



# High Performance USB Camera module for Scientific Imaging

## CAM-HRX-001

### FEATURES

- Readout speed: up to 1Mpix/s
- A/D Converter: selectable 12/14/16bit
- Partial CCD reading: programmable
- Binning: from 1x1 to 8x8 or arbitrary
- Interface: PCI or USB1.1/2.0
- Exposure time: from 0.1 to 9999s
- Settable gains: 64
- BIAS control: 9bit
- Dimensions: 98x115 mm
- Drivers for WINDOWS Me/2000/XP
- SDK free download
- MaxIm Plug-In

### APPLICATIONS

- Biology
- Astronomy
- Spectroscopy
- RAMAN Spectroscopy
- Semiconductor Physics
- Plasma Physics
- X-Ray Physics

### DESCRIPTION

HiRes V OEM PCI/USB camera was born to detect extremely faint light emissions. Thanks to its 16 lines for the sensor clocks and for the generation of BIAS and to its completely programmable electronic board, this module can manage all the CCD sensor types: Front- or Back-Illuminated, Full-Frame, Frame-Transfer or Interline types. This module requires an external power supply we can provide as optional (or we can provide the technical info on request). Here below all the optional we can provide on request:

- 230/115V Power Supply (external)
- Link cable for connection to Power Supply
- Electromechanical shutter (external)
- Kit for cooling system
- DTA ViSTA 3 management software

**NB:** the modules present some little differences in electronic components according to the sensor you are going to mount on it. Please, specify it at the time of the order.



