1 IP CONNECT MODULE – SIMPLE USER INSTRUCTIONS

2 APPENDICES

The IP CONNECT Module is a versatile communications interface which allows a PC to inter-work with the Connect Network System of Screen controllers.

This document provides simplified instructions on how to connect the IP CONNECT module, and basic usage of the module.

For more detailed information consult the document “D1322_User_Manal_Ver_1_9.doc”

1.1 BACKGROUND

The IP CONNECT module connects into the Connect Network in the same way as the other modules, and works with the same addressing scheme.

The module can interface with a host PC or controller in a number of ways:-

(a) Serial RS232
(b) Serial RS485
(c) USB
(d) TCP/IP

The module communicates over the serial ports and USB using a simple ASCII protocol.
The TCP/IP connection provides a simple HTTP Web Server or can use the Control Port with a Telnet type of application and the same ASCII protocol as for the serial ports

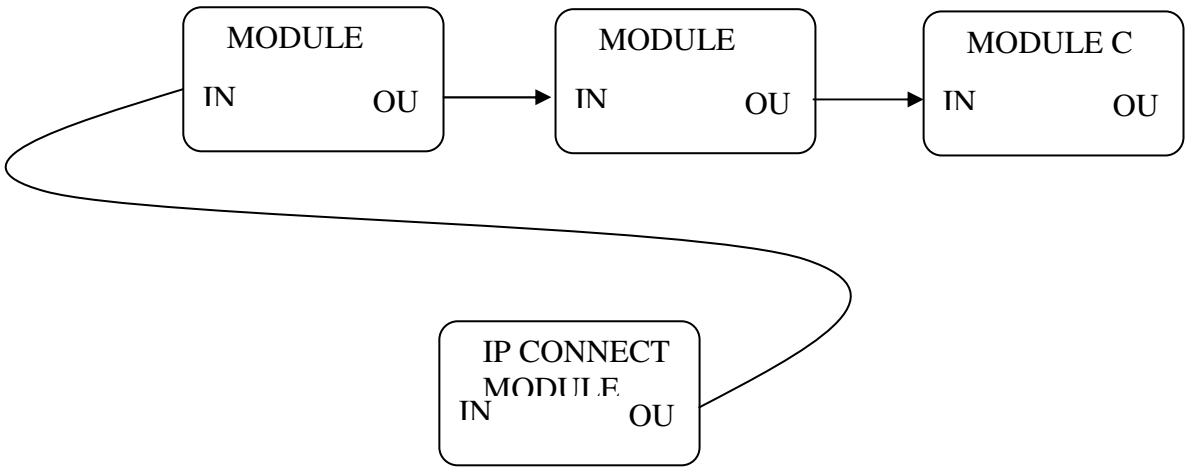
Separate ports on the USB and TCP/IP can be linked through to the RS232 port.
Data is transmitted transparently between the linked ports.

The following ports and connections are available:

Interface	Connector	Port	Connections	RS232 Link Thru	Control Port
CONNECT	RJ12	IN	1		
CONNECT	RJ12	OUT	1		
RS232	Screw Term		1	Y	Y
RS485	Screw Term		1		Y
USB	USB-B	D132213_A	1		Y
		D132213_B	1	Y	Y
HTTP	RJ45	80	3		Y
TCP/IP		3002	3		Y
TCP/IP		3001	1	Y	Y

Module Connection and Addressing

The IP module is connected to the Connect Network using the 6wire RJ12 cables.
The modules are connected as a daisy chain from each module's OUT socket to the next module's IN socket. EG:-



Each module has 2 addresses:

(1) Relative (MAF) address – In the example above
IP Connect Module – Always starts with MAF = 1
MODULE A MAF = 2
MODULE B MAF = 3
MODULE C MAF = 4

(2) Module ID – this address is assigned by programming the Module ID Register
Module ID can also be programmed using special 'Quick Configure' commands.

