport company's name. To clarify and organize printed information, the ticket heading appears on the first line of Delivery Tickets and Journey Tickets.

Configuration Menu Flowchart

For quick reference, a flowchart of the configuration menu screens when accessed with the operator keys appears on the following page.

TranScan 2 Configuration Mode Menu
Revision TS2-T410.014 Software Flowchart



*Preset names will appear in this screen if [Preset names] is set to ON.

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Section 4
Operation

Operator Controls

Once installed, the TranScan 2 ADR system records and stores daily files (journey files) automatically. Normally, no operator action or adjustment is required to start or stop the recording process.

Each TranScan 2 includes a digital display panel and a control panel with a series of keys for operating the system.

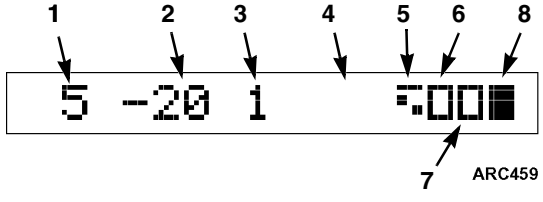
Display Panel

The digital display panel reports the current readings of all enabled temperature sensors up to 99.9 F (49.9 C). System event indicators and a recording indicator appear on the display panel as well.

The digital display panel can be set to operate in 3 different display modes. See “Selecting Display Mode” on page 4-6 for additional information.

NOTE: The combination of temperature sensor readings, event indicators, and the recording indicator is referred to as the Operating Display, no matter which display mode is selected.

Summary Display Mode



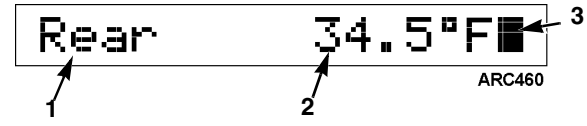
1.	Sensor 1 Reading	5.	System Event Indicator - Defrost (cycling shown)
2.	Sensor 2 Reading	6.	System Event Indicator - User Defined (door open shown)
3.	Sensor 3 Reading	7.	System Event Indicator - Door (open shown)
4.	Sensor 4 Reading (no reading shown)	8.	Recording and Alarm Indicator

Figure 19: Digital Display Panel (all models - shown in Summary Display Mode)

In Summary Display Mode all enabled temperature sensor readings are displayed simultaneously in whole degree increments along with status indicators for each enabled system event. The recording indicator also appears in the digital display.

If the temperature sensor reading is over 99.5 F (49.5 C), [++] will appear on the display panel. If the temperature sensor is not reporting due to sensor or sensor wiring failure, [--] will appear on the display panel.

Single Display Mode



1.	Sensor Name	3.	Recording Indicator
2.	Sensor Reading		

Figure 20: Digital Display Panel (all models - shown in Single Display Mode)

In Single Display Mode only one enabled temperature sensor reading (user selected) is displayed in tenths of a degree along with the sensor name. The recording indicator also appears in the digital display.

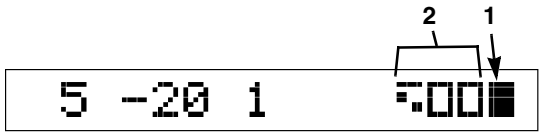
If the temperature sensor reading is over 99.9 F (49.9 C), [+++++] will appear on the display panel. If the temperature sensor is not reporting due to sensor or sensor wiring failure, [-----] will appear on the display panel.

NOTE: Single Display Mode is useful to verify a sensor location, and to check the operation of a specific sensor or sensor circuit.

Scroll Display Mode

In Scroll Display Mode the summary display (all enabled temperature sensor readings and status indicators for each enabled system event) appears for 5 seconds followed by the single display (temperature sensor reading and the sensor name) for each enabled sensor. Each display appears for 5 seconds before scrolling to the next available display. The displays continue to scroll as long as the control unit is set to scroll display mode. The recording indicator also appears in the digital display.

Display Panel Indicators



1.	Recording Indicator	2.	Event Indicators

Figure 21: Display Panel Indicators

Recording Indicator

The recording indicator is located at the far right side of the display panel.

■ and □ will alternate in the recording indicator position about once every second if the alarms feature is disabled.

■ and A will alternate in the recording indicator position about once every second if the alarms feature is enabled.

NOTE: The recording indicator is visible in all display modes.

System Event Indicators

Up to 3 system events (On/Off inputs) can be monitored. Cargo area door openings and defrost cycles are factory defined events the system can monitor. One additional user defined system event is also available. The system event indicators are located on the right side of the display panel.

■ indicates the cargo area door is closed.

□ indicates the cargo area door is open.

indicates the refrigeration unit is running a Defrost cycle. The area of the display panel for this indicator will remain blank at all other times.

NOTE: Any symbol from the standard character set (including the system default door symbol) can be used for the user defined system event.

System event indicators are not visible in Single Display Mode.

Control Panel

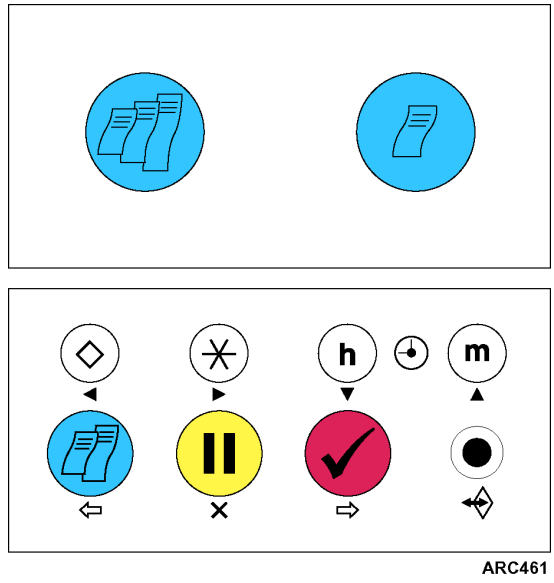


Figure 22: Control Panel (model T and C)

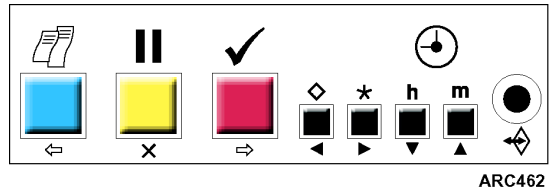


Figure 23: Control Panel (model R)

Operating Mode

Operator Keys (operating mode)

The keys have different functions based on the control unit mode. The following descriptions explain the key functions while in Operating mode. The symbol for each operating mode function is located on or above the key.

Print Delivery Ticket (model T/C) (Figure 22)

Use this key to print any of the following tickets:

Delivery Ticket

TranScan Help (basic operation) Ticket.

Print Tickets (model R) (Figure 23)

Use this key to print any of the following tickets:

Delivery Ticket

TranScan Help (basic operation) Ticket

Journey Ticket

2-Day Ticket 3-Day Ticket 4-Day Ticket

5-Day Ticket 6-Day Ticket 7-Day Ticket

More Help (advanced operation) Ticket

NOTE: The PRINT TICKETS KEY found on models T/C (under the key cover) functions the same as the PRINT JOURNEY TICKET KEY when in Operating mode. The key is located here for convenience during system programming and configuring.

Print Journey Ticket (model T/C) (Figure 22)

Use this key to print any of the following tickets:

Journey Ticket

2-Day Ticket 3-Day Ticket 4-Day Ticket

5-Day Ticket 6-Day Ticket 7-Day Ticket

More Help (advanced operation) Ticket

Pause

Use this key to pause recorder operation and to return the display panel to the Operating Display.

NOTE: The recorder must be paused to allow for adjustment of the recording interval, to view alarms, and to adjust the system clock.

Enter

Use this key as described to accept changes to control unit settings, and silence the alarm buzzer.

Recording Interval

The TranScan 2 records temperature readings at programmed intervals. Use this key to display the current recording interval.

Journey Ticket Style Select

The temperature sensor data can be printed on Journey Tickets as a list of values, or as a graph. Use this key to display and/or select the Journey Ticket style.

h Clock/Calendar

Use this key to display the current system clock/calendar time and date.

m Display Mode Select

Use this key to select one of the various display modes.

Operating Mode Procedures

NOTE: Additional procedures can be found in Section 6 of this manual.

Printing "Help" Tickets

Two different Help Tickets are available with each TranScan 2 ADR. The "TranScan Help" ticket covers most commonly used basic operations. The "More Help" ticket covers print and display options available.

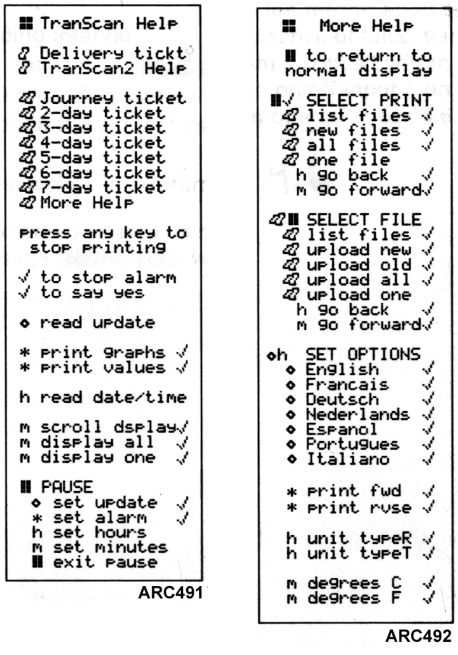


Figure 24: Help and More Help Tickets

NOTE: If the printer is exposed to moisture, it should be allowed to dry completely before use.

To ensure on demand printing, a spare printer paper roll should be available at all times.

The type of ticket displayed will begin printing in 3 seconds or immediately upon pressing ✓. The control unit will return to the Operating Display when printing is complete.

Press any key to cancel printing, [Abandoned] will briefly appear on the display panel, and the control unit will return to the Operating Display.

Model T and C (Figure 22)

From the Operating Display, press as needed to display [TranScan Help].

From the Operating Display, press or as needed to display [More Help].

Model R (Figure 23)

From the Operating Display, press as needed to display [TranScan Help] or [More Help].

Printing Delivery Tickets

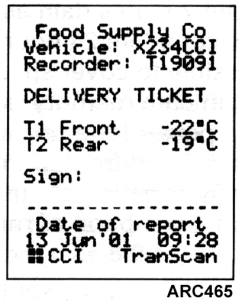


Figure 25: Typical Delivery Ticket

NOTE: If the printer is exposed to moisture, it should be allowed to dry completely before use.

To ensure on demand printing, a spare printer paper roll should be available at all times.

The ticket will begin printing in 3 seconds or immediately upon pressing ✓. The control unit will return to the Operating Display when printing is complete.

Press any key to cancel printing, [Abandoned] will briefly appear on the display panel, and the control unit will return to the Operating Display.

Model T and C (Figure 22)

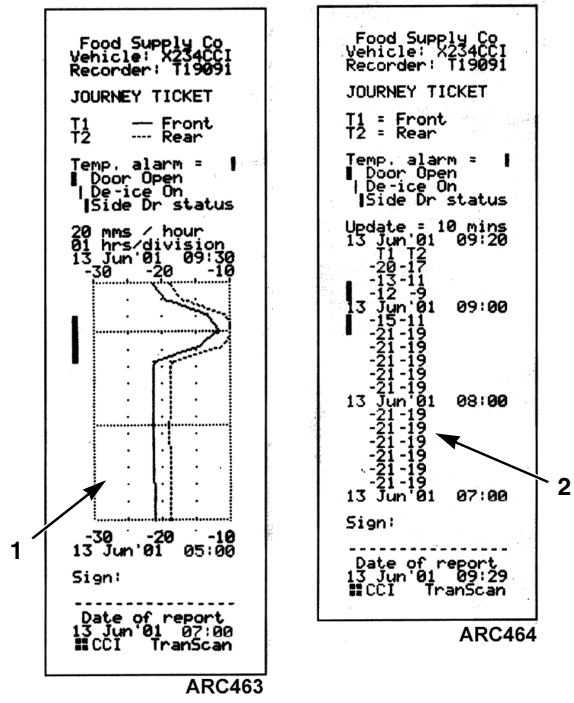
From the Operating Display, press as needed to display [DELIVERY TICKET].

Model R (Figure 23)

From the Operating Display, press as needed to display [DELIVERY TICKET].

Selecting Journey Ticket Data Style

The temperature sensor data can be printed on Journey Tickets as a list of values, or as a graph.



1.	Print Graphs	2.	Print Values

Figure 26: Typical Journey Ticket (current day)

From the Operating Display, press ✳ as needed to display [Print Values] or [Print Graphs]. Once the desired data style appears on the display panel, press ✓ to accept that style. [YES] will always appear to the right of the selected style.

Press ❙❙ to return to the Operating Display.

If no key is pressed within 5 seconds, the control unit will automatically return to the Operating Display.

Printing Journey Tickets

NOTE: If the printer is exposed to moisture, it should be allowed to dry completely before use.

To ensure on demand printing, a spare printer paper roll should be available at all times.

The following Journey Tickets are available for print on all TranScan 2 ADR's:

[JOURNEY TICKET] (current day)

[2-DAY TICKET]
(current day and previous day)

[3-DAY TICKET]
(current day and 2 previous days)

[4-DAY TICKET]
(current day and 3 previous days)

[5-DAY TICKET]
(current day and 4 previous days)

[6-DAY TICKET]
(current day and 5 previous days)

[7-DAY TICKET]
(current day and 6 previous days)

The ticket will begin printing in 3 seconds or immediately upon pressing ✓. The control unit will return to the Operating Display when printing is complete.

Press any key to cancel printing, [Abandoned] will briefly appear on the display panel, and the control unit will return to the Operating Display.

Model T and C (Figure 22)

From the Operating Display, press or as needed to display the desired Journey Ticket.

Model R (Figure 23)

From the Operating Display, press as needed to display the desired Journey Ticket.

Selecting Display Mode

The digital display panel reports the current readings of all enabled temperature sensors up to 99.9 F (49.9 C). System event indicators and a recording indicator appear on the display panel as well.

The digital display panel can be set to operate in 3 different display modes. See "Display Panel" on page 4-1 for additional information.

Press **m** as needed to display the desired Display Mode. The various display modes will appear on the display panel in the following order:

[Scroll Display]

[28 34 –10 –5]
Summary Display mode
(all enabled sensor readings in whole degrees)

[Sensor 1 Name 28.4°F]
Single Display mode
(1st enabled temperature sensor name and reading in tenths of a degree F or C)

[Sensor 2 Name 34.2°F]
Single Display mode
(2nd enabled temperature sensor name and reading in tenths of a degree F or C)

[Sensor 3 Name –10.3°F]
Single Display mode
(3rd enabled temperature sensor name and reading in tenths of a degree F or C)

[Sensor 4 Name –4.8°F]
Single Display mode
(4th enabled temperature sensor name and reading in tenths of a degree F or C)

Once the desired display mode appears on the display panel, press ✓ to accept that display mode and return to the Operating Display.

If no other key is pressed within 5 seconds, or **II** is pressed, the control unit will return to the Operating Display in the display mode previously selected.

Adjusting Recording Interval

The recording interval represents the rate at which the recordings are made.

From the Operating Display, press ❚❚ once, [PAUSING] will appear on the display panel.

Press ◇ as needed to adjust the recording interval to 1, 2, 5, 10, 15, 30, or 60 minute preset intervals.

Once the desired interval appears on the display panel, press ✓ to accept the change. The control unit will automatically restart operation and return to the Operating Display.

If no other key is pressed within 15 seconds, or ❚❚ is pressed, the control unit will automatically restart operation, return to the previous recording interval, and return to the Operating Display.

NOTE: Adjustments to the recording interval will automatically start a new Journey File, [NEW FILE] will appear on the display panel for 5 seconds.

The recording interval may be adjusted to a time other than the programed presets. See "[min/update 00XX] Set Recording Interval" on page 3-9 for additional information.

Selecting Alarm Settings

From the Operating Display, press ❚❚ once, [PAUSING] will appear on the display panel.

Press ✳ to check the current alarm settings.

If the alarms feature for all enabled sensors is turned Off, [No alarms] will appear in the display panel.

Press ✳ as needed to view the alarm sets (conditions) available for a sensor [SensorName AlarmSetName]. [YES] will appear to the right of the currently selected sensor/alarm set combination. The possible alarm sets are:

[AlarmSetName] (alarm set 1)

[AlarmSetName] (alarm set 2)

[Auto] (combines alarm set 1 and 2)

[Noalm] (alarm monitoring disabled)

To select one of the available sensor/alarm set combinations, press ✳ as needed to display the desired sensor/alarm set combination. Press ✓ to accept the sensor/alarm set combination displayed. [YES] will appear to the right of the currently selected sensor/alarm set combination. Selecting [Noalm] disables the temperature out-of-range alarm feature for the sensor.

One of the Alarm Sets, Auto, or NoAlm must be selected [YES] for each enabled sensor at all times.

NOTE: Depending on system configuration, more than one alarm set may be available for a sensor, and some sensors may have no alarm sets available to them.

For additional information on configuring the alarm feature, see the various alarm settings in "Configuration Menu" on page 3-8.

If no other key is pressed within 15 seconds, or ❚❚ is pressed, the control unit will automatically restart operation, and return to the Operating Display.

Clearing Alarms

If the alarms feature is enabled, and a temperature out-of-range alarm occurs:

An audible alarm inside the control unit will sound

An alarm light (if installed) will illuminate

The temperature sensor reading for the offending sensor will flash On and Off

Press ✓ to silence the audible alarm, [Alarm accepted] will appear on the display panel. The alarm light (if installed) will remain illuminated, and the offending sensor reading will continue to flash until the sensor temperature reading returns to within its programmed operating range.

Alarms can be manually reset without interrupting the recording process by:

Selecting No Alarms for the offending sensor sensor in Operating Mode if available. See "Selecting Alarm Settings" on page 4-7 of this manual for additional information.

Disabling the alarm for the offending sensor in Configuration Mode. See "[Alarm on T# XXX] Enable Sensor T# Alarms" on page 3-15 for additional information.

NOTE: If a refrigeration On/Off signal switch is included in the system, alarms will reset when the refrigeration system is switched Off for a period of time longer than the Set Extended Alarm Monitoring Period.

Section 5
Diagnostics

This section is a troubleshooting aid. It is designed to help isolate a problem via Temperature Out-of-Range Alarms or other symptoms and refer the technician to the appropriate actions necessary to complete the repair.

Section 6 of this manual contains many Service Procedures necessary to successfully accomplish a variety of service tasks. The procedures must be followed exactly, for in many cases failure to do so will result in an incomplete or improper repair. Service Procedures are referenced by Procedure Number rather than section and page number to facilitate future updates and additions.

Software Revisions

There may be several revisions of software used with the TranScan 2 ADR system. In addition, upgrade software may be made available that incorporates new features. It is very important that the correct revision of software be installed in the control unit.

To check the current software revision, see Service Procedure A06A in Section 6 of this manual.

Always consult Service Information A16A "Software (PROM Chip) interchange and Service Part Numbers" in Section 7 of this manual when replacing software or control units.

Electrostatic Discharge (ESD)

As with other similar electronic devices, the Tran Scan 2 control unit is vulnerable to damage from Electrostatic Discharge (ESD). This damage is not always immediately apparent. As a result of ESD, a circuit can be damaged but may continue to operate temporarily only to fail later.

A grounded wrist strap should always be used when handling a control unit circuit board or PROM Chip that is not grounded to the refrigeration unit. The control unit circuit board and PROM Chip should always be stored and shipped in an anti-static bag and protective packaging.

For additional information on electrostatic discharge, refer to the Electrostatic Discharge Training Guide (TK 40282) and Service Procedure A12A in Section 6 of this manual.