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DGhigh  
Pin 2 X44

Hlow  
Pin 3 X41

Hhigh  
Pin 2 X40

Vlow  
Pin 3 X39

Vhigh  
Pin 2 X38

Rhigh  
Pin 2 X42

DGlow  
Pin 3 X45

Rlow  
Pin 3 X43

Pin 1 Y16

Pin 1 Y17

Bias1  
Pin 14 X7

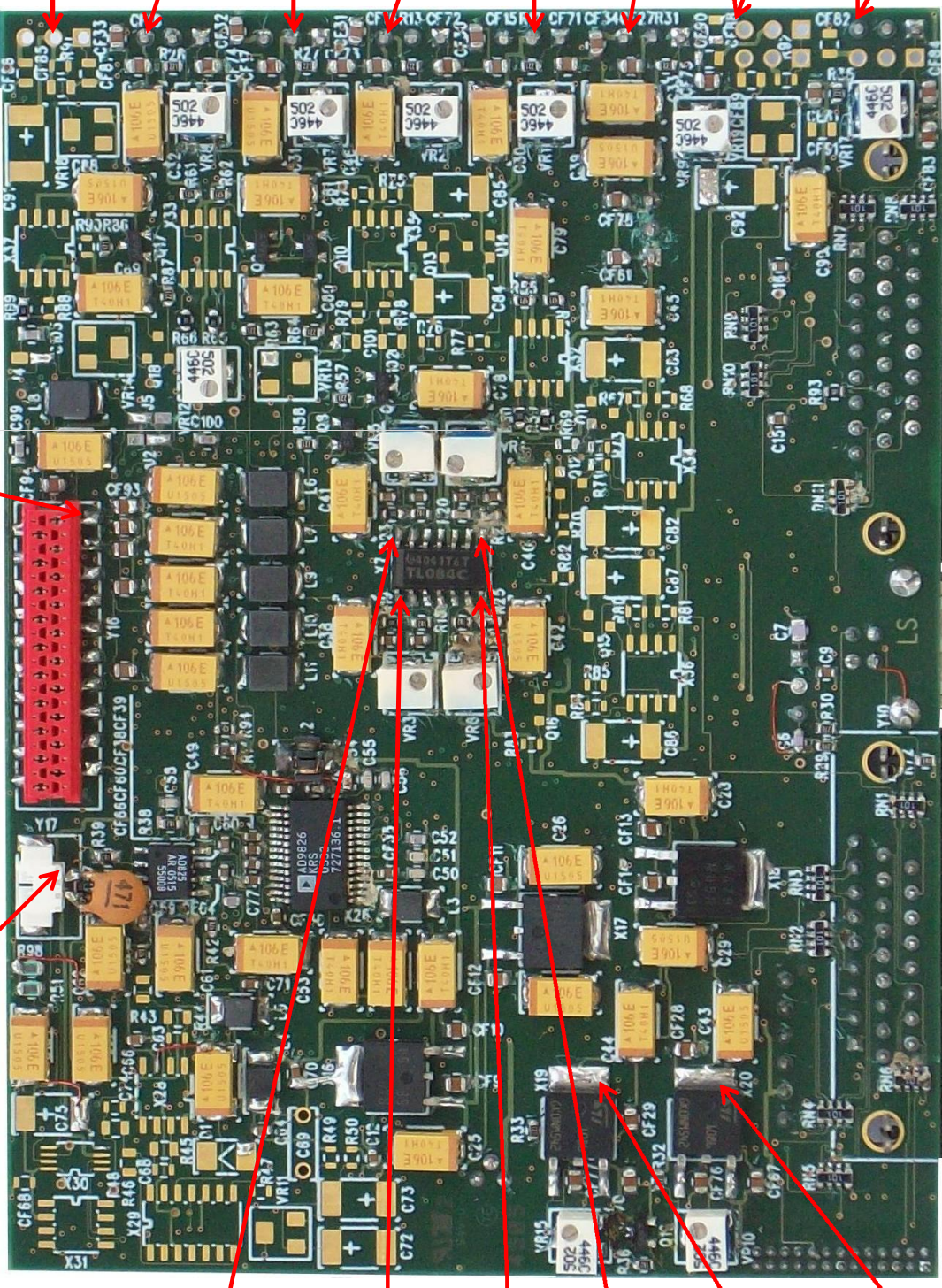
Bias3  
Pin 1 X7

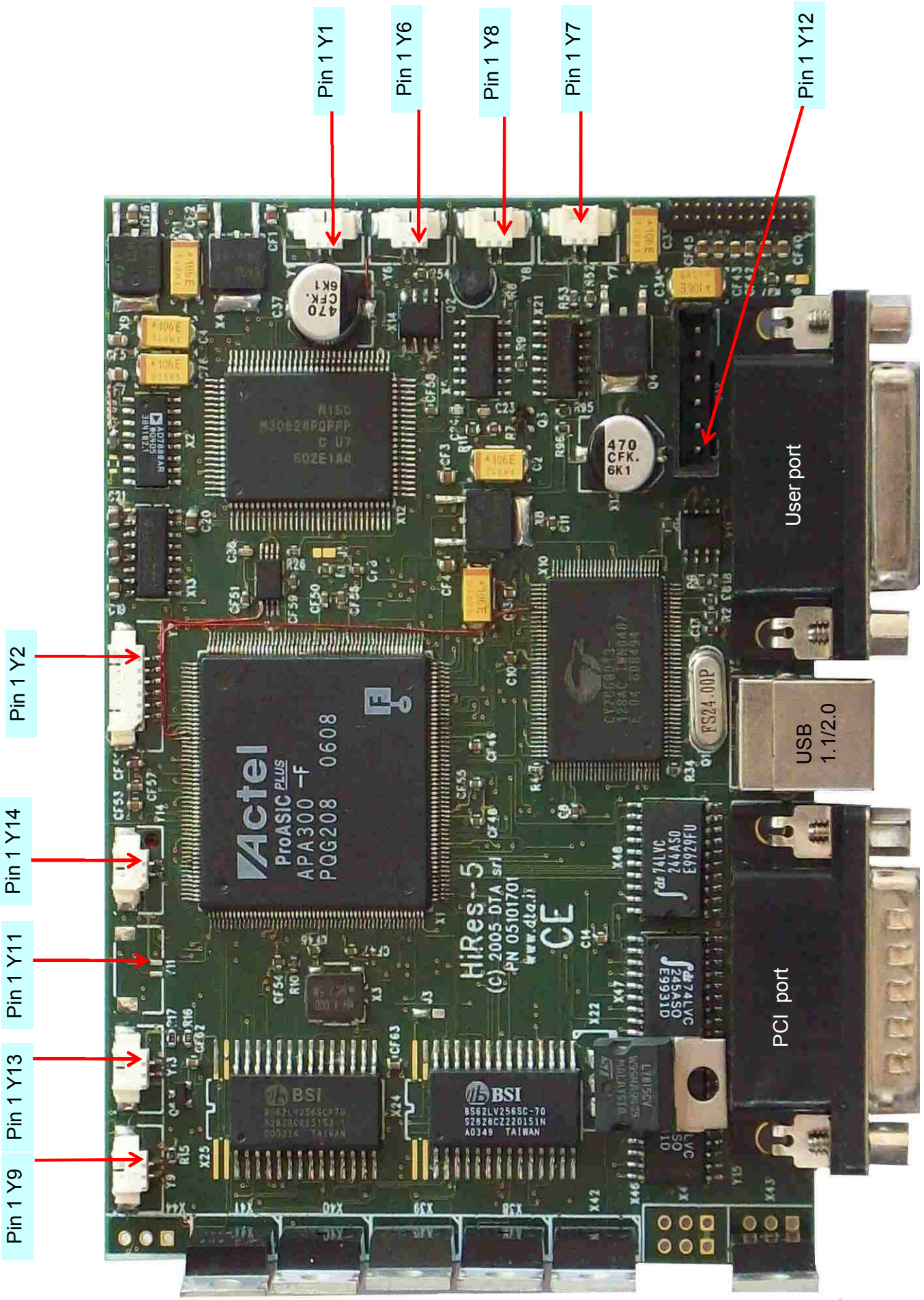
Bias4  
Pin 7 X7

Bias2  
Pin 8 X7

Vbias  
Pin 2 X19

Vrd  
Pin 2 X20





Pin 1 Y2

Pin 1 Y14

Pin 1 Y11

Pin 1 Y13

Pin 1 Y9

Pin 1 Y1

Pin 1 Y6

Pin 1 Y8

Pin 1 Y7

Pin 1 Y12

**Actel**  
P10ASIC PLUS  
APA300 -F  
PQG208 0608

**HiRes-5**  
(c) 2005 DTA srl  
PN 05101701  
www.dta.it

**BSI**  
B562LV2568C-70  
92828CZ220151N  
A0349 TAIWAN

