THE IM-1MAG/E DISPENSER

SET UP AND OPERATION MANUAL

FOR SERVICE CALL
1-800-795-8251

Dispenser Serial Number _____
Software Version _____

THE IM-1MAG/E DISPENSER
SET UP AND OPERATION MANUAL

TABLE OF CONTENTS

SAFETY CONSIDERATIONS

Unplug the dispenser when servicing – failure to do so could cause serious injury.

UNPACKING

When the dispenser is received, it should be carefully unpacked and checked closely for any possible damage. If a freight company is involved and there is damage, please notify them immediately. They will need to thoroughly inspect the damage and fill out a report. Please **do not** touch the machine until this has been done.

Please remove and save packing materials for later use.

STANDARD MACHINE PACKING LIST

QUANTITY	DESCRIPTION
1	IM-1MAG/E dispenser
1	Hex key (side of dispenser)
1	Card weight
1	Card hook
1	Warranty certificate
1	Operation manual

LOADING / UNLOADING CARDS

Cards may be loaded from the top or front of the column, as is most convenient, with the magnetic stripes facing DOWN. Once the cards are loaded place the included weight on top of the stack with the word "FRONT" facing forward, right side up.

For unloading cards, a card hook is provided that allows for easy removal of the bottom-most cards.

CARD THICKNESS ADJUSTMENT PROCEDURE

1. With a 9/64 hex head wrench, turn the adjustment screw on the dispenser counter-clockwise until a card will not pass the adjustment mechanism.
2. Place the supplied calibration card in the bottom of the column.
3. Place the card weight on top of the card with the word "FRONT" facing forward.
4. Place the hex head wrench into the adjustment screw.
5. Try to dispense the card and turn the adjustment screw clockwise until the card is dispensed. It may take a few tries before the card is dispensed smoothly.
6. Once the card is dispensed, the column is properly adjusted.

REGULAR MAINTENANCE

Dispenser lubrication is not necessary. Improper lubrication can result in machine malfunction.

The magnetic stripe reader heads may need cleaning if frequent card read failures are encountered. Use the following procedure to clean the heads if needed:

1. Remove all cards from the dispenser.
2. Unwrap and place one head cleaning card in the bottom of the column; set the column weight on top of it.
3. Command the dispenser to read a card.
4. The cleaning card will be pulled from the column and passed over the heads three times. Once the motion stops vend or outstack the card to remove it.
5. Discard the used cleaning card. DO NOT RE-USE CLEANING CARDS!

   NOTE: Do not attempt to clean the heads by inserting any tool, swab or other foreign object into the card head guides. Head damage may result.
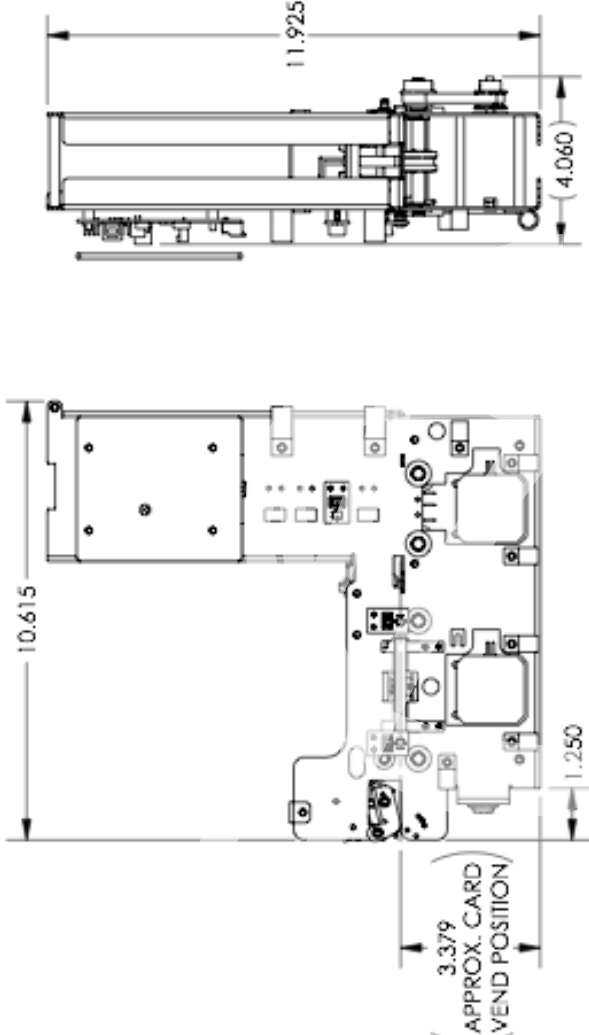
DISPENSER COMMUNICATION SPECIFICATIONS

