Condor

Technical Manual

Condor Acceptor

Teach and Run™

COIN CONTROLS INTERNATIONAL

NOTE

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

The equipment must be protected by a 3A fuse.

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.

Condor

Contents

1 **GENERAL DESCRIPTION** 2
1.1 Model Range 2
1.2 Coin Specific Variations 4

2 **ELECTRONIC INTERFACE** 5

3 **OPERATION** 6
3.1 Power Up 6
3.2 Using the Acceptor 6
3.3 Accepting & Rejecting a Coin 8
3.3.1 VACS 8
3.3.2 Credit Signal 8
3.4 Security 10
3.5 Alarm 10
3.6 Inhibit All 11
3.7 Routine Maintenance 11

4 **SPECIFICATIONS** 12
4.1 Valid Coin Acceptance Rate 12
4.2 Dimensions 12
4.3 Coin Size 12
4.4 Temperature Range 12
4.5 Power Requirement 12
4.6 Current Consumption 12

Diagrams and Tables

Figure 1: Side views of the Condor acceptor 2
Figure 2: Condor interfaces 3
Figure 3: Accept and reject path options 3
Table 1: Breakdown of Condor model code 4
Figure 4: Dual connector interface - 2 connectors; connector 1 with 6 pins, connector 2 with 4 pins 5
Figure 5: Single connector interface - 1 connector with 7 pins 5
Figure 6: Error output pin 6
Table 2: Error signal timings 6
Figure 7: Teach and RunTM 7
Figure 8: VACS output pins 8
Table 3: VACS timings 8
Figure 9: Credit signal output pins 8
Figure 10: Credit Outputs for a CN3xx model 9
Figure 11: Credit Outputs for a CN4xx model 9
Figure 12: Credit signal 10
Table 4: Credit signal timings 10
Figure 13: Adjusting security setting 10
Figure 14: Alarm signal output pin 11
Table 5: Alarm signal 11
Figure 15: Inhibit all output 11
Figure 16: Inhibit All Circuit 11
Figure 17: Condor dimensions 13

1 General Description

The Condor range of electronic coin acceptors have been designed specifically for the international gaming machine industry. Whilst conforming to the industry standard space envelope, Condor brings advanced coin handling technology and sets a new standard in discrimination, reliability and servicing.

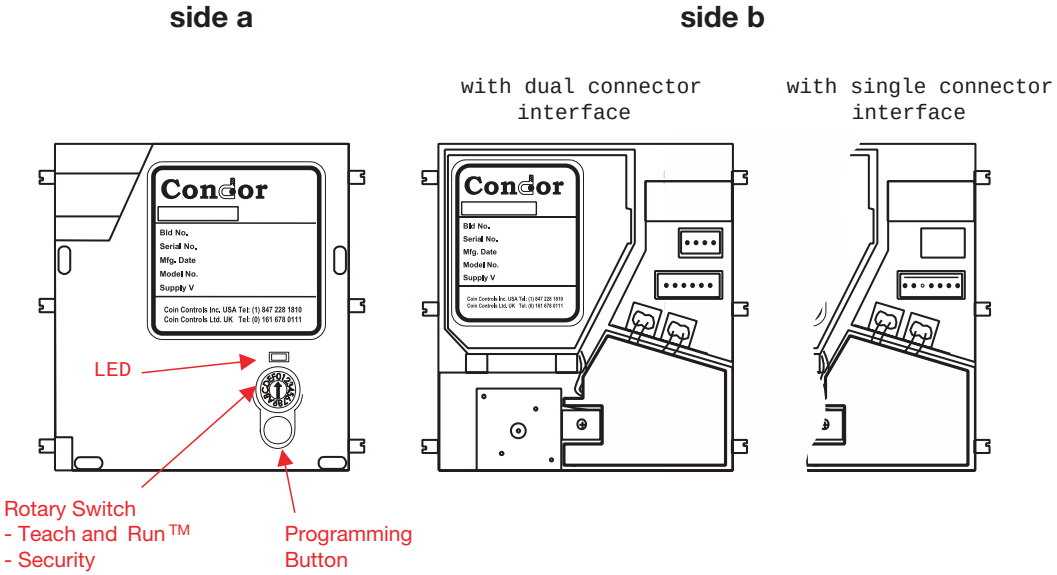


Figure 1: Side views of the Condor acceptor

1.1 Model Range

There are a number of models within the Condor range all varying in functionality and features. They are split into four main categories.

