Ardac Elite Technical Manual

Diary of changes

Issue 1.0 ..... April 2006
Issue 1.1 ..... May 2006
Issue 1.2 ..... July 2006
Issue 1.3 ..... Oct 2006
- Provisional

Issue 1.4 ..... Jan 2007
- Added Safety Statement

Issue 1.5 ..... April 2007
- Added chassis mounting recommendations

Issue 1.6 ..... May 2007
- Added comment “without illuminated bezel fitted” to current consumption.

Issue 1.7 ..... Jun 2007
- Added Red / Green diagnostics LED description

Issue 1.8 ..... Jun 2007
- Corrected 2 dimensions on **Figure 1**

Issue 2.0 ..... Feb 2008
- Updated with dual barcode / up stack information
- New chassis drawing as **Figure 1**
- Add IGT bezels to Bezel Options

Issue 2.1 ..... Jun 2008
- Updated new ID003 and Netplex DIP switch functions.
- Added ccTalk DIP switch functions.

Issue 2.2 ..... Feb 2009
- Addition of bezel part number

Safety Note

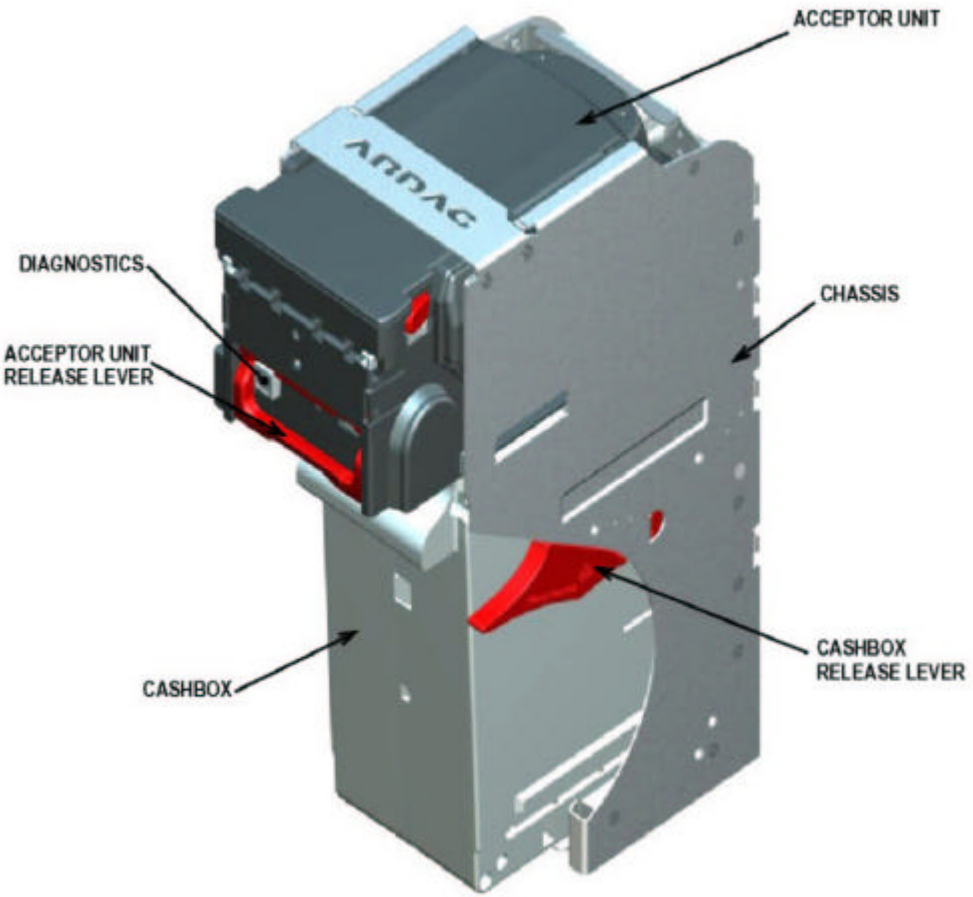
To meet the requirements for EN 60950 the equipment must be installed according to the following requirements:-

- This equipment requires a 12 - 24 V d.c. supply and must be protected by a suitable fuse (see ELECTRICAL SPECIFICATION).
- The equipment must be supplied from a SELV limited power source.
- The equipment must be installed in an enclosure but positioned so that it is external to any fire enclosure area within the main enclosure.
- Disconnect the power supply before carrying out any servicing, maintenance or cleaning.

Introduction

Ardac Elite utilises advanced technology sensing techniques.

- Ability to accept note regardless of note position in bezel or angle of insertion.
- No “steps” required in bezel, just a single 85mm note entry.
- Patent pending techniques to process data at exceptional speeds.
- Multiple wavelength note illumination to utilise available security features in bank notes.
- Full area note scan allows unrivalled flexibility and capability to reject counterfeits.
- 64 different notes in 4 directions
- Dual barcode reader – option for up stack model



COMMUNICATIONS PROTOCOLS

Money Controls is licensed to sell products utilizing proprietary IGT Netplex and JCM ID003 firmware protocols. The reprogramming of units will be supported via ccTalk-based configuration software.

