

COIN - PLUS, RS2000

EXTENDED COMPUTER INTERFACE CREDIT BOARD

Simple to connect:

Single standard connection to coin acceptor and cable to optional note validator;
Simple connections to power, external lamp and RS232 signals.

PC Control of Acceptance:

CTS Asserted - All coins and notes accepted,
CTS deasserted - All coins and notes rejected.
Individual control of coin and note acceptance by COM port command codes.

Full control of Electronic Coin Validator

Lamp:

ON - indicates machine "ready",
OFF - indicates machine "out-of-service".

Continuous self test;

Invalid configuration detection with fail-safe and warning indicator.

Expansion options;

Additional controls for switches, counters, displays, hoppers and other devices.

Features (Note: not all options are available simultaneously)

- Cased power supply unit available requiring only mains power to provide a total cash handling interface solution for a PC or compatible computer;
 - Produces ASCII encoded data in response to coin acceptor signals, note validator signals and optional external hardware;
 - Supports coin mechanism anti-strimming protection;
 - Wide range of coin acceptors supported, including Mars Cashflow, Coin Controls, Asahi Seiko and NRI. An additional interface board may be required, please contact the factory for details;
 - Optional secondary interface for note validators;
 - Wide range of note validators supported, including Smiley, GBA, CashCode and others, please contact the factory for details;
 - Built-in mains relay option with timed shutdown facility, please contact the factory for details;
 - Optional control of external devices such as switches, electromechanical counters, seven segment displays, hoppers, card dispensers;
-

Output format

Data is produced in the following format:

- 1200 Baud
- 8-bit data
- No-parity
- One stop bit

Other formats available, please contact the factory for details

Input data

Command	Code from PC		
	ASCII	Hex	Decimal
Enable coin A	'A'	\$41	65
Enable coin B	'B'	\$42	66
Enable coin C	'C'	\$43	67
Enable coin D	'D'	\$44	68
Enable coin E	'E'	\$45	69
Enable coin F	'F'	\$46	70
Enable note 0	'G'	\$47	71
Enable note 1	'H'	\$48	72
Enable note 2	'I'	\$49	73
Enable note 3	'J'	\$4A	74
Enable note 4	'K'	\$4B	75
Enable note 5	'L'	\$4C	76
Enable note 6	'M'	\$4D	77
Enable note 7	'N'	\$4E	78
Enable note 8	'O'	\$4F	79
Enable note 9	'P'	\$50	80
Enable note 10	'Q'	\$51	81
Enable note 11	'R'	\$52	82
Enable note 12	'S'	\$53	83
Enable note 13	'T'	\$54	84
Enable note 14	'U'	\$55	85
Enable note 15	'V'	\$56	86
Disable coin A	'a'	\$61	97
Disable coin B	'b'	\$62	98
Disable coin C	'c'	\$63	99
Disable coin D	'd'	\$64	100
Disable coin E	'e'	\$65	101
Disable coin F	'f'	\$66	102
Disable note 0	'g'	\$67	103
Disable note 1	'h'	\$68	104
Disable note 2	'i'	\$69	105
Disable note 3	'j'	\$6A	106
Disable note 4	'k'	\$6B	107
Disable note 5	'l'	\$6C	108
Disable note 6	'm'	\$6D	109
Disable note 7	'n'	\$6E	110
Disable note 8	'o'	\$6F	111
Disable note 9	'p'	\$70	112
Disable note 10	'q'	\$71	113
Disable note 11	'r'	\$72	114
Disable note 12	's'	\$73	115
Disable note 13	't'	\$74	116
Disable note 14	'u'	\$75	117
Disable note 15	'v'	\$76	118
Enable all	'x'	\$58	88
Disable all	'x'	\$78	120
Report status	'z'	\$7A	122
Dispense card	'0'	\$30	48
Abort dispense	'1'	\$31	49
Escrow mode	'2'	\$32	50
Accept mode	'3'	\$33	51
Escrow accept	'4'	\$34	52
Escrow reject	'5'	\$35	53
Set output low	'w'	\$57	87
Set output high	'w'	\$77	119
Set lamp low	'Y'	\$59	89
Set lamp high	'y'	\$79	121
Pulse notes	'6'	\$36	54
Serial notes	'7'	\$37	55

Notes:

The report status command causes the COIN+RS to reply with the current state of the switch inputs, the card dispenser and the note validator escrow mode. Some commands are available only in combination with certain hardware options. For example the lamp is not available with the note validator option and the general purpose output is not available with the card dispenser option. The COIN+RS powers up assuming the note validator is in pulse mode. It auto-detects Innovative Technology NV series validators in Serial IO mode when necessary but can be forcibly switched into "Serial Notes" mode by code '7'.