Temperature Out-of-Range Alarms

The Temperature Out-of-Range Alarms feature records, displays, and sounds an alarm if a temperature sensor reading raises above or drops below the desired temperature range.

Keep the following information in mind when diagnosing temperature out-of-range alarm issues:

- Configuration mode settings determine when to start and stop monitoring the system for alarms. The system can be configured to start and stop monitoring for alarms manually, or automatically by incorporating a refrigeration switch. These settings are different then the recording start and stop times.

  See "Enable Temperate Out-of-Range Alarm" and "Enable Extended Alarm Monitoring" beginning on page 3-11 for additional information.

- Configuration mode settings determine the conditions for the available alarm sets.

  See "Enable Alarm Set#" beginning on page 3-13 for additional information.

- Configuration mode settings determine which sensors are monitored for alarms. Any, all, or none of the available sensors can be monitored.

  See "Enable Sensor T# Alarms" beginning on page 3-15 for additional information.

- Configuration mode settings determine which alarm sets (conditions) are available for each sensor being monitored. In addition to alarm sets, 1 and 2, Auto Alarm (alarm set 1 and 2 conditions combined) and No Alarm (alarm disabled) can be made available for a sensor. Once the alarm sets are made available to a sensor, they can be easily selected by the Driver or Operator as load types (fresh, frozen, ambient) change.

See “Alarm Set 1, 2, and Auto Alarm Available to Sensor T#” and Disable Alarm Monitoring Available to Sensor T#” beginning on page 3-15 for additional information.

- Selections made from Operating Mode determine the alarm set (conditions) for each sensor being monitored. These selections should be changed based on current load type.

  See “Selecting Alarm Settings” on page 4-7 for additional information.

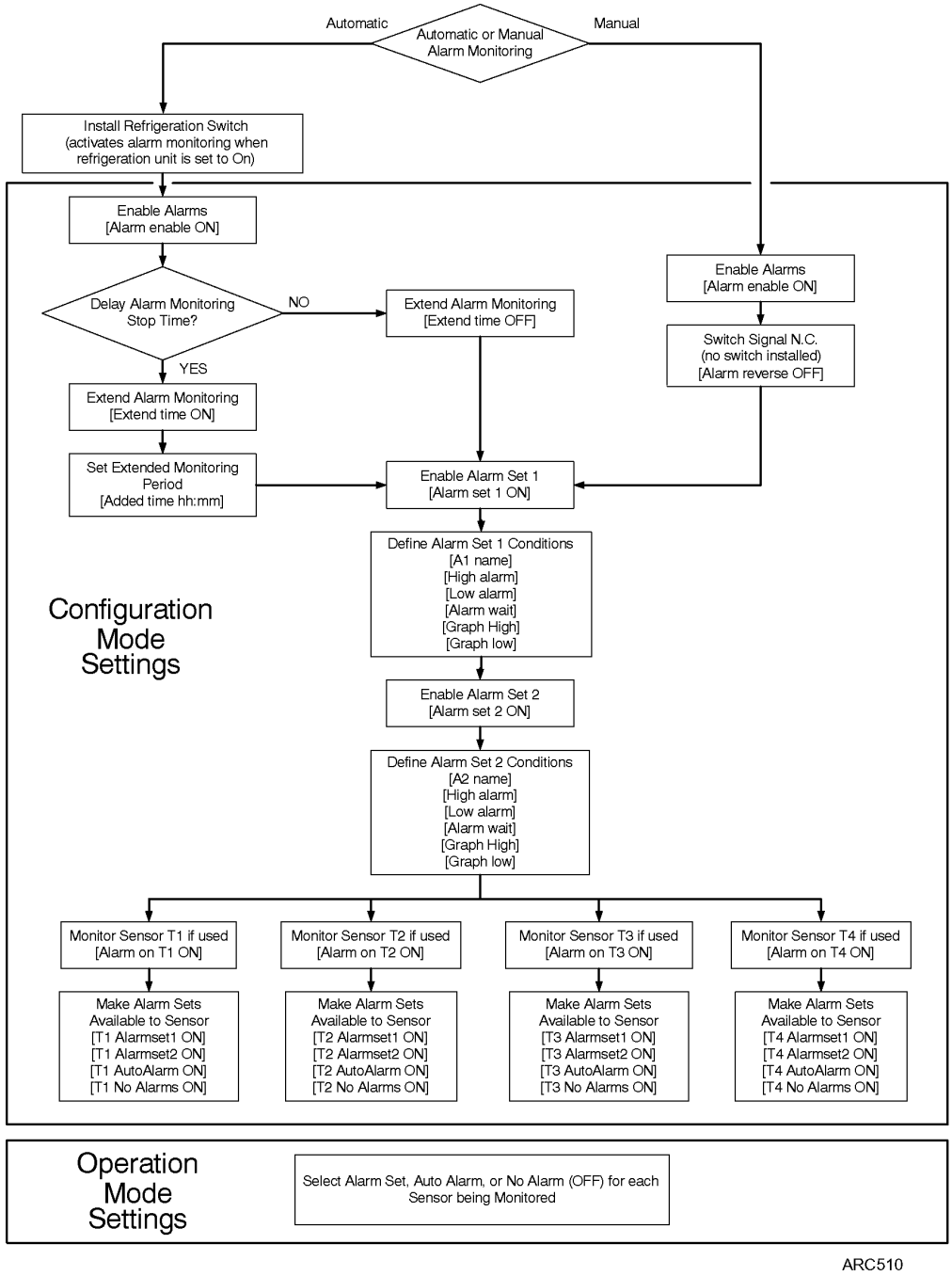


Figure 27: Temperature Out-of-Range Alarm Troubleshooting

Troubleshooting Suggestions

The following suggestions will prove helpful when working on TranScan 2 systems.

- Clear any alarms before testing a unit.
- Be certain all wire harness connectors are securely in place.
- Be certain all programmable features are restored to the customers specifications before releasing the unit from service.

CAUTION: Refer to the Safety Precautions found in Section 1 of this manual before servicing the unit.

TranScan 2 System Troubleshooting Table

Symptom	Cause	Corrective Action
Control Unit Issues		
Control unit will not operate, display panel remains blank.	Blown fuse in supply power circuit.	Check in-line fuse. Replace if necessary.
	Dead or disconnected vehicle or refrigeration unit battery.	Check vehicle or refrigeration system battery. Charge or replace if necessary
	Defective wiring or loose power supply connector.	Check wiring and connections for power supply circuits. See Service Procedure H04A in Section 6 of this manual for additional information.
	Defective control unit.	Replace the control unit.
Control unit will not operate, [--INITIALIZING--] appears on the display panel, and the audio alarm may or may not be sounding.	Power supply voltage low.	Voltage less than 9.5 VDC, check power supply, connections, and related circuitry.
	Control unit PROM Chip malfunction.	PROM Chip incorrectly seated in chip socket. Remove and reinstall PROM Chip.
	Moisture inside Control Unit.	Allow inside of Control Unit to dry.
	Control Unit has sustained electrical damage from Electrostatic Discharge (ESD), improper welding elswhere on unit, or natural causes (lightning strike).	Replace Control Unit. NOTE: Always wear a grounded wrist strap when servicing the Control Unit. NOTE: Follow Service Procedure A26A when welding on unit.
No information, [■■■■■■■■] appears on the display panel.	Control unit PROM Chip malfunction.	Check PROM Chip and chip socket connection on PC board. See Service Procedure A13A in Section 6 of this manual.

TranScan 2 System Troubleshooting Table (Continued)

Symptom	Cause	Corrective Action
New Journey Files begin at a start time other than 00:00 (default setting)	Power supply to the control unit is interrupted for a period longer than 2 current recording intervals.	Check supply voltage and power supply wiring. See Service Procedure H04A in Section 6 of this manual.
	The time or date was changed.	Check and compare system settings. Compare Journey Ticket or File time and date values.
	The recording interval was changed.	Check and compare system settings.
	The file start and stop times are set to a time other than 00:00.	Check and compare system settings.
	The Log by Day feature is set to a period other than 24/7.	Check and compare system settings.
No temperature sensor reading, sensor portion of the display panel remains blank.	Temperature sensor not enabled.	Verify amount and location of installed sensors. Check Configuration Mode Enable Temperature Sensor T# setting. [Temperature# XXX] should be set to ON for each sensor connected. See the Wiring Diagrams in Section 8 of this manual for additional information.

TranScan 2 System Troubleshooting Table (Continued)

Symptom	Cause	Corrective Action
Temperature Sensor Issues		
No temperature sensor reading, [--] appears on the sensor portion of the display panel.	Temperature sensor enabled but not connected.	Verify amount and location of installed sensors. Check Configuration Mode Enable Temperature Sensor T# setting. [Temperature# XXX] should be set to ON only if a sensor is connected at that location.
	Defective or loose wiring at sensor connector.	Check wiring and connections for sensor circuit. See Service Procedure H04A in Section 6 of this manual for additional information.
	Defective temperature sensor.	Disconnect the sensor wires from the sensor connector at the control unit and check the sensor with an accurate ohmmeter. Sensor resistance should be approximately as shown for the temperatures listed: 68 F (20 C) = 2.82 K Ohm 50 F (10 C) = 4.54 K Ohm 32 F (0 C) = 7.40 K Ohm -4 F (-20 C) = 22.0 K Ohm If the sensor resistance is correct, and the sensor harness is not damaged, replace the control unit. See Service Procedure A02A and Service Procedure A04A & Service Procedure A04B in Section 6 of this manual for additional information.
	Temperature sensor has exceeded lower display limit.	If the actual temperature being read by a correctly functioning sensor is below -57.9 F, [--] will appear on the display panel. Measure actual temperature near sensor to verify sensor operation.

TranScan 2 System Troubleshooting Table (Continued)

Symptom	Cause	Corrective Action
Temperature Out-of-Range Alarm Issues		
Alarm light continues to flash even after the buzzer has been silenced.	Temperature sensor remains out of programmed temperature range.	Check temperature sensor reading and currently selected alarm set limits. Temperature Out-of-Range alarms clear automatically only when the temperature sensor returns to within the programmed operating range. Once in range, the alarm light will stop flashing. Select No Alarms [YES] for the offending sensor from Operating Mode if available, and correct any refrigeration issues. If a refrigeration switch is included in the system, switch the refrigeration system Off for a period of time longer than the Set Extended Alarm Monitoring Period and correct any refrigeration issues.
Printer Issues		
Printer will not operate.	To protect the control unit against reversed power supply connections, there is a diode in series with the input supply that may prevent printer operation at minimum supply voltage.	Check supply voltage.
	Printer is out of paper.	Check paper supply.

Section 6
Service Procedures

Control Unit Procedures

A02A Recording Existing Control Unit Settings
A03A Setting Display and Print Options
A04A System Setup - Using the Control Unit Keys
A04B System Setup - Using a Remote Computer
A05A Adjusting the Calender/Clock - Using the Control Unit Keys
A05B Adjusting the Calender/Clock - Using a Remote Computer
A06A Checking Software Revision - Soft Reset
A12A Electrostatic Discharge (ESD) Procedures
A13A Changing Software (PROM Chip)
A26A Welding on Units Equipped with TranScan 2 Control Units
A50A Downloading Files in Control Unit Memory
A51A Printing Journey Tickets (files) in Control Unit Memory
A60A Replacing Printer Paper
A61A Replacing Printer Ribbon
A70A Comparing Control Unit Settings Using the Signature Feature

Micellaneous Procedures

H04A Checking Harness Continuity

A02A Recording Existing Control Unit Settings

Where Used

All TranScan 2 ADR Control Units with Revision TS2-T410 Software

Purpose

This procedure should be used to retrieve and record the current control unit settings. These settings will then be duplicated in the replacement control unit. This must be done prior to replacement of a control unit, and any time the software (PROM Chip) is changed.

The following procedure records all possible settings by completing the User Option Settings portion of the Setup Information Sheet (found on the last pages of this procedure) and printing a Parameter Ticket.

Steps

Step	Action	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Make sure the control unit printer has an adequate supply of paper and printer ribbon.		
3	Press ✳ once.	The display will show [Print Graphs YES] or [Print Values YES].	This is the current Journey Ticket Print Style.
4	Record the current Journey Ticket Print Style on the Setup Information Sheet.		
5	Press ◇ and **h** simultaneously.	The display will show [Set User Options].	The control unit is in User Options Mode.
6	Press ◇ once.	The display will show the current display language.	
7	Record the current display language on the Setup Information Sheet.		The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 5 before proceeding to the next step.
8	Press ✳ once.	The display will show [Print Forward] or [Print Reverse].	This is the ticket orientation for all printed tickets.
9	Record the current ticket orientation on the Setup Information Sheet.		The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 5 before proceeding to the next step.
10	Press **h** once.	The display will show [Type T] or [Type R].	This is the control unit type.

Step	Action	Results	Comments
11	Record the control unit type on the Setup Information Sheet.		The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 5 before proceeding to the next step.
12	Press **m** once.	The display will show [Temperature °F] or [Temperature °C].	This is the current display unit of measure setting.
13	Record the current display unit of measure setting on the Setup Information Sheet.		
14	Allow the control unit to exit User Options Mode and return to the Operating Display.		
15	Press and ✓ simultaneously	The display will show [Enter PIN code]. **NOTE:** If the Pin code security feature has been disabled (set to 0000), the last configuration menu screen viewed will appear on the display panel.	A valid Security Code (set to a PIN other than 0000) must be used to print a Parameter Ticket. Set a temporary PIN code through the Configuration Mode [PIN number XXXX] screen (1111 recommended), exit Configuration Mode, and repeat this step.
16	Enter the PIN code.	The display will show [Start time hh:mm]	This is the first configuration menu screen.
17	Press ⇦ or ⇨ repeatedly until the [ENG Display] screen appears.	The display will show [ENG Display XXX].	
18	If the [ENG Display] screen is set to ON, proceed to step 19. If the [ENG Display] screen is set to OFF, press ◀ to set the screen to ON.	The display will show [ENG Display ON].	Setting this screen to On exposes additional configuration menu screens. The settings of the additional screens should be recorded.
19	Press ✖ to exit configuration mode.	The Operating Display will appear on the display panel.	
20	Press and ✓ simultaneously	The display will show [Enter PIN code].	
21	Press , ▌▌, , ▌▌ to enter the print Parameter Ticket code 1212.	The display panel will show [Print parameters] and the printer will begin printing the current configuration menu screen settings in order on a single Parameter Ticket.	When finished, the printer will stop and the Operating Display will appear on the display panel. Attach the Parameter Ticket to the Setup Information Sheet.

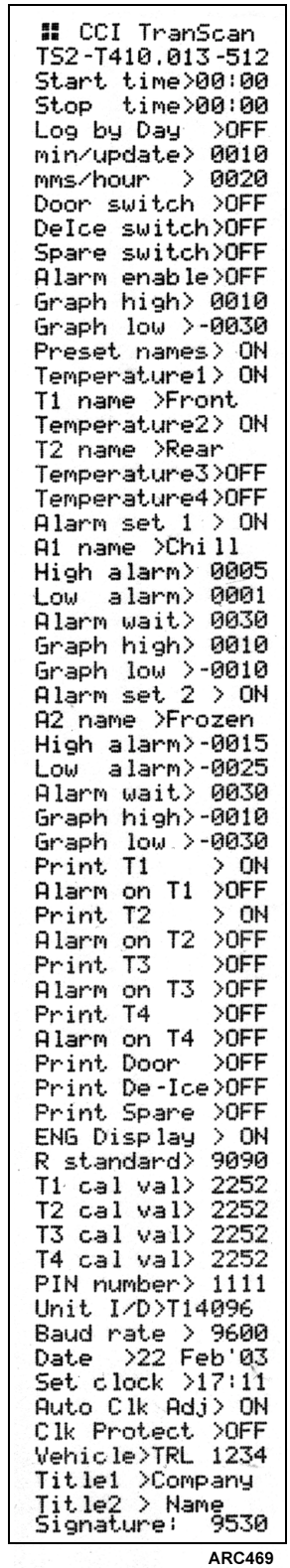


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Figure 1: Parameter Ticket

Setup Information Sheet
TranScan 2 Control Units with Revision TS2-T410 Software

User Option Settings

User Option	Display	Default Setting	Recorded Setting
Journey Ticket print style	[Print Graphs XXX] or [Print Values XXX]	Print Values	
Display Language	[current language]	English	
Ticket Orientation	[Print Forward] or [Print Reverse]	Print Reverse (Model T and C) Print Forward (Model R)	
Control Unit Type	[Type T] or [Type R]	(defined by model) **NOTE:** Model T and C use the [Type T] setting.	
Display Unit of Measure	[Temperature °F] or [Temperature °C]	Temperature °C	

Configuration Mode Settings (parameters)

Menu Screen	Display	Default Setting	Recorded Setting
NOTE: Complete this table manually if the control unit is unable to print a Parameter Ticket			
Set Recording Start Time	[Start time hh:mm]	00:00	
Set Recording Stop Time	[Stop time hh:mm]	00:00	
Select Weekly Recording Schedule	[Log by day XXX]	OFF	
Set Days for Weekly Recording Schedule	[Day Code XXXXXXX]	CCCCCCC	
Set Recording Interval	[min/update 00XX]	0010	
Set Graph Print Density	[mms/hour 00XX]	0020	
Enable System Event - Door	[Door switch XXX]	OFF	
Reverse Door Switch Signal	[Door reverse XXX]	OFF	
Enable System Event - DeIce (Defrost)	[DeIce switch XXX]	OFF	
Reverse DeIce (Defrost) Switch Signal	[DIce reverse XXX]	ON	
Enable System Event - Spare	[Spare switch XXX]	OFF	
Reverse Spare Switch Signal	[Spare reverse XXX]	OFF	
Spare Switch Name	[Spr name XXXXXXX]	(user defined)	
Spare Switch Event Indicator Symbol	[Spare symbol X]	(space = door symbol)	

Configuration Mode Settings (parameters) continued

Menu Screen	Display	Default Setting	Recorded Setting
Enable Temperature Out-of-Range Alarm	[Alarm enable XXX]	OFF	
Reverse Refrigeration Switch Signal	[Alarm reverse XXX]	ON	
Enable Extended Alarm Monitoring	[Extend time XXX]	ON	
Extended Alarm Monitoring Period	[Added time hh:mm]	00:45	
Graph Print High Limit (alarms disabled)	[Graph high X00XX]	0010	
Graph Print Low Limit (alarms disabled)	[Graph low X00XX]	–0030	
Preset Sensor and Alarm Set Names	[Preset names XXX]	ON	
Enable Temperature Sensor T1	[Temperature1 XXX]	ON	
Temperature Sensor T1 Name	[T1 name XXXXXXX]	Front	
Enable Temperature Sensor T2	[Temperature2 XXX]	ON	
Temperature Sensor T2 Name	[T2 name XXXXXXX]	Rear	
Enable Temperature Sensor T3	[Temperature3 XXX]	OFF	
Temperature Sensor T3 Name	[T3 name XXXXXXX]	Air Ret	
Enable Temperature Sensor T4	[Temperature4 XXX]	OFF	
Temperature Sensor T4 Name	[T4 name XXXXXXX]	Product	
Enable Alarm Set 1	[Alarm set 1 XXX]	ON	
Alarm Set 1 Name	[A1 name XXXXXXX]	Chill	
High Temperature Alarm Limit (alarm set 1)	[High alarm X00XX]	0005	
Low Temperature Alarm Limit (alarm set 1)	[Low alarm X00XX]	0001	
Alarm Delay Period (alarm set 1)	[Alarm wait 0XXX]	0030	
Graph Print High Limit (alarm set 1)	[Graph high X00XX]	0010	
Graph Print Low Limit (alarm set 1)	[Graph low X00XX]	–0010	

