teli

iIS

Intelligent Image Sensor

iIS-010 series

TK6234A5 : iIS-010

TK6238A7 : iIS-011

TK6240A5 : iIS-012

Product Specification

TOSHIBA TELI CORPORATION

The contents of this product specification may be revised without notice to reflect future product modifications. Please confirm the functions and the specifications on the latest specification sheet.

(Total 29 pages)

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1. Product Description

"intelligent image sensor" iIS-010 series is an integrated image processing system consists of CCD camera head, control unit, and application software. iIS-010 series is a pre-packaged solution designed to simplify the deployment of machine vision in industrial applications.

2. Features

(1) High measurement accuracy

High measurement precision finds small defects in manufactured parts.

(2) Double speed VGA sensor

Remote head VGA sensor connected through a single cable with all camera electronics contained within the iIS assembly. The camera electronics support a 60Hz progressive scan frame rate.

(3) Interface for industrial applications

Industrial and intelligent I/O interfaces for part type (job code), part inspection, part decision and light control.

(4) Standard interfaces

Standard serial and Ethernet 10/100baseT communication interfaces for configuration and data reporting.

(5) Graphical user interface

Intuitive step-by-step configuration and monitoring GUI, accessible through a standard Microsoft browser page and available in two languages (English and Japanese).

(6) Local Scaling / Global Scaling

Simple calibration procedure which factors out both perspective and non-linear lens distortions, provides high measurement accuracy. And measurement in metric, English or pixel, supports unique system requirements.

(7) History reports

Customer-defined history reports including parts images records information on recent passed, failed and reworked parts; key measures; specifics on which part failed to enable diagnosis. Provides a history of recent good and bad label images enables you to monitor and spot error trends on a line.

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(8) Gauge Application

Comprehensive set of gauging tools gives you the ability to precisely and accurately measure lines, angles between lines, ellipses and circles (center, circularity or out-of-round, nicks, major and minor axes),arcs (centers and lengths), Annuli, thread spacing ("wave tool "),multiple measures of length and spacing of parts such as pins on an electrical connector ("rake tools "),and other part measures.

(9) Label Application

User-defined features including label rotation, movement, rejection thresholds enables you to define your label quality criteria. All settings are quickly defined and changed using a sliding bar from "lower" to "higher". Automatic learning of good labels, using a proprietary neural net learns labels and variations.

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3. Configuration

Hardware

iIS-010	Camera Head: 20mm square type ·· 1
	Camera cable: Direct Fixing (2m) ··· 1
	*Cable fixing direction: (viewed from rear) Right
	Control Unit (iIS-010 series compatible) ·· 1
iIS-011	Camera Head: φ17mm type ··· 1
	Camera cable: Separated type (2m) ··· 1
	*Cable fixing direction: (viewed from rear) Rear
	Control Unit (iIS-010 series compatible) ·· 1
iIS-012	Camera Head: C mount head type ··· 1
	Camera cable: Direct Fixing (2m) ··· 1
	*Cable fixing direction: (viewed from rear) Right
	Control Unit (iIS-010 series compatible) ·· 1

Accessories

Ethernet crossover cable	KB-10T5-03CK (Sanwa-supply, 3m) ·································· 1
DIN rail mounting kit	CKD-80 (Takachi Denki)·· 2
Screws for the mounting kit	PB3X10BS-NI·· 4
Plug for power cable	39860-1002 (MOLEX, 2 terminal type)······························ 1
Plug for parallel I/O cable	1-1546208-5 (AMP/Buchanan, 15 pin type) ························ 1
Floppy Disk	Including switching application file································· 1
Operation Manuals	Basics (Japanese)·· 1
	Basics (English)·· 1
	Applications (Japanese) ·· 1
	Applications (English) ··· 1
Calibration sheet	A4 size ·· 1

*Ethernet® is a trademark of Xerox Corporation U.S.

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Software

iIS Web pages	for viewing on Internet Explorer® (Installed)
iWorks(Gauge)	Application for Gauge (Auto download from the control unit)
iWorks(Label)	Application for Label (Auto download from the control unit)
iAssistant	Application for Upgrade (Auto download from the control unit)
iServer	Application for monitoring connection status (Installed)
HTML Help	Microsoft® online help for Gauge / Label application
Switch To Gauge	Binary File for switching to Gauge (including in the floppy disk)
Switch to Label	Binary File for switching to Label (including in the floppy disk)
Others	ActiveX® control libraries (Auto download from the control unit)

*Microsoft®, Windows®, Microsoft® Internet Explorer, and ActiveX® are registered trademarks of Microsoft Corporation, U.S., in the U.S. and other countries.

Optional Accessories

Camera Lens

For iIS-010	Dedicated lenses (M10.5 P0.5 female)
For iIS-011	Dedicated lenses (M15.5 P0.5 male)
For iIS-012	C mount lenses

Camera mounting kit

For iIS-010	CPT4310A / CPT4310B
For iIS-011	CPT5130
For iIS-012	CPT5110

*Please contact your dealer / distributor for details of option units.

Peripheral Devices (compatibility verified)

DC Power supply	PS5R-D24 (Idec)
PC	DynaBook 2590X (Windows® 2000 Japanese / English)
Local Display	RDF17S (Mitsubishi)

*Please contact your dealer / distributor for the other peripheral devices.
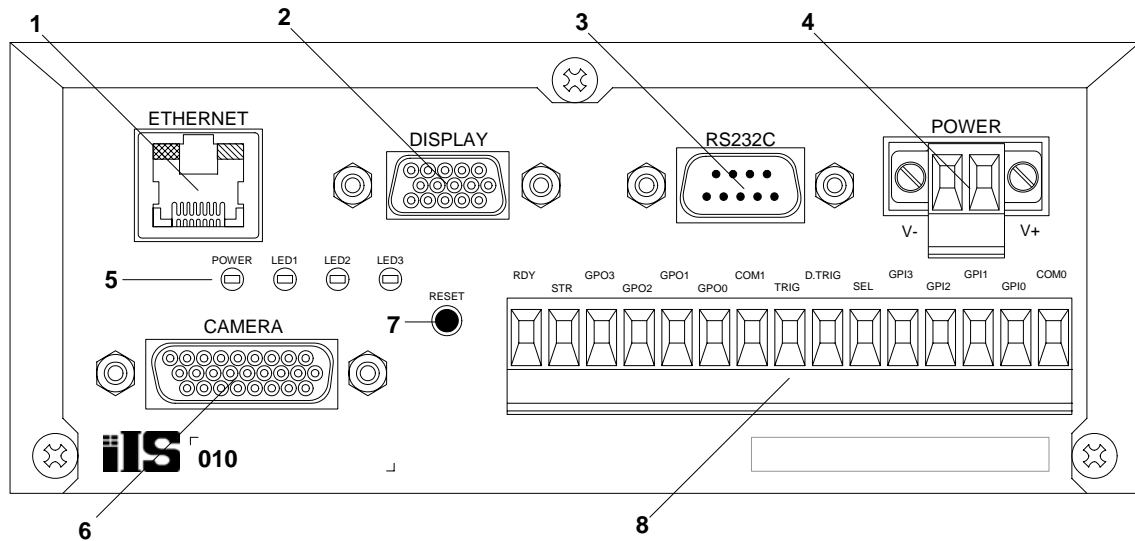
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4. Name and Function of Parts

Figure 1. Control unit (Front-panel side)

1. RJ45 connector for Ethernet

    Connect with PC or PLC by using Ethernet cable.