CN1ab - single coin acceptor with single credit output
CN3ab - multiple coin acceptor with preset multiple credit pulses of length 10ms (12ms for CNx3x).
For example coin 1 = 1 pulse, coin 2 = 2 pulses, etc.
CN4ab - multiple coin acceptor with customer specifiable multiple credit pulses of 10ms each (12ms for CNx3x).
For example coin 1 could be 6 pulses, coin 2 could be 1 pulse, etc

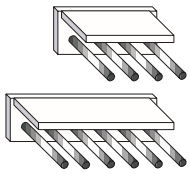
Multi coin variants CN3xx can be programmed with a maximum of 12 coins in a configuration of 2x6 windows.
The credit signal for window 1 is the same as the credit signal for window 7. The credit signal for window 2 is also the signal for window 8, and so on up to window 12. Thus, a high security coin set can be programmed into windows 7-12 which reflects windows 1-6.

NB. The suffix a refers to the type of interface connector required and there are four possible ones.

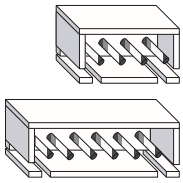
0 - JST dual connector interface
1 - AMP dual connector interface
2 - JST dual connector interface
3 - AMP single connector interface

See Figure 2 for details on the connector types.

Dual Connector Interfaces

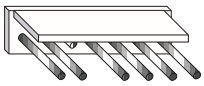


Connector types: **AMP**
Part no. 64054 - 4
64054 - 6



Connector types: **JST**
Part no. B4B - XH - A
B6B - XH - A

Single Connector Interface



Connector types: **AMP**
Part no. 640456 - 7
Pin 5 removed to act as key

Figure 2: Condor interfaces

NB. The suffix b refers to the inhibit conditions where

0 - Inhibit high - default inhibit
1 - Inhibit high - default accept
2 - Inhibit low - default inhibit
3 - Inhibit low - default accept

A further suffix R is applied where a Condor is supplied with accept and reject paths reversed. The standard is straight through acceptance with the accept gate opening after a credit is given. See below

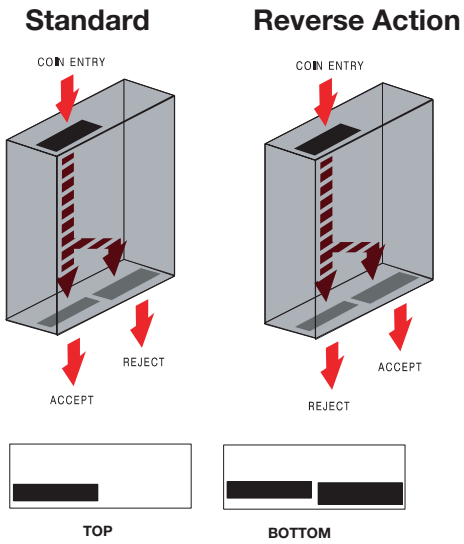


Figure 3: Accept and reject path options

The following is an example of a Condor model code.

CN	1	3	3	R
CN				
	1			
		3		
			3	
				R

Condor generic prefix
Singles coin, single credit
AMP single connector interface
Inhibit low, the default is accept
Reversed accept and reject paths

Table 1: Breakdown of Condor model code

1.2 Coin Specific Variations

Condor is designed to accept coins within the diameter range 15mm to 44.5mm and thickness range 1.5mm to 3.75mm. For coins larger than 38.5mm portions at the bottom of the acceptor are removed at the factory. For coins with thicknesses at the upper end of the range a selection of spacers are available. These hold the debris flap more open than would normally be the case. However, when Condor is fitted to accept larger coins its performance in discriminating smaller coins may be reduced due to the increased space, allowing them to rattle or bounce through the acceptor.

