

AMANO®

MTX-15™

Data Collection Terminal

Installation Guide



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We recommend that this document be read in its entirety before any attempt is made to operate the equipment.

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About This Manual

This manual covers the following Terminals with Index No.'s:

- A201: Serial Version - Magnetic Reader
- A204: Serial Version - Barcode Reader
- A207: Serial Version - Proximity Reader

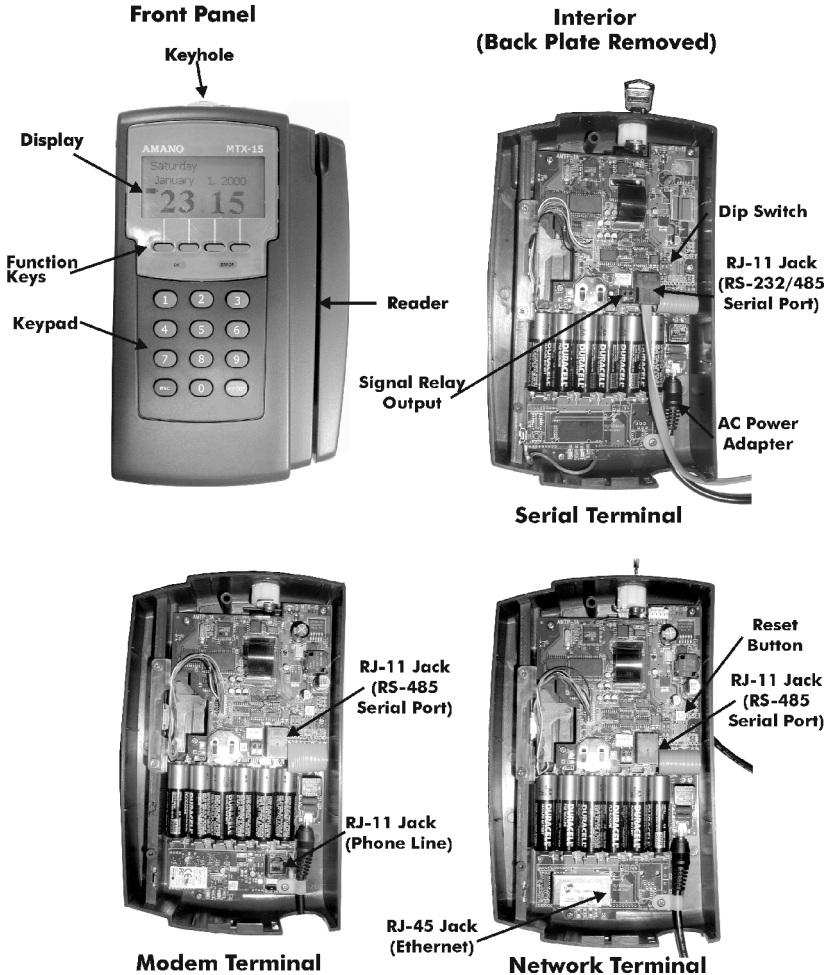
- A203: Modem Version - Magnetic Reader
- A206: Modem Version - Barcode Reader
- A209: Modem Version - Proximity Reader

- A202: Ethernet Version - Magnetic Reader
- A205: Ethernet Version - Barcode Reader
- A208: Ethernet Version - Proximity Reader

Unpacking Your MTX-15

In addition to this guide, your package should include the following:

- Data Collection Terminal
 - AC Adapter
 - Keys (2)
- *Batteries not Included

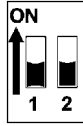


Note: The Dip Switch, Signal Relay Output and AC Power Adapter are the same on all models.

Note: The Rest Slots on the terminal slip over the Rest Hooks on the Back Plate to hold the terminal in the open position for wiring and configuration.