2. Local Display connector

    A XGA Monitor can be connected directly to the control unit, for local display of the camera image.

3. RS-232C connector

    Connect with PC or PLC by using the crossover RS-232C cable.

4. Power connector

    Connect the DC Power Supply (+24V DC ±10%) to the control unit power connector.

5. LED indicator

    POWER: power-on indicator   - steady green

    LED1:   server "heartbeat"   - slow flashing green

    LED2:   acquisition (frame) done (or processing start)   rapid flashing green

    LED3:   reserved for future use   steady off

6. Camera connector

    Connect the control unit and camera head with the camera cable provided with iIS-010 series kits.

7. Reset button

    Reset the control unit or reset to the factory default.

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8. Parallel I/O

    8 inputs and 7 outputs parallel I/O.

Table 1. Parallel I/O terminal functions

NAME	I/O	Function	Name	I/O	Function
COM0	I	Common for inputs	COM1	O	Common for outputs
GPI0	I		GPO0	O	Result (Pass) output
GPI1	I	Select solution input (4bit, ID00~15)	GPO1	O	RESERVE
GPI2	I		GPO2	O	Result (Recycle) output
GPI3	I		GPO3	O	Result (Reject) output
SEL	I	Change solution input	STR	O	Strobe pulse output
D.TRIG	I	Decision trigger input	RDY	O	Ready signal output
TRIG	I	Inspection trigger input			

COM0:   Common input for all other inputs.

GPI0 ~ 3:   4 inputs for solution selection. This is a BCD code representing 16 different solutions that can be loaded.

SEL: 1 input for job change - This input will generate an interrupt to the CPU informing it that a line changeover is taking place. The system will then load one of 16 predefined solutions according to the BCD code present on the job selection inputs. During this process, the ready signal will go OFF indicating a busy state.

D.TRIG: 1 decision trigger input representing detection of a valid part to make a decision on. Decisions are queued following every inspection.

TRIG   1 inspection trigger input representing detection of a valid part to inspect.

COM1:   Common output for all other outputs.

GPO0 ~ 3:   4 outputs for pass, fail, rework and reserve

STR: 1 strobe light control with offset and pulse width programmable.

RDY: 1 ready indicator. This OUTPUT will be active when the iIS system is available to process parts. It is a level sensitive signal where a ON indicates the system is available and a OFF indicates that it is busy, not configured or unable to continue due to a catastrophic event.
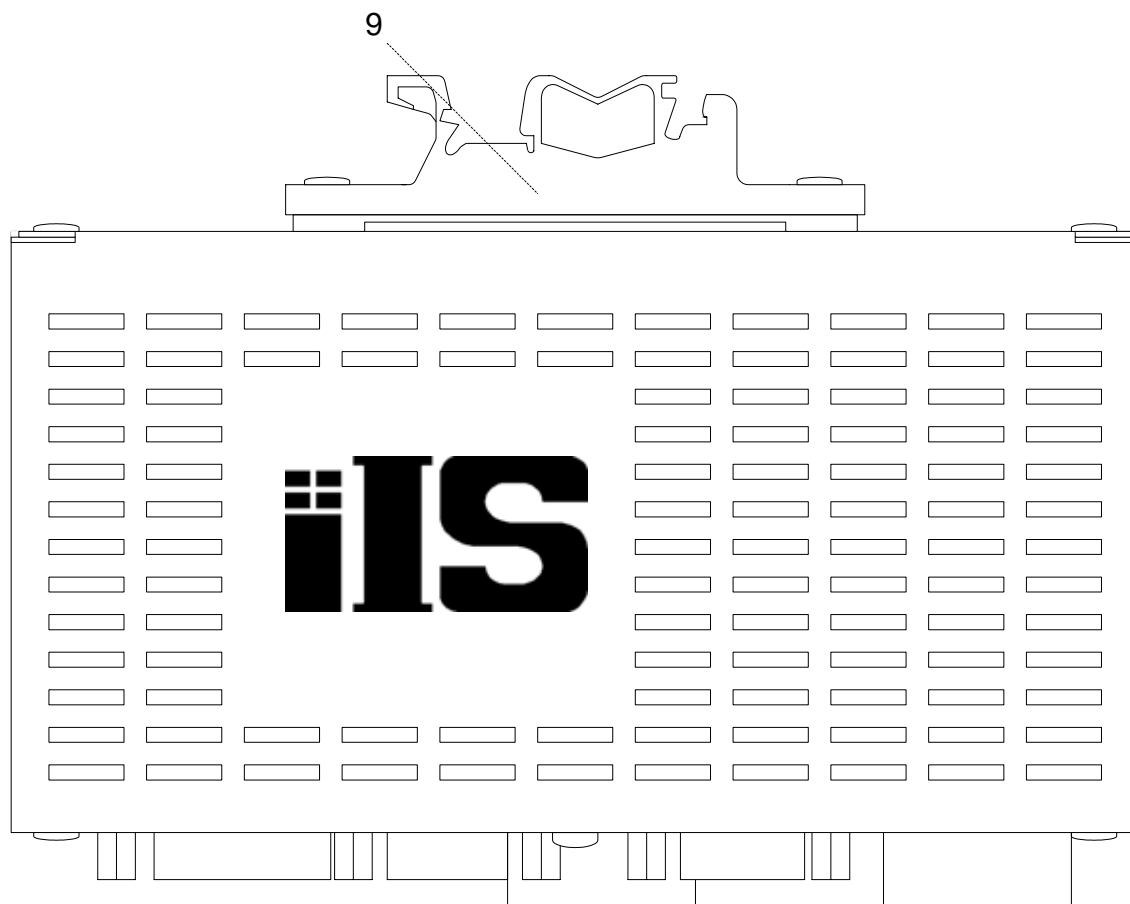
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Figure 2. Control unit (top view)

9. Mounting kits for DIN rail

You can mount with 32mm / 35mm width type DIN rail.

