

Panasonic
ideas for life



Matsushita

Imagechecker

Accessories

Machine Vision for Industry

ACCESSORIES

NAIS Machine Vision Systems are already established in many factory automation applications.

Quality control and process control are the most important industrial fields of application for Machine Vision.

To reduce costs in production, cycle times become faster and faster. To improve the quality assurance by eliminating reworks and complaints, it is necessary to detect errors during production, at the place where the defect happens. The industry has the intention to manufacture a 100% error-free product. Therefore, a sampling inspection isn't enough. But the human eye has not the ability to control such complex things with high speed during production. Hence NAIS has developed miniaturised, compact, compatible systems for a fast return on investment.

But a Machine Vision system does not consist of only a camera and a controller. To enable the use of Machine Vision system in a wide range of applications, lights, lenses and displays are needed, which are offered in this catalogue. To add the right accessory is the prerequisite to solve all the different applications. For a detailed technical assistance regarding design in, installation or commissioning, please contact our application team, who will be pleased to offer their assistance.

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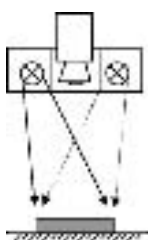
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SUCCESSFUL IMAGE PROCESSING STARTS WITH LIGHT

For Industrial Machine Vision a constant and homogenous light is required. Vibrations from machines must not influence the light. Lighting is not just a matter of making an area brighter, but to produce a light that is suitable for making measurements. To reach the best conditions for your measurement please find an overview about the typical methods.

FRONTLIGHTING

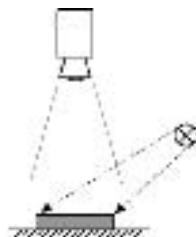
Direct lighting from above produces a good grey image from your object.
 Used e.g. to check position, prints or measurement
 Suitable products see pages 4 and 8



e.g. position detection

DARK-FIELD ILLUMINATION

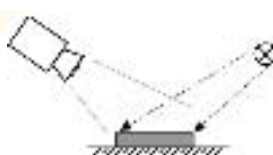
This kind of illumination avoids mirroring of the light on the object surface.
 Used e.g. to check prints or surfaces
 Suitable products see pages 4 and 8



e.g. character checking

BRIGHT-FIELD ILLUMINATION

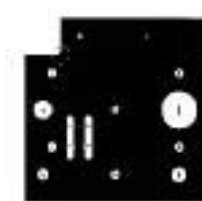
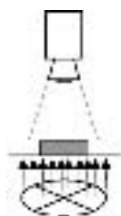
The camera uses the light which is reflected from the object.
 Used e. g. to find scratches on a surface
 Suitable products see pages 4 and 8



e.g. flaw detection

BACKLIGHTING

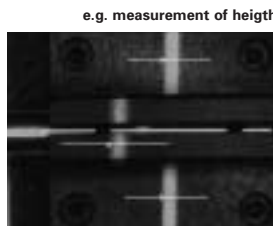
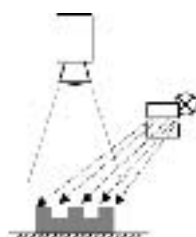
Defines the outline of the object and produces a good contrast in the image.
 Most common type of illumination for size measurement.
 Suitable products see pages 6 and 10



e.g. size measurement

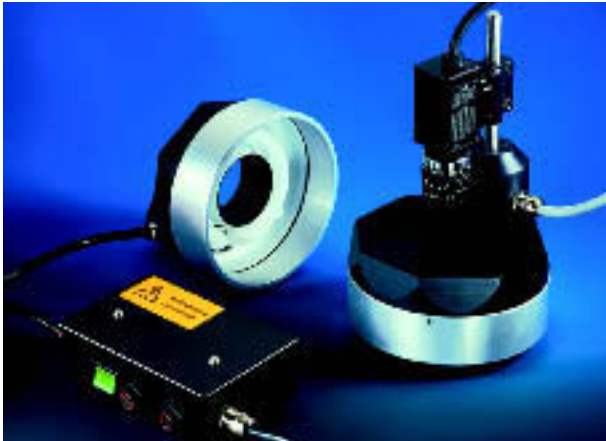
LIGHT-LINE METHOD

A line projector projects a line of light over the object.
 Used e. g. for 3D size measurement
 Please ask our application team.



e.g. measurement of height

AN OVERVIEW



- Even illumination
- Flicker free, high frequency output
- Easy bulb replacement
- Mounting threads
- Different camera holders available
- Robust construction
- Optional filters and coloured bulbs

RING LIGHT

SPECIFICATION

ICH LIGHT 006D

Type	High frequency fluorescent ring light
Frequency	22kHz
Ripple	Less than $\pm 2\%$
Power	10W
Colour temperature	4600 – 5400°
Typical bulb life	1,500 hours (no guarantee for bulb life)
Working distance	100mm
Cable length	To power supply: 150cm Between power supply and light: 150cm
Supply voltage	230VAC