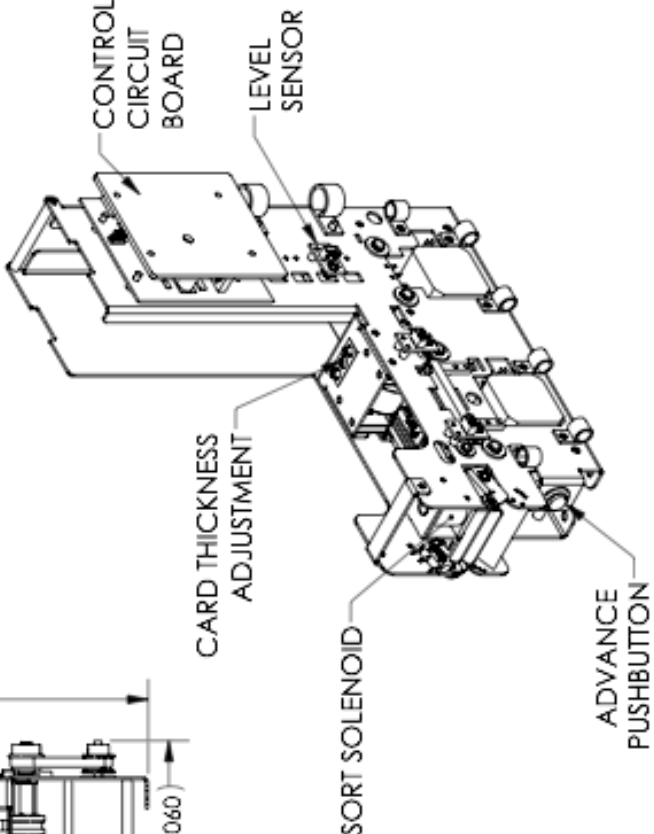The IM-1MAG/E controller contains firmware to allow a host computer to control the card dispenser by issuing commands through an RS-232C or USB serial interface. The default communications format for the serial interface is 9600 Baud, 8 bits, no parity, one stop bit. An option jumper allows for 115200 baud communication. See the "Software Addendum" section below for details on the dispenser communication protocol.
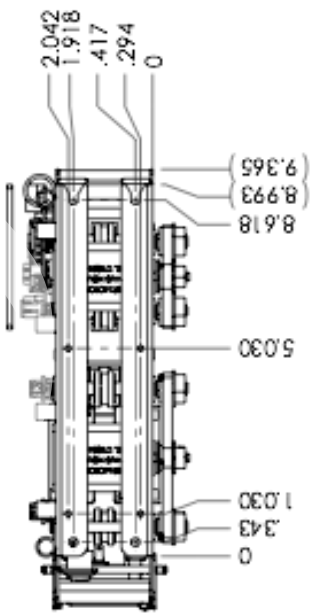
IM-1MAG/E Dispenser Drawings

TMI

TECHNIK MFG. INC.
COLUMBUS, NEBRASKA

NAME:
IM-1MAG

PART # 424-002 IM-1MAG-SH(
DATE: 3/6/2018
REV #
SHEET: 1 OF 1
SCALE: NONE
DRW'N BY: BM
MAT'L
FINISH:

DESIGNER APPROVAL
MANAGER APPROVAL
MATERIALS REVIEW

CONTROL CIRCUIT BOARD

LEVEL SENSOR

CARD THICKNESS ADJUSTMENT

SORT SOLENOID

ADVANCE PUSHBUTTON

11.925

4.060

2.042
1.918
.417
.294
0

9.365
8.993
8.618

5.030

1.030
.343
0

10.615

1.250

3.379
APPROX. CARD VEND POSITION

REVISION HISTORY

REV.	DESCRIPTION	DATE
A	NEW PART	3/6/2018

IM-1MAG/E Component Locations
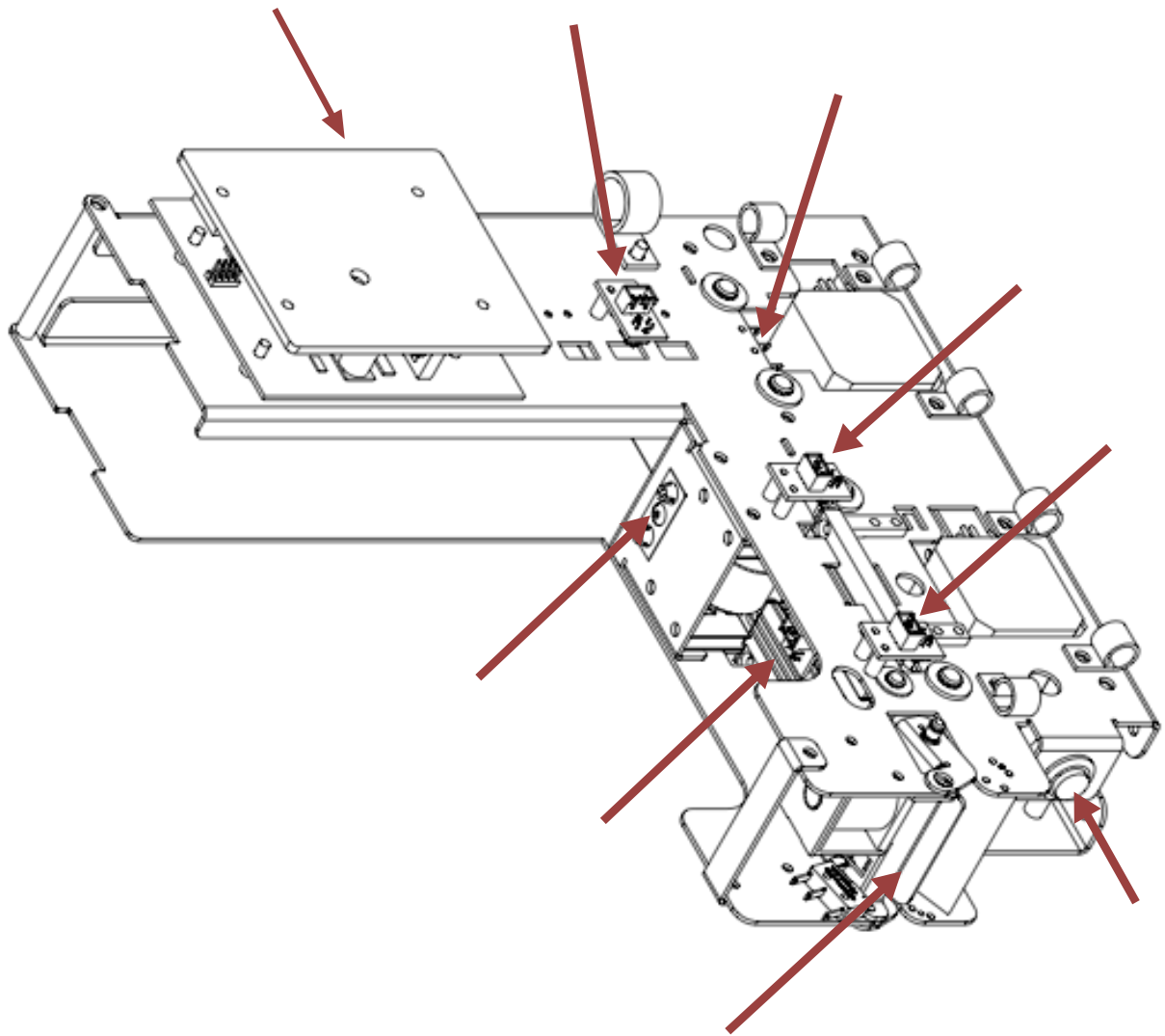
110-095 Series Control Board Description