2 Electronic Interface

There are two types of interface connector in the Condor range:

Dual Connector Interfaces

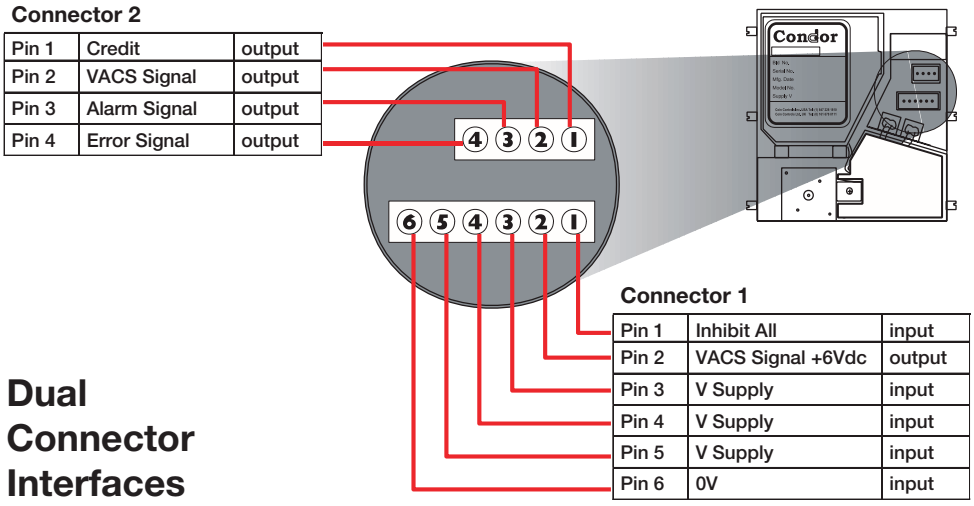


Figure 4: Dual connector interface - 2 connectors; connector 1 with 6 pins, connector 2 with 4 pins

Single Connector Interface

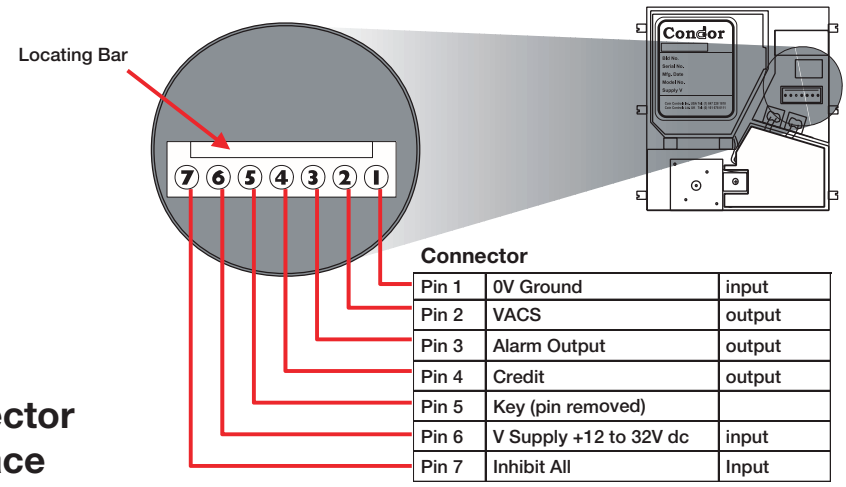


Figure 5: Single connector interface - 1 connector with 7 pins

3 Operation

3.1 Power Up

Diagnostics is a customer option. It can be enabled or disabled according to customer requirements. The diagnostics routines performed at power-up cover the following areas

1. Inductive coils
2. Reflective sensor
3. Diameter optos
4. Credit opto

If all is clear the acceptor will be ready to accept coins within 60ms of power-up. If a fault is found the following will occur:

1.the LED will flash red

2.no coins will be accepted and

3.a pulse of *x* milliseconds will be output (+6V, NPN open collector transistor) on the error pin every two seconds