Software Protocols supported in the ARDAC ELITE include:

IGT NETPLEX

via Current Loop Host connection

IGT-USB

via USB Host connection

JCM ID003

via Current Loop Host Connection
via RS232 Host Connection
via TTL Host Connection

CCTALK

via USB Diagnostics/Download connector
via USB Host connection
via ccTalk Host Connection

ENVIRONMENT

Operating temperature	0…….60ºC
Operating humidity	0…….95% RH non-condensing
Storage temperature	-30…..72ºC

WEIGHT

3.5 kg without packaging

3.75 kg with packaging

ELECTRICAL SPECIFICATION

POWER SUPPLY

VOLTAGE

Minimum:	10.5 VDC
Maximum:	28 VDC
Nominal:	12 VDC or 24 VDC

CURRENT at 12 V nominal

Standby:	150 mA	1.8W	Without Illuminated Bezel.
Acceptance:	2.0 A Peak	24W	
Stacking:	3.0 A Peak	36W	
Fuse Rating:	3A Anti-surge / delayed		

CURRENT at 24 V nominal

Standby:	120 mA	2.88W	Without Illuminated Bezel.
Acceptance:	1.5 A Peak	36W	
Stacking:	3.0 A Peak	72W	
Fuse Rating:	1.5A Anti-surge / delayed		

ELECTRICAL HOST INTERFACES

All electrical interfaces listed below will be supported within each ARDAC ELITE product.

RS232
CURRENT LOOP
TTL
ccTalk
USB Diagnostics/Download

SWITCH SETTINGS ID003 – Examples for English Pounds and Euro

EURO:-

Notes Accepted

Country	Denomination	Euro1 Escrow Code Spec 1*	Euro2 Escrow Code Spec 2*	Euro3 Escrow Code WMS*	Software Inhibit #	Inhibit switch #
Euro	5	0x62	0x63	0x72	0200	Bank 1-1
Euro	10	0x63	0x64	0x73	0400	Bank 1-2
Euro	20	0x64	0x65	0x74	0800	Bank 1-3
Euro	50	0x65	0x66	0x75	1000	Bank 1-4
Euro	100	0x66	0x67	0x76	2000	Bank 1-5
Euro	200	0x67	0x68	0x77	4000	Bank 1-6
Euro	500	0x68	0x69	0x78	8000	Bank 1-7

* See Euro spec selection switches for details. **Total Machine Inhibit = FE00**

Bank 1 Dip Switch Functions

Switch	Function	Switch OFF	Switch ON
Bank 1 – 1	Note Inhibit	Enable 5 Euro	Inhibit 5 Euro
Bank 1 – 2	Note Inhibit	Enable 10 Euro	Inhibit 10 Euro
Bank 1 – 3	Note Inhibit	Enable 20 Euro	Inhibit 20 Euro
Bank 1 – 4	Note Inhibit	Enable 50 Euro	Inhibit 50 Euro
Bank 1 – 5	Note Inhibit	Enable 100 Euro	Inhibit 100 Euro
Bank 1 – 6	Note Inhibit	Enable 200 Euro	Inhibit 200 Euro
Bank 1 – 7	Note Inhibit	Enable 500 Euro	Inhibit 500 Euro
Bank 1 – 8	N/A	N/A	N/A

Bank 2 Dip Switch Functions – Firmware versions below 8.00

Switch	Function	Switch OFF	Switch ON
Bank 2 – 1	Spec Select	See Below	See Below
Bank 2 – 2	Spec Select	See Below	See Below
Bank 2 – 3	Spec Select	See Below	See Below
Bank 2 – 4	Serial Comm	See Below	See Below
Bank 2 – 5	Serial Comm	See Below	See Below
Bank 2 – 6	ID003 Baud Rate	9600	19200
Bank 2 – 7	String	Enabled	Disabled
Bank 2 – 8	Barcode	Enabled	Disabled

Note Specification Selection Switches

Function	Switch 2-1	Switch 2-2	Switch 2-3	Version String
Spec 1	OFF	OFF	OFF	"A(EUR)-A5-SS ID003-03V5070.00.01.01 DBB1"
Spec 2	ON	OFF	OFF	"A(EUR2)-A5-SS ID003-03V5070.00.01.01 XXXX"
Spec 3 WMS	OFF	ON	OFF	"A(EUR2)-A5-SS ID003-03V5070.00.01.01 XXXX"
Spec 4	ON	ON	OFF	Not Used

ENGLAND:-

Notes Accepted

Country	Denomination	Euro3 Escrow Code WMS*	Software Inhibit #	Inhibit switch #
England	5	0x61	0100	Bank 1-1
England	10	0x62	0200	Bank 1-2
England	20	0x63	0400	Bank 1-3
England	50	0x64	0800	Bank 1-4

Bank 1 Dip Switch Functions

Switch	Function	Switch OFF	Switch ON
Bank 1 – 1	Note Inhibit	Enable £5	Inhibit £5
Bank 1 – 2	Note Inhibit	Enable £10	Inhibit £10
Bank 1 – 3	Note Inhibit	Enable £20	Inhibit £20
Bank 1 – 4	Note Inhibit	Enable £50	Inhibit £50
Bank 1 – 5	N/A	N/A	N/A
Bank 1 – 6	N/A	N/A	N/A
Bank 1 – 7	N/A	N/A	N/A
Bank 1 – 8	N/A	N/A	N/A