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5. Specification

[General Specification]

Power Supply	+24V DC ±10% Ripple voltage: 50mV$_{P-P}$ or less
Power Consumption	10W or less (+24V DC
Operating Temperature	0 °C ～ +40 °C
Operating Humidity	30 % ～ 85 %RH (No condensing)
Storage Temperature	-20 °C ～ +60 °C
Storage Humidtity	10 % 95 %RH (No condensing)

EMC conditions (Electro-Magnetic Compatibility)

EMI (Electro-Magnetic Interference)   EN50081-2 (Examination level: EN55011-A) Conformity

EMS (Electro-Magnetic Susceptibility)   EN61000-6-2 Conformity

* Conformity of EMC conditions
    About the conformity of the EMC standard of this machine, it has guaranteed in the conditions combined with the peripheral devices of the 3rd clause.
    When used combining parts other than specification of our company, I ask you to have final EMC conformity checked of a visitor with a machine and the whole equipment.

[Camera head specification]

Image sensor	All Pixel's Data Read-out Interline CCD
Total pixels	692 (H) × 504 (V)
Valid pixels	648 (H) × 494 (V)
Unit cell size	7.4 (μm) × 7.4 (μm)
Sensitivity	400lx, F5.6 (Exposure time = 1/60s

External Dimensions

iIS-010	20 (W) × 20 (H) × 25 (D) mm
iIS-011	φ17 × 36.2 (D) mm
iIS-012	φ35 × 40 (D) mm

Lens mount

iIS-010	Special mount (M10.5 P0.5 female)
iIS-011	Special mount (M15.5 P0.5 male)
iIS-012	C mount

Weight

iIS-010	Approx. 19g (Excluding cable)
iIS-011	Approx. 16g (Excluding cable)
iIS-012	Approx. 55g (Excluding cable)

Camera cable length   2m (iIS-010 series)

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Relative Spectrum Response (*Including lens characteristics, Excluding light source characteristics)
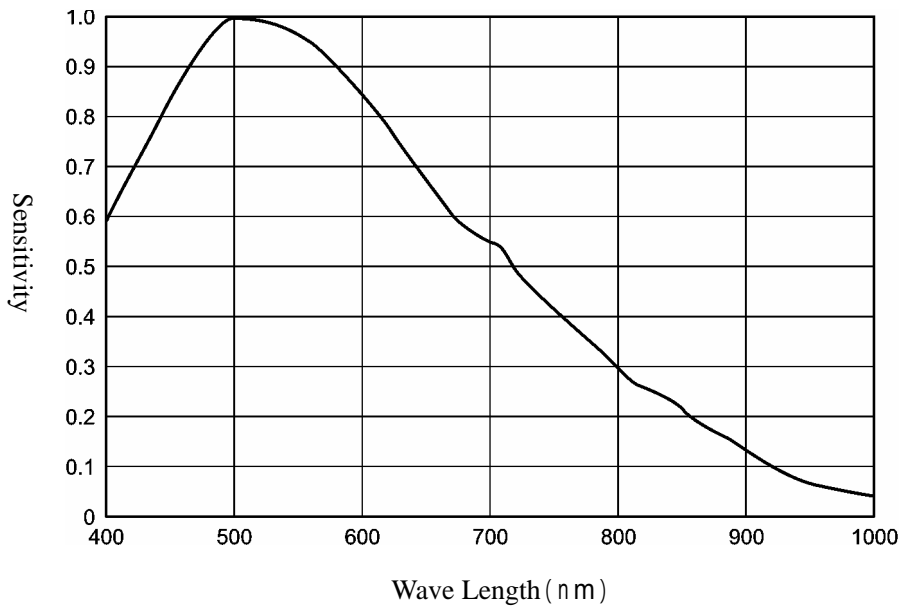

Figure 3. Relative Spectrum Response

[Control Unit]

Camera input	1
Video output pixels	640 (H) × 480 (V)
Quantization	10bit gray scale
Processing	8bit gray scale
Video format	Non-Interlace
Sensor Trigger mode	Selectable Internal Timer or External trigger
Exposure time	Settable from 1 to 1024 (1 step = Approx. 60μs)
Brightness	Approx. 3 ~ 19 LSB (8 bit
Contrast	Approx. ±4dB
Processor	266MHz Intel compatible SOC processor
Memory	64MB image acquisition and processing
	32MB program and solution (job) storage
Device Name	NS2***** (Default)
IP address	192.168.0.100 (Default)
Subnet Mask	255.255.0.0 (Default)
MAC address	00-01-0D-**-**-** (* Unique ID)
DHCP	Disabled (Default)
DHCP server	Not Available (Default)
Primary WINS server	000.000.000.000 (Settable on the web page)

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Secondary WINS server   Not Available (Default)

Interfaces

  Ethernet   1ch

    Connector   RJ-45

Table 2. Ethernet connector pin assignment

Pin #	I/O	Teminal function
1	O	TD+ (Transmit data +)
2	O	TD- (Transmit data -)
3	I	RD+ (Receive data +)
4	-	NC
5	-	NC
6	I	RD- (Transmit data -)
7	-	NC
8	-	NC

  Connection Type   10/100 BaseT Ethernet

                               IEEE 802.3 compatible

                               10/100 BaseT Auto Sence

  Protocol   HTTP, ICMP, DHCP, TCP/IP

  LED indicator   Orange indicates for working on 100BaseT

                               Green indicates for working on 10BaseT

                               Light on indicates for linking Ethernet

                               Blink indicates for working communication

  Cables   Twisted Pair (Category 5e or greater)

  Maximum cable length   100m (Unshielded Twisted Pair cable

DISPLAY   1ch

  Connector   D-SUB 15 pin, Right Angle, female

Table 3. Local Display connector pin assignment

Pin #	Terminal Function	Pin #	Terminal Function
1	Red Data	9	NC
2	Green Data	10	GND
3	Blue Data	11	NC
4	NC	12	NC
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	NC
8	GND		

  Scanning type   Progressive

  Video signal level $0.7V_{P-P}$ (75Ω terminated)

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for sync on green, 1.0 V_{P-P} (75 Ω terminated)

(Video signal: 0.7 V_{P-P}, sync signal: 0.3 V_{P-P})

Sync signal	Separate sync
Horizontal sync frequency	56.4kHz
Vertical sync frequency	70Hz
Image resolution	1024 × 768 × 16bpp
Sampling resolving power	R=5bit, G=6bit, B=5bit

RS-232C	1ch
Connector	D-SUB 9pin, Male

Table 4. RS-232C connector pin assignment

Pin #	I/O	Description	Pin #	I/O	Description
1	-	NC	6	-	NC
2	I	RX (Receive Data)	7	-	NC
3	O	TX (Transmit Data)	8	-	NC
4	-	NC	9	-	NC
5	-	Ground			

|	
Control type	RS-232C (Non-procedure)
Bit rate	110 / 300 / 600 / 1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 bps
	*230400 / 460800 / 921600 bps are not supported.
Data bits	5 / 6 / 7 / 8
Stop bits	1 / 1.5 / 2
Parity	Odd / Even / None / Mark / Space
Flow Control	None

