MRCC28

Multi **R**ole **C**olor **C**amera **28** volts

v3.0-10_21

ADiiS is a division of EASii IC

CONTENTS

INTRODUCTION

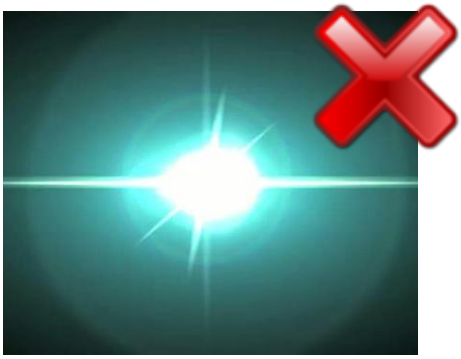
ADiiS designed, developed and manufacture a complete Cameras Product line for the aeronautical domain. Based on strong internal expertise and experience, ADiiS manage every step of the development (Sensor selection, architecture design, schematic and layout of complex electronic boards).
ADiiS cameras are dedicated to fulfill the needs of aeronautics application and the following functional features:

- CMOS "Global Shutter" sensor: no image distortion;
- 25 Coherent images per second, non interlaced video (720x576p definition): no "comb" effect;
- Especially fast automatic gain control (to adapt to major and/or fast brightness changes);
- Double integration (automatic) to make it possible to "see" more detail in shaded areas (inside the cabin) and light zones (outside), and to limit glare effects;
- Analogue PAL and digital SD SDI format 4/3 video outputs.

No "comb" effect

No image distortion

No back-lighting



No glare

The MRCC 28 is a compact camera that fulfils the needs of aeronautics applications. It can be used for various applications and can be placed inside or outside the aircraft. It is DO160 Dal D qualified.

THE MRCC 28 CAMERA

General specifications

SENSOR

- e2v CMOS 1.3 MPixels
- Size: 1/2”
- Definition: 1280 x 1024, 5.3µ
- Sensitivity: 0.3 Lux, F1.2 (with black and white sensor)
- Shutter: from 1s (long integration) to 1/100 000s (adjustable or automatic)
- Optics: M12 1/2"

VIDEO OUTPUTS (4/3)

- Analogue video: PAL (720 x 576)
- Digital video SD SDI: SMPTE 259M-C (720 x 576)

BOX

- Anodised aluminium
- Weight: 310g (excluding cable)
- Sapphire windows (black and white version) / glass with IR-cut filter (colour version) with an anti-reflection treatment
- Standard optics 6 mm (88° diag) (possibility of choosing 4mm (146° diag) or 8 mm (62° diag))

ELECTRIC POWER SUPPLY

- Voltage: 9 - 36 Volts
- Consumption: 2.5 Watts typical (without demisting / defrosting)

CONNECTOR

- Camera connector : Amphenol Socapex (MIL-DTL-38999 series III) : TVP 00 RW 13-26 PN with 2 coaxial contacts : M39029 / 28-211
- Mating connector : Amphenol Socapex (MIL-DTL-38999 series III) : TV 06 RW 13-26 SN with 2 coaxial contacts : M39029 / 75-416

SIGNALS

- Electric power supply: 2 wires (28V, 0V)
- Analogue video: 1 RG179 coaxial
- Digital video: 1 RG179 coaxial
- Configuration using a serial RS232 connection: 3 wires (RXD, TXD, GND)

ENVIRONMENTAL CONDITIONS (September 2012)

- Operating Temp. Cold (DO160 cat. A1)
- Operating Temp. Hot (DO160 cat. A2)
- Altitude (DO160 section 4.6.1)
- Shock (DO160 section 7 cat. B)
- Vibration (DO 160 section 8)
- Acceleration: 20 G / 3 axis
- EMC (DO160 section 21 cat.M)
- EMI (DO160 section 21 cat.M)

1.1 Input-output specifications

Video outputs:

	Monochrome camera	Colour camera
Analogue	CCIR (720x576 @ 50i)	PAL composite (720x576 @ 50i)
Digital video SD-SDI	SMPTE 256-C (PAL 720x576 @ 50i)	SMPTE 256-C (PAL 720x576 @ 50i)