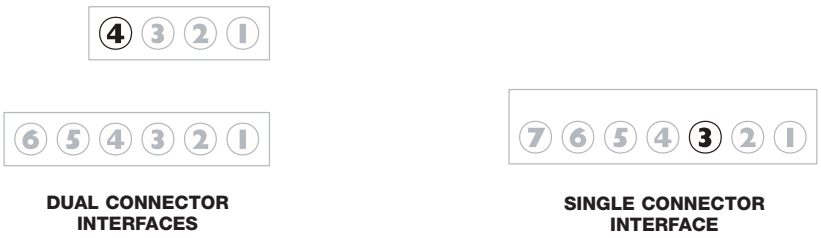


Figure 6: Error output pin

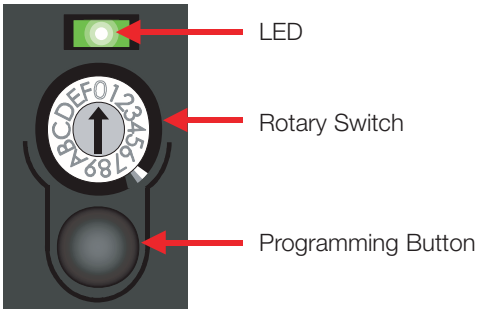
The following table shows the length of value *x* (please note that in some variants the signal is actually a double pulse):

	x	Gap between pulses
CN0XX	500ms	not applicable - single pulse
CN1XX	500ms	not applicable - single pulse
CN2XX	2x100ms	gap between pulses is 10ms
CN3XX	2x10ms	gap between pulses is 10ms
except for CN33XX	2x12ms	gap between pulses is 20ms
CN4XX	2x10ms	gap between pulses is 10ms
except for CN43XX	2x12ms	gap between pulses is 20ms

Table 2: Error signal timings

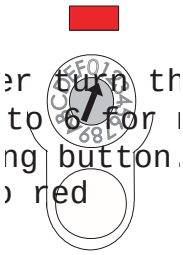
3.2 Using the Acceptor

Condor is equipped with a unique programming system called Teach and Run™. Teach and Run™ is a method of programming the acceptor to accept a coin by using a sample of a given coin to allow it to calibrate itself. The procedure itself is very simple and involves using the rotary switch and the programming button both located on side a of the acceptor (see Fig. 1).



To Teach and Run a coin or token into Condor follow this procedure:

To start with the LED should be lit green and the rotary switch in position 0



Using a small flathead screwdriver turn the rotary switch to position 1 (or 1 to 6 for multi coin Condors) and press the programming button. The LED should change to red

Feed a selection of the coin to be taught into the acceptor until the LED begings to flast green (this typically happens after 4 coins). Press the programming button once more.

The LED should return to green.
Turn the rotary switch back to 0.
The acceptor is now ready to accept coins.

Figure 7: Teach and Run™

3.3 Accepting & Rejecting a Coin

3.3.1 VACS

Condor can accept and reject coins using two paths; one for accept and one for reject. See Figure 3 for coin path details.

When a coin is accepted the acceptor outputs a Valid Advanced Coin Signal or VACS to the host machine. This acts as early notification that a true coin is passing through the acceptor and is a precursor to the Credit signal. The output pin for VACS is pin 2 on both connectors of the JST interface and pin 2 of the AMP connector.

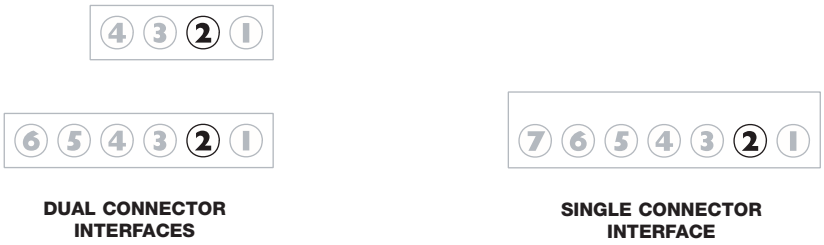


Figure 8: VACS output pins

The duration and state of VACS is dependent upon the acceptor model. The following table gives an indication of the length of VACS in relation to the model number.

Model	VACS duration
All Condor models except the following	12ms
Any CNxxxR i.e. reversed coin path models	35ms
CN11x	35ms
CNx3x except CNx3xR	17ms
CNx3xR	35ms

Table 3: VACS timings

NB. VACS is active low on all variants. However, the VACS signal produced on connector1 (the 6 pin connector) of CN10x and CN12x acceptors is active high.

