PHYTEC Messtechnik GmbH
www.phytec.de

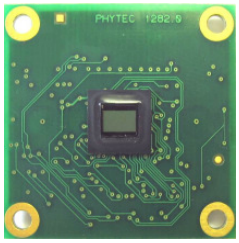
VM-007-COL-xxx

Color CMOS Camera Module / Camera with Digital Interface

- image sensor: 1/3", Wide-VGA, 752(H) x 480 (V), APTINA MT9V022
- pixel size: 6.0µm x 6.0µm
- data output: 10 Bit digital parallel, color, phyCAM-P
  8 Bit digital serial, color, phyCAM-S (LVDS)
- frame rate: 60 frames per second (at full resolution)
- dynamic range: >55 dB linear / >80 dB - 100 dB in HiDy mode
- shutter: global shutter - TrueSNAP™
- camera control: numerous register settings available by I²C bus
- power supply: 3.3V DC (±10%)
- power consumption: <320mW at maximum data rate / 100µW in standby
- synchronisation modes: master- / slave- / snapshot - mode
- operation temperature: -40°C ... +85°C
- dimensions: 34mm x 34mm x 6mm (without lens holder)
- mounting: 4 x M2,5 (PCB)
- weight: 7g (PCB)
- connector: 33 pin. FFC/FPC, 0.5mm pitch, 0.3mm thick,
  contact position bottom, phyCAM-P
- mating cable: 33 wire FFC cable 0.5mm (e.g. PHYTEC part no.
  WF062=120mm, WF043 = 200mm, WF046 = 300mm)
- lens holder: VM-007-xxx-H : fits to C-Mount and CS-Mount lenses
  VM-007-xxx-M12 : fits to M12 / 0.5 lenses (S-Mount)

All types of the camera board VM-007-xxx can directly be connected to a microcontroller equipped with an appropriate digital camera interface. PHYTEC offers for example the PXA270/320 and i.MX31/27 carrier-/development boards, which allow a direct connection of the VM-007-xxx. Driver software and demo applications for various controllers are included.

Camera PCB:



frontside

phyCAM-P

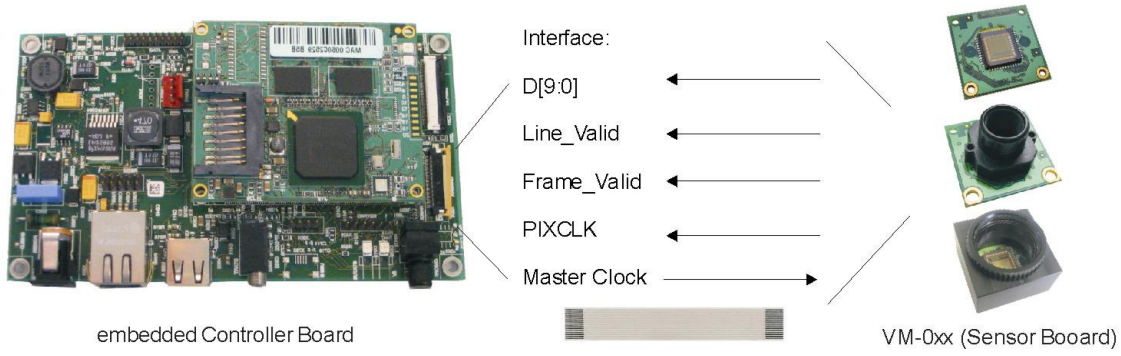
backside phyCAM-S

Camera with lens holder:

-H = camera with lens
holder for C/CS-mount lenses

-M12 = camera with lens
holder for M12 / 0.5 lenses (S-Mount)