Module Addresses are always in the range 1 to 9

1.2 SETTING UP SIMPLE HTTP WEB SERVER

The IP CONNECT module can be connected to a Local Area Network (LAN) and the HTTP on port 80 can be accessed by a standard Web Browser such as Windows Internet Explorer.

The simple web browser allows a user to view and change the module configurations and also to perform some control functions with status updates.

The following steps should allow connection to the HTTP web server from a PC

STEP 1. Connect the RJ45 port to from the IP CONNECT module to the LAN port of the PC

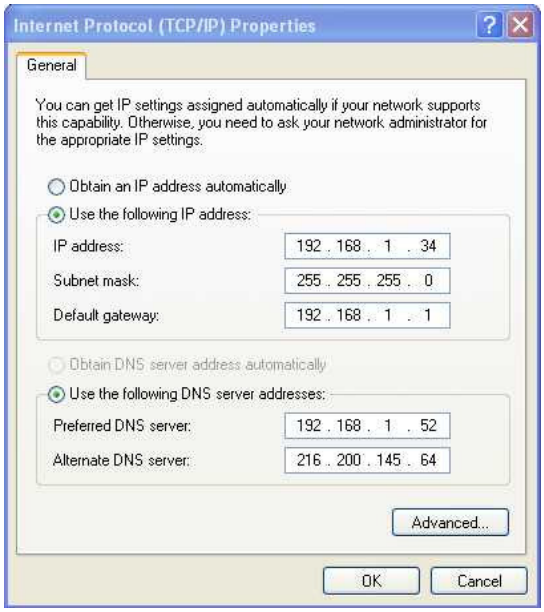
STEP 2. Power-up the IP CONNECT Module.

Note – if the IP address or subnet mask have been changed in the module then should power-up with the small switch on side of the module depress and then release after a few seconds . This will set the module IP address and subnet mask back to the following factory defaults:

DEFAULT IP ADDRESS = 192.168.1.253
DEFAULT SUBNET MASK = 255.255.255.0
DEAFULT GATEWAY = 192.168.1.1

STEP 2A . Change Network Settings in the PC

The PC Network Settings must match the IP address (first 3 numbers) and subnet mask of the IP CONNECT module.
The last number (eg IP address '34' in the example below must be different)
This is done in Windows NT by opening the "Control Panel \ Network Connections".
Then select the" LAN Connection" and Right Click to view "Properties".
Then select "Internet Protocol (TCP/IP)" and view "Properties"



The following Window should appear.
Make a note of the values as these will need to be changed
Change the IP Address and Subnet Mask as shown

Once the changes are made select OK to save it.

STEP 2B –An ALTERNATIVE to changing the Network Settings in the PC is to change the Network settings in the IP CONNECT module to match those of the PC & Local Area network.
Using the procedure in STEP 2B to view the TCP/IP properties on the PC.
Make a note of the IP Address and Subnet Mask.

Connect a PC to the RS232 Serial Port or USB (see procedures in next section 1.4).

Then using the Register Set command to change the IP Address (Registers 68 and 69) and Subnet Mask (Registers 70, 71) to the required values.

Note the 4 byte address is converted to the 2 integer address as follows:-

If the 4 Byte IP address is AAA.BBB.CCC.DDD

Then for the CONNECT IP module registers values are set to
Register 68 – IP Address (H) = AAA x 256 + BBB
Register 69 – IP Address (L) = CCC x 256 + DDD

The subnet mask determines which bits of the IP Address should be matching for the devices to be able to communicate. For small networks it is normally set to "255.255.255.0"
This means that the first 4 numbers of the IP Address need to be matching, and the last one should be unique.

STEP 3. Run the Web Browser – eg Windows Internet Explorer

Type the IP Address for the IP CONNECT module into the browser's address bar at the top LHS of the Window.
Note : The IP Address should be written for example as "http://192.168.1.253"

The following Opening screen should then be shown.

STEP 4. Enter the User Name and Password

The factory Defaults are: User Name: Admin
Password: Connect

If the Username or password has been changed and forgotten, the IP CONNECT module can be returned to the Factory defaults by powering-up with the side Push-button pressed.