Dip Switches

The Dip Switches on the PCB are set as follows:



- **Switch 1:** Enables the termination resistor (ON position). When RS-485 serial communications are used and the terminal is located at the end of the serial chain, this switch should be ON. It should also be ON for RS-232, Modem and Network terminals. For all RS-485 terminals except the last one, this switch should be OFF.
- **Switch 2:** Disables RS-485 communications (OFF position) in order to permit firmware upgrades via RS-232 (serial models only). For normal operation, this switch should always be in the ON position.

Note: Firmware upgrades should never be attempted without consulting Amano Technical Support for detailed instructions.

Mounting Location



Warning! Before selecting a mounting location for your MTX-15, you must consider the following:

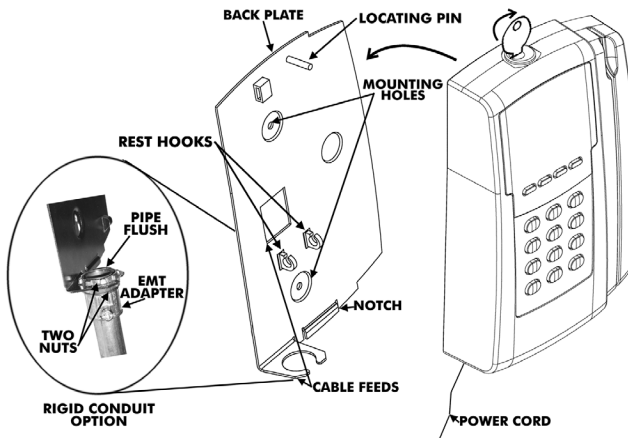
- The mounting surface and hardware must be able to support the unit's weight, 6 lbs. (2.7 kg).
- The area must be within the specified operating temperature range.
- Close proximity to a power source or wall outlet.
- The area or wall can accommodate signal and/or power conduits.

Note: Wiring can be routed through either cable feed.

Note: If you are using rigid (1/2" EMT) conduit, secure the conduit to the bottom cable feed using two nuts, making sure the pipe doesn't extend beyond the thickness of the nut. **Do not bend** the cable feed.

Once a mounting location has been chosen, perform the following:

1. Insert the key into the keyhole, turn clockwise, and remove the back plate as shown. Set the terminal face up on a flat surface. Do not remove the key.



2. Using the back plate as a template, mark the location of the upper mounting hole on the wall. Mark a vertical line on the wall as a guide to align the lower mounting hole.
3. Install a screw or anchor at the mark and hang the back plate from the top-mounting hole. Level the back plate by centering the vertical line in the bottom hole.
4. Mark the location of the bottom hole.
5. If using the square Cable Feed in the Backing Plate for power or communications, mark this location.
6. Install another screw or anchor for the bottom-mounting hole and secure the back plate to the wall.

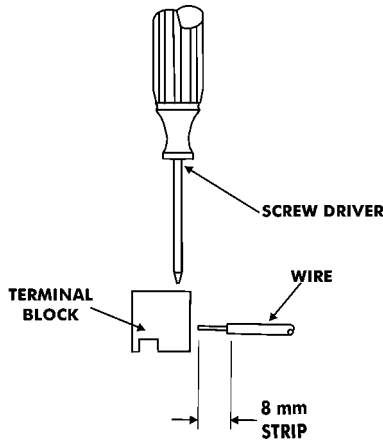
Relay Circuits



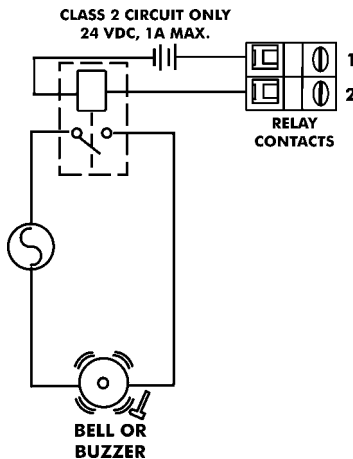
Warning! All connections to the relay contacts must be Class 2 wiring with a maximum of 24 VDC, 1A.

