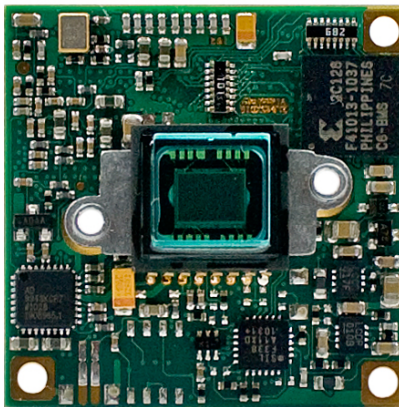


VIDEOLOGY

IMAGING SOLUTIONS INC.
Original Equipment Manufacturer

Application Note 20D45X Family



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1. Document History

Revision	Issue Date	Reason	CN#
Rev A	04-20-11	Initial release (Europe Rev 01)	11-0046
Rev B	02-25-13	Pin outs updated on 40 pole flex foil connector	12-0130

2. Introduction

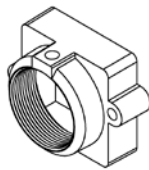
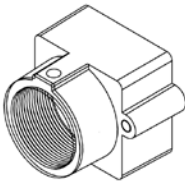
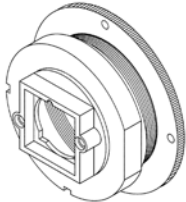
The camera is designed as an extension of Videology's current digital camera module line. The 20/21D45X is a digital output camera, but also offers analog output options. The camera can output either analog CVBS or analog YC out.

The camera is a high end camera product that is suitable to drive a IR-cut filter switch for real day/night applications.

Also with its dynamic noise cancellation and slow shutter mode the camera is very suitable for very low light applications.

Its compact design (32x32 mm) makes it possible to fit almost in any casing.

3. Specifications

Electrical		20D45X (NTSC)	21D45X (PAL)	
sensor		1/3" Interline CCD		
Active Pixels (H x V)		768 x 492	752 x 582	
Pixel Pitch (H x V)		4.9um x 5.6um	5.0um x 4.8um	
Scanning Frequency V		15750 KHz	15625 KHz	
Scanning Frequency H		60 Hz (30 full images)	50 Hz (25 full images)	
Video Output	Digital	YUV 8 bits ITU-R BT.656 (clock NTSC 28.636 MHz/ PAL 28.375 MHz)		
	Analog	CVBS or Y/C		
Sensitivity		Typical 0.05 Lux (F1.2, AGC max) Gamma 0.45 reflection chart 80%, 3200K		
Signal to Noise Ratio		> 49 dB		
Horizontal Resolution		560 TVL		
Shutter Mode		Electronic iris or fixed shutter speeds		
White Balance		Auto mode: 2850K-6000K, Fixed modes (selectable)		
Mirror Mode (Horizontal)		On/off selectable both horizontal and vertical		
Output Signals		Clock signal 3.3V into 10K Ω Hsync: 3Vpp into 10K Ω Vsync: 3Vpp into 10K Ω		
Communication		I2C		
Sync System		Internal/External (H/V)/LL (optional)		
Supply Voltage		5VDC (\pm 10%)		
Current		270 mA		
Power Consumption		< 1.4 Watt		
Environmental				
Operating Temperature		-10°C ~ 50°C (14°F ~ 122°F)		
Operating Humidity		20 to 93% RH		
Storage Temperature		-20°C ~ 65°C (-4°F ~ 149°F)		
Storage Humidity		Up to 98% RH		
Mechanical				
Dimensions W x H x D		32mm x 32mm (1.26" x 1.26")		
Weight		21g (0.74 oz)		
Lens Mounts		Replace "X" in model number with desired lens:		
Example: Change 20D45X to 20D455 to select an M- 12 board mount.		5 = Metal M-12 Board	6 = Metal M-14 Board	8 = Metal CS Board
				
Lifetime MTBF		30000 hrs		
I²C Communication Kit (Optional)				
60D5 60D5-U (USB version)		Software control I ² C program kit includes: I ² C board, Program cable, DB25 serial cable (or USB cable), Camera control software		
Complementary Models				
2XD458-T		CS mount & True day/night		

4. Connector Pin Out

The camera has in total 3 possible output connectors:

Digital connectors:

Pinning connector J1 53916-0304 MOLEX conn-SMD-male 30-pole

Pin#	function
1	GROUND
2	GROUND
3	Video Data0
4	Dnu
5	Video Data1
6	Dnu
7	Video Data2
8	Dnu
9	Video Data3
10	Dnu
11	Video Data4
12	Dnu
13	Video Data5
14	Video lowest two bits: 0
15	Video Data6

