SUNRISE CCT162/NRI & CCT164/NRI Credit Boards

Part no **CCT162/NRI** Universal Credit Board allows the NRI and other electronic or mechanical coin mechs to be used for all of the following applications, for coins and/or tokens.

Part no **CCT164/NRI** Universal Video Credit Board Mk4 may be used for any of the Video Game applications for coins and/or tokens.

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APPLICATIONS
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1.Video Game: Standard Mode.
Standard "conversion" Video game with one or two coin mechs operating together, with a single credit output connection to the game PCB.

2.Video Game: Seperate Mech Mode.
For 2 player video games designed to operate with separate coin entry for each player (e.g. most linked driving games). The Left and Right player coin mechs operate independently, with a Left and Right credit output. Use of this mode allows one credit board to be used where otherwise two would have been required.

3. Lockout Coil Hand-shaking.
Allows connection of 1 or 2 multi-coin accepters to used with games which originally are fitted with a mechanical coin accepter and 12 volt DC coin lockout coil, where the game itself is not capable of storing multiple credits. Credits are stored in the credit board memory. A single credit is released to the game each time the lockout coil driver is re-energised. The optional coin / credit LED display panel can be used.

4. Pinball.
The isolated relay output allows connection of 1 or 2 multi-coin accepters to switch matrix operated games such as Williams Pinball.

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COMMON FEATURES
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NRI CONNECTORS. The 10 pin box headers may be connected to one or two NRI G.13.0004 or G.13.1002 coin mechanisms, for 20c, $1, $2 and token operation. Disable any unwanted coin/token channels by means of the DIP switch inside the coin mech.
Alterantively, coin/token switches may connect to the designated edge connector pins.

INDIRECT CREDIT CONVERSION. (Preferred operating mode). Bonus credits calculated on the total value of coins inserted, regardless of individual denomination. *Example:- If 1 x Two Dollar coin gives 3 credits,   then so will 2 x One Dollar coins.*

or **DIRECT CREDIT CONVERSION.** Coin denominations may not be mixed. I(ndirect credit conversion is generally preferred).

ANTENNA. A simple static pickup antenna wire may be connected to the credit board. The length of the wire and its proximity to the cabinet wiring harness will determine the sensitivity of the static reset function. Operation is indicated by the on-board LED indicator.

SPARK RESET OUT. This is an open collector, active low output which may be connected to the game board RESET input. If the game board has no reset input, a PCB technician could add the input to the gameboard, via an unused edge connector pin.

COIN METER. All coin registrations are accumulated as 10 cent units on a single mechanical coin meter. Connect coin meter between 12 volts and Coin Meter Output . Tokens are also registered on this meter. The token value can be set to 60, 70 or 80c, see dip switch settings, page 2. No diode is needed, the credit board contains an internal protection diode.

LAMP OUTPUT. This output allows installation, where appropriate, of 12 volt lamps inside illuminated Start Buttons.

ALARM   Anti Stringing Alarm. Triggered if coin switch closed longer than 250 mS. This open collector output may be connected to a general purpose Piezo Screamer, (-) lead to credit board, (+) lead to +12 volt supply. Alternatively it may be connected to a game board RESET input, so that stringing causes game to immediately reset, and stay reset for 10 seconds.

ANTI STRINGING lock-up. This feature is activated if a coin switch closes longer than 250 mS. The coin channel affected will be locked-out for 10 seconds, after which it will self restore.

DISPLAY DATA, CLOCK. Where appropriate, the separately sold 6 digit or 2 digit LED display PCB may be connected. The 6 digit display shows $-c inserted and the resulting credit. The 2 digit display shows credit only.

SERVICE CREDIT SWITCH input, allows a push button switch to give free credits for testing the game without incrementing coin meter. Also allows Free Game Mode.

FREE GAME MODE. This mode is entered by holding the SERVICE CREDIT switch closed for more than four seconds. If fitted, the start button lamps light and remain lit. The credit display shows 99. Pressing a start button will then start a free game, or a two player start button will start a two player game. The Free Game Mode remains in operation until the host game is switched off.