Output data

Event	COIN+RS2000 Code		
	ASCII	Hex	Decimal
Coin Channel			
A (5p)	'A'	\$41	65
B (£2)	'B'	\$42	66
C (10p)	'C'	\$43	67
D (20p)	'D'	\$44	68
E (50p)	'E'	\$45	69
F (£1)	'F'	\$46	70
FEDB=0000 (5p)	'G'	\$47	71
FEDB=0001 (1p)	'H'	\$48	72
FEDB=0010 (2p)	'I'	\$49	73
FEDB=0011 (10p)	'J'	\$4A	74
FEDB=0100	'K'	\$4B	75
FEDB=0101 (£1)	'L'	\$4C	76
FEDB=0110	'M'	\$4D	77
FEDB=0111	'N'	\$4E	78
FEDB=1000	'O'	\$4F	79
FEDB=1001	'P'	\$50	80
FEDB=1010 (50p)	'Q'	\$51	81
FEDB=1011	'R'	\$52	82
FEDB=1100 (20p)	'S'	\$53	83
FEDB=1101	'T'	\$54	84
FEDB=1110	'U'	\$55	85
FEDB=1111 (£2)	'V'	\$56	86
coin alarm	'Y'	\$59	89
heartbeat	'Z'	\$5A	90
note pulse	'o'	\$6F	111
note channel			
0	'0'	\$30	48
1	'1'	\$31	49
2	'2'	\$32	50
3	'3'	\$33	51
4	'4'	\$34	52
5	'5'	\$35	53
6	'6'	\$36	54
7	'7'	\$37	55
8	'8'	\$38	56
9	'9'	\$39	57
10	':'	\$3A	58
11	';'	\$3B	59
12	'<'	\$3C	60
13	'='	\$3D	61
14	'>'	\$3E	62
15	'?'	\$3F	63
Unknown note	'a'	\$61	97
Validator slow	'b'	\$62	98
Strim alarm	'c'	\$63	99
Channel 5	'd'	\$64	100
Stacker full	'e'	\$65	101
Escrow abort	'f'	\$66	102
Note taken	'g'	\$67	103
Note validator busy	'h'	\$68	104
Note validator ready	'i'	\$69	105
Note validator in escrow mode	'j'	\$6A	106
Note validator in accept mode	'k'	\$6B	107
Note validator in pulse mode	'p'	\$70	112
Note validator in serial mode	'q'	\$71	113
Card Dispensed OK and dispenser OK	'm'	\$6D	109
Card Dispensed OK but dispenser empty	'l'	\$6C	108
Card Dispenser failed	'n'	\$6E	110
Input 1 low	'w'	\$57	87
Input 2 low	'x'	\$58	88
Input 1 high	'w'	\$77	119
Input 2 high	'x'	\$78	120

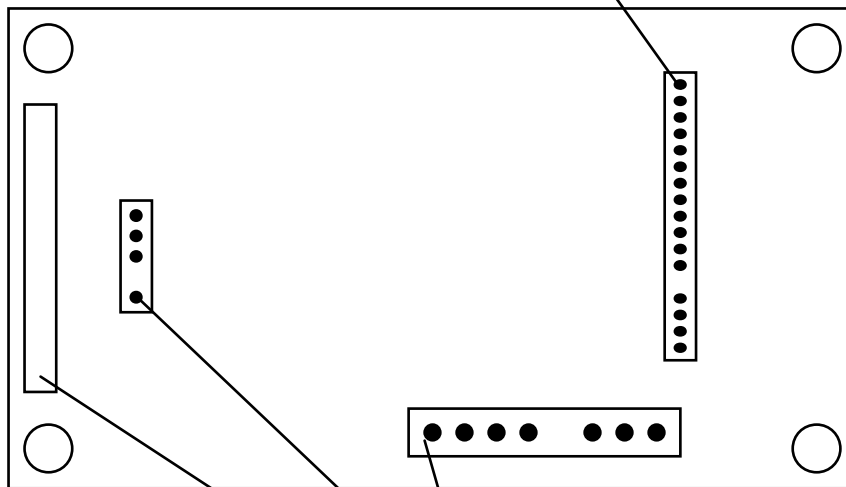
Notes:

The "Unknown Note" code 'a' is generated whenever a note is passed into the note validator and then rejected. This code is provided so the PC can display a message of the form "Sorry – try again" or to monitor the acceptance rate of the note validator. It does not necessarily indicate an attempt to defraud the note validator.