Parallel I/O	8 inputs (COM0 / GPI0 ~ 3 / SEL / D.TRIG / TRIG)
	7 outputs (COM1 / GPO0 ~ 3 / STR / RDY)
Connector	Terminal Block (1-1546208-5 supplied by AMP)

Input circuit
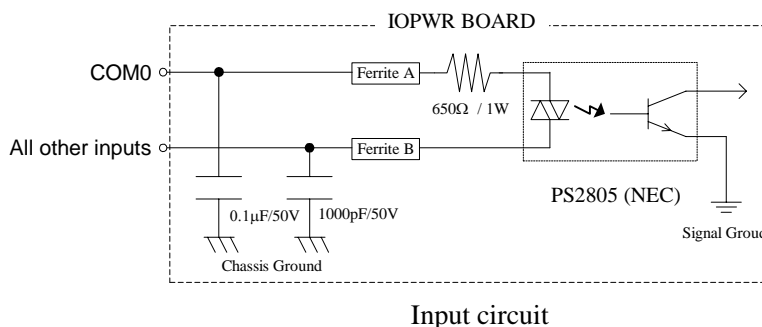
Rated input voltage	25V (1ch)	
Input voltage range	0V to 25V	
Input voltage level	ON: 5V to 25V	
	OFF: 0.8V or less	
Input current level	ON: 5mA to 20mA	
	OFF: 1.9mA or less	
Control signal inputs	3ch	
TRIG	Inspection Trigger input	
D.TRIG	Decision Trigger input	
SEL	Change Solution input	
Polarity	Positive	
Minimum pulse width	200μ	
Select Solution Inputs	4ch	

Table 5. Select Solution Inputs

|	GPI3	GPI2	GPI1	GPI0
ID_00	OFF	OFF	OFF	OFF
ID_01	OFF	OFF	OFF	ON
ID_02	OFF	OFF	ON	OFF
ID_03	OFF	OFF	ON	ON
ID_04	OFF	ON	OFF	OFF
ID_05	OFF	ON	OFF	ON
ID_06	OFF	ON	ON	OFF
ID_07	OFF	ON	ON	ON
ID_08	ON	OFF	OFF	OFF
ID_09	ON	OFF	OFF	ON
ID_10	ON	OFF	ON	OFF
ID_11	ON	OFF	ON	ON
ID_12	ON	ON	OFF	OFF
ID_13	ON	ON	OFF	ON
ID_14	ON	ON	ON	OFF
ID_15	ON	ON	ON	ON

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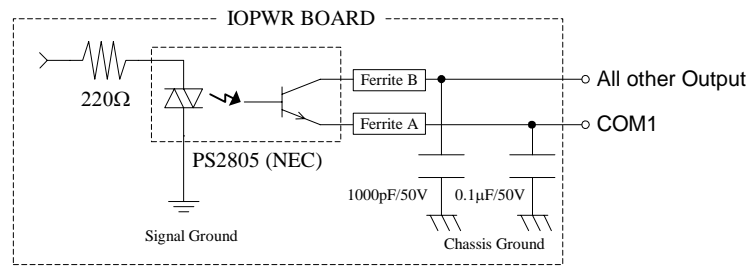
Output circuit

Rated Voltage	80V (Collector to Emitter)
Reverse voltage	-6V (Emitter to Collector)
Total Power Dissipation	120mW
Load voltage range	5V to 24V
Rated output current	50mA
Decision outputs	4ch
GPO0	Pass output
GPO1	RESERVE
GPO2	Recycle output
GPO3	Reject output
Light control output (STR)	1ch
READY output (RDY)	1ch
	OFF: Booting the control unit / When changing solution
	ON: After boot, start application / After changing solution

External Dimensions	150 (W) × 60 (H) × 80 (D)
Weight	Approx. 500g (Excluding DIN rail mounting kits)

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[Example Installation]
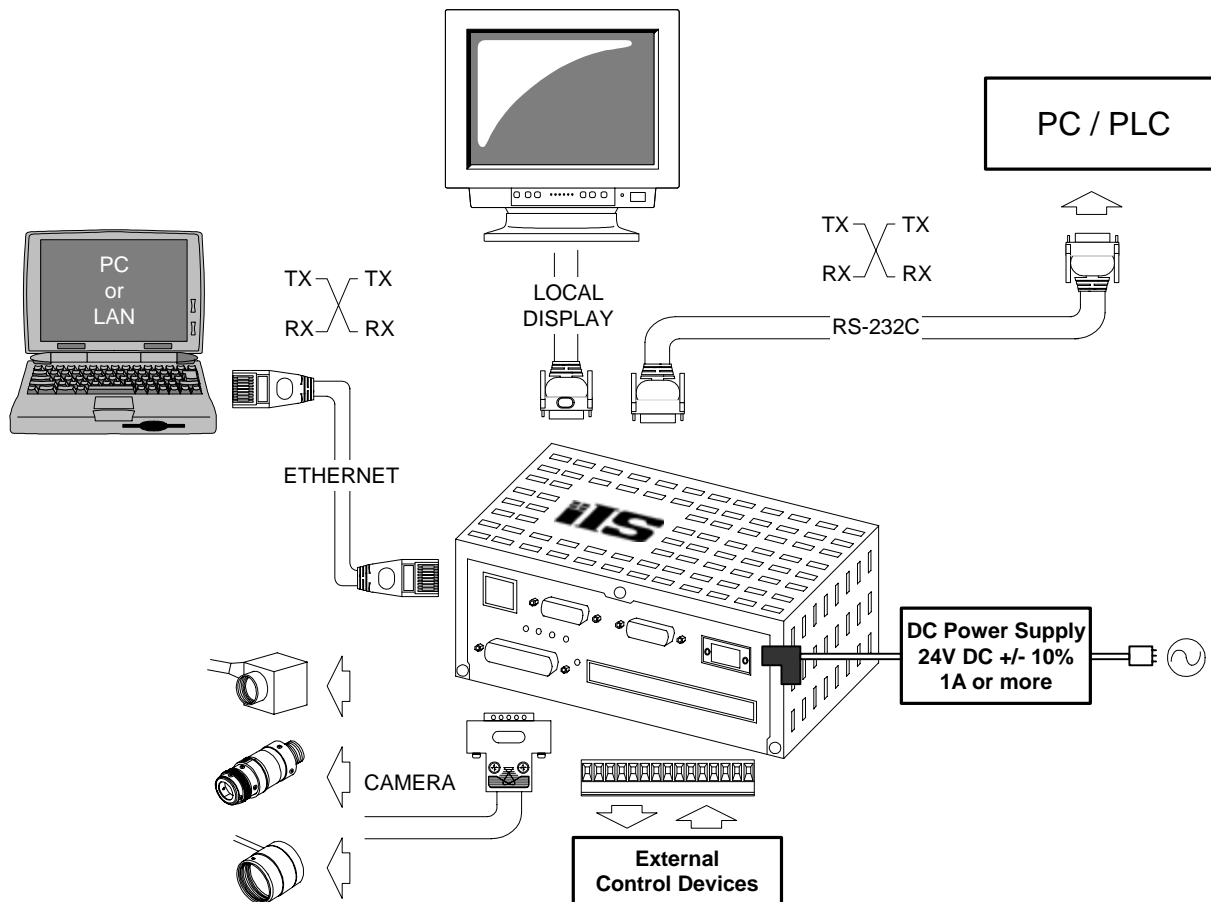
*The length of the power line between the control unit and DC power supply must be less than 10m, and use twisted-pair wire.