Interface



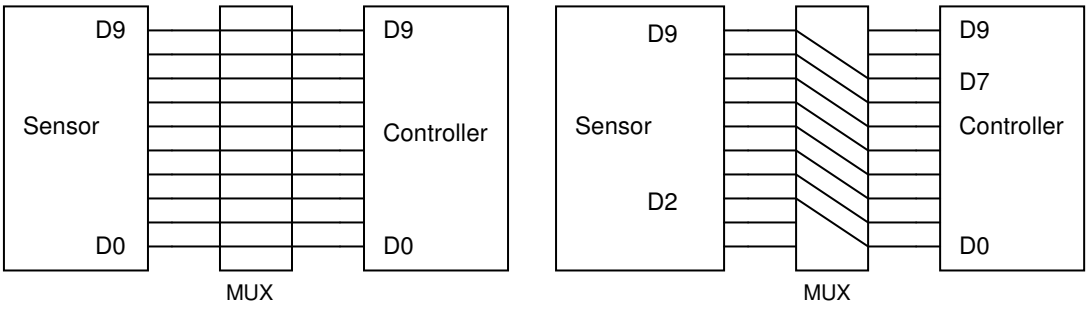
Ordering options

VM-007-COL camera board with MT9V022 Wide-VGA (752x480), color

VM-007-COL-H camera board with MT9V022 Wide-VGA, color, with C/CS-mount-lens holder, **without** lens

VM-007-COL-M12 camera board with MT9V022 Wide-VGA, color, with M12 lens holder, **without** lens

Note: All types of VM-007 can be ordered with the option **–MUX**.
MUX-boards are equipped with an addition multiplexer, which can be controlled by the I2C interface. This multiplexer allows to shift the upper 8 data lines D[9..2] to D[7..0]. This option is useful for applications which need both color depths (e.g. 8 bit for display image data 10 bit for recording or measurement) and the controller interface the shift not supported (e.g. PXA270 / PXA320).



VM-007-COL-MUX camera board with MT9V022 Wide-VGA (752x480), color, MUX

VM-007-COL-MUX-H camera board with MT9V022 Wide-VGA, color, MUX, with C/CS-mount lens holder, **without** lens

VM-007-COL-MUX-M12 camera board with MT9V022 Wide-VGA, color, MUX, with M12 lens holder, **without** lens

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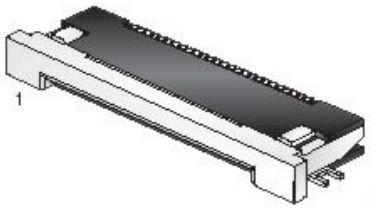
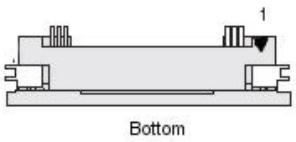
Pinout of the camera connector, phyCAM-P

33pol. FFC/FPC, 0.5mm pitch, 0.3mm thick, contact position bottom





Camera Board VM-007-xxx			
Pin	**Dir**	**Signal Name**	**Description**
1	PWR	Vcc	+3,3 V Supply Input
2		Vcc	
3	IN	CAM_RST	
4	-	GND	
5	I/O	CAM_SDA	SDA, I²C
6	IN	CAM_SCL	SCL, I²C
7	I/O	CAM_CTRL1	Camera Dependent Feature (Addr.Sel.,Trigger, I/O…)
8	-	GND	
9	I/O	CAM_FV	VSYNC
10	I/O	CAM_LV	HSYNC
11	-	GND	
12	OUT	CAM_DD9	D9
13	OUT	CAM_DD8	D8
14	-	GND	
15	OUT	CAM_DD7	D7
16	OUT	CAM_DD6	D6
17	-	GND	
18	OUT	CAM_DD5	D5
19	OUT	CAM_DD4	D4
20	-	GND	
21	OUT	CAM_DD3	D3
22	OUT	CAM_DD2	D2
23	-	GND	
24	OUT	CAM_DD1	D1
25	OUT	CAM_DD0	D0
26	-	GND	
27	I/O	CAM_PCLK	PCLK
28	-	GND	
29	IN	CAM_MCLK	MCLK
30	I/O	CAM_CTRL2	Camera Dependent Feature2 (Addr.Sel.,Trigger, I/O…)
31	O	Power Voltage Set	Resistor to GND. Sets Supply and Signal Voltage Level
32	IN	CAM_OE	OE (default = Vcc)
33	PWR	Vcc	+3,3 V Supply Input

Dimensions

PCB outline ± 0,25mm
drill holes ± 0,1mm

The optical center is located in the center of the camera board. The connector is mounted on the backside, cable connection from the top. Direction of pixel readout can be set by software, the image can be horzontally and vertically mirrored.
All mounting holes are metal plated and can be connected to the board's ground plane by capacitors.