

H55ZAME-5F-PAIR01

with 『PAIR』 function

f=12mm~660mm (~1680mm) F1:4.0 Zoom Lens

1. Model **H55ZAME-5F-PAIR01**

2. Application For 1/2 Format CCTV Camera, scene requiring Atmospheric Interference Reduction

3. Specification

3-1. Physical (As per the attached drawing)

- (1) Dimensions 155(W)mm×138mm(H)×355mm(D)
- (2) Weight 5400g
- (3) Filter Screw Size ϕ 105mm, P=1mm
- (4) Mount C-Mount (1-32UN-2A, Position Adjustable)
- (5) Screw for Tripod 1/4-20 UNC (2 Positions)

3-2. Optical

The numerals in parentheses () refer to the figures when the built-in 2.5X extender is in use.

- (1) Focal Length 12mm to 660mm (30.5mm to 1680mm)
- (2) Max. Aperture Ratio 1 : 4.0 (f=12mm) to 1 : 18.2 (f=1680mm)
- (3) Iris Range F/4.0 to F/360 compatible (Continuous)
- (4) Angle of View

	WIDE	TELE
Diagonal	40.8° (15.1°)	0.7° (0.3°)
Horizontal	31.6° (12.1°)	0.6° (0.2°)
Vertical	23.2° (9.0°)	0.4° (0.2°)

- (5) Picture Format 6.4mm×4.8 (1/2" Image sensor)
- (6) Focusing Range Inf. to 6 m
- (7) Back Focal Length 80.342 mm (45.402 mm)
- (8) Flange Back Length 17.526 mm ± 0.05 mm

3-3. Electrical

Refer to 5. for Connection Diagram

(1) Iris

①Auto

- 1. Supply Voltage & Current DC 8 V to 15 V 50 mA or less
- 2. Input Signal V or VS
- 3. Iris Accuracy ±20 % at V signal level
- 4. Sensitivity Adjustment 0.5 V (p-p) to 1.0 V (p-p) at V signal level continuously adjustable
- 5. Input Impedance High Impedance
- 6. Response Speed 1.5 sec. (approx.)
- 7. Metering Average to Peak continuously adjustable (adjusted at Average when delivered)
- 8. Close Down Iris closes down when the power is cut off and protects Image Sensor from strong light.
- 9. Adopted connector 4-pin connector

②Manual

- 1. Supply Voltage & Current DC 12 V 5mA or less
- 2. Close Down Iris closes down when the power is cut off and protects Image Sensor from strong light.

(2) Zoom, Focus and Built-in Extender (Motorized)

①Supply Voltage & Current DC 12 V




※Supply Voltage and operation are controlled through (3) Image Control Board

Zooming	100 mA or less/motor (at 25°C)
Focusing	50 mA or less/motor (at 25°C)
Extender	30 mA or less/motor (at 25°C)

