Miniaturized Color Camera System

CF 16 MX / CF 16 DSP / CF 16 RGB

The color camera CF 16 DSP comes with all technical refinements for applications requiring low weight, smallest dimensions, rugged construction, and optimum resolution. It is used in various optical and endoscopic visualization tasks in industry, medical, research, and scientific applications.

The significant features are the digital signal processing, the automatic controls for integration and gain and the digital edge enhancement.

With a range of different pick-up devices this series is highly flexible regarding dimensions and optical adjustments. Four different camera heads are available (1/4” 7 mm, 1/4” 10 mm, 1/3”, 1/2”). This guarantees the best adaptation to each application.

The CF 16 DSP features an RS 232-interface. With the detailed interface description it is possible to program camera functions for user-specific needs and to control them via the serial interface. The camera is available as a basic version with the operation modes “serial” and “manual”. This version offers all standard features, more discrete fine adjustments and the new function “horizontal image mirror”.

The version CF 16 MX comes equipped with two additional modules. With the LG module (line generator) you can directly adjust two reticles. The DRE module (Dynamic Range Enhancement) realizes individual adjustments for the dynamic contrast adaptation (measuring window, offset, gain) on the live image.

- Remote camera head IP 67
- Smallest dimensions, low weight
- Excellent image quality
- Optimum ease of handling of the camera head
- Cable length camera head - control unit up to 30 m
- Digital edge enhancement
- Horizontal image mirror
- Serial control via RS 232 interface
- Line generator for two reticles (LG)
- Dynamic Range Enhancement (DRE)
- Battery operation possible
- Rub resistant membrane keyboard
- Optional RGB-Version

Optional serial control via RS 232 interface
## Technical Data

### Camera Head

<table>
<thead>
<tr>
<th>Type</th>
<th>1/4&quot; (10 mm)</th>
<th>1/4&quot; (7 mm)</th>
<th>1/3&quot;</th>
<th>1/2&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Interline transfer CCD with complementary color filter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video norm</td>
<td>CCIR/PAL 752 x 582 pixel / EIA/NTSC 768 x 494 pixel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>3.6 x 2.7 [mm]</td>
<td>3.6 x 2.7 [mm]</td>
<td>4.9 x 3.6 [mm]</td>
<td>6.45 x 4.8 [mm]</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>&lt; 2.3 lx</td>
<td>&lt; 6.1 lx</td>
<td>&lt; 1.1 lx</td>
<td>&lt; 1.4 lx</td>
</tr>
</tbody>
</table>

(1/4 ms integration, 0 dB gain, 50% video level)

<table>
<thead>
<tr>
<th>Lens mount</th>
<th>1/4&quot; x 48 UNS</th>
<th>1/4&quot; x 48 UNS</th>
<th>C-mount</th>
<th>C-mount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter (not removable)</td>
<td>infrared blocking filter</td>
<td>optical low pass and infrared blocking filter</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**IP Protection**

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### Dimensions camera head (Ø x L):

| 10 x 50 [mm] | 7 x 33 [mm] | 23 x 39 [mm] | 29 x 53 [mm] |

### Weight camera head:

| Approx. 20 g | Approx. 12 g | Approx. 50 g | Approx. 60 g |

### Signal Processing

**System:** 10 bit digital signal processing

**Signal / noise ratio:** 50 dB (measured in a dark image at 20 ms integration and 0 dB gain)

**Resolution:** 480 lines (horizontal)

**Signal output:** Y/C (Si-VHS), composite video, optional RGB output

### Functions

**Integration:**

CCIR/PAL 1/50 s to 1/100 000 s automatic (AIT) / 1/50 s fixed

EIA/NTSC 1/60 s to 1/100 000 s automatic (AIT) / 1/60 s fixed

**Gain:** 0 to 12 dB automatic (AGC) / 0 dB fixed

**Measuring window AIT and AGC:** whole field or spot (about 10% in image center), switchable

**Gamma:** 0.45 or 1. switchable

**Edge enhancement:** low / high, switchable

**White set:** set / lock / manual

**Serial control via RS 232**:

AIT, AGC, gamma, edge enhancement, white-set, backlight compensation, integration, image mirror, etc.

**Synchronization:** internal

**Additional Functions with CF 16 MX**

Serial control via RS 232:

LG module: line generator two reticles

DRE module: dynamic contrast adaptation

### General

**Power supply:** 12 V DC / < 7 W (external adapter input: 100-240 V AC 47-63 Hz output: 12 V DC / 1.25 A)

**Length camera cable:** 2 m (other cable lengths on request)

**Connections:**

Y/C [Mini-DIN]; composite [BNC]; power supply [miniature socket]; RS 232 [9 pin D-sub-socket]; camera head [19 pin socket]

**Operating temperature:** -10°C to +45°C

**Relative humidity:** 10% to 90%, non-condensing

**Dimensions control unit:** 110 x 50 x 228 [mm] base and socket inclusive, other housing dimensions on request

**Weight control unit:** approx. 550 g

**Standard equipment:**

camera [control unit, camera head, camera cable], power adapter, Y/C cable, BNC cable, system case, operating manual, software for serial control (RS 232) and appropriate control cable on request.

**Order no.:**

CF 16 MX: 962-1319 / CF 16 DSP: 962-1309 / CF 16 RGB: 962-1320 (camera head** 1/4", 7 mm))

*Information about additional functions and detailed interface description on request. ** Order no. for other sensors on request

### Optional

Integration into the modular software package KAPPA ImageBase (KIB) via PCI-bus frame grabber

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We are constantly checking the accuracy of the technical data. We are prepared to provide more detailed information on request. **Technical data is subject to change without notice! 08/02**