Configuration interface:
RS-232C

Objectives and optical performances

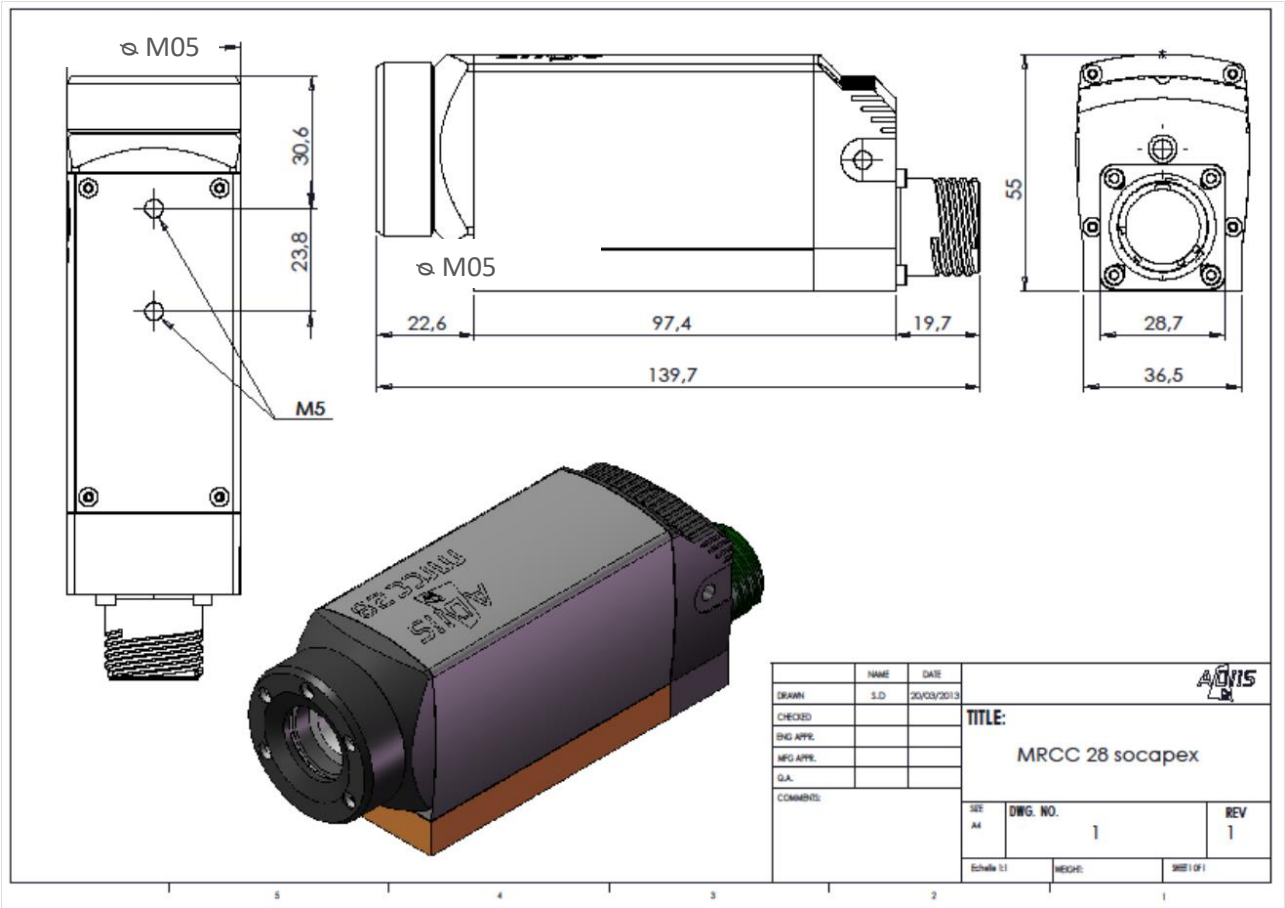
The MRCC28 camera can be fitted with different types of objectives.