Once the Username / Password are successfully entered then the main menu screen will be shown.

1.3 SETTING UP RS232 / RS485 SERIAL PORT

1.3.1 PORT CONFIGURATION

The Default settings are :-

Baud Rate	9600
Bits	8
Parity	None
Stop	1
Flow Control	None / Hardware

Note – baud rate may be changed in the configuration registers

1.3.2 COMMUNICATIONS PROTOCOL

The Serial Protocol is an ASCII text based protocol which can be accessed by a user using "Windows Hyperterm" or it can be interfaced to an automated controller

Note – the default setting is for character echo to be switched off.
This may be switched on by sending the command "062 0 3781 <Enter>"

Responses are returned with the Command number incremented by +100.

The second field returns a response code, with the status of the response:-

Response Code	STATUS
1	Data Valid/Action Completed OK/LEFT PORT
2	Data Valid / More Data to Come/LEFT PORT
3	Data Valid/ Buffer is Full /LEFT PORT
4	Address Error
5	Address Error
6	IP Module is Busy
7	No Module Response
8	Bad Value

1.3.3 MODULE UNIFIED ADDRESS

Commands for a particular module require a module address which can be represented in 2 ways:
(1) As the Module ID (1 to 9) assigned by programming.
(2) As the Relative or MAF address (1 to 9) +16

Eg MAF address 3 becomes Unified Address 3 + 16 = 19.

1.3.4 RS485 OPERATION

The module sits in Receive mode and when it Receives a command it switches to TX to send the response and then back to receive. When it switches from RX to TX allow 50ms for slow PC applications.

1.3.5 SOME USEFUL COMMANDS

COMMAND DESCRIPTION	COMMAND NUMBER	VALUE1	VALUE2	VALUE3
READ REGISTER	1	ADDRESS	REGISTERE NUMBER	
WRITE REGISTER	2	ADDRESS	REGISTER NUMBER	VALUE
OPERATE IR GROUP UP	20	IR GROUP		
OPERATE IR GROUP DOWN	23	IR GROUP		
OPERATE MODULE DIRECT UP	30	ADDRESS		
OPERATE MODULE DIRECT DOWN	33	ADDRESS		
GET MODULE STATUS	50			

1.3.6 MODULE STATUS REGISTER

The Module Status register returns the current state of each module.
This can show if a module is moving up or down or is stopped at top or bottom

When modules are operated, they will transmit a change in their status.
The IP CONNECT module receives these status values and stores them in a buffer.

This buffer can be Polled (Command 50) regularly to provide a “live” indication of the module activity.

MODULE STATUS	ACTION
0	Moving top
1	Moving bot
6	At TOP
7	At BOTTOM
10	Stopped manual
11	Error

1.4 IP CONNECT USB TO PC COMMUNICATIONS

1.4.1 USB CLASS, VENDOR AND PRODUCT

The IP CONNECT module (D132217) is supplied with

Vendor ID	0x1150
Product ID	8 & 9
Serial Number	Always "00000000"
Driver Representation	USB\VID_1150&PID_0007

The Vendor ID 0X1150 is owned by Don Alan Pty Ltd is made available for use on this product on this instance for this product as it stands. No further right to this vendor ID is provided.

The module implements CDC class which means it will appear as a com port on the PC. Although the PC may allow com port parameters such as baud rate to be set they have no effect.

1.4.2 CONNECTION AND DRIVER SETUP

For use on most operating systems there is no 'driver' as such as the CDC class licence for the operating system will be invoked. A usbser.inf file is provided that allows easy connection to Microsoft Windows 2000 and later systems.

When the USB cable is plugged into the PC, the user will be prompted to install the device information (.inf) file. Select the option "Search Specific location" and point it to the folder where the
"usbser.inf" file is located.
Two virtual COMM Ports are created, and so the driver installation will prompt for the .inf file to be installed twice.