Configuration Mode Settings (parameters) continued

Menu Screen	Display	Default Setting	Recorded Setting
Enable Alarm Set 2	[Alarm set 2 XXX]	ON	
Alarm Set 2 Name	[A2 name XXXXXXX]	Frozen	
High Temperature Alarm Limit (alarm set 2)	[High alarm X00XX]	–0015	
Low Temperature Alarm Limit (alarm set 2)	[Low alarm X00XX]	–0025	
Alarm Delay Period (alarm set 2)	[Alarm wait 0XXX]	0030	
Graph Print High Limit (alarm set 2)	[Graph high X00XX]	–0010	
Graph Print Low Limit (alarm set 2)	[Graph low X00XX]	–0030	
Print Sensor T1 Data	[Print T1 XXX]	ON	
Enable Sensor T1 Alarms	[Alarm on T1 XXX]	OFF	
Alarm Set 1 Available to Sensor T1	[T1 AlarmSet1 XXX]	ON	
Alarm Set 2 Available to Sensor T1	[T1 AlarmSet2 XXX]	ON	
Auto Alarm Set Available to Sensor T1	[T1 AutoAlarm XXX]	ON	
Disable Alarm Monitoring Available to Sensor T1	[T1 No Alarms XXX]	ON	
Print Sensor T2 Data	[Print T2 XXX]	ON	
Enable Sensor T2 Alarms	[Alarm on T2 XXX]	OFF	
Alarm Set 1 Available to Sensor T2	[T2 AlarmSet1 XXX]	ON	
Alarm Set 2 Available to Sensor T2	[T2 AlarmSet2 XXX]	ON	
Auto Alarm Set Available to Sensor T2	[T2 AutoAlarm XXX]	ON	
Disable Alarm Monitoring Available to Sensor T2	[T2 No Alarms XXX]	ON	
Print Sensor T3 Data	[Print T3 XXX]	OFF	
Enable Sensor T3 Alarms	[Alarm on T3 XXX]	OFF	
Alarm Set 1 Available to Sensor T3	[T3 AlarmSet1 XXX]	ON	
Alarm Set 2 Available to Sensor T3	[T3 AlarmSet2 XXX]	ON	
Auto Alarm Set Available to Sensor T3	[T3 AutoAlarm XXX]	ON	
Disable Alarm Monitoring Available to Sensor T3	[T3 No Alarms XXX]	ON	

Configuration Mode Settings (parameters) continued

Menu Screen	Display	Default Setting	Recorded Setting
Print Sensor T4 Data	[Print T4 XXX]	OFF	
Enable Sensor T4 Alarms	[Alarm on T4 XXX]	OFF	
Alarm Set 1 Available to Sensor T4	[T4 AlarmSet1 XXX]	ON	
Alarm Set 2 Available to Sensor T4	[T4 AlarmSet2 XXX]	ON	
Auto Alarm Set Available to Sensor T4	[T4 AutoAlarm XXX]	ON	
Disable Alarm Monitoring Available to Sensor T4	[T4 No Alarms XXX]	ON	
Print Door Switch Data	[Print Door XXX]	OFF	
Print DeIce (Defrost) Switch Data	[Print De-Ice]	OFF	
Print Spare Switch Data	[Print Spare XXX]	OFF	
View Additional Screens and Settings	[ENG Display XXX]	OFF	
Standard Calibration Constant	[R standard XXXX]	9090	
Sensor T1 Standard Calibration	[T1 cal val XXXX]	2252	
Sensor T2 Standard Calibration	[T2 cal val XXXX]	2252	
Sensor T3 Standard Calibration	[T3 cal val XXXX]	2252	
Sensor T4 Standard Calibration	[T4 cal val XXXX]	2252	
Set Security Code	[PIN number XXXX]	1111	
Control Unit Identification Number	[Unit I/D XXXXXX]	(control unit serial number)	
Serial Port Communication Speed	[Baud rate XXXX]	9600	
Set System Calendar	[Date DD Mon' YY]	(application specific)	
Set System Clock	[Set clock hh:mm]	(application specific)	
Automatic Clock Adjustment	[Auto Clk Adj XXX]	ON	
Clock Adjustment Protection	[Clk Protect XXX]	OFF	
Vehicle Identification Number	[Vehicle XXXXXXXX]	(user defined)	
Ticket Heading (1st 8 of 16 digits)	[Title1 XXXXXXXX]	Company	
Ticket Heading (2nd 8 of 16 digits)	[Title2 XXXXXXXX]	Name	

A03A Setting Display and Print Options

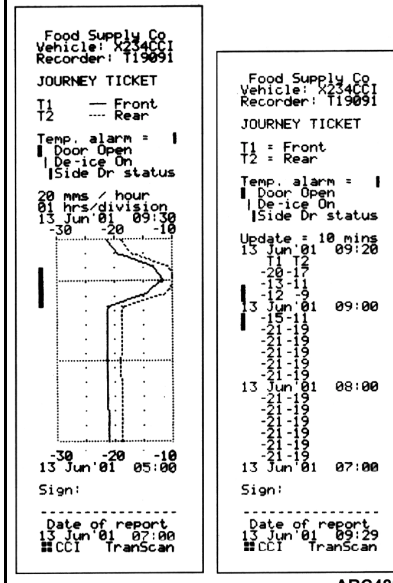
Where Used

All TranScan 2 ADR Control Units with Revision TS2-T410 Software

Purpose

This procedure can be used to set up the display and print options on a new Control Unit. For complete system setup instructions, see Service Procedure A04A & Service Procedure A04B in Section of this manual for additional information.

Steps

Step	Action	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Press ✳ once.	The display will show [Print Values YES].	This is the current Journey Ticket Print Style.
3	Press ✳ as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [YES] next to the current setting.  ARC482 Graphs Values	
4	Press ❚❚ to return to the Operating Display.	The Operating Display will appear on the display panel.	
5	Press ◇ and h simultaneously.	The display will show [Set User Options].	The control unit is in User Options Mode.

Step	Action	Results	Comments
6	Press ◇ once.	The display will show [English].	This is the current Display Language. The following display languages are available: English Francais Deutsch Nederlands Espanol Portugues, Italiano If this is the desired setting, proceed to step 8. **NOTE:** The displays shown throughout the remainder of this procedure use [English] as the Display Language.
7	Press ◇ as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 5 before proceeding to the next step.
8	Press ✳ once.	The display will show [Print Reverse] for model T and C. The display will show [Print Forward] for model R.	This is the Ticket Orientation for all printed tickets. For model T and C units, the ticket is readable (top of ticket up) as it emerges from the printer when [Print Reverse] is set. For Model R units, the ticket is readable (top of ticket up) as it emerges from the printer when [Print Forward] is set. **NOTE:** To easily compare tickets printed from a model T or C unit with those printed from a model R unit, set the ticket orientation the same for all models.
9	Press ✳ as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 5 before proceeding to the next step.
10	Press h once.	The display will show [Type T] or [Type R].	This is the Control Unit Type. If this is the correct setting, proceed to step 12. **NOTE:** Model T and C use the [Type T] setting.

Step	Action	Results	Comments
11	Press **h** as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 5 before proceeding to the next step.
12	Press **m** once.	The display will show [Temperature °C].	This is the current Display Unit of Measure setting. Display temperatures can be set to show Fahrenheit (°F) or Celsius (°C) readings.
13	Press **m** as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 5 before proceeding to the next step.
14	Press **II** to return to the Operating Display, or Allow the control unit to exit User Options Mode and return to the Operating Display automatically.	The Operating Display will appear on the display panel.	

A04A System Setup - Using the Control Unit Keys

Where Used

All TranScan 2 ADR Control Units with Revision TS2-T410 Software

Purpose

This procedure can be used to set up the programmable features on a new or replacement Control Unit, or after a software (PROM Chip) change. For a complete discussion of the programmable features, see Section 4 “Software” of this manual.

Important

Temperature Out-of-Range Alarms

Many of the configuration mode menu screens involve the Temperature Out-of-Range Alarms feature. Keep the following steps in mind when setting up the temperature out-of-range alarms feature:

1. Program when to start and when to stop monitoring the system for alarms. The system can be configured to start and stop monitoring for alarms manually, or automatically by incorporating a refrigeration switch. These settings are different then the recording start and stop times.
2. Program the conditions for one or both of the available alarm sets.
3. Program which sensors should be monitored for alarms. Any, all, or none of the available sensors can be monitored.
4. Program which alarm sets (conditions) are available for each sensor being monitored. In addition to alarm sets, 1 and 2, Auto Alarm (alarm set 1 and 2 conditions combined) and No Alarm (alarm disabled) can be made available for a sensor. Once the alarm sets are made available to a sensor, they can be easily selected by the Driver or Operator as load types (fresh, frozen, ambient) change.

Steps

Step	Action	Results	Comments
1	Obtain a completed copy of the Setup Information Sheet and/or a Parameter Ticket as described in Service Procedure A02A.		This information will be used to set up the control unit to the desired specifications. **NOTE:** For a new installation, completing the Setup Information Sheet manually will help prompt configuration questions prior to programming.
2	If replacing software (PROM Chip) or a control unit, check the part number of the new components against the part number of the original components.	Be certain the part numbers are the same.	Consult Service Information A16A in Section 7 of this manual for hardware and software features and interchange.
3	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
4	Press ✳ once.	The display will show [Print Values YES].	This is the current Journey Ticket Print Style. If this is the desired setting, proceed to step 6.

Step	Action	Results	Comments
5	Press ✳ as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [YES] next to the current setting.	
6	Press ❚❚ to return to the Operating Display.	The Operating Display will appear on the display panel.	
7	Press ◇ and **h** simultaneously.	The display will show [Set User Options].	The control unit is in User Options Mode.
8	Press ◇ once.	The display will show [English].	This is the current Display Language. If this is the desired setting, proceed to step 10. **NOTE:** The displays shown throughout the remainder of this procedure use [English] as the Display Language.
9	Press ◇ as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 7 before proceeding to the next step.
10	Press ✳ once.	The display will show [Print Reverse] for model T and C. The display will show [Print Forward] for model R.	This is the Ticket Orientation for all printed tickets. For model T and C units, the ticket is readable (top of ticket up) as it emerges from the printer when [Print Reverse] is set. For Model R units, the ticket is readable (top of ticket up) as it emerges from the printer when [Print Forward] is set. **NOTE:** To easily compare tickets printed from a model T or C unit with those printed from a model R unit, set the ticket orientation the same for all models. If this is the desired setting, proceed to step 12.
11	Press ✳ as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 7 before proceeding to the next step.

Step	Action	Results	Comments
12	Press **h** once.	The display will show [Type T] or [Type R].	This is the Control Unit Type. If this is the correct setting, proceed to step 14. **NOTE:** Model T and C use the [Type T] setting.
13	Press **h** as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 7 before proceeding to the next step.
14	Press **m** once.	The display will show [Temperature °C].	This is the current Display Unit of Measure setting. If this is the correct setting, proceed to step 16.
15	Press **m** as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 7 before proceeding to the next step.
16	Press **II** to return to the Operating Display, or Allow the control unit to exit User Options Mode and return to the Operating Display automatically.	The Operating Display will appear on the display panel.	
17	Press and ✓ simultaneously	The display will show [Enter PIN code].	
18	Press , , , to enter the default PIN code 1111.	The display will show [Start time 00:00]	This is the Set Recording Start Time screen. The control unit is now in Configuration Mode. If this is the correct setting, proceed to step 20.
19	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
20	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Stop time 00:00]	This is the Set Recording Stop Time screen. If this is the correct setting, proceed to step 22.

Step	Action	Results	Comments
21	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
22	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Log by day OFF]	This is the Select Weekly Recording Schedule screen. If this is the correct setting, proceed to step 26.
23	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
24	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Log by day ON] is set, the display will show [Day Code CCCCCCC].	This is the Set Days for Weekly Recording Schedule screen. If this is the correct setting, proceed to step 26.
25	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
26	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [min/update 0010]	This is the Set Recording Interval screen. If this is the correct setting, proceed to step 28.
27	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
28	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [mms/hour 0020]	This is the Set Graph Print Density screen. If this is the correct setting, proceed to step 30.
29	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
30	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Door switch OFF]	This is the Enable System Event - Door screen. If this is the correct setting, proceed to step 34.

Step	Action	Results	Comments
31	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
32	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Door switch ON] is set, the display will show [Door reverse OFF].	This is the Reverse Door Switch Signal screen. If this is the correct setting, proceed to step 34.
33	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
34	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [DeIce switch OFF]	This is the Enable System Event - DeIce (Defrost) screen. If this is the correct setting, proceed to step 38.
35	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
36	Press ⇨ to accept changes (if any) and advance to the next screen.	If [DeIce switch ON] is set, the display will show [DIce reverse OFF].	This is the Reverse DeIce (Defrost) Switch Signal screen. If this is the correct setting, proceed to step 38.
37	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
38	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Spare switch OFF]	This is the Enable System Event - Spare screen. If this is the correct setting, proceed to step 46.
39	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
40	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Spare switch ON] is set, the display will show [Spare reverse OFF].	This is the Reverse Spare Switch Signal screen. If this is the correct setting, proceed to step 42.
41	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
42	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Spr name (7 blank spaces)]	This is the Spare Switch Name screen.
43	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	

Step	Action	Results	Comments
44	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Spr symbol (1 blank space)].	This is the Spare Switch Event Indicator Symbol screen. **NOTE:** the blank space = the rectangle door symbol in this screen only. If this is the correct setting, proceed to step 46.
45	Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
46	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Alarm enable OFF].	This is the Enable Temperature Out-of-Range Alarm screen. If this is the correct setting, proceed to step 54.
47	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
48	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Alarm enable ON] is set, the display will show [Alarm reverse OFF].	This is the Reverse Refrigeration Switch Signal screen. If this is the correct setting, proceed to step 50.
49	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
50	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Extend time OFF].	This is the Enable Extended Alarm Monitoring screen. If this is the correct setting, proceed to step 52.
51	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
52	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Added time 00:45].	This is the Extended Alarm Monitoring Period screen. If this is the correct setting, proceed to step 54.
53	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
54	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Graph high 0010].	This is the Graph High Limit (alarms disabled) screen. If this is the correct setting, proceed to step 56.

Step	Action	Results	Comments
55	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
56	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Graph low –0030].	This is the Graph Low Limit (alarms disabled) screen. If this is the correct setting, proceed to step 58.
57	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
58	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Preset names ON].	This is the Preset Sensor and Alarm Set Names screen. If this is the correct setting, proceed to step 60.
59	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
60	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Temperature1 ON].	This is the Enable Temperature Sensor T1 screen. If this is the correct setting, proceed to step 62.
61	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
62	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Temperature1 ON] and [Preset names ON] is set, the display will show [T1 name Front]	This is the Temperature Sensor T1 Name screen for the default preset name. If this is the correct setting, proceed to step 64.
		If [Temperature1 ON] and [Preset names OFF] is set, the display will show [T1 name (7 blank spaces)].	This is the Temperature Sensor T1 Name screen for a user defined name.
		If [Temperature1 OFF] is set, the display will show [Temperature2 ON]	This is the Enable Temperature Sensor T2 screen. Proceed to step 65.

Step	Action	Results	Comments
63	Preset Names: Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
	User Defined Names: Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.		
64	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Temperature2 ON].	This is the Enable Temperature Sensor T2 screen. If this is the correct setting, proceed to step 66.
65	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
66	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Temperature2 ON] and [Preset names ON] is set, the display will show [T2 name Rear]	This is the Temperature Sensor T2 Name screen with the default preset name. If this is the correct setting, proceed to step 68.
		If [Temperature2 ON] and [Preset names OFF] is set, the display will show [T2 name (7 blank spaces)].	This is the Temperature Sensor T2 Name screen for a user defined name.
		If [Temperature2 OFF] is set, the display will show [Temperature3 OFF]	This is the Enable Temperature Sensor T3 screen. Proceed to step 69.
67	Preset Names: Press ▲, or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
	User Defined Names: Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.		
68	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Temperature3 OFF].	This is the Enable Temperature Sensor T3 screen. If this is the correct setting, proceed to step 70.
69	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	

Step	Action	Results	Comments
70	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Temperature3 OFF] is set, the display will show [Temperature4 OFF]	This is the Enable Temperature Sensor T4 screen. Proceed to step 73.
		If [Temperature3 ON] and [Preset names ON] is set, the display will show [T3 name Air Ret]	This is the Temperature Sensor T3 Name screen with the default preset name. If this is the correct setting, proceed to step 72.
		If [Temperature3 ON] and [Preset names OFF] is set, the display will show [T3 name (7 blank spaces)].	This is the Temperature Sensor T3 Name screen for a user defined name.
71	Preset Names: Press ▲, or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
	User Defined Names: Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.		
72	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Temperature4 OFF].	This is the Enable Temperature Sensor T4 screen. If this is the correct setting, proceed to step 74.
73	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
74	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Temperature4 OFF] is set, the display will show [Alarm set 1 ON].	This is the Enable Alarm Set 1 screen. Proceed to step 77.
		If [Temperature4 ON] and [Preset names ON] is set, the display will show [T4 name Product]	This is the Temperature Sensor T4 Name screen with the default preset name. If this is the correct setting, proceed to step 76.
		If [Temperature4 ON] and [Preset names OFF] is set, the display will show [T4 name (7 blank spaces)].	This is the Temperature Sensor T4 Name screen for a user defined name.

Step	Action	Results	Comments
75	Preset Names: Press ▲, or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
	User Defined Names: Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.		
76	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Alarm set 1 ON].	This is the Enable Alarm Set 1 screen. If this is the correct setting, proceed to step 78.
77	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
78	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Alarm set 1 ON] and [Preset names ON] is set, the display will show [A1 name Chill].	This is the Alarm Set 1 Name screen with the default preset name. If this is the correct setting, proceed to step 80.
		If [Alarm set 1 ON] and [Preset names OFF] is set, the display will show [A1 name (7 blank spaces)].	This is the Alarm Set 1 Name screen for a user defined name.
		If [Alarm set 1 OFF] is set, the display will show [Alarm set 2 ON].	This is the Enable Alarm Set 2 screen. Proceed to step 91.
79	Preset Names: Press ▲, or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
	User Defined Names: Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.		
80	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [High alarm 0005].	This is the High Alarm Limit screen for alarm set 1. If this is the correct setting, proceed to step 82.

Step	Action	Results	Comments
81	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
82	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Low alarm 0001].	This is the Low Alarm Limit screen for alarm set 1. If this is the correct setting, proceed to step 84.
83	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
84	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Alarm wait 0030].	This is the Alarm Delay Period screen for alarm set 1. If this is the correct setting, proceed to step 86.
85	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
86	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Graph high 0010].	This is the Graph Print High Limit screen for alarm set 1. If this is the correct setting, proceed to step 88.
87	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
88	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Graph low –0010].	This is the Graph Print Low Limit screen for alarm set 1. If this is the correct setting, proceed to step 90.
89	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
90	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Alarm set 2 ON].	This is the Enable Alarm Set 2 screen. If this is the correct setting, proceed to step 92.