[Client PC system requirements]

Operating System	Microsoft® Windows® NT 4.0 SP5 or later,
	Microsoft® Windows® 2000 SP3 or later,
	Microsoft® Windows® XP SP1
Web Browser	Microsoft Internet Explorer 6.0 or later
	(ActiveX control supported)
History Log Viewer	Hilgraeve HyperTerminal for Conditional/strings output
	Microsoft EXCEL for the History log of CSV type
PC type	X86 compatible
Interface	Ethernet (Static or Dynamic addressing)
	RJ-45 type connector

* The PC control program may not work for the effect installed software for application and driver. The workaround for this problem is to be done by users at their own risk.

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Software function specification - on Internet Explorer (Ver.1.2.0.0)

Select Language   English / Japanese

Devise Setup

   Network Alias   Naming a network name your control unit

   Network Settings   Selectable using DHCP or Static IP Address

Monitor   Monitoring inspections from the web

Upgrade   Software Upgrades / Backup / Restore

                                     Switch to Gauge or Label

Open iWorks   Open Gauge or Label application window

HistoryLog   Viewing data output

                                     File logging (CSV type)

Table 6. CSV file output format (Gauge application)

	A	B	C	D	E	….
1	Inspection Number N	Time Stamp T_1	Result	Measured Value V_{N1}	Measured Value V_{N2}	…
2	Inspection Number N+1	Time Stamp T_2	Result	Measured Value $V_{(N+1)1}$	Measured Value $V_{(N+1)2}$	…
3	Inspection Number N+2	Time Stamp T_3	Result	Measured Value $V_{(N+2)1}$	Measured Value $V_{(N+2)2}$	…
.	.	.	.	.	.	…
.	.	.	.	.	.	…

Inspection Number   Parts Inspection Number

Time Stamp   Inspection time taken from Client PC (HH:MM:SS)

Result   Pass/ Recycle / Fail

Measured value   The values for each measurement.

                                     Measurements sort in ascii order

                                     Significant digit: 3

Table 7. CSV file output format (Label application)

	A	B	C	D	E	F
1	Inspection Number N	Time Stamp T_1	Failed Area F_N	Angle Offset A_N	Result	Barcode String
2	Inspection Number N+1	Time Stamp T_2	Failed Area $F_{(N+1)}$	Angle Offset $A_{(N+1)}$	Result	Barcode String
3	Inspection Number N+2	Time Stamp T_3	Failed Area $F_{(N+2)}$	Angle Offset $A_{(N+2)}$	Result	Barcode String
.	.	.	.	.	.	.
.	.	.	.	.	.	.

Inspection Number   Parts Inspection Number

Time Stamp   Inspection time taken from Client PC (HH:MM:SS)

Failed Area   How much of the Label's area failed (%, significant digit: 3)

Angle offset   How much of the Label's angle failed   degree, significant digit: 3

Result   Pass / Recycle/ Fail

Barcode String   Barcode string output if you enabled the barcode reader

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Password Protection	For preventing others from changing your Solution

[Software Function Specification: Gauge/Label in common specifications (Ver.1.2.0.0)]

Camera image	Displaying on the right panel of the application window
Camera Image size	640×480 pixel
Zoom in / Zoom out	Zoom in / Zoom out buttons
Cursor Location	Displaying X-Y coordinate at mouse cursor location
Pixel Intensity	Displaying Pixel intensity at mouse cursor location (0 ~ 255)
Solution ID	Displaying Current Solution ID (00 ~ 15)
Online Help	Microsoft® HTML Help
Setup Status Bar	Displaying current status
	(Not configured / Stopped / Ready to Run / Running)
Select solution panel	Starting new solution
	Loading last saved solution
	Importing solution from network client
Setup Sensor panel	
Sensor Trigger mode	Selectable Internal Trigger or External Trigger
Internal Trigger period	Settable from 35ms to 1000ms (1 step = 1ms)
Inspection Trigger Delay	Settable from 0ms to 1500ms (1 step = 1ms)
Light Control	
Duration	Settable from 0ms to 64ms (1 step = 1 ms)
Offset	Settable from 0μs to 2000μs (1 step = 1μs)
Local display refresh rate	Every 100 / Continuous / None
Exposure	Selectable from 1 to 1024 (1 step = 60.0μs)
Brightness	0% ~ 100%
Contrast	0% ~ 100% (with inverting contrast function)

      * Due to the level variation characteristics of the control amplifier, incremental change amount per step is not uniform.

Decision panel	
Action when Images are skipped	Ignore / Stop when count reaches set value / Pass / Recycle / Reject
Action when frames are failed	Ignore / Stop when continuous or total count reaches set value
Setup Outputs panel	
History Log	Selectable Enable or Disable
Decision output	
Output timing	Selectable Immediate or Decision sensor
Rejection Delay	Settable from 0ms to 1500ms (1 step = 1ms)
Duration	Settable from 0.1ms to 1000.0ms (1 step = 0.1ms)

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Conditional output   Selectable Disable or Enable

  if (Condition)   Create / Edit Condition

  Then (Send)   Add / Edit Output string

  To (Destination)   Add / Edit Destination

   Serial (COM3) port settings

   Bit rate   Selectable 110 / 300 / 600 / 1200 / 2400 / 4800 / 9600 / 19200 /

38400 / 57600 / 115200bps

*230400 / 460800 / 921600bps are not supported.

   Data Bits   Selectable 5 / 6 / 7 /8

   Parity   Selectable Odd / Even / None / Mark / Space

   Stop bit   Selectable 1/ 1.5 / 2

   Flow control   None

   TCP/IP

   Control unit role   Selectable "as client" or "as server"

   As client   Define device IP address

   As server   Alter or reassign Port Number

*The reliability of controlling external devices (such as a conveyer, a kicker or etc.) on the product line via Ethernet is NOT guaranteed.