Pin#	function
16	Video lowest two bits: 1
17	Video Data7
18	Nc
19	Data Clock
20	For future features
21	Iris signal
22	GROUND
23	HREF
24	VREF
25	For future features
26	For future features
27	I2C data
28	I2C Clock
29	CVBS (anaolog video 1Vpp int 75 Ohm)
30	+5V supply voltage in

Pinning connector J3 Molex 78119-1408, 40 pole flex foil connector

Pin#	function
2	+5V supply voltage in
3	I2C clock
5	I2C data
9	CVBS (anaolog video 1Vpp int 75 Ohm)
13	Iris out
17	Video Data0
19	Video Data1
21	Video Data2
23	Video Data3
25	Video Data4
27	Video Data5
29	Video Data6
31	Video Data7
35	Data Clock

Pin#	function
4	Not connected
6	Not connected
7	Not connected
8	Not connected
11	Not connected
12	Not connected
37	Not connected
39	Not connected
Following pins are connected to ground: 1, 10, 14, 15, 16, 18, 20, 22, 24, 26, 28, 30, 32, 33, 34, 36, 38, 40	

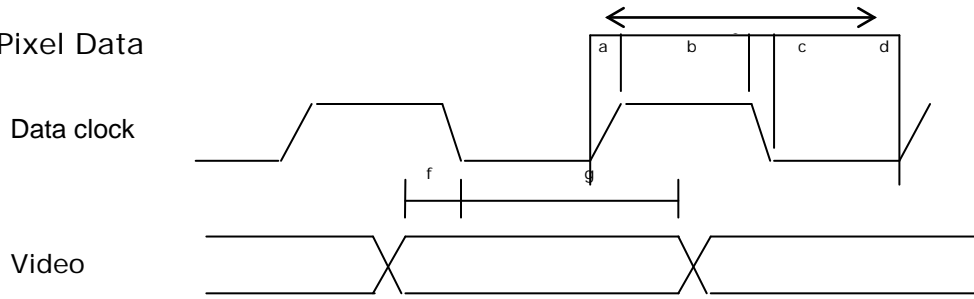
Analog connector J2 (optional)

Pin#	function
1	C signal (colour)
2	Iris (opt ground)
3	I2C data
4	I2C Clock
5	Ground

Pin#	function
6	CVBS/Y
7	Ground
8	+5V supply voltage in
9	LL-phase (optional)
10	Linelock (optional)

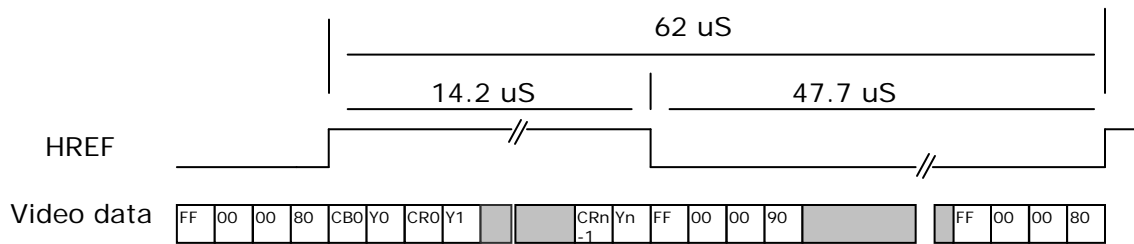
5. Timing Diagrams

5.1. Pixel Data

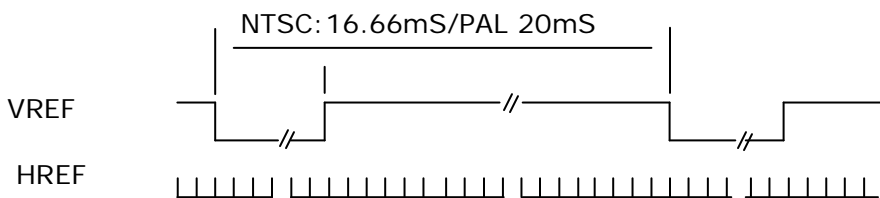


item	name	min	nom	max
a	Clock rise time	0.5 nS		4 nS
b	Clock high time	7 nS		11nS
c	Clock fall time	0.5 nS		3 nS
d	Clock low time	7 nS		11nS
e	Clock period	34.8	35 nS	35.3
f	Data setup time	9 nS		
g	Data hold time	10 nS		