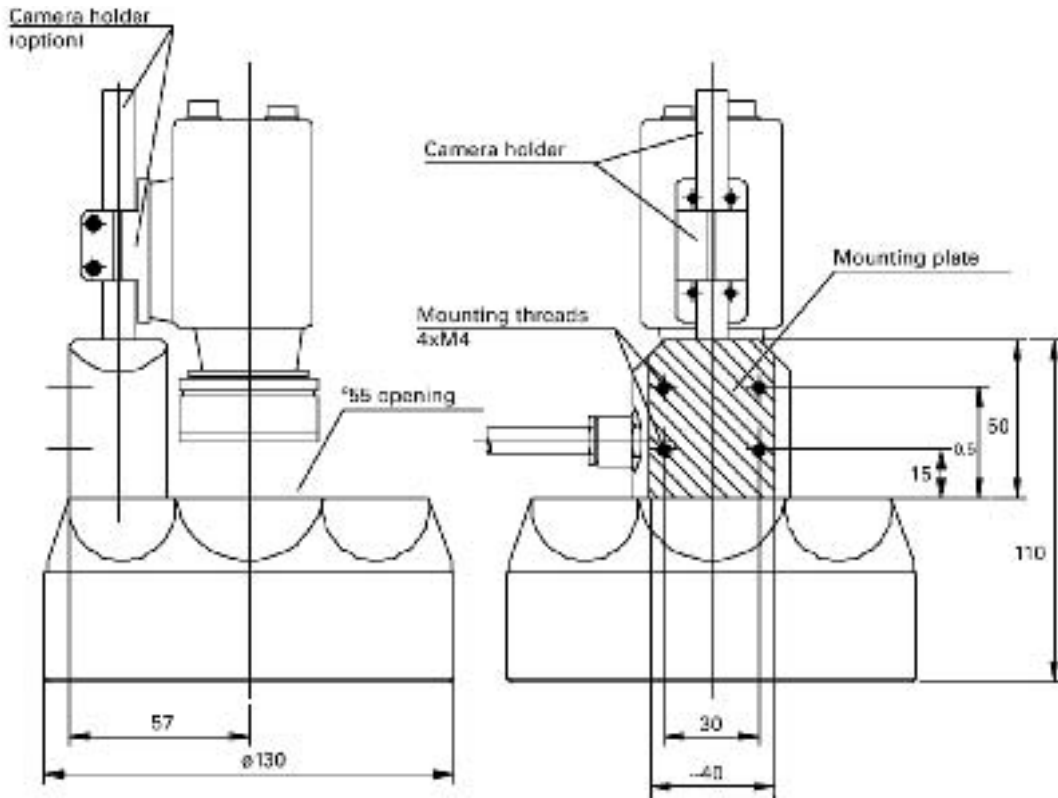
ACCESSORIES / SPARE PARTS

Component	Part Number
Camera holder for ANM830CE	ICHLIGHT0061D
Camera holder for ANG830 –R/-F	ICHLIGHT0062D
Camera holder for ANG831D	ICHLIGHT0630D
Camera holder for ANG832CE	ICHLIGHT0621D
Camera holder for ANPC830D	ICHLIGHT0620D
Diffuser	ICHLIGHT0063D
Polarizing filter	ICHLIGHT0064D
Mounting plate	ICHLIGHT00610D
Replacement bulb white	ICHLIGHT0065D
Replacement bulb ultraviolet	ICHLIGHT0066D
Replacement bulb blue	ICHLIGHT0067D
Replacement bulb green	ICHLIGHT0068D
Replacement bulb red	ICHLIGHT0069D

Please note: the fluorescent ring light is equipped with a white bulb

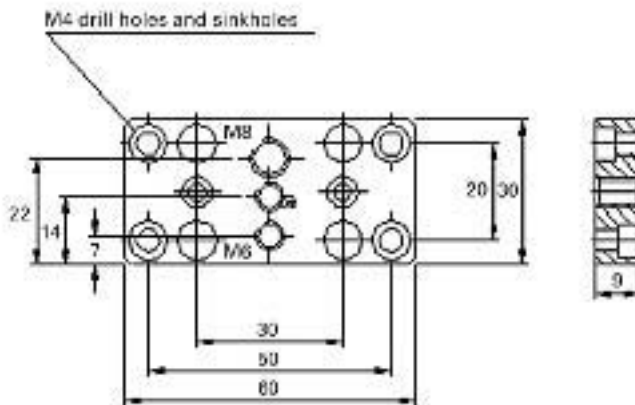
ICHLIGHT006D

Dimensions (mm)



ICHLIGHT00610D

Adapter Plate for ICHLIGHT006D



SPECIFICATION



- Intense and even illuminated area
- Flicker free, high frequency output
- Ripple less than 2%
- Many different illumination area sizes selectable
- Robust steel housing with mounting threads

BACK LIGHT

SPECIFICATION

ICH LIGHT 002D

Type	High frequency fluorescent ring light
Frequency	22kHz
Ripple	Less than $\pm 2\%$
Power	6W up to 78W (depending on size)
Colour temperature	4000°
Typical bulb life	2,500 hours (no guarantee for bulb life)
Cable length	2m
Dimensions	270 x 130 x 60 up to 570 x 508 x 60 (mm) (length x width x height)
Supply voltage	230VAC

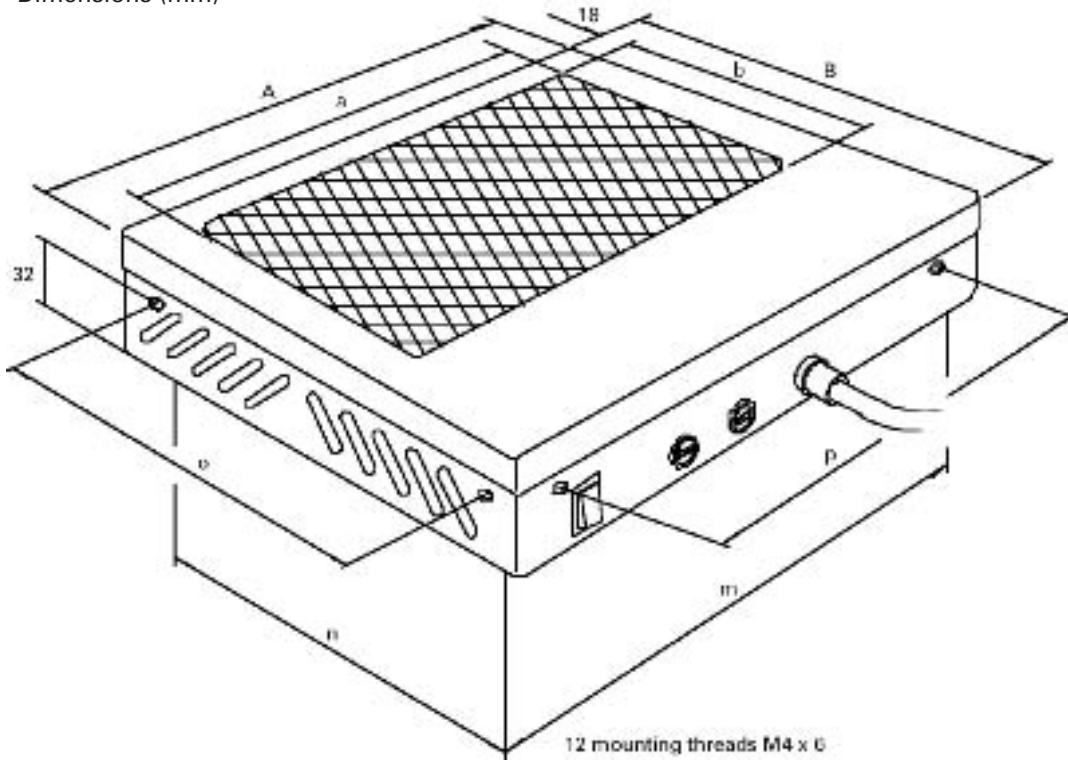
ORDER GUIDE

Order Suffix ¹⁾	Size of active area	No. of bulbs	Power of bulb (W)	Total power (W)
-205-1D	208 x 50	1	6	6
-210-2D	208 x 100	2	6	12
-220-4D	208 x 200	4	6	24
-225-5D	208 x 250	5	6	30
-310-2D	308 x 100	2	8	16
-320-4D	308 x 200	4	8	32
-330-6D	308 x 300	6	8	48
-405-1D	408 x 50	1	11	11
-415-3D	408 x 150	3	11	33
-425-5D	408 x 250	5	11	55
-510-2D	508 x 100	2	13	26
-520-4D	508 x 200	4	13	52
-530-6D	508 x 300	6	13	78

¹⁾ When ordering please add the respective order suffix to ICHLIGHT-002. Example: ICHLIGHT-002-330-6D

ICHLIGHT002-XXX-XD

Dimensions (mm)

