Panasonic ideas for life

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Product Number : PT-**DS8500**U

Product Name : 3-Chip DLP® Projector

Specifications

Main unit

Power supply		120 V AC, 10 A, 60 Hz
Power consumption		920 W (970 VA) (0.2 W with standby mode set to ECO*[1]. 6 W with standby mode set to NORMAL. Both with fan stopped.)
DLP® chip	Panel size	24.1 mm (0.95 inches) diagonal (4:3 aspect ratio)
	Display method	DLP® chip × 3 (R, G, B), DLP® projection system
	Pixels	1,470,000 (1,400 × 1,050) × 3, total of 4,410,000 pixels
Lens		Optional powered zoom/focus lenses
Lamp		355 W UHM lamps (× 2) (dual lamp system)
Screen size		70–600 inches (70–300 inches with the ET-D75LE5), 4:3 aspect ratio
Brightness*[2]		10,600 lumens (dual lamp, high mode)
Center-to-corner uniformity*[2]		90%
Contrast*[2]		10,000:1 (full on/full off, in dynamic iris 3 mode)
Resolution		1,400 × 1,050 pixels (Input signals that exceed this resolution will be converted to .)
Scanning frequency	SDI	SD-SDI signal: SMPTE 259M compliant: 480i, 576i
		Single-link HD-SDI signal: SMPTE 292M compliant: 720/50p, 720/60p, 1035/60i, 1080/50i, 1080/60i, 1080/25p, 1080/24p, 1080/24sF, 1080/30p
	HDMI/DVI-D/RGB	Horizontal: 15–100 kHz, vertical: 24–120 Hz, Dot clock: 162 MHz or lower
	YP_BP_R (YC_BC_R)	525i (480i): f_H 15.75 kHz; f_V 60 Hz,
		625i (576i): f_H 15.63 kHz; f_V 50 Hz,
		525p (480p): f_H 31.50 kHz; f_V 60 Hz,
		625p (576p): f_H 31.25 kHz; f_V 50 Hz,
		750 (720)/60p: f_H 45.00 kHz; f_V 60 Hz,
		750 (720)/50p: f_H 37.50 kHz; f_V 50 Hz,
		1035/60i: f_H 33.75 kHz; f_V 60 Hz,
		1125 (1080)/60i: f_H 33.75 kHz; f_V 60 Hz,
		1125 (1080)/50i: f_H 28.13 kHz; f_V 50 Hz,
		1080/25p: f_H 28.13 kHz; f_V 25 Hz,
		1080/24p: f_H 27.00 kHz; f_V 24 Hz
		1080/24sF: f_H 27.00 kHz; f_V 48 Hz,
		1080/30p: f_H 33.75 kHz; f_V 30 Hz
		1080/60p: f_H 67.50 kHz; f_V 60 Hz,
		1080/50p: f_H 56.25 kHz; f_V 50 Hz
	S-Video/Video	Horizontal: 15.75/15.63 kHz, vertical: 50/60 Hz, (NTSC, NTSC4.43, PAL, PAL60, PAL-N, PAL-M, SECAM)
Optical axis shift		±50% (±40% with the ET-D75LE6) from center of screen, powered ±30% (±20% with the ET-D75LE6) from center of screen, powered
Keystone correction range		Vertical: ±40° (±22° with the ET-D75LE5, ±28° with the ET-D75LE6)
		When using only the KEYSTONE correction of the Geometric Adjustment function: Vertical ±40°, horizontal ±15° (vertical ±22° and horizontal ±15° with the ET-D75LE5, vertical ±28° and horizontal ±10° with the ET-D75LE5)
		When using both the KEYSTONE and CURVED corrections of the Geometric Adjustment function: Vertical ±5°, horizontal ±5° (vertical ±10° and horizontal ±10° with the ET-D75LE3, vertical ±10° and horizontal ±15° with the ET-D75LE4/D75LE8)
Installation		Ceiling/floor, front/rear

Terminals*³	SDI IN	BNC × 1,
		  SD-SDI signal (YCʙCʀ 4:2:2 10-bit):
		    SMPTE 259M compliant: 480i, 576i
		  Single-link HD-SDI signal (YCʙCʀ 4:2:2 10-bit):
		    SMPTE 292M compliant: 720/50p, 720/60p, 1035/60i, 1080/50i,
		    1080/60i, 1080/25p, 1080/24p, 1080/24sF, 1080/30p

	HDMI IN	HDMI 19-pin × 1, Deep Color, compatible with HDCP,
		  480p, 576p, 720/60p, 720/50p, 1080/60i, 1080/50i, 1080/24p,
		  1080/24sF, 1080/25p, 1080/30p, 1080/60p, 1080/50p
		    (non-interlaced signals only),
		  VGA (640 × 480) – WUXGA*² (1,920 × 1,200),
		    dot clock: 25–162 MHz
		NOTE: Compatible with non-interlaced signals only.

	DVI-D IN	DVI-D 24-pin × 1, DVI 1.0 compliant, HDCP compatible,
		  for single link only
		  480p, 576p, 720/60p, 720/50p, 1080/60i, 1080/50i, 1080/24p,
		  1080/24sF, 1080/25p, 1080/30p, 1080/60p, 1080/50p,
		  VGA (640 × 480) – WUXGA*² (1,920 × 1,200),
		    dot clock: 25–162 MHz
		NOTE: Compatible with non-interlaced signals only.