(3) Image Control Board

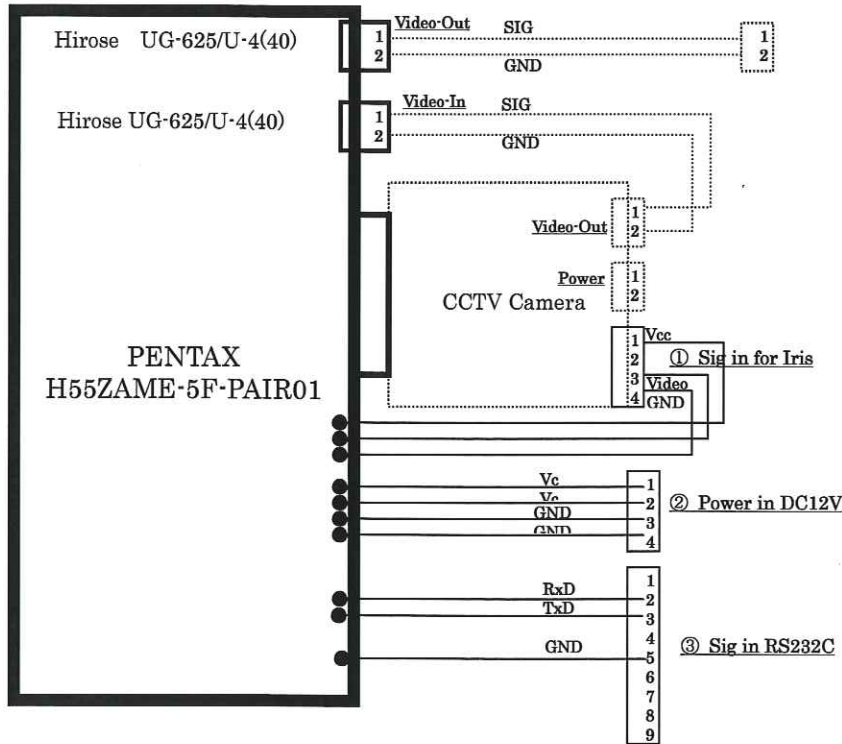
- ①Regular Supply Voltage & Current DC 12 V, 1.0 A (except for the above motor current) 4-pin connector
- ②Input image signal and connector NTSC or PAL image signal by BNC connector
- ③Output image signal and connector NTSC or PAL image signal by BNC connector
- ④Image control signal and connector RS232C standard command by D-Sub9P connector (Refer to 7. for details)

				Approved	Checked	Drawn	Drawing Title
							SPEC. SHEET
No.	Revisions	Date	By				
HOYA CORPORATION PENTAX Imaging Systems Div. Security Systems Dept.				Date Drawn SEP.11,'2009	Drawnig Number 3161248-X501-C-B16		

4. Image Control	<p>(In the following, the zoom lenses specified in 1.- 3. is represented as 'The Lens', the control signal from the exclusive software for PC which is described in 6. with Window Design and the RS232C control command described in 7. are represented as 'Command'.) The following functions; 'Focus Control (described in 4-1.)', 'Zoom Control (described in 4-2.)', 'Atmospheric Interference Reduction Control (described in 4-3.)' can be performed by the video signal (NTSC or PAL) of the respective CCTV Camera (color, B/W, IR or High Sensitive etc.) mounted on 'The Lens' based on 5. Connection Diagram and the input signal of 'Command' described in 6. and 7..</p> <p>※Excluding the case of the defect of the camera, PC or cables.</p>						
4-1. Focus Control	<p>(1) Auto/ Manual Switch Capable to select Auto Focus (represented as 'AF' in the following) by respective 'Command' or Manual Focus</p> <p>(2) 'AF' Specification Capable to 'AF', driving the focus system of 'The Lens' by inputting respective 'Command', based on the video signal from the camera mounted to 'The Lens'.</p> <p>(3) 'AF' Performance Following ①~③ are achieved at Tele and Wide, when 'AF' is activated and the B/W chart is placed within the 'AF' area of the monitor in the distance of 20m and under natural light condition. Avg. 5 Sec from inputting 'Command' until focus is adjusted. MTF of B/W chart after 'AF' is more than 70%. Error Frequency is less than 1 per 10 times of 'AF'.</p>						
① 'AF' Speed							
② 'AF' Accuracy							
③ 'AF' Error Frequency							