**ORDER GUIDE**

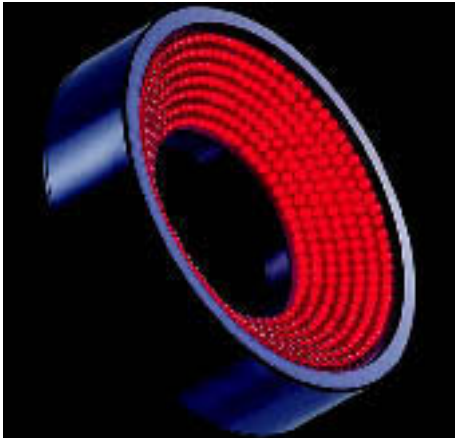
Part Number	Dimensions (mm)							
	a	b	A	B	m	n	o	p
ICHLIGHT002-205-1D	208	50	270	130	249	109	109	220
ICHLIGHT002-210-2D	208	100	270	180	249	159	159	220
ICHLIGHT002-220-4D	208	200	270	306	249	285	285	220
ICHLIGHT002-225-5D	208	250	270	382	249	361	361	220
ICHLIGHT002-310-2D	308	100	370	180	349	159	159	320
ICHLIGHT002-320-4D	308	200	370	306	349	285	285	320
ICHLIGHT002-330-6D	308	300	370	432	349	411	411	320
ICHLIGHT002-405-1D	408	50	470	130	449	109	109	420
ICHLIGHT002-415-3D	408	150	470	256	449	235	235	420
ICHLIGHT002-425-5D	408	250	470	382	449	361	361	420
ICHLIGHT002-510-2D	508	100	570	180	549	159	159	520
ICHLIGHT002-520-4D	508	200	570	306	549	285	285	520
ICHLIGHT002-530-6D	508	300	570	432	549	411	411	520

Please note: the height is 60mm for all lights

ACCESSORIES / SPARE PARTS

Component	Part Number
Flourescent bulb 6W	ICHLIGHT002-000-2D
Flourescent bulb 8W	ICHLIGHT002-000-3D
Flourescent bulb 11W	ICHLIGHT002-000-4D
Flourescent bulb 13W	ICHLIGHT002-000-5D

SPECIFICATION



LED

- Long lifetime
- Available in different diameters
- For strobe or constant light
- Fast response time
- Different colours available
- Miniaturised construction with mounting threads
- Optional diffuser, polariser

RING LIGHT

SPECIFICATION

LDRxxJ	
Type	LED Ring Light
Power	1.5W up to 15W (depending on size)
Typical lifetime	30,000 hours under continuous use ¹⁾
Cable length	0.2m
Dimensions	32 x 10 x 16 up to 90 x 50 x 20 (mm) (outer diameter x inner diameter x height)
Supply voltage	12VDC or 24VDC (depending on size)

¹⁾ Provided that PD30xx power supplies will be used

ORDER GUIDE

Order Suffix ²⁾	Colour	Inner diameter (mm)	Outer diameter (mm)	Height (mm)	Options ³⁾	Power Consumption (W)
32J	●	10	32	16	D/P/A	12V / 1.5W
32SWJ	○	10	32	16	D/P/A	24V / 2.0W
50BJ	●	28	50	16	D/P/A	12V / 3.0W
50BSWJ	○	28	50	16	D/P/A	24V / 4.1W
70ANJ	●	35	70	22	D/P/*	12V / 6.0W
70AWJ	●	35	70	22	D/P/*	12V / 6.0W
70ASWJ	○	35	70	27	D/P/*	24V / 8.2W
90BJ	●	50	90	20	D/P/A	12V / 9.0W
90BSWJ	○	50	90	20	D/P/A	24V / 15W

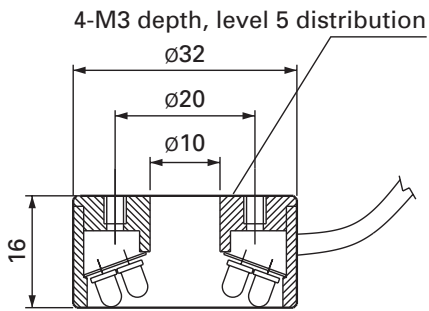
²⁾ When ordering please add the respective order suffix to LDR. Example: LDR32J

³⁾ Options: D = Diffuser P = Polariser A = Adapter for mounting (see page 14)

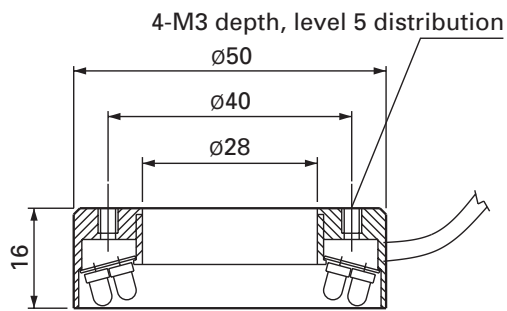
* A clear acrylic panel is used for installation

LDRXXJ

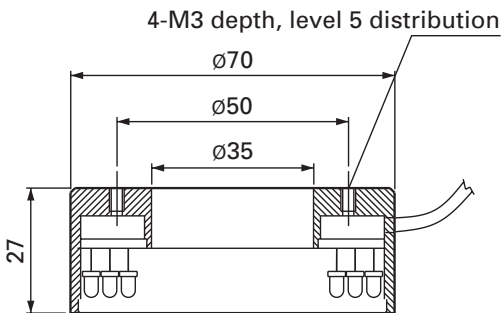
Dimensions (mm)



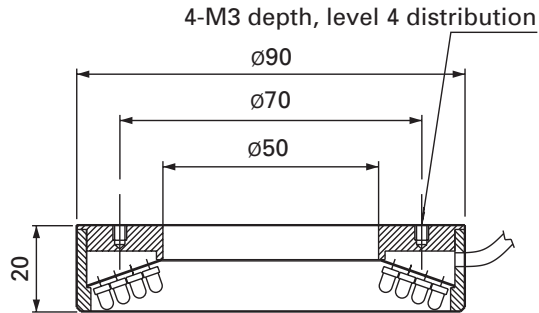
LDR32J / LDR32SW



LDR50BJ / LDR50BSWJ

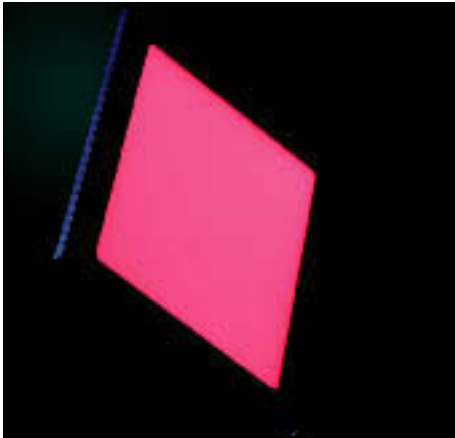


LDR70ANJ / LDR70AWJ
LDR70ASWJ



LDR90BJ / LDR90BSWJ

SPECIFICATION



LED

- Long lifetime
- Available in different sizes
- For strobe or constant light
- Fast response time
- Different colours available
- Miniaturised construction with mounting threads
- Diffuser included

BACK LIGHT

SPECIFICATION

LFLxxJ	
Type	LED Back Light
Power	0.6W up to 12W (depending on size)
Typical lifetime	up to 30,000 hours under continuous use ¹⁾
Cable length	0.2m
Dimensions	32 x 42 x 7 up to 90 x 50 x 20 (mm) (outer diameter x inner diameter x height)
Supply voltage	12VDC or 24VDC (depending on size)

