1.0 Introduction

The following specification defines the requirements for the transmission of data to the Wyvern 2000PC from any PC proprietary software. The serial protocol will use 9600 baud 8 data bits 1 stop bit no parity. All instructions will start with a control character donated by ^ . All commands will have a response of a sequence of ASCII characters.

A simple additive single byte checksum should be sent with all commands followed by CR and LF. The checksum will not include itself or CR LF.

There will be two modes of operation
  (i) programming of data
  (ii) control or real time access.
The programming mode will only be allowed when the link switch (LKSW1 see manual page 9) is set to ON. Control mode will only be allowed when the link switch is OFF.

2.0 Logging on to Wyvern 2000PC

The first command should be to send ^p. The response will be either ^p if in program mode (switch LKSW1 ON) and option 53 selected or a ^t if option 53 not selected. A ^s will be returned if the Wyvern 2000PC is in command mode (LKSW1 switch OFF).

3.0 List of Commands for Program Mode

Control	Action	Response	Comments
C	Clears totals	C e	
D	Get all setup data	D nnn dn	nnn - number of bytes returned. dn - data n
E	Get totals	E nn dn	nn are 2 ASCII characters for the number of characters and Dn will be ASCII characters for the data.
F a d	Update Data Single	F a d	a - address d - single byte. both a and d in binary
G nn dn	Update Data Block	G nn	Block will always start at 0 address nn is 2 ASC characters
H m	Set Control Mode	H m	
I	Get input status	I i	i input binary number
S No.	Set Serial No.	S No.	No. is serial number 5 bytes ASCII **see notes**
K n **	Send Coin Data	K n ** 'M'	n is 1 to 6 ASCII character. ** is 8 bytes binary data CRLF
L	Learn Coin	L 'C' ** 'M' **	N n sent as coin entered
R n	Set Output	M n	n - set output 1 or 2
O	Read Clock	O	10's hr hr 10's min min ASCII characters
Q nnnn	Set Clock	Q	nnnn four ASCII characters as ctr O

3.1 ^C Clear Totals

The W2000PC will respond with ^C e after a delay of some 50 Ms. This is to allow for the EEPROM to program. If e is 0 then the programming has passed. Any other ASCII character means a failure.

3.2 ^D Get all Data

The W2000PC will respond with ^D nnn then the binary data. nnn will be three ASCII characters as the number of bytes of data to be returned. The data will be in raw Binary returning 101 bytes (see 5.0 for the definition of each byte).

3.3 ^E Get Totals

The W2000PC will respond with ^E nn, where nn is 2 ASCII characters for the number of bytes
Firmware issue 5.0 upwards will return 12 bytes of ASC. The following is the order as they arrive -:
1 total money xx 100's £
2 total money ..xx 10's £
3 total money ....xx p
4 total time mins xx 100's
5 total time mins ..xx 10's
6 total time seconds xx

3.4 ^F Set value

The PC should send the address and value of data to be stored.
The address will be 1 byte binary thereby addressing from 0 to 255.
The data must be a single binary byte having value 0 to 255.
NOTE no data is stored until the link switch is moved to the OFF position.

3.5 ^G Update data block

The PC can update all data in one go by using this command. The command should be followed by nn the number of bytes as 2 ASC characters (max 99), and should be the same as that returned by ^D. The data should be as specified in 3.4 as binary characters.

3.6 ^H Set Control mode.

This mode allows for the W2000PC to respond differently when in the control mode.
The character is an ASCII 1 to 9. 2 different options are allowed.
m = 1 sets the W2000PC to send the Coin number its time and value when a coin is inserted. See ^B
m = 2 sets W2000PC to return coin data when coin entered.

3.7 ^I Get input status

The W2000PC will respond with ^I followed by a binary value. A value of 1 will indicate input 1 is high.
1 - input 1 high EXT EMSP
2 - input 2 high EXT START
4 - input 3 high Front panel PB
8 - spare
10 - coin detect LED 1& 2
20 - reject detect LED
40 - magnetic detect ferrite present
80 - Card inserted

3.8 ^S Set serial number.

Sending ^S followed by 5 ASCII characters will program a serial number into the W2000PC for use by the CAN bus.
Note This has a password to allow acceptance. If ^S followed by 5 bytes of correct password and 5 bytes of serial number, then the new number will be stored and returned. If the wrong password or only 5 bytes are sent then the old serial number will be returned.

3.9 ^K Program coin data
This allows predefined parameters for coins to be set without the need for the learn mode.
N will select the coin 1 to 6 and the binary values following will set the max min.
There must be 9 values sent.
Max C min C
Max L1 Min L1
Max L2 Min L2
Max V Min V
0 for non ferrite 1 to 255 for ferrite value.

3.10 ^L Set W2000PC into coin learn mode
Sending L sets it into learn mode. Any character will exit this mode. While in this mode the coin
value limits and number of coins entered will be output as each coin is entered. The 8 bytes of coin
data will be proceeded by an ASCII C. The 8 bytes of limits will be proceeded by an ASCII M and the
number of coins will be proceeded by ASCII N. All data will be binary.