DIP SWITCH 12345678	Coins/credit and bonus
-FFFF---	1 tok=1, 40c=1, $1=3
-NFFF---	1 tok=1, 60c=1, $1=2
-FNFF---	1 tok=1, $1=1
-NNFF---	1 tok=1, $1=1, $2=3
-FFNF---	2 tok=1, $2=1, $3=2
-NFNF---	3 tok=1, $2=1
-FNNF---	3 tok=1, $3=1, $5=2
-NNNF---	4 tok=1, $3=1
-FFFN---	4 tok=1, $4=1
-NFFN---	5 tok=1, $4=1
-FNFN---	5 tok=1, $5=1
-NNFN---	6 tok=1, $5=1
-FFNN---	6 tok=1, $6=1
-NFNN---	7 tok=1, $6=1
-FNNN---	7 tok=1, $7=1
-NNNN---	8 tok=1, $7=1

DIP SWITCH 12345678	Credit out pulse	Token meter pulses
-----FFF	x1	6
-----NFF	x2	6
-----FNF	x1	7
-----NNF	x2	7
-----FFN	x1	8
-----NFN	x2	8

Operating Modes

N-------	1.Video Game: Standard	F-------	3.Lockout Hand-Shaking
N-------	2.Video Game: Separate	N-------	4.Pinball
		NNNNNNNN	5.Display Test

The NRI coin mech should be programmed as follows. Any coin or token channels not required must be disabled by means of the DIP switch located within the NRI coin mech.

Channel 1......................50c coin.
Channel 2......................Token
Channel 3 ....20 cent coin
Channel 4......................$1 coin
Channel 5......................$2 coin
Channel 6......................not used, disable.

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CONNECTION DETAILS
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(1). VIDEO GAME : STANDARD

EDGE CONNECTOR

Component Side		Solder Side
	1	Player 1 Start input
	2	Player 2 Start input
Token input RIGHT	3	Service credit switch input
20c. coin input R	4	Token input LEFT
50c R	5	20c coin input L
$1 coin input R	6	50c L
$2 coin input R	7	$1 coin input L
Antenna	8	$2 coin input L
Free Game Lamp	9	-
-	10	-
Spark Reset out	11	Alarm Output
-	12	Coin Meter output
-	13	Credit output to Game Board
-	14	-
-	15	-
-	16	-
-	17	-
-	18	-
12 volts	19	Power input, 12 volts DC
" "	20	" " " " " "
Ground	21	Ground
" "	22	" "

INDIRECT CREDIT CONVERSION (Preferred)

1. BONUS RESET by START BUTTON. Pins **1s** & **2s** should be connected to the cabinet Start Switch buttons, which also connect to the Game Board. If the game uses only one Start Switch, Player 2 Start is not connected.

or:-
2. BONUS RESET by 30 Second TIMER. Do not connect Start Buttons to credit board. Connect Pin **1s** permanently to Ground. Bonus system will reset 30 seconds after insertion of the last coin.

DIRECT CREDIT CONVERSION (Indirect conversion normally preferred). Do not connect Start Buttons to credit board. Instead, connect pin **13s** (output) to pin **1s** (player 1 input), in addition to game board coin input.

The free game lamp driver is provided for use in Free Game Mode. (See **"APPLICATIONS",** *page 1).*

(2). VIDEO GAME: Separate Mech Mode

EDGE CONNECTOR

COMP SIDE		SOLDER SIDE
Mode 2 sel.(GND)	1	Left Player Start Switch
Right Service Sw	2	Right Player Start Switch
R Token.	3	Left Service Switch
R coin 20c.	4	L Token.
R ciin 50c	5	L coin 20c.
R coin $1.	6	L coin 50c
R coin $2.	7	L coin $1.
Antenna	8	L coin $2.
Credit Lamp Output	9	-
-	10	-
Spark Reset out	11	Alarm output
-	12	Coin Meter output, 10c.
R Credit Output	13	L Credit Output
-	14	-
-	15	-
-	16	-
-	17	-
-	18	-
12 volts DC	19	Power input, 12 volts DC
" "	20	" " " " "
Ground	21	Ground
" "	22	" "

INDIRECT CREDIT CONVERSION (Preferred operating mode).

1. BONUS RESET by START BUTTON. Pins **1s** & **2s** should be connected to the cabinet Start Switch buttons, which also connect to the Game Board. This connection also required if Free game Mode is used.

or:-

2. BONUS RESET by 30 Second TIMER. Do not connect Start Buttons to credit board Connect Pin **1s** permanently to Ground. Bonus system will reset 30 seconds after insertion of the last coin.

DIRECT CREDIT CONVERSION (Indirect conversion normally preferred). Do not connect Start Buttons to credit board. Instead, connect pin **13s** (L output) to pin **1s** (L Start), and pin **13c** (R output) to pin **2s** (R Start), in addition to their connections to the game board coin inputs.