¹⁾ Provided that PD30xx power supplies will be used

ORDER GUIDE

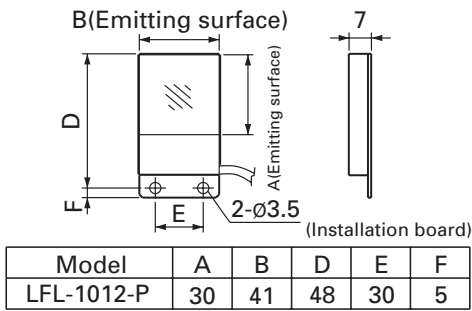
Order Suffix ²⁾	Colour	Inner diameter (mm)	Outer diameter (mm)	Height (mm)	Options ³⁾	Power Consumption (W)
1012PJ	●	30	41	7	-	12V / 0.6W
50J	●	50	50	6	-	12V / 2.4W
50SWJ	○	50	50	6	-	24V / 3.0W
100J	●	80	100	8	L	12V / 4.2W
100SWJ	○	80	100	8	L	24V / 5.8W
200J	●	180	200	8	L	12V / 8.8W
200SWJ	○	180	200	8	L	24V / 12W

²⁾ When ordering please add the respective order suffix to LFL. Example: LFL50J

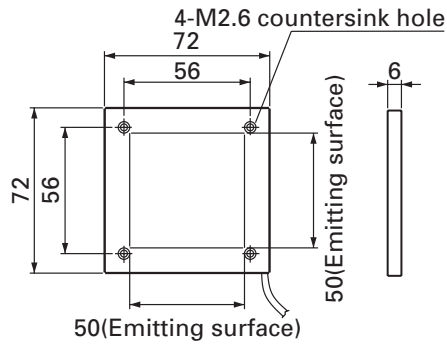
³⁾ Option: L= Light control film which converts diffused light into parallel light (see Page 14)

LFLXXJ

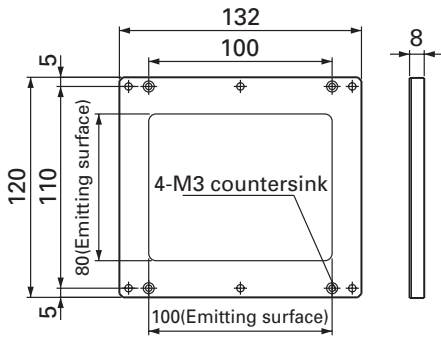
Dimensions (mm)



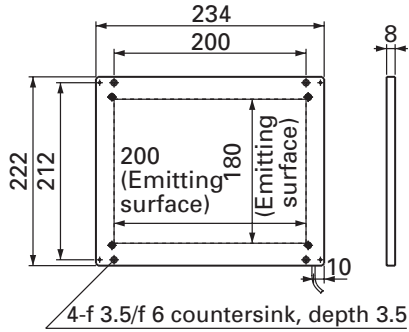
LFL1012PJ



LFL50J / LFL50SWJ



LFL100J / LFL100SWJ



LFL200J / LFL200SWJ

SPECIFICATION

LED



- Easy handling
- For all LED Ring Lights and Back Lights offered in this catalogue
- Simple setting of strobe emitting time
- Test function

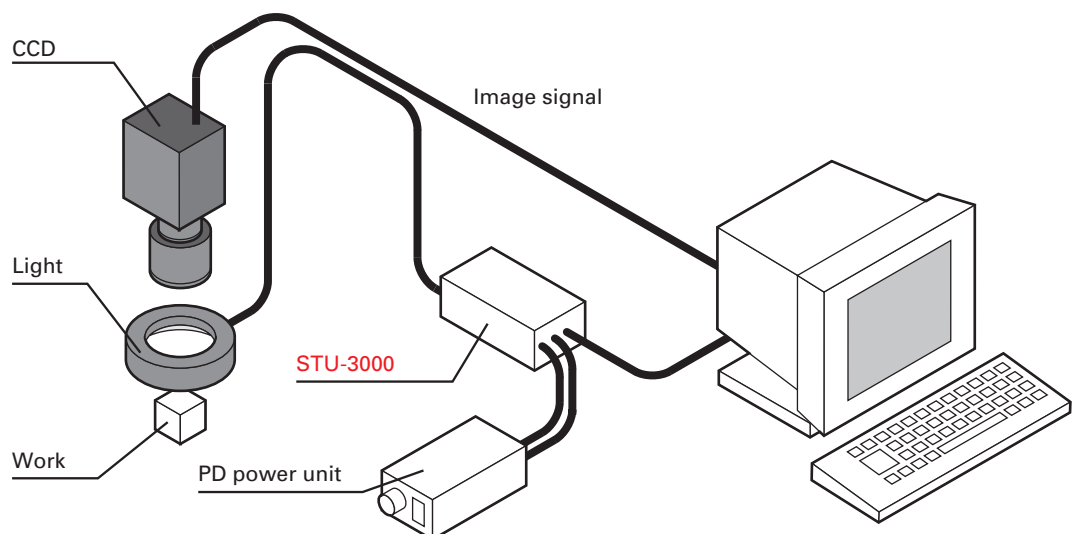
STROBE UNIT

SPECIFICATION

STU-3000J

Type	Strobe unit
Timer setting (digital switch)	0.01 to 99.99msec
Trigger input	Photocoupler input (4mA)
Trigger output	Output by simply turning the output of the connected power unit on and off
Power requirements	Supplied from the connected power unit: 12V power unit; approx. 0.4W 24V power unit; approx. 0.8W
Connectable power units	PD3012J PD3024J
Dimensions	110 x 72 x 40 (mm) / (length x width x height)

SYSTEM DIAGRAM





- Easy light adjustment by rotary switch or external TTL signal
- For all LED Ring Lights and Back Lights offered in this catalogue

SPECIFICATION

PD3012J / PD3024J

Type	Power Supply
Digital light control	256 levels
Pulse duty	Approx 60kHz pulse illumination
External control	External light control bit, light pulse, INT/EXT switching
Control connector	Internal control ON/OFF 3.5 microphone jack External control ON/OFF D-sub 15pins (male)
Power requirements	100 – 240VAC
Output	PD3012J 12V / 28W PD3024J 24V / 28W
Options	DIN rail fitting / external light control cable (3m)
Dimensions	170 x 62 x 110 (mm) / (length x width x height)

POWER SUPPLY

ACCESSORIES

ORDER GUIDE

Part Number	Description
CB1J	Extension cable for 12VDC LED lights, 1m
CB2J	Extension cable for 12VDC LED lights, 2m
CB3J	Extension cable for 12VDC LED lights, 3m
CB5J	Extension cable for 12VDC LED lights, 5m
FCB1J	Extension cable for 24VDC LED lights, 1m
FCB2J	Extension cable for 24VDC LED lights, 2m
FCB3J	Extension cable for 24VDC LED lights, 3m
FCB5J	Extension cable for 24VDC LED lights, 5m
PLLDR32J	Polarizing plate for LDR32x
DFLDR32J	Diffusion plate for LDR32x
ADLDR32J	Adapter for polarizing or diffusion plate for LDR32x
PLLDR50J	Polarizing plate for LDR50Bx
DFLDR50J	Diffusion plate for LDR50Bx
ADLDR50BJ	Adapter for polarizing or diffusion plate for LDR50Bx
PLLDR70J	Polarizing plate for LDR70Ax
DFLDR70J	Diffusion plate for LDR70Ax
	No adapter required for LDR70
PLLDR90J	Polarizing plate for LDR90Bx
DFLDR90J	Diffusion plate for LDR90Bx
ADLDR90BJ	Adapter for polarizing or diffusion plate for LDR90Bx
MRLDR32M27	Attachment ring to mount LDR32J to lens C1614ATHJ or B2514DTH
MRLDR50BM27	Attachment ring to mount LDR50J to lens C1614ATHJ or B2514DTH
LCLFL100J	Light control film for LFL100J, converts diffused light into parallel light
LCLFL200J	Light control film for LFL200J, converts diffused light into parallel light

