

**ELMO**

# *High Performance CCD Cameras for industrial Applications*



*Inspection*

*Industrial*

*Broadcasting*

*Security*

*Medical/Scientific*

**ELMO**

Visualizing technology since 1921

# ELMO CCD CAMERAS FOR INDUSTRIAL APPLICATIONS



**MN400**

- $\phi$  17mm One-Piece Micro Camera. No CCU required.
- Color with 410,000 pixels 1/2" CCD
- 3m/10', 10m/33' camera cables and a variety of  $\phi$  17mm lenses as optional
- 480TV lines(H) high resolution



**UN43H**

- $\phi$  12mm Ultra-Micro camera. Camera head weighs only 0.6 oz (18gm)
- Color with 410,000 pixels 1/3" CCD
- Max. 30m/98' camera cables and a variety of  $\phi$  12mm lenses as optional  
(To be used with optional CCU, CC431E)



**MN43H**

- $\phi$  17mm Micro camera. Camera head weighs only 0.6 oz (18gm)
- Color with 410,000 pixels 1/2" CCD
- Max. 54m/177' camera cables and a variety of  $\phi$  17mm lenses as optional  
(To be used with optional CCU, CC431E)



**ME421E  
ME421R**

- $\phi$  17mm Micro camera. Camera head weighs only 0.5 oz (16gm)
- Black & White with 410,000 pixels 1/2" CCD
- 570 TV lines (H) high resolution and 1.8 lx high sensitivity
- Full synchronization system including one-pulse trigger mode
- Max. 30m/98' camera cables and a variety of  $\phi$  17mm lenses as optional
- Model ME421R has no I/R cut filter for special application.  
(Camera head and CCU are supplied as a set.)



**CN43H**

- 1 1/4 x 1 1/2 x 15/16" (32x38x33.8mm) in size, 2.8 oz (80 gm) compact camera head
- Color with 410,000 pixels 1/2" CCD
- Accepts C-mount lenses
- Max. 54m/177' camera cables as optional  
(To be used with Optional CCU, CC431E)

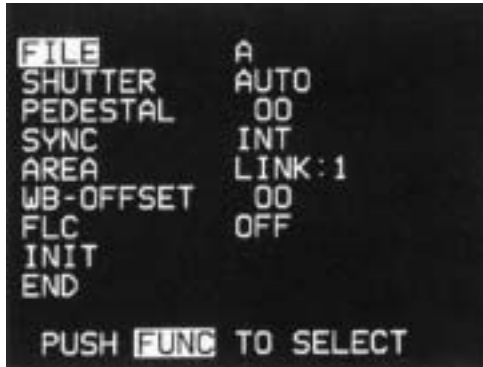
\* Scale 1:1  
\* Lens and cable are optional.

# Camera Control Unit (CCU) : CC431E

## ON SCREEN DISPLAY

Setting while monitoring the menu on the monitor screen is possible.

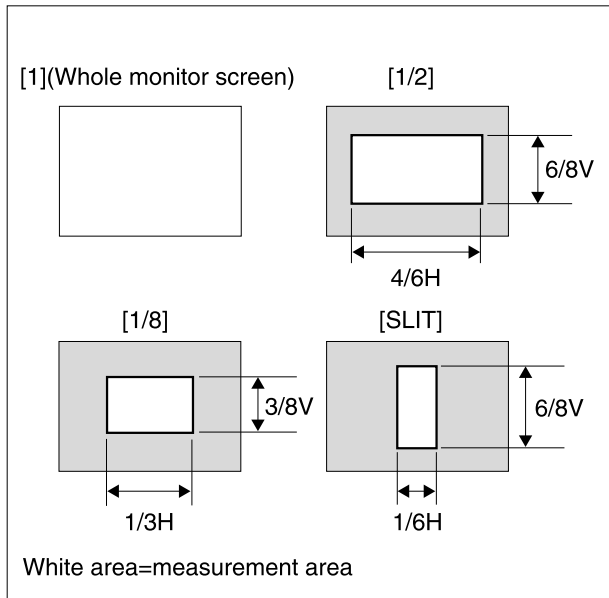
[Main Menu]



## AREA ( Measurement Area )

AREA is a measurement AREA item for AGC, auto electronic shutter and white balance.

The size of AREA is approximately as shown below.