Please refer to the following image of the 110-095 series board for the locations of the various controls, test points and indicators described below.
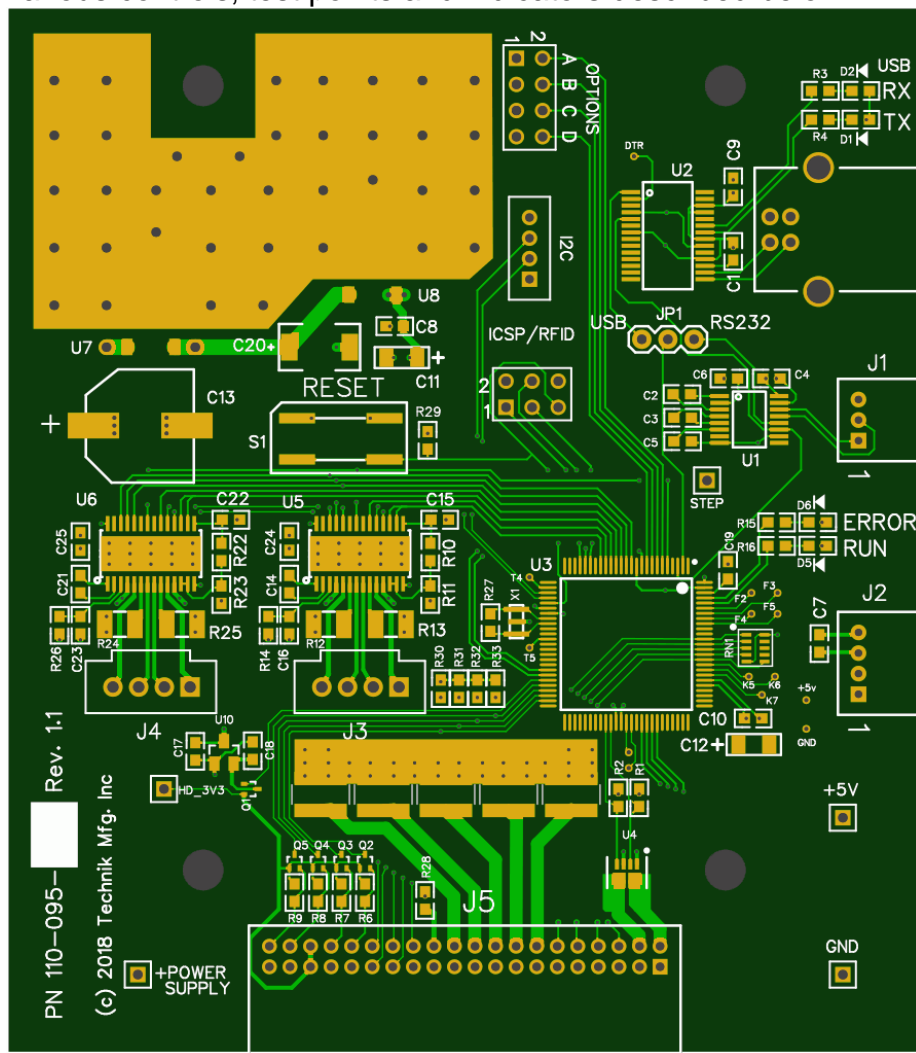
NOTE:

Part #110-095-24 boards operate from a **24VDC**, 3A power supply only.
Part #110-095-12 boards operate from a **12VDC**, 3A power supply only.

J1   3-pin RS232 serial I/O connector (mating connector: JST PHR-3):
      Pin 1 - TX data out from dispenser to host
      Pin 2 - RX data in from host to dispenser
      Pin 3 - GND

J2   4-pin power connector (mating connector: JST PHR-4):
      Pins 1 & 4 - +24v (110-095-24) or 12v (110-095-12) DC @ 3A
      Pins 2 & 3 - GND

J3   Column (rear) motor connector
J4   Feed (front) motor connector
J5   Main wiring harness connector

RESET button:
    Resets the controller to the same state as a power-on condition.

OPTION Jumpers A-D:
    OPTION A - Placing a jumper in the OPTION A position will cause the board to use a baud rate of 115200 for serial communication. No jumper on OPTION A (default) will use 9600 baud. A reset is required after changing this jumper.
    OPTION B - Unused.
    OPTION C - Unused. Store spare jumper at this location.
    OPTION D - Enables internal diagnostics. Place a jumper at this location only if instructed to by Technik technical support.

Jumper JP1:
    USB position - selects the USB connector for serial communication
    RS232 position - selects the RS232 connector (J1) for serial communication

USB LEDs:
    RX - flashes when data is received by the board on the USB connector
    TX - flashes when data is transmitted from the board on the USB connector

ERROR LED:
    Illuminates to indicate an error condition on the controller.

RUN LED:
    Blinks regularly to indicate normal controller operation.