Step	Action	Results	Comments
91	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
92	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Alarm set 2 ON] and [Preset names ON] is set, the display will show [A1 name Frozen].	This is the Alarm Set 2 Name screen with the default preset name. If this is the correct setting, proceed to step 94.
		If [Alarm set 2 ON] and [Preset names OFF] is set, the display will show [A2 name (7 blank spaces)].	This is the Alarm Set 2 Name screen for a user defined name.
		If [Alarm set 2 OFF] is set, the display will show [Print T1 ON].	This is the Print Sensor T1 Data screen. Proceed to step 105.
93	Preset Names: Press ▲, or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
	User Defined Names: Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.		
94	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [High alarm –0015].	This is the High Alarm Limit screen for alarm set 2. If this is the correct setting, proceed to step 96.
95	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
96	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Low alarm –0025].	This is the Low Alarm Limit screen for alarm set 2. If this is the correct setting, proceed to step 98.
97	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	

Step	Action	Results	Comments
98	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Alarm wait 0030].	This is the Alarm Delay Period screen for alarm set 2. If this is the correct setting, proceed to step 100.
99	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
100	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Graph high –0010].	This is the Graph Print High Limit screen for alarm set 2. If this is the correct setting, proceed to step 102.
101	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
102	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Graph low –0030].	This is the Graph Print Low Limit screen for alarm set 2. If this is the correct setting, proceed to step 104.
103	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
104	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Print T1 ON].	This is the Print Sensor T1 Data screen. If this is the correct setting, proceed to step 106.
105	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
106	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Alarm on T1 OFF].	This is the Enable Sensor T1 Alarms screen. If this is the correct setting, proceed to step 116.
107	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
108	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Alarm on T1 ON] is set, the display will show [T1 AlarmSet1 ON].	This is the Alarm Set 1 Available to Sensor T1 screen. If this is the correct setting, proceed to step 110.

Step	Action	Results	Comments
109	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
110	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T1 AlarmSet2 ON].	This is the Alarm Set 2 Available to Sensor T1 screen. If this is the correct setting, proceed to step 112.
111	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
112	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T1 AutoAlarm ON].	This is the Auto Alarm Set Available to Sensor T1 screen. If this is the correct setting, proceed to step 114.
113	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
114	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T1 No Alarms ON].	This is the Disable Alarm Monitoring Available to Sensor T1 screen. If this is the correct setting, proceed to step 116.
115	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
116	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Print T2 ON].	This is the Print Sensor T2 Data screen. If this is the correct setting, proceed to step 118.
117	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
118	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Alarm on T2 OFF].	This is the Enable Sensor T2 Alarms screen. If this is the correct setting, proceed to step 128.
119	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
120	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Alarm on T2 ON] is set, the display will show [T2 AlarmSet1 ON].	This is the Alarm Set 1 Available to Sensor T2 screen. If this is the correct setting, proceed to step 122.
121	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	

Step	Action	Results	Comments
122	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T2 AlarmSet2 ON].	This is the Alarm Set 2 Available to Sensor T2 screen. If this is the correct setting, proceed to step 124.
123	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
124	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T2 AutoAlarm ON].	This is the Auto Alarm Set Available to Sensor T2 screen. If this is the correct setting, proceed to step 126.
125	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
126	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T2 No Alarms ON].	This is the Disable Alarm Monitoring Available to Sensor T2 screen. If this is the correct setting, proceed to step 128.
127	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
128	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Print T3 OFF].	This is the Print Sensor T3 Data screen. If this is the correct setting, proceed to step 130.
129	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
130	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Alarm on T3 OFF].	This is the Enable Sensor T3 Alarms screen. If this is the correct setting, proceed to step 140.
131	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
132	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Alarm on T3 ON] is set, the display will show [T3 AlarmSet1 ON].	This is the Alarm Set 1 Available to Sensor T3 screen. If this is the correct setting, proceed to step 134.
133	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
134	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T3 AlarmSet2 ON].	This is the Alarm Set 2 Available to Sensor T3 screen. If this is the correct setting, proceed to step 136.

Step	Action	Results	Comments
135	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
136	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T3 AutoAlarm ON].	This is the Auto Alarm Set Available to Sensor T3 screen. If this is the correct setting, proceed to step 138.
137	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
138	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T3 No Alarms ON].	This is the Disable Alarm Monitoring Available to Sensor T3 screen. If this is the correct setting, proceed to step 140.
139	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
140	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Print T4 OFF].	This is the Print Sensor T4 Data screen. If this is the correct setting, proceed to step 142.
141	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
142	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Alarm on T4 OFF].	This is the Enable Sensor T4 Alarms screen. If this is the correct setting, proceed to step 152.
143	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
144	Press ⇨ to accept changes (if any) and advance to the next screen.	If [Alarm on T4 ON] is set, the display will show [T4 AlarmSet1 ON].	This is the Alarm Set 1 Available to Sensor T4 screen. If this is the correct setting, proceed to step 146.
145	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
146	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T4 AlarmSet2 ON].	This is the Alarm Set 2 Available to Sensor T4 screen. If this is the correct setting, proceed to step 148.
147	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	

Step	Action	Results	Comments
148	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T4 AutoAlarm ON].	This is the Auto Alarm Set Available to Sensor T4 screen. If this is the correct setting, proceed to step 150.
149	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
150	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T4 No Alarms ON].	This is the Disable Alarm Monitoring Available to Sensor T4 screen. If this is the correct setting, proceed to step 152.
151	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
152	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Print Door OFF].	This is the Print Door Switch Data screen. If this is the correct setting, proceed to step 154.
153	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
154	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Print De-Ice OFF].	This is the Print DeIce (Defrost) Switch Data screen. If this is the correct setting, proceed to step 156.
155	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
156	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Print Spare OFF].	This is the Print Spare Switch Data screen. If this is the correct setting, proceed to step 158.
157	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
158	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [ENG Display OFF].	This is the View Additional Screens and Settings screen.
159	Press ◀ once.	The display will show [ENG Display ON].	
160	Press ⇨ to accept change and advance to the next screen.	The display will show [R standard 9090].	This is the Standard Calibration Constant screen. **NOTE:** This setting should not require change.

Step	Action	Results	Comments
161	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T1 cal val 2252].	This is the Sensor T1 Standard Calibration screen. **NOTE:** If the thermistor type sensors supplied with the TranScan 2 are used, this setting should not require change.
162	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T2 cal val 2252].	This is the Sensor T2 Standard Calibration screen. **NOTE:** If the thermistor type sensors supplied with the TranScan 2 are used, this setting should not require change.
163	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T3 cal val 2252].	This is the Sensor T3 Standard Calibration screen. **NOTE:** If the thermistor type sensors supplied with the TranScan 2 are used, this setting should not require change.
164	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [T4 cal val 2252].	This is the Sensor T4 Standard Calibration screen. **NOTE:** If the thermistor type sensors supplied with the TranScan 2 are used, this setting should not require change.
165	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [PIN number 1111].	This is the Set Security Code screen. If this is the correct setting, proceed to step 167.
166	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
167	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Unit I/D (unit serial number)].	This is the Control Unit Identification Number screen. If this is the correct setting, proceed to step 169. **NOTE:** If the software (PROM Chip) is changed, this setting should be set to match the control unit serial number.
168	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	

Step	Action	Results	Comments
169	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Baud rate 9600].	This is the Serial Port Communication Speed screen. If this is the correct setting, proceed to step 171. **NOTE:** This setting should be compatible with most current laptop and desktop computers.
170	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
171	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Date 01 Feb'03]. **NOTE:** The example shown is for February 1st, 2003.	This is the Set System Calender screen. If this is the correct setting, proceed to step 173.
172	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
173	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Set clock 15:20]. **NOTE:** The example shown is for 3:20 pm.	This is the Set System Clock screen. If this is the correct setting, proceed to step 175.
174	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
175	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Auto Clk Adj ON].	This is the Automatic Clock Adjustment screen. **NOTE:** This feature automatically adjusts the system clock for Daylight Saving Time as observed in the European Union (02:00 on the last Sunday in March to 02:00 on the last Sunday in October). In the United States, Daylight Saving Time is observed from 02:00 on the first Sunday in April to 02:00 on the last Sunday in October.
176	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	

Step	Action	Results	Comments
177	Press ⇨ to accept changes (if any) and advance to the next screen.	The display will show [Clk Protect OFF].	This is the Clock Adjustment Protection screen. If this is the correct setting, proceed to step 179.
178	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
179	Press ⇦ to accept changes (if any) and return to the previous screen. Press ⇦ 11 more times to return to the View Additional Screens and Settings screen.	The display will show [ENG Display ON].	
180	Press ◀ once.	The display will show [ENG Display OFF].	
181	Press ⇨ to accept change and advance to the next screen.	The display will show [Vehicle TRL 1234]. **NOTE:** The example shown is for a model T control unit.	This is the Vehicle Identification Number screen.
182	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
183	Press ⇨ to accept change and advance to the next screen.	The display will show [Title1 Company].	This is the Ticket Heading screen for the 1st 8 of 16 digits.
184	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
185	Press ⇨ to accept change and advance to the next screen.	The display will show [Title2 Name].	This is the Ticket Heading screen for the 2nd 8 of 16 digits.
186	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
187	Press ✖ to exit Configuration Mode.	The Operating Display will appear on the display panel.	The TranScan 2 ADR Control Unit should be ready to place into service.

A04B System Setup - Using a Remote Computer

Where Used

All TranScan 2 ADR Control Units with Revision TS2-T410 Software

Purpose

This procedure can be used to set up the programmable features on a new or replacement Control Unit, or after a software (PROM Chip) change. For a complete discussion of the programmable features, see Section 4 “Software” of this manual.

Important

Temperature Out-of-Range Alarms

Many of the configuration mode menu screens involve the Temperature Out-of-Range Alarms feature. Keep the following steps in mind when setting up the temperature out-of-range alarms feature:

1. Program when to start and when to stop monitoring the system for alarms. The system can be configured to start and stop monitoring for alarms manually, or automatically by incorporating a refrigeration switch. These settings are different then the recording start and stop times.
2. Program the conditions for one or both of the available alarm sets.
3. Program which sensors should be monitored for alarms. Any, all, or none of the available sensors can be monitored.
4. Program which alarm sets (conditions) are available for each sensor being monitored. In addition to alarm sets, 1 and 2, Auto Alarm (alarm set 1 and 2 conditions combined) and No Alarm (alarm disabled) can be made available for a sensor. Once the alarm sets are made available to a sensor, they can be easily selected by the Driver or Operator as load types (fresh, frozen, ambient) change.

Special Equipment

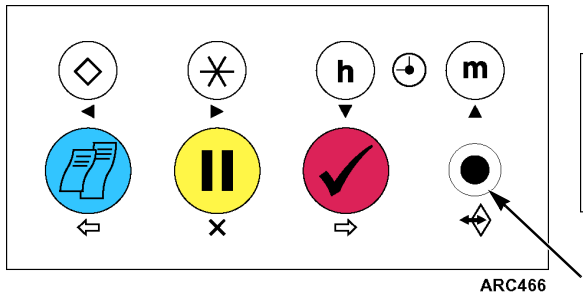
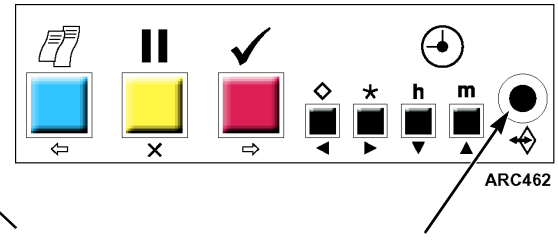
- A remote computer running WinTrac 4.2.1 Software
- Upload/Download cable TK Service Part No. 204-1086

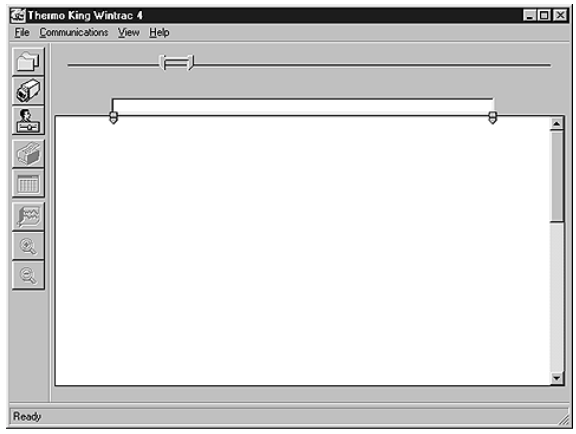
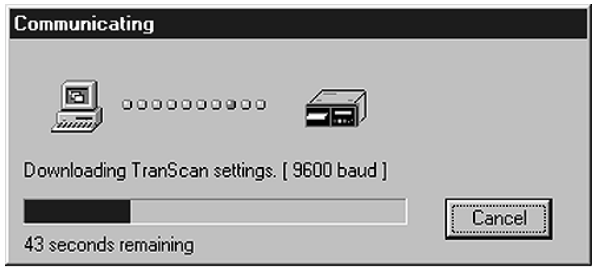
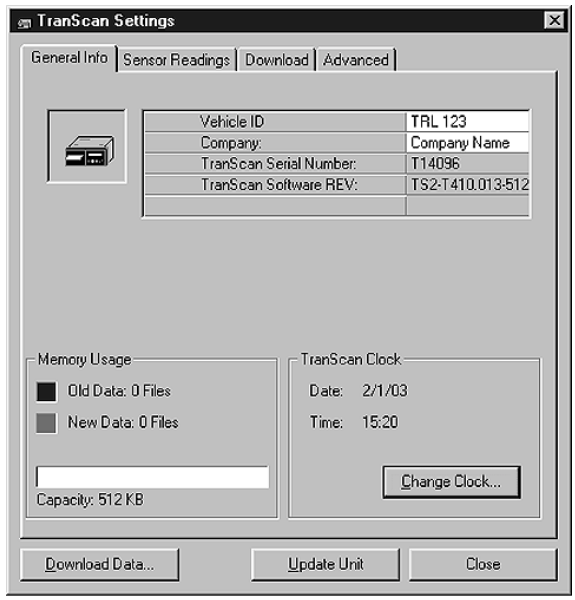
Steps

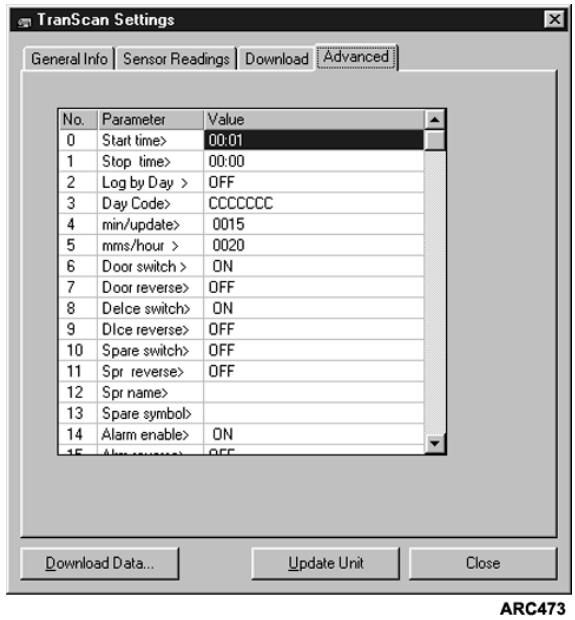
Step	Action	Results	Comments
1	Obtain a completed copy of the Setup Information Sheet and/or a Parameter Ticket as described in Service Procedure A02A.		This information will be used to set up the control unit to the desired specifications. **NOTE:** For a new installation, completing the Setup Information Sheet manually will help prompt configuration questions prior to programming.
2	If replacing software (PROM Chip) or a control unit, check the part number of the new components against the part number of the original components.	Be certain the part numbers are the same.	Consult Service Information A16A in Section 7 of this manual for hardware and software features and interchange.

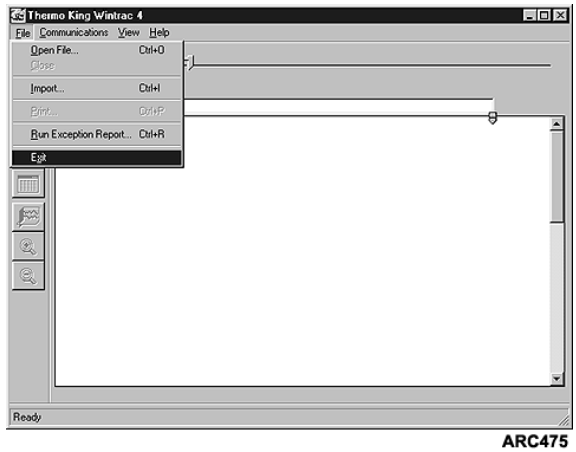
Step	Action	Results	Comments
3	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
4	From the TranScan 2 ADR Control Unit: Press ✳ once.	The display will show [Print Values YES].	This is the current Journey Ticket Print Style. If this is the desired setting, proceed to step 6.
5	Press ✳ as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [YES] next to the current setting.	
6	Press ❚❚ to return to the Operating Display.	The Operating Display will appear on the display panel.	
7	Press ◇ and **h** simultaneously.	The display will show [Set User Options].	The control unit is in User Options Mode.
8	Press ◇ once.	The display will show [English].	This is the current Display Language. If this is the desired setting, proceed to step 10. **NOTE:** The displays shown throughout the remainder of this procedure use [English] as the Display Language.
9	Press ◇ as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 7 before proceeding to the next step.
10	Press ✳ once.	The display will show [Print Reverse].	This is the Ticket Orientation for all printed tickets. If this is the desired setting, proceed to step 12.
11	Press ✳ as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 7 before proceeding to the next step.
12	Press **h** once.	The display will show [Type T] or [Type R].	This is the Control Unit Type. If this is the correct setting, proceed to step 14. **NOTE:** Model T and C use the [Type T] setting.

Step	Action	Results	Comments
13	Press **h** as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 7 before proceeding to the next step.
14	Press **m** once.	The display will show [Temperature °C].	This is the current Display Unit of Measure setting. If this is the correct setting, proceed to step 16.
15	Press **m** as needed until the desired setting appears on the display panel. Press ✓ to accept the change.	The display will show [Set User Options].	The control unit automatically exits User Options Mode and returns to the Operating Display in 5 seconds. If necessary, re-enter User Options Mode by repeating step 7 before proceeding to the next step.
16	Press ‖ to return to the Operating Display, or Allow the control unit to exit User Options Mode and return to the Operating Display automatically.	The Operating Display will appear on the display panel.	