Port D132213_A – uses the command interpreter

Port D132213_B – uses the command interpreter
This port can also be set for direct link through to the RS232 Port

Once the driver is installed a user can access the virtual COMM port using Hyperterm or similar console application.

1.4.3 COMMUNICATIONS PROTOCOL

This serial command protocol is essentially the same as for the other Serial RS232 and RS485 ports. Refer Section 1.4 for further details.

2 APPENDICES

2.1 REGISTER MAPPINGS SCREEN MODULES

Register No.		Description	Registers Supported D13221	D13225	D13226	D132217
SPECIAL						
0		Special Register	Y	Y	Y	Y
READ ONLY						
DEC	HEX					
1	01	S/W Version	Y	Y	Y	Y
2	02	Hardware Version	Y	Y	Y	Y
3	03	Batch Number	Y	Y	Y	Y
4	04	Serial Number	Y	Y	Y	Y
5	05	Module Type	Y	Y	Y	Y
6 . . 7	06 .. 07	Spare				
8 . . 15	08 .. 0F	Bit map of supported registers	Y	Y	Y	Y
16 . . 31		Spare				
DIAGNOSTICS						
DEC	HEX					
32	20	STATUS – See Table 2.1.3	Y	Y	Y	Y
33	21	COMMANDS – See Table **Error! Reference source not found.**	Y	Y	Y	Y
34	22	Left Packet Errors	Y	Y	Y	Y
35	23	Right Packet Errors	Y	Y	Y	Y
36	24	Motor Operates Up	Y	Y		Y
37	25	Motor Operates Down	Y	Y		Y
38	26	Motor Operate Time (Minutes)	Y	Y		Y
39	27	Motor Current – Max		Y		
40	28	Motor Current – Ave		Y		
41	29	Number of Power-Restarts	Y	Y	Y	Y
42	2A	Poweron Secs- Lo	Y	Y	Y	Y
43	2B	Poweron Secs -Hi	Y	Y	Y	Y
44	2C	Failures – timeout	Y	Y		Y
45	2D	Failures - current		Y		
46	2E	Process_State	Y	Y	Y	Y
46..63	2C..3F	Spare				

PROGRAMMING - EEROM

DEC	HEX					
64	40	Magic 1 (Fixed 43981)	Y	Y	Y	Y
65.	41	Operation PIN	Y	Y	Y	Y
66 .	42	Programming PIN	Y	Y	Y	Y
67	43	Partial Pos 1 – Lo	Y	Y		Y
68	44	Partial Pos 1 – Hi	Y	Y		Y
69	45	Partial Pos 2 – Lo	Y	Y		Y
70	46	Partial Pos 2 – Hi	Y	Y		Y
71	47	SWITCH MODE	Y	Y	Y	Y
72	48	Partial 1 Open Mode	Y	Y		Y
73	49	Partial 2 Open Mode	Y	Y		Y
74	4A	SWITCH GROUP Bitmapped Register See below	Y	Y		Y
75	4B	IR GROUP Bitmapped Register See below	Y	Y		Y
76	4C	Timer Up	Y	Y		Y
77	4D	Timer Down	Y	Y	Y	Y
78	4E	MODULE_ID	Y	Y		Y
79	4F	Motor Current Trip Threshold		Y		
80	50	Motor Run Timeout	Y	Y		Y
81	51	Diagnostics Log Time	Y	Y	Y	Y
82	52	Time_delay_up (100mS)	Y	Y		Y
83	53	Time_delay_down (100mS)	Y	Y		Y
84	54	Magic 2 (fixed 47637)	Y	Y	Y	Y
83..127	53 .. 7F	Spare				

2.1.1 BITMAPPED REGISTERS 74 & 75

The group is selected by setting the respective binary bit.
The number is then the decimal conversion of the binary number

Bit N0	B8	B8	B7	B6	B5	B4	B3	B2	B1	B0
Group	GRP9	GRP8	GRP7	GRP6	GRP5	GRP4	GRP3	GRP2	GRP1	0
Value	512	256	128	64	32	16	8	4	2	0

Alternatively, simply add the table values assigned to the required groups

2.1.2 DIAGNOSTICS REGISTERS 32 TO 63

These registers provide important diagnostic information about the current state of the module, the operating conditions and various fault conditions.