Bank 2 Dip Switch Functions - Firmware versions below 8.00

Switch	Function	Switch OFF	Switch ON
Bank 2 – 1	N/A	N/A	N/A
Bank 2 – 2	N/A	N/A	N/A
Bank 2 – 3	N/A	N/A	N/A
Bank 2 – 4	Serial Comm	See Below	See Below
Bank 2 – 5	Serial Comm	See Below	See Below
Bank 2 – 6	ID003 Baud Rate	9600	19200
Bank 2 – 7	String	Enabled	Disabled
Bank 2 – 8	Barcode	Enabled	Disabled

Serial Communication Selection Switches

Function	Switch 2-4	Switch 2-5
Current Loop (Default)	OFF	OFF
RS 232	ON	OFF
TTL	OFF	ON
Current Loop	ON	ON

Bank 2 Dip Switch Functions - Firmware versions 8.00 & Above

Switch	Function	Switch OFF	Switch ON
Bank 2 – 1	Spec Select	See Below	See Below
Bank 2 – 2	Spec Select	See Below	See Below
Bank 2 – 3	Spec Select	See Below	See Below
Bank 2 – 4	Serial Comm	See Below	See Below
Bank 2 – 5	Serial Comm	See Below	See Below
Bank 2 – 6	Bottom Barcode	Enabled	Disabled
Bank 2 – 7	String	Enabled	Disabled
Bank 2 – 8	Top Barcode	Enabled	Disabled

Note Specification Selection Switches

Function	Switch 2-1	Switch 2-2	Switch 2-3	Version String
Spec 1	OFF	OFF	OFF	"A(EUR)-A5-SS ID003-03V5070.00.01.01 DBB1"
Spec 2	ON	OFF	OFF	"A(EUR2)-A5-SS ID003-03V5070.00.01.01 XXXX"
Spec 3 WMS	OFF	ON	OFF	"A(EUR2)-A5-SS ID003-03V5070.00.01.01 XXXX"
Spec 4	ON	ON	OFF	Not Used

Serial Communication Selection Switches

Function	Switch 2-4	Switch 2-5
Current Loop (Default)	OFF	OFF
RS 232	ON	OFF
TTL	OFF	ON
Current Loop	ON	ON

Barcode Selection Switches

Barcode Acceptance Selection Switches			
Switch 2-6 (Bottom Sensor Disable)	**Switch 2-8** (Top Sensor Disable)	**Barcode Acceptance Directions**	
		Universal Model (002)	Downstack Model (001) **ONLY Top Sensor present**
OFF	OFF	4-Direction Barcode Acceptance	Barcode Enabled
OFF	ON	2-Direction Barcode Acceptance (Upstack Mounting)	Barcode Disabled
ON	OFF	2-Direction Barcode Acceptance (Downstack Mounting)	Barcode Enabled
ON	ON	Barcode Disabled	Barcode Disabled

SWITCH SETTINGS NETPLEX & IGT USB

Bank 1 Dip Switch Functions

Switch	Function	Switch OFF	Switch ON
Bank 1 – 1	Note Inhibit	Enable Lowest Denomination	Inhibit Lowest Denomination
Bank 1 – 2	Note Inhibit	Enable Note 2	Inhibit Note 2
Bank 1 – 3	Note Inhibit	Enable Note 3	Inhibit Note 3
Bank 1 – 4	Note Inhibit	Enable Note 4	Inhibit Note 4
Bank 1 – 5	Note Inhibit	Enable Note 5	Inhibit Note 5
Bank 1 – 6	Note Inhibit	Enable Note 6	Inhibit Note 6
Bank 1 – 7	Note Inhibit	Enable Note 7	Inhibit Note 7
Bank 1 – 8	Note Inhibit	Enable Highest Denomination	Inhibit Highest Denomination

Note:- if only 4 denominations are used, for example, then switches 5, 6, 7 & 8 are not used.

Bank 2 Dip Switch Functions - Firmware version 10.00+

Switch	Function	Switch OFF	Switch ON
Bank 2 – 1	N/A	N/A	N/A
Bank 2 – 2	N/A	N/A	N/A
Bank 2 – 3	N/A	N/A	N/A
Bank 2 – 4	N/A	N/A	N/A
Bank 2 – 5	N/A	N/A	N/A
Bank 2 – 6	Bottom Barcode	Enabled	Disabled
Bank 2 – 7	String	Enabled	Disabled
Bank 2 – 8	Top Barcode	Enabled	Disabled

Barcode Selection Switches

Barcode Acceptance Selection Switches			
Switch 2-6 (Bottom Sensor Disable)	**Switch 2-8** (Top Sensor Disable)	**Barcode Acceptance Directions**	
		Universal Model (002)	Downstack Model (001) **ONLY Top Sensor present**
OFF	OFF	4-Direction Barcode Acceptance	Barcode Enabled
OFF	ON	2-Direction Barcode Acceptance (Upstack Mounting)	Barcode Disabled
ON	OFF	2-Direction Barcode Acceptance (Downstack Mounting)	Barcode Enabled
ON	ON	Barcode Disabled	Barcode Disabled

SWITCH SETTINGS ccTalk

Bank 1 Dip Switch Functions - Firmware versions 10.00 and above

Switch	Function	Switch OFF	Switch ON
Bank 1 – 1	Note Inhibit	Enable Lowest Denomination	Inhibit Lowest Denomination
Bank 1 – 2	Note Inhibit	Enable Note 2	Inhibit Note 2
Bank 1 – 3	Note Inhibit	Enable Note 3	Inhibit Note 3
Bank 1 – 4	Note Inhibit	Enable Note 4	Inhibit Note 4
Bank 1 – 5	Note Inhibit	Enable Note 5	Inhibit Note 5
Bank 1 – 6	Note Inhibit	Enable Note 6	Inhibit Note 6
Bank 1 – 7	Note Inhibit	Enable Note 7	Inhibit Note 7
Bank 1 – 8	Note Inhibit	Enable Highest Denomination	Inhibit Highest Denomination

Note:- if only 4 denominations are used, for example, then switches 5, 6, 7 & 8 are not used.