Step	Action/Results/Comments
17	Connect the download cable to the ◈ (download) jack of the TranScan 2 ADR Control Unit and to the remote computer.  ARC466  ARC462

Step	Action/Results/Comments
18	From the remote computer: Open WinTrac on the remote computer. The Thermo King WinTrac 4 Menu will appear.  ARC474
19	Click the  icon or select Seek Device from the WinTrac Communications Menu. **NOTE:** Make sure the Com Port selected on the WinTrac Global Settings Communications tab is the same as the Com Port used to connect the download cable.
20	The Communicating screen should appear in a few moments. [Self Test O.K.] will appear on the control unit display panel during download. **NOTE:** WinTrac is used to communicate with a variety of Thermo King devices. You can track the device search by viewing the status bar at the bottom of the screen. Connection to the TranScan 2 Control Unit should occur during the “Searching for CCI Devices” phase.  ARC470
21	Once the TranScan settings have been downloaded (about 1 minute), the TranScan Settings Menu General Info Tab will appear. The vehicle identification and the company name can be adjusted from the General Info Tab. **NOTE:** The company name in the General Info Tab is the combination of Title1 and Title2 from the Advanced Tab.  ARC471

Step	Action/Results/Comments
22	Check the Date and Time settings displayed on the TranScan Settings Menu. **NOTE:** The Date and Time settings displayed represent the Control Unit Calender and Clock settings at the time of download. The settings displayed are frozen and do not advance with time.
23	If adjustment is required, click on the Change Clock button of the TranScan Settings Menu. The Change TranScan Date/Time screen will appear. Use the ▼ button next to the month to display the month pop-up menu. Use the mouse cursor to click on the desired month of the year. The selected value will appear against a blue field. Use the mouse cursor to click on the desired day of the month. The selected value will appear against a blue field. Use the ▲▼ buttons next to the year to change the setting. Use the ▲▼ buttons next to the hour and minute to change the settings. Make sure ☑ 24 hour clock is selected.  ARC472
24	Click “Apply” on the TranScan Date/Time screen to accept any changes and return to the TranScan Settings Menu General Info Tab. A WinTrac 4 Caution Window will appear to allow you to double check any changes. Click “OK” if you are satisfied with the changes or “Cancel” to return to the TranScan Date/Time screen for further adjustment. Click “Cancel” on the TranScan Date/Time screen to reset any changes and return to the TranScan Settings Menu General Info Tab.
25	Select the Advanced Tab of the TranScan Settings Menu. Compare the parameter values against the values on the Parameter Ticket and/or the Setup Information Sheet. Use the scroll bar to the right of the Values column to advance the list of parameters forward or backward as needed. **To adjust a setting**: Click on the parameter value with your cursor. The selected value will appear against a blue field. For parameters with ON/OFF values, an ON/OFF pop-up menu will automatically appear. Select the desired setting from the pop-up menu. Press the computer Enter key accept the change. For parameters with numeric values, press the ▼ button to expose a preset values pop-up menu. Select the desired setting from the pop-up menu or use the computer keyboard to enter the desired value. Press the computer Enter key accept the change. For parameters with text values, use the computer keyboard to enter the desired value. Press the computer Enter key accept the change.  ARC473

Step	Action/Results/Comments
26	Click “Update Unit” on the Advanced Tab of the TranScan Settings Menu to accept all changes and update the control unit. **NOTE:** To reset all values, click “Close” on the Advanced Tab of the TranScan Settings Menu. The Thermo King WinTrac 4 Menu will appear. Repeat steps 19-25 of this procedure if necessary. Click “Close” on the Advanced Tab of the TranScan Settings Menu to return to the Thermo King WinTrac 4 Menu.
27	Exit WinTrac by selecting “Exit” from the File Menu.  ARC475
28	Disconnect the download cable from the control unit.

Step	Action	Results	Comments
29	From the TranScan 2 ADR Control Unit: Press and ✓ simultaneously	The display will show [Enter PIN code].	
30	Press , , , , to enter the default PIN code 1111.	The display will show [Start time 00:00]	This is the Set Recording Start Time screen. The control unit is now in Configuration Mode.
31	Press ✓ as needed to advance to the View Additional Screens and Settings screen.	The display will show [ENG Display OFF].	This is the View Additional Screens and Settings screen.
32	Press ◀ once.	The display will show [ENG Display ON].	
33	Press ✓ to accept change and advance to the next screen.	The display will show [R standard 9090].	This is the Standard Calibration Constant screen. **NOTE:** This setting should not require change.
34	Press ✓ to accept changes (if any) and advance to the next screen.	The display will show [T1 cal val 2252].	This is the Sensor T1 Standard Calibration screen. **NOTE:** If the thermistor type sensors supplied with the TranScan 2 are used, this setting should not require change.

Step	Action	Results	Comments
35	Press ✓ to accept changes (if any) and advance to the next screen.	The display will show [T2 cal val 2252].	This is the Sensor T2 Standard Calibration screen. **NOTE:** If the thermistor type sensors supplied with the TranScan 2 are used, this setting should not require change.
36	Press ✓ to accept changes (if any) and advance to the next screen.	The display will show [T3 cal val 2252].	This is the Sensor T3 Standard Calibration screen. **NOTE:** If the thermistor type sensors supplied with the TranScan 2 are used, this setting should not require change.
37	Press ✓ to accept changes (if any) and advance to the next screen.	The display will show [T4 cal val 2252].	This is the Sensor T4 Standard Calibration screen. **NOTE:** If the thermistor type sensors supplied with the TranScan 2 are used, this setting should not require change.
38	Press ✓ to accept changes (if any) and advance to the next screen.	The display will show [PIN number 1111].	This is the Set Security Code screen. If this is the correct setting, proceed to step 40.
39	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
40	Press ✓ to accept changes (if any) and advance to the next screen.	The display will show [Unit I/D (unit serial number)].	This is the Control Unit Identification Number screen. If this is the correct setting, proceed to step 42. **NOTE:** If the software (PROM Chip) is changed, this setting should be set to match the control unit serial number.
41	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
42	Press ✓ to accept changes (if any) and advance to the next screen.	The display will show [Baud rate 9600].	This is the Serial Port Communication Speed screen. If this is the correct setting, proceed to step 44. **NOTE:** This setting should be compatible with most current laptop and desktop computers.

Step	Action	Results	Comments
43	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
44	Press ✓ to accept changes (if any) and advance to the next screen.	The display will show [Date 01 Feb'03]. **NOTE:** The example shown is for February 1st, 2003.	This is the Set System Calender screen. This setting should be correct as it was already set in step 23.
45	Press ✓ to advance to the next screen.	The display will show [Set clock 15:20]. **NOTE:** The example shown is for 3:20 pm.	This is the Set System Clock screen. This setting should be correct as it was already set in step 23.
46	Press ✓ to advance to the next screen.	The display will show [Auto Clk Adj ON].	This is the Automatic Clock Adjustment screen. **NOTE:** This feature automatically adjusts the system clock for Daylight Saving Time as observed in the European Union (02:00 on the last Sunday in March to 02:00 on the last Sunday in October). In the United States, Daylight Saving Time is observed from 02:00 on the first Sunday in April to 02:00 on the last Sunday in October.
47	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
48	Press ✓ to accept changes (if any) and advance to the next screen.	The display will show [Clk Protect OFF].	This is the Clock Adjustment Protection screen. If this is the correct setting, proceed to step 50.
49	Press ◀ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
50	Press 🖹 to accept changes (if any) and return to the previous screen. Press 🖹 11 more times to return to the View Additional Screens and Settings screen.	The display will show [ENG Display ON].	
51	Press ◀ once.	The display will show [ENG Display OFF].	
52	Press ❚❚ to exit Configuration Mode.	The Operating Display will appear on the display panel.	The TranScan 2 ADR Control Unit should be ready to place into service.

A05A Adjusting the Calender/Clock - Using the Control Unit Keys

Where Used

All TranScan 2 ADR Control Units with Revision TS2-T410 Software

Purpose

Use this procedure to adjust the system clock by using the Control Unit keys from either Operating Mode or Configuration Mode. For complete system setup instructions, see Service Procedure A04A & Service Procedure A04B in Section of this manual for additional information.

Important

NOTE: Adjustments to the system clock will automatically start a new Journey File, [NEW FILE] will appear on the display panel for 5 seconds.

Steps

From Operating Mode

Step	Action	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Press ❚❚ once.	The display panel will show [PAUSING].	
3	Press **h** to adjust the clock hours.	If the clock protection feature is set to Off, the display panel will show [Hours + XX:XX] (current system time).	If this is the correct setting, proceed to step 5.
		If the Clock Protection feature is set to On, the display panel will show [Protected] and clock adjustment from Operating Mode will be blocked.	
4	Press **h** as needed until the desired hour appears on the display panel.		If no other key is pressed within 15 seconds, or ❚❚ or ✓ is pressed, the control unit will accept any clock changes, automatically restart operation, and return to the Operating Display.
5	Press **m** to adjust the clock minutes.	If the clock protection feature is set to Off, the display panel will show [Minutes + XX:XX] (current system time).	If this is the correct setting, proceed to step 7.
		If the Clock Protection feature is set to On, the display panel will show [Protected] and clock adjustment from Operating Mode will be blocked.	

Step	Action	Results	Comments
6	Press m as needed until the desired minute appears on the display panel.		If no other key is pressed within 15 seconds, or II or ✓ is pressed, the control unit will accept any clock changes, automatically restart operation, and return to the Operating Display.
7	Press II once.	The Operating Display will appear on the display panel.	

Steps

From Configuration Mode

Step	Action	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Press 📖 and ✓ simultaneously	The display will show [Enter PIN code].	
3	Use the following keys to enter the correct 4 digit PIN code if necessary: 📖 and II pressed simultaneously = 0 📖 = 1 II = 2 ✓ = 3 ◇ = 4 ✳ = 5 h = 6 m = 7 II and ✓ pressed simultaneously = 8 📖 and ✓ pressed simultaneously = 9 **NOTE:** The factory default PIN code is 1111.	The display will show [Start time 00:00]	This is the Set Recording Start Time screen. The control unit is now in Configuration Mode.
4	Press 📖 or ✓ repeatedly until the [ENG Display] screen appears.	If the display panel shows [ENG Display OFF], proceed to step 5.	
		If the display panel shows [ENG Display ON], proceed to step 6.	
5	Press ◀ to set the screen to ON.	The display will show [ENG Display ON].	Setting this screen to On exposes additional configuration menu screens including the clock adjustment and protection screens.
6	Press ✓ as needed to accept changes (if any) and advance to the Set System Calender screen.	The display will show [Date 01 Feb'03]. **NOTE:** The example shown is for February 1st, 2003.	This is the Set System Calender screen. If this is the correct setting, proceed to step 8.

Step	Action	Results	Comments
7	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
8	Press ✓ to accept changes (if any) and advance to the next screen.	The display will show [Set clock 15:20]. **NOTE:** The example shown is for 3:20 pm.	This is the Set System Clock screen.
9	Press ◀ or ▶ as needed to position the cursor. Press ▲ or ▼ as needed until the desired setting appears on the display panel.	The display will show any changes to this setting.	
10	Press ✓ as to accept changes and advance to the next screen.		If necessary, return to the [ENG Display] screen and set [ENG Display OFF].
11	Press ❚❚ to exit Configuration Mode.	The Operating Display will appear on the display panel.	

A05B Adjusting the Calender/Clock - Using a Remote Computer

Where Used

All TranScan 2 ADR Control Units with Revision TS2-T410 Software

Purpose

Use this procedure to adjust the system clock by using a remote computer running WinTrac™ 4.2.1 software. For complete system setup instructions, see Service Procedure A04A & Service Procedure A04B in Section of this manual for additional information.

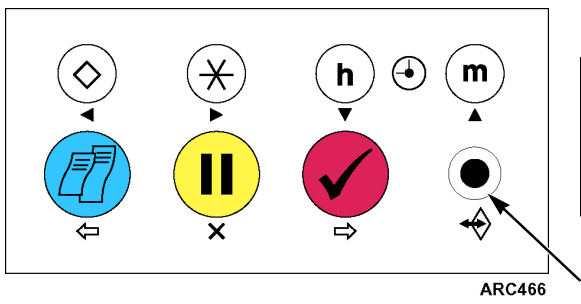
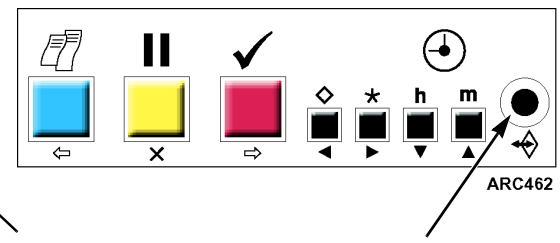
Important

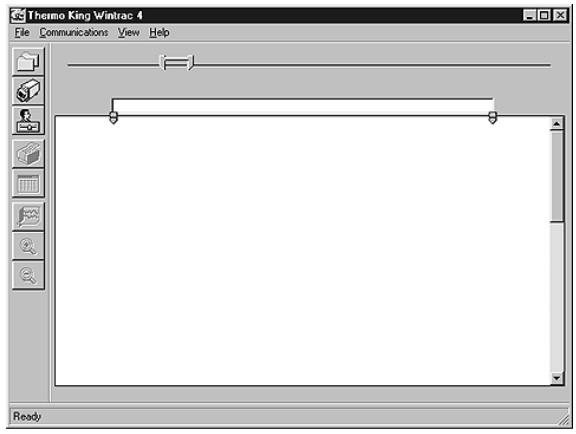
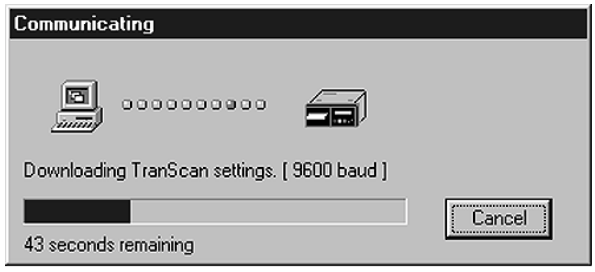
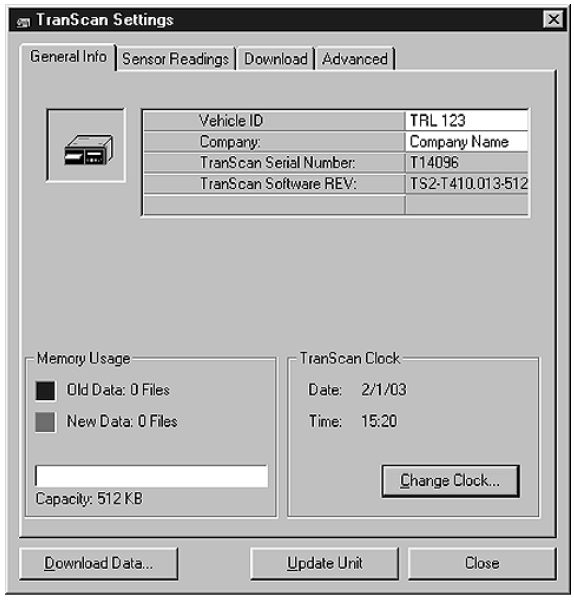
NOTE: Adjustments to the system clock greater that the current recording interval will automatically start a new Journey File, [NEW FILE] will appear on the display panel for 5 seconds.

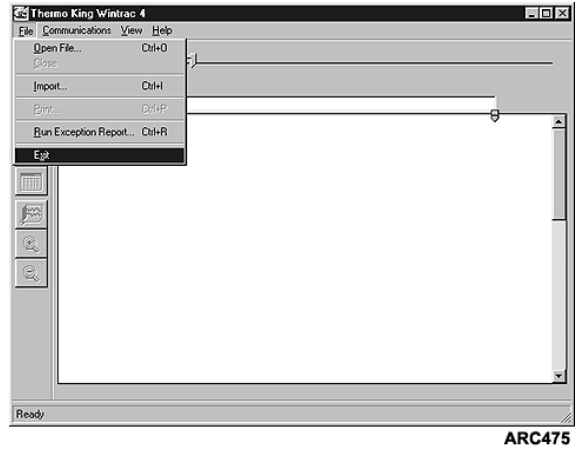
Special Equipment

- A remote computer running WinTrac 4.2.1 Software
- Upload/Download cable TK Service Part No. 204-1086

Steps

Step	Action/Results/Comments
1	Make sure the control unit is connected to supply power. The Operating Display will appear on the display panel.
2	Connect the download cable to the ◈ (download) jack of the TranScan 2 ADR Control Unit and to the remote computer.  ARC466  ARC462

Step	Action/Results/Comments
3	From the remote computer: Open WinTrac on the remote computer. The Thermo King WinTrac 4 Menu will appear.  ARC474
4	Click the  icon or select Seek Device from the WinTrac Communications Menu. **NOTE:** Make sure the Com Port selected on the WinTrac Global Settings Communications tab is the same as the Com Port used to connect the download cable.
5	The Communicating screen should appear in a few moments. [Self Test O.K.] will appear on the control unit display panel during download. **NOTE:** WinTrac is used to communicate with a variety of Thermo King devices. You can track the device search by viewing the status bar at the bottom of the screen. Connection to the TranScan 2 Control Unit should occur during the "Searching for CCI Devices" phase.  ARC470
6	Once the TranScan settings have been downloaded (about 1 minute), the TranScan Settings Menu General Info Tab will appear.  ARC471

Step	Action/Results/Comments
7	**NOTE:** The Date and Time settings displayed represent the Control Unit Calender and Clock settings at the time of download. The settings displayed are frozen and do not advance with time. Click on the Change Clock button of the TranScan Settings Menu. The Change TranScan Date/Time screen will appear. Use the button next to the month to display the month pop-up menu. Use the mouse cursor to click on the desired month of the year. The selected value will appear against a blue field. Use the mouse cursor to click on the desired day of the month. The selected value will appear against a blue field. Use the buttons next to the year to change the setting. Use the buttons next to the hour and minute to change the settings. Make sure 24 hour clock is selected.  ARC472
8	Click “Apply” on the TranScan Date/Time screen to accept any changes and return to the TranScan Settings Menu General Info Tab. A WinTrac 4 Caution Window will appear to allow you to double check any changes. Click “OK” if you are satisfied with the changes or “Cancel” to return to the TranScan Date/Time screen for further adjustment. Click “Cancel” on the TranScan Date/Time screen to reset any changes and return to the TranScan Settings Menu General Info Tab.
9	Click “Close” on the General Info Tab of the TranScan Settings Menu to return to the Thermo King WinTrac 4 Menu.
10	Exit WinTrac by selecting “Exit” from the File Menu.  ARC475
11	Disconnect the download cable from the control unit.

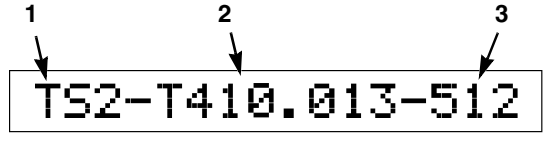
A06A Checking Software Revision - Soft Reset

Where Used

All TranScan 2 ADR Control Units with Revision TS2-T410 Software

Purpose

Use this procedure to determine which software revision is being used in a control unit. The software revision is part of the Sign On Message and can be viewed on the display panel by performing a "Soft Reset", or viewing the information on the printed Parameter Ticket. This procedure includes instructions for both methods of obtaining the control unit software revision.



1.	Product Type (TranScan 2 shown)	3.	Recorder Memory Capacity (512 kilobytes shown)
2.	Software Revision (T410.013 shown)		

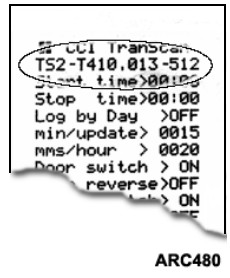
Figure 1: Sign On Message (as it appears on the display panel and on the Parameter Ticket)

Steps

Viewing the Software Revision on the Display Panel

Step	Action	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Press and ✓ simultaneously	The display will show [Enter PIN code]. If the Pin code security feature has been disabled (set to 0000), the last configuration menu screen viewed will appear on the display panel.	A valid Security Code (set to a PIN other than 0000) must be used to view the Signature on the display panel. Set a temporary PIN code through the Configuration Mode [PIN number XXXX] screen (1111 recommended), exit Configuration Mode, and repeat this step.
3	Press and ✓ simultaneously 4 times.	The display panel will show [--INITIALIZING--] followed by the Sign On Message. The Sign On Message will appear on the display panel for a few seconds before returning to the Operating Display.	Steps 2 and 3 are also referred to as a "Soft Reset". This procedure will reset the control unit without changing the current Configuration Mode settings (parameters) and without interrupting the recording process.
4	Note the software revision for the specific unit.		
5	Reset the Security Code to its original setting if necessary.		