Your MTX-15 is equipped with one relay **NORMALLY OPEN (NO)** contact that can be used to control external equipment such as a bell or buzzer. Connection to the contacts is via the screw terminal block on the back panel PCB. The terminal block can be removed from the PCB to facilitate wiring. The connections to the relay contacts must be Class 2 wiring with a maximum of 24 VDC, 1A.

Connections to the relay contacts are made as follows:



A typical wiring diagram for a bell circuit is shown below:



Communications

Connections between your Host PC and terminal(s) are based upon your application and the model of the MTX-15 you have purchased.

Serial Version

RS-232

RS-232 communications can only be used when there is only one terminal in the system and the length of wire running to the host PC is less than 50 feet.

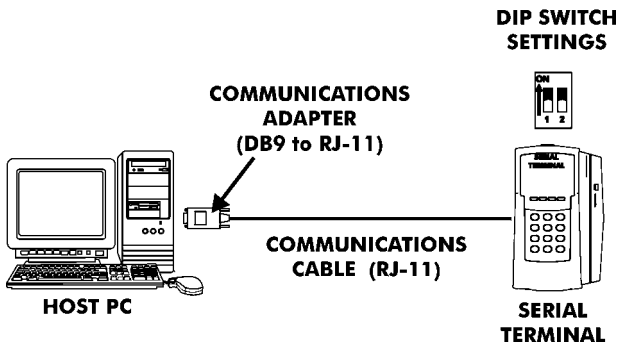
You will require the following accessories:

- AMX-201500: Communications Cable – 50 ft., 6 conductor RJ-11
- AMX-203650: Communications Adapter – DB9F to RJ-11

Connect one end of the Communications Cable to the RJ-11 connector on the back of the MTX-15 terminal. Connect the other end of the cable to an available Com Port of your PC using the Communications Adapter.

If the COM Port of your PC is 25-pin, you must use a 25-pin to 9-pin adapter.

RS-232C TERMINAL SETTINGS AND CONNECTIONS



For distances of greater than 50ft, RS-485 communications must be used.

RS-485

RS-485 communications must be used when the wire run to the host PC is greater than 50 feet or there is more than one terminal in the system.

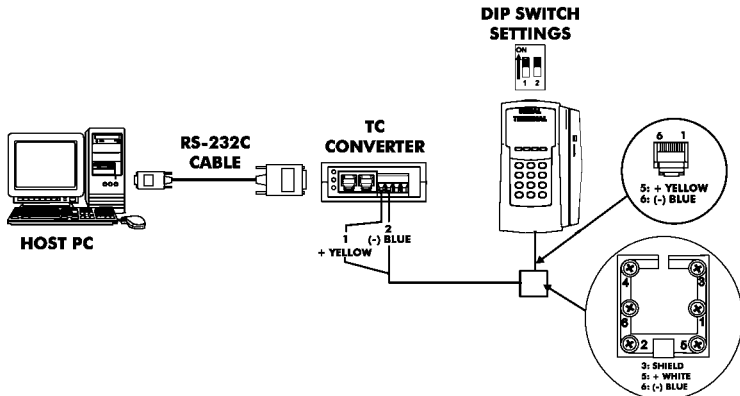
You will require an AMX-204053 TC Converter Kit for the host PC, which includes:

- TC Converter
- DB25M to DB9 F serial “modem” cable

You will require the following accessories for each additional RS-485 terminal:

- AMX-206950: Communications Cable – 10', 6 conductor RJ-11
- AMX-206700: Junction Box

RS-485 TERMINAL SETTINGS AND CONNECTIONS



Note that when there is only one RS-485 terminal in the system, DIP Switch 1 must be in the ON position to enable the termination resistor.