User port

USB  
1.1/2.0

PCI port

PS24.00P

74ALVC  
244AS0  
E9929FU

74ALVC  
245AS0  
E9931D

M15C  
M30B20PQPP  
C U7  
602E1AR

CY7C63013  
128AC-DV1407  
E 04 608439

L2BLANE  
SONIX  
MVB1823

B562LV2568C-70  
92828CZ220151N  
A0349 TAIWAN

B562LV2568C-70  
92828CZ220151N  
A0349 TAIWAN

## SCHEME OF CONNECTORS

Y1 (R 4,7 ohm)	
PIN	SIGNAL
1	PWR
2	VINL

Y2 (RS232)	
PIN	SIGNAL
1	TX0
2	TX1
3	RX0
4	RX1
5	GND
6	GND

Y6 (BDX53C)	
PIN	SIGNAL
1	SHUTTER
2	GND

Y7 (FAN)	
PIN	SIGNAL
1	PWR fan
2	GND

Y8 (TIP35C)	
PIN	SIGNAL
1	Base
2	Emitter

Y12 (POWER)	
PIN	SIGNAL
1	PWR
2	AGND
3	GND
4	GND
5	VDD
6	VSS

Y9 (POWER LED)	
PIN	SIGNAL
1	Anode
2	Katode

Y11 (ENVTEMP)	
PIN	SIGNAL
1	+15V
2	OUT (AD590)