Inspection status   Selectable Ready to Run / Running

Monitoring

  Statistics Information   Displaying parts inspected number

Displaying parts skipped number

Displaying Pass / Recycle / Reject parts number

  Inspection Information   Displaying set upped inspection information

  Processing Time   Displaying the total time take to find (search) and inspect the part

  Reset   Product line and Statistics

  History Recall   Showing history records for inspected parts

  Saving image   Bitmap image

Image Data / Data Only / Nothing

Saving Solution

  To the Control Unit memory   Up to 16 solutions

Settable Solution description (Up to 127 letters)

  Export   Saving to PC or a network device

Deleting saved Solution   All / Current solution / Single Solution

[Software function specifications: Gauge Application (Ver.1.2.0.0)]

Calibration   Measurement in real units with the calibration sheet

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Take a picture	Taking a still or frozen picture
Location setup	
Position / Angle	Settable search area and search pattern
Origin Properties	Moving the origin to another location
Locator Properties	Confidence / Position / X / Y/ Rotation
	Naming each measurements
	Setting Tolerance
Edge Sensitivity	Settable from 1 to 100
Inspection tools	
Perpend Line-Line	measure the perpendicular distance between two edges
Line-Line	measure the distance between two edges
Point-Point	measure the distance between two points
Point-Line	measure the distance between one edge and one point
Angle	measure the angle between two edges
Corner	define a corner point, or measure the angle between two edges.
Circle	define a point, or measure the diameter or circularity of a circle
Circle-Circle	measure the distance between 2 circle centers
Circle-Line	measure the distance from a circle center to an edge
Point-Circle	measure the distance between a circle and one point
Concentric Circles	measure the distance from each circle center, to the average center
Ruler Properties	Naming measurement
	Setting Tolerance (settable units on the measurement)
	Settable Accuracy from 2 to 50
	Track locator (Enable / Disable)
Angle Properties	Naming measurement
	Setting Tolerance
	Settable Accuracy from 2 to 50
	Track locator (Enable / Disable)
Circle Properties	Diameter / Circularity
	Naming measurement
	Setting Tolerance (settable units on the measurement)
	Settable Accuracy from 8 to 72
	Track locator (Enable / Disable)
Concentricity Properties	Naming measurement
	Setting Tolerance
More inspection tools	
ROI (Region of Interest)	Selectable the shape (Line / Rectangle / Circle / Poly)

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Count		count the number of objects in a ROI
	Count Properties	Count / Area
		Naming measurement
		Setting Tolerance (settable units on the measurement)
		Selectable defecting bright object or dark object
		Settable Inspection Area / Length / Height
		Rejecting objects that touch edges (Enable / Disable)
		Track locator (Enable / Disable)
		Setting Sensitivity from 0 to 100
	Edge count	Counting the edges crossed, along a line or the outline of the ROI.
	Edge Count Properties	Count / Average Separation / Min / Max
		Naming measurement
		Setting Tolerance
		Selectable transition (Dark-Light / Light-Dark / Both)
		Track locator (Enable / Disable)
		Setting Sensitivity from 0 to 100
	Intensity	Avg. / Min / Max /Std. Dev.
		measure pixel intensities in a ROI and calculate statistics
	Statistics Properties	Naming measurement
		Setting Tolerance
		Track locator (Enable / Disable)
	Eraser	delete a measurement
	Tip Window	gives hints on drawing measurements
	Color settings	changing colors of the measurement tools and graphics
		to suit your preference
		(HighLight1 / Actual Edge / User Drawn /
		User Drawn Same Tool / Gauge Point / Construct /
		Control Point / Landmark / Landmark 2 /
		Landmark Search / Pass / Warning / Reject)
	Saving good parts image	Windows® Bitmap Image
	Decision outputs setting	Define the conditions for part acceptance, recycling or rejections
	Monitoring	
	Statistics Information	Displaying parts inspected number
		Displaying parts skipped number
		Displaying Pass / Recycle / Reject parts number
	Inspection Information	Displaying each measured value
	Processing Time	Displaying the total time take to find (search) and inspect the part

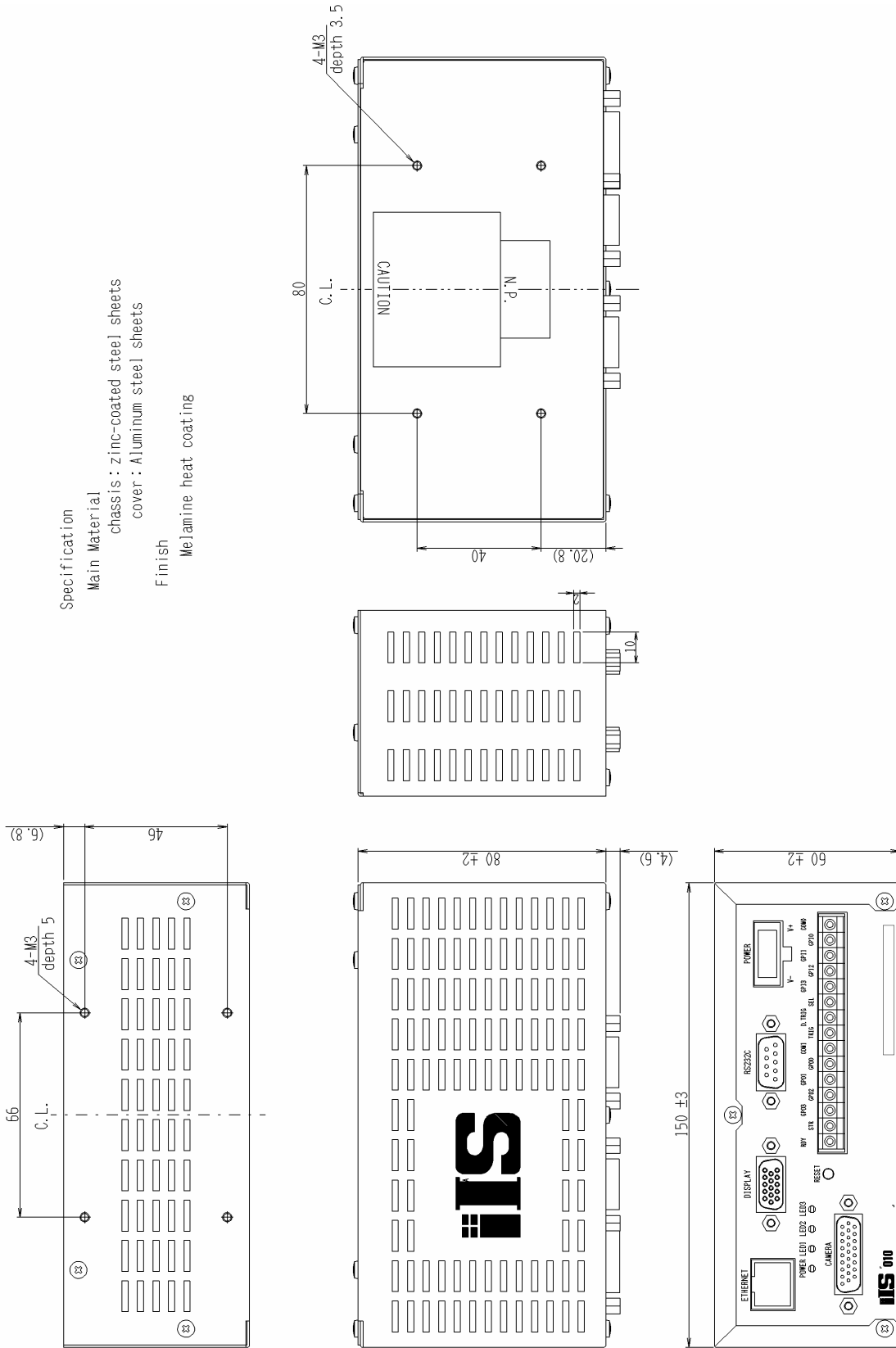| Reset | Product line and Statistics |
Reset	Product line and Statistics
History Log	Recent 8 images and data of Pass / Recycle / Reject
Saving current parts image	Windows® Bitmap Image
Display	Image and Data / Data only / Nothing