	RGB 1 IN	BNC × 5
	RGB	R: 0.7 Vp-p, 75 ohms, G: 0.7 Vp-p (G: 1.0 Vp-p for sync on G), 75 ohms, B: 0.7 Vp-p, 75 ohms HD/VD, SYNC: High impedance, TTL (positive/negative), 75 ohms
	YPʙPʀ (YCʙCʀ)	Y: 1.0 Vp-p (including sync signal), Pʙ/Pʀ (Cʙ/Cʀ): 0.7 Vp-p, 75 ohms **NOTE: SYNC/HD and VD terminals do not accept tri-level sync signals.**
	RGB 2 IN	D-sub HD 15-pin (female) × 1
	R, G, B	R: 0.7 Vp-p, 75 ohms, G: 0.7 Vp-p (G: 1.0 Vp-p for sync on G), 75 ohms, B: 0.7 Vp-p, 75 ohms HD/VD, SYNC: High impedance, TTL (positive/negative), 75 ohms
	YPʙPʀ (YCʙCʀ)	Y: 1.0 Vp-p (including sync signal), Pʙ/Pʀ (Cʙ/Cʀ): 0.7 Vp-p, 75 ohms **NOTE: SYNC/HD and VD terminals do not accept tri-level sync signals.**
	VIDEO IN	BNC × 1, 1.0 Vp-p, 75 ohms
	S-VIDEO IN	Mini DIN 4-pin × 1, Y: 1.0 Vp-p, C: 0.286 Vp-p, 75 ohms
	SERIAL IN	D-sub 9-pin × 1 (RS-232C compliant) for external controller
	SERIAL OUT	D-sub 9-pin × 1 for link control
	REMOTE 1 IN	M3 jack × 1 for wired remote control
	REMOTE 1 OUT	M3 jack × 1 for link control
	REMOTE 2 IN	D-sub 9-pin × 1 for external control (parallel)
	LAN	RJ-45 × 1 for network connection, 100Base-TX/10Base-T, compliant with PJLink™ (class 1)
Power cord length		3.0 m (9 ft 10 in)
Cabinet materials		Molded plastic
Dimensions (W × H × D):		530 mm × 200 mm*⁵ × 548.5 mm*⁶ (20-7/8˝ × 7-7/8˝ *⁵ × 21-19/32˝ *⁶) (without lens)
Weight		Approx. 24 kg (52.9 lbs)*⁷ (without lens)
Operating temperature		0°–45°C (32°–113°F)*⁸
Operating humidity		10%–80% (no condensation)

Remote control unit

Power supply	3 V DC (AA type battery × 2)
Operation range*⁹	Approx. 30 m (98 ft 5 in) when operated from directly signal receptor
Dimensions (W × H × D)	51 × 176 × 28 mm (2″ × 6-15/16″ × 1-3/32″)
Weight	Approx. 134 g (4.7 oz) (including batteries)

Supplied accessories

Power cord with security lock (× 1)

Wireless/wired remote control unit (× 1)

Batteries for remote control (AA type × 2)

Safety wire rope (× 1)

Optional accessories

Zoom lens (1.0–1.2:1)	ET-D75LE6
Zoom lens (1.4–1.8:1)	ET-D75LE10
Zoom lens (1.8–2.6:1)	ET-D75LE20
Zoom lens (2.6–5.1:1)	ET-D75LE30
Zoom lens (5.0–8.0:1)	ET-D75LE4
Zoom lens (7.9–15.0:1)	ET-D75LE8
Fixed-focus lens (0.8:1)	ET-D75LE5
Lens motor cover	ET-D75MC1
High-ceiling mount bracket	ET-PKD310H
Low-ceiling mount bracket	ET-PKD310S
Attachment for ceiling mount bracket	ET-PAD310
Frame	ET-PFD310
Smoke cut filter	ET-SFD310
Replacement lamp (one bulb)	ET-LAD310
Replacement lamp (a set of two bulbs)	ET-LAD310W
Replacement filter unit	ET-ACF310

Weights and dimensions shown are approximate. Specifications subject to change without notice.

*1 When the standby mode is set to ECO, LAN-based network functions such as the standby ON function will not operate.

*2 Measurement, measuring conditions, and method of notation all comply with ISO 21118 international standards.

*3 The SYNC/HD and VD inputs do not accept the tri-level sync signal.

*4 WUXGA resolution is supported only when the signals are compliant with VESA CVT-RB (Coordinated Video Timing-Reduced Blanking).
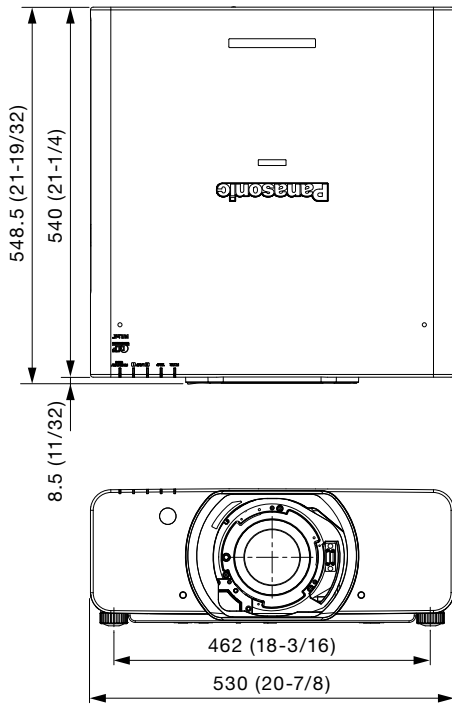
*5 With legs at shortest position.

*6 Excluding the optional lens.

*7 Average value (excluding the optional lens). May differ depending on models.

*8 The operating temperature range is 0°C (32°F) to 40°C (104°F) when used in High-Altitude mode (1,400 m (4,593 ft) to 2,700 m (8,858 ft)).
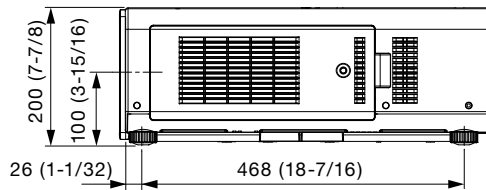
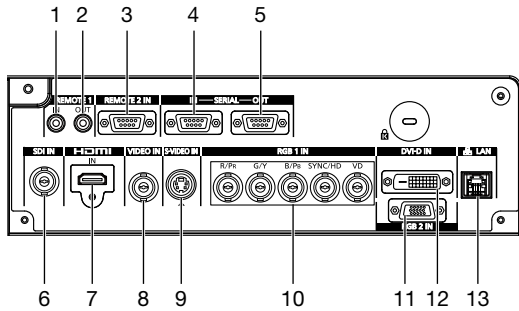*9 Operation range differs depending on environments.