Bank 2 Dip Switch Functions - Firmware versions 10.00 and above

Switch	Function	Switch OFF	Switch ON
Bank 2 – 1	Encryption Key Reset	Set all three switches to ON, then power up. Factory keys will be reprogrammed into EEPROM	
Bank 2 – 2	Encryption Key Reset		
Bank 2 – 3	Encryption Key Reset		
Bank 2 – 4	N/A	N/A	N/A
Bank 2 – 5	N/A	N/A	N/A
Bank 2 – 6	Bottom Barcode	Enabled	Disabled
Bank 2 – 7	String	Enabled	Disabled
Bank 2 – 8	Top Barcode	Enabled	Disabled

Barcode Selection Switches

Barcode Acceptance Selection Switches			
Switch 2-6 (Bottom Sensor Disable)	**Switch 2-8** (Top Sensor Disable)	**Barcode Acceptance Directions**	
		Universal Model (002)	Downstack Model (001) **ONLY Top Sensor present**
OFF	OFF	4-Direction Barcode Acceptance	Barcode Enabled
OFF	ON	2-Direction Barcode Acceptance (Upstack Mounting)	Barcode Disabled
ON	OFF	2-Direction Barcode Acceptance (Downstack Mounting)	Barcode Enabled
ON	ON	Barcode Disabled	Barcode Disabled

DIAGNOSTICS INTERFACE

ccUSB Front Diagnostic and ccUSB Rear Host Interface

Manufacturers may utilize the Download Diagnostics Port. Estimated time to download entire Core and Table image is less than 1.0 minute via the USB communications link.

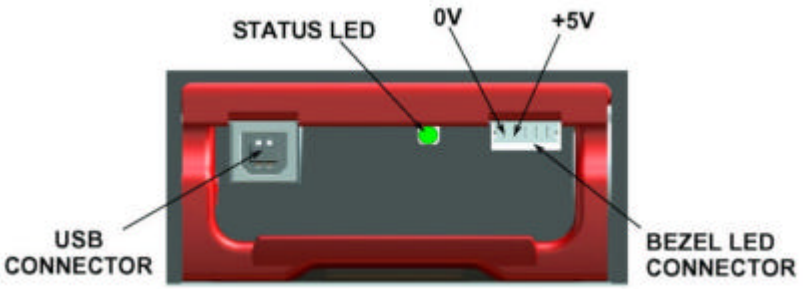
Entire Table download estimated at less than 40 secs.

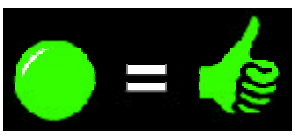
Download

- Core Firmware
- Packed Table Download
- Core & Packed Firmware Combined
- Macro: individual Note inhibit ability

Upload

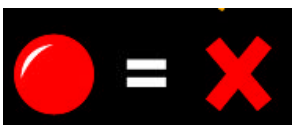
- Core Revision/Individual Note Profile Revision
- Serial Number
- Note Information
- Voltage Information
- Historic Logs (Encrypted)
-





Green	**No problems with Ardac Elite**
Solid	Normal operation, validator ready to accept currency
1 x flash	Disabled by machine interface or acceptor is busy
2 x flash	Note recognised but inhibited by machine
3 x flash	Note not recognised
4 x flash	Note transportation fault

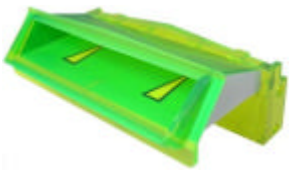
Amber	**Operator attention required**
Solid	Cashbox not fitted
1 x flash	Cashbox full
2 x flash	Clean sensors (based on acceptance rate) of last 50 bills
3 x flash	Note jam



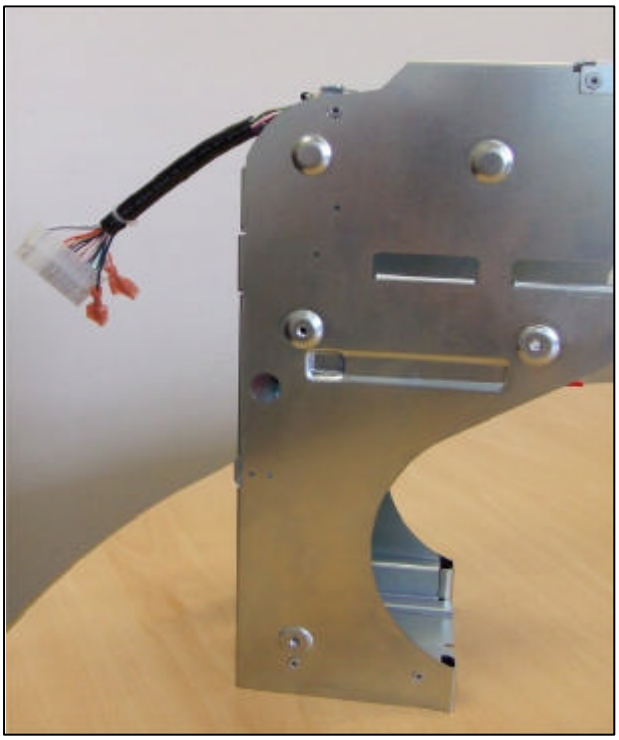
Red	**Service attention required**
Solid	Validator hardware fault
1 x flash	Stacker home not detected

Note:- Should the LED flash RED / GREEN alternately, then the Elite has not been programmed and a firmware / tables download should be performed.

