

CMOS Camera DU Series



Thermal Design Manual

Ver.1.0

※This document is the reference data for using it on condition of “Performance assurance temperature : 0 ~ 40°C” or “Operation assurance temperature : -5 ~ 45°C” currently written in an operation manual “Operation Ambient condition”

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Contents of this document are subject to change for improvement without notice

1. Overview

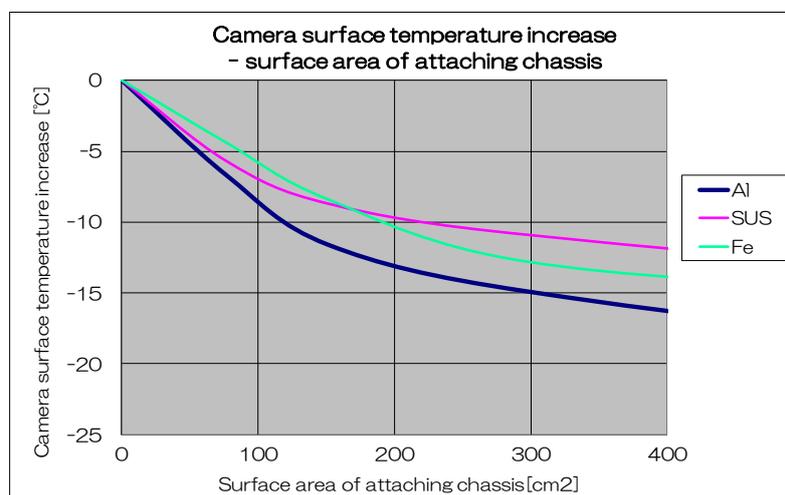
This camera has extremely high frame rate, compact size and light weight.

Even some customers might be worried about heat because the products have compact size and high frame rate. However, by devising general lens mounting and installation conditions to chassis, this camera can be used comfortably in high surrounding temperature.

This document contains supporting data of thermal design with customer’s machines or equipment.

2. The relation between the surface temperature of camera housing and the materials of attaching chassis

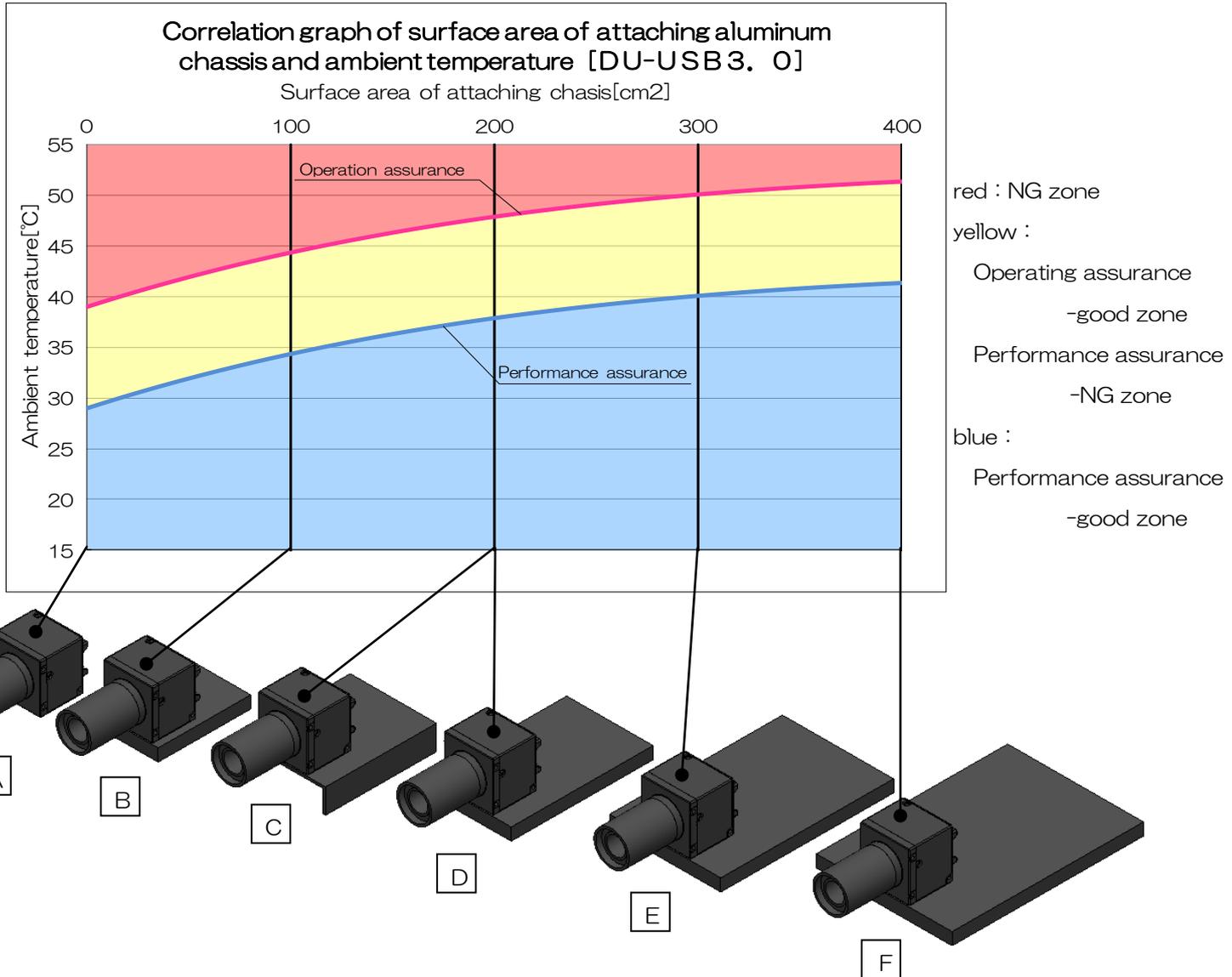
The relation of camera surface temperature increase and surface area of attaching chassis is plotted in thermal simulation with attaching chassis of each material of three kinds. Below graph shows Al (black color) is the most preferable as material of attaching chassis.



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3. Representative model using aluminum attaching chassis “DU-USB3. 0”

The graph below shows a correlation between surface area of attaching aluminum chassis and ambient temperature. By using a attaching chassis that size matches the ambient temperature, the camera can be used in “Performance assurance temperature : 0 ~ 40°C” or “Operation assurance temperature : -5 ~ 45°C” .



Setting condition		
	Attaching chassis [mm]	Surface area [cm ²]
A	NIL	-
B	t10x50x75	approx.100
C	t2x70x90(Bending height : 20)	approx.200
D	t10x70x115	approx.200
E	t10x90x140	approx.300
F	t10x110x155	approx.400

<About the graph>
 If using in performance assurance range, ambient temperature should be below 29°C in case of no attaching chassis. The camera can be used in ambient temperature of approximately 40°C by using **E** or equivalent attaching chassis. If using in operating assurance range, ambient temperature should be below 39°C in case of no attaching chassis. The camera can be used in ambient temperature of approximately 45°C by using **C** or **D** or equivalent attaching chassis.

Above correlation graph is based on representative value of DU series cameras. Correlation between attaching chassis area and ambient temperature varies depend on model. Please check attaching chassis size with thermal design guide line of “Documents” tub in below link according to ambient temperature.
http://www.toshiba-teli.co.jp/en/products/industrial/usb/du_usb3.htm