Dimensions

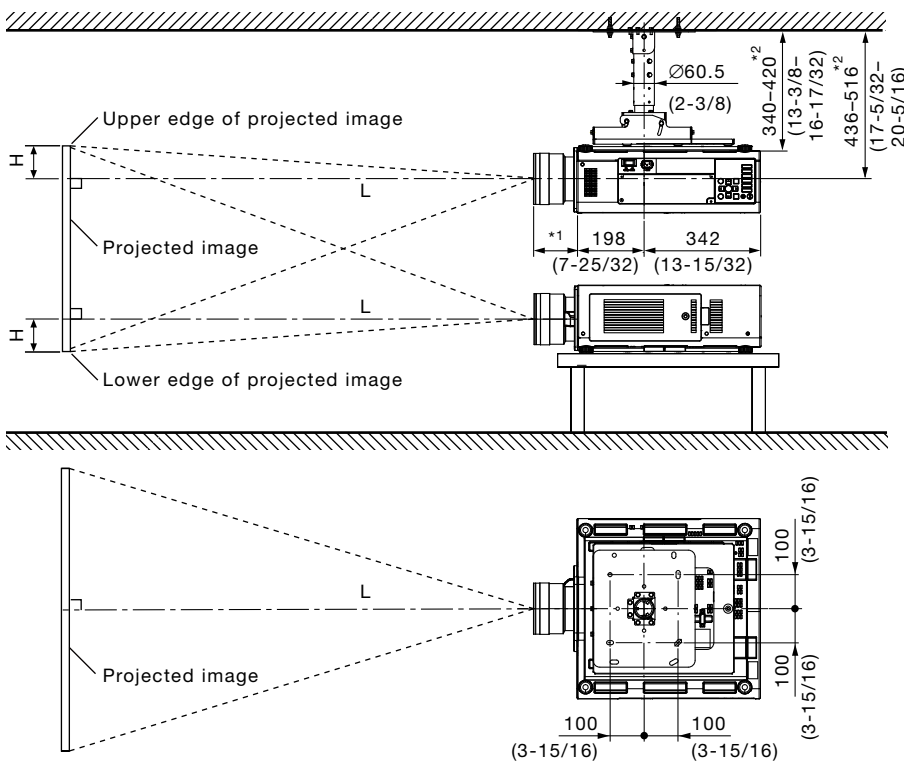unit : mm (inch)
NOTE: This illustration is not drawn to scale.

548.5 (21-19/32)
540 (21-1/4)
8.5 (11/32)

462 (18-3/16)
530 (20-7/8)

200 (7-7/8)
100 (3-15/16)
26 (1-1/32)
468 (18-7/16)

Terminals

1	Remote 1 input	8	Video input
2	Remote 1 output	9	S-Video input
3	Remote 2 input	10	RGB 1 input
4	Serial input	11	RGB 2 Input
5	Serial output	12	DVI-D input
6	SDI input	13	LAN connector
7	HDMI input		

Standard setting-up position (when installed using the ET-PKD310H)

Upper edge of projected image

Projected image

Lower edge of projected image

Ø60.5 (2-3/8)

198 (7-25/32)   342 (13-15/32)

340–420 (13-3/8–16-17/32) *2
436–516 (17-5/32–20-5/16) *2

Projected image

100 (3-15/16)
100 (3-15/16)
100 (3-15/16)
100 (3-15/16)

*1 When the lens protrudes to the maximum.
212 mm (8-11/32˝) with the ET-D75LE6
125 mm (4-29/32˝) with the ET-D75LE10
114 mm (4-1/2˝) with the ET-D75LE1
121 mm (4-3/4˝) with the ET-D75LE20
99 mm (3-29/32˝) with the ET-D75LE2
121 mm (4-3/4˝) with the ET-D75LE30
102 mm (4-1/32˝) with the ET-D75LE3
126 mm (4-31/32˝) with the ET-D75LE4
254 mm (10˝) with the ET-D75LE8
202 mm (7-15/16˝) with the ET-D75LE5

*2 Adjustable in 40 mm (1-9/16˝) steps.

unit : mm (inch)

Caution:
• All construction work should be done by a qualified technician.
• When mounting to the ceiling, use the special mounting bracket. To prevent the projector from swaying or dropping, attach the wire that is included with the projector between the mounting bracket and the ceiling.

PT-**DS8500**U

Projection distance for 4:3 aspect ratio screen
(ET-D75LE6/D75LE10/D75LE20/D75LE30/D75LE4/D75LE8/D75LE5)

Unit: millimeters

Screen size (inch, diagonal)	Distance to screen (L)												Height from the edge of screen to center of lens (H)		
	Zoom											Fixed-focus	Zoom lenses		Fixed-focus lens*
	ET-D75LE6 Zoom lens		ET-D75LE10 Zoom lens		ET-D75LE20 Zoom lens		ET-D75LE30 Zoom lens		ET-D75LE4 Zoom lens		ET-D75LE8 Zoom lens		ET-D75LE5 Fixed-focus lens	Except ET-D75LE6	ET-D75LE6	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.				
70	1,392	1,662	1,946	2,517	2,516	3,660	3,636	7,095	7,101	11,374	11,090	21,143	1,022	0 – 1,067	107 – 960	533
80	1,599	1,910	2,236	2,892	2,887	4,200	4,172	8,134	8,132	13,013	12,730	24,215	1,180	0 – 1,219	122 – 1097	610
90	1,806	2,158	2,526	3,267	3,259	4,739	4,708	9,173	9,163	14,653	14,369	27,286	1,338	0 – 1,372	137 – 1234	686
100	2,013	2,406	2,816	3,642	3,630	5,279	5,243	10,212	10,194	16,292	16,009	30,358	1,496	0 – 1,524	152 – 1372	762
120	2,427	2,902	3,397	4,393	4,372	6,358	6,315	12,290	12,255	19,571	19,288	36,502	1,812	0 – 1,829	183 – 1646	914
150	3,048	3,646	4,267	5,518	5,486	7,976	7,922	15,406	15,348	24,489	24,206	45,717	2,286	0 – 2,286	229 – 2057	1143
200	4,083	4,886	5,718	7,393	7,343	10,674	10,600	20,600	20,503	32,686	32,404	61,076	3,076	0 – 3,048	305 – 2743	1524
250	5,118	6,126	7,169	9,269	9,199	13,372	13,278	25,795	25,657	40,882	40,601	76,435	3,866	0 – 3,810	381 – 3429	1905
300	6,153	7,366	8,620	11,144	11,056	16,069	15,957	30,989	30,812	49,079	48,799	91,794	4,656	0 – 4,572	457 – 4,115	2,286
400	8,223	9,846	11,522	14,895	14,769	21,464	21,313	41,377	41,121	65,472	65,194	122,512	–	0 – 6,096	610 – 5,486	–
500	10,293	12,326	14,424	18,646	18,482	26,859	26,670	51,766	51,431	81,866	81,589	153,230	–	0 – 7,620	762 – 6,858	–
600	12,363	14,806	17,326	22,397	22,195	32,254	32,026	62,154	61,740	98,259	97,984	183,948	–	0 – 9,144	914 – 8,230	–