LED

- Shadow free and diffuse illumination
- Equipped with red or white LEDs
- Low noise fan
- Long lifetime
- Four different sizes available
- Robust aluminium houses



SPECIFICATION

CISXX	
Type	LED Coaxial Light
Power	2W up to 32W (depending on size)
Colour temperature	7800°
Wavelength (red)	623nm
Typical lifetime	70,000 hours
Cable length	1.5m
Dimensions	65 x 31 x 5 up to 175 x 108 x 102 (mm) / (length x width x height)
Supply voltage	24VDC
Connectable Power units	CIS Power Supply 24V

ORDER GUIDE

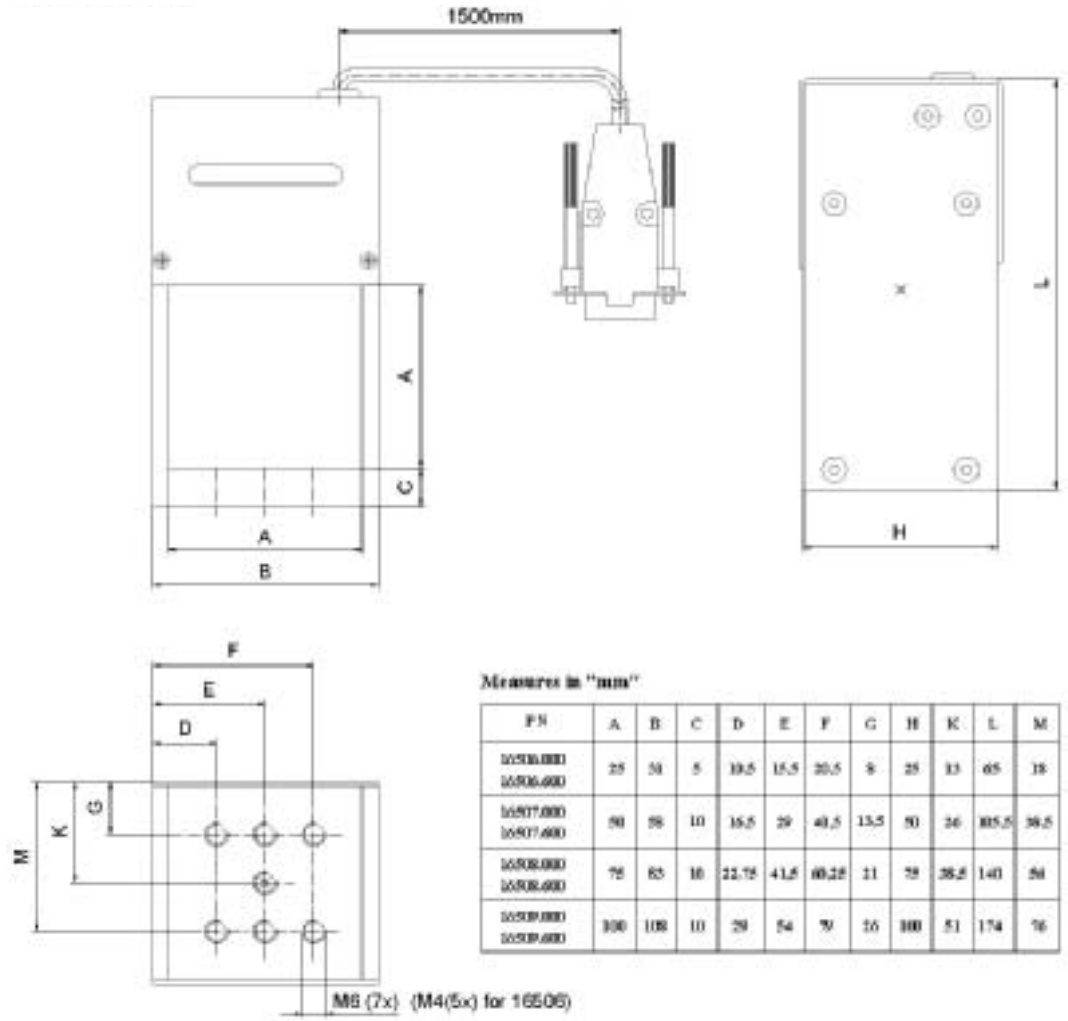
Order Suffix	Colour	Emitting surface length (mm)	Emitting surface width (mm)	Height (mm)	Power Consumption (W)
CIS25w	○	25	25	25	3
CIS25r	●	25	25	25	2
CIS50w	○	50	50	52	11
CIS50r	●	50	50	52	8
CIS75w	○	75	75	77	14
CIS75r	●	75	75	77	16
CIS100w	○	100	100	102	26
CIS100r	●	100	100	102	32

COAXIAL

SPECIFICATION

CISXX

Dimensions (mm)



- Excellent price/performance ratio
- For industrial use
- Variable focus
- Manual iris control
- Types with fixing screws
- C- and CS-mount types



VIDEO LENSES

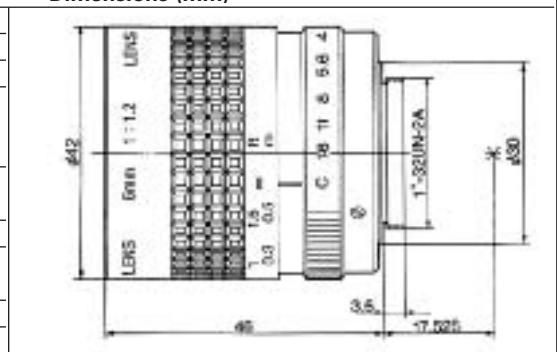
1/2" IMAGE FORMAT

C-mount

F = 6/1.2

Specification	
Focal length	6mm
Max. aperture ratio	1:1.2
Iris range	F1.2 ~ close
Angle of view (hor. X vert.)	1/3" - 45.0° x 32.6° 1/3" - 58.0° x 45.0° 2/3" -
Minimum object distance	0.2 m
Max. CCD format	1/2"
Filter thread diameter / pitch	ø 40.5 / 0.5mm
Dimensions	ø 42 x 46 (mm)
Order number	H612AJ

Dimensions (mm)

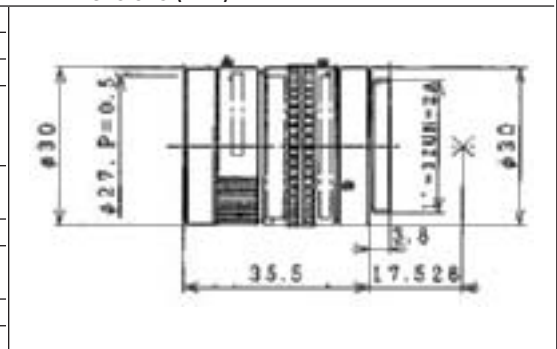


C-mount

F = 12/1.2

Specification	
Focal length	12mm
Max. aperture ratio	1:1.2
Iris range	F1.2 ~ 22
Angle of view (hor. X vert.)	1/3" - 22.3° x 16.5° 1/3" - 30.1° x 22.3° 2/3" -
Minimum object distance	0.2m
Max. CCD format	1/2"
Filter thread diameter / pitch	ø 27 / 0.5mm
Dimensions	ø 30 x 35.5 (mm)
Order number	H1212BTHJ