Test Points:
    +POWER SUPPLY - incoming 24VDC or 12VDC power supply
    +5V - regulated +5VDC onboard power supply
    HEAD_3V3 - regulated 3.3VDC power supply to mag stripe heads
    GND - common system ground

110-096 Series Control Board Description

Please refer to the following image of the 110-096 series board for the locations of the various controls, test points and indicators described below.
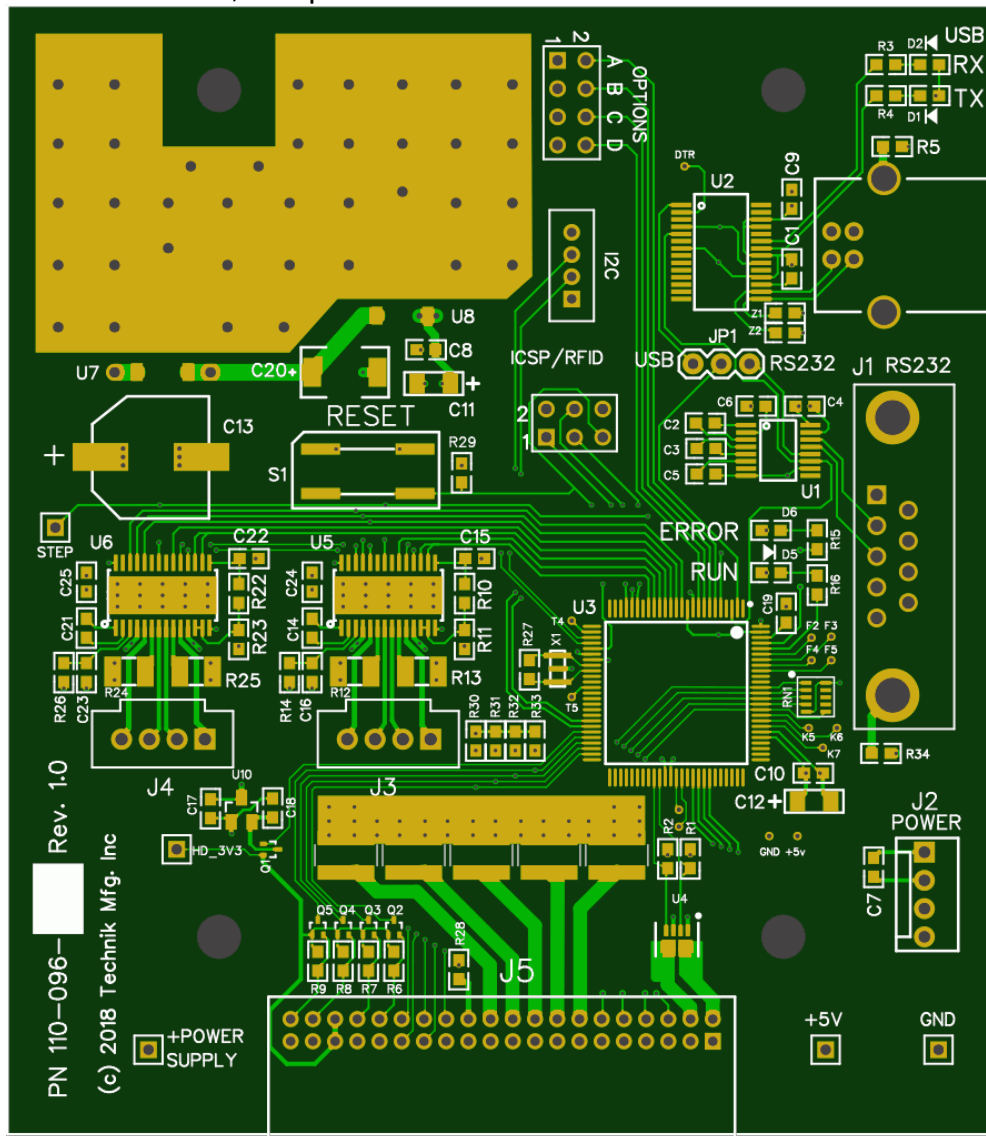
NOTE:

Part #110-096-24 boards operate from a **24VDC**, 3A power supply only.
Part #110-096-12 boards operate from a **12VDC**, 3A power supply only.