Bezel Options

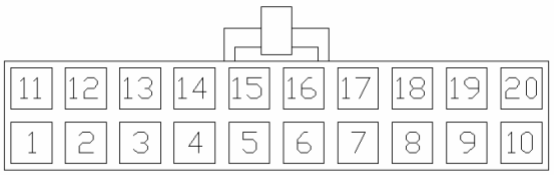
NOTE SIZE	PART NO	DESCRIPTION	
Up to 83mm	BAES02XX00003	Ardac Elite STDII BEZ Tall Blue LED's	
Up to 85mm	BBES02XX00001	Ardac Elite 85mm STDII BEZ Tall Blue LED's	
Up to 83mm	BAES02XX00002	Ardac Elite STDII BEZ Short Blue LED's	
Up to 85mm	BAEP01XX00001	Ardac Elite Platform BEZ Green LED's	
Up to 85mm	BAEP01XX00002	Ardac Elite Platform BEZ **Blue LED Option**	
Up to 85mm	BAES03XX00001	Ardac Elite STD 3 BEZ Blue LED's – UPSTACK / DOWNSTACK	
Up to 85mm	BAED01XX00003	IGT Note Guide for Players Edge+, 17" Upright & 17" Game King applications.	
Up to 85mm	172193	IGT Note Guide for Bartop application.	
Up to 85mm	BAED01XX00002	IGT Note Guide for S+, Vision, 19" Game King, & S2000 applications.	
Up to 85mm	BAED01XX00001	IGT Note Guide for Lexus application.	

ARDAC Elite – Standard Chassis Pin Outs

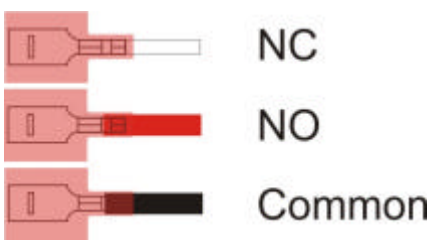


1	Supply GND
2	Comms GND
3	Current Loop GND
4	RS-232 - Rx
5	TTL - Rx
6	Current Loop - Rx
7	Enable LED
8	
9	
10	Stacker Present
11	Diagnostics / ccTalk
12	
13	Current Loop Signal +
14	RS-232 - Tx
15	TTL - Tx
16	Current Loop Tx
17	Master Reset
18	
19	
20	12 / 24V DC

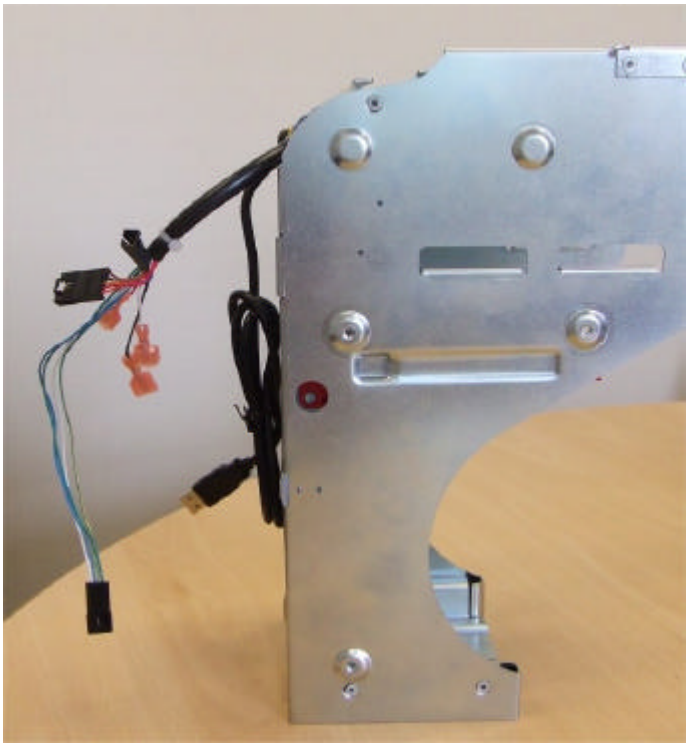
Connector Pinouts as viewed from Host:



Spade Connectors: Cashbox fitted micro switch



ARDAC Elite - Netplex chassis pinouts



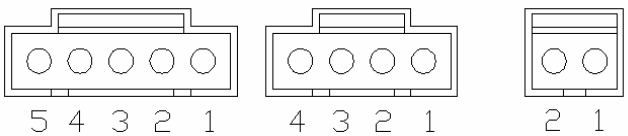
1	USB Vbus
2	USB D-
3	USB D+
4	USB GND
	USB Shield