Viewing the Software Revision by Printing a Parameter Ticket

Step	Action	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Make sure the control unit printer has an adequate supply of paper and printer ribbon.		
3	Press and ✓ simultaneously	The display will show [Enter PIN code]. **NOTE:** If the Pin code security feature has been disabled (set to 0000), the last configuration menu screen viewed will appear on the display panel.	A valid Security Code (set to a PIN other than 0000) must be used to print a Parameter Ticket. Set a temporary PIN code through the Configuration Mode [PIN number XXXX] screen (1111 recommended), exit Configuration Mode, and repeat this step.
4	Press , ▌▌, , ▌▌ to enter the Print Parameter Ticket code 1212.	The display panel will show [Print parameters] and the printer will begin printing the current configuration menu screen settings in order on a single Parameter Ticket.	When finished, the printer will stop and the Operating Display will appear on the display panel.
5	Reset the Security Code to its original setting if necessary.		
6	The Sign On Message appears on the second line of the Parameter Ticket as shown.	 ARC480	

A12A Electrostatic Discharge (ESD) Procedures

Where Used

All solid state applications

Purpose

To prevent Electrostatic Discharge (ESD) damage while working on a control unit. Electrostatic discharge is an invisible foe which can only be counteracted by using good procedures. Failure to follow stated procedures may result in electronic component failure. Additional information may be found in the ELECTROSTATIC DISCHARGE (ESD) TRAINING GUIDE TK 40282.

Special Equipment

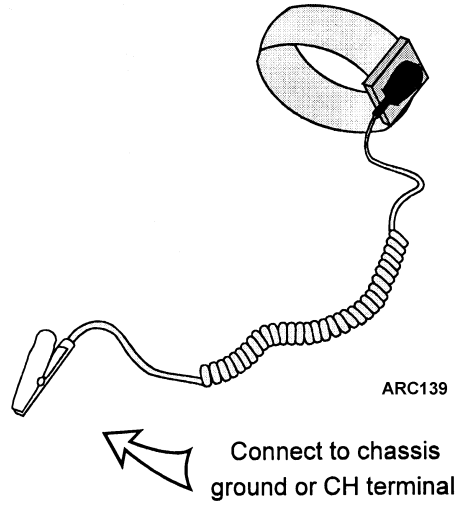


Figure 1: Wrist Strap (Service Part 204-622)

Steps

Step	Action	Results	Comments
1	Obtain and use a wrist strap when handling a Control Unit circuit board or PROM Chip that is not connected to the vehicle via the plugs or is not in an anti-static bag.		Wrist Strap Service Part 204-622. Refer to ESD Training Guide TK 40282-1.
2	Store and ship Control Unit circuit boards and PROM Chips in anti-static bags and protective packaging.		

A13A Changing Software (PROM Chip)

Where Used

All TranScan 2 ADR Control Units

Purpose

This procedure should be used to change the software PROM (Programmable Read Only Memory) Chip.

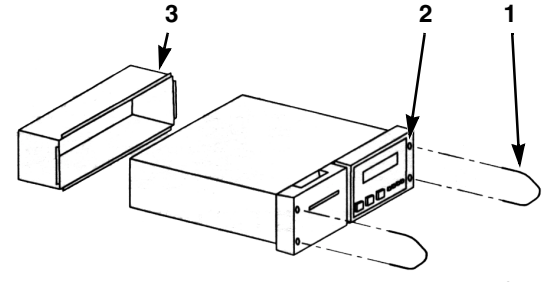
Important

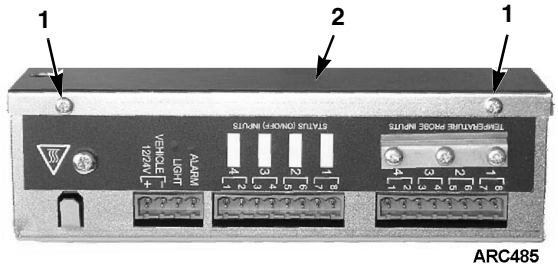
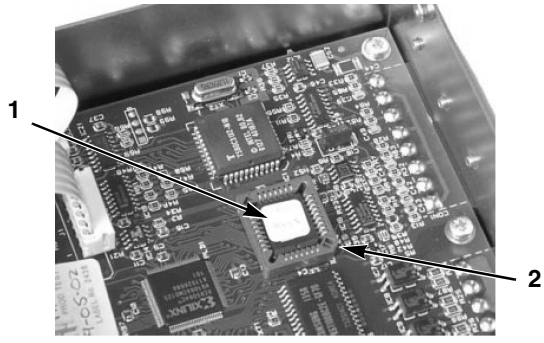
When the software PROM Chip is replaced, all programmable features are returned to default values. Programmable settings must be recorded using Service Procedure A02A and reprogrammed using Service Procedure A04A or Service Procedure A04B.

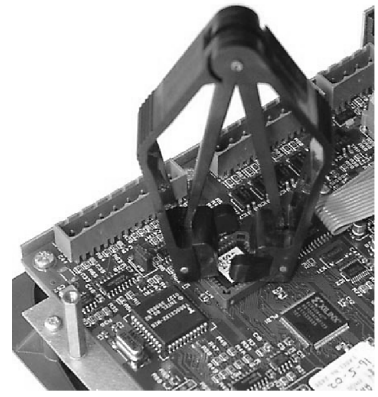
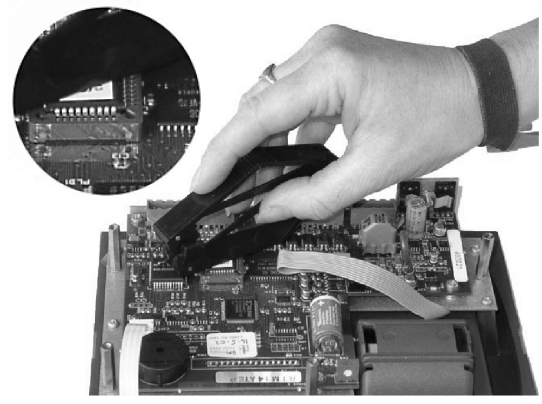
Check and record the software PROM Chip revision before and after installing a new PROM Chip.

Steps

TranScan 2 Model R Units

Step	Action/Results/Comments
1	Log all existing control unit settings using Service Procedure A02A. This information will be used to set programmable features after the new software is installed.
2	Disconnect the supply power by removing the 2 in-line supply power fuses.
3	Insert the keys supplied with the control unit installation kit through the access holes to release the locking tabs from the mounting cage. **NOTE:** A key can be made from .125 in (3 mm) diameter spring steel rod (piano wire) if necessary. The key must extend into the access hole at least 1.0 in (25 mm). **NOTE:** The locking tabs on the left side of the control unit may be accessed by opening the printer drawer. Slide the control unit out of the mounting cage.  ARC484 1. Key 2. Access Hole (4) 3. Mounting Cage
4	Use ESD wrist strap. Connect the strap wire to the metal control unit chassis. **Caution:** Do not attempt this procedure without a wrist strap and proper ESD protection. See Service Procedure A12A for details.
5	Disconnect all wire terminals from the back of the control unit.

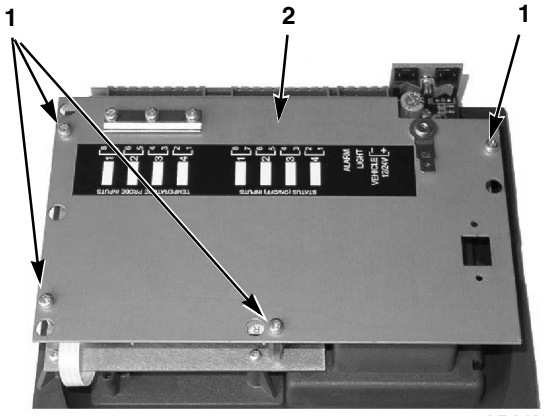
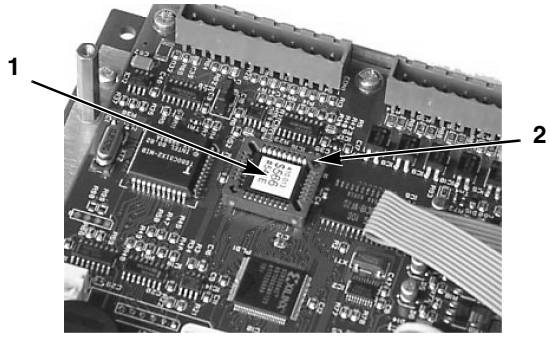
Step	Action/Results/Comments
6	Remove the 2 access panel screws and the access panel.  ARC485 1. Screw 2. Access Panel
7	The PROM Chip and socket are mounted to the printed circuit (PC) board. One corner of the socket is designed to locate the PROM Chip squarely in the socket.  ARC486 1. PROM Chip 2. Locating Corner
8	Use a chip extraction tool to remove and install the PROM Chip.  ARC483

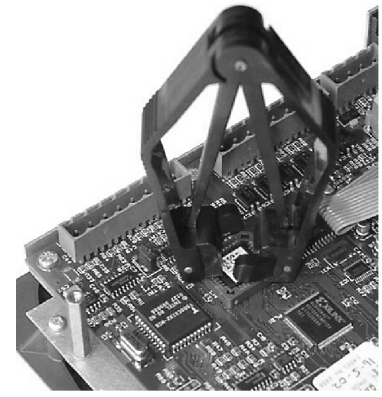
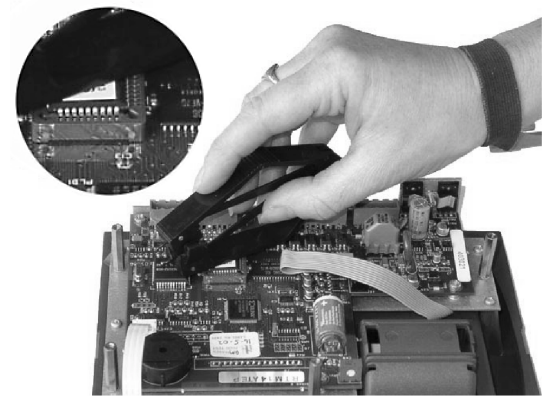
Step	Action/Results/Comments
9	Locate the extraction tool with its claws at each corner of the PROM Chip. Gently squeeze and pull the PROM Chip from the socket.  ARC487
10	Locate the new PROM Chip in the socket and press firmly into place using the side of the extraction tool. The top PROM Chip should be flush with or just below the top of the socket when properly installed.  ARC488
11	Install the access panel and the 2 panel screws.
12	Connect all wire terminals to the back of the control unit, and disconnect the ESD strap wire from the control unit chassis.
13	Slide the control unit into the mounting cage until it locks.
14	Connect the supply power by installing the 2 in-line supply power fuses. The Operating Display will appear on the control unit display panel.
15	Perform the System Setup using Service Procedure A04A or Service Procedure A04B.

Steps

TranScan 2 Model T and C Units

Step	Action/Results/Comments
1	Log all existing control unit settings using Service Procedure A02A. This information will be used to set programmable features after the new software is installed.
2	Disconnect the supply power by removing the 2 in-line supply power fuses.
3	Remove the 4 control unit mounting screws and pull the control unit from the mounting enclosure.
4	Use ESD wrist strap. Connect the strap wire to the metal control unit chassis. **Caution:** Do not attempt this procedure without a wrist strap and proper ESD protection. See Service Procedure A12A for details.
5	Disconnect all wire terminals from the back of the control unit.

Step	Action/Results/Comments
6	Remove the 4 access panel screws and the access panel.  ARC489 1. Screws 2. Access Panel
7	The PROM Chip and socket are mounted to the printed circuit (PC) board. One corner of the socket is designed to locate the PROM Chip squarely in the socket.  ARC490 1. PROM Chip 2. Locating Corner
8	Use a chip extraction tool to remove and install the PROM Chip.  ARC483

Step	Action/Results/Comments
9	Locate the extraction tool with its claws at each corner of the PROM Chip. Gently squeeze and pull the PROM Chip from the socket.  ARC487
10	Locate the new PROM Chip in the socket and press firmly into place using the side of the extraction tool. The top PROM Chip should be flush with or just below the top of the socket when properly installed.  ARC488
11	Install the access panel and the 4 panel screws.
12	Connect all wire terminals to the back of the control unit, and disconnect the ESD strap wire from the control unit chassis.
13	Position the control unit into the mounting enclosure and install the 4 mounting screws.
14	Connect the supply power by installing the 2 in-line supply power fuses. The Operating Display will appear on the control unit display panel.
15	Perform the System Setup using Service Procedure A04A or Service Procedure A04B.

A26A Welding on Units Equipped with TranScan 2 Control Units

Where Used

All trucks and trailers equipped with TranScan 2 ADR Control Units

Purpose

To prevent damage to the TranScan 2 ADR Control Unit during welding operations. Electric welding generates extremely high amperage currents which can damage electrical and electronic components. To minimize the possibility of damage, the following procedures must be followed.

Important

Follow this procedure in addition to any welding procedure recommended for the refrigeration system.

Before Welding

Step	Action	Results	Comments
1	Turn the refrigeration unit Off.		
2	Disconnect all connectors from the TranScan 2 ADR Control Unit.		
3	If welding close enough to a Control Unit that sparks could damage it, remove the module.		
4	Connect the welder ground cable as close as possible to the area where the welding is to be performed. Move the welder ground cable as required.		

After Welding

Step	Action	Results	Comments
1	Reinstall the Control Unit if it was removed.		
2	Reconnect all connectors.		
3	Verify operation of the TranScan 2 ADR Control Unit.		

A50A Downloading Files in Control Unit Memory

Where Used

All TranScan 2 ADR Control Units with Revision TS2-T410 Software

Purpose

This procedure can be used to download recorded files from the TranScan 2 control unit memory to a remote computer running WinTrac 4.2.1 software.

NOTE: For information on managing and viewing downloaded files using WinTrac, see the WinTrac 4 User Manual provided with the software.

Important

Files stored in memory are named by the date and time the file began recording. Example: 26 Feb 06:00.

Old Files represent files that have already been downloaded onto the remote computer being used.

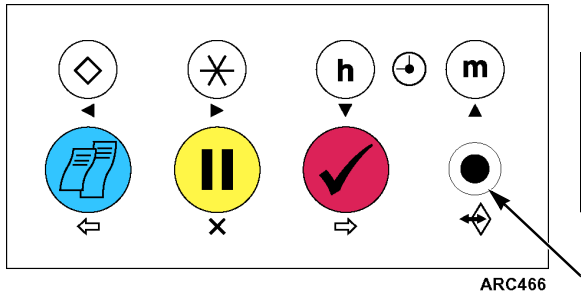
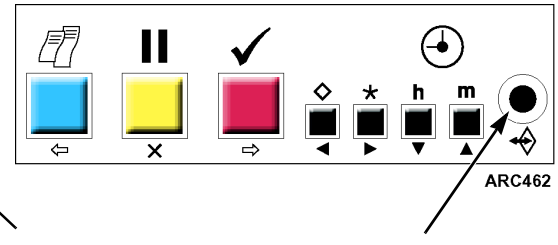
New Files represent files that have been recorded since the last file download onto the remote computer being used.

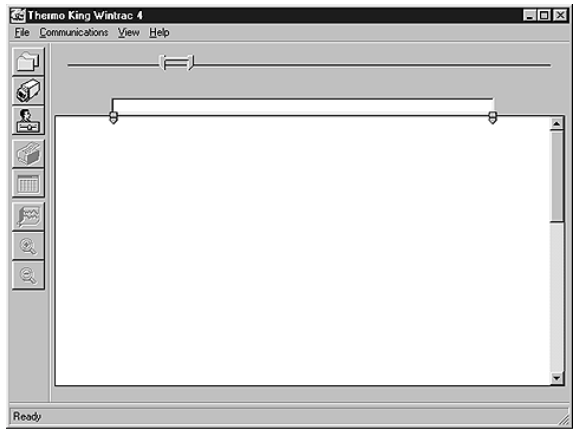
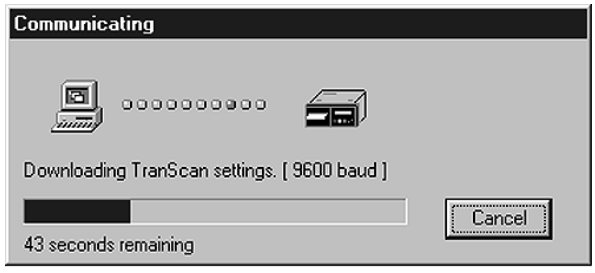
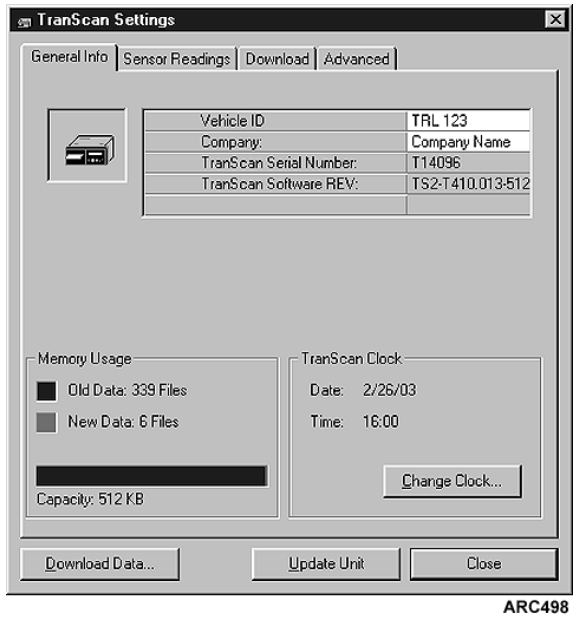
NOTE: WinTrac compares the Archive file for the control unit Vehicle ID with the current date to determine which files are New. If the Archive file for the control unit is absent (first time a control unit with a new Vehicle ID is downloaded, or a remote computer that has never downloaded the control unit) all files will be considered New.