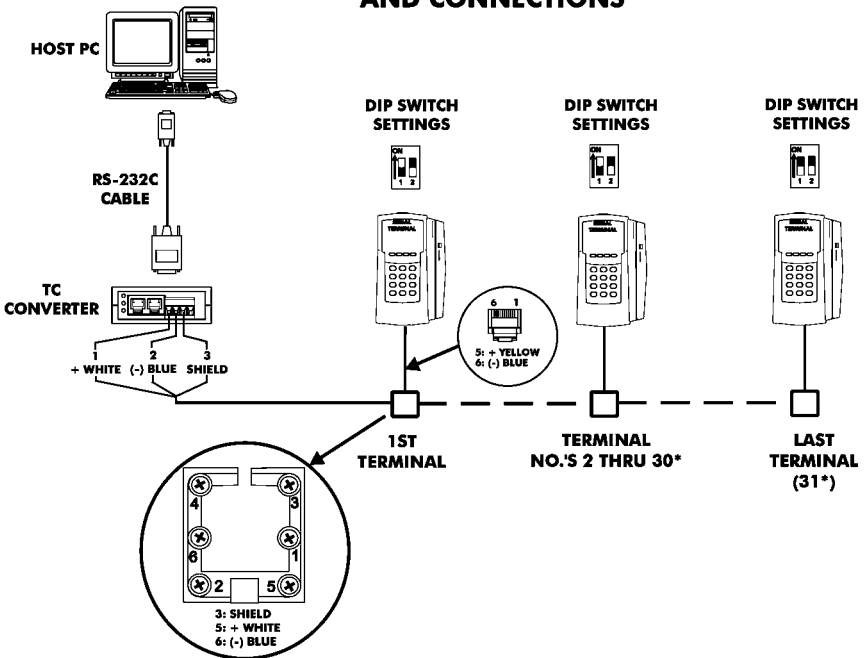


Warning! Please note that terminal #3 (used for the RS-485 cable Shield) is disconnected from the internal RJ-11 receptacle of the junction box. This is deliberate; the shield connection is **NOT** fed through to the MTX Terminal.

Multi-terminal (maximum of 31) applications require the DIP Switches to be OFF in all but the last terminal on the communications line. Dip Switch 1 of the last terminal must be set to ON to enable the termination resistor so that all the terminals can properly communicate with the Host PC.

The terminal settings and connections between the PC and terminals for this application are as follows:

MULTIPLE TERMINAL SETTINGS AND CONNECTIONS



* The maximum number of terminals is dependent upon the distance and the quality of cabling used. It is recommended that Belden Low Voltage Computer Cable, P/N 9841 or equivalent be used for this application.



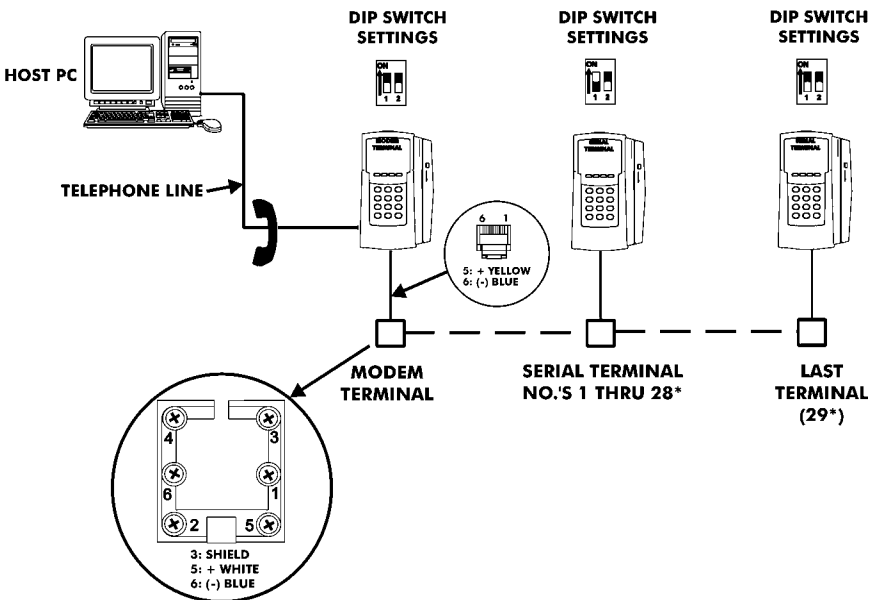
Warning! Please note that terminal #3 (used for the RS-485 cable Shield) is disconnected from the internal RJ-11 receptacle of the junction box. This is deliberate; the shield connection is **NOT** fed through to the MTX Terminal.