The Diagnostics Registers are saved to EEPROM every 3600 seconds (1 Hour).
This period may be changed with Register 0x51.

2.1.3 STATUS REGISTER 32

The STATUS register is special in that it is used for feeding back response information to the Connect IP module.

	MODULE FUNCTION			
Response Type No	D13221	D13225	D13226	D132217
0	Moving top	Moving top	OK	Moving top
1	Moving bot	Moving bot		Moving bot
2	Moving PP1	Moving PP1		Moving PP1
3	Moving PP2	Moving PP2		Moving PP2
4	Moving PPT	Moving PPT		Moving PPT
5	Moving PPB	Moving PPB		Moving PPB
6	At TOP	At TOP		At TOP
7	At BOTTOM	At BOTTOM		At BOTTOM
8	At PP1	At PP1		At PP1
9	At PP2	At PP2		At PP2
10	Stopped manual	Stopped manual		Stopped manual
11	Error	Error	Error	Error
12				
13	Fail-timeout	Fail-timeout		Fail-timeout
14	Fail – current	Fail – current		Fail – current
15	Rattle	Rattle		Rattle
16	At PPB	At PPB		At PPB

2.2 REGISTER MAPPINGS D1322_13 IP CONNECT MODULE

Register No.	Description
SPECIAL	
0	Special Register
READ ONLY	
1	S/W Version
2	Hardware Version
3	Batch Number
4	Serial Number
5	Module Type
6.7	Spare
8..15	Bit map of supported registers
16 .. 31	Spare
DIAGNOSTICS	
32	Status
33	COMMAND – Future
34	Left Packet Errors
35	Right Packet Errors
36..40	Spare
41	Buffer – IP CONNECT Module ID (MAF=2)
42	Buffer – Module ID MAF=2
43	Buffer – Module ID MAF=3
44	Buffer – Module ID MAF=4
45	Buffer – Module ID MAF=5
46	Buffer – Module ID MAF=6
47	Buffer – Module ID MAF=7
48	Buffer – Module ID MAF=8
49	Buffer – Module ID MAF=9
50	Spare
51	Buffer – IP MODULE STATUS (MAF=1)
52	Buffer – Module STATUS MAF=2
53	Buffer – Module STATUS MAF=3
54	Buffer – Module STATUS MAF=4
55	Buffer – Module STATUS MAF=5
56	Buffer – Module STATUS MAF=6
57	Buffer – Module STATUS MAF=7

58	Buffer – Module STATUS MAF=8
59	Buffer – Module STATUS MAF=9

60 ..63

PROGRAMMING - EEROM

64	RS232 Baud Rate /10
65	RS232 bitmapped options B0 Echo on B1 Handshake B2 1=7 or 0=8 bits B3 0=1 Stop bit 1=2 Stop Bits
66	RS485 Baud Rate /10
67	RS485 bitmapped options B0 B1 B2 1=7 or 0=8 bits B3 0=1 Stop bit 1=2 Stop Bits
68	IP Address (H)
69	IP Address (L)
70	Subnet mask (H)
71	Subnet mask (L)
72	Gateway (H)
73	Gateway (L)
74	MAC Address (H)
75	MAC Address (M)
76	MAC Address (L)
77	Diagnostics Log Time (Seconds)
78	Module ID
79	Buffer Refresh Rate (Seconds)
80	Bitmapped Options B0 AMX Discoverable Enabled B1 RS232 Linked to TCP/IP B2 RS232 Linked to USB Spare
81 .. 127	Spare

MODULE ID BUFFER and MODULE STATUS BUFFER Registers are special registers used to store quick lookup of particular module information.

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