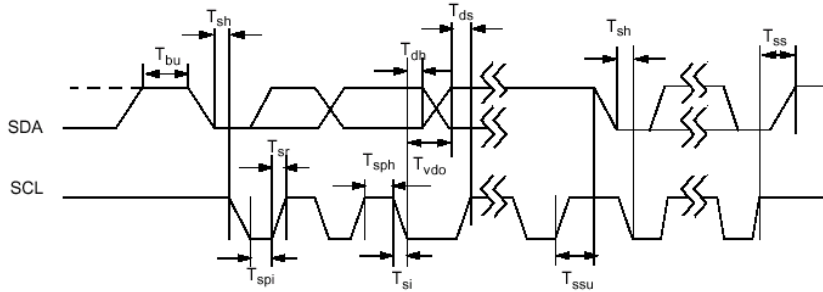
5.2. Horizontal Timing



5.3. Vertical Timing



5.4. I2C Communication



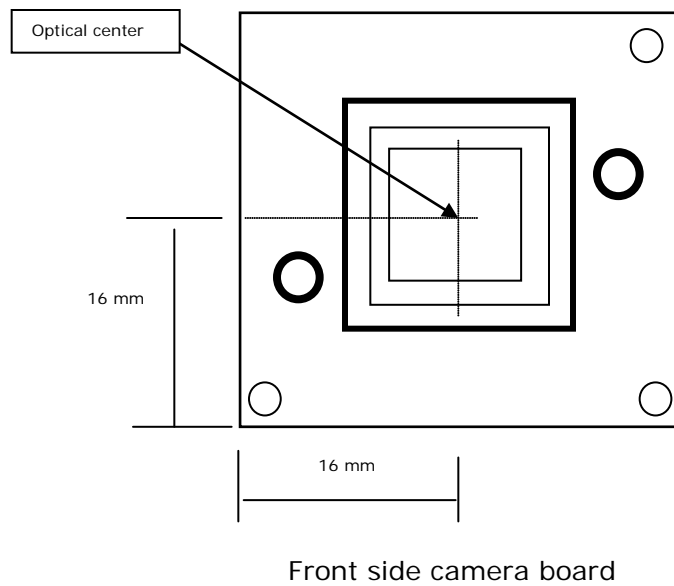
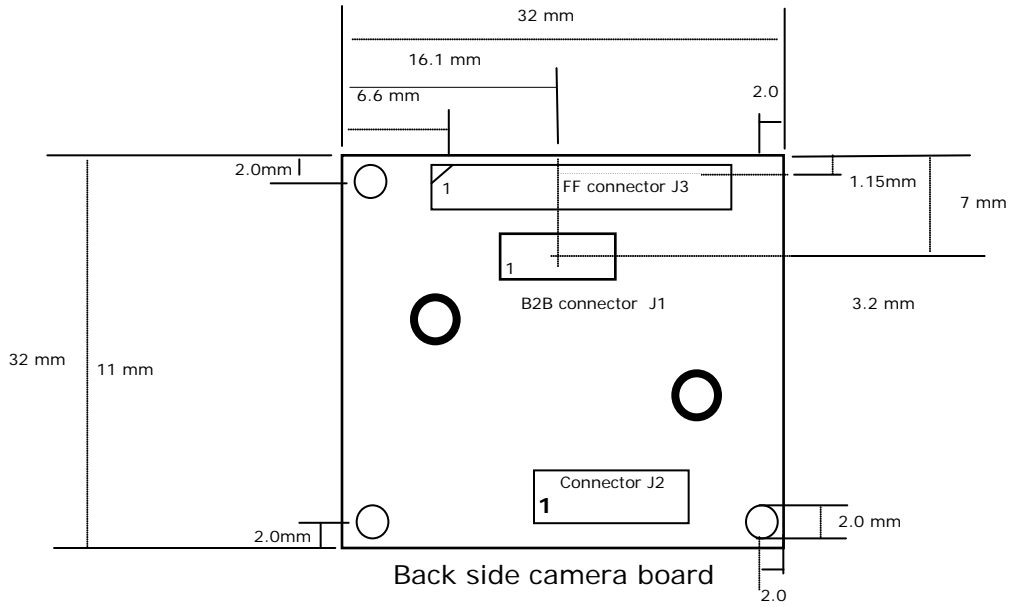
In table below the max/min timing ratings can be found for the I2C communication.

item	Min (uS)	Max (uS)
Tbu	4	na
Tsu		
Tdb	1	
Tds	1.5	
Tsh	2.0	

5.4.1. I²C Program Kit Contents

Model Number		Program Kit Includes
60D5		I ² C board Program cable DB25 serial cable Camera control software
60D5-U	USB version	I ² C board Program cable USB cable Camera control software

6. Mechanical Drawing



Tolerances in the drawing ± 0.25 mm

7. Contact Information

For technical assistance with this product, please contact the supplier from whom the product was purchased.

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