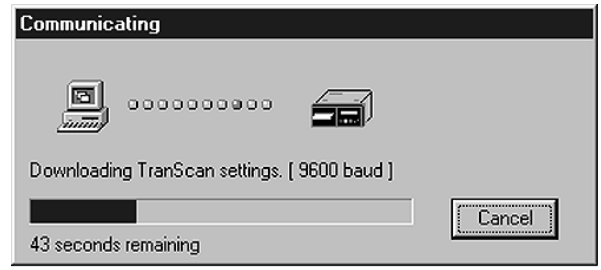
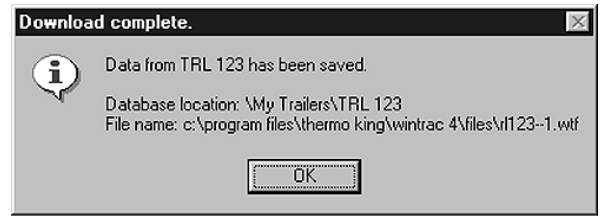
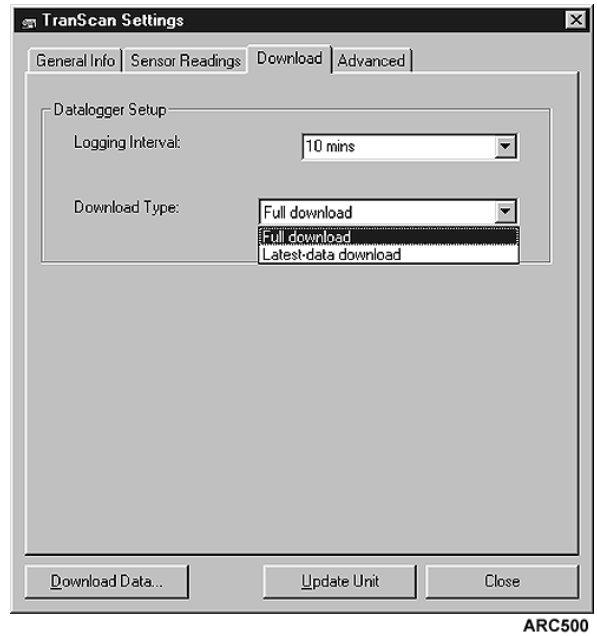
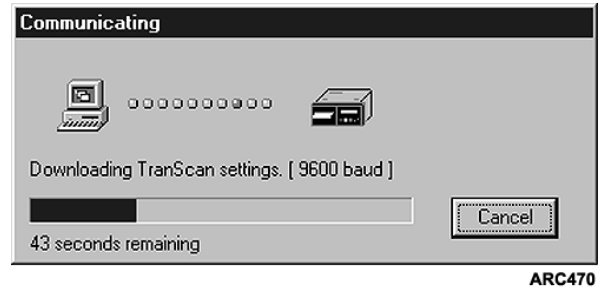
Special Equipment

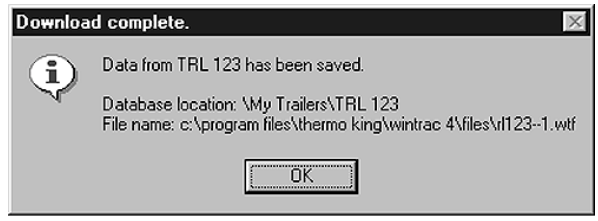
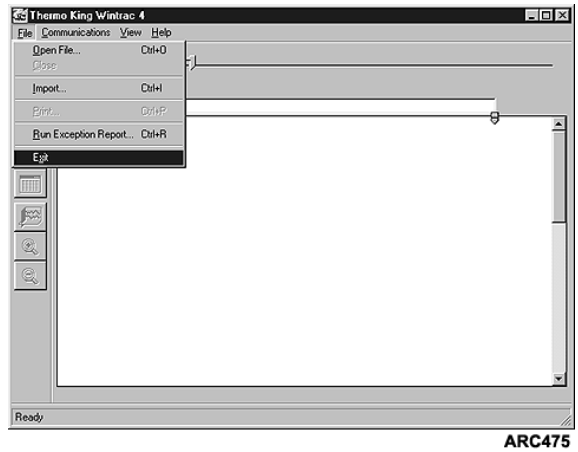
- A remote computer running WinTrac 4.2.1 Software
- Upload/Download cable TK Service Part No. 204-1086

Steps

Step	Action/Results/Comments
1	Make sure the control unit is connected to supply power. The Operating Display will appear on the display panel.
2	Connect the download cable to the ◈ (download) jack of the TranScan 2 ADR Control Unit and to the remote computer.  ARC466  ARC462

Step	Action/Results/Comments
3	From the remote computer: Open WinTrac on the remote computer. The Thermo King WinTrac 4 Menu will appear.  ARC474
4	Click the  icon or select Seek Device from the WinTrac Communications Menu. **NOTE:** Make sure the Com Port selected on the WinTrac Global Settings Communications tab is the same as the Com Port used to connect the download cable.
5	The Communicating screen should appear in a few moments. [Self Test O.K.] will appear on the control unit display panel during download. **NOTE:** WinTrac is used to communicate with a variety of Thermo King devices. You can track the device search by viewing the status bar at the bottom of the screen. Connection to the TranScan 2 Control Unit should occur during the “Searching for CCI Devices” phase.  ARC470
6	Once the TranScan settings have been downloaded (about 1 minute), the TranScan Settings Menu General Info Tab will appear. The number of Old Files and New Files appears in the Memory Usage area (lower left) of the General Info Tab. 339 Old Files and 6 New Files exist in the TranScan 2 control unit memory in the example shown. Old Files represent files that have already been downloaded onto the remote computer being used. New Files represent files that have been recorded since the last file download onto the remote computer being used.  ARC498

Step	Action/Results/Comments
7	Select the Download Data button in the lower left corner of the General Settings tab to automatically download all new files. The Communicating screen should appear. The names of the files being downloaded will appear on the control unit display panel during download.  ARC470
8	A Download Complete window will appear when the download is finished. The new files will be consolidated into one WinTrac file. The location and name of the consolidated file appears in the Download Complete window. Click OK. **NOTE:** WinTrac compares the Archive file for the control unit Vehicle ID with the current date to determine which files are New. If the Archive file for the control unit is absent (first time a control unit with a new Vehicle ID is downloaded, or a remote computer that has never downloaded the control unit) all files will be considered New.  ARC499
9	To download Old files, select the Download Tab of the TranScan Settings Menu. Use the button next to the Download Type to display the download type pop-up menu. Use the mouse cursor to click on Full download. The selected value will appear against a blue field.  ARC500
10	Select the Download Data button in the lower left corner of the Download tab to download the files. The Communicating screen should appear. The names of the files being downloaded will appear on the control unit display panel during download.  ARC470

Step	Action/Results/Comments
11	A Download Complete window will appear when the download is finished. The new files will be consolidated into one WinTrac file. The location and name of the consolidated file appears in the Download Complete window. Click OK.  ARC499
12	Click “Close” on the Download Tab or General Info Tab of the TranScan Settings Menu to return to the Thermo King WinTrac 4 Menu.
13	Exit WinTrac by selecting “Exit” from the File Menu.  ARC475
14	Disconnect the download cable from the control unit.

A51A Printing Journey Tickets (files) in Control Unit Memory

Where Used

All TranScan 2 ADR Control Units with Revision TS2-T410 Software

Purpose

This procedure can be used to list, select, and print Journey Tickets (files) stored in the control unit memory.

Important

Files stored in memory are named by the date and time the file began recording. Example: 26 Feb 06:00. Additional information about the file appears to the right of the file name as follows:

- **A** - A Temperature Out-of-Range Alarm occurred during the recording of this file
- **M** - Indicates the "Marked" file. The marked file and all files recorded before the marked file are considered Old Files, and all files recorded after the marked file are considered New Files.
- **R** - Indicates a normal recording generated by the TranScan 2 system.

The Journey Ticket (file) currently being recorded will print and appear on the file list.

Journey Tickets (files) will print in the data style (graph or values) currently selected. See "Selecting Journey Ticket Data Style" on page 4-5 in this manual for additional information.

Steps

Step	Action	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Press ❚❚ and ✓ simultaneously once.	The display will show [Select printout].	
3	Press 🖹 once.	The display will show [Print file list].	If you do not wish to print a list of all files in memory, proceed to step 5.
4	Press ✓ once.	A list of all files currently in memory will begin to print. The date and start time of each file will appear on the list. The files will appear on the list in date/time order.	Press ❚❚ once to cancel printing. The display will show [Abandoned] then return to the Operating Display.
5	Press 🖹 once.	The display will show [Print new files]. **NOTE:** New files are those created after the "Marked" file. An M appears to the right of the date/time of the current marked file.	If you do not wish to print a Journey Ticket for each new file in memory, proceed to step 7.
To "Mark" a file, or change the "Marked file, follow steps 12 through 15 in this procedure.			

Step	Action	Results	Comments
6	Press ✓ once.	A separate Journey Ticket for each new file in memory will begin to print.	After all new files have been printed, the most recent file in memory will automatically become the "Marked" file. An M appears to the right of the date/time of the current marked file. Press ❙❙ once to cancel printing. The display will show [Abandoned] then return to the Operating Display.
7	Press 🖹 once.	The display will show [Print all files].	If you do not wish to print a Journey Ticket for each file in memory, proceed to step 9.
8	Press ✓ once.	A separate Journey Ticket for each file in memory will begin to print.	Press ❙❙ once to cancel printing. The display will show [Abandoned] then return to the Operating Display.
9	Press 🖹 once.	The display will show the file currently being recorded. Example: [26 Feb 06:00 R]. **NOTE:** The "R" in the file name indicates a normal recording generated by the TranScan 2 system.	This feature allows printing only a specific Journey Ticket (file).
10	Press **h** as needed to scroll backwards through the list of all files in memory. Press **m** as needed to scroll forwards through the list of all files in memory.	The display will show the file name.	
11	Press ✓ once when the desired file appears on the display panel.	A Journey Ticket for the selected file will begin to print.	Press ❙❙ once to cancel printing. The display will show [Abandoned] then return to the Operating Display.
The following steps are for "Marking" a file, or changing the "Marked file.			
12	From the Operating Display, press ❙❙ and ✓ simultaneously once.	The display will show [Select printout].	
13	Press 🖹 4 times.	The display will show the file currently being recorded.	
14	Press **h** as needed to scroll backwards through the list of all files in memory. Press **m** as needed to scroll forwards through the list of all files in memory.	The display will show the file name.	

Step	Action	Results	Comments
15	Press ✳ or ◇ once when the desired file appears on the display panel.	The display will show the newly marked file. Example: [21 Feb 06:00 MR]. **NOTE:** The “M” in the file name indicates this is now the marked file.	

A60A Replacing Printer Paper

Where Used

All TranScan 2 ADR Control Units

Purpose

This procedure should be used to replace the printer paper rolls.

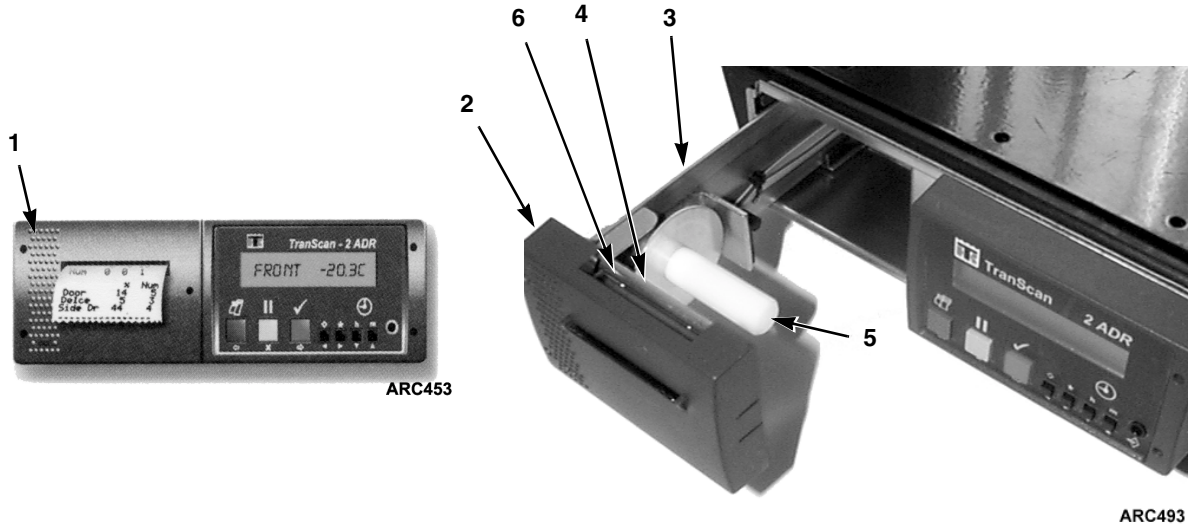
Important

Use printer paper rolls of 1.75 in (44 mm) width with 60 ft (m) of paper. Paper rolls should be about 1.75 in (44 mm) in diameter with 65 feet (20 m) of paper and have an inside core diameter of 0.5 in (13 mm). Replacement printer paper rolls are available through Thermo King Service Parts #205-0251 (pack of 10 rolls).

CAUTION: Never pull paper backwards through the printer as this will damage the printer mechanism.

Steps

TranScan 2 Model R Units



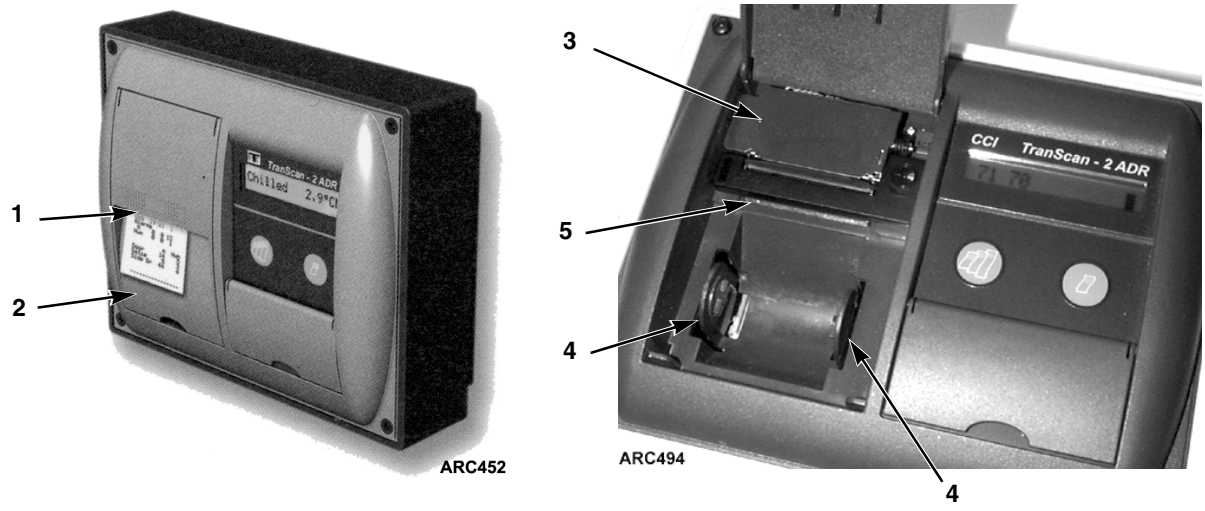
1.	Dimpled Portion of Printer Cover	4.	Printer Head
2.	Printer Cover	5.	Spool
3.	Printer Drawer	6.	Paper Feed Slot

Figure 1: TranScan 2 Model R

Step	Actions	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Release the printer drawer by pressing the dimpled portion of the printer cover (just left of the printer slot) once and slide the printer drawer out.		
3	Cut or carefully tear the paper just behind the printer head and slide the old paper roll and core off the spool.		**Caution:** Do not pull any remaining paper backwards through the printer.
4	Press  once.	[DELIVERY TICKET] will appear on the display panel. The printer will begin printing a Delivery Ticket.	
5	Press ❚❚ once some of the remaining paper clears the printer cover. Grasp and pull the remaining paper forward and out of the printer.	[Abandoned] will appear on the display panel. The printer will stop printing the Delivery Ticket.	
6	Install the new paper roll all the way onto the printer spool so the paper feeds forward over the top of the roll.		Make sure the entire paper roll turns freely on the spool.
7	Feed the leading edge of the new paper into the paper feed slot at the top of the printer cover.		
8	Press  once while holding the paper down in the slot.	[DELIVERY TICKET] will appear on the display panel. The printer will begin printing a Delivery Ticket.	Make sure the paper feeds squarely into the paper feed slot.
9	Remove any slack in the paper between the printer head and the paper roll and close the printer drawer.		Make sure the printer drawer locks into the control unit.
10	Remove the Delivery Ticket.		

Steps

TranScan 2 Model T and C Units



1.	Ticket Slot	4.	Paper Roll Mount
2.	Printer Cover	5.	Paper Feed Slot
3.	Printer Head		

Figure 2: TranScan 2 Model C and T

Step	Actions	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Use the finger cutout (just below the ticket slot) and lift the printer cover open.		
3	Cut or carefully tear the paper just below the printer head and pull the remaining paper outward through the printer.		**Caution:** Do not pull any remaining paper downwards through the printer.
4	Spread the paper roll mounts and remove the old paper roll and core.		
5	Install the new paper roll in the mounts so the paper feeds upward over the back of the roll.		Make sure the entire paper roll turns freely in the mounts.
6	Feed the leading edge of the new paper into the paper feed slot at the bottom of the printer head.		
7	Press once while holding the paper up in the slot.	[DELIVERY TICKET] will appear on the display panel. The printer will begin printing a Delivery Ticket.	Make sure the paper feeds squarely into the paper feed slot.

Step	Actions	Results	Comments
8	Remove any slack in the paper between the printer head and the paper roll, feed the leading edge of the paper through the ticket slot and close the printer cover.		Make sure the printer cover locks into the control unit.
9	Remove the Delivery Ticket.		

A61A Replacing Printer Ribbon

Where Used

All TranScan 2 ADR Control Units

Purpose

This procedure should be used to replace the printer ribbon.

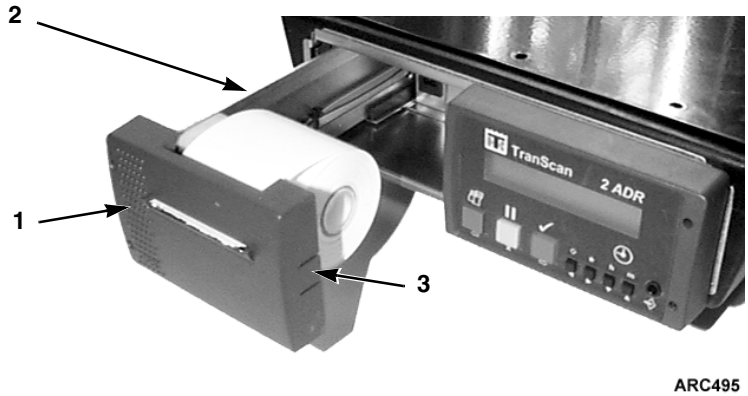
Important

The printer uses Epson® ERC 05 (or compatible) ribbon cartridges. Replacement printer ribbons are available through Thermo King Service Parts #205-0249 (pack of 5 ribbons).

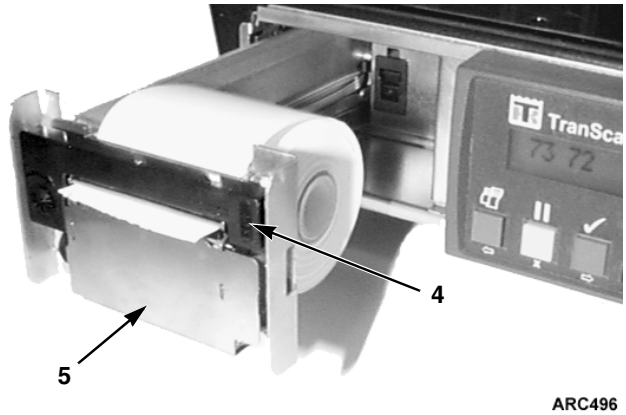
CAUTION: Never pull paper backwards through the printer as this will damage the printer mechanism.

Steps

TranScan 2 Model R Units



ARC495



ARC496

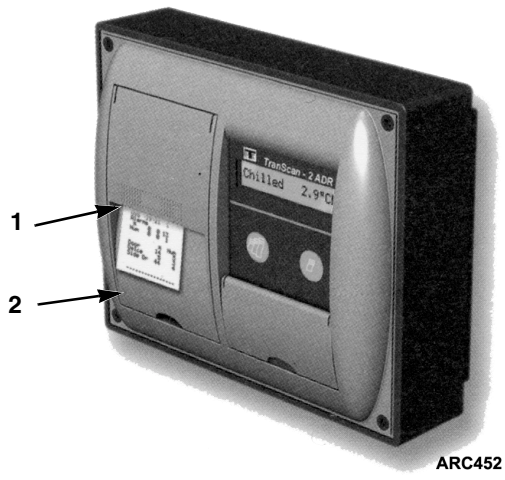
1.	Dimpled Portion of Printer Cover	4.	Ribbon Cartridge
2.	Printer Drawer	5.	Printer Head
3.	Printer Cover Tab		

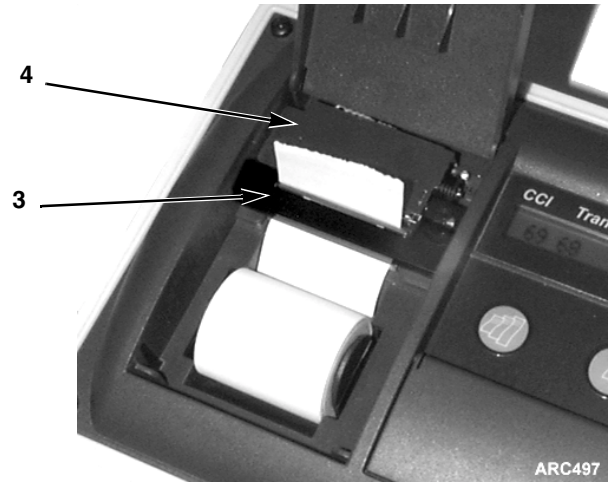
Figure 1: TranScan 2 Model R

Step	Actions	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Release the printer drawer by pressing the dimpled portion of the printer cover (just left of the printer slot) once and slide the printer drawer out.		
3	Release the tab on the right side of the printer cover, and remove the printer cover.		
4	Remove the old ribbon cartridge by pushing on the right side edge of the cartridge.		PUSH is stamped into the right side edge of the ribbon cartridge.
5	Insert the right side end of new ribbon cartridge into the printer head with the paper feeding between the cartridge and the exposed ribbon.		
6	Swing the left side of the cartridge into position. Gently press the left side of the cartridge until it locks into the printer head.		
7	Reinstall the printer cover.		Install cover left side first.
8	Remove any slack in the paper between the printer head and the paper roll and close the printer drawer.		Make sure the printer drawer locks into the control unit.
9	Press  once.	[DELIVERY TICKET] will appear on the display panel. The printer will begin printing a Delivery Ticket.	
10	Remove the Delivery Ticket and check the print quality.		