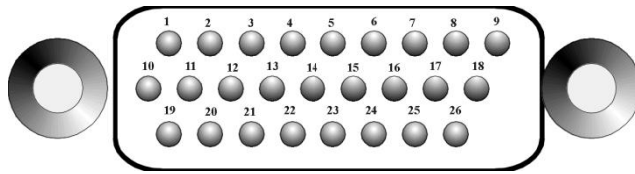
Y13 (LED SHUTTER)	
PIN	SIGNAL
1	Anode
2	Katode

Y14 (CCDTEMP)	
PIN	SIGNAL
1	+15V
2	OUT (AD590)

Y17 (CCD OUT)	
PIN	SIGNAL
1	OUT
2	CCDRET

Y16 (BIAS AND CLOCK CONTROL)							
1	VBIAS	2	BIAS1	3	BIAS2	4	BIAS3
5	VRD	6	HOR1	7	HOR2	8	S3
9	S4	10	S5	11	BIAS4	12	VER2
13	VER3	14	DUMP1	15	CHGND	16	AGND
17	DUMP2	18	VER4	19	HOR4	20	-5V

## PCI PORT



**Y10 (PCI PORT)**

Y10 (PCI PORT)					
1	PI00	2	PI03	3	PI06
4	PI09	5	PI12	6	PI15
7	IACK	8	IRW	9	GND
10	PI01	11	PI04	12	PI07
13	PI10	14	PI13	15	+5V
16	IREQ	17	ISTB	18	GND
19	PI02	20	PI05	21	PI08
22	PI11	23	PI14	24	+5V
25	ICD	26	GND	-	-

**PI[0:15]:** bidirectional CAMERA BUS.

**IACK/IRW/IREQ/ISTB/ICD:** hand shake signal

**GND:** ground.

**NOTE:** All signals are TTL compatible.

## USER PORT



Y15 (USER PORT)					
1	+3V	2	PA0	3	PA1
4	PA2	5	PA3	6	PA4
7	PA5	8	PA6	9	PA7
10	PB0	11	PB1	12	PB2
13	PB3	14	PB4	15	PB5
16	PB6	17	PB7	18	INAD0
19	INAD1	20	INAD2	21	INAD3
22	SHUT IN	23	TRIG IN	24	TRIG OUT
25	SHUTTER	26	GND	-	-