[Software Function Specifications: iWorks Label (Ver.1.2.0.0)]

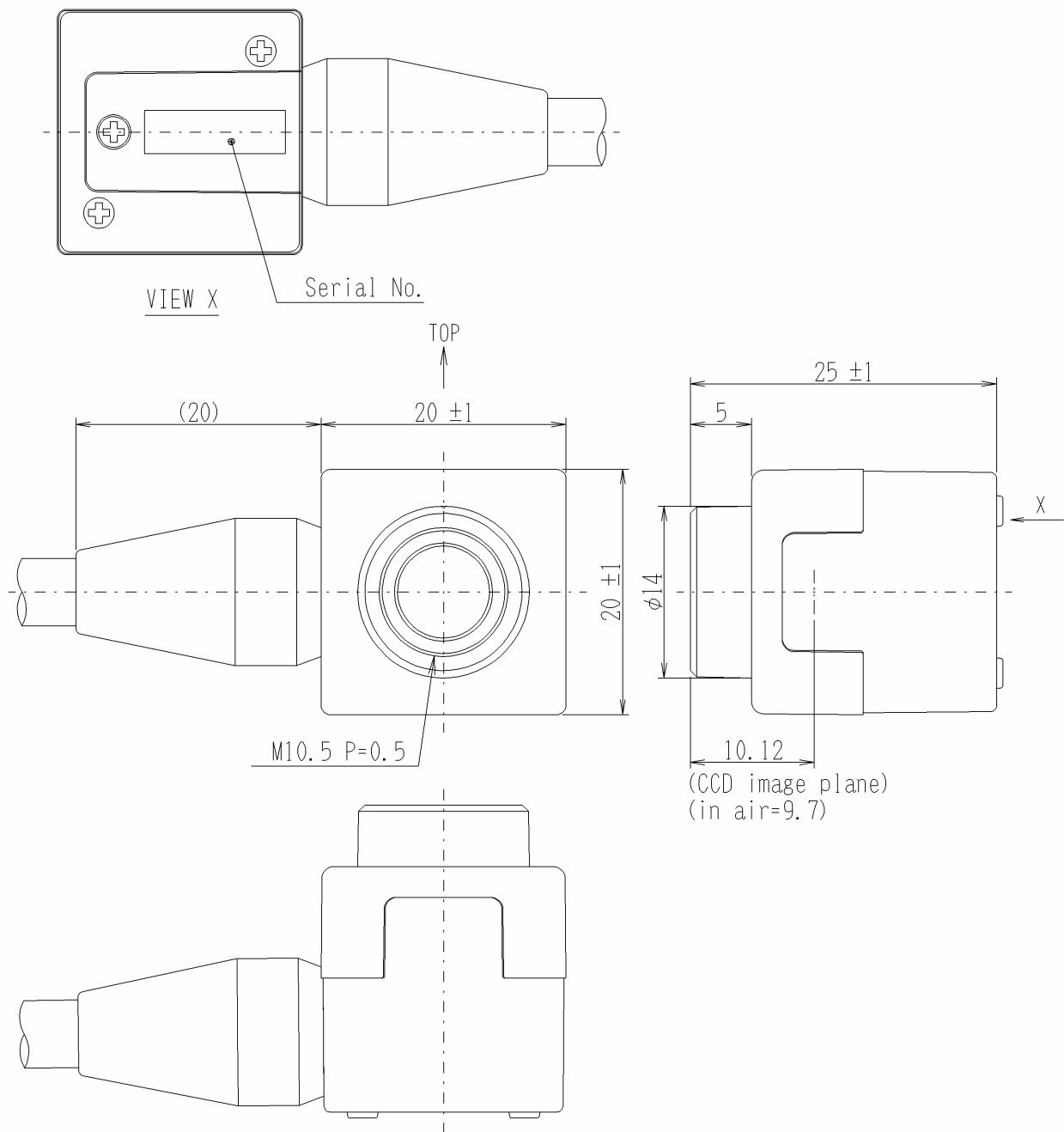| Take a Picture | Taking a still or frozen picture |
Inspection Area Settings	Setting inspection area
	Setting search areas
	Define any areas to ignore
Barcode Reading (Optional)	Enable / Disable
Barcode change	None / Change
Inputting Barcode Value	If applicable
Inspecting as Part of the Label	Enable / Disable
Barcode Inspection Settings	Report Every Read / Report Only If Error
Inspection Settings	
Label Locator	On / Off
Label Rotation Tolerance	Settable ±5° (Maximum, 1step=0.25°)
Acceptable Tolerance	Contrast / Failed area
Learning Good Parts	
Acceptable Tolerance	Differences
Forgetting Learned Images	
Monitoring Inspections	
Statistics Information	Displaying parts inspected number
	Displaying parts skipped number
	Displaying Pass / Recycle / Reject parts number
Processing Time	Displaying the total time take to find (search) and inspect the part
Inspection Information	Label Quality
	Angle Offset
	Displaying barcode string (if you enabled the barcode reader)
Reset	Product line and Statistics
History Log	Recent 8 images and data of Pass / Recycle / Reject / Learn mode
Display	Image and Data / Data only / Nothing
Saving current image	Windows® Bitmap image format (*.BMP)

* For detailed information operating procedures, see the operation manuals.

* The design and specification may change without prior notice.