3.3.2 Credit Signal

The credit signal is output after VACS and subject to the coin being seen as true. A credit signal is output on pin 1, connector 2 of the JST arrangement or on pin 4 of the AMP connector.

Figure 9: Credit signal output pins

As with the VACS signal the duration and state of the credit signal is variable depending on the model type. However, in the case of multi-coin models whereas VACS will be a single pulse, the credit signal can be a series of several pulses.

For example on a multi-coin acceptor capable of accepting six different coins the credit output dependent on coin window, would be as follows:

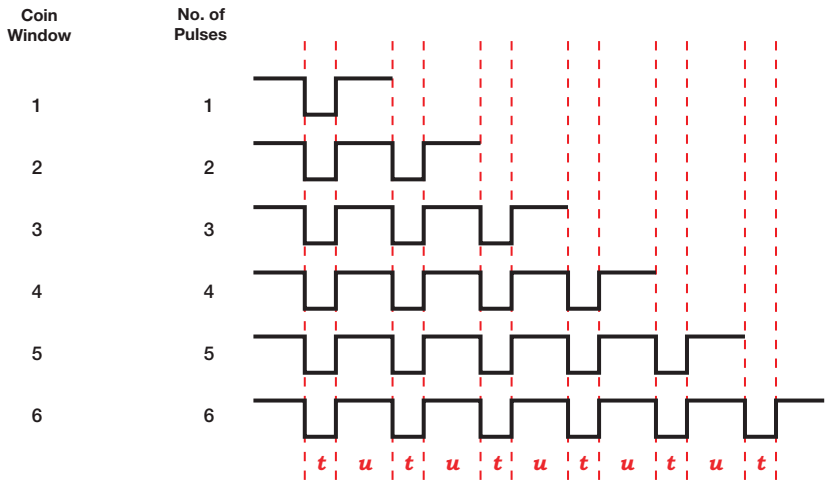


Figure 10: Credit Outputs for a CN3xx model

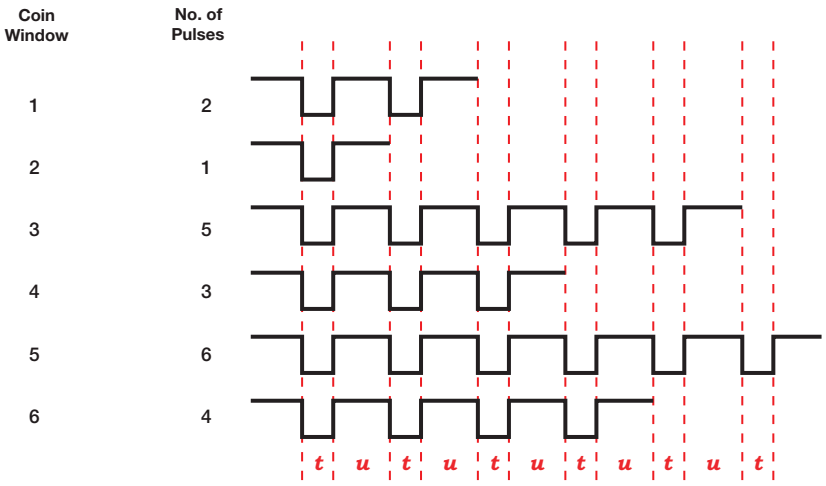
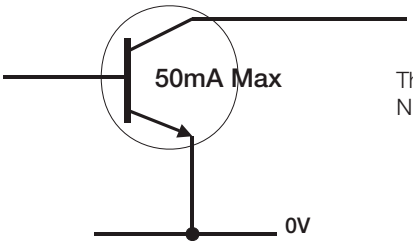


Figure 11: Credit Outputs for a CN4xx model

where t is the duration of a single pulse and u is the gap time between pulses; typically 20ms.



The credit signal is an open collector NPN for all variants 50mA (max.)

