



See the possibilities

Command List

SW-2001T-CL

*3CCD High Speed Color
Line Scan Camera*

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JAI SW-2001T-CL Communication Protocol

<Rev. 1.0>

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All configuration of the camera is done via the RS-232C port. The camera can be set up from a PC running terminal emulator software.

Below is the description of the ASCII based short command protocol.

1. Communication setting

Baud Rate	9600
Data Length	8bit
Start Bit	1bit
Stop Bit	1bit
Parity	Non
Xon/Xoff Control	Non

2. Protocol

Transmit the setting command to camera:

NN is any kind of the commands.

NN=[Param.]<CR><LF>

e. g.

Send to camera: TR=0 <CR><LF>

Camera response: COMPLETE<CR><LF>

When camera receive the valid command, camera will return 'COMPLETE'.

If camera receive the command, camera will return following:

e. g.

Send to camera: TRX=0 <CR><LF>

Camera response: 01 Unknown Command!!<CR><LF>

e. g.

Send to camera: TR=99 <CR><LF>

Camera response: 02 Bad Parameters!!<CR><LF>

Transmit the request command to camera:

The status of camera's settings can be queried by transmitting NN?<CR><LF>, where NN is any kind of the commands.

The camera will return the current setting data.

e. g.

Send to camera: TR? <CR><LF>

Camera response: TR=3<CR><LF>

3. Command List

	Command Name	Format	Parameter	Remarks
A – General settings and useful commands.				
1	Echo Back	EB=[Param.]<CR><LF> EB?<CR><LF>	0=Echo off, 1=Echo on	Off at power up
2	Camera Status Request	ST?<CR><LF>		Actual setting
3	Online Help Request	HP?<CR><LF>		Command list
4	Firmware Program Version Request	VN?<CR><LF>		3 digits (e. g) 100 = Version 1.00
5	FPGA Program Version Request	PV?<CR><LF>		3 digits (e. g) 100 = Version 1.00
6	Camera ID Request	ID?<CR><LF>		max 10 characters
7	Model Name Request	MD?<CR><LF>		max 10 characters
8	User ID	UD=[Param.]<CR><LF> UD?<CR><LF>		User can save and load free text. (16 or less characters)
B – Trigger mode				
1	Trigger Mode	TR=[Param.]<CR><LF> TR?<CR><LF>	0=No-shutter 1=Shutter select 2=Pulse width control	
2	Trigger Origin	TG=[Param.]<CR><LF> TG?<CR><LF>	0=Internal 1=External	TG=0 is available when TR=0 or TR=1
3	Trigger Input	TI=[Param.]<CR><LF> TI?<CR><LF>	0=Camera-Link 1=Hirose12pin	
4	Trigger Polarity	TP=[Param.]<CR><LF> TP?<CR><LF>	0=Active-Low 1=Active-High	
5	Auto Reset Mode	ARST=[Param.]<CR><LF> ARST?<CR><LF>	0=Off 1=On	
C – Line Rate, Exposure				
1	Line Rate	LR=[Param.]<CR><LF> LR?<CR><LF>	No-shutter 2100 to 2150400 clocks Shutter Select 2150 to 2150400 clocks - 1 clock is 25ns	Available when TG=0
2	One-push auto line rate set	AR=[Param.]<CR><LF>	0=Activate one-push auto line rate set	Available when TG=0
3	Auto line rate reference level	AL=[Param.]<CR><LF> AL?<CR><LF>	0 to 1023	
4	RB Exposure interlocked with G	EI=[Param.]<CR><LF> EI?<CR><LF>	0=Off (independent) 1=On (interlocked)	Available when TR=1
5	Programmable Exposure – Red	PER=[Param.]<CR><LF> PER?<CR><LF>	80 to 2150400 clocks - 1 clock is 25ns	Available when TR=1
6	Programmable Exposure – Green	PEG=[Param.]<CR><LF> PEG?<CR><LF>	80 to 2150400 clocks - 1 clock is 25ns	Available when TR=1
7	Programmable Exposure – Blue	PEB=[Param.]<CR><LF> PEB?<CR><LF>	80 to 2150400 clocks - 1 clock is 25ns	Available when TR=1
8	One-push AWB shutter	AH=[Param.]<CR><LF>	0=Activate one-push AWB shutter	Available when TR=1
9	Inquire the status after one-push AWB shutter	AHRS?<CR><LF>	<One of following values will be replied from the camera> 0=AWB has not been finished yet. 1=Succeeded. 2=Error1 – G image was too bright. 3=Error2 – G image was too dark. 4=Error3 – Timeout–error occurred.	