Unit: feet

Screen size (inch, diagonal)	Distance to screen (L)												Height from the edge of screen to center of lens (H)		
	Zoom											Fixed-focus	Zoom lenses		Fixed-focus lens*
	ET-D75LE6 Zoom lens		ET-D75LE10 Zoom lens		ET-D75LE20 Zoom lens		ET-D75LE30 Zoom lens		ET-D75LE4 Zoom lens		ET-D75LE8 Zoom lens		ET-D75LE5 Fixed-focus lens	Except ET-D75LE6	ET-D75LE6	
	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.				
70	4.6	5.5	6.4	8.3	8.3	12.1	12.0	23.3	23.3	37.4	36.4	69.4	3.4	0.0 – 3.2	0.4 – 3.2	1.4
80	5.3	6.3	7.4	9.5	9.5	13.8	13.7	26.7	26.7	42.7	41.8	79.5	3.9	0.0 – 3.6	0.5 – 3.6	1.7
90	6.0	7.1	8.3	10.8	10.7	15.6	15.5	30.1	30.1	48.1	47.2	89.6	4.4	0.0 – 4.1	0.5 – 4.1	1.9
100	6.7	7.9	9.3	12.0	12.0	17.4	17.3	33.6	33.5	53.5	52.6	99.6	5.0	0.0 – 4.5	0.5 – 4.6	2.1
120	8.0	9.6	11.2	14.5	14.4	20.9	20.8	40.4	40.3	64.3	63.3	119.8	6.0	0.0 – 5.4	0.7 – 5.5	2.5
150	10.0	12.0	14.0	18.2	18.0	26.2	26.0	50.6	50.4	80.4	79.5	150.0	7.5	0.0 – 6.8	0.8 – 6.8	3.1
200	13.4	16.1	18.8	24.3	24.1	35.1	34.8	67.6	67.3	107.3	106.4	200.4	10.1	0.0 – 9.0	1.1 – 9.0	4.1
250	16.8	20.1	23.6	30.5	30.2	43.9	43.6	84.7	84.2	134.2	133.3	250.8	12.7	0.0 – 11.3	1.3 – 11.3	5.2
300	20.2	24.2	28.3	36.6	36.3	52.8	52.4	101.7	101.1	161.1	160.2	301.2	15.3	0.0 – 13.5	1.5 – 13.6	6.2
400	27.0	32.4	37.9	48.9	48.5	70.5	70.0	135.8	135.0	214.9	213.9	402.0	–	0.0 – 18.0	2.1 – 18.0	–
500	33.8	40.5	47.4	61.2	60.7	88.2	87.5	169.9	168.8	268.6	267.7	502.8	–	0.0 – 22.5	2.5 – 22.5	–
600	40.6	48.6	56.9	73.5	72.9	105.9	105.1	204.0	202.6	322.4	321.5	603.6	–	0.0 – 27.0	3.0 – 27.1	–

- The value for L (distance to screen) varies slightly depending on the zoom lens characteristics.
- At the shortest projection distance, the zoom lens characteristics may cause slight image distortion.
- When vertical keystone correction is used, the image is corrected in the direction that reduces its projected size.

NOTE: When the fixed-focus lens is mounted, the optical lens shift function cannot be used.

Projection distance for 4:3 aspect ratio screen

(ET-D75LE1/D75LE2/D75LE3)

Unit: millimeters

Screen size (inch, diagonal)	Distance to screen (L)						Height from the edge of screen to center of lens (H)
	ET-D75LE1 Zoom lens		ET-D75LE2 Zoom lens		ET-D75LE3 Zoom lens		
	min.	max.	min.	max.	min.	max.	
70	2,071	2,768	2,801	4,215	4,225	7,095	0 – 1,067
80	2,378	3,178	3,213	4,832	4,842	8,126	0 – 1,219
90	2,685	3,588	3,624	5,449	5,460	9,157	0 – 1,372
100	2,991	3,998	4,036	6,066	6,077	10,188	0 – 1,524
120	3,605	4,818	4,859	7,301	7,312	12,250	0 – 1,829
150	4,525	6,047	6,093	9,153	9,163	15,342	0 – 2,286
200	6,059	8,096	8,151	12,239	12,250	20,497	0 – 3,048
250	7,593	10,145	10,209	15,326	15,336	25,652	0 – 3,810
300	9,126	12,195	12,266	18,412	18,423	30,806	0 – 4,572
400	12,194	16,293	16,381	24,585	24,596	41,116	0 – 6,096
500	15,261	20,391	20,497	30,758	30,768	51,425	0 – 7,620
600	18,329	24,490	24,612	36,931	36,941	61,734	0 – 9,144

Unit: feet

Screen size (inch, diagonal)	Distance to screen (L)						Height from the edge of screen to center of lens (H)
	ET-D75LE1 Zoom lens		ET-D75LE2 Zoom lens		ET-D75LE3 Zoom lens		
	min.	max.	min.	max.	min.	max.	
70	6.8	9.1	9.2	13.9	13.9	23.3	0.0 – 3.5
80	7.9	10.5	10.6	15.9	15.9	26.7	0.0 – 4.0
90	8.9	11.8	11.9	17.9	18.0	30.1	0.0 – 4.6
100	9.9	13.2	13.3	20.0	20.0	33.5	0.0 – 5.0
120	11.9	15.9	16.0	24.0	24.0	40.2	0.0 – 6.1
150	14.9	19.9	20.0	30.1	30.1	50.4	0.0 – 7.5
200	19.9	26.6	26.8	40.2	40.2	67.3	0.0 – 10.0
250	25.0	33.3	33.5	50.3	50.4	84.2	0.0 – 12.5
300	30.0	40.1	40.3	60.5	60.5	101.1	0.0 – 15.0
400	40.1	53.5	53.8	80.7	80.7	134.9	0.0 – 20.0
500	50.1	66.9	67.3	101.0	101.0	168.8	0.0 – 25.0
600	60.2	80.4	80.8	121.2	121.2	202.6	0.0 – 30.0

• The value for L (distance to screen) varies slightly depending on the zoom lens characteristics.
• At the shortest projection distance, the zoom lens characteristics may cause slight image distortion.
• When vertical keystone correction is used, the image is corrected in the direction that reduces its projected size.
NOTE: When the fixed-focus lens is mounted, the optical lens shift function cannot be used.