(3) Manual Focus Specification	Capable to control focus position respectively between Near - Far by driving the focus system of 'The Lens' by inputting respective 'Command'.						
4-2. Manual Zoom Control Specification	<p>Capable to control zoom position respectively between Tele - Wide by driving the zoom system of 'The Lens' by inputting respective 'Command'.</p> <p>Capable to insert and exert the Extender by inputting respective 'Command'.</p>						
4-3. Atmospheric Interference Reduction Control Specification	This specification is related to Atmospheric Interference (as fog, sand storm, etc) Reduction function.						
(1) Atmospheric Interference	This function is represented as 'PAIR' in the following. Liquid (Fog/Rain) and solid (Sand/Smoke/Snow) particles and compound.						
(2) In/Output Video Signal	NTSC or PAL image from the camera mounted on 'The Lens' as input signal, capable to output from 'The Lens' output terminal the Atmospheric Interference reduced video signal in NTSC or PAL and in color or B/W.						
(3) ON/OFF and Mode Switch	Capable to switch ON/OFF of 'PAIR' function and to set Auto/Manual of PAIR function by respective 'Command'.						
(4) Auto 'PAIR' Function	Under the following condition, capable to obtain the image almost in real time (less than 2 frames delay at 30 fps) which satisfies below «Compensated Contrast Condition» :						
«Compensated Contrast Condition»	- Under the condition of above (1) with Atmospheric Interference, with the object distance more than 2km.						
(5) Manual 'PAIR' Function	- Video Signal in NTSC or PAL, and the image in color or B/W ※ «Compensated Contrast Condition» is intended within the respective 'AF' area on the monitor, using either of the setting of 'Command' for Auto PAIR						
(6) User Setting Function	The following conditional format is fulfilled before and after compensation of the Histogram, on 256 gradation luminance data of all dots within the respective 'AF' area on the monitor.						
No.	Revisions	Date	By	Approved 	Checked 	Drawn 	Drawing Title SPEC. SHEET
HOYA CORPORATION PENTAX Imaging Systems Div. Security Systems Dept.				Date Drawn SEP.11,'2009		Drawnig Number 3161248-X501-C-B26	