Figure 12: Credit signal

The value for t is as follows.

	t	u
CN10x to CN11x	30ms	20ms
CN12x	50ms	20ms
CN13x	12ms	20ms
CN30x, CN40x	10ms	10ms
CN330/A0	20ms	20ms
CN333,CN43x	12ms	20ms

Table 4: Credit signal timings

Because of the fast feed nature of the Condor range a space of at least 4x the gap time is expected between coins. This is typically 80ms (40ms for CN30x and CN40x) and would be the absolute minimum gap between two coins passing through the acceptor.

For single coin acceptors the variation in duration of the credit signal can also be seen in the above table, the only difference being that the signal consists of a single pulse.

3.4 Security

The window of a coin/token can be narrowed or widened in order to increase fraud rejection or increase true coin acceptance.

With the acceptor in normal operation i.e. the LED lit green, turning the rotary switch clockwise towards 7 will increase fraud rejection. Likewise turning the rotary switch counter/anti clockwise towards 9 will increase true coin acceptance.

Figure 13: Adjusting security setting

3.5 Alarm

The alarm signal is activated when as the acceptor is in use, a coin or coins are seen to travel in the wrong direction i.e. upwards towards the coin entry, or if the credit optos are obscured.

Figure 14: Alarm signal output pin

The LED on Condor will change from the normal operating green to yellow. During an alarm condition Condor will not accept coins. When an alarm condition occurs a single pulse of length y is output. The following table shows the length of the signal for the Condor variants.

	y
All Condors except CN13X, CN33X and CN43X	2 secs
CN13X, CN33X and CN43X	12ms

Table 5: Alarm signal

NB. On CN13x acceptors if the credit sensor is blocked the alarm remains active.

3.6 Inhibit All

For greater functionality and overall security, the inhibit all feature enables the host machine to reject all coins or tokens on demand.

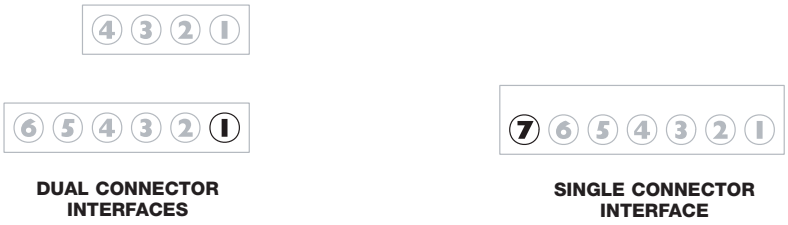


Figure 15: Inhibit all input

*** R101 NOT fitted on CNxx1 or CNxx2 variants**

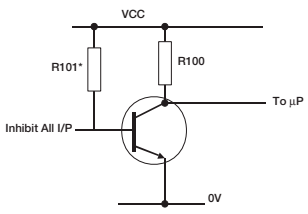


Figure 16: Inhibit All Circuit

3.7 Routine Maintenance

Condor should be cleaned with a damp cloth every 100,000 coins or three months. Primarily wipe down the coin path by opening the debris flap for access and using a damp cloth wipe down the inner surfaces of the acceptor. DO NOT use solvents or abrasive cleaners.

4 Specification

4.1 Valid Coin Acceptance Rate

When pre-programmed (at the factory) Condor will provide the following coin acceptance performance as standard:

> 95% - fast feed (10 coins a second)
> 98% - slow feed (5 coin a second)

In special cases this may vary on a coin by coin basis.

4.2 Dimensions

Height - 102mm
Width - 89mm
Depth - 43.5mm
(52mm reverse action)

4.3 Coin Size

The Condor range of acceptors can handle coins within the following sizes:
15 - 44.5mm diameter
1.5 - 3.75mm thickness

4.4 Temperature Range

Operational: 0°C to 60°C
Storage: -25°C to 70°C
Relative humidity: 5% to 95% non-condensing