Calculation of the projection distance

For a screen size different from the above, use the equation below to calculate the projection distance.

Aspect ratio 4:3

Zoom lenses

ET-D75LE6	minimum	L (mm) = (diagonal screen size in inches) × 20.7 – 56.6
	maximum	L (mm) = (diagonal screen size in inches) × 24.8 – 73.6
ET-D75LE10	minimum	L (mm) = (diagonal screen size in inches) × 29.0 – 85.7
	maximum	L (mm) = (diagonal screen size in inches) × 37.5 – 108.5
ET-D75LE1	minimum	L (mm) = (diagonal screen size in inches) × 30.7 – 76.0
	maximum	L (mm) = (diagonal screen size in inches) × 41.0 – 100.4
ET-D75LE20	minimum	L (mm) = (diagonal screen size in inches) × 37.1 – 83.2
	maximum	L (mm) = (diagonal screen size in inches) × 54.0 – 116.2
ET-D75LE2	minimum	L (mm) = (diagonal screen size in inches) × 41.2 – 79.5
	maximum	L (mm) = (diagonal screen size in inches) × 61.7 – 106.4
ET-D75LE30	minimum	L (mm) = (diagonal screen size in inches) × 53.6 – 113.1
	maximum	L (mm) = (diagonal screen size in inches) × 103.9 – 176.5
ET-D75LE3	minimum	L (mm) = (diagonal screen size in inches) × 61.7 – 95.8
	maximum	L (mm) = (diagonal screen size in inches) × 103.1 – 121.6
ET-D75LE4	minimum	L (mm) = (diagonal screen size in inches) × 103.1 – 115.8
	maximum	L (mm) = (diagonal screen size in inches) × 163.9 – 101.3
ET-D75LE8	minimum	L (mm) = (diagonal screen size in inches) × 164.0 – 386.2
	maximum	L (mm) = (diagonal screen size in inches) × 307.2 – 359.8

Fixed-focus lens

ET-D75LE5		L (mm) = (diagonal screen size in inches) × 15.8 – 83.5

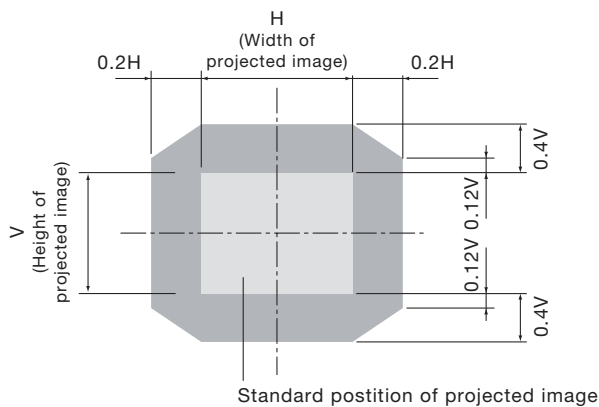• Distances calculated with the above equations will include slight deviations.

Shift range

Optical axis shift function allows to shift the position of a projected image as shown below.

• **When the lens except the ET-D75LE6 is mounted**

H
(Width of projected image)

0.3H   0.3H

0.5V

0.1V 0.1V

0.1V

0.5V

V
(Height of projected image)

Standard postition of projected image

• **When the ET-D75LE6 is mounted**

H
(Width of projected image)

0.2H   0.2H

0.4V

0.12V 0.12V

0.12V

0.4V

V
(Height of projected image)

Standard postition of projected image
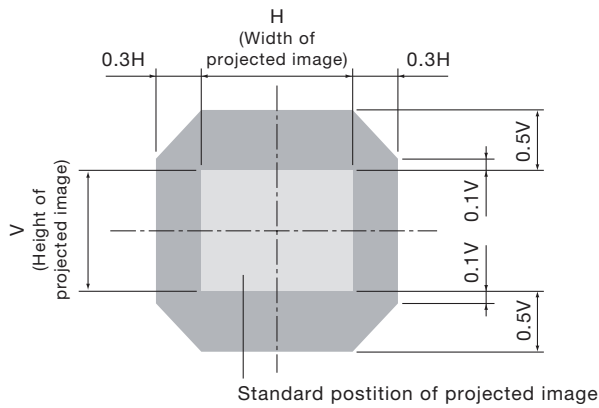
• **Because the ET-D75LE5 is a fixed short-throw lens, the lens shift function cannot be used with it.**

Installable angle

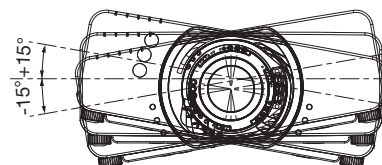Install the projector at an angle within the range shown below.

• **Vertical direction**
The projector may be installed at a vertical angle of 360°.

360°
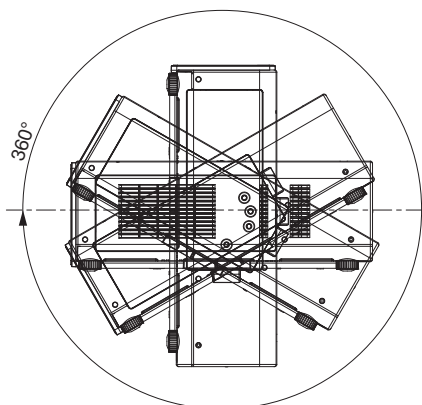
• **Horizontal direction**
The projector may be installed at a horizontal angle of ±15°.

-15°/+15°

List of compatible signals

The signals that can be input to this projector are shown in the table below. Horizontal scanning frequencies of 15 to 100 kHz, vertical scanning frequencies of 24 to 120 Hz, and a dot clock of 162 MHz maximum can be input.

NOTE: The native resolution of this projector is 1,400 × 1,050 pixels. If the display resolution of the input signal is different from the native resolution, image compression or expansion will be used to convert the input signal to a level within the native resolution.