Modem Version

Dial-up modem communication is generally used when the host PC is located at a different facility from the terminal(s). This configuration can consist of a single Modem Terminal, or a Modem Terminal networked (via RS-485) with a group of up to (29) Serial Terminals.

The Modem Terminal is connected to a standard telephone line. The terminal settings and connections between the Modem Terminal and Serial Terminals for this application are as follows:

MODEM TERMINAL WITH RS-485 NETWORK SETTINGS AND CONNECTIONS

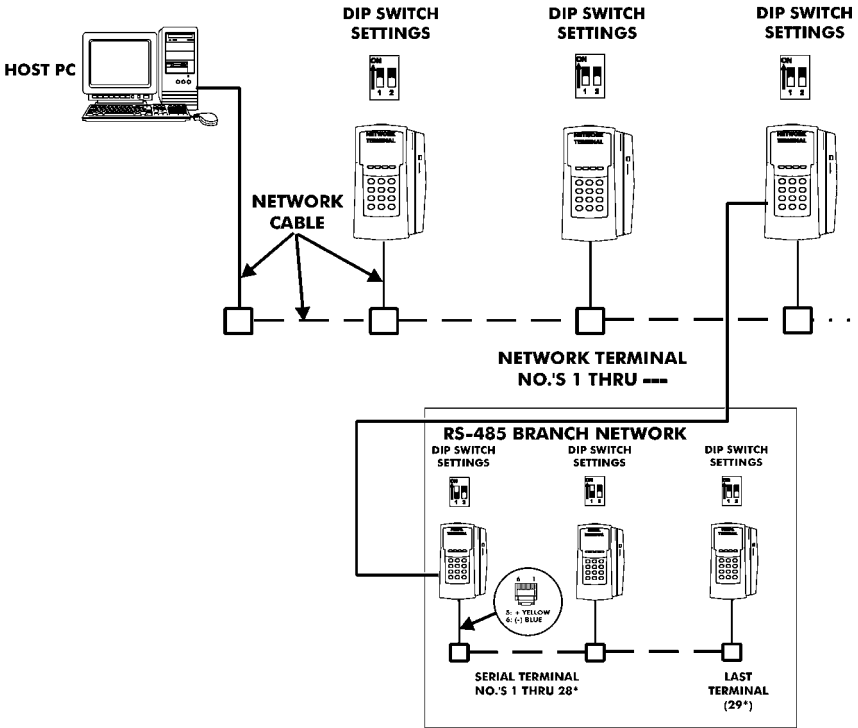


Note that the serial connections depicted here are the same as for the RS-485 wiring described previously.

Network Version

Network Terminals can be connected to a standard 10BaseT or 100 BaseTx computer network. In addition, each Network Terminal can have a group of up to 29 Serial Terminals networked via RS-485 (in the same manner described previously for a Modem Terminal).

NETWORK TERMINALS WITH RS-485 BRANCH NETWORK SETTINGS AND CONNECTIONS



Note that the serial connections for the RS-485 branch network are the same as for the RS-485 wiring described previously.

Wall Mounting and Initialization

Once connections have been made the terminal can be mounted and initialized. To do so perform the following:

1. Holding the terminal face down, pull and remove the green paper insulating strip from under the battery.
2. Re-install the terminal on the back plate by placing the notch on the bottom of the Back Plate (see page 3) over the plastic tab in the bottom of the terminal cabinet. Pivot the terminal up so the locating pin on the Back Plate aligns with its corresponding hole in the cabinet. Rotate the key counterclockwise to lock the terminal in place. Remove the key.
3. Plug in the AC Power Adapter into an outlet. The terminal will do the following after displaying opening splash screens:
 - Test memory banks “0” through “6” and report the results.

```
MEMORY BANK TEST
0,1,2,3,4
*****

