

ELMO

CCD COLOR VIDEO ULTRA-MICRO CAMERA

UN411E



as a technological innovator since 1921

AN INCREDIBLY ULTRA COMPACT SIZED REMOTE COLOR CAMERA WITH DIGITAL PROCESSING FROM ELMO.

Imagine a camera head with broadcast quality that has a diameter of only 12mm including lens!

That's the ELMO UN411E Ultra micro remote color CCD camera. In fact, the camera head weighs less than one-third of an ounce (without lens). Our specially designed image enhancement circuitry combined with digital signal processing reproduces video images from the 410,000 pixel color CCD that are more real than ever before imaginable.

Once you see the performance of the ELMO UN411E, your imagination immediately begins envisioning hundreds of applications including machine vision, covert surveillance, medical, non destructive testing, and much more.

Digital Signal Processing

The video signal from the CCD is converted to 10 bit digital data and in turn digitally processed.

This results in a far superior video signal resulting in superb color reproduction.

12mm Diameter Ultra Micro Camera Head

The camera head is remotored from a CCU (camera control unit) enabling its 12mm diameter size to monitor and record in areas never thought before possible. The camera head can be used up to 98 feet from the CCU which is only 3-5/16" wide.

410,000 Pixel CCD

Heart of the UN411E is the 1/3", 410,000 pixel color CCD that results in 470 lines (H) resolution with simultaneous Y/C and composite video outputs.

Electronic Shutter and Iris Function

There are three modes of electronic shuttering: auto, manual and off. In the auto mode, the UN411E will automatically adjust its shutter speed from 1/60 to 1/10,000 sec. according to the available light thereby always ensuring a crisp clear video image. For capturing high speed objects such as moving parts on an assembly line, the manual mode may be adjusted in nine discrete steps again from 1/60 to 1/10,000 sec. There is an off mode that defaults to 1/60 sec if you so desire.

Remarkable Light Sensitivity in a Ultra Small Package

Despite the 12mm diameter, the UN411E has remarkable light collecting properties equipped with AGC and a S/N ratio of 46 dB.

Interchangeable camera cables from 6 ft. to 98 ft.

The UN411E will perform whether the camera head is remotored 6 feet or 98 feet from the CCU. The advanced electronics are that good. Camera cables are available in six discrete lengths to help customize the installation.



Wide Variety of Ultra Small Lenses

You may choose from a wide variety of lenses specially designed by ELMO for the UN411E (see lens reference chart for details).

Automatic White Balance Function

A highly sophisticated automatic white balance circuit adjusts to color changes in the scene without further adjustment by the operator.

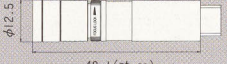
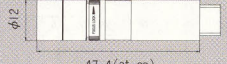
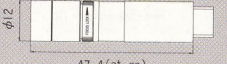

Internal/External Sync. with automatic Changeover

Internal/external sync (genlock) is incorporated in the UN411E so that the camera may be integrated from the most simple to the most complex CCTV systems.




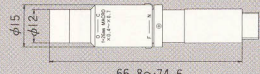
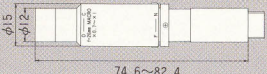
Actual size (with optional lens and cable)

BROADCAST QUALITY MINIATURE LENSES

TYPE	TT203	TT1655	TT2011	TT3318
Code #	9289	9283	9288	9295
Profile (in mm)	 49.1(at ∞)	 47.4(at ∞)	 47.4(at ∞)	 52.3(at ∞)
Focal length	f=3mm	f=5.5mm	f=11mm	f=18mm
Max. aperture ratio	1 : 2	1 : 1.6	1 : 2	1 : 3.3
Angle of view (V × H at ∞)	69° × 91°	38° × 50°	18.8° × 24.9°	11.6° × 15.5°
Object distance	20mm ~ ∞	20mm ~ ∞	90mm ~ ∞	230mm ~ ∞

V : VERTICAL
H : HORIZONTAL

SPECIAL DESIGNED MACRO LENSES FOR ROBOTICS AND MACHINE VISION

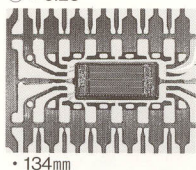
TYPE	TT426MA	TT426MB	TT426MC
Code #	9800	9801	9802
Profile (in mm)	 62.9~66.8	 66.8~74.6	 74.6~82.4
Focal length	f=26mm	f=26mm	f=26mm
Magnifications	×0.25~×0.4	×0.4~×0.7	×0.7~×1
Object distance	134mm~95mm	95mm~67.2mm	67.2mm~56mm

TYPE/Code #	Focal Length	Object Distance		Magnifications	Object Size	Outer Diameter	Magnifications on Monitor TV (Times) (※)	
TT426MA 9800	26mm	F	134mm	×0.25	19.5mm × 14.6mm	15mm	9inch	11~17
		N	95mm	×0.4	12.2mm × 9.2mm		14inch	16~26
							20inch	23~38
TT426MB 9801	26mm	F	95mm	×0.4	12.2mm × 9.2mm	15mm	9inch	17~30
		N	67.2mm	×0.7	7.0mm × 5.2mm		14inch	26~46
							20inch	38~66
TT426MC 9802	26mm	F	67.2mm	×0.7	7.0mm × 5.2mm	15mm	9inch	30~42
		N	56mm	×1	4.9mm × 3.7mm		14inch	46~66
							20inch	66~94

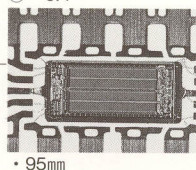
F : FARTHEST
N : NEAREST

(※) Magnifications are approximate and may differ depending on monitor.

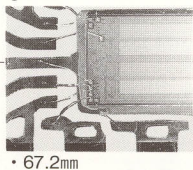
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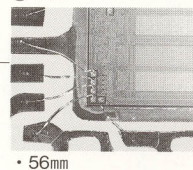
◎ ×0.4



◎ ×0.7



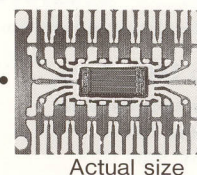
◎ ×1



TT426MA

TT426MB

TT426MC



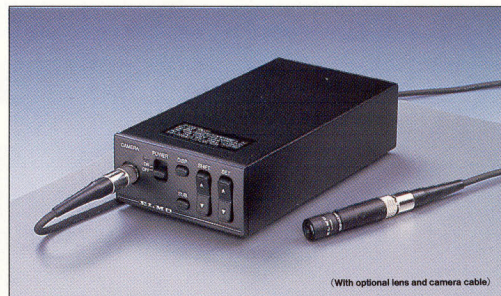
Specifications

Power supply	12V±0.5VDC
Power consumption	5W
Image sensor	1/3" interline-transfer CCD
Effective pixel number	Horizontal:768pixels, Vertical:494 pixels
Effective image area	Horizontal:4.88mm, Vertical:3.66mm
Scanning system	2:1 interlace
Scan frequency	15.734kHz(H), 59.94Hz(V)
Sync system	Internal/external sync(automatic detecting)
Resolution	More than 470 lines (H), More than 350 lines(V)
Standard intensity of illumination for objects	200 lx (F1.6,3000K)
Minimum intensity of illumination for objects	15 lx (F1.6,3000K)
S/N ratio	46 dB or more
Video output	VBS 1.0V(p-p), (BNC terminal) NTSC system Y/C separation output (S terminal)
Output impedance	75 Ω unbalanced
External sync	Input VBS 1.0V(p-p) (BNC terminal) 75 Ω unbalanced
	Adjustment function Subcarrier phase, H phase
White balance	Automatic / push set / manual
Gain switch (AGC)	SENS UP (+6dB) / ON / OFF
Electronic shutter	Automatic 1/60s to 1/10000s, automatic switching
	Manual Electronic shutter: 1/60s, 1/100s, 1/125s, 1/250s, 1/500s, 1/1000s, 1/2000s, 1/4000s, 1/10000s
Camera cable	Optional cables (2m, 3m, 5m, 10m, 20m or 30m)
Operating temperature/humidity	-10°C to +40°C (14°F to 104°F) / 30% to 90%
Anti-vibration/shock characteristics	70m/s ² (10 to 200 Hz) / 700 m/s ²
Weight	Camera head 9g (0.32 oz) without lens
	Ccu 390g (0.86 lb)
Dimensions	Refer to "PROFILE"

* Design and specifications are subject to change without notice.

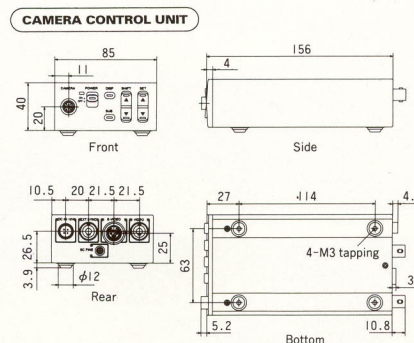
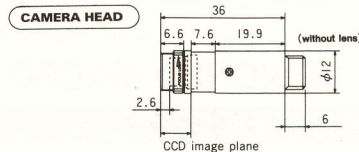
* Dimensions and weight are approximate.

Note : The camera head and the camera control unit(ccu) are to be used as a set with matching numbers.



(With optional lens and camera cable)

PROFILE (All dimensions in mm)



CAMERA CABLES

Code #	Type	Length
9810	EMC-02D	2m(φ3.5mm)
9810-1	EMC-03D	3m(φ3.5mm)
9810-2	EMC-05D	5m(φ3.5mm)
9810-3	EMC-10D	10m(φ5.0mm)
9810-4	EMC-20D	20m(φ5.0mm)
9810-5	EMC-30D	30m(φ5.0mm)

ELMO CO., LTD.

Additional technical information is available from any of the following subsidiary companies;

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