Steps

TranScan 2 Model T and C Units





1.	Ticket Slot	3.	Ribbon Cartridge
2.	Printer Cover	4.	Printer Head

Figure 2: TranScan 2 Model C and T

Step	Actions	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Use the finger cutout (just below the ticket slot) and lift the printer cover open.		
3	Remove the old ribbon cartridge by pushing on the left side edge of the cartridge.		PUSH is stamped into the left side edge of the ribbon cartridge.
4	Insert the left side end of new ribbon cartridge into the printer head with the paper feeding between the cartridge and the exposed ribbon.		
5	Swing the right side of the cartridge into position. Gently press the right side of the cartridge until it locks into the printer head.		
6	Remove any slack in the paper between the printer head and the paper roll and close the printer cover.		Make sure the printer cover locks into the control unit.
7	Press once.	[DELIVERY TICKET] will appear on the display panel. The printer will begin printing a Delivery Ticket.	
8	Remove the Delivery Ticket and check the print quality.		

A70A Comparing Control Unit Settings Using the Signature Feature

Where Used

All TranScan 2 ADR Control Units with Revision TS2-T410 Software

Purpose

The Signature feature is a 4 digit number that uniquely represents the current Configuration Mode settings (parameters). The signature can be viewed on the display panel, and it appears on the printed Parameter Ticket. This procedure includes instructions for both methods of obtaining the control unit Signature. Use this procedure when a quick comparison of multiple TranScan 2 ADR Control Units is required.

NOTE: Units with revision TS2-410.013 software can be compared to units with revision TS2-410.014 software using the signature feature.

Important

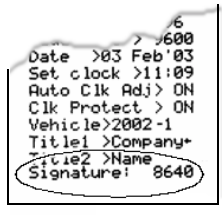
- Standardized Configuration Mode settings (parameters) will help keep operating procedures, printed information, and recorded information consistent across multiple units, and is highly recommended.
- All of the control units being compared must have the same revision software. To check the Software revision, see Service Procedure A06A in Section 6 of this manual.
- The Signature feature will not compare any of the descriptive character settings, user defined names, titles, or the control unit and vehicle identification numbers.

Steps

Viewing the Signature on the Display Panel

Step	Action	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Press ◇ and ✓ simultaneously	The display will show [Enter PIN code]. If the Pin code security feature has been disabled (set to 0000), the last configuration menu screen viewed will appear on the display panel.	A valid Security Code (set to a PIN other than 0000) must be used to view the Signature on the display panel. Set a temporary PIN code through the Configuration Mode [PIN number XXXX] screen (1111 recommended), exit Configuration Mode, and repeat this step.
3	Press ◇ and **h** simultaneously.	The display will show [Signature: XXXX] for a few seconds before returning to the Operating Display.	Note the signature number for the specific unit.
4	Reset the Security Code to its original setting if necessary.		
5	Repeat steps 1-4 as needed on other units for comparison.		A Signature viewed on the display panel and a printed Signature will be the same for a particular unit.

Viewing the Signature by Printing a Parameter Ticket

Step	Action	Results	Comments
1	Make sure the control unit is connected to supply power.	The Operating Display will appear on the display panel.	
2	Make sure the control unit printer has an adequate supply of paper and printer ribbon.		
3	Press and ✓ simultaneously	The display will show [Enter PIN code]. **NOTE:** If the Pin code security feature has been disabled (set to 0000), the last configuration menu screen viewed will appear on the display panel.	A valid Security Code (set to a PIN other than 0000) must be used to print a Parameter Ticket. Set a temporary PIN code through the Configuration Mode [PIN number XXXX] screen (1111 recommended), exit Configuration Mode, and repeat this step.
4	Press , , , to enter the Print Parameter Ticket code 1212.	The display panel will show [Print parameters] and the printer will begin printing the current configuration menu screen settings in order on a single Parameter Ticket.	When finished, the printer will stop and the Operating Display will appear on the display panel.
5	Reset the Security Code to its original setting if necessary.		
6	The Signature appears on the last line of the Parameter Ticket as shown.	 ARC479	
7	Repeat steps 1-5 as needed on other units for comparison.		A printed Signature and a Signature viewed on the display panel will be the same for a particular unit.

H04A Checking Harness Continuity

Where Used

All TranScan ARD systems and other solid state applications

Purpose

To illustrate the required procedures for checking harness continuity on equipment utilizing solid state devices.

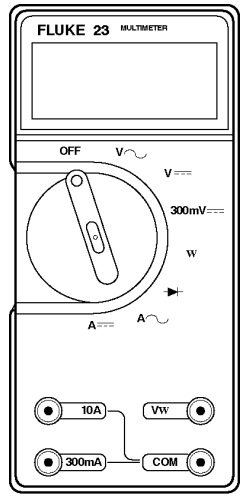


Figure 1: Digital Multimeter Service Part Number 204-615

Steps

Step	Action	Results	Comments
	CAUTION STATEMENTS		
1	Do not use battery and light combinations to check continuity.		Using such devices may present excessive voltage or current to solid state devices. In most cases the device will be damaged or destroyed.
2	Use a high quality digital multimeter such as Service Part Number 204-615.		Older analog (needle type meter movement) meters and some inexpensive “mechanic tool box” meters present a large load to the circuit being tested. This can significantly alter the meter reading, especially when measuring small voltages or currents.
3	Do not test a circuit to see if it is energized by tapping the circuit wire to ground and watching for a spark.		This will damage solid state components or blow a fuse or circuit.

Step	Action	Results	Comments
4	Always wear a grounded wrist strap such as Service Part Number 204-622 when working on exposed solid state circuits.		Failure to use a grounded wrist strap and/or failure to observe other ESD (Electrostatic Discharge) procedures can result in damage to solid state components. This damage may not be immediately noticeable. See Service Procedure A12A for additional information on ESD procedures.
	GENERAL PROCEDURES		
1	Locate the suspect circuit on the appropriate wiring diagram.		
2	Isolate both ends of the circuit using the following methods as required. • Disconnect the appropriate connector at the control unit. • Remove the wire from the control unit terminal if necessary. • Disconnect the device connector at the device. • Remove the wire from the device terminal if necessary.		Harness connections are determined by consulting the wiring diagrams. **CAUTION: Failure to isolate both ends may cause misleading results.**
3	Using jumpers as required, connect each end of the circuit to a high quality multimeter.	The meter must show a very low resistance (less than 1.0 ohm), indicating circuit continuity. If not, the circuit is open or has excessive resistance. Troubleshoot the circuit to determine the cause using the wiring diagrams.	Be certain the ohmmeter battery is good and the meter zeros with the leads held together to prevent misleading results.
4	After determining that the circuit passes a continuity test, remove one lead and connect it to chassis ground to check for a short to ground.	The meter should indicate an open circuit. If not, the circuit is shorted to ground. Trouble-shoot the circuit to determine the cause using the wiring diagrams.	

Section 7
Service Information

A16A Software (PROM Chip) Interchange and Service Parts Numbers
A17A Replacement Hardware Service Part Numbers

A16A Software (PROM Chip) Interchange and Service Parts Numbers

Where Used

All TranScan 2 Automatic Daily Recording Systems

Important Information

NOTE: To determine the software revision, refer to Service Procedure A06A in Section 6 of this manual.

NOTE: If the software PROM Chip must be changed, refer to Service Procedure A13A in Section 6 of this manual.

Software Interchange & Service Parts Numbers

Software Revision	Features	Interchange with	Service Parts Number (includes Chip extraction tool)
T410.013	NAD production release	T410.014	---
T410.014	Communications Improvements	all North American applications	Contact Thermo King Service Parts

A17A Replacement Hardware Service Part Numbers

Where Used

TranScan 2 Automatic Daily Recording Systems

Important Information

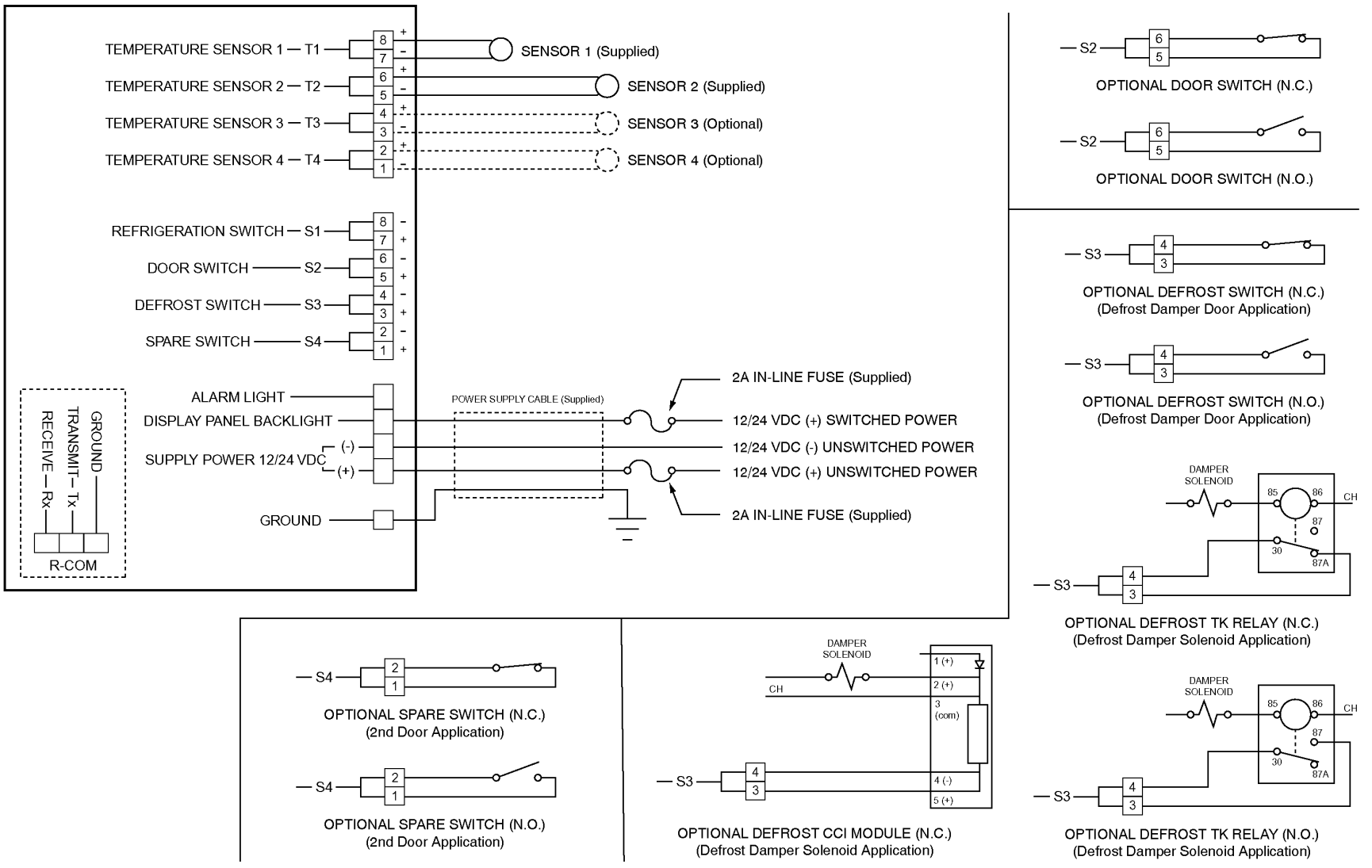
NOTE: If replacement software is required, consult Service Information A16A in Section & of this manual.

TranScan 2 Service Parts

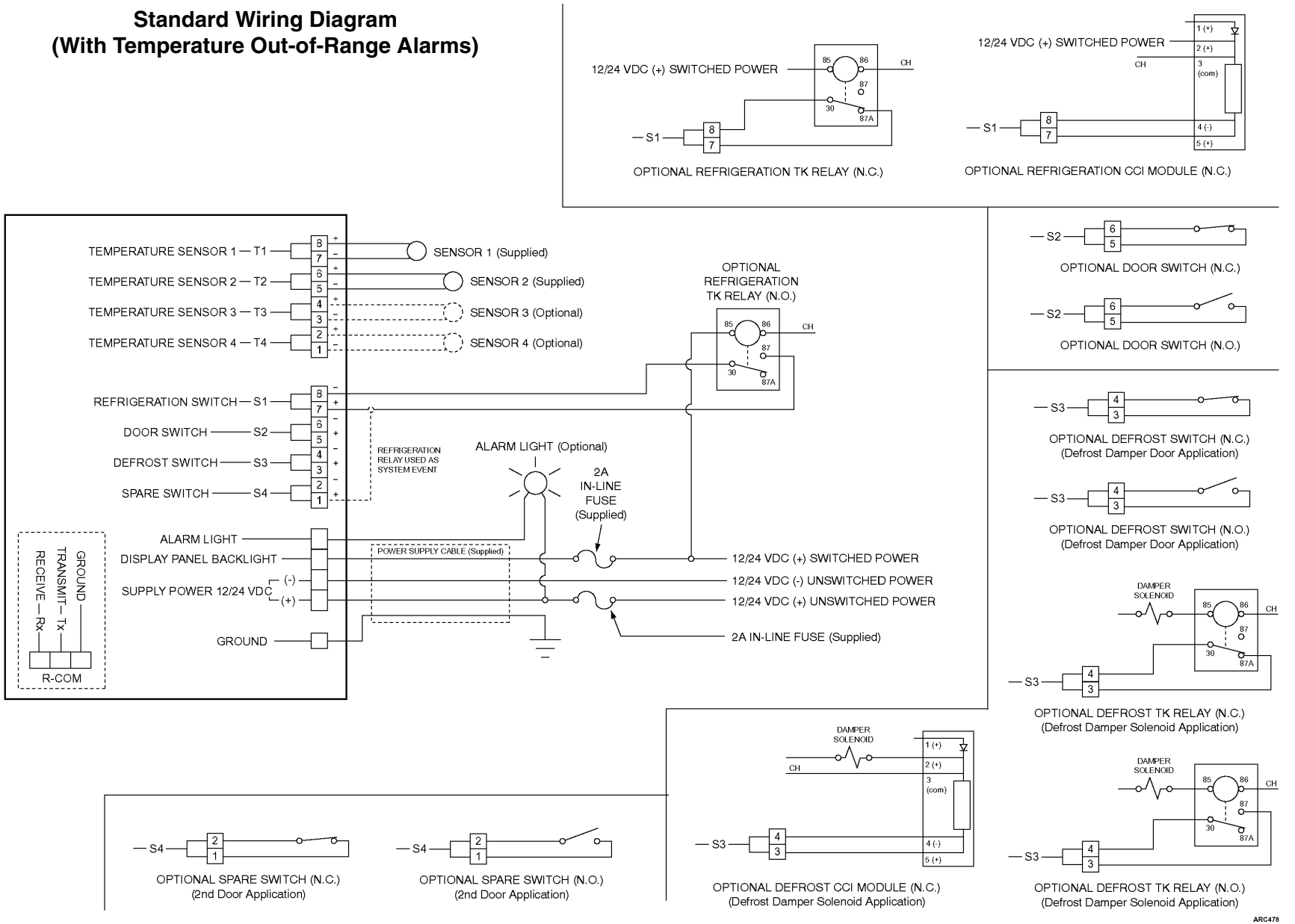
Component Name	Service Parts Number
TranScan 2T Basic Kit Includes exterior housing assembly with clear cover and rubber seal, 1 thermistor type temperature sensor with 20 ft (6 m) cable, 1 thermistor type temperature sensor with 59 ft (18 m) cable, 1 power supply cable with 2 in-line fuses, 1 - 4 pin connector, 2 - 8 pin connectors, mounting hardware, User Reference Manual & Installation Guide	**45-1983**
TranScan 2C Basic Kit Includes exterior housing assembly with clear cover and rubber seal, 1 thermistor type temperature sensor with 20 ft (6 m) cable, 1 thermistor type temperature sensor with 59 ft (18 m) cable, 1 power supply cable with 2 in-line fuses, 1 - 4 pin connector, 2 - 8 pin connectors, mounting hardware, User Reference Manual & Installation Guide	**45-1986**
TranScan 2R Basic Kit Includes exterior housing assembly with clear cover and rubber seal, 1 thermistor type temperature sensor with 20 ft (6 m) cable, 1 thermistor type temperature sensor with 59 ft (18 m) cable, 1 power supply cable with 2 in-line fuses, 1 - 4 pin connector, 2 - 8 pin connectors, mounting hardware, User Reference Manual & Installation Guide	**45-1982**
Thermistor Type Temperature Sensor with 3 ft (1 m) shielded cable	**204-1081**
Thermistor Type Temperature Sensor with 20 ft (6 m) shielded cable	**204-1070**
Thermistor Type Temperature Sensor with 59 ft (18 m) shielded cable	**204-1071**
Temperature Sensor Mounting Clip	**92-1921**
File Download Cable with 5 ft (1.5 m) cable	**204-1086**
4 Pin Connector (power inputs and alarm light output)	**41-4638**
8 Pin Connector (temperature and event inputs)	**41-4637**
4 wire Power Supply Cable - 10 ft (3 m)	**41-4635**
Clear Cover and Cover Seal Kit (fits model T)	**92-2469**
External Alarm Kit (fits model T)	**40-0808**
In-cab Alarm Kit (fits models C and R)	**40-0807**
Under Dash Mounting Kit (fits model R)	**90-0334**
Magnetic Door Switch	**40-0814**
Test Kit (for bench testing all TranScan 2 control units) Includes temperature simulator, control box (power light, alarm light, 4 event status simulator switches), AC power supply, power supply cord	**204-1082**
Printer Ribbon (package of 5)	**205-0249**
Paper Roll (package of 10)	**205-0251**
WinTrac™ Software Revision 4.2.1 (new license)	**204-1084**
WinTrac™ Software Revision 4.2.1 (upgrade license)	**204-1085**

Section 8
Schematics and Wiring Diagrams

Standard Wiring Diagram (Without Temperature Out-of-Range Alarms)



Standard Wiring Diagram
(With Temperature Out-of-Range Alarms)



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Changes and Comments

You are invited to comment on this manual so it can be updated and improved to better meet your needs. Any corrections or comments are welcome. Please complete the following information:

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Page Number(s): _____

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Company Name: _____

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Corrections and Comments: _____

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Return Form To:

Thermo King Corporation
314 West 90th Street
Mail Stop 38
Bloomington, MN 55420
Attn: TranScan 2 Product Manager