**PA[0:7]** : bidirectional user port.

**PB[0:7]** : bidirectional user port.

**INAD[0:3]**: digital analogical input channel, 0-2.5V.

**SHUTTER**: shutter TTL output, for the control of a second external shutter.

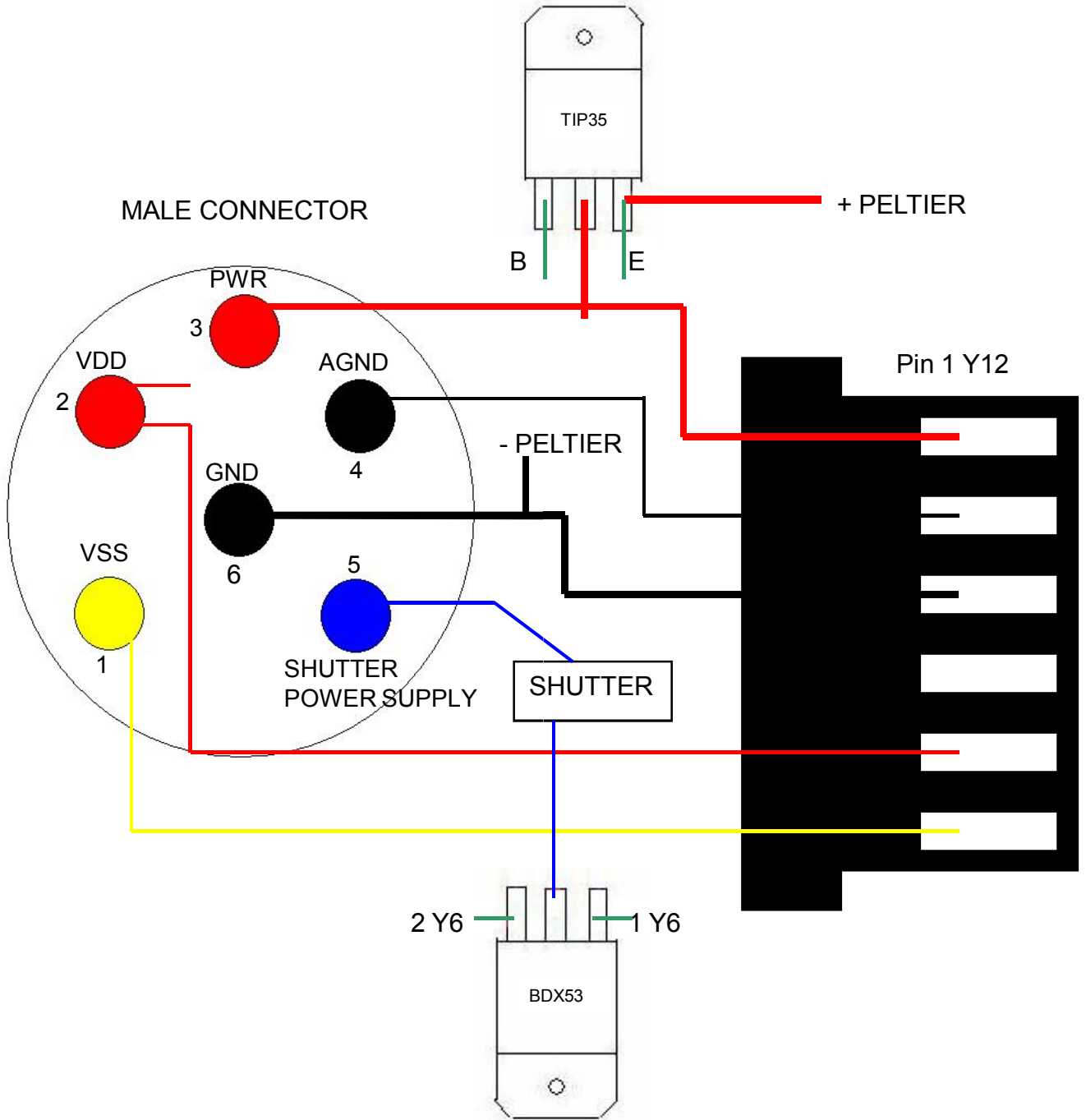
**SHUT IN**: by means of this signal, the user can directly control the shutter (by keeping it at 1 the shutter stays open, otherwise it is closed).

**TRIG IN/OUT**: bidirectional pin for the trigger signals transmission from and to the camera.

**GND**: ground.

**NOTE**: all signals are TTL compatible, except for INAD[0:3]

# POWER SUPPLY CONNECTION DIAGRAM



The male connector is an AMPHENOL **C091 31W006 100 2** type.