```

```
MEMORY BANK = OK
SET VARIABLES
*****
SN=0000000000
COMM=Waiting

```

- Report the serial number of this terminal.
- Report the communication type of this terminal: serial (RS232/RS485), Modem or Ethernet.
- Test the keypad and if OK, report the keypad version.
- Display the version of firmware installed.
- Display the Terminal Number (always “0” until re-assigned by Time Guardian software).

```
MEMORY BANK = OK
SET VARIABLES
*****
SN=0000000000
COMM=RS232/RS485
KEYPAD=UER1
UER=44.8   TN=01
DONE

```

- Display the opening screen.

```
Saturday
January, 1 2000
12 00 AM

```

Note: The time and date cannot be set from the keypad; it must be downloaded to the terminal from the host PC. Pressing any numeric key will display “E04 Keypad Lock”. All features and functions must be enabled from the host.

- Once the default time is displayed, swipe a badge. The badge number will be displayed at the top of the screen.
- Please insert the Time Guardian or Time Guardian Pro Software CD into the CD-ROM drive of your PC to install the software.

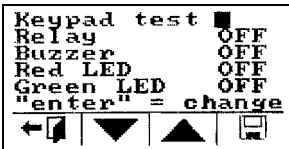
Troubleshooting and Configuration

In addition to a system diagnostic that runs during power up, the MTX-15 has an internal diagnostic utility for verifying the correct operation of the terminal, adjusting the display contrast and configuring network communications (Ethernet terminals only). To access diagnostics, press the **Enter** key when the Memory Bank test appears. After the terminal initializes, the Diagnostic screen will appear:



Use the Function keys (as indicated at the bottom of the display) to highlight the desired test and press **Enter** on the keyboard to advance to the test screen. Use the left function key to exit diagnostics.

Relay, Keypad, LED and Buzzer Test



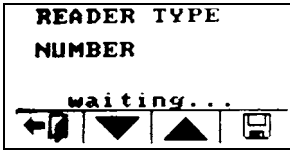
Use the Function keys to highlight the desired test and press **Enter** to begin.

- Keypad Test:** Pressing any numeric key will display the number on the Keypad Test line. ESC will indicate "C" and ENTER will display "E". The function keys (from left to right) will display "L","M","N" and "O", respectively. Press the "▼" function key twice to exit this test.
- Relay:** Pressing **Enter** will display "ON" and energize the signal relay (closing the contacts). Pressing enter a second time will display "OFF" and deactivate the relay.
- Buzzer:** This will display "ON" and sound the internal buzzer for approximately one second.
- Red LED:** Pressing **Enter** will display "ON" and turn the red "ERROR" LED on for one second, then deactivate the LED and display "OFF".
- Green LED:** Pressing **Enter** will display "ON" and turn the green "OK" LED on for one second, then deactivate the LED and display "OFF".

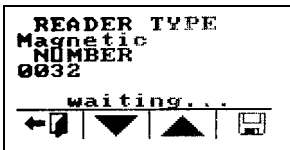
Press the left Function key to return to the Diagnostic menu.

Reader Test

This test will display the type of reader installed in the MTX-15 terminal and indicate the functional status of the reader.



Swipe a badge to initiate the test. If the display advances to the following screen, the reader is functioning normally:



If "FAIL" is displayed instead of a number it indicates an unreadable card.

The test can be repeated by re-swiping a card.

Press the left Function key to return to the Diagnostic menu.

Screen Test

This diagnostic tests the display by turning on all the pixels. Any spots would indicate a defective pixel.

Press the left Function key to return to the Diagnostic menu.

Network Configuration

This selection will only function on an Ethernet Terminal and is used to configure network communications.

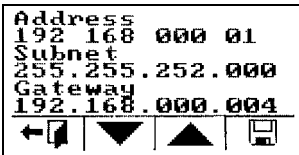


Automatic IP is the default, which will obtain the settings automatically when the terminal is connected to the network. If this is acceptable, press the right Function key to save the setting and reboot the terminal. "Please Wait" and "Rebooting" will flash along the bottom of the display for a few minutes while the terminal reboots. The left Function key or **Esc** will exit without saving your setting or rebooting the terminal.