Dimensions (mm)



VIDEO LENSES

2/3" IMAGE FORMAT

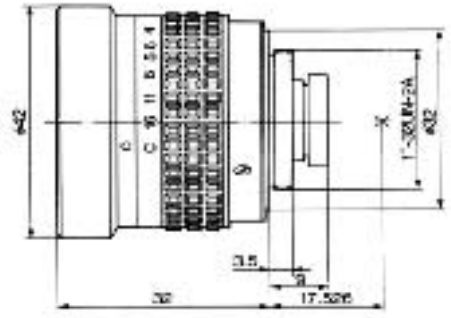
C-mount

Specification

Focal length	4.8mm
Max. aperture ratio	1:1.8
Iris range	F1.8 ~ close
Angle of view (hor. X vert.)	1/3" - 54.3° x 41.1° 1/3" - 71.2° x 54.3° 2/3" - 96.0° x 74.0°
Minimum object distance	0.2m
Max. CCD format	2/3"
Filter thread diameter / pitch	-
Dimensions	ø 30 x 21 (mm)
Order number	C418DXKAJ

F = 4.8/1.8

Dimensions (mm)



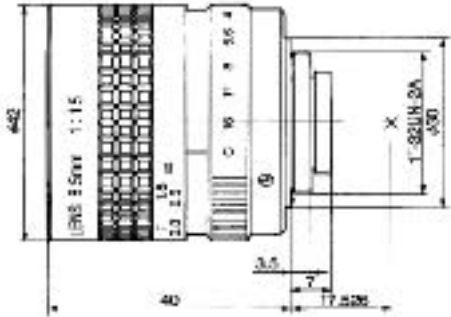
C-mount

Specification

Focal length	8.5mm
Max. aperture ratio	1:1.5
Iris range	F1.5 ~ close
Angle of view (hor. X vert.)	1/3" - 31.3° x 24.0° 1/3" - 41.2° x 31.3° 2/3" - 56.5° x 43.4°
Minimum object distance	0.2m
Max. CCD format	1/2"
Filter thread diameter / pitch	ø 40.5 / 0.5mm
Dimensions	ø 42 x 40 (mm)
Order number	C815BKAJ

F = 8.5/1.5

Dimensions (mm)



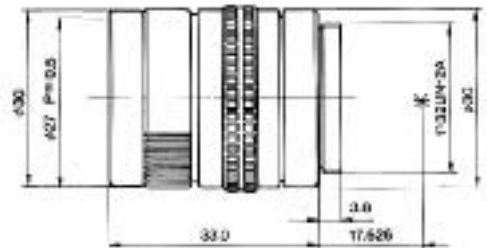
C-mount

Specification

Focal length	16mm
Max. aperture ratio	1:1.4
Iris range	F1.4 ~ close
Angle of view (hor. X vert.)	1/3" - 17.0° x 12.4° 1/3" - 22.4° x 17.0° 2/3" - 30.4° x 23.2°
Minimum object distance	0.3m
Max. CCD format	2/3"
Filter thread diameter / pitch	ø 27 / 0.5mm
Dimensions	ø 30 x 33 (mm)
Order number	C1614ATHJ

F = 16/1.4

Dimensions (mm)



1" IMAGE FORMAT

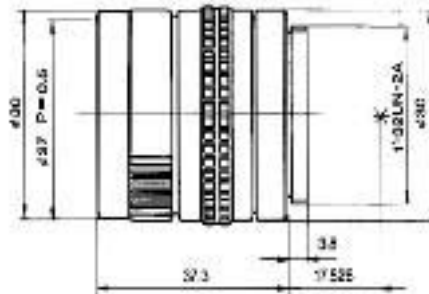
C-mount

Specification

Focal length	25mm
Max. aperture ratio	1:1.4
Iris range	F1.4 ~ 22
Angle of view (hor. X vert.)	1/3" - 10.6° x 8.2° 1/3" - 14.4° x 10.6° 2/3" - 19.6° x 15.0°
Minimum object distance	0.3m
Max. CCD format	2/3"
Filter thread diameter / pitch	ø 27 / 0.5mm
Dimensions	ø 30 x 37.3 (mm)
Order number	B2514DTHJ

F = 25/1.4

Dimensions (mm)



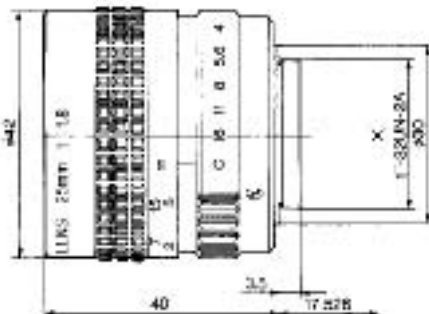
C-mount

Specification

Focal length	25mm
Max. aperture ratio	1:1.8
Iris range	F1.8 ~ close
Angle of view (hor. X vert.)	1/3" - 10.6° x 8.2° 1/3" - 14.4° x 10.6° 2/3" - 19.6° x 15.0°
Minimum object distance	0.6m
Max. CCD format	2/3"
Filter thread diameter / pitch	ø 40.5 / 0.5mm
Dimensions	ø 42 x 40 (mm)
Order number	B2518KAJ

F = 25/1.8

Dimensions (mm)



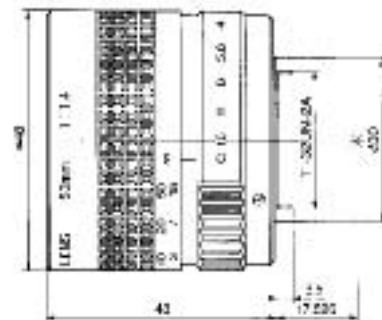
C-mount

Specification

Focal length	50mm
Max. aperture ratio	1:1.4
Iris range	F1.8 ~ close
Angle of view (hor. X vert.)	1/3" - 5.3° x 4.1° 1/3" - 7.2° x 5.3° 2/3" - 10.0° x 7.3°
Minimum object distance	1m
Max. CCD format	2/3"
Filter thread diameter / pitch	ø 46 / 0.5mm
Dimensions	ø 48 x 48 (mm)
Order number	B5014AKAJ

F = 50/1.4

Dimensions (mm)



VIDEO LENSES

VIDEO LENSES

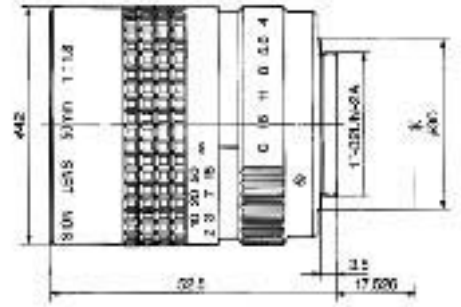
1" IMAGE FORMAT

C-mount
Specification

Focal length	50mm
Max. aperture ratio	1:1.8
Iris range	F1.8 ~ close
Angle of view (hor. X vert.)	1/3" - 5.3° x 4.1° 1/3" - 7.2° x 5.3° 2/3" - 10.0° x 7.3°
Minimum object distance	1m
Max. CCD format	2/3"
Filter thread diameter / pitch	ø 40.5 / 0.5mm
Dimensions	ø 42 x 52.5 (mm)
Order number	B5018A3KAJ