## AGC (Automatic Gain Control)

AGC functions "OFF", "ON" or "UP" can be selected on the screen menu. Generally, the camera is used with the AGC set to OFF, but when increased sensitivity is required, it is set to ON. When more sensitivity is required, "UP" is selected. We recommend you increase intensity of the lighting to obtain good pictures. The AGC measurement area is the same as that used for "AREA(Measurement Area)."

OFF : 0dB  
 ON : Max + 6dB  
 UP : Max + 12dB

## SHUTTER(Electronic Shutter, Backlight Control)

The electronic shutter is available in AUTO (auto electronic shutter), 1/60 ~ 1/10000 and SS (Synchronized Scan).

### AUTO

Controls electronic shutter automatically to get the set video level. Can be selected in backlight correction, peak measurement, average measurement and measurement area.

### ●Detailed setting in AUTO mode (Auto Electronic Shutter)

<b>LEVEL</b>	Adjust the auto electronic shutter video level.
<b>BLC</b>	Correction for backlight. This can be set when the measurement area is set to one of 1/2, 1/8 and SLIT for AREA in the main menu. Backlight is corrected at ON, but not at OFF.
<b>PEAK:AVE</b>	Selects peak or average for measurement of auto electronic shutter video level.

### 1/60 ~ 1/10000

Exposure time can be fixed to any one of 1/60, 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000 and 1/10000.

### SS ( Synchronized Scan )

Sets the electronic shutter in horizontal scanning time (1H).

## WHITE BALANCE

White balance adjustment is necessary to obtain pictures with correct color tone. This camera allows you to select the white balance adjustment of AUTO, SET and MANU.

### AUTO

Camera automatically measures object color temperature and adjusts the white balance.

### SET

Adjust white balance by pressing UP button on the camera control unit while shooting a white object.

## FILE (Screen File)

There are two scene files A and B which can be selected according to the shooting state.

## 43H Series Color Camera Heads : UN43H/MN43H/CN43H

Equipped a new 410,000 pixels CCD and a DSP (Digital Signal Processor), the ELMO MICRO CAMERA 43H series have achieved very high sensitivity.

New functions, like "Measurement Area Selection", clearer image quality and higher cost performance are also the advantages.



### CAMERA SPECIFICATIONS (Quick Reference Table)

\* See the independent product catalogs or contact ELMO/ELMO dealers for detailed specifications.

\* Design and specifications are subject to change without notice.

Camera Model	UN43H	MN43H	CN43H
Camera control unit (CCU)	Optional (CC431E)	Optional (CC431E)	Optional (CC431E)
Power source	DC12V through CCU	DC12V through CCU	DC12V through CCU
Lens/lens mount	Optional ( $\phi$ 12mm)	Optional ( $\phi$ 17mm)	Optional (C-mount)
Camera cable	Optional Max. 30m/98'	Optional Max. 54m/177'	Optional Max. 54m/177'
CCD	1/3"	1/2"	1/2"
410K pixels	●	●	●
TV systems	NTSC	NTSC	NTSC
Color	●	●	●
Black & White			
Built-in infrared-proof filter			
Resolution (H)	470TVL	470TVL	470TVL
Sync.system	●	●	●
• Int/Ext auto changeover			
• C-SYNC/VS mode			
• HD, VD mode			
• Reset/Restart mode			
• One-pulse trigger mode			
Minimum illumination	3.5 lx	2.5 lx	1.5 lx
Gain up	●	●	●
Auto white balance	●	●	●
Manual white balance	●	●	●
Auto electronic shutter	●	●	●
Manual electronic shutter	●	●	●
Shutter speed setting by 1H		●	●
Field/Frame accumulation			
Gamma correction			
Impedance selector			
Output field designation			
CLOCK output			
C-coupling video out			
DC direct connection output			
Interlaced/Non-interlaced			
VBS or VS video output	●	●	●
Y/C video output	●	●	●
Dimensions	$\phi$ 12x36mm (without cable/ lens/CCU)	$\phi$ 17x38.9mm (without cable/ lens/CCU)	32x38x33.8mm (without cable/ lens/CCU)
Mass/weight	18 grm (0.6 oz) (without cable/ lens/CCU)	18 grm (0.6 oz) (without cable/ lens/CCU)	80 grm (2.8 oz) (without cable/ lens/CCU)