To view the IP address set by the network, highlight **Specify IP** and press **Enter**. Copy down the settings displayed in order to configure your time and attendance software. Press the left function key or **Esc** to exit the screen to maintain the automatic setting.

Note: It is important to exit this screen without saving. If save is pressed, the terminal will reboot with the displayed address in manual mode (see below); automatic IP setting will be disabled.

If you need to set the IP Address manually, highlight **Specify IP** and press **Enter** to advance to the IP Address window.



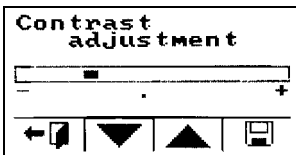
You need to obtain the appropriate settings from your network administrator.

Enter the IP Address, Subnet Mask and Gateway settings using the numeric keypad. The Up and Down Function keys allow you to move between the three fields.

Press the right Function key to save the setting. This will automatically reboot the terminal. "Please Wait" and "Rebooting" will flash along the bottom of the display for a few minutes while the terminal reboots. The new settings will be in effect after the terminal reboots. The left Function key will exit without saving your setting or rebooting the terminal.

Contrast

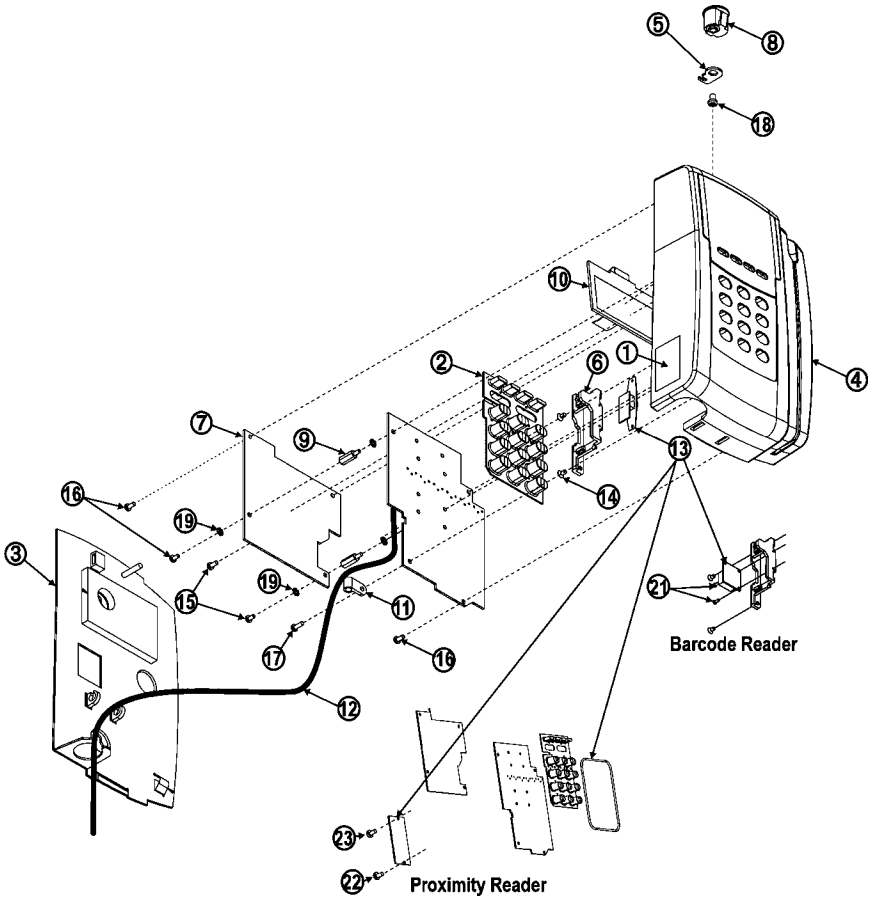
This function adjusts the contrast of the LCD display.