1	+12 / +24V DC
2	Supply GND

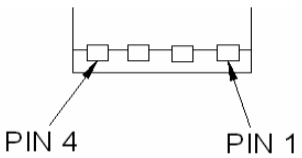
1	+12 / +24V DC
2	Enable LED
3	Supply GND
4	Stacker Present

1	Netplex MRESET
2	Netplex NET Tx
3	Netplex NET VDC
4	Netplex NET Rx
5	Netplex NET GND

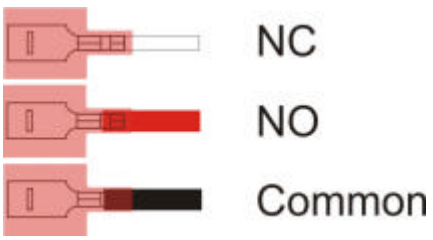
Connector Pinouts as viewed from Host:



USB Connector:

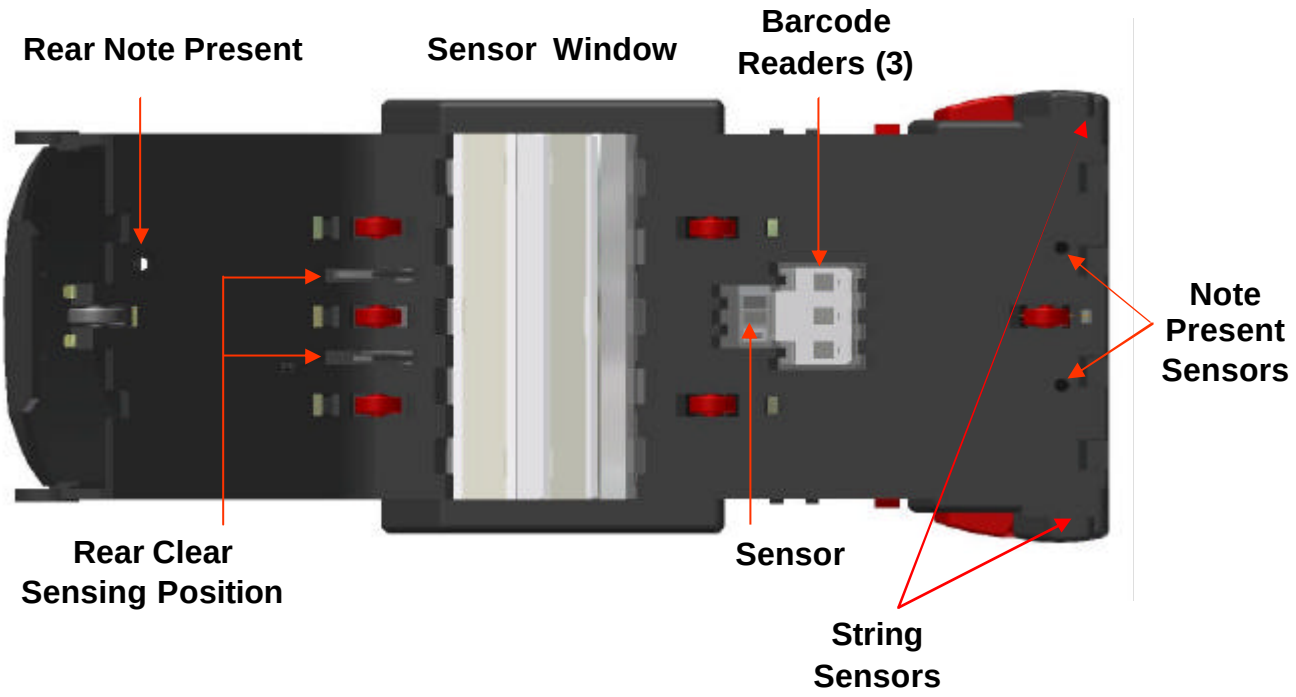


Spade Connectors:
Cashbox fitted micro switch

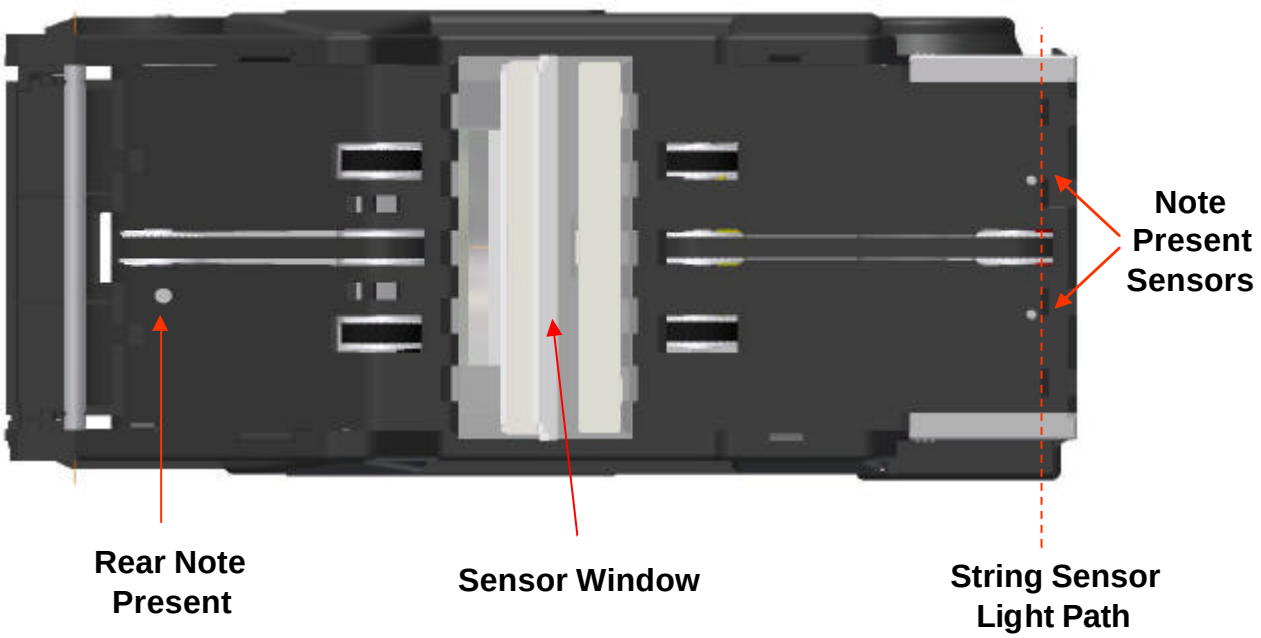


NOTE VALIDATION SENSORS

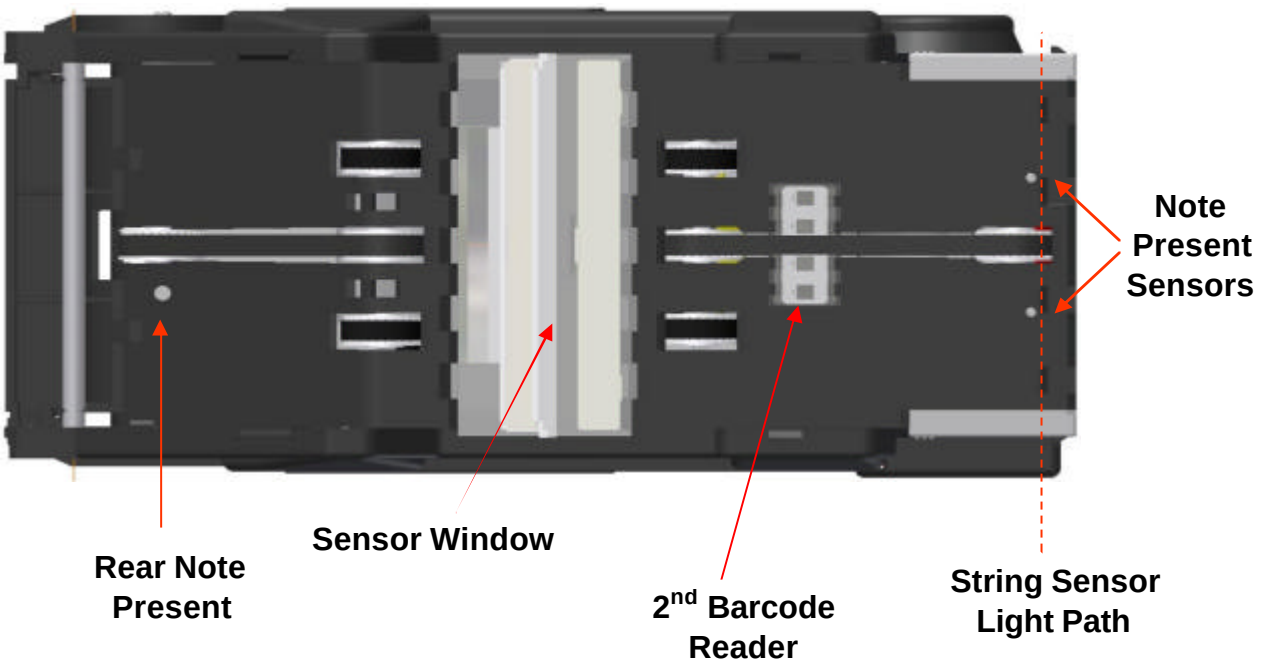
TOP Sensor Plate



BOTTOM Sensor Plate – SINGLE barcode system (Model 001)- Downstack Mount



BOTTOM Sensor Plate – DUAL barcode system (Model 002)– Universal Mount



STANDARDS

General

Compliant with all current European and US directives/standards where applicable.

Environmental

RoHS Directives

CE

EMC

Immunity BS EN 61000-6-1:2001
Emissions BS EN 61000-6-3:2001

SAFETY

Safety of IT equipment, electrical business equipment BS EN 60950-1:2000

UL - R

EMC

FCC Title 47 CFR Part 15 Class B

SAFETY

UL 756: 1997

Vibration

OPERATIONAL

Units will not sustain physical damage and will function as normal under the following conditions:

.25g @ 5 to 500 Hz
Intermittent over unit's life
Refer to IEC68-2-6

Transportation

Units in packed state will not sustain physical damage, and will function as normal after being objected to the following conditions:

Shock	Half Sine, 30g, 18ms duration Refer to IEC68-2-27
Bump	1000 bumps 6ms duration, 25g Refer to IEC68-2-29
Free Fall	1000 mm fall onto packing faces

Refer to IEC68-2-32:1975

Chassis Mounting Recommendations

Down Stack

The chassis must be supported from underneath and be bolted to the host housing. The dimensional drawing (**Figure 1**) shows the location of the chassis mounting hardware (notes 1 through 4).