COIN+RS2000 CD series card dispenser controller

- The COIN+RS 2000 can be supplied with looms so that it can control a CD-series card dispenser. Looms should be connected as shown in the drawing below:

Optional connector to BACTA standard coin acceptor



Main loom connector

Connector to PC loom

Optional connector to Smiley NV4 note validator

- The PC Loom connects between the COIN+RS 2000 circuit board and a standard PC COM Port. On one end of the PC Loom is a 9-pin D-type connector for connection to the COM Port and on the other end is a 4-pin (+polarising pin) 0.1" Molex connector to connect to the COIN+RS 2000 circuit board.
- The Main Loom has a 7-pin (+polarising pin) 0.156" Molex connector on one end to connect to the COIN+RS 2000 circuit board and a 12-pin connector on the other end to connect to a CD Series card dispenser. The main loom also has three wires to connect to the power supply.
- The COIN+RS 2000 requires a regulated 12 Volt supply of about 100mA to operate. If a coin acceptor and note validator are connected to the COIN+RS 2000 circuit board then the 12 Volt supply must have enough capacity to supply the coin acceptor and note validator as well. The Red wire in the Main Loom is the +12 Volts supply and the Black wire is the ground (0 Volts).
- The COIN+RS 2000 can control CD series card dispensers operating from either 12 or 24 Volt supplies. The Orange wire in the Main Loom is the supply for the card dispenser and should be connected to the correct voltage for the dispenser chosen. The Black wire is the ground (0 Volts) for the card dispenser.

Operating a COIN+RS2000 card dispenser

- The COIN+RS 2000 controls all functions of the card dispenser and simplifies the required PC software.
- To dispense a card the PC sends a single '0' character (hex 30, decimal 48) through the COM Port to the COIN+RS 2000 circuit board. As soon as the first '0' is received the COIN+RS 2000 will attempt to dispense a card. If the card dispenser is empty, disconnected, or jammed the COIN+RS 2000 will wait.
- Further '0' characters may be sent and the COIN+RS 2000 will store them so that exactly one card is dispensed for each '0' character received. Up to 250 '0' characters can be stored within the COIN+RS 2000.
- When a card is successfully dispensed, and removed from the dispenser, the COIN+RS 2000 will report back to the PC by sending a 'm' character up the COM Port to the PC. The PC side software should allow up to 15 seconds for a card to be dispensed before it considers the dispenser to be faulty.
- If the last card of a stack is dispensed the COIN+RS 2000 will report back to the PC by sending a 'l' character up the COM Port to the PC.
- If the card dispenser is empty or fails to dispense after a 15 second timeout the COIN+RS 2000 will report back to the PC by sending a 'n' character up the COM Port to the PC. It will then discard any stored '0' characters.
- The PC can cause the COIN+RS 2000 to abort a card dispense operation and discard any stored '0' characters by sending a '1' character (hex 31, decimal 49). If the card dispenser is currently operating when the '1' character is received by the COIN+RS 2000 then the current dispense operation will be completed (and a 'm' character sent to the PC upon successful completion) but any stored '0' characters will be discarded.
- If the card dispenser jams then it may require its power to be disconnected and then reconnected in order to reset it and allow it to operate when the jam has been cleared. Since the card dispenser receives power through the Orange wire in the main loom while the COIN+RS 2000 receives power through the Red wire it is possible to reset the card dispenser while the COIN+RS 2000 remains powered. This allows the card dispenser to be reset without losing '0' characters stored in the COIN+RS 2000.
- If the COIN+RS 2000 loses power then it will forget any stored '0' characters when power is applied again.

COIN+RS2000 compared with COIN+RS

- The original COIN+RS accepted five coins on channels 'B', 'C', 'D', 'E', and 'F'. The COIN+RS2000 accepts six coins on channels 'A', 'B', 'C', 'D', 'E', and 'F' and automatically handles 16 coin BACTA standard coin acceptors, generating codes 'G' to 'V'.
- The original COIN+RS required that its note validator be configured in pulse mode and generated multiple "M" codes for different note denominations. The COIN+RS2000 does not require that the note validator be configured in pulse mode and generates different output data codes for each note denomination. However the COIN+RS2000 will automatically handle note validators configured in pulse mode and will generate an 'o' code for each pulse.
- The original COIN+RS did not detect errors generated by the coin or note validators. The COIN+RS2000 detects various errors and generates output data codes for each error.
- The original COIN+RS used a COM port hardware control signal to allow the PC to enable and disable the coin and note validators. The COIN+RS2000 also provides this control system but in addition allows individual coin and note channels to be enabled and disabled by sending command codes from the PC COM port.
- The original COIN+RS did not provide any expansion capabilities. The COIN+RS2000 has additional input/output available. These input and output signals may be used to connect external devices such switches, electromechanical counters, 7-segment displays and coin or card dispensing units to the PC. Please contact D. M. (Kent) Electronics Ltd. for details of the many available options.