J1   DB-9 female RS232 serial I/O connector:
Pin 2 - TX data out from dispenser to host
Pin 3 - RX data in from host to dispenser
Pin 5 - GND
Pins 1,6,7,8 - DCD, DCE, RTS, CTS connected together internally

J2   4-pin power connector (mating connector: Molex 22-01-2047 or equiv.):
Pins 1 & 4 - +24v (110-096-24) or 12v (110-096-12) DC @ 3A
Pins 2 & 3 – GND

J3   Column (rear) motor connector
J4   Feed (front) motor connector
J5   Main wiring harness connector

RESET button:
    Resets the controller to the same state as a power-on condition.

OPTION Jumpers A-D:
    OPTION A - Placing a jumper in the OPTION A position will cause the board to use
            a baud rate of 115200 for serial communication. No jumper on OPTION
            A (default) will use 9600 baud. A reset is required after changing this
            jumper.
    OPTION B - Unused.
    OPTION C - Unused. Store spare jumper at this location.
    OPTION D - Enables internal diagnostics. Place a jumper at this location only if
            instructed to by Technik technical support.

Jumper JP1:
    USB position - selects the USB connector for serial communication
    RS232 position - selects the RS232 connector (J1) for serial communication

USB LEDs:
    RX - flashes when data is received by the board on the USB connector
    TX - flashes when data is transmitted from the board on the USB connector

ERROR LED:
    Illuminates to indicate an error condition on the controller.

RUN LED:
    Blinks regularly to indicate normal controller operation.

Test Points:
   +POWER SUPPLY - incoming 24VDC or 12VDC power supply
    +5V - regulated +5VDC onboard power supply
    HEAD_3V3 - regulated 3.3VDC power supply to mag stripe heads
    GND - common system ground

Status Indicators

The **RUN** and **ERROR** LEDs provide a visual indication of the operating state of the dispenser.

RUN
This LED will blink green once per second during normal operation.

ERROR
This LED will illuminate red to indicate various error conditions.

Errors at startup
Solid red after calibrating the dispenser - Failed to calibrate the card position sensors. Attempt to recalibrate the dispenser again according to the procedure below. If this error condition persists after recalibrating contact Technik technical support for assistance.

Sequence of 2 blinks - An error has been detected in the controller's internal configuration memory. Recalibrate the dispenser according to the procedure below. If this error condition persists after recalibrating contact Technik technical support for assistance. (Software vers. 1.00 - Blinking red once every 2 seconds)

Sequence of 3 blinks - A failure in the head position sensor has been detected. Contact Technik technical support for assistance. (Software vers. 1.00 - Blinking red once every second)

Sequence of 4 blinks - A failure in the column feed position sensor has been detected. Contact Technik technical support for assistance. (Software vers. 1.00 - Blinking red 4 times every second)

Errors during operation
A red ERROR indicator during routine operation may mean one of the following conditions:

  Failure to feed - a mechanical problem occurred while moving a card from the column through the feed channel. This error will clear on the next successful card dispense cycle.

  Head fault - an error was detected while trying to read data from the card stripe.

  Motor fault - the motor control circuity has detected a problem with one of the drive motors.

Control Board Software Addendum

A Microsoft .NET library is available from Technik Mfg. to enable custom software to control the IM-1MAG/E dispenser. If using this library, please note the following documentation changes for the TMIDispenser.dll dispenser control .NET framework when used with the 110-095 and 110-096 series control boards:

The controllers respond only to the following methods:
> Reset
> UpdateStatus
> Vend
> Read
> Outstack
> Restack
> MotorOn
> MotorOff

The following properties related to unimplemented functions may return undefined values:
> BAstatus
> BillValue
> GetCredits
> PeekCredits
> ModeSwitchValue

Controller Communications Protocol

The following section describes the low-level serial command and status messages passed between the host computer and the controller. The communications format for either the USB or RS232 serial interface is 9600 Baud, 8 bits, no parity, one stop bit.

A speed of 115200 baud is available by placing a jumper on position A of the option jumper block and resetting the dispenser.

NOTE: 9600 baud is required to use the dispenser with the TMIDispenser.dll library.

The USB interface emulates a serial COM port and is compatible with standard FTDI FT232R Virtual COM Port drivers.

In the following command descriptions [\r] represents the ASCII carriage return character and [\n] represents the ASCII newline character.

Commands (issued from the host to the controller)

Miscellaneous Commands
Status Query
Format: SQ[\r]
This causes the controller to return a status message.