As a minimum, secure the chassis to the host housing by bolting:

a. One side and the bottom (3) of the chassis to the housing

b. One side and the back of the chassis to the housing. (Although the chassis must be supported from underneath, it is not necessary to bolt the bottom if the back is bolted to the housing).

c. Both sides of the chassis to the housing. (Bottom support is not required).

Up Stack

The chassis must be supported from underneath and be bolted to the host housing. The dimensional drawing (**Figure 1**) shows the location of the chassis mounting hardware (notes 1 through 4).

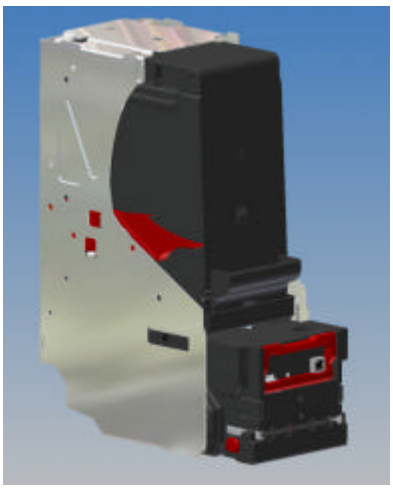
As a minimum, secure the chassis to the host housing by bolting:

a. One side and the bottom (3) of the chassis to the housing

b. One side and the back of the chassis to the housing. (Although the chassis must be supported from underneath, it is not necessary to bolt the bottom if the back is bolted to the housing).

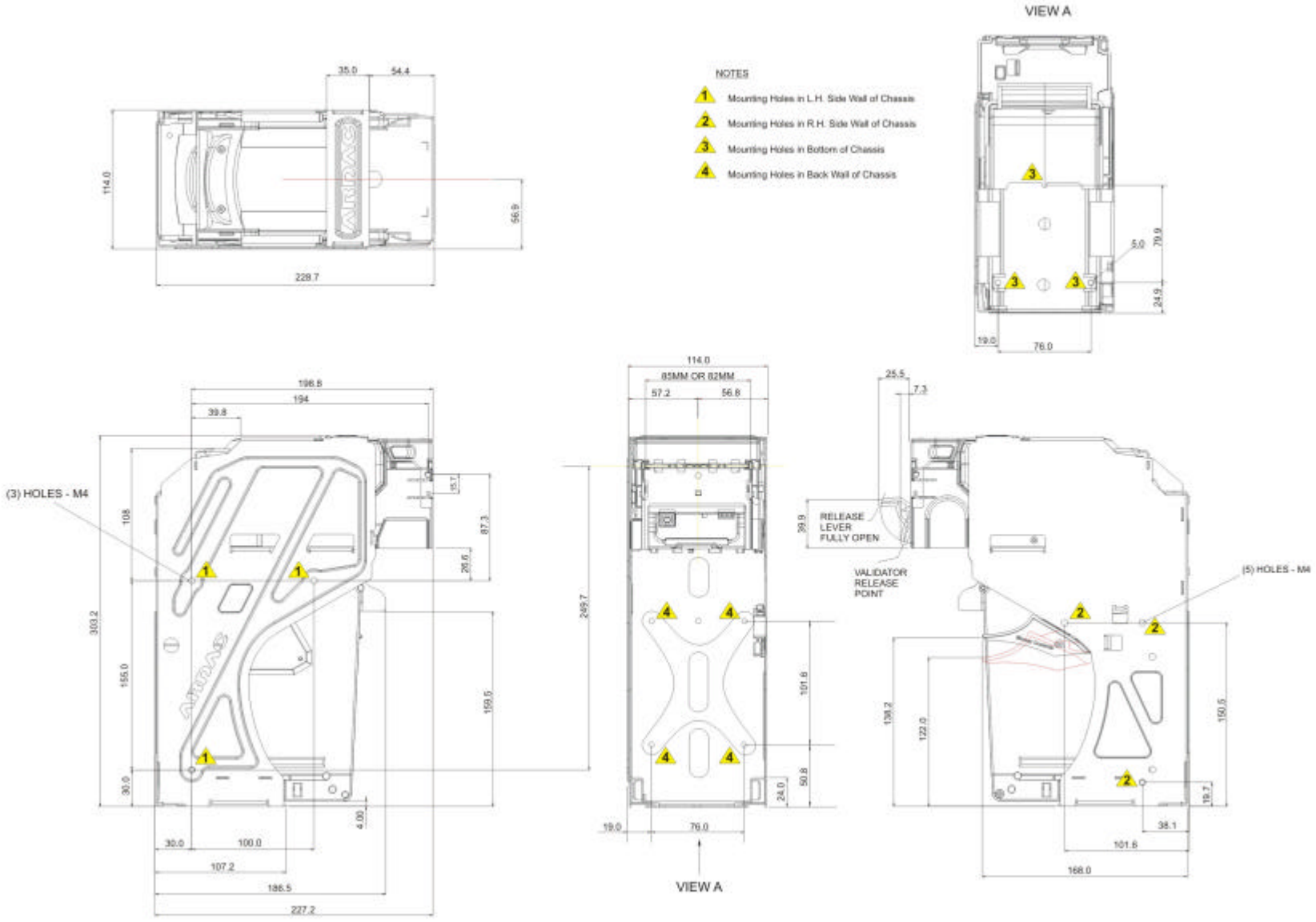
c. Both sides of the chassis to the housing. (Bottom support is not required).

Up stack orientation



Down stack orientation

Figure 1



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