Display mode	Display resolution (dots)[1]	Scanning frequency H (kHz)	V (kHz)	Dot clock frequency (MHz)	Format
NTSC/NTSC4.43/PAL-M/PAL6	720 × 480i	15.7	59.9	–	VIDEO/S-VIDEO
PAL/PAL-N/SECAM	720 × 576i	15.6	50.0	–	
480i (525i)	720 × 480i	15.7	59.9	13.5	SDI/RGB/YPвPʀ
576i (625i)	720 × 576i	15.6	50.0	13.5	
480p (525p)	720 × 483	31.5	59.9	27.0	HDMI/DVI-D/
576p (625p)	720 × 576	31.3	50.0	27.0	RGB/YPвPʀ
720/60p	1280 × 720	45.0	60.0	74.3	
720/50p	1280 × 720	37.5	50.0	74.3	
1080/60i	1920 × 1080i	33.8	60.0	74.3	
1080/50i	1920 × 1080i	28.1	50.0	74.3	
1080/24p	1920 × 1080	27.0	24.0	74.3	
1080/24sF	1920 × 1080i	27.0	24.0	74.3	
1080/25p	1920 × 1080	28.1	50.0	74.3	
1080/30p		33.8	60.0	74.3	
1080/60p		67.5	60.0	148.5	
1080/50p		56.3	50.0	148.5	
VGA400	640 × 400	31.5	70.1	25.2	HDMI/DVI-D/RGB
		37.9	85.1	31.5	
VGA480	640 × 480	31.5	59.9	25.2	
		35.0	66.7	30.2	
		37.9	72.8	31.5	
		37.5	75.0	31.5	
		43.3	85.0	36.0	
SVGA	800 × 600	35.2	56.3	36.0	
		37.9	60.3	40.0	
		48.1	72.2	50.0	
		46.9	75.0	49.5	
		53.7	85.1	56.3	
MAC16	832 × 624	49.7	74.6	57.3	
XGA	1024 × 768	39.6	50.0	51.9	
		48.4	60.0	65.0	
		56.5	70.1	75.0	
		60.0	75.0	78.8	
		65.5	81.6	86.0	
		68.7	85.0	94.5	
		80.0	100.0	105.0	
		96.7	120.0	130.0	
MXGA	1152 × 864	53.7	60.0	81.6	
		64.0	71.2	94.2	
		67.5	74.9	108.0	
		76.7	85.0	121.5	
MAC21	1152 × 870	68.7	75.1	100.0	
1280 × 700	1280 × 700	37.1	49.8	60.5	
		44.8	59.9	74.5	
1280 × 768	1280 × 768	39.6	49.9	65.3	
		47.8	59.9	79.5	
	1280 × 768[2]	47.4	60.0	68.3	
	1280 × 768	60.3	74.9	102.3	
		68.6	84.8	117.5	

1. The "i" appearing after the resolution indicates an interlaced signal.
2. WUXGA resolution is supported only when the signals are compliant with VESA CVT-RB (Coordinated Video Timing-Reduced Blanking).

| Display mode	Display resolution (dots)[1]	Scanning frequency H (kHz)	V (kHz)	Dot clock frequency (MHz)	Format
1280 × 800	1280 x 800	41.3	50.0	68.0	HDMI/DVI-D/RGB
		49.7	59.8	83.5	
	1280 x 800[2]	49.3	59.9	71.0	
	1280 x 800	62.8	74.9	106.5	
		71.6	84.9	122.5	
MSXGA	1280 x 960	60.0	60.0	108.0	
SXGA	1280 × 1024	52.4	50.0	88.0	
		64.0	60.0	108.0	
		72.3	66.3	125.0	
		78.2	72.0	135.1	
		80.0	75.0	135.0	
		91.1	85.0	157.5	
1366×768	1280 × 768	47.7	59.8	84.8	
		39.6	49.9	69.0	
SXGA+	1400 × 1050	54.1	50.0	99.9	
		64.0	60.0	108.0	
		65.2	60.0	122.6	
		65.3	60.0	121.8	
		78.8	72.0	149.3	
		82.2	75.0	155.9	
WXGA+	1440 × 900	55.9	59.9	106.5	
		46.3	49.9	86.8	
UXGA60	1600 × 1200	75.0	60.0	162.0	
WSXGA+	1680 × 1050	65.3	60.0	146.3	
		54.1	50.0	119.5	
1920×1080	1920 × 1080	55.6	49.9	141.5	
	1920 × 1080[2]	66.6	59.9	138.5	
	1920 × 1080	67.2	60.0	173.0	RGB
WUXGA	1920 × 1200	61.8	49.9	158.3	HDMI/DVI-D/RGB
	1920 × 1200[2]	74.0	60.0	154.0	
	1920 × 1200	74.6	59.9	193.3	RGB

1. The "i" appearing after the resolution indicates an interlaced signal.
2. WUXGA resolution is supported only when the signals are compliant with VESA CVT-RB (Coordinated Video Timing-Reduced Blanking).

3-Chip DLP® Projector   PT-**DS8500**U

Serial connector

The serial connector complies with RS-232C. To control the projector from a personal computer, commands must be input through communication software, based on the format and satisfying the communication conditions shown below.
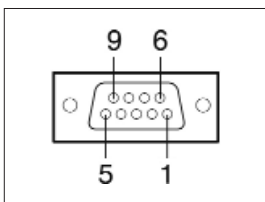
Pin assignments and signal names
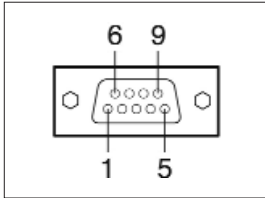
D-sub 9-pin (female)
Serial input

No.	Signal name	Description	No.	Signal name	Description
1	–	NC			
2	TXD	Send data	6	–	NC
3	RXD	Receive data	7	CTS	Connected internally
4	–	Connected internally	8	RTS	Connected internally
5	GND	Ground	9	–	NC

Pin assignments and signal names

D-sub 9-pin (male)
Serial output

No.	Signal name	Description	No.	Signal name	Description
1	–	NC			
2	RXD	Receive data	6	–	NC
3	TXD	Send data	7	RTS	Connected internally
4	–	Connected internally	8	CTS	Connected internally
5	GND	Ground	9	–	NC

Communication conditions (factory setting)

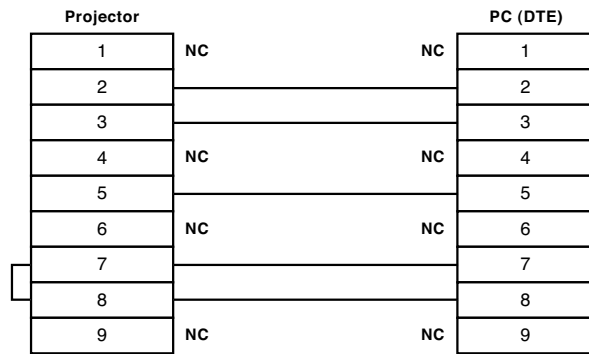|	
Signal level	RS-232C-compliant
Synchronization method	Start-stop synchronization
Baud rate	9,600 bps
Parity	None
Character length	8 bits
Stop bit	1 bit
X parameter	None
Y parameter	None