5. Connection Diagram, Connector and Pin Configuration

※The dotted line indicates connection opponent device or connector as reference.



① Sig in for Iris

Technical Electron E4-191J-150

1	Vcc	Supply Voltage (DC8~15V)
2	-	
3	Video	Video Signal
4	GND	Ground

② Power in DC12V

Hirose Electric HR10A-7R-4P

1	Vc	Supply Voltage (DC12V)
2	Vc	Supply Voltage (DC12V)
3	GND	Ground
4	GND	Ground

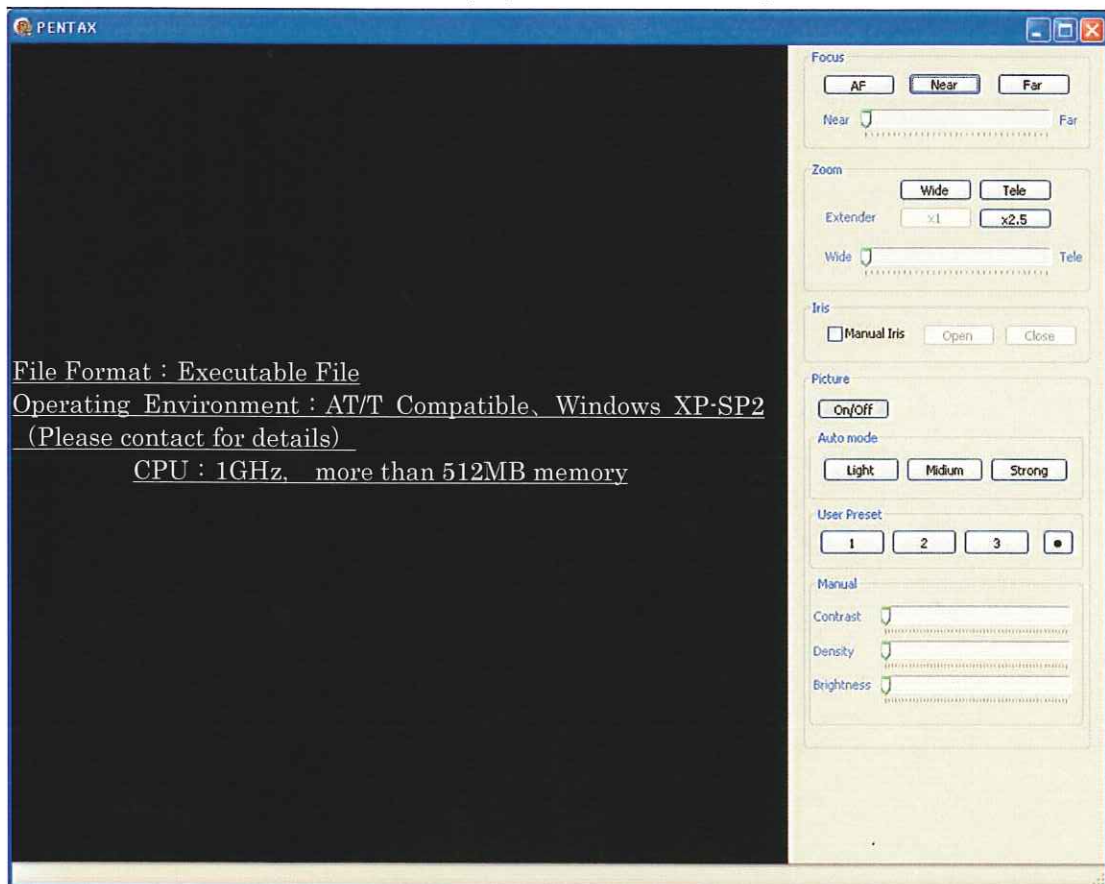
③ Sig in RS232C

Technical Electron D9-403N-110

1	-	
2	RxD	Receiving Data
3	TxD	Sending Data
4	-	
5	GND	Ground
6	-	

6. Control Software

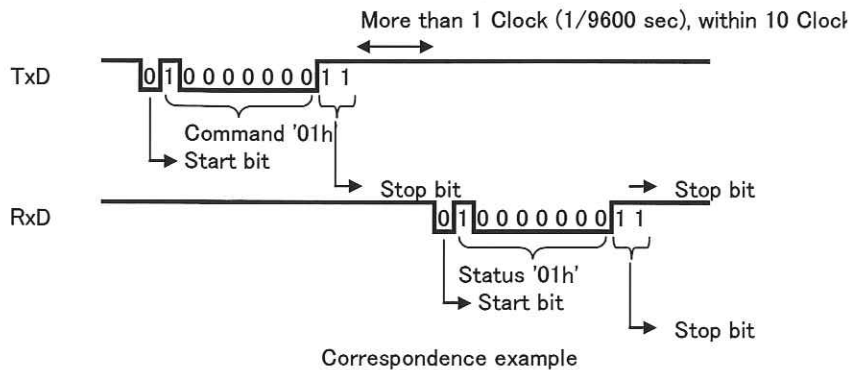
※Only Operation Window Design is shown



				Approved <i>[Signature]</i>	Checked <i>[Signature]</i>	Drawn <i>[Signature]</i>	Drawing Title SPEC. SHEET
No.	Revisions	Date	By	Date Drawn SEP.11,'2009		Drawnig Number 3161248-X501-C-B36	
HOYA CORPORATION PENTAX Imaging Systems Div. Security Systems Dept.							

7. RS232C Command & Specification

- 1) Control Method RS232C compliant
- 2) Initial Setting Normal H 1:H, 0:L
no parity, data length 8, stop bit 2, 9600 bps top LSB



- 3) See 'Command and Status' for details of control.
Command: 1 - 3 byte, Status: 1 - 2 byte
- 4) Others ADC 10 bit
Motor Voltage 8 bit (from lens circuit board 0V~DC12V)
-Supply Voltage for Control System (Connector C): DC 15V, 200mA or I