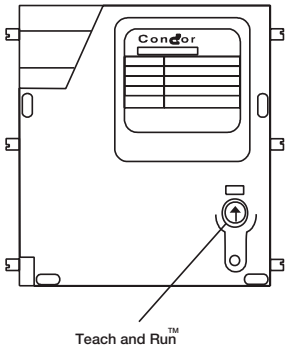
4.5 Power Requirement

12Vdc to 32Vdc
Options available upon request
24Vac

4.6 Current Consumption

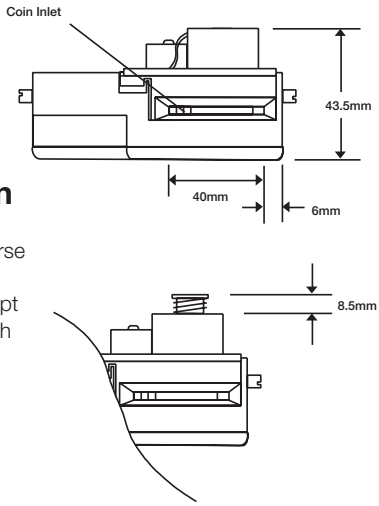
Typically
70mA Quiescent
500mA Peak

Front Elevation

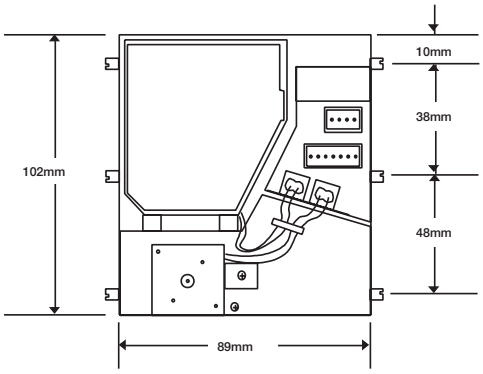


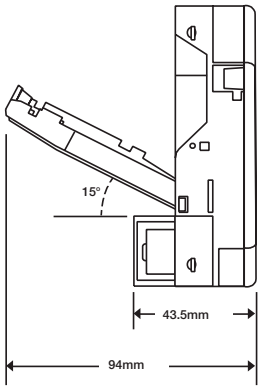
Top Elevation

Showing reverse action option; reverses accept and reject path



Side Elevation





Base Elevation

Showing standard accept and reject paths

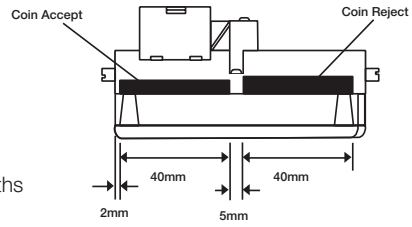


Figure 17: Condor dimensions

This manual is intended only to assist the reader in the use of this product and therefore Coin Controls shall not be liable for any loss or damage whatsoever arising from the use of any information or particulars in, or any omission from, this manual or any incorrect use of the product.

Coin Controls Limited reserve the right to change product specifications on any item without prior notice.

Coin Controls has a policy of continual product evaluation and improvement, which means that the equipment supplied may vary in some respects to the specification.

Coin Controls has a policy of continual product evaluation and improvement, which means that the equipment supplied may vary in some respects to the specification.

COIN CONTROLS INTERNATIONAL

Coin Controls International
Coin Controls Ltd (Corp HQ)
Royton, Oldham OL2 6JZ, England.
Telephone: 44 (0)161 678 0111
Fax: 44 (0)161 626 7674
e-mail: sales@coincontrols.com

Coin Controls Inc - Las Vegas
2925 East Patrick Lane,
Suite C, Las Vegas,
Nevada 89120, USA
Tel: 1 702 739 8263
Fax: 1 702 739 1911
email: coincontrols@ibm.net

Coin Controls GmbH
Friedensallee 35,
D22765 Hamburg,
Germany.
Tel: 49-4039 1775
Fax: 49-40390 4582

Coin Controls SA
Sancho de Avila 52-58,
5º, 1ª 08018 Barcelona,
Spain.
Tel: 34-3 3002496
Fax: 34-3 3002608

Coin Controls Pty Limited
Unit 3, 43 College Street,
Gladesville, Sydney,
NSW 2111, Australia.
Tel: 61-2-9879 0011
Fax: 61-2-9879 0111
email: sailes@coincontrols.com.aus

Issue CCI 1.1 09/98

www.coincontrols.com

email: sales@coincontrols.com