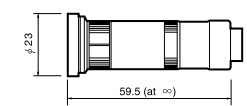

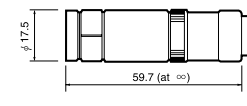

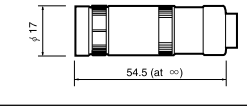

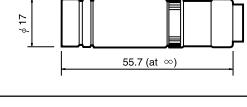

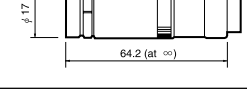

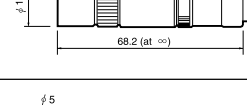

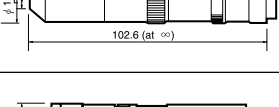



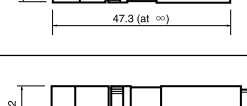

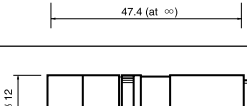

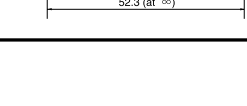



Select and connect the camera head to meet your particular needs/location among the world smallest 12mm dia., the best-selling 17mm dia. and the standard C-mount cameras.

DSP (Digital Signal Processing) camera control unit, CC431E (Optional) accepts any of 43H series camera heads. The CC431E features On-Screen Display control and Screen File function to store two menu settings and to recall the specific mode immediately. Selectable measurement area for white balance, AGC and auto electronic shutter settings.

Camera Model	ME421E	ME421R	MN400
Camera control unit (CCU)	Supplied	Supplied	No CCU required
Power source	DC12V through CCU	DC12V through CCU	DC12V
Lens/lens mount	Optional (φ 17mm)	Optional (φ 17mm)	Optional (φ 17mm)
Camera cable	Optional Max. 30m/98'	Optional Max. 30m/98'	Optional 3m/10', 10m/33'
CCD	1/2"	1/2"	1/2"
410K pixels	●	●	●
TV systems	EIA	EIA	NTSC
Color			●
Black & White	●	●	
Built-in infrared-proof filter	●	×	●
Resolution (H)	570TVL	570TVL	480TVL
Sync.system • Int/Ext auto changeover	●	●	
• C-SYNC/VS mode	●	●	
• HD, VD mode	●	●	
• Reset/Restart mode	●	●	
• One-puls trigger mode	●	●	
Minimum illumination	1.8 lx	1.8 lx	2 lx
Gain up	●	●	●
Auto white balance			●
Manual white balance			●
Auto electronic shutter	●	●	●
Manual electronic shutter	●	●	●
Shutter speed setting by 1H	●	●	●
Field/Frame accumulation	●	●	
Gamma correction	●	●	
Impedance selector	●	●	
Output field designation	●	●	
CLOCK output	●	●	
C-coupling video out	●	●	
DC direct connection output	●	●	
Interlaced/Non-interlaced	●	●	
VBS or VS video output	●	●	●
Y/C video output			
Dimensions	φ 17x39mm (without cable/ lens/CCU)	φ 17x39mm (without cable/ lens/CCU)	19(W)x19(H)x80(D)mm (0.75x0.75x3.15 inches)
Mass/weight	16 grm (0.5 oz) (without cable/lens/CCU)	16 grm (0.5 oz) (without cable/lens/CCU)	Approx.50g (0.11lbs)

# SPECIFICATIONS FOR ELMO MICRO CAMERA LENSES

Model	Type	Profile (in mm)	Focal Length	Max. Aperture Ratio	Angle of View (V × H at ∞)	Object Distance	Near(※)	Infinity(※)
MN400 MN43H ME421E ME421R	T183 (#8771)		3mm	1:1.8	1/4: 50.8° × 67.4° 1/2: 88.6° × 115.8°	10mm ~ ∞	ABCDEFGH HIJKLMNO PQRSTUVWXYZ	
	T204D (#9264)		4mm	1:2.0	1/4: 39.1° × 52.1° 1/2: 69.1° × 92.1°	10mm ~ ∞	ABCDEFGH HIJKLMNO PQRSTUVWXYZ	
	T1675F (#9250)		7.5mm	1:1.6	1/4: 20.8° × 27.6° 1/2: 36.4° × 48.2°	20mm ~ ∞	ABCDE HIJKLM	
	T2015D (#9265)		15mm	1:2.0	1/4: 10.4° × 13.9° 1/2: 18.4° × 24.4°	90mm ~ ∞	ABCDE HIJKLM	
	T3124 (#9266)		24mm	1:3.1	1/4: 6.5° × 8.7° 1/2: 11.5° × 15.3°	250mm ~ ∞	ABCDEFGH HIJKLMNO PQRSTUVWXYZ	
	T4536 (#9819)		36mm	1:4.5	1/4: 4.3° × 5.8° 1/2: 7.7° × 10.2°	520mm ~ ∞	ABCDEFGH HIJKLMNO PQRSTUVWXYZ	
	T287P (Pinhole) (#9267)		7mm	1:2.8	1/4: 22.1° × 29.2° 1/2: 38.2° × 49.8°	50mm ~ ∞	ABCD HIJKLM	
UN43H	TT203 (#9289)		3mm	1:2	69° × 91°	20mm ~ ∞	ABCDE HIJKLM	
	TT1655 (#9283)		5.5mm	1:1.6	38° × 50°	20mm ~ ∞	ABCDE HIJKLM	
	TT2011 (#9288)		11mm	1:2	18.8° × 24.9°	90mm ~ ∞	ABCDE HIJKLM	
	TT3318 (#9295)		18mm	1:3.3	11.6° × 15.5°	230mm ~ ∞	ABCDEFGH HIJKLMNO PQRSTUVWXYZ	

