14. IP Connect Serial Protocol

    a. This serial command protocol is essentially the same for all console channels

        (a) TELNET via TCP/IP (2 ports 3001)

        (b) HTTP via port 80

FORMAT

The stream is made up of messages. A message consists of 1 to 80 printable ascii characters followed by and end of message. An end of message is one or more of CR and LF optionally combined with any number of delimiters.

A message is made up of unsigned numerical value fields in decimal format separated by one or more delimeters. A delimiter is any single or combination of space, comma or tab.

Examples of valid messages to the IP Connect module are given below. All these messages have the same meaning.

```
1,3,45<CR>
1,3,45<LF>
1,3,45<CR><LF>
,1,3,45<CR><LF>
1,3,45,<CR><LF>
1,3,,45,<CR><LF>
1,3, 45,<CR><LF>
1,3,45,<CR>, ,<LF>
01,3,45<CR><LF>
000000001,3,45<CR><LF>
   1   3   45<CR><LF>
1,   3,   45<CR><LF>
```

A message is not a valid message if
It contains more than 80 characters before an end of message character is received.
It contains a character that is not <CR>,<LF>,<TAB>,<SPACE>,0,1,2,3,4,5,6,7,8,9,",".
A numerical field exceeds 65535
It contains more than 10 fields

If a packet is determined to be not a valid message it is ignored. If a message is determined to be invalid before the end of message is ignored then all characters received are ignored until an end of message character is received.

Messages from the IP Connect module comply with the requirements of the incoming messages but in addition are fixed width formatted. Each numerical field is made of 5 characters (leading spaces and digits). A comma delimiter is included. An Example is shown below.

```
   1,   3,   45<CR><LF>
```

15.CONTROL COMMANDS

a. These commands are used to control the operation of screens.

b. The Switch groups and IR groups must be programmed according to section 5

c. Unified address is MAF address plus 16 e.g. Module 1 is Unified address 17

Operate Module Direct

COMMAND	Value	Description
30	Module ID	Operate Module UP
31	Module ID	Operate Module PARTIAL 1
32	Module ID	Operate Module PARTIAL 2
33	Module ID	Operate Module DOWN
36	Module ID	Operate Module STOP

d. Command followed by value 0 operates all modules connected via Connect Network including the Connect IP module
(e.g.: 30 0 will operate all devices connected via the Connect network)

e. Example of direct command
Connected to 192.168.0.32:3001 – command 30 1 using module ID would see the screen move to up position

IR Group Commands

f. IR group control can be used to control screens directly if connected via Connect Network including the Connect IP module

g. Each module will require programming via register 75, as per point 11 in document

h. Example of direct command
Connected to 192.168.0.32:3001 – command 20 1 ,would see all screens programmed to operate on IR group 1 move to up position

i. Command followed by value 0 operates all modules connected via Connect Network including the Connect IP module

Operate IR Group

Command	IR Group	Description
20	IR Group 1 to 9, 0	Operate IR Group UP
21	IR Group 1 to 9, 0	Operate IR Group PARTIAL 1
22	IR Group 1 to 9, 0	Operate IR Group PARTIAL 2
23	IR Group 1 to 9, 0	Operate IR Group DOWN
26	IR Group 1 to 9, 0	Operate IR Group STOP

Switch Group Commands

a. Switch group control can be used to control screens directly if connected via Connect Network including the Connect IP module

b. Each module will require programming via register 74, as per point 11 in document

c. Example of direct command
   Connected to 192.168.0.32:3001 – command 20 1 - would see all screens programmed to operate on Switch group 1 move to up position

d. Command followed by value 0 operates all modules connected via Connect Network including the Connect IP module

Operate Switch Group

Command	Switch Group	Description
10	SWITCH Group 1 to 9, 0	Operate Switch Group UP
11	SWITCH Group 1 to 9, 0	Operate Switch Group PARTIAL 1
12	SWITCH Group 1 to 9, 0	Operate Switch Group PARTIAL 2
13	SWITCH Group 1 to 9, 0	Operate Switch Group DOWN

16. Programming Partial Positions 1 & 2

a. Before partial positions can be programmed, the screen must be calibrated – Calibration is done by sending the below command. eg. to calibrate screen 1 a code of 192.168.0.32:3001 – command 042 17 using Unified address would see the screen calibrate

b. Calibration command can also be sent from the PC Connect software

Command	MAF Address + 16	Value 1
42	Unified Address	3781

c. Please start calibration by returning screen to top limit and then sending calibration command.
d. Due to motor run time this feature is not available on some large projection screens or Screen Lowering devices
e. Partial 1 must be set first and must be above partial 2
f. Note that if partial positions have been programmed Stop 1 and Stop 2 on infra red transmitter will send screen to partial 1 & 2, and will not stop the screen.

Setting the Partial positions

Note: Partial positions are set using internal timers, position can vary due to mains voltage fluctuations, motor load changes and temperature.

COMMAND	MAF Address + 16	Value 1	Description
44	Unified Address	3781	Sets Partial Position 1
45	Unified Address	3781	Sets Partial Position 2

a. To set Partial 1 – stop screen at required location and send command - if screen 1 is being used a IP address 192.168.0.32:3001 –   command 044 17 using unified address would see the screen set partial position 1
b. To set Partial 2 – stop screen at required location and send command - if screen 1 is being used a IP address 192.168.0.32:3001 –   command 045 17 using unified address would see the screen set partial position 1

17.Module Status Feedback

A module status buffer (20 record FIFO) is updated as a automatically generated Send Register Commands with register number = 0x20 are sent from each module.
The module status buffer contains the Module ID (1 byte), and Module Status (2 bytes)

Command
050

Response from module e.g. 150, 1, 1, 6 – value 6 indicates screen at top

Command	Value 1	Value 2	Value 3
150	Status	Module ID	Module Status Register (0x20)

Note – Status=1 is returned if valid data and no further records in the status buffer
Status=2 is returned if valid data and there are still records in status buffer
Status=3 is returned if valid data but the buffer is full (eg may have lost data)
Status=6 is returned if there are no new records

This buffer is updated when screens are moved. It is also updated automatically every 60 seconds. It needs to be polled regularly to clear the stored data otherwise it will get full and records will be lost. Even though screens may not be moving the data is being updated even though the status is the same

Response Type No	Connect IP Module
0	Moving top
1	Moving bot
2	Moving PP1
3	Moving PP2
4	Moving PPT
5	Moving PPB
6	At TOP
7	At BOTTOM
8	At PP1
9	At PP2
10	Stopped manual
11	Error
12	Spare
13	Fail-timeout
14	Fail – current
15	Rattle
16	At PPT
17	At PPB

Example of string from module

192.168.0.32 3001   Up   Send 30 1

 192.168.0.32 3001   Up   Receive 130, 1, 1

192.168.0.32 3001   Status Change   Receive 9999

192.168.0.32 3001   Get Module Status   Send 67 3781

192.168.0.32 3001   Get Module Status   Receive 167, 0, 255, 255, 255, 255, 255, 255, 255, 255

192.168.0.32 3001   Status Change   Receive 9999

192.168.0.32 3001   Get Module Status   Send 67 3781
192.168.0.32 3001   Get Module Status   Receive 167, 6, 255, 255, 255,   255, 255, 255, 255, 255