Basic format

Transmission from the computer begins with STX, then the ID, command, parameter, and ETX are sent in this order. Add parameters according to the details of control.

| STX | A D | I1 I2 | ; | C1 C2 C3 | : | P1 P2 ... Pn | ETX |

Start
(1 byte)

ID 2 characters
(2 bytes)

Semicolon
(1 byte)

Command
(3 bytes)
(Control and/or query commands)

Colon
(1 byte)

Parameters
(undefined length)

End
(1 byte)

ID designator:
01 to 64: Address number
0A to 0Z: Group ID
ZZ: All units (ID ALL)
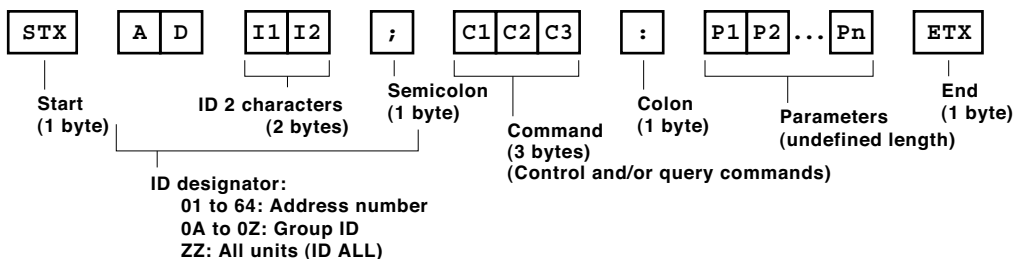
CAUTION
• It may not be possible to send or receive commands for about 10 to 60 seconds when the lamp is first turned on. If this occurs, wait for 60 seconds, then try sending or receiving again.
• When sending multiple commands, be sure to wait for at least 0.5 second after receiving a response from the projector before sending the next command.
• Additional time is sometimes required for response due to processing inside the projector. Set the time-out period for command response to 10 seconds or more.

SFD10M002   **Panasonic**

Cable specifications

Projector			PC (DTE)
1	NC	NC	1
2			2
3			3
4	NC	NC	4
5			5
6	NC	NC	6
7			7
8			8
9	NC	NC	9

Control commands

Command : Parameter	Function		Callback
`PON`	POWER (STANDBY)	Standby power on	`PON`
`POF`		Standby power off	`POF`
`IIS:SDI`	INPUT SELECT	SDI	`IIS:SDI`
`IIS:HD1`		HDMI	`IIS:HD1`
`IIS:DVI`		DVI	`IIS:DVI`
`IIS:RG1`		RGB 1	`IIS:RG1`
`IIS:RG2`		RGB 2	`IIS:RG2`
`IIS:VID`		Video	`IIS:VID`
`IIS:SVD`		S-Video	`IIS:SVD`
`LPM:0`	LAMP SELECT	Dual (two lamps)	`LPM:0`
`LPM:1`		Single (one lamp)	`LPM:1`
`OSH:0`	SHUTTER	Shutter off	`OSH:0`
`OSH:1`		Shutter on	`OSH:1`
`OPP:0`	P IN P SELECT	Off	`OPP:0`
`OPP:1`		User 1	`OPP:1`
`OPP:2`		User 2	`OPP:2`
`OPP:3`		User 3	`OPP:3`
`OAS`	AUTO SETUP		`OAS`
`VPM:NAT`	PICTURE MODE	Natural	`VPM:NAT`
`VPM:STD`		Standard	`VPM:STD`
`VPM:DYN`		Dynamic	`VPM:DYN`
`VPM:CIN`		Cinema	`VPM:CIN`
`VPM:GRA`		Graphic	`VPM:GRA`
`VPM:DIC`		DICOM	`VPM:DIC`
`VXX:DLVI0=+00000`	SYSTEM DAYLIGHT VIEW 2	Off	`VXX:DLVI0=+00000`
`VXX:DLVI0=+00001`		1	`VXX:DLVI0=+00001`
`VXX:DLVI0=+00002`		2	`VXX:DLVI0=+00002`
`VXX:DLVI0=+00003`		3	`VXX:DLVI0=+00003`
`OTE:4`	COLOR TEMPERATURE	User 1	`OTE:4`
`OTE:9`		User 2	`OTE:9`
`OTE:10`		Default	`OTE:10`
`OTE:p1p2p3p4`		3200 K – 9300 K (100 K steps)	`OTE:p1p2p3p4`
`TSD:y1y2y3y4m1m2d1d2w`	DATE	Date setting	`TSD:y1y2y3y4m1m2d1d2w`
`TST:h1h2m1m2s1s2`	TIME	Time setting	`TST:h1h2m1m2s1s2`
`OOS:0`	ON SCREEN	On-screen display off	`OOS:0`
`OOS:1`		On-screen display on	`OOS:1`

* Do not send PON, POF, OSH, or OLP commands continuously in a short period of time. Doing so may burst the lamp or shorten the lamp replacement cycle.

* When a command that cannot be executed during standby mode is sent, the projector will send an ER401 command in reply.

Status asking commands

Command:Parameter	Function	Callback	Description
QPW	Main power status	000	Standby (Off)
		001	On
QSH	Shutter function status	0	Off
		1	On
QFZ	Freeze function status	0	Off
		1	On
QIN	Input signal status	SDI	SDI
		HD1	HDMI
		DVI	DVI
		RG1	RGB 1
		RG2	RGB 2
		VID	Video
		SVD	S-Video
QOS	On-screen display status	0	Off
		1	On
QST	Projector run time	p1p2p3p4p5	00000h−99999h
Q$L:1	Lamp 1 run time	p1p2p3p4	0000h−9999h
Q$L:2	Lamp 2 run time	p1p2p3p4	0000h−9999h
QSL	Lamp operation mode status	0	Dual (two lamps)
		1	Single (one lamp)
QLP	Lamp power mode status	0	High
		1	Low
QPM	Picture mode status	NAT	Natural
		STD	Standard
		DYN	Dynamic
		CIN	Cinema
		GRA	Graphic
		DIC	DICOM
QVX:DLVI0	System daylight view status	DLVI0=+00000	Off
		DLVI0=+00001	1
		DLVI0=+00002	2
		DLVI0=+00003	3
QPP	P in P status	0	Off
		1	User 1
		2	User 2
		3	User 3
QTM:0	Temperature status	p1p2p3p4/p5p6p7p8 [*1]	p0 = Intake air
QTM:1			p1 = Around lamp
QTM:2			p2 = Optics module
QGD	Date setting status	y1y2y3y4m1m2d1d2w	yyyymmdd (day of week) [*2]
QGT	Time setting status	h1h2m1m2s1s2	hhmmss [*3]

∗1 p1p2p3p4: Celsius (°C), p5p6p7p8: Fahrenheit (°F)
∗2 Day of week: Monday = 1, Tuesday = 2, ... Sunday = 7
∗3 Set the date and time to UTC (universal time coordinated).