D - Image format				
1	Binning	BI=[Param.]<CR><LF> BI?<CR><LF>	0=Binning Off, 1=Binning On	
2	Bit allocation	BA=[Param.]<CR><LF> BA?<CR><LF>	0=24bit, 1=30bit	
3	Test Pattern	TS=[Param.]<CR><LF> TS?<CR><LF>	0=Off 1=Color Bar 2=Gray Pattern 1 3=Gray Pattern 2 4=White	Off at power up
E - Gain, white balance and signal settings				
1	Gain Level - Master	GA=[Param.]<CR><LF> GA?<CR><LF>	-132 to 429	0=0dB
2	Gain Level - Red	GAR=[Param.]<CR><LF> GAR?<CR><LF>	-231 to 231	
3	Gain Level - Blue	GAB=[Param.]<CR><LF> GAB?<CR><LF>	-231 to 231	
4	Black Level - Master	BL=[Param.]<CR><LF> BL?<CR><LF>	0 to 127	
5	Black Level - Red	BLR=[Param.]<CR><LF> BLR?<CR><LF>	-64 to 63	
6	Black Level - Blue	BLB=[Param.]<CR><LF> BLB?<CR><LF>	-64 to 63	
7	White Balance	WB=[Param.]<CR><LF> WB?<CR><LF>	0=Manual/One push AWB 1=4000K 2=4600K 3=5600K	
8	Activate One-push AWB	AW=[Param.]<CR><LF>	0=Activate one-push AWB	
9	Inquire the status after one-push AWB	AWRS?<CR><LF>	<One of following values will be replied from the camera> 0=AWB has not been finished yet. 1=Succeeded. 2=Error1 - G image was too bright. 3=Error2 - G image was too dark. 4=Error3 - Timeout-error occurred.	
10	Knee On/Off	KN=[Param.]<CR><LF> KN?<CR><LF>	0=Off, 1=On	
11	Knee Slope - Red	KSR=[Param.]<CR><LF> KSR?<CR><LF>	0 to 16383	
12	Knee Slope - Green	KSG=[Param.]<CR><LF> KSG?<CR><LF>	0 to 16383	
13	Knee Slope - Blue	KSB=[Param.]<CR><LF> KSB?<CR><LF>	0 to 16383	
14	Knee Point - Red	KPR=[Param.]<CR><LF> KPR?<CR><LF>	0 to 1023	
15	Knee Point - Green	KPG=[Param.]<CR><LF> KPG?<CR><LF>	0 to 1023	
16	Knee Point - Blue	KPB=[Param.]<CR><LF> KPB?<CR><LF>	0 to 1023	
17	Fine Gain - Red	GAR2=[Param.]<CR><LF> GAR2?	31768 to 33768	32768 = *1
18	Fine Gain - Blue	GAB2=[Param.]<CR><LF> GAB2?	31768 to 33768	32768 = *1
19	Noise Reduction	NOSR=[Param.]<CR><LF> NOSR?	0=Off, 1=On	

F – Shading correction, pixel gain and pixel black correction				
1	Select shading correction mode	SDC=[Param.]<CR><LF> SDC?<CR><LF>	0=Off (Bypass) 1=Factory area 2=User area	
2	Run shading correction, store to user area	SDR=[Param.]<CR><LF>	0=Run flat shading correction, store to user area 1=Run color shading correction, store to user area	Store in user setting.
4	Inquire the status after shading correction	SDS?<CR><LF>	0=Shading correction has not been finished yet. 1=Succeeded. 2=Error1 – image was too bright. 3=Error2 – image was too dark. 4=Error3 – Timeout-error occurred.	
5	Select pixel gain correction mode	PGC=[Param.]<CR><LF> PGC?<CR><LF>	0=Off (Bypass) 1=Factory area 2=User area	
6	Run pixel gain correction, store to user area	PGR=[Param.]<CR><LF>	0=Run PRNU correction, store to user area 1=Run flat correction, store to user area	Store in user setting.
8	Inquire the status after pixel gain correction	PGS?<CR><LF>	0=Pixel gain correction has not been finished yet. 1=Succeeded. 2=Error1 – image was too bright. 3=Error2 – image was too dark. 4=Error3 – Timeout-error occurred.	
9	Select pixel black correction mode	PBC=[Param.]<CR><LF> PBC?<CR><LF>	0=Off (Bypass) 1=Factory area 2=User area	
10	Run pixel black correction, store to user area	PBR=[Param.]<CR><LF>	0=Run pixel black correction, store to user area	Store in user setting.
12	Inquire the status after pixel black correction	PBS?<CR><LF>	0=Pixel black correction has not been finished yet. 1=Succeeded. 2=Error1 – image was too bright. 3=Error2 – image was too dark. 4=Error3 – Timeout-error occurred.	

G – Saving and loading data in EEPROM				
1	Load Settings (from Camera EEPROM)	LD=[Param.]<CR><LF>	0=Factory area 1=User area1 2=User area2	Latest used DATA AREA will become default at next power up.
2	Save Settings (to Camera EEPROM)	SA=[Param.]<CR><LF>	1=User area1 2=User area2 Note the parameter 0 is not allowed.	
3	EEPROM Current Area No. Request.	EA?<CR><LF>	0=Factory area 1=User area1 2=User area2	The camera returns latest used DATA AREA.