Reset
Format: RS[\r]
This causes the controller firmware to restart, returning all devices to their initial state. If a card is present in the read station, it will be returned to the product stack.

Dispenser Commands

MOTOR FORWARD
Format: MF[\r]
This causes the dispenser motor to run forward continuously. This is useful for cleaning the dispenser. Canceled by *DISPENSE MODE*.

MOTOR REVERSE
Format: MR[\r]
This causes the dispenser motor to run in reverse continuously. This is useful for cleaning the dispenser. Canceled by *DISPENSE MODE*.

DISPENSE MODE
Format: MD[\r]
This causes the controller to return to normal operating mode.

READ CARD.

Format: CR[\r]

This command causes the dispenser to advance the next card from the stack through the magnetic stripe read station. The card will be held at this position and a status message will be sent to the host.

VEND CARD.

Format: CV[\r] *or* VE[\r] *or* VX[\r]

This command causes the card dispenser to dispense the previously read card. This command will only be accepted following a *READ CARD* command.

OUTSTACK CARD.

Format: CO[\r]

This command causes the card dispenser to deposit the previously read card into the reject bin. This command will only be accepted following a *READ CARD* command.

RESTACK CARD.

Format: CK[\r]

This command causes the card dispenser to return the previously read card to the stack of un-dispensed cards. This command will only be accepted following a *READ CARD* command.

Messages (sent from the controller to the host)

Status
Format:
    ST;VER=2;DS=UP;BS=DN;LC=SQ;CS=OK;MD=0;LP=0;SO=0;SG=0;GT=1;RD=(n)xxxxx***END*
**[\r\n]

This message is sent at reset or after completion of a command. Note that all fields are identified by a fixed field name followed by an equals sign [=] with the parameter terminated by [;]. The data portion of the field is terminated with [***END***].

NOTE: Except for the ST, VER and RD fields, host software should not assume that message fields will always be delivered in the same order within the status message or that field parameters will always have the same number of characters. Host software should not parse status messages based on specific character positions of fields within the reply string. Host software must also be tolerant of currently unused fields not being included in future versions of controller firmware or new fields being added. The host software's parsing routines should be flexible and fault-tolerant.

ID	Field Name	Description
ST	Record type	Fixed record ID
VER	Firmware version	String identifying the revision level of the firmware

DS	Dispenser Status	Card dispenser status:
		    UP = Ready to dispense
		    DN = Dispenser is jammed
		    SO = Sold out

BS	Bill Status	Unused. Always = DN.
LC	Last Command	The last command received by the controller.

CS	Completion Status	Results of last command:
		    OK = Command completed successfully
		    BZ = Dispenser busy executing prior command
		    NG = Error. Command failed.

MD	Mode Switch	Unused. Always = 0.
LP	Low product	1 = product stack low, 0 = product present at sensor
SO	Sold Out	1 = sold out, 0 = OK
SG	Card staged	1 = card is positioned at end of dispenser channel, 0 = not present
GT	Sort gate status	1 = sort gate open, 0 = sort gate closed
RD	Read data length	Number of characters in data string between (n) and ***END***
END	Terminator	Indicates end of card data and status message

Examples

Read data from a card

(from host)   CR[\r]   (allow 6 seconds for read to complete)
(from dispenser)

                ST;VER=2;DS=UP;BS=DN;LC=CR;CS=OK;MD=0;LP=0;SO=0;SG=0;
GT=0;
RD=(21)6074=0000000000382255***END***[\r\n]

Read successful; card data is 21 characters long and = "6074=0000000000382255"

- OR-

(from host)   CR[\r]   (allow 6 seconds for read to complete)
(from dispenser)

                ST;VER=2;DS=UP;BS=DN;LC=CR;CS=OK;MD=0;LP=0;SO=0;SG=0;
GT=0;
RD=(0)***END***[\r\n]

Read unsuccessful; no card data returned.

SERVICE LOG SHEET

DISP. SERIAL NUMBER _____   DATE INSTALLED _____

DISP. MODEL TYPE _____ INSTALLED BY _____

BUSINESS LOCATION _____

BUSINESS ADDRESS _____

CITY/STATE/ZIP _____

DATE	SERVICE PERFORMED	SERVICED BY

DISPENSER #_____ LOG SHEET

DATE	MACHINE ROW	CARD VALUE	TOTAL CARDS	TOTAL CASH
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
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