Use the Up and Down Function keys to darken or lighten the contrast.

Press the right Function key to save the setting and return to the Diagnostic menu. The left Function key will exit without saving your setting.

Service Parts



	Part Number	QTY	Description	Comments
1	ACC-300840	1	Serial # Label	
2	AMX-300102	1	Keypad-MTX-15	
3	AMX-300252	1	Back Assembly MTX-15	
4	AMX-300390	1	Case Assembly MTX-15	
5	AMX-300500	1	Pawl	
6	AMX-300601	1	Bracket Reader MTX-15	Mag Reader Barcode Reader
7	AMX-303450	1	MTX-15 PCB Assembly Serial	Serial Terminal
	AMX-303550	1	MTX-15 PCB Assembly Modem	Modem Terminal
	AMX-303650	1	MTX-15 PCB Assembly Ethernet	Ethernet Terminal
8	C-435401	1	Lock	
9	C-502700	2	Standoff M3x13.5	
10	AMX-303350	1	LCD display assembly	
11	EHL-201400	1	Clamp, cable	
12	EOE-108370	1	Wall Mount Transformer, 120V	
13	EOE-111080	1	Magnetic Stripe Reader	Mag Reader
	ATE-007130	1	Barcode Sensor, visible	Barcode Reader
	AMX-302900	1	Reader, Prox-44 bit Wiegand	Prox Reader
14	SRG-3005	2	Screw, 3mm flat head	
15	STG-3005	2	Screw, D-3mm L-5mm	
16	UFJ-3006	3	Tap screw, D-3mm L-6mm	
17	UFG-3008	1	Screw, D-3mm L-8mm	
18	UFJ-40062V	1	Screw	
19	WIB-300499	4	External toothed lock washer	
20	C-459150	1	Key Assembly (#700 key)*	
21	UFJ-2005	2	Screw, D-3mm L-5mm	Barcode Reader
22	UFJ-3006	1	Tap screw, D-3mm L-6mm	Prox Reader
23	STG-3005	1	Screw, D-3mm L-5mm	Prox Reader

*Not Shown

Specifications

Operating Environment:	32°F to 113°F (0°C to 45°C) 10 - 90% relative humidity, non-condensing
AC Adapter Power Input:	105 - 130 VAC, 50-60 Hz
Power Consumption:	1.5 Watts (Serial version) 2.1 Watts (Modem version) 3.0 Watts (Network version)
Dimensions:	8.86" L X 5.5" W X 1.9" D (225 mm L X 140 mm W X 49 mm D)
Weight:	6 lbs. (2.7 kg)
Daylight Saving Time (DST):	Settings are programmable through Time Guardian software.
Employee Badges:	3.375" L X 2.215" W X 0.030" D (86 mm L X 54 mm W X 0.76 mm D) Magnetic stripe card badges conform to Amano proprietary standard. Barcode badges are Amano standard code 39. Proximity devices have embedded chip with Amano format.
Readers:	Index No.'s A201, A202 and A203: Mag-stripe reader that accepts Amano proprietary standard mag-stripe encoding. Index No.'s A204, A205 and A206: Equipped with visible barcode reader that accepts Amano standard code 39 barcode card. Index No.'s A207, A208 and A209: Proximity reader, ACI format
Memory Backup:	Provides up to 1 year of continuous memory backup without AC power.
Battery Backup: (Optional)	(6) AA size alkaline (non-rechargeable) batteries.
Battery Backup Time (Range dependant on reader type)	Serial Version: 14 to 24 hours Modem Version: 7 to 10 hours Ethernet Version: 5 to 6 hours
Display:	2.8" diagonal, 128 x 64 dots resolution LCD reflective (no backlight)
Keypad:	3x4 keypad (0~9, ENT, ESC) + 4 function keys (used for Cost Center /Job costing feature).
External Signal Capability:	1 Dry contact: 1A, 24V, Class 2 circuit, Normally Open

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