3.11 ^R Set output.
This will set the relay outputs and the auxiliary output. An ASC character of 1 to 3 should be used.
1 - output 1 ON only
2 - output 2 ON only
4 - Auxiliary output ON only
8 - Activate Solenoid

3.14 ^O Get Time
Sending ^O will get the time from the W2000PC as four ASCII characters in the form of h h m m. 10
's Hours Hours 10's minutes and minutes as 24 hour clock.

3.15 ^Q Set Clock
To set the time to a new value send four ASC characters as 10'sh h 10'sm m
I.E ^Q 1 5 3 2   - set time to 15:32

4.0 List of commands for Control Mode

Control	Action	Response	Comments
B	Poll for coin	B n ££PP mm ss	n is 0 for no coin See ^H.
E	Get totals	E nn dn	
I	Get status	I coin values	
R	Reset time		

4.1 ^B poll for coin.
This mode will ask the W2000PC if a coin has been input since the last poll.
A ^B followed by a number for the coin type (1 to 6) and the value and time setup for that coin will be
output to the PC in binary.
I.e. ^B 1 1 0 5 1e ------ this is coin 1 value £1.0 time 5 mins 30 seconds
If the second byte is 0 or 9 the no further data will be sent.
A 9 is an unrecognized coin and a 0 is no further coin has been entered since last coin.

4.2 ^E Get totals
The W2000PC will respond with ^E nn, where nn is 2 ASCII characters for the number of bytes
Firmware issue 5.0 upwards will return 12 bytes of ASC. The following is the order as they arrive -:
1 total money xx 100's £
2 total money ..xx 10's £
3 total money ....xx p
4 total time mins xx 100's
5 total time mins ..xx 10's
6 total time seconds xx

4.3 ^I will return the status of the timer.
An ASCII character for the type of time loop and 3 bytes in binary for the time will be returned.
^I 0   - No timing
^I 1 0 0 14   - pre time 20 seconds left
^I 2 0 0 6 3   - Main time 6 mins 3 secs left (if set hrs mins and seconds may be returned)
^I 3 0 0 1 0   - Fan time 1 minute remaining

4.4 ^R will reset any pre-time or main time. If the fan output is ON then this will continue as normal.

5.0 Returned Setup Data

00 program pre time minutes   **Max 9 mins**
01 program pre time seconds   **Max 59 seconds**
02 program fan time minutes
03 program fan time seconds   **Max 59 seconds**
04 program peak session cost in pounds
05 program peak session cost in pence
06 program off peak session cost in pounds
07 program off peak session cost in pence
08 program peak session time in mins
09 program peak session time in secs **Max 59 seconds**
10 program off peak session time in mins
11 program off peak session time in secs **Max 59 seconds**
12 program peak time on in Hrs **Max 23 Hours If off peak and peak times are the same use peak values**
13 program peak time on in Mins **Max 59 Mins**
14 program off peak time on in Hrs **Max 23 Hours**
15 program off peak time on in Mins **Max 59 Mins**
16 program lockout time minutes HR or Mins
17 program lockout time seconds Mins or seconds   **Max 59 seconds or Mins**
18 program buzzer ON time minutes HR or Mins
19 program buzzer ON time seconds Mins or seconds   **Max 59 seconds or Mins**
20 program buzzer duration seconds **Max 59 seconds**
21 program Total time display in Pre-time
22 program Hours or minutes Hr = On
23 program external I/P OFF / ON
24 program key switch input function Play / Panic. Play is ON panic is OFF
25 program Cool message when fan running only. ON display cool.
26 program Hold when external input is low. ON Hold enabled
27 program Fan output on in pre-time. ON fan enabled in pre-time
28 program Fan output on when in Play mode. ON fan enabled in play.
29 program ON pulse 250 ms output
30 not returned
31 coin 1 session time minutes
32 coin 1 session time seconds
33 coin 2 session time minutes
34 coin 2 session time seconds
35 coin 3 session time minutes
36 coin 3 session time seconds
37 coin 4 session time minutes
38 coin 4 session time seconds
39 coin 5 session time minutes
40 coin 5 session time seconds
41 coin 6 session time minutes
42 coin 6 session time seconds
43 coin 1 session value pounds
44 coin 1 session value pence
45 coin 2 session value pounds

46 coin 2 session value pence
47 coin 3 session value pounds
48 coin 3 session value pence
49 coin 4 session value pounds
50 coin 4 session value pence
51 coin 5 session value pounds
52 coin 5 session value pence
53 coin 6 session value pounds
54 coin 6 session value pence

Followed by 48 bytes of coin setup data limits
Coin 1
Capacitor +
Capacitor –
Frequency 1 +
Frequency 1 –
Frequency 2 +
Frequency 2 –
Voltage +
Voltage –
Repeated for next 5 coins (i.e. 8 * 6 = 48)
Last 2 bytes are
Ferrite band select 1
Ferrite band select 2

Issue history
1.0 16.07.01
1.1   add ^p and ^s as response
1.2   additions to accommodate enhancements in firmware issue 5.11
1.3   enhancement add reset and card lockout firmware issue 5.20
2.0   updated for firmware issue 6.0 05.03.02