## CCD SIGNALS

Min.		Nom.		Max.		KAF 6303E						Min.		Nom.		Max.		
		0				VSUB	<b>1</b>	<b>26</b>	VSUB									
						VOUT	<b>2</b>	<b>25</b>	VOG	+3,75	+4	+5						
+14,5		+15		+15,5		VDD	<b>3</b>	<b>24</b>	VGUARD	+8	+10	+12						
+10,5		+11		+11,5		VRD	<b>4</b>	<b>23</b>	ΦV1	+0,5/-10,5	+1/-10	+1,5/-9,5						
+3,5/-4		+4/-3		+5/-2		ΦR	<b>5</b>	<b>22</b>	ΦV1	+0,5/-10,5	+1/-10	+1,5/-9,5						
+1,5		+2		+2,5		VSS	<b>6</b>	<b>21</b>	ΦV2	+0,5/-10,5	+1/-10	+1,5/-9,5						
						N/C	<b>7</b>	<b>20</b>	ΦV2	+0,5/-10,5	+1/-10	+1,5/-9,5						
						N/C	<b>8</b>	<b>19</b>	ΦV2	+0,5/-10,5	+1/-10	+1,5/-9,5						
						N/C	<b>9</b>	<b>18</b>	ΦV2	+0,5/-10,5	+1/-10	+1,5/-9,5						
+5,5/-4,5		+7/-3		+6,5/-3,5		ΦH1	<b>10</b>	<b>17</b>	ΦV1	+0,5/-10,5	+1/-10	+1,5/-9,5						
+5,5/-4,5		+7/-3		+6,5/-3,5		ΦH2	<b>11</b>	<b>16</b>	ΦV1	+0,5/-10,5	+1/-10	+1,5/-9,5						
						N/C	<b>12</b>	<b>15</b>	VSUB		0							
		0				VSUB	<b>13</b>	<b>14</b>	VSUB		0							

Min.		Nom.		Max.		KAF 16801E						Min.		Nom.		Max.	
		0				VSUB	1	34	ΦVER2		ΦVER2	+1,5/-9	+2/-8,5		+2, 2/-8,3		
+1,5/-9		+2/-8,5		+2, 2/-8,3		ΦVER2	2	33	ΦVER2		ΦVER2	+1,5/-9	+2/-8,5		+2, 2/-8,3		
+1,5/-9		+2/-8,5		+2, 2/-8,3		ΦVER2	3	32	ΦVER1		ΦVER1	+1,5/-9	+2/-8,5		+2, 2/-8,3		
+1,5/-9		+2/-8,5		+2, 2/-8,3		ΦVER1	4	31	ΦVER1		ΦVER1	+1,5/-9	+2/-8,5		+2, 2/-8,3		
+1,5/-9		+2/-8,5		+2, 2/-8,3		ΦVER1	5	30	VSUB		VSUB		0				
+9		+10		+12		VGUARD	6	29	N/C		N/C						
						N/C	7	28	N/C		N/C						
						N/C	8	27	N/C		N/C						
						N/C	9	26	N/C		N/C						
						N/C	10	25	N/C		N/C						
		0				VSUB	11	24	N/C		N/C						
+4,5		+5		+5,2		VOG	12	23	N/C		N/C						
+14,5		+15		+17		VDD	13	22	N/C		N/C						
						VOUT	14	21	N/C		N/C						
+1,5		+2		+2,5		VSS	15	20	ΦH2		ΦH2	+8/-2,5	+8/-2,5		+8,7/-1,3		
+11		+12		+12,25		VRD	16	19	ΦH1		ΦH1	+8/-2,5	+8/-2,5		+8,7/-1,3		
+3/+9,5		+5/-10		+5,5/-10,5		ΦR	17	18	VSUB		VSUB		0				

Nom.	E2V 47-10B				Nom.
+21.1	ABD	1	24	ABG	-7.9
+3.1/-8.9	IΦ3	2	23	IΦ3	+3.1/-8.9
+3.1/-8.9	IΦ2	3	22	IΦ2	+3.1/-8.9
+3.1/-8.9	IΦ1	4	21	IΦ1	+3.1/-8.9
-6	OG	5	20	DG	+3.1/-8.9
		6	19		
0	SS	7	18	SS	
+3.1/-8.9	ΦR	8	17	RΦ3	+2.0/-7.9
+2.0/-7.9	RΦ2L	9	16	RΦ2R	+2.0/-7.9
+2.0/-7.9	RΦ1L	10	15	RΦ1R	+2.0/-7.9
+21.1	OD	11	14	RD	+9.1
	OSL	12	13	OSR	

## **CONTACTS**

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