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The following material resulting from the investigation under the above numbers is enclosed.

Issue

<u>Date</u>	<u>Vol</u>	<u>Sec</u>	<u>Pages</u>	<u>Revised Date</u>
	X1		Index Page(s)	
2018/03/23	X1	A224	Cert of Compliance	
2018/03/23	X1	A224	Revised Proc/Rpt Section	

PO# KANG, JEISOON

Please file revised pages and illustrations in place of material of like identity. New material should be filed in its proper numerical order.

NOTE: Follow-Up Service Procedure revisions DO NOT include Cover Pages, Test Records and Conclusion Pages. Report revisions DO NOT include Authorization Pages, Indices, Section General Pages and Appendixes.

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SEO File

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<u>Product Type</u>	<u>Model/Type Reference</u>	<u>Report Reference #</u>	<u>Status</u>
Digital Video Recorder	SVR-430	E158873-A2-UL	
Video Presenter	UF-80, UF-80DX, UF-80ST	E158873-A4-UL	
Video Presenter	SVP-5300N	E158873-A5-UL	
Video Presenter	SDP-900DXAN, SDP-950DXAN, SDP-950STAN	E158873-A6-UL	
Video Presenter	SDP-850, SDP-850DX	E158873-A9-UL	
Digital Video Recorder	SVR-1650, SVR-1650E, SVR-1640, SVR-1640E, SVR-950, SVR-950E and SVR-1640A	E158873-A11-UL	
Video Presenter	SDP-6500DXA	E158873-A12-UL	
Video Presenter	UF-130DX	E158873-A14-UL	
Video Presenter	UF-130ST	E158873-A15-UL	
Network Video Recorder	SNR-6400, SNR-3200, SRN-3250, SRN-6450	E158873-A16-UL	
Digital Video Recorder.	SVR-480	E158873-A17-UL	Withdrawn
Video Presenter	SDP-860	E158873-A18-UL	
Digital Video Recorder.	SVR-1670	E158873-A19-UL	
UTP Power Supply Unit	SPU-400	E158873-A20-UL	Withdrawn
Digital Presenter	SDP-760	E158873-A44-UL	
Network Camera	SNP-5300H*, SNP-6201H* (* is Blank or N or P: N = NTSC, P=PAL)	E158873-A45-UL	
Network Camera	SND-7011*, SND-5011*, SND-5061*, SND-7061*, SNV-5010*, SNZ-5200* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A46-UL	
Network Camera	SNP-5300*, SNP-6201* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A47-UL	
Digital Color Camera	SCP-3371H*, SCP-2371H*, SCP-2271H*, SCP-2373H*, SCP-2273H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A48-UL	
Digital Color Camera	SCP-3371*, SCP-2371*, SCP-2271*, SCP-2373*, SCP-2273* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A49-UL	
Network Camera	SND-7082*, SND-7082F*, SNV-7082* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A50-UL	
Network Camera	SNB-7001*, SNB-5001*, SNB-3002* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A51-UL	
Network Camera	SNO-7082R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A52-UL	
Network Camera	SNB-7002* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A53-UL	

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DIGITAL COLOR CAMERA	SCV-2010F*, SCD-1020R*, SCD-2080R*, SCD-2020R*, SCD-2010*, SCD-2010B*, SCD-2010F*, SCB-3020*, SCB-3021*, SCB-2010*, SCO-1020R* (* is blank or N or P: N=NTSC, P=PAL)	E158873-A54-UL	
Network Camera	SNB-6004*, SNB-6003*, SNB-5004*, SNB-5003*, SNB-7004*, SNB-6005* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A55-UL	
Network Camera	SND-6084*, SND-6083*, SND-5084*, SND-5083*, SND-7084* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A56-UL	
DIGITAL COLOR CAMERA	SCD-2022*, SCD-2022R*, SCD-2042R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A58-UL	
Digital Color Camera	SCB-2004*, SCB-2005* (* is blank or N or P: N = NTSC, P=PAL);	E158873-A59-UL	
Digital Color Camera	SCD-2082*, SCV-2082R*, SCV-3083*, SCD-3083* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A60-UL	
Network Camera	SND-6084R*, SND-7084R*, SND-5084R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A61-UL	
NETWORK CAMERA	SNO-6084R*. SNO-7084R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A62-UL	
Network Camera	SNV-6084R*, SNV-6084*, SNV-5084*, SNV-7084*, SNV-7084R*, SNV-5084R*, SNV-6084T* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A63-UL	
Digital Color Camera	SCO-2081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A64-UL	
DIGITAL COLOR CAMERA	SCB-2004*D, SCB-2005*D (* is blank or N or P: N = NTSC, P=PAL)	E158873-A65-UL	
DIGITAL VIDEO RECORDER	SRD-1673D*, SRD-1654D*, SRD-854D*, SRD-852D*, SRD-1673*, SRD-1653*, SRD-873*, SRD-1640*, SRD-840*(* is blank or N or P, N=NTSC / P=PAL)	E158873-A66-UL	
Network Camera	SNP-6200RH*, SCP-2370RH* (* is blank or N or P: N=NTSC,P=PAL)	E158873-A67-UL	
Network Camera	SNV-6012M* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A68-UL	
Network Camera	SNF-7010*, SNF-7010V*, SNF-7010VM* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A69-UL	
Network Camera	SNO-6011R* (* is blank or N or	E158873-A72-UL	

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	P: N = NTSC, P=PAL)		
Network Camera	SND-6011R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A73-UL	
Digital Video Recorder	SRD-1680D*, SRD-880D* (* is blank or N or P : N=NTSC, P=PAL)	E158873-A74-UL	
DIGITAL COLOR CAMERA	SCZ-2373*, SCZ-2273* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A75-UL	
NETWORK CAMERA	SCO-6081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A76-UL	
DIGITAL COLOR CAMERA	SCV-6081R* and SCD-6081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A77-UL	
NETWORK VIDEO RECORDER	SRN-4000	E158873-A78-UL	
DIGITAL COLOR CAMERA	SCD-6021* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A81-UL	
NETWORK CAMERA	SNV-6013* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A83-UL	
NETWORK CAMERA	SNB-6010*, SNB-6010A*, SNB-6011*, SNB-6010B*, SNB-6011B* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A85-UL	
NETWORK CAMERA	SNP-6320H*, SNP-5430H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A86-UL	
NETWORK CAMERA	SNP-6320*, SNP-5430* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A87-UL	
Network Video Recorder	SRN-472S, XRN-810S* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A88-UL	
Digital Video Recorder	SRD-1676D*, SRD-1656D*, SRD-876D* (* is blank or N or P, N=NTSC/ P=PAL)	E158873-A89-UL	
DIGITAL COLOR CAMERA	SCB-5000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A90-UL	
DIGITAL COLOR CAMERA	SCB-5000*D (* is blank or N or P: N = NTSC, P=PAL)	E158873-A91-UL	
DIGITAL COLOR CAMERA	SCD-5080* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A92-UL	
DIGITAL COLOR CAMERA	SCB-5003*, SCB-5005*, HCB-6001* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A94-UL	
DIGITAL COLOR CAMERA	SCV-5082* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A95-UL	
DIGITAL COLOR CAMERA	SCD-5083*, SCD-5083R*, SCD-5082*, SCD-5083B*, SCD-5081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A96-UL	
DIGITAL COLOR CAMERA	SCV-5083* (* is blank or N or P: N = NTSC, P=PAL) SCV-5083R* (* is blank or N or	E158873-A97-UL	

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	P: N = NTSC, P=PAL) SCV-5081R* (* is blank or N or P: N = NTSC, P=PAL)		
NETWORK CAMERA	SNF-8010VM*, SNF-8010* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A98-UL	
DIGITAL COLOR CAMERA	SCD-5030*, SCD-5020* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A99-UL	
NETWORK CAMERA	SNO-5084R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A100-UL	
DIGITAL COLOR CAMERA	SCO-5083R*, SCO-5081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A101-UL	
NETWORK CAMERA	SNP-6321*, SNP-L6233* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A102-UL	
NETWORK CAMERA	SNP-6321H*, SNP-L6233H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A103-UL	
DIGITAL COLOR CAMERA	SCV-5085* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A104-UL	
NETWORK CAMERA	SNB-8000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A105-UL	
NETWORK CAMERA	SNV-8080* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A106-UL	
NETWORK CAMERA	SNZ-6320	E158873-A107-UL	
NETWORK CAMERA	SNP-6320RH*, SNP-L6233RH* (* is blank or N or P: N=NTSC,P=PAL)	E158873-A108-UL	
NETWORK CAMERA	SNP-5321H*, SNP-L5233H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A109-UL	
NETWORK CAMERA	SNP-5321*, SNP-L5233* (* is blank or N: NTSC or P:PAL)	E158873-A110-UL	
NETWORK CAMERA	SND-L6013R*, SND-L6013*, SND-L6012*, SND-L5013* (* is blank or N or P: N:NTSC/P:PAL)	E158873-A111-UL	
NETWORK CAMERA	SNO-L6083R*, SNO-L5083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A113-UL	
Network Video Recorder	SRN-1673S*(* is blank or N or P: N = NTSC, P=PAL)	E158873-A115-UL	
NETWORK CAMERA	SNO-L6013R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A118-UL	
NETWORK CAMERA	SND-L6083R*, SND-L5083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A119-UL	
Network Video Recorder	SRN-873S* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A120-UL	
NETWORK CAMERA	SNV-L6083R*, SNV-L5083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A121-UL	

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NETWORK CAMERA	SNB-9000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A122-UL	
Optical PTZ Accessary	SBP-301HF	E158873-A125-UL	
Optical PTZ Accessary	SBP-300HF	E158873-A126-UL	
NETWORK CAMERA	SNV-8081R* (* is Blank or N or P: N = NTSC, P=PAL)	E158873-A127-UL	
NETWORK CAMERA	SNO-8081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A128-UL	
NETWORK CAMERA	SNV-6085R* (* is blank or N or P: N = NTSC, P=PAL) SNV-6085* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A129-UL	
DIGITAL COLOR CAMERA	SCB-6003* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A130-UL	
DIGITAL COLOR CAMERA	SCO-6023R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A132-UL	
DIGITAL COLOR CAMERA	SCV-6083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A133-UL	
DIGITAL COLOR CAMERA	SCV-6023R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A135-UL	
DIGITAL COLOR CAMERA	SCD-6023R*, SCD-6013* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A136-UL	
DIGITAL COLOR CAMERA	SCD-6083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A137-UL	
DIGITAL COLOR CAMERA	SCO-6083R*(* is blank or N or P: N = NTSC, P=PAL)	E158873-A138-UL	
NETWORK CAMERA	SNV-L6014RM*, SNV-L6013R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A139-UL	
DIGITAL COLOR CAMERA	PNO-9080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A140-UL	
NETWORK CAMERA	PNV-9080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A141-UL	
NETWORK CAMERA	PND-9080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A142-UL	
Digital Video Recorder	SRD-1685*, SRD-894*, HRD-842* (* is blank or N or P, N=NTSC/ P=PAL)	E158873-A143-UL	
Digital Video Recorder	SRD-1694*, HRD-1642* (* is blank or N or P, N=NTSC/ P=PAL)	E158873-A144-UL	
Network Video Recorder (NVR)	XRN-2011*, XRN-2010*, XRN-3010*, XRN-1610* (* is blank or N or P: N=NTSC, P=PAL) XRN-2010P/DM, XRN-3010P/DM, XRN-3010A, XRN-2011A, XRN-2010A, XRN-1610A	E158873-A146-UL	
NETWORK CAMERA	QNO-7030R*, QNO-7020R*, QNO-7010R*, QNO-6030R*, QNO-6020R*, QNO-6010R*, QNO-6070R*, QNO-7080R*, QNO-6071R* (* is blank or N or	E158873-A147-UL	

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	P: N = NTSC, P=PAL)		
NETWORK CAMERA	QND-7030R*, QND-7020R*, QND-7010R*, QND-6030R*, QND-6020R*, QND-6010R*, QND-6070R*, QND-7080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A148-UL	
NETWORK CAMERA	QNV-7030R*, QNV-7020R*, QNV-7010R*, QNV-6030R*, QNV-6020R*, QNV-6010R*, QNV-6070R*, QNV-7080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A149-UL	
Network Video Recorder	XRN-1610S* (* is blank or N or P: N=NTSC, P=PAL) XRN-1610SP/DM, XRN-1610SA	E158873-A150-UL	
NETWORK CAMERA	PNF-9010RV*, PNF-9010R*, PNF-9010RVM* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A151-UL	
NETWORK CAMERA	PNM-9020V* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A152-UL	
Network Video Recorder	PRN-4011* (* is blank or N or P: N=NTSC, P=PAL)	E158873-A153-UL	
DIGITAL COLOR CAMERA	HCP-6320*, HCP-6320A*, HCP- 6230* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A154-UL	
DIGITAL COLOR CAMERA	HCP-6320H*, HCP-6320HA*, HCP-6230H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A155-UL	
NETWORK CAMERA	PNP-9200RH*, XNP-6370RH*, XNP-6330RH* (* is blank or N or P: N=NT, P=PAL)	E158873-A156-UL	
NETWORK CAMERA	XNB-8000*, XNB-6000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A157-UL	
NETWORK CAMERA	XNO-8080R*, XNO-6080R*, XNO-6120R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A158-UL	
NETWORK CAMERA	XNV-8040R*, XNV-8030R*, XNV-8020R*, XNV-6020*, XNV- 6010*, XNV-6020R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A159-UL	
NETWORK CAMERA	XND-8040R*, XND-8030R*, XND-8020R*, XND-6020*, XND- 6010*, XND-6020R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A160-UL	
NETWORK CAMERA	XNV-8080R*, XNV-6080R*, XNV-6080*, XNV-6120R*, XNV- 6120* (* is blank or N or P: N = NTSC, P=PAL) , XNV-8080RS, XNV-6080RS, XNV-6120RS.	E158873-A161-UL	
NETWORK CAMERA	XND-8080RV*, XND-8080R*, XND-6080RV*, XND-6080R*, XND-6080V*, XND-6080* (* is	E158873-A162-UL	

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	blank or N or P: N = NTSC, P=PAL)		
AHD Multi Directional Camera	HCM-9020VQ* (is blank or N or P: N = NTSC, P=PAL)	E158873-A163-UL	
NETWORK CAMERA	XNO-8020R*, XNO-8030R*, XNO-8040R*, XNO-6010R*, XNO-6020R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A164-UL	
NETWORK CAMERA	XNV-6011* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A165-UL	
DIGITAL COLOR CAMERA	HCD-6080R*, HCD-6070R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A167-UL	
DIGITAL COLOR CAMERA	HCV-6080R*, HCV-6070R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A168-UL	
NETWORK CAMERA	XNP-6120H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A169-UL	
NETWORK CAMERA	XND-8020F*, XND-6011F* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A170-UL	
NETWORK CAMERA	PNM-9080VQ* (* is blank or N or P: N = NTSC, P = PAL)	E158873-A172-UL	
Network Storage	SRB-160S	E158873-A173-UL	
NETWORK CAMERA	TNB-6030* (* is blank or N or P: N = NTSC, P = PAL)	E158873-A174-UL	
NETWORK CAMERA	PNM-9081VQ* (* is blank or N or P: N = NTSC, P = PAL)	E158873-A176-UL	
NETWORK CAMERA	XNO-6085R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A177-UL	
NETWORK CAMERA	XNB-6005* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A178-UL	
NETWORK VIDEO RECORDER	SNR-D5401N	E158873-A179-UL	
NETWORK CAMERA	XND-6085*, XND-6085V* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A180-UL	
NETWORK CAMERA	XNV-6085* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A181-UL	
NETWORK CAMERA	XNP-6040H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A182-UL	
NETWORK VIDEO DECODER	SPD-150* (* is blank or N or P: N = NTSC, P=PAL), SPD-151	E158873-A184-UL	
DIGITAL COLOR CAMERA	HCB-6000*, HCB-7000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A185-UL	
DIGITAL COLOR CAMERA	HCZ-6320*, HCZ-6321* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A186-UL	
NETWORK CAMERA	XNF-8010RVM*, XNF-8010RV*, XNF-8010R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A187-UL	

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DIGITAL COLOR CAMERA	HCO-6070R*, HCO-6080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A188-UL	
NETWORK CAMERA	XNB-6001* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A189-UL	
DIGITAL COLOR CAMERA	HCO-7070R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A190-UL	
LENS MODULE	SLA-T2480*, SLA-T2480V*, SLA-T4680*, SLA-T4680V* (* is blank or N or P: N = NTSC, P=PAL), SLA-T4680D, SLA-T4680DW, SLA-T4680DS, SLA-T2415, SLA-T2815B.	E158873-A191-UL	
DIGITAL COLOR CAMERA	HCD-7070R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A192-UL	
DIGITAL COLOR CAMERA	HCV-7070R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A193-UL	
NETWORK VIDEO RECORDER	TRM-1610S	E158873-A194-UL	
LENS MODULE	SLA-T1080F* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A195-UL	
NETWORK SWITCH	SPN-10080P, SPN-10080PM	E158873-A196-UL	
ANALOG CAMERA	HCV-7010R*, HCV-7020R*, HCV-7030R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A197-UL	
DIGITAL COLOR CAMERA	HCD-7010R*, HCD-7020R*, HCD-7030R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A198-UL	
DIGITAL COLOR CAMERA	HCO-7010R*, HCO-7020R* , HCO-7030R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A199-UL	
NETWORK CAMERA	XNP-6320, QNP-6230, XNP-6321	E158873-A200-UL	
NETWORK CAMERA	XNP-6320H, XNP-6320HS, QNP-6230H, XNP-6321H	E158873-A201-UL	
NETWORK THERMAL CAMERA	TNO-4050T, TNO-4030T, TNO-4040T	E158873-A202-UL	
NETWORK THERMAL CAMERA	TNO-4051T, TNO-4041T	E158873-A204-UL	
NETWORK CAMERA	XNV-6013M	E158873-A205-UL	
NETWORK CAMERA	XNV-6012M, XNV-6012	E158873-A206-UL	
NETWORK CAMERA	XNV-6022R, XNV-6022RM	E158873-A207-UL	
NETWORK CAMERA	LNO-6070R, LNO-6071R	E158873-A208-UL	
NETWORK CAMERA	LNO-6030R, LNO-6020R, LNO-6010R, LNO-6031R, LNO-6021R, LNO-6011R, LNO-6011RW	E158873-A209-UL	
NETWORK CAMERA	LNV-6070R	E158873-A210-UL	
NETWORK CAMERA	LND-6070R, LND-6071R	E158873-A213-UL	
NETWORK CAMERA	LNV-6030R, LNV-6020R, LNV-6010R,	E158873-A214-UL	

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E158873	Index	X1	9	21-May-20

	LVN-6031R, LVN-6021R, LVN-6011R		
NETWORK CAMERA	LND-6030R, LND-6020R, LND-6010R	E158873-A215-UL	
NETWORK CAMERA	XNV-L6080R, XNV-L6080	E158873-A216-UL	
NETWORK CAMERA	XND-L6080RV, XND-L6080R, XND-L6080V	E158873-A217-UL	
NETWORK CAMERA	XNO-L6080R	E158873-A218-UL	
NETWORK CAMERA	PNM-7000VD	E158873-A220-UL	
NETWORK VIDEO ENCODER	SPE-410, SPE-410A* (* is Blank or N or P, N = NTSC, P = PAL)	E158873-A222-UL	
NETWORK VIDEO ENCODER	SPE-1610, SPE-1610A* (* is Blank or N or P, N = NTSC, P = PAL), NVE3016	E158873-A223-UL	
NETWORK POSITIONING CAMERA	TNU-6320, TNU-6321	E158873-A224-UL	
Network Video Recorder	QRN-1610S, QRN-1620S, LRN-1610S	E158873-A225-UL	
NETWORK CAMERA	QNE-7080RV, QNE-6080RV	E158873-A226-UL	
NETWORK CAMERA	PNM-9000VQ	E158873-A227-UL	
Network Camera	XNP-6550RH, XNP-6320RH, XNP-6250RH, QNP-6230RH	E158873-A229-UL	
NETWORK CAMERA	PNM-9320VQP, PNM-9321VQP.	E158873-A230-UL	
NETWORK CAMERA	XNZ-6320	E158873-A231-UL	
NETWORK ENCODER	SPE-110N, SPE-110A* (* is Blank or N or P, N = NTSC, P = PAL)	E158873-A232-UL	
THERMAL POSITIONING CAMERA	TNU-4041T, TNU-4051T	E158873-A233-UL	
NETWORK CAMERA	PNM-9030V	E158873-A234-UL	
NETWORK CAMERA	TNV-7010RC	E158873-A235-UL	
NETWORK CAMERA	XND-8081VZ, XND-8081FZ, XND-6081VZ, XND-6081FZ	E158873-A236-UL	
DIGITAL COLOR CAMERA	HCF-8010V	E158873-A239-UL	
ANALOG CAMERA	HCO-6020R	E158873-A241-UL	
NETWORK CAMERA	XNV-6081, XNV-6081R, XNV-8081R	E158873-A242-UL	
NETWORK VIDEO RECORDER	TRM-810S, TRM-410S	E158873-A243-UL	
ANALOG CAMERA	HCD-6020R, HCD-6010	E158873-A244-UL	
NETWORK CAMERA	XND-6081V, XND-6081F, XND-6081RV, XND-6081RF, XND-8081RV, XND-8081RF	E158873-A245-UL	
NETWORK CAMERA	XND-L6080	E158873-A246-UL	
NETWORK CAMERA	TNO-6010M	E158873-A247-UL	
ANALOG CAMERA	SCO-6085R	E158873-A248-UL	
NETWORK CAMERA	PNM-9000VD	E158873-A249-UL	
NETWORK CAMERA	QND-6083R, QND-6082R, QND-6073R, QND-6072R,	E158873-A250-UL	

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	QND-6032R, QND-6022R, QND-6012R		
NETWORK CAMERA	QNE-8021R, QNE-8011R	E158873-A251-UL	
NETWORK CAMERA	QND-8021, QND-8011	E158873-A252-UL	
NETWORK CAMERA	QNO-8080R, QNO-8010R, QNO-8020R, QNO-8030R	E158873-A253-UL	
NETWORK CAMERA	QND-6021, QND-6011	E158873-A254-UL	
NETWORK CAMERA	QNO-6083R, QNO-6082R, QNO-6012R, QNO-6022R, QNO-6032R, QNO-6072R, QNO-6073R	E158873-A255-UL	
NETWORK CAMERA	QNV-6083R, QNV-6082R, QNV-6073R, QNV-6072R, QNV-6012R, QNV-6022R, QNV-6032R, QNV-6012RA.	E158873-A256-UL	
NETWORK CAMERA	QNV-8080R, QNV-8010R, QNV-8020R, QNV-8030R	E158873-A257-UL	
NETWORK CAMERA	QND-8080R, QND-8010R, QND-8020R, QND-8030R	E158873-A258-UL	
NETWORK CAMERA	QNF-8010	E158873-A259-UL	
NETWORK CAMERA	LNV-6012R, LNV-6022R, LNV-6032R	E158873-A260-UL	
NETWORK CAMERA	LNV-6072R	E158873-A261-UL	
NETWORK CAMERA	LND-6012R, LND-6022R, LND-6032R	E158873-A262-UL	
NETWORK CAMERA	LND-6072R	E158873-A263-UL	
NETWORK CAMERA	QNV-6024RM, QNV-6023R	E158873-A264-UL	
NETWORK CAMERA	LNO-6012R, LNO-6022R, LNO-6032R	E158873-A265-UL	
NETWORK CAMERA	LNO-6072R	E158873-A266-UL	
Digital Video Recorder	HRX-1621* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A267-UL	
Digital Video Recorder	HRX-821* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A268-UL	
NETWORK THERMAL CAMERA	TNO-3010T, TNO-3020T, TNO-3030T	E158873-A269-UL	
NETWORK CAMERA	PNM-9084QZ	E158873-A270-UL	
NETWORK CAMERA	XNP-6371RH	E158873-A275-UL	
NETWORK CAMERA	XNZ-L6320	E158873-A276-UL	
NETWORK CAMERA	PNM-9084RQZ*, PNM-9085RQZ* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A6001-UL	
NETWORK VIDEO RECORDER	WRN-1610S	E158873-A6002-UL	
NETWORK VIDEO RECORDER	WRN-810S* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A6003-UL	
NETWORK CAMERA	PNB-A9001	E158873-A6005-UL	
NETWORK CAMERA	TNB-9000	E158873-A6006-UL	
NETWORK CAMERA	PNO-A9081R	E158873-A6007-UL	
NETWORK CAMERA	PNV-A9081R	E158873-A6008-UL	
NETWORK CAMERA	PND-A9081RF	E158873-A6009-UL	
NETWORK CAMERA	QNB-8002	E158873-A6010-UL	
NETWORK CAMERA	QNB-6002	E158873-A6011-UL	

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NETWORK CAMERA	PND-A9081RV	E158873-A6012-UL	
NETWORK CAMERA	QNF-9010	E158873-A6013-UL	
NETWORK CAMERA	XNV-8081RE, XNV-6081RE, XND-8081REV, XND-6081REV	E158873-A6014-UL	
NETWORK CAMERA	XNV-9082R, XNV-8082R	E158873-A6023-UL	

CERTIFICATE OF COMPLIANCE

Certificate Number E158873
Report Reference E158873-A224-UL
Issue Date 2020-MAY-22

Issued to: Hanwha Techwin Co Ltd
6, Pangyo-ro 319beon-gil, Bundang-gu
Seongnam-si Gyeonggi-do 13488 KOREA

This certificate confirms that
representative samples of

INFORMATION TECHNOLOGY EQUIPMENT INCLUDING
ELECTRICAL BUSINESS EQUIPMENT
NETWORK POSITIONING CAMERA
TNU-6320, TNU-6321

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.

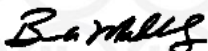
Standard(s) for Safety: UL 60950-1 and CAN/CSA C22.2 No. 60950-1-07
(Information Technology Equipment - Safety - Part 1:
General Requirements)

Additional Information: See the UL Online Certifications Directory at
<https://iq.ulprospector.com> for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.



Bruce Mahrenholz, Director North American Certification Program
UL LLC

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UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2019-05-09 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Listing
CCN:	NWQQ, NWGQ7 (Information Technology Equipment Including Electrical Business Equipment)
Complementary CCN:	N/A
Product:	NETWORK POSITIONING CAMERA
Model:	TNU-6320, TNU-6321
Rating:	Input: 24 Vac, 6 A, 60 Hz.
Applicant Name and Address:	HANWHA TECHWIN CO LTD 1204 CHANGWON-DAERO SEONGSAN-GU CHANGWON-SI GYEONGSANGNAM-DO 51542 KOREA

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared By: Lawrence Lee / Project Handler Reviewed By: SungIl Kim / Reviewer

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

A. Authorization - The Authorization page may include additional Factory Identification Code markings.

B. Generic Inspection Instructions -

- i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
- ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
- iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

NETWORK POSITIONING CAMERA for indoor use include Listed NETWORK CAMERA model SNZ-6320.

Model Differences

TNU-6320 is basic model.

TNU-6321 is identical to basic model except model name.

Test Item Particulars

Equipment mobility	stationary
Connection to the mains	No direct connection
Operating condition	continuous
Access location	operator accessible
Over voltage category (OVC)	OVC I
Mains supply tolerance (%) or absolute mains supply values	No direct connection
Tested for IT power systems	No
IT testing, phase-phase voltage (V)	N/A
Class of equipment	Class III (supplied by SELV)
Considered current rating of protective device as part of the building installation (A)	N/A
Pollution degree (PD)	N/A
IP protection class	IP X0
Altitude of operation (m)	Up to 2 000
Altitude of test laboratory (m)	Less than 2 000
Mass of equipment (kg)	13.65

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (T_{ma}) permitted by the manufacturer's specification of : 55 °C
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual

Additional Information

Original (4788322008)

Maximum normal load: Continuous operation with wiper motion.

4789494311

- Add model name; TNU-6321.

Additional Standards

The product fulfills the requirements of: N/A

Markings and Instructions

Clause Title	Marking or Instruction Details
Power rating - Ratings	Ratings (voltage, frequency/dc, current)
Power rating - Company identification	Listee's or Recognized companys name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Fuses - Rating	Rated current and voltage and type located on or adjacent to fuse or fuseholder.

Special Instructions to UL Representative

N/A

BD1.0	TABLE: Production-Line Testing Requirements					
BD1.1	Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.					
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
BD1.2	Earthing Continuity Test Exemptions – This test is not required for the following models:					
	All models					
BD1.3	Electric Strength Test Exemptions – This test is not required for the following models:					
	All models					
BD1.4	Electric Strength Test Component Exemptions – The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:					

BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics

1.5.1	TABLE: List of critical components					Pass
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Product Category CCN(s)	Mark(s) of conformity	Supplement ID
Enclosure (Metal)	Interchangeable	Interchangeable	Aluminum, Min. 4.0 mm thickness, See enclosure for dimension.	-	-	
Internal Network camera	HANWHA TECHWIN CO LTD	SNZ-6320	12 Vdc, 0.8 A / 44-57 Vdc(PoE), 0.2 A	NWGQ/7	UL (E158873)	
Fuse (F2)	COOPER BUSSMANN LLC	S500-8-R	250 V, 8 A	JDYX2/8	UL (E19180)	
Fuse (F11)	COOPER BUSSMANN LLC	S500-5-R	250 V, 5 A	JDYX2/8	UL (E19180)	
Fuse holder X2	GEO YOUNG INDUSTRY LTD	GF-205B	250 Vac, 10 A	IZLT2/8	UL (E164123)	
Motor controller	PANASONIC CORPORATION	JQ1P-5V-F	125 V, 10 A	MLDX2	UL (E43028)	
Upper heater	JIANGYIN HUILONG HEATER CO LTD	DR4006-220-18-30	24 V, 19.2 ohm	-	-	
Middle heater	SUNGSILELECTRO NICS CO LTD	HK 08R505P	24 V, 19.2 ohm	-	-	
DC motor	MOONS MOTOR	RB350600-50W01R	12 Vdc, 0.19 A	-	-	
DC FAN	YOUNG LINTECH CO LTD	DFB501512H	12 Vdc, 0.14 A	GPWV2	UL (E199993)	
Internal Wiring (Secondary)	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; Min. 30 V, 80 deg. C	AVLV2	UL	
PWB	Interchangeable	Interchangeable	Min. V-1, 105 deg.C.	ZPMV2	UL	

Issue Date: 2018-03-23

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Report Reference #

E158873-A224-UL

Revision Date: 2020-05-20

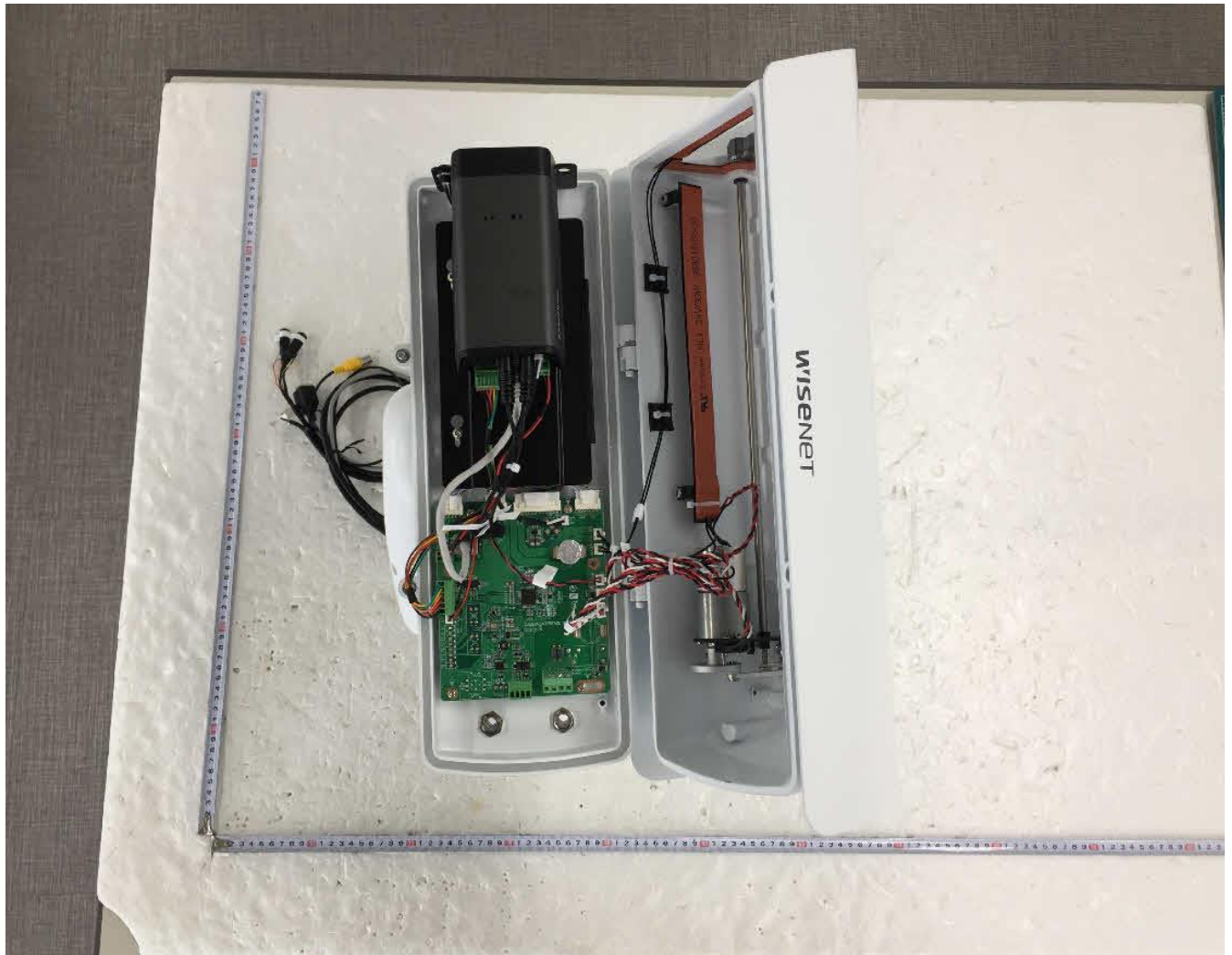
Label	Interchangeable	Interchangeable	Min.70 deg. C if max. surface temperature not specified.	PGDQ2 or PGJI2	UL	
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Enclosures

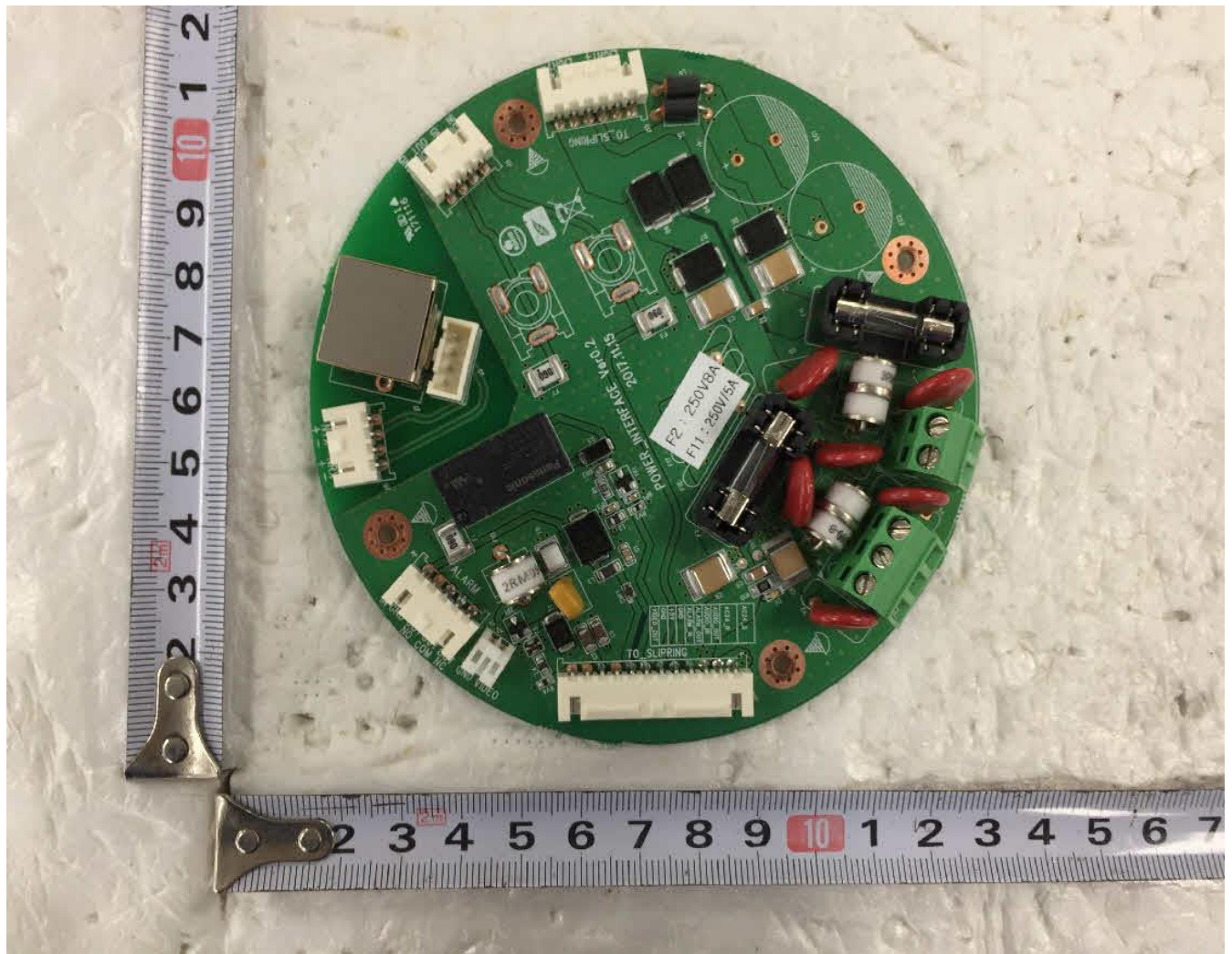
Type	Supplement Id	Description
Photographs	03-01	Front view
Photographs	03-02	Rear view
Photographs	03-03	Internal view -1
Photographs	03-04	Internal view -2
Photographs	03-05	Power interface board Top
Photographs	03-09	Power interface board bottom
Photographs	03-10	Motion drive board Top
Photographs	03-11	Motion drive board bottom
Photographs	03-12	Camera interface board Top
Photographs	03-13	Camera interface board bottom
Manuals	06-01	Manual
Miscellaneous	07-01	Enclosure dimension
Miscellaneous	07-02	Label

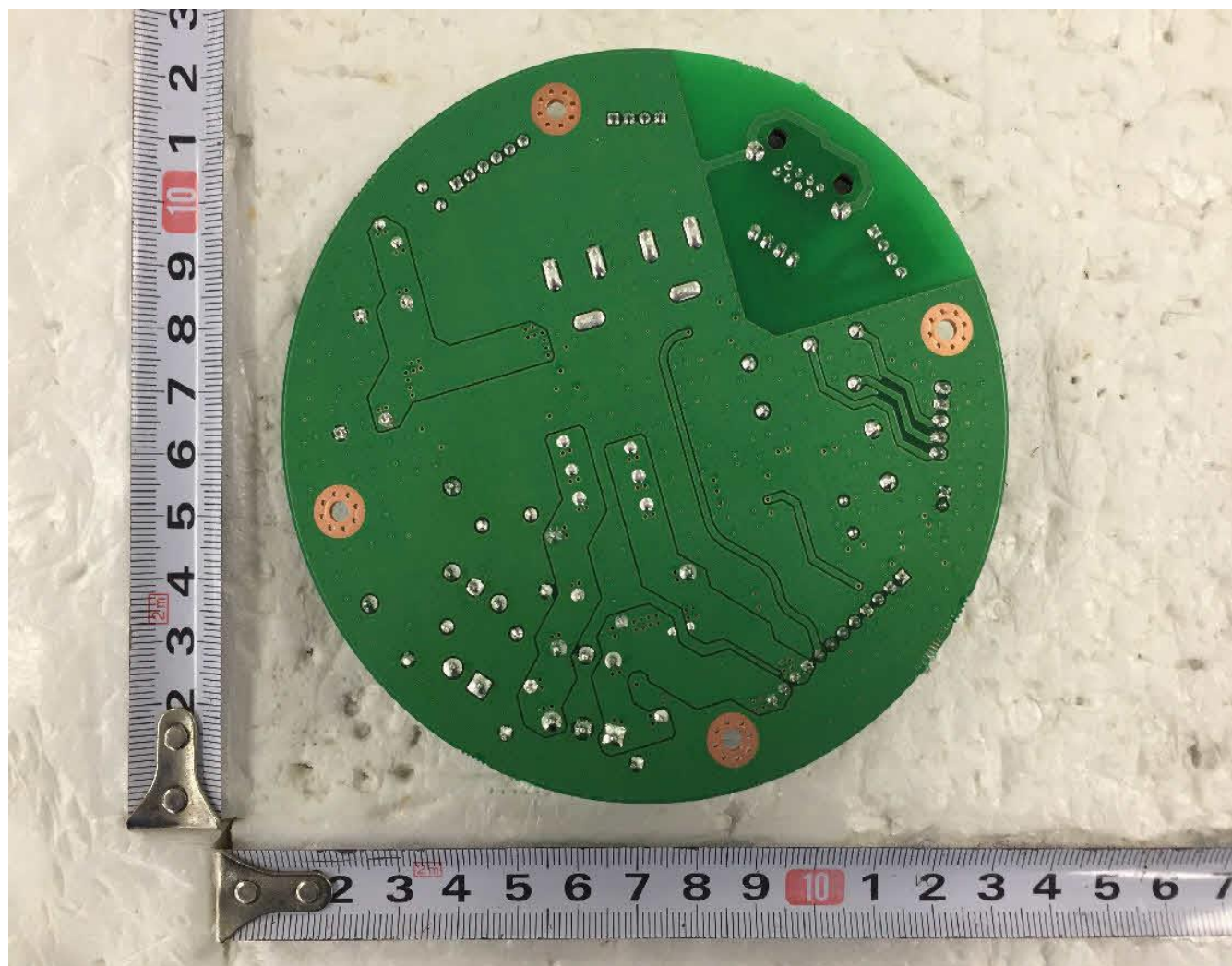


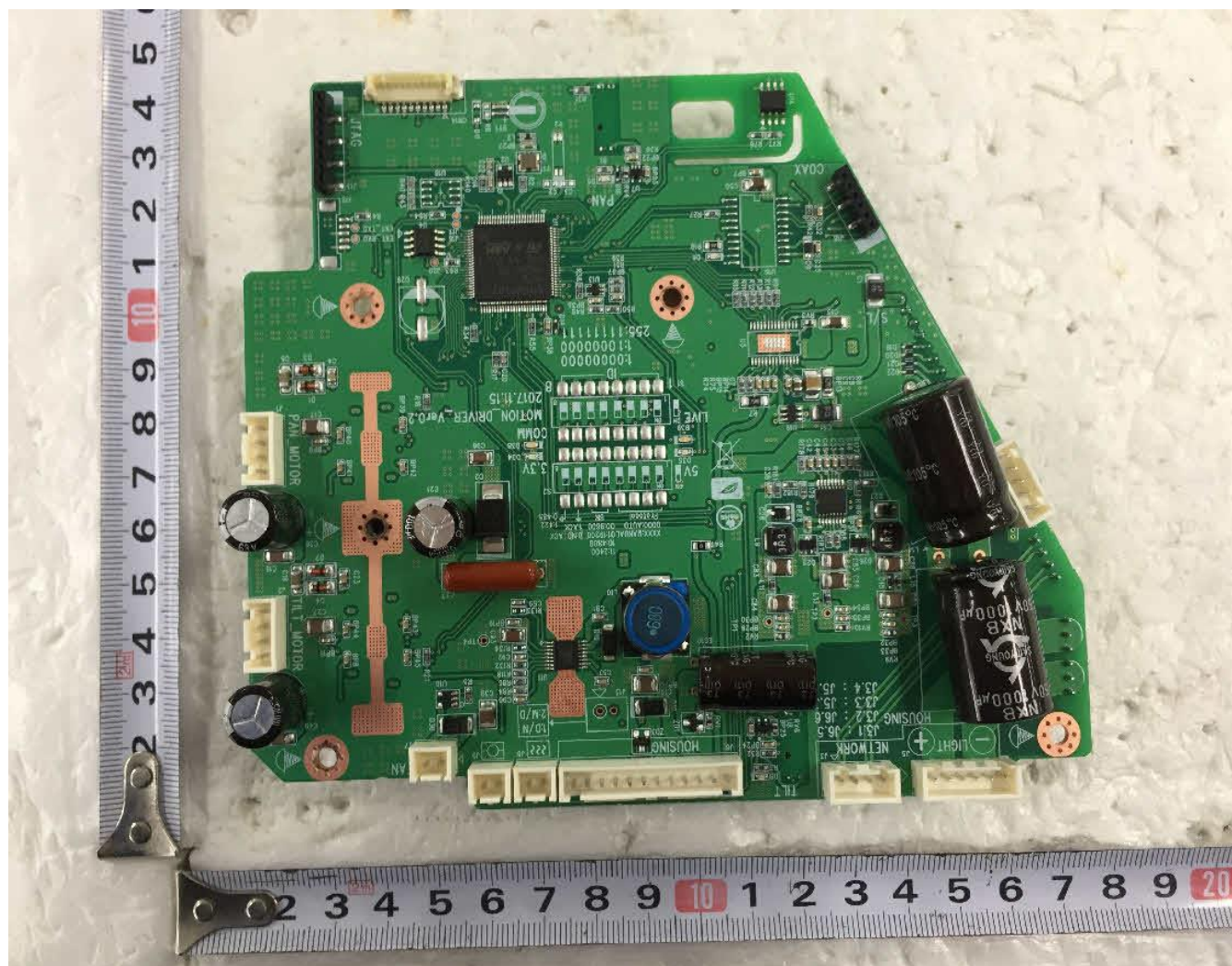


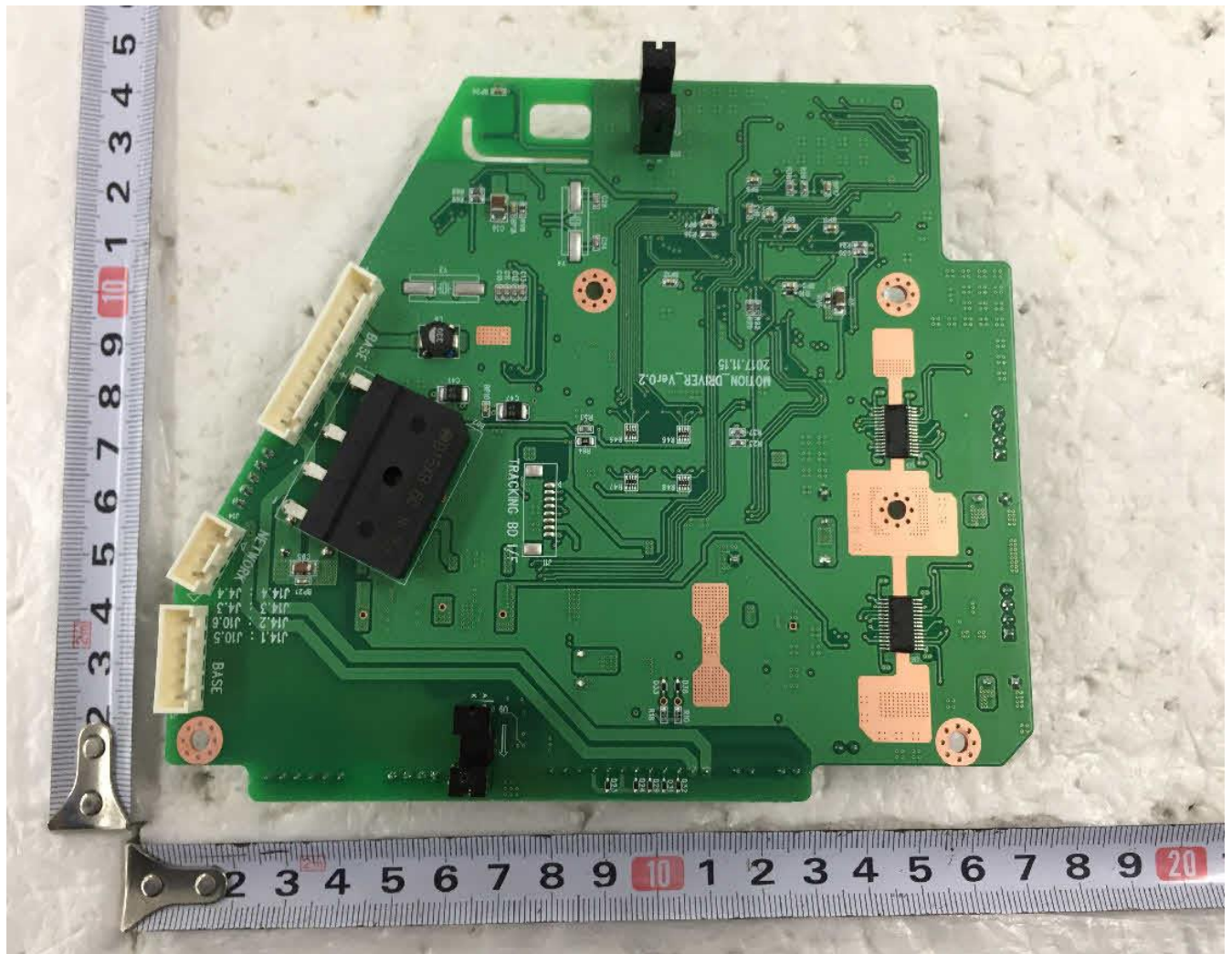


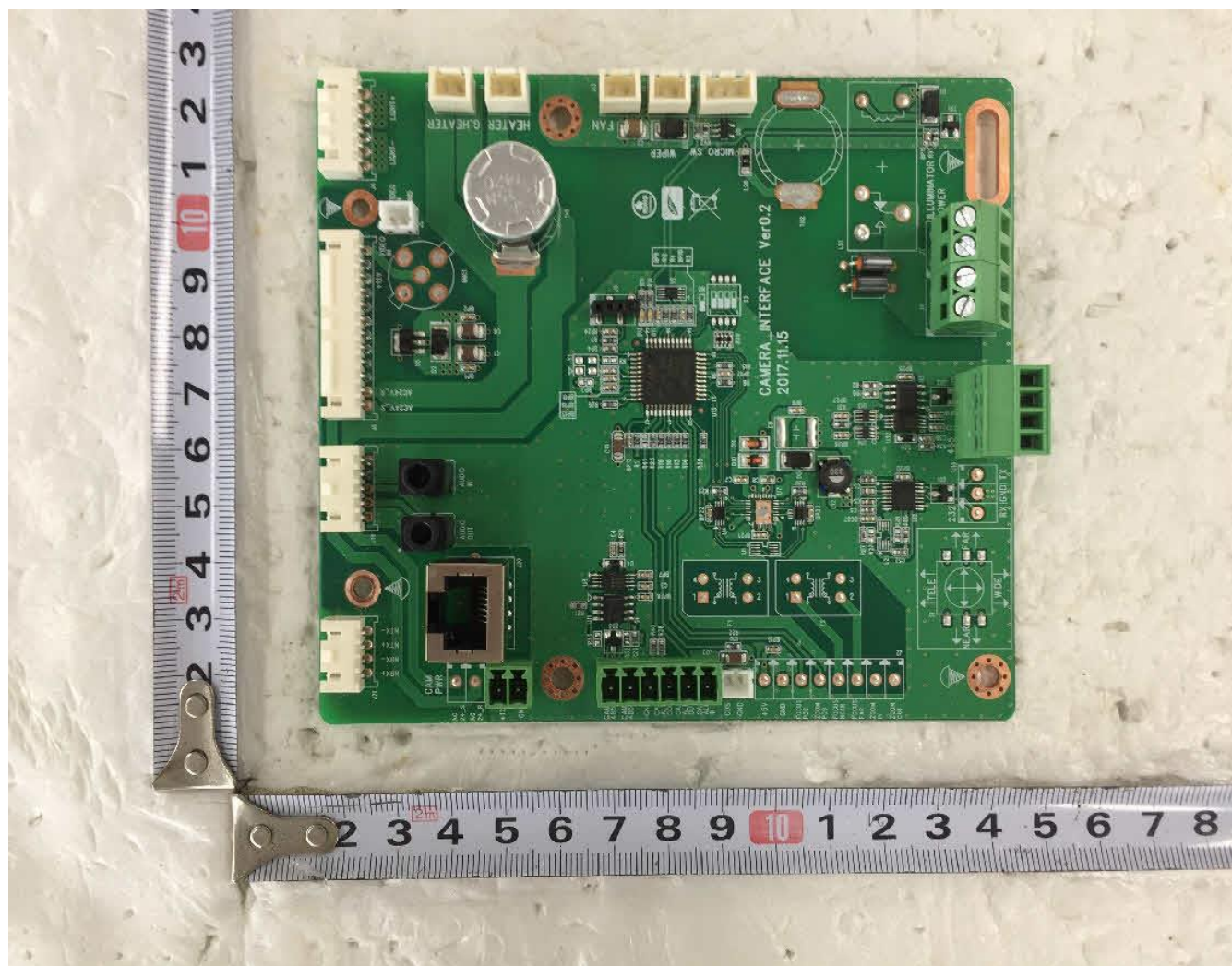


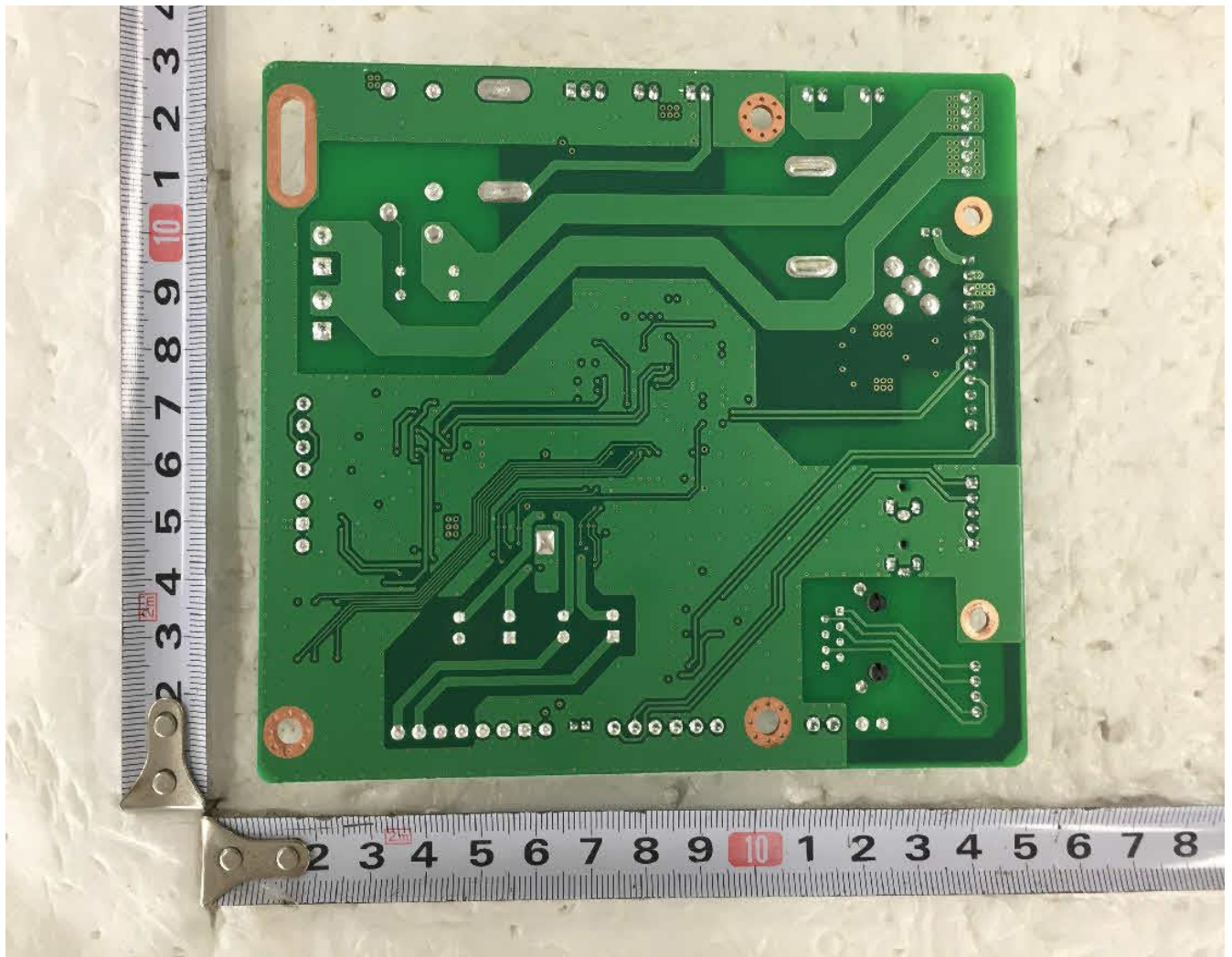












WISeNeT

NETWORK CAMERA

User Manual

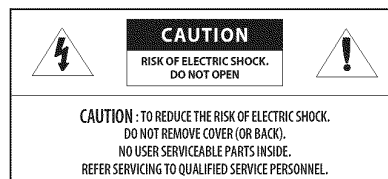
TNU-6320

CE

overview

IMPORTANT SAFETY INSTRUCTIONS

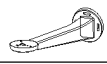
1. Before installation, read all manuals thoroughly and proceed with the installation according to the directions.
2. When connecting a power cable or signal line, check the external connection port first. Incorrectly connecting the power supply may cause fire, electric shock or damage to the product.
3. If you notice any unusual smells or smoke coming from the unit, stop using the product. If this occurs, immediately disconnect the power source and contact the service center. Continued use may cause fire or electrical shock.
4. Do not disassemble while the power is on.
5. Before the power is supplied, confirm that all power cords have been properly connected. An insecure connection may result in fire.
6. If the system has been in a high or low temperature environment, you may be injured by high heat or low chill of the surface.
7. Before turning the power on, confirm that the power supply supports 24Vac/6A 50/60Hz. Power in excess of the rated voltage may cause a fire.
8. Lightning or thunder may cause damage to the device.
When installing the product, consider taking measures that will minimize damage to the product in the event of lightning.
9. When the system is installed, it should be tightly anchored on a floor that can sufficiently sustain its weight against any strong wind.
The fixing method and material used must be able to sustain at least 4 times the system's weight.
10. Since the system is remotely controlled and sometimes changes its position, it should be so carefully installed that it does not create any harmful environment, i.e., its moving part does not injure people.
11. Do not attach anything to the system.
12. When installing in a dangerous environment, remove the equipment from the power supply to reduce the possibility of ignition.
13. Do not install near a heater or motor.
Install the system in a place with good ventilation.
14. You can receive installation support from engineers who are qualified to handle technical services.
15. Do not install the product in a location that is humid, or where the product will be exposed to dust or soot.
16. Do not drop objects on the product, or apply strong impact to it.
Keep away from locations where there is excessive vibration or magnetic interference.
17. Do not install in an operating environment with extreme temperatures.
The camera will operate at temperatures of -40°C or higher.
18. Keep out of direct sunlight, and away from heat radiation sources.
19. If you want to relocate a product that has already been installed, be sure to turn off the power and then move or reinstall it.
Failure to turn off the power may result in fire or electric shock.
20. Install the product in a location with good ventilation.
When connecting a power cable or signal line, check the external connection port first.
21. The rubber part of the camera wiper is expendable. Replace with a new one if performance is degraded.
22. Before cleaning the system, disconnect it from the power supply.

CAUTION

overview

WHAT'S INCLUDED

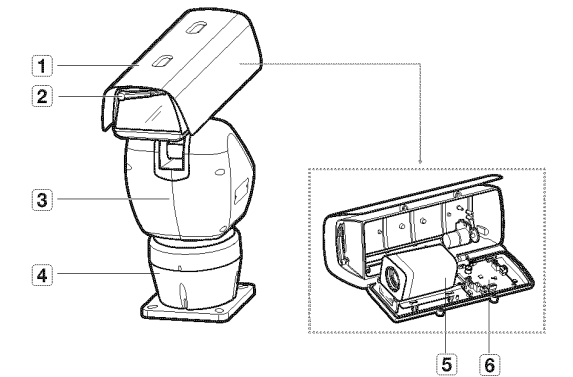
Please check if your camera and accessories are all included in the product package.
(As for each sales country, accessories are not the same.)

Appearance	Item Name	Quantity	Description
	Camera body	1	-
	Instructions and installation software DVD	1	-
	Quick Guide (Optional)	1	-
	Warranty card (Optional)	1	-
	L-Wrench	1	Used when assembling the camera body and bracket
Wall Mount Bracket (not included)			
	Wall Mount Bracket	1	Used when installing the camera on a wall
	Wrench bolts / flat washers	12/12	M5 x 18 (3EA / for connecting the main body and adapter) M5 x 12 (4EA / for connecting the adapter and wall mount) M4 x 10 (5EA / for connecting the cable wiring cover) Flat washers (12EA)
	Gasket	2	O-ring (1EA / for assembling the main body and adapter) Rear gasket (1EA for wall mounting)

Appearance	Item Name	Quantity	Description
IR illuminator (not included)			
	IR illuminator body	2	Mounted in the positioning system and used
	Mounting bracket	1	IR illuminator mounting bracket
	Quick Guide (Optional)	1	-
	Warranty card (Optional)	1	-
	L-Wrench	1	Used when assembling the camera body and bracket
	Wrench bolts (1/4"-1/2")	9	Used when mounting the bracket to the camera body (3EA) Used when mounting the IR illuminator on the bracket (6EA)

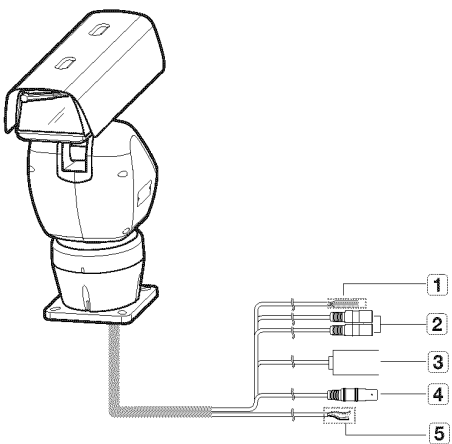
AT A GLANCE

Appearance



Item	
1	Sunshield
2	Windshield Wiper
3	Main body
4	Base housing
5	Camera
6	Interface board

Cables



Item	Description
1	Alarm cable Alarm I/O cable. (Black/Brown/Red/Yellow/Orange)
2	Audio cable Audio I/O cable.
3	Ethernet Connects the Ethernet cable.
4	Video output cable Outputs the video.
5	Power cable Cables for the camera power and IR illuminator power. (Black/Green/Brown/Blue)

installation & connection

INSTALLATION

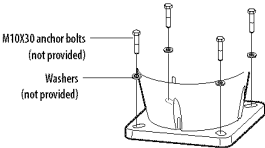
Precautions before installation

Ensure you read out the following instructions before installing the camera:

- Install the system based on the following directions. If you want to install using a different method, you should confirm the safety recommendations by making a request to the manufacturer in advance.
- The gross weight of the system is 14kg. Be careful when lifting the system, and put on proper anti-slip gloves.
- It must be installed on the area (ceiling or wall) that can withstand 4 times the weight of the camera including the installation bracket.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site. And put aside personal belongings from the site, just in case.

Install the device on the floor

1. Install the pedestal on the floor.



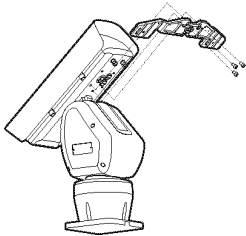
- We recommend using M10X30 anchor bolts or better to install the camera on concrete.
- Use screws that can withstand more than four times the weight of the equipment.

Optional Accessories for Installation

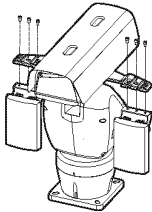
For your easier installation, you can purchase appropriate optional accessories available.

▪ Installing the IR illuminator

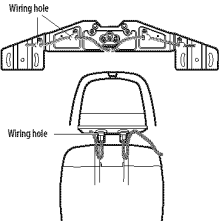
1. Secure the bracket to the camera with the 3 supplied bolts.



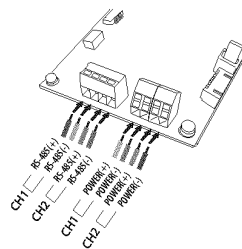
2. Connect the IR illuminator to the fixed bracket, using 3 bolts as shown.



3. Insert the IR illuminator cable into the housing through the wiring hole in the bracket and the hole in the back of the housing.

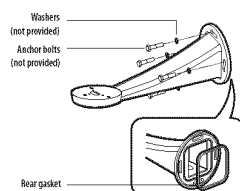


4. Connect the power cable and RS-485 cable of the IR illuminator to the board in the housing.



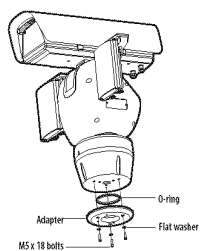
▪ Mounting on wall using bracket

1. Connect the side of the bracket to the wall using 4 anchor bolts (not supplied).

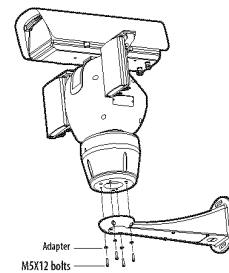


- We recommend using M10X30 anchor bolts or better to install the camera on concrete.
■ Use screws that can withstand more than four times the weight of the equipment.

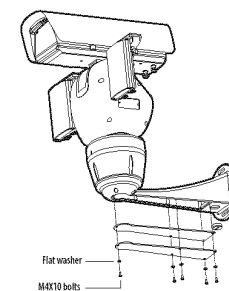
2. Connect the main body with the adapter using 3 screw bolts.



3. Assemble the adapter and bracket using 4 screw bolts.

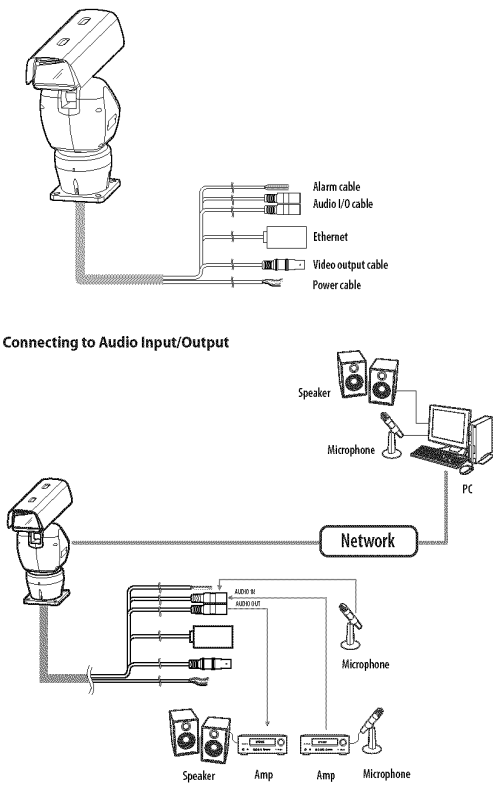


4. After organizing the cables as shown, assemble the cover.



installation & connection

CONNECTING WITH OTHER DEVICE



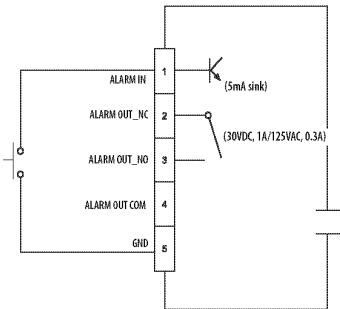
1.

Connect the AUDIO IN port of the camera with the microphone directly or LINE OUT port of the amplifier that the microphone is connected to.
2.

Connect the AUDIO OUT port of the camera with the LINE IN port of the speaker.
3.

Check the specifications for audio input.
- Audio Codec : G.711 PCM, μ -law 64kbps 8kHz sampling
- Full duplex Audio
- Audio in : Used for mono signal line input (Max.2.4 Vpp)
- Audio out : Used for mono signal line output (Max.2.4 Vpp)
- Line out impedance : 600 Ω

Alarm I/O Wiring Diagram



appendix

SPECIFICATION

Items		Description TNU-6320
Video	Imaging Device	1/2.8" 2.38M CMOS
	Total Pixels	1952(H) x 1116(V), 2.18M
	Effective Pixels	1944(H) x 1104(V), 2.14M
	Scanning System	Progressive
	Min. Illumination	Color : 0.3 Lux (1/30sec, F1.6, 50IRE) B/W : 0.03 Lux (1/30sec, F1.6, 50IRE)
	S / N Ratio	50dB
	Video Out	CVBS : 1.0Vp-p / 75Ω composite, 720x480(N), 720x576(P), for installation
Lens	Focal Length (Zoom Ratio)	4.44~142.6mm(Optical 32X)
	Max. Aperture Ratio	1.6 (Wide) ~ 4.4 (Tele)
	Angular Field of View	H : 62.8° (Wide) ~ 2.23° (Tele), V : 36.80° (Wide) ~ 1.26° (Tele)
	Min. Object Distance	Wide 1.5m
	Focus Control	Auto / Manual / One Push
	Lens Type	DC Auto Iris
Pan / Tilt / Rotate	Mount Type	Board-in type
	Pan Range	360° Endless
	Pan Speed	0.036° ~ 120°/sec
	Tilt Range	-90° ~ 40°
	Tilt Speed	0.012° ~ 40°/sec
	Sequence	Preset (255 ea), Swing, Group (6 ea), Trace, Tour (1 ea), Auto Run, Schedule
	Preset Accuracy	±0.2°
	Azimuth	Yes (E/W/S/N/NE/NW/SE/SW)

Items	Description TNU-6320	
Operational	Camera Title	Off / On (Displayed up to 45 characters)
	Day & Night	Auto (ICR) / Color / B/W / Schedule
	Backlight Compensation	Off / BLC
	Wide Dynamic Range	120dB
	Contrast Enhancement	SSDR (Off / On)
	Digital Noise Reduction	SSNRIII (2D+3D Noise Filter) (Off / On)
	Defog	Auto/Manual/Off
	Digital Image Stabilization	Off / On
	Motion Detection	Off / On (4 Zones with 4 Points of Polygonal)
	Gain Control	Off / Low / Middle / High
	White Balance	ATW / AWB / Manual / Indoor / Outdoor / Mercury
	Electronic Shutter Speed	Minimum / Maximum / Anti flicker (2 ~ 1/12,000sec)
	Digital Zoom	16x
	Intelligent Video Analytics	Tampering, Virtual Line, Enter/Exit, Appear / Disappear, Face Detection
	Alarm I/O	Input 1ea / Output 1ea (Relay)
	Audio In	Selectable (Mic IN/Line IN), Supply voltage: 2.5VDC (4mA), Input impedance: approx. 2K Ohm
	Audio out	Line out (Mono), Max output level: 1 Vrms
	Alarm Triggers	Motion detection, Tampering, Face Detection, Video Analytics, Alarm Input, Network Disconnection
	Alarm events	• File upload via FTP, E-Mail • Notification via E-Mail, TCP and HTTP • NAS recording at Alarm Triggers • External output • Preset
	IR Illuminator (Optional)	Compatible with Varifocal IR Illuminator
	Wiper	support

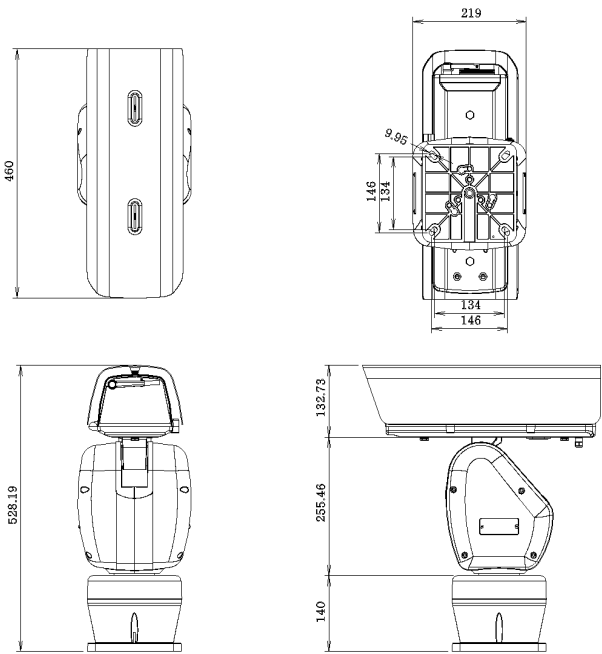
appendix

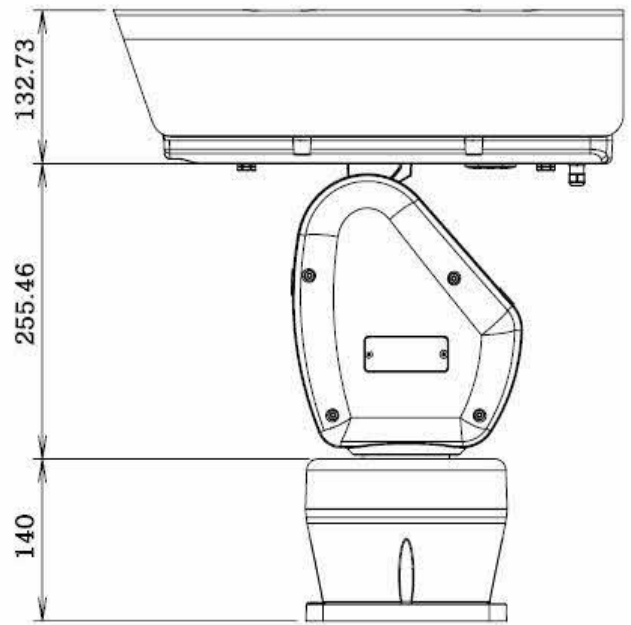
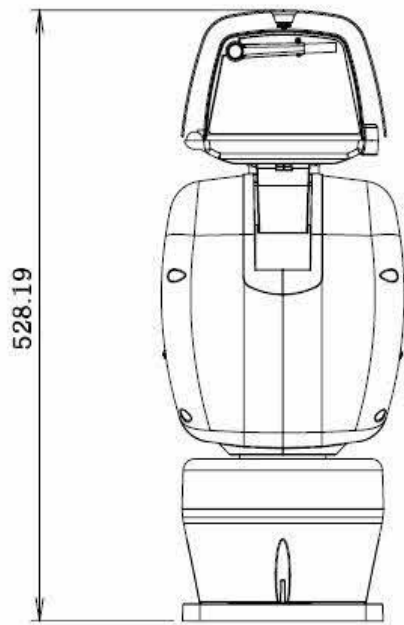
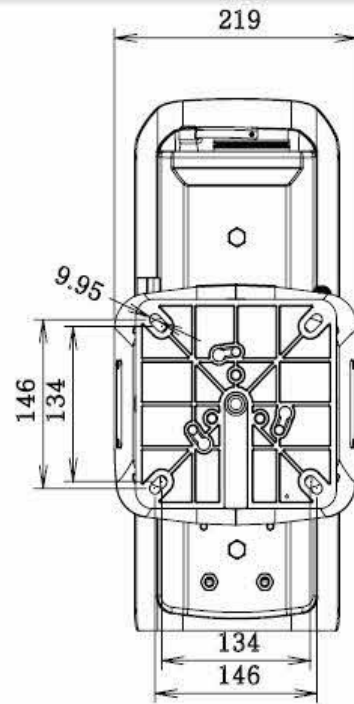
