Tx1500 control protocol via the B-BUS interface.
DRAFT VERSION 24Jan03 PSC

Baud settings: 9600,N,8,1
Data can be sent at full speed with no inter-character pacing.

Function	String	Notes
SELECT MONITOR	@2,M <CR>	M = monitor number (1 - 8)
SELECT CAMERA	@3,C <CR>	C = camera number (1 - 96)
PAN RIGHT	@5,2 <CR>	
PAN LEFT	@5,3 <CR>	
TILT UP	@5,4 <CR>	
TILT DOWN	@5,5 <CR>	
ZOOM IN	@5,6 <CR>	
ZOOM OUT	@5,7 <CR>	
FOCUS FAR	@5,8 <CR>	
FOCUS NEAR	@5,9 <CR>	
IRIS CLOSE	@5,10 <CR>	
IRIS OPEN	@5,11 <CR>	
WASH ON	@5,12 <CR>	
WIPER ON	@5,19 <CR>	
LAMPS ON	@5,21 <CR>	
STOP PAN RIGHT	@6,2 <CR>	
STOP PAN LEFT	@6,3 <CR>	
STOP TILT UP	@6,4 <CR>	
STOP TILT DOWN	@6,5 <CR>	
STOP ZOOM IN	@6,6 <CR>	
STOP ZOOM OUT	@6,7 <CR>	
STOP FOCUS FAR	@6,8 <CR>	
STOP FOCUS NEAR	@6,9 <CR>	
STOP IRIS CLOSE	@6,10 <CR>	
STOP IRIS OPEN	@6,11 <CR>	
STOP WASH ON	@6,12 <CR>	
STOP WIPER ON	@6,19 <CR>	
STOP LAMPS ON	@6,21 <CR>	
STOP PAN/TILT/LENS	@6,22	Stops all pan/tilt and lens movement
PAN/TILT SPEED	@7,P,T <CR>	P=Pan & T=Tilt speed in the range 0 - 15 0 = slowest, 15 = fastest
GOTO PRESET	@8,P <CR>	P = preset number (1-99)
PROGRAM PRESET	@9,P <CR>	P = preset number (1-99)
START PATROL 1	@10 <CR>	
START AUTOPAN	@12 <CR>	
START MONITOR SEQUENCE	@25,0 <CR>	Same as hold off
STOP MONITOR SEQUENCE	@25,1 <CR>	Same as hold on

Relay ON (Triangle Key)	@50,X<CR>	X = 0 – 12 0 = Tx1500 relay 1 – 2 = relays 1 & 2 of alarm card 1 3 – 4 = relays 1 & 2 of alarm card 2 5 – 6 = relays 1 & 2 of alarm card 3 7 – 8 = relays 1 & 2 of alarm card 4 9 – 10 = relays 1 & 2 of alarm card 5 11 – 12 = relays 1 & 2 of alarm card 6
Relay OFF	@51,X<CR>	X = As above
HASH command	@52,X<CR>	X = hash number – see Tx1500 for specific hash commands.
Send Single Key Press	@53,0<CR>	‘0’ Key
	@53,1<CR>	‘1’ Key
	@53,2<CR>	‘2’ Key
	@53,3<CR>	‘3’ Key
	@53,4<CR>	‘4’ Key
	@53,5<CR>	‘5’ Key
	@53,6<CR>	‘6’ Key
	@53,7<CR>	‘7’ Key
	@53,8<CR>	‘8’ Key
	@53,9<CR>	‘9’ Key
	@53,10<CR>	‘CAMERA’ key
	@53,11<CR>	‘MONITOR’ key
	@53,12<CR>	‘CLEAR’ key
	@53,13<CR>	‘+’ key
	@53,14<CR>	‘-‘ key
	@53,15<CR>	‘PRESET’ key
	@53,16<CR>	‘PATROL’ key
	@53,17<CR>	‘SEQ’ key
	@53,18<CR>	‘RELAY/TRIANGLE’ key
	@53,19<CR>	‘ALARM’ key
	@53,21<CR>	‘PROGRAM’ key
	@53,22<CR>	TX1500 MENU ACCESS
Display current Info	@54<CR>	Output current camera, monitor & lights status

All characters shown are the actual ASCII characters that should be sent. Two or three digit numbers will be sent using either two or three characters.
All commands are terminated with a <CR> = 0x0d or decimal 13

Examples

Select camera 1 onto monitor 4

@2,4 <CR>	Complete HEX byte string	0x40 0x32 0x2c 0x34 0x0d
@3,1 <CR>		0x40 0x31 0x2c 0x31 0x0d

Once the monitor is selected, any subsequent camera selects relate to this monitor ie to now select camera 16 send the following:
@3,16 <CR>

The current camera can then be controlled using the @5 and @6 commands.
@5 commands are used to start a function and @6 commands are used to stop a function. Only a single function can be controlled with each command

To Pan Left, Tilt Up and Zoom in, send the following:
@5,3 <CR>
@5,4 <CR>
@5,6 <CR>

Pan and Tilt speeds are sent using the @7 command. 16 speed are supported, 0 being the slowest speed up to 15 as the fastest.

If no speed command is sent following a @5 command then a speed of 1 will be assumed. This prevents the head from 'jerking' on movement start.

Speed Examples
Move Left at increasing speeds

@5,3 <CR>	Start Panning Left
@7,1,1 <CR>	Slow Pan Speed
@7,5,1 <CR>	Increased Pan Speed
@7,10,1 <CR>	Even Higher Pan Speed
@7,15,1 <CR>	Full Pan Speed

To stop movement in a direction send a @6 command.
To stop moving left send
@6,3 <CR>

Selecting a new camera whilst the current camera is moving will cause the current camera to stop moving before selecting the new camera.

Responses sent from the TX1500 BBUS Interface
Each response is followed by CR/LF.
On power up the following message is sent:: TX1500 BBUS I-F V6
After each successfully received command the interface responds with OK and ERR followed by reason if the command or a parameter is invalid.
After a @54<CR> command or if the current monitor, camera or LED status changes the following message is send. M1,C01 0000000
M = The monitor number, 1-8
C = The camera number, 1-96
The next 7 characters represent the LED status, 1 if the LED is ON, 0 is OFF as shown left to right.
LIGHTS, AUTOPAN, WIPE, ALARM, TRIANGLE, SEQ, PATROL
EG monitor 2 showing camera 45 which is running a patrol with the lights on.
M02,C45 1000010

Version History

23Jan03	PSC	Added stop all command, @6,22
		Added responses from BBUS interface
10Dec02	PSC	Pan/Tilt speed changed from percentage to 0 – 15, @7,P,T
16Nov02	PSC	Initial Revision