Command example

To set the on-screen display off, send the command as shown below.

$$\text{STX} \quad \text{ADZZ} \quad ; \quad \text{OOS} \quad : \quad 0 \quad \text{ETX}$$

| Start | ID Address | Command | Parameter | End |

NOTE: When sending commands without parameters, a colon (:) is not necessary.

Panasonic

Notes on projector placement and operation

The projector uses a high-wattage lamp that becomes very hot during operation. Please observe the following precautions.

1. Never place objects on top of the projector while it is operating.
2. Make sure there is an unobstructed space of 500 mm (19-11/16˝) or more around the projector's exhaust openings.
3. Do not stack projector units directly on top of one another. If two units must be stacked for back-up use in ordinary projection, use a method as shown below and provide ample space between the units to ensure that exhaust heat does not accumulate near the intake opening or around the units. Dual stacked projection is not recommended.
4. Make sure that nothing blocks the projector's air intake and exhaust openings. Also, install the projector so that cool or hot air from other air conditioning equipment does not flow directly toward the projector's air intake or exhaust openings.
5. Do not install the projector in an enclosed space. If it is necessary to install it in an enclosed space, add a separate ventilation system. If ventilation is insufficient, hot air will accumulate at the intake opening. This may cause the projector's protective circuit to interrupt projector operation, or may shorten the replacement cycle for the Auto Cleaning Filter (ACF) Unit.
6. If the projector is installed in an enclosed space, ensure that the temperature of the air surrounding the projector is between 0°C (32°F) and 40°C (104°F). Also make sure that the projector's intake and exhaust openings are not blocked. Even though the air surrounding the projector is 40°C (104°F) or less, if hot exhaust air accumulates inside the space, it may cause the projector's protective circuit to interrupt projector operation, or may shorten the replacement cycle for the ACF Unit. Pay particular attention to the surrounding temperature conditions when planning the installation.
7. If the projector is not to be set on the floor using adjuster legs, install it by using the five ceiling-mount screw holes (screw diameter: M6, length of each screw hole in the projector: 8 mm (5/16˝)). Provide a space of 5 to 10 mm (3/16˝ to 13/32˝) between the projector and the mounting surface by inserting metal spacers.
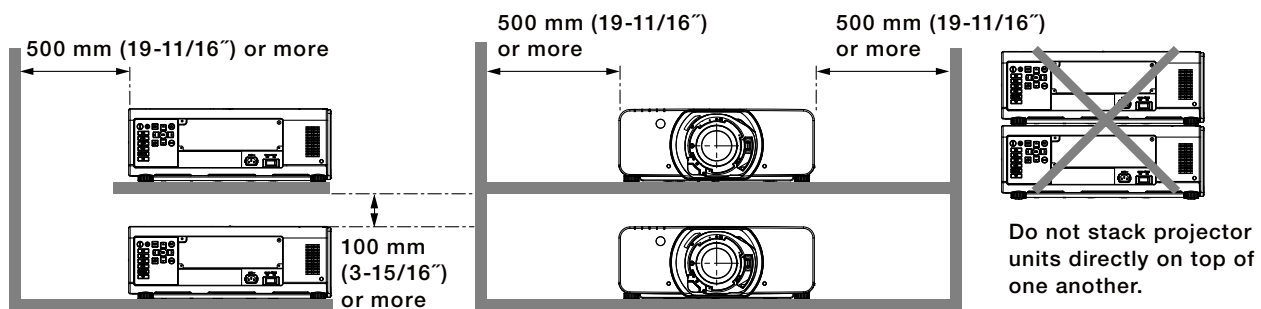
Direction of air intake and exhaust
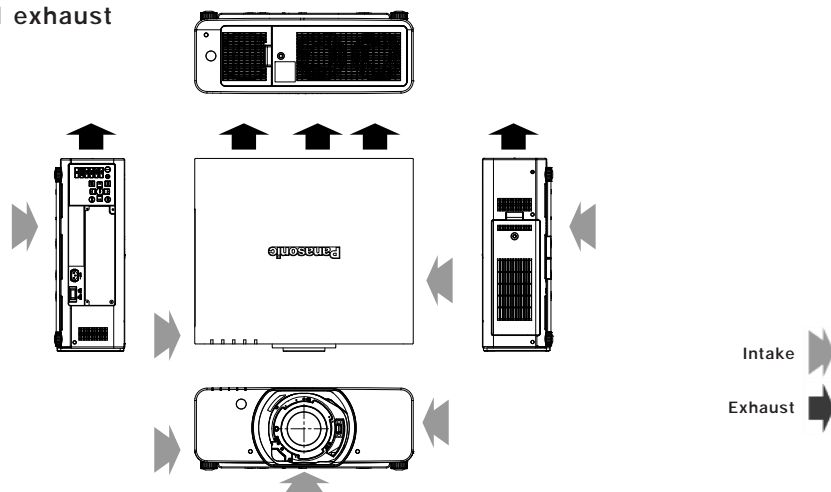
Operating the projector continuously

1. If the projector is to be operated continuously 24 hours a day, use the dual-lamp optical system's alternating lamp operation (lamp changer) function. The projector cannot be operated continuously 24 hours a day in dual-lamp mode.
    Allow a minimum of two hours per day of non-operation time.
2. The lamp replacement cycle duration becomes shorter if the projector is operated repeatedly for short periods.

Replacing the filter unit

The projector is equipped with the Auto Cleaning Filter (ACF) function, which automatically winds the air filter to set a new filter element in place according to operating conditions. The filter unit replacement cycle is approximately 10,000 hours*. Please purchase the ET-ACF310 filter unit for replacement use.

* The replacement cycle given here is a guideline. It may differ depending on the usage environment.

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