Dimensions (mm)

F = 50/1.8

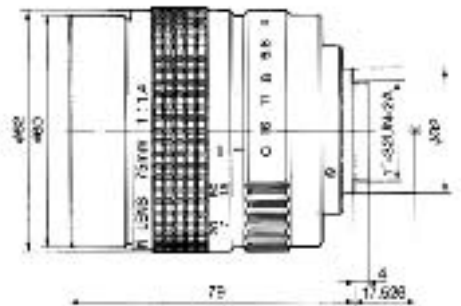


C-mount
Specification

Focal length	75mm
Max. aperture ratio	1:1.4
Iris range	F1.4 ~ close
Angle of view (hor. X vert.)	1/3" - 3.4° x 2.5° 1/3" - 4.5° x 3.4° 2/3" - 6.3° x 4.6°
Minimum object distance	1.2m
Max. CCD format	2/3"
Filter thread diameter / pitch	ø 58 / 0.75mm
Dimensions	ø 62 x 79 (mm)
Order number	B7514CKAJ

Dimensions (mm)

F = 75/1.4



ACCESSORIES

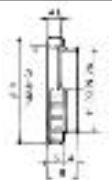
C-CS Mount Adapter

Specification

This adapter converts a C mount lens into a CS mount lens.

Dimensions (mm)

Order number	C-CS Mount
--------------	------------



Extension Tubes Set

Dimensions (mm)

Set consists of 1 pc of each extension tube (6 pcs. total)

LENGTH 0.5mm 1.0mm 3mm 13mm 20mm 40mm



Order number	EXC6J
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- 9" or 14" screen
- Crisp and detailed picture
- Operating controls on the front panel
- Robust metal cabinet
- Optional 19" rack-mount adapters



SPECIFICATION

WV-BM Series

Order number	WV-BM 990G3J	WV-BM 1410J
Type	Black and white video monitor	
Screen size (diagonal)	22cm	32cm
Horizontal resolution	800 lines	1.000 lines
Video input	1 x BAS (BNC)	
Video input impedance	75W	
Video output	1 x BAS (BNC)	
Power consumption	29W	32W
Operating temperature range	-10° C – 50°C	
Dimensions (w x h x d) [mm]	221 x 220 x 262	320 x 326 x 328
Weight	5.2kg	10kg
Housing material	Metal	
Supply voltage	230VAC / 50Hz	230VAC / 50Hz

ACCESSORIES

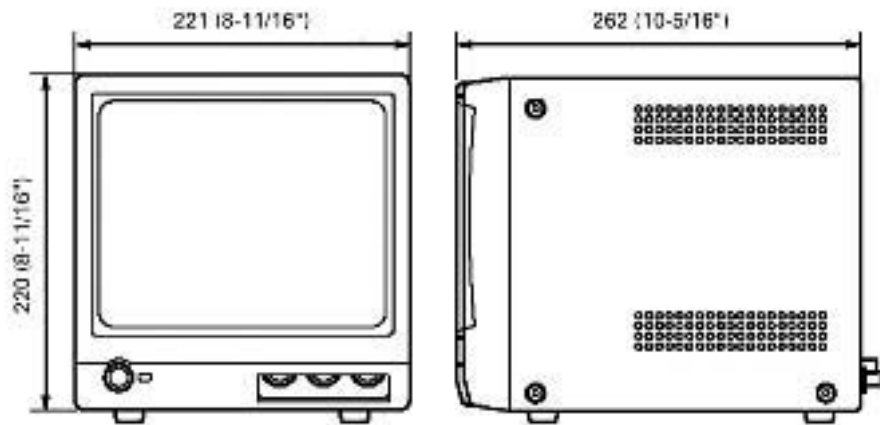
Component	Part Number
19" mounting bracket for WV-BM 990G3J	WV-Q29AP3J
19" mounting bracket for WV-BM 1410J	WV-Q21WJ
Monitor cable 3 m	ANM8703J
Monitor cable 5 m	ANM8705J
Monitor cable 10 m	ANM8710J

MONITORS

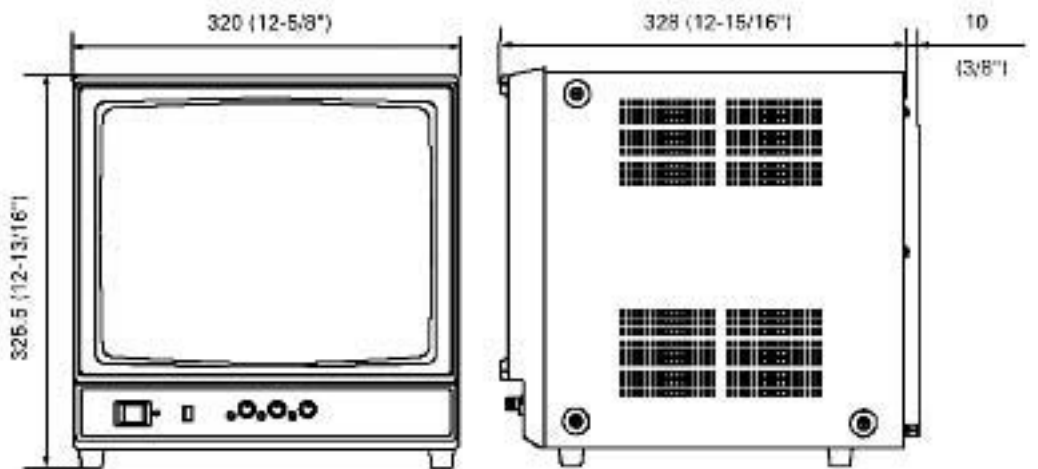
SPECIFICATION

DIMENSIONS

WV-BM990G3J



WV-BM1410J



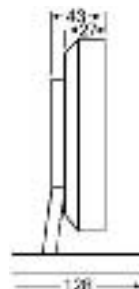
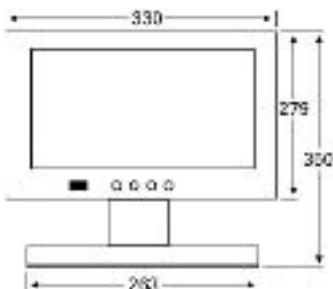
- 10.4" display size
- SECAM / PAL / NTSC
- Power supply included
- Video input
- On screen display



SPECIFICATION

TFT-104X

Order number	TFT-104X
Type	Colour TFT monitor
Screen size (diagonal)	26cm
Resolution (w x h)	640 x 480
Video input	1 Vss / 75 Ohm
Video input impedance	75W
Power consumption	<10W
Operating temperature range	0°C – 50°C
Dimensions (w x h x d) [mm]	330 x 279 x 44
Weight	4.2kg
Housing material	Plastic
Supply voltage	230VAC / 50Hz or 12VDC (power supply included)