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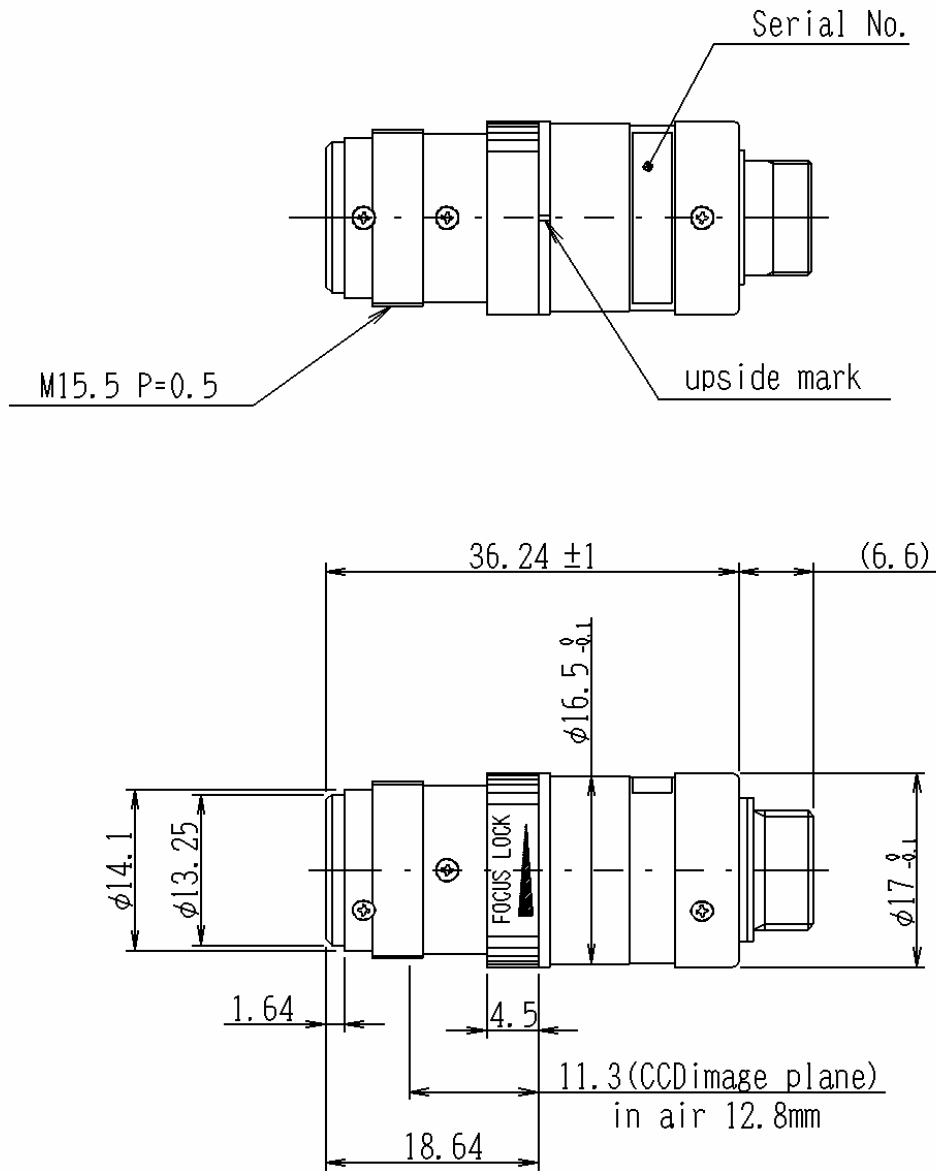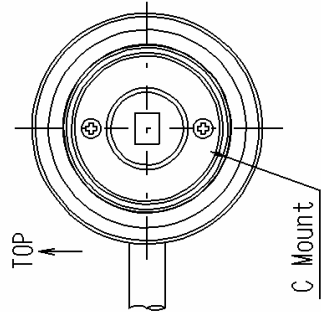## 6. External View

iIS-010 series control unit - external view

VIEW X   Serial No.

TOP

(20)   20 ±1   20 ±1

M10.5 P=0.5

25 ±1

5

φ14

10.12

(CCD image plane)
(in air=9.7)

X

iIS-010

20mm square camera head - external view

Main Material ; Anti-corrosive Aluminum
    Finish ; Black anodic oxide coating

Serial No.

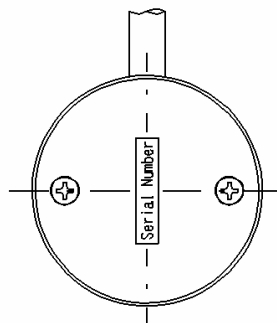M15.5 P=0.5

upside mark

36.24 ±1   (6.6)

$\phi 16.5 \, ^{0}_{-0.1}$

$\phi 14.1$

$\phi 13.25$

FOCUS LOCK

$\phi 17 \, ^{0}_{-0.1}$

1.64   4.5
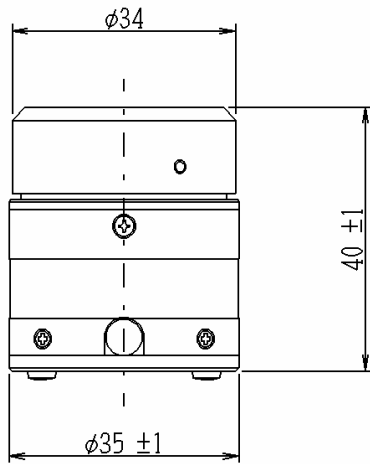
11.3(CCDimage plane)
in air 12.8mm

18.64

iIS-011

φ17mm camera head- external view

Specification
  Main Material
          Anti-corrosive Aluminum Alloy
  Finish
          Black anodized aluminum (equivalent to munsell N1.5)

TOP

C Mount

φ34

40 ±1

φ35 ±1

Serial Number

iIS-012

C mount camera head - external view

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● **Restriction For Use**

- Should the equipment be used in the following conditions or environments, give consideration to safety measures and inform us of such usage:
    1. Use of the equipment in the conditions or environment contrary to those specified, or use outdoors.
    2. Use of the equipment in applications expected to cause potential hazard to people or property, which require special safety measures to be adopted.
- This product can be used under diverse operating conditions. Determination of applicability of equipment or devices concerned shall be determined after analysis or testing as necessary by the designer of such equipment or devices, or personal related to the specifications. Such designer or personal shall assure the performance and safety of the equipment or devices.
- Do NOT place your device near any noises generating source. Correct result outputs may be not obtained causes the inputted data are disturbed. Take extra precautions against electromagnetic-wave-interference if the camera is used with a servomotor, inverter, or other electromagnetic-wave-generating equipment.
- This product is not designed or manufactured to be used for control of equipment directly concerned with human life(*1) or equipment relating to maintenance of public services/functions involving factors of safety(*2). Therefore, the product shall not be used for such applications.
  (*1): Equipment directly concerned with human life refer to:
      Medical equipment such as life-support systems, equipment for operating theaters.
      Exhaust control equipment for exhaust gases such as toxic fumes or smoke.
      Equipment mandatory to be installed by various laws and regulations such as the Fire Act or Building Standard Law.
      Equipment related to the above.
  (*2): Equipment relating to maintenance of public service/functions involving factors of safety refer to:
      Traffic control systems for air transportation, railways, roads, or marine transportation.
      Equipment for nuclear power generation.
      Equipment related to the above.

Although sufficient check is performed about translation of these specifications, we will apply a Japanese sentence, if a doubt should occur.

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- Expenses we bear on this product shall be limited to the individual price of the product.

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