Manufacturer	Model	Optical format	Focal length	Aperture	Zoom x1			Zoom x2			Optical format
					FOV Diag	**FOV Horiz**	FOV Vert	FOV Diag	**FOV Horiz**	FOV Vert	
Lensation	BSM4016S12	1/2"	4.0 mm	F/1,6	136°	**105°**	77°	69°	**53°**	42°	1/2"
Lensation	BSM6016S12	1/2"	6.0 mm	F/1,6	99°	**70°**	54°	48°	**37°**	29°	> 1/1.8"
Lensation	BSM8016S12	1/2"	8.0 mm	F/1,6	66°	**50°**	40°	36°	**28°**	22°	1/2"
Lensation	BSM12016S12	1/2"	12.0 mm	F/1,6	42°	**32°**	26°	24°	**18°**	14°	> 1/1.8"
Lensation	BM2820	1/3"	2.8 mm	F/2,0	-	-	-	100°	**79°**	63°	1/3"
Sunex	DSL901J-650-F3.0	2/3"	12.0 mm	F/3,0	40°	**32°**	26°	23°	18°	15°	> 1/1.8"
Sunex	DSL212D-650-F3.0	1/3"	2.0 mm	F/3,0	-	-	-	132°	109°	87°	1/3"

DEFROSTING OPTION

Cameras with the defrosting option are fitted with defrosting heating. An 83 ohms heating element producing 9W at 28V heats the sapphire window so that it reaches a temperature of 40 to 60° above the surrounding temperature. A thermostat systems switches off the heating if the window temperature exceeds about 70°C. This limit has been set to avoid burns when touching the camera, and to avoid increasing the general camera temperature excessively. If there is ice on the window when the camera is powered on, the melting time is a few dozen seconds depending on the outside temperature. If the layer of ice is thicker, this time may reach one minute. WARNING: The heating power decreases with the power supply voltage. It is only 1.7 W on 12V. For operating safety reasons, there is no easy way of disconnecting the defrosting module.

EXTERNAL VIEW DRAWING



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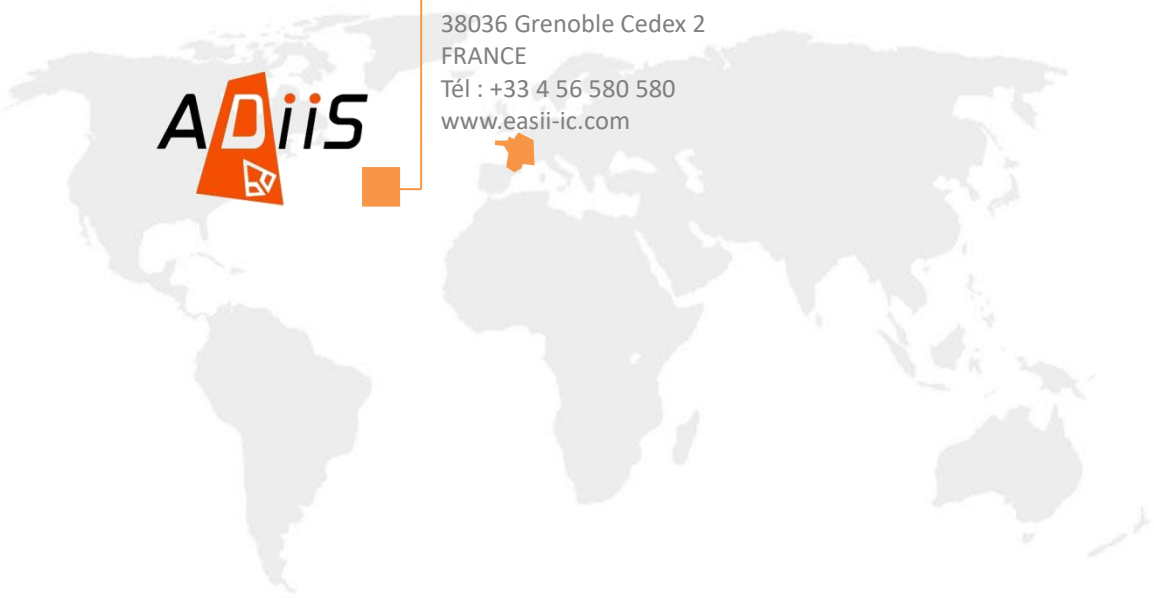

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