COLOUR TFT-LCD

COLOUR TFT-LCD

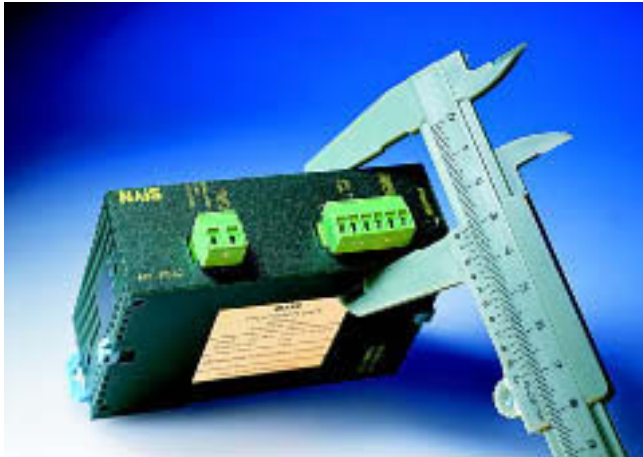


- 7" display size
- PAL/NTSC
- Video input
- On screen display
- Digital sensor to adjust brightness

SPECIFICATION

TC-7WMS1J

Order number	TC-7WMS1J
Type	Colour TFT monitor
Screen size (diagonal)	18cm
Resolution (w x h)	234 x 480
Video input	BNC – Composite NTSC/PAL
Power consumption	<24W
Operating temperature range	0°C – 40°C
Dimensions (w x h x d) [mm]	181 x 131 x 34
Weight	0.47kg
Housing material	Plastic
Supply voltage	12VDC



- **Incredibly small size**
- **Maximum output current:**
 FP0 power supply: 0.7A (24VDC)
 FP power supply: 2.1A (24VDC)
- **Multiple voltage input:**
 85 to 265VAC
- **Optimal protection**
 overvoltage, overcurrent, overheating
- **Global approvals**
 (UL/cUL, EN, CE-marking)
- **DIN-rail mounting**
 (FP0 power supply also side mounting)

PERFORMANCE SPECIFICATIONS

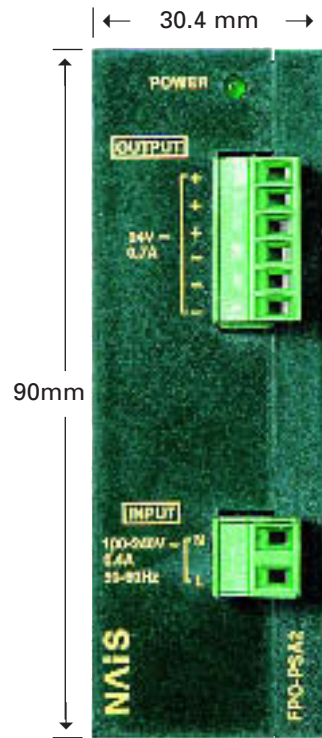
Order No.:	FP0-PSA2	FP-PS24-050E
Primary side:		
Rated operating voltage	115/230VAC	
Operating voltage range	85 to 265VAC	
Rated operating frequency	50/60Hz	
Operating frequency range	40 to 70Hz	
Inrush current	< 50A at 55°C	< 50A at 25°C / < 70A at 55°C
Current consumption	145mA (at 230VAC and 0.7A output current)	400mA (at 230VAC and 2.1A output current)
Over voltage protection	PROTECTED	
Secondary side:		
Rated output voltage	24VDC	
Output voltage range	23.5 to 24.5VDC	
Nominal output current	0.7A	2.1A
Output current range	0 to 0.7A	0 to 2.1A
Output ripple	< 60mV _{pp}	< 240mV _{pp}
Short circuit protected	electronic, automatic restart mode	continuous
Over voltage protected	Yes	
Over load protection	Yes (switch off at approx. 0.8A and more)	Yes (switch off at approx. 3.5A and more)
Holding time	min. 20ms at 230VAC	min. 110ms at 230VAC
Power OK signal	-	Yes

STANDARDS

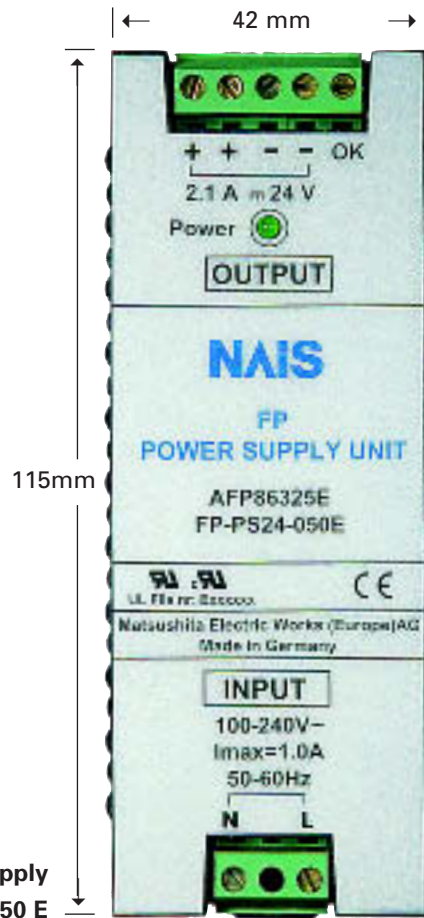
EMC	EN 50082-2, 50082-1, 50081-2, 50081-1	EN 55011/B, 55022/B, 61000-4-2 to -4-6/-4-11
LVD	EN 60950, 50178 (overvoltage category 3)	EN 60950, 50178 (overvoltage category 2)
Others	UL Recognised according to UL 508, UL 1950, cUL according to CAN/CSA-C22.2 No. 950.95	
Protection	IP30	IP20 outside / IP67 inside

DC POWER SUPPLY

INDUSTRY TYPE



**FP0 Power supply
FP0-PSA2**



**FP Power supply
FP-PS24-050 E**

NOTE:

- 1) Mounting distance between the FP0 power supply and the FP0 CPU is needed to permit heat radiation for the FP0-CPU
- 2) For side mounting, 2 additional blue clips are needed: order part-no. 677-021-17101 (1pce.) for FP0-PSA2
- 3) Mounting distance between the power supply FP-PS24-050E and other devices is needed for cooling / heat radiation.

GENERAL SPECIFICATIONS

Ambient temperature	0°C to 55°C	
Storage temperature	-20°C to +70°C	
Ambient humidity	5 to 95% non-condensing	
Storage humidity	5 to 95% non-condensing	
Vibration resistance	10 to 55Hz, 1 cycle/min.: double amplitude of 0.75mm, 10min. on 3 axes	
Shock resistance	10g min., 4 times on 3 axes	
Life time min.	7 years at nom. load, 25°C ambient temperature 20,000 hours at 55°C with full load/continuous operation	
Mounting	DIN rail or FP0 flat attachment plate	DIN rail
Size	90 x 60 x 30.4mm	115 x 75 x 42mm
Input connection AC side	MC connector, 2 pin	2 pin
Output connection DC side	MC connector, 6 pin, 3 pin for „+“ and 3 pin for „-“	5 pin, 2 pin for „+“ and 2 pin for „-“ 1 pin Power OK
Status display	LED (green) at the front side for the secondary voltage indication	

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