5) Command & Status

1. Request Command	CO1	PC (Controller) → Lens	CO2	PC (Controller) → Lens	CO3	PC (Controller) → Lens	ST1	Lens → PC (Controller)	ST2	Lens → PC (Controller)	ST3	Lens → PC (Controller)
Status Request	01h	ST 1byte requested	None	None	None	None	01h	Normal (incd. Definition of	None		None	
							81h	Command error #4	None		None	
							82h	Motor electric current error	None		None	
							84h	Amp circuit current error #4	None		None	
Remote Iris Position Request #1	02h	ST 1byte requested	None	None	None	None	01h	Normal (incd. Definition of	Ni	8 bit (0 - DC 5.5V)	None	
							8xh	Error info excd. 81h	Ni	8 bit (0 - DC 5.5V)	None	
							81h	Command error #4	None		None	
							81h	Command error #4	None		None	
Zoom Position Request	03h	ST 2 byte requested	None	None	None	None	01h	Normal (incd. Definition of	Nz1	Zoom Position / top 8 bit	Nz2	bottom 2 bit XX000000
							8xh	Error info excd. 81h	Nz1	Zoom Position / top 8 bit	Nz2	bottom 2 bit XX000000
							81h	Command error #4	None		None	
							81h	Command error #4	None		None	
Focus Position Request	04h	ST 2 byte requested	None	None	None	None	01h	Normal (incd. Definition of	Nf1	Focus Position / top 8 bit	Nf2	bottom 2 bit XX000000
							8xh	Error info excd. 81h	Nf1	Focus Position / top 8 bit	Nf2	bottom 2 bit XX000000
							81h	Command error #4	None		None	
							81h	Command error #4	None		None	
Extender Position Request	05h	ST 1 byte requested	None	None	None	None	01h	Normal (incd. Definition of	Ne	0x01: 等積, 0x02: 2倍, その他の: 移動中	None	
							8xh	Error info excd. 81h	Ne	0x01: 等積, 0x02: 2倍, その他の: 移動中	None	
							81h	Command error #4	None		None	
							81h	Command error #4	None		None	
Motor Voltage 1 Request	06h	ST 1 byte requested	None	None	None	None	01h	Normal (incd. Definition of	Nm1	8 bit (0 - DC 12V)	None	
							8xh	Error info excd. 81h	Nm1	8 bit (0 - DC 12V)	None	
							81h	Command error #4	None		None	
							81h	Command error #4	None		None	
Backlash adjustment Request	07h	ST 2 byte requested	None	None	None	None	01h	Normal (incd. Definition of	Nb1	Backlash Width / top 8 bit	Nb2	bottom 2 bit XX000000
							8xh	Error info excd. 81h	Nb1	Backlash Width / top 8 bit	Nb2	bottom 2 bit XX000000
							81h	Command error #4	None		None	
							81h	Command error #4	None		None	
Image Process H Parameter Request	08h	ST 1 byte requested	None	None	None	None	01h	Normal (incd. Definition of	Nb1	Image Process H Paramete	None	
							8xh	Error info excd. 81h	Nb1	Image Process H Paramete	None	
							81h	Command error #4	なし		None	
							81h	Command error #4	なし		None	
Image Process S Parameter Request	09h	ST 1byte requested	None	None	None	None	01h	Normal (incd. Definition of	Nb1	Image Process S Paramete	None	
							8xh	Error info excd. 81h	Nb1	Image Process S Paramete	None	
							81h	Command error #4	なし		None	
							81h	Command error #4	なし		None	
Image Process T Parameter Request	0ah	ST 1byte requested	None	None	None	None	01h	Normal (incd. Definition of	Nb1	Image Process T Paramete	None	
							8xh	Error info excd. 81h	Nb1	Image Process T Paramete	None	
							81h	Command error #4	なし		None	
							81h	Command error #4	なし		None	
Motor Voltage 2 Request	0bh	ST 1byte requested	None	None	None	None	01h	Normal (incd. Definition of	Nm2	8 bit (0 - DC 12V)	None	
							8xh	Error info excd. 81h	Nm2	8 bit (0 - DC 12V)	None	
							81h	Command error #4	None		None	
							81h	Command error #4	None		None	
Version Request	0fh	ST 1byte requested	None	None	None	None	01h	Normal (incd. Definition of	None	Version info.	None	
							8xh	Error info excd. 81h	None	Version info.	None	
							81h	Command error #4	None		None	
							81h	Command error #4	None		なし	

				Approved	Checked	Drawn	Drawing Title
							SPEC. SHEET
No.	Revisions	Date	By	Date Drawn		Drawning Number	
HOYA CORPORATION PENTAX Imaging Systems Div. Security Systems Dept.				SEP.11,'2009		3161248-X501-C-B46	

7. RS232C Command & Specifications 5) Command & Status Continued

2. Set Command	CO1 PC (Controller) → Lens	CO2 PC (Controller) → Lens	CO3 PC (Controller) → Lens	ST1	ST2	ST2
Manual / Auto Switch #6 Auto Image Processing	10h ST 1 byte	None	Manual	None	01h Normal (incd. Definition of 8xh Error Info	None None
Manual / Auto Switch #6 Auto Image Process	11h ST 1 byte	01h	Auto 1	None	01h Normal (incd. Definition of 8xh Error Info	None None
Manual / Auto Switch #6 Auto Image Process	11h ST 1 byte	02h	Auto 2	None	01h Normal (incd. Definition of 8xh Error Info	None None
Manual / Auto Switch #6 Auto Image Process	11h ST 1 byte	03h	Auto 3	None	01h Normal (incd. Definition of 8xh Error Info	None None
Image Process H Parameter	12h ST 1 byte	H	8 bit	None	01h Normal (incd. Definition of 8xh Error Info	None None
Image Process S Parameter	13h ST 1 byte	S	8 bit	None	01h Normal (incd. Definition of 8xh Error Info	None None
Image Process Parameter T	14h ST 1 byte	T	8 bit	None	01h Normal (incd. Definition of 8xh Error Info	None None
Image Process Preset 1	15h ST 1 byte	01h	Preset 1	None	01h Normal (incd. Definition of 8xh Error Info	None None
Image Process Preset 2	15h ST 1 byte	02h	Preset 2	None	01h Normal (incd. Definition of 8xh Error Info	None None
Image Process Preset 3	15h ST 1 byte	03h	Preset 3	None	01h Normal (incd. Definition of 8xh Error Info	None None
Image Process Preset 1 Sett	16h ST 1 byte	01h	Preset 1	None	01h Normal (incd. Definition of 8xh Error Info	None None
Image Process Preset 2 Sett	16h ST 1 byte	02h	Preset 2	None	01h Normal (incd. Definition of 8xh Error Info	None None
Image Process Preset 3 Sett	16h ST 1 byte	03h	Preset 3	None	01h Normal (incd. Definition of 8xh Error Info	None None
Remote Iris Fully Open	21h ST 1 byte	ffh	8 bit (DC 5.5V)	None	10 Normal (incd. Definition of 8xh Error Info	None None
Remote Iris Fully Closed	21h ST 1 byte	ffh	8 bit (DC 5.5V)	None	01h Normal (incd. Definition of 8xh Error Info	None None
Remote Iris Fully Open	21h ST 1 byte	45h	8 bit (DC 1.5V)	None	01h Normal (incd. Definition of 8xh Error Info	None None
Remote Iris Stop	20h ST 1 byte	None		None	01h Normal (incd. Definition of 8xh Error Info	None None
Remote Iris Move	21h ST 1 byte	Ni	8 bit (0 - DC 5.5V)	None	01h Normal (incd. Definition of 8xh Error Info	None None
Manual / Auto Switch #5 Auto Iris	22h ST 1 byte	01h	Auto	None	01h Normal (incd. Definition of 8xh Error Info	None None
Manual / Auto Switch #5 Manual Iris	22h ST 1 byte	02h	Manual	None	01h Normal (incd. Definition of 8xh Error Info	None None
Zoom Tele End	31h ST 1 byte	ffh	Zoom Position top byte	c0h Zoom Position bottom byte	01h Normal (incd. Definition of 8xh Error Info	None None
Zoom Wide End	31h ST 1 byte	00h	Zoom Position top byte	00h Zoom Position bottom byte	01h Normal (incd. Definition of 8xh Error Info	None None
Zoom Stop	30h ST 1 byte	None		None	01h Normal (incd. Definition of 8xh Error Info	None None
Zoom Move	31h ST 1 byte	Nz1	Zoom Position top 8 byte	Nz2 bottom 2 bit XX000000b	01h Normal (incd. Definition of 8xh Error Info	None None
Manual / Auto Switch #7 Auto Focus	44h ST 1 byte	01h	Auto	None	01h Normal (incd. Definition of 8xh Error Info	None None
Manual / Auto Switch #7 Manual Focus	44h ST 1 byte	02h	Manual	None	01h Normal (incd. Definition of 8xh Error Info	None None
Focus Far End	41h ST 1 byte	ffh	Focus Position top byte	c0h Focus Position bottom byte	01h Normal (incd. Definition of 8xh Error Info	None None
Focus Near End	41h ST 1 byte	00h	Focus Position top byte	00h Focus Position bottom byte	01h Normal (incd. Definition of 8xh Error Info	None None
Focus Stop	40h ST 1 byte	None		None	01h Normal (incd. Definition of 8xh Error Info	None None
Focus Move	41h ST 1 byte	Nf1	Focus Position top 8 by	Nf2 bottom 2 bit XX000000b	01h Normal (incd. Definition of 8xh Error Info	None None
Extender Set	51h ST 1 byte	Ne	0x01: 1x 0x02: 2x	None	01h Normal (incd. Definition of 8xh Error Info	None None
Motor Voltage 1 Set #2	61h ST 1 byte	Nm1	8 bit (0 - DC 12V)	None	01h Normal (incd. Definition of 8xh Error Info	None None
Motor Voltage 2 Sets #2	62h ST 1 byte	Nm2	8 bit (0 - DC 12V)	None	01h Normal (incd. Definition of 8xh Error Info	None None
Backlash Width #3	71h ST 1 byte	Nb1	Backlash Width top 8 bit	Nb2 bottom 2 bit XX000000b	01h Normal (incd. Definition of 8xh Error Info	None None

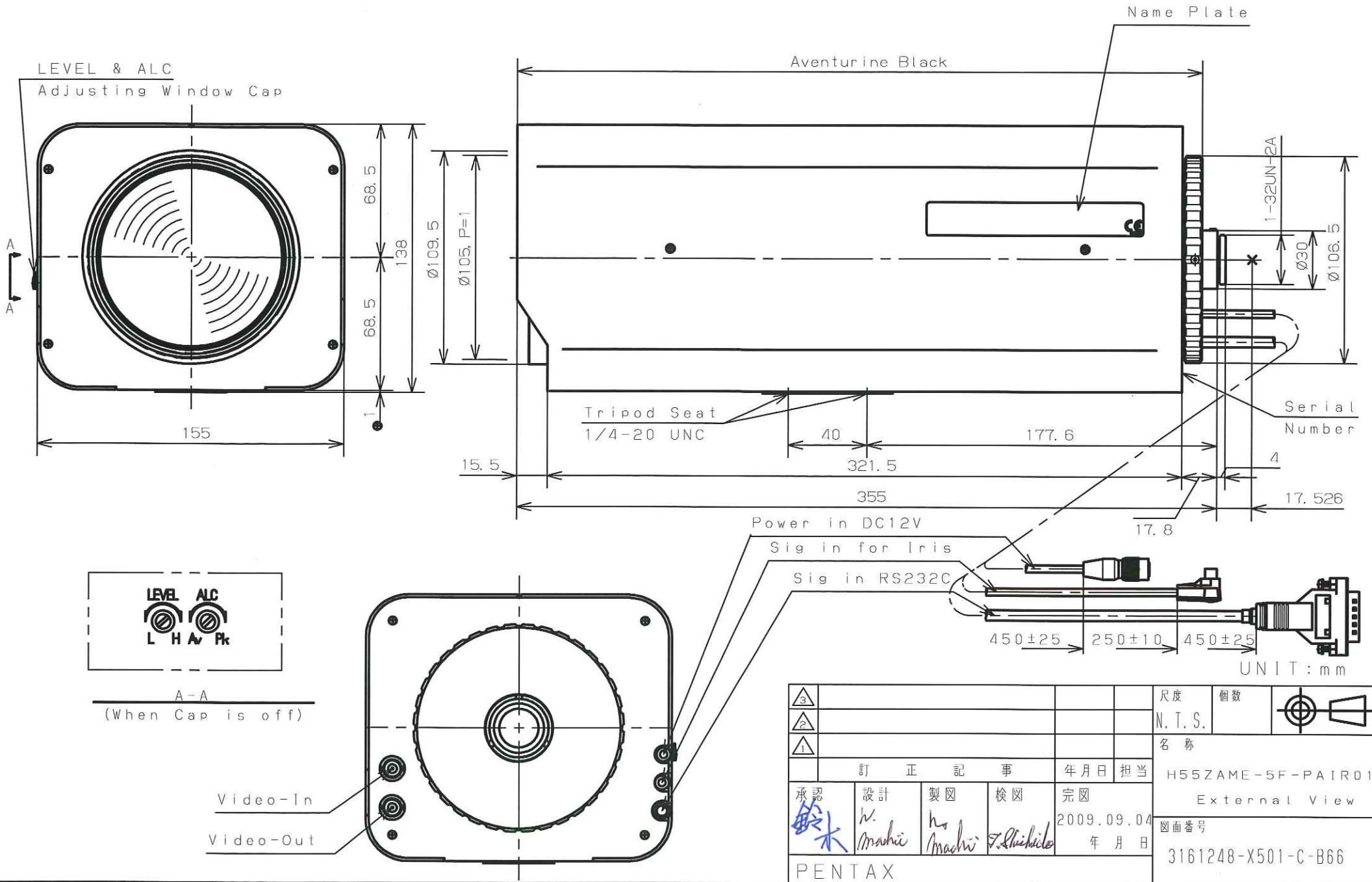
- *1 Remote Iris Voltage: 0V = Auto Iris
- *2 Motor Voltage: Initial setting = DC6V.
- *3 Backlash Width: Initial setting = '5(=5/1023)'
- *4 Error status: answered by 'or' when multiple occurrences happen. i.e. when 82h and 84h occur at the same time, the answer is 86h.
- *5 Iris Manual / Auto Switch: Initial setting = Auto
- *6 Image Process Manual / Auto Switch: Initial setting = Auto
- *7 Focus Manual / Auto Switch: Initial setting = Manual

8. Environmental Temperature Range -10°C to +50°C

9. Accessories

- (1) Front Lens Cap 1 piece
- (2) Rear Lens Cap 1 piece
- (3) Packing Box 1 piece
- (4) Connector 1 piece
- (5) Control Software Downloadable file supplied individually as needed

				Approved	Checked	Drawn	Drawing Title
							SPEC. SHEET
No.	Revisions	Date	By	Date Drawn		Drawnig Number	
HOYA CORPORATION PENTAX Imaging Systems Div. Security Systems Dept.				SEP.11,'2009		3161248-X501-C-B56	



A-A
(When Cap is off)

△3					尺度	個数	
△2					N. T. S.		
△1					名称		
訂正記事					年月日	担当	H55ZAME-5F-PAIR01
承認	設計	製図	検図	完図	External View		
鈴木	h. Machi	h. Machi	F. Kubota	2009.09.04	図面番号		
PENTAX					年月日	3161248-X501-C-B66	