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(3). LOCKOUT HAND-SHAKING

Requires Universal Credit Board part no CCT162/NRI

EDGE CONNECTOR PINOUT

Component Side		Solder Side
	1	Move Forward button (S.T. pin 4)
	2	-
R Token.	3	Service Switch
R coin 20c.	4	L Token
R coin 50c	5	L coin 20c.
R coin $1.	6	L coin 50c
R coin $2.	7	L coin $1.
Spark Antenna	8	L coin $2.
	9	+12 volts DC
	10	Lockout sense (S.T. pin 11)
	11	Alarm output
	12	Coin Meter output
	13	-
	14	Display Panel DATA
	15	Display panel CLOCK
	16	Credit out COM. (S.T. pin 12)
	17	-
	18	Credit out N.O. (S.T. pin 8)
12 volts DC	19	Power input, 12 volts DC
" "	20	" " " "
Ground	21	Ground
" "	22	"

(Connections are shown for a typical installation, *Skill Tester*)

BONUS RESET by START BUTTON. Pin 1, solder side should be connected as shown to the Move Forward button input of the Skilltester Game Board, pin 4.

BONUS RESET by 30 Second TIMER. Connect credit board Pin 1s permanently to Ground, instead of to Move Forward button. Bonus system will reset 30 seconds after the insertion of the last coin.

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(4). PINBALL.

Requires Universal Credit Board part no CCT162/NRI

EDGE CONNECTOR

Component Side		Solder Side
-	1	Connect to Ground
-	2	-
Token R	3	Service credit switch input
20c. coin input R	4	Token L
50c coin input R	5	20c coin input L
$1 coin input R	6	50c coin input L
$2 coin input R	7	$1 coin input L
Spark Antenna	8	$2 coin input L
-	9	-
-	10	-
-	11	Alarm output
-	12	Coin Meter output
-	13	-
-	14	-
-	15	-
NRI lock out (GND)	16	RELAY OUTPUT common
-	17	RELAY OUTPUT normal closed
-	18	RELAY OUTPUT normal open
12 volts DC	19	Power input, 12 volts DC
" "	20	" " " " "
Ground	21	Ground
" "	22	" "

Instructions are given for a Williams Pinball. Other games requiring an isolated connection to a switch matrix type coin input can use a similar connection.

Adjust the pinball pricing **1 coin 1 game.** Set the credit board for the desired coins/game and bonus.

Credit board bonus coin system resets automatically 30 seconds after insertion of the last coin.

Power. In a Williams pinball, 12 V DC unregulated is obtained from the power supply PCB connector **3P6 pin 6** (grey/white wire). GND is connected to **3P6 pin 11** (black wire).
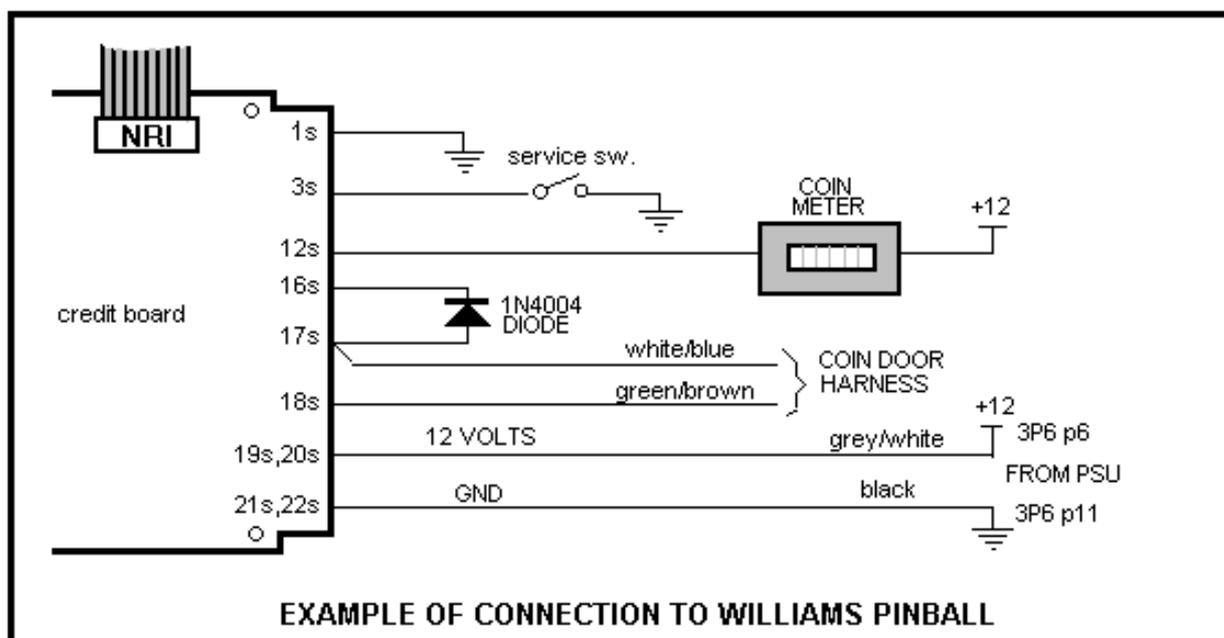
EXAMPLE OF CONNECTION TO WILLIAMS PINBALL