## SPECIAL DESIGNED MACRO LENSES FOR ROBOTICS AND MACHINE VISION

Model	Type	Profile (in mm)	Focal Length	Shooting Distance	Magnifications	Object Size	Magnifications on Monitor TV(Times)(※)	Near(※)	Far(※)
MN400 MN43H ME421E ME421R	T3425M (#8797)		25mm	F	104.9mm	×0.384	16.9mm × 12.6mm	9in 12~16	
				N	90.8mm	×0.489	13.3mm × 9.9mm	14in 19~24 20in 27~35	
	T3425MB (#8797-1)		25mm	F	115.3mm	×0.33	19.7mm × 14.7mm	9in 11~21	
				N	76.9mm	×0.67	9.7mm × 7.2mm	14in 16~33 20in 23~47	
	T3425MC (#8797-2)		25mm	F	77.3mm	×0.66	9.8mm × 7.3mm	9in 21~32	
				N	64.5mm	×1.00	6.5mm × 4.8mm	14in 32~49 20in 47~71	
	T416M (#9271-2)		16mm	F	24.0mm	×1.41	4.6mm × 3.4mm	9in 45~50	
				N	22.9mm	×1.57	4.1mm × 3.1mm	14in 69~77 20in 100~111	
	T416MA (#9271)		16mm	F	22.7mm	×1.60	4.1mm × 3.0mm	9in 51~80	
				N	19.1mm	×2.50	2.6mm × 1.9mm	14in 79~124 20in 113~176	
	T416MB (#9271-1)		16mm	F	27.2mm	×1.10	5.9mm × 4.4mm	9in 35~51	
				N	22.7mm	×1.60	4.1mm × 3.0mm	14in 54~79 20in 78~113	

### φ 7mm dia. lenses for 1/4 inch Cameras

Model	Type	Focal Length	Max. Aperture Ratio	Angle of View (V × H at ∞)	Object Distance	Near(※)	Infinity(※)
1/4inch	QT271AS (#9847)	1.8mm	1:2.7	86.2° × 115.9°	10mm ~ ∞		
	QT282AS (#9821)	2.2mm	1:2.8	71° × 93°	10mm ~ ∞		
	QT254 (#9812)	4mm	1:2.5	39° × 51°	20mm ~ ∞		
	QT288 (#9813)	8mm	1:2.8	19.4° × 25.7°	90mm ~ ∞		
	QT3515 (#9831)	15mm	1:3.5	10.4° × 13.7°	350mm ~ ∞		

F : FARTHEST N : NEAREST W : WIDE T : TELE

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

# OPTIONAL ACCESSORIES FOR ELMO MICRO CAMERAS

## CABLES

Model	Code	Type	Nominal length
MN400	9888	MNC-03A	3m/10'
	9888-1	MNC-10A	10m/33'
UN43H	9833	EMC-02H	2m/6.5'
MN43H	9833-1	EMC-03H	3m/10'
CN43H	9833-2	EMC-05H	5m/16'
	9833-3	EMC-12H	12m/40'
	9833-4	EMC-20H	20m/65'
	9833-5	EMC-30H	30m/98'
	INLINE H	Inline Coupler	
ME421E	9270	EMC-02A	2m/6.5'
ME421R	9270-X	EMC-03A	3m/10'
	9270-1	EMC-05A	5m/16'
	9270-2	EMC-10A	10m/33'
	9270-3	EMC-15A	15m/49'
	9270-4	EMC-20A	20m/65'
	9270-5	EMC-30A	30m/98'
INLINE A	Inline Coupler		

EMC-54H can be used with MN43H/CN43H (Except UN43H)

## OTHERS

Model	Code	Accessory
MN400	8733-1	Filters set
MN43H		· MC protector · PX N0.14
ME421E	C-mount adapter	· FP · ND8
ME421R		

Contact ELMO dealers for the specific AC adapter for each model.



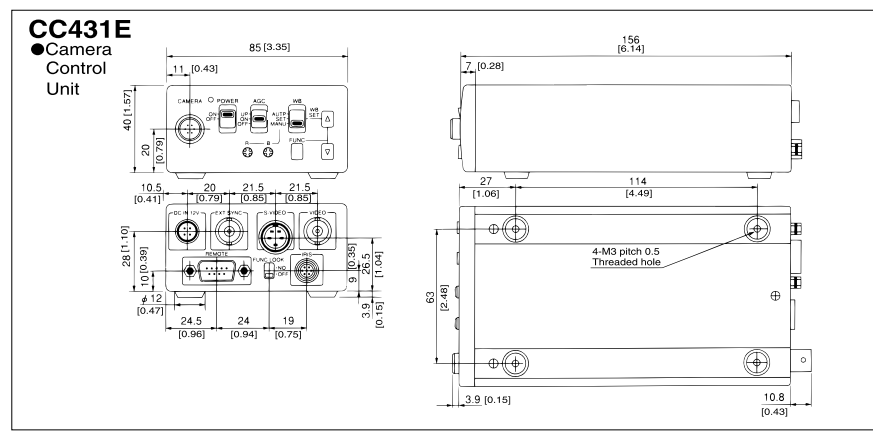
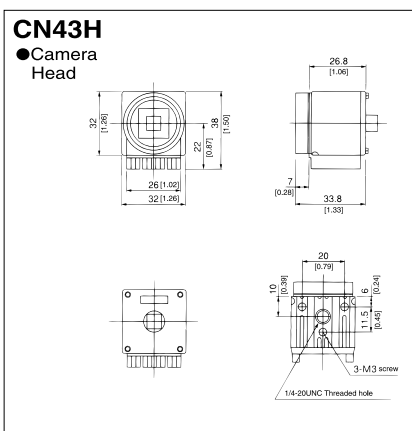
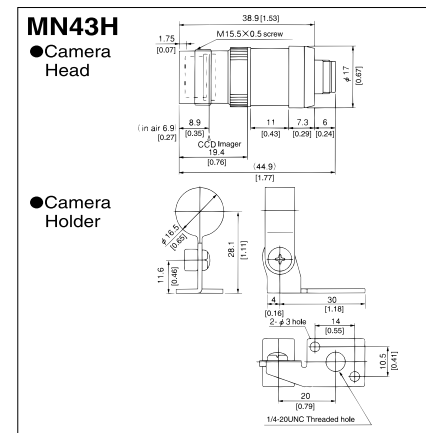
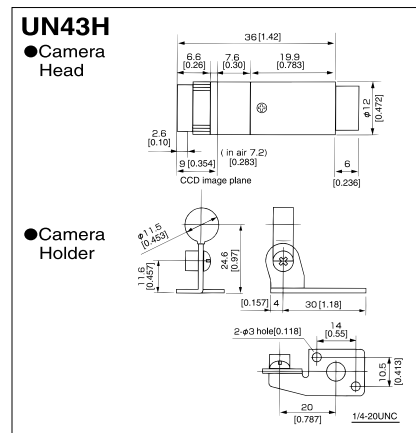
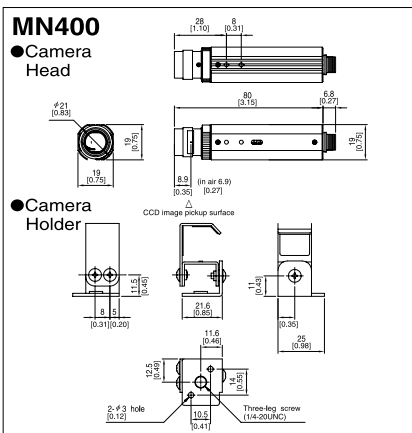
Filters set



C-mount adapter

All dimensions in mm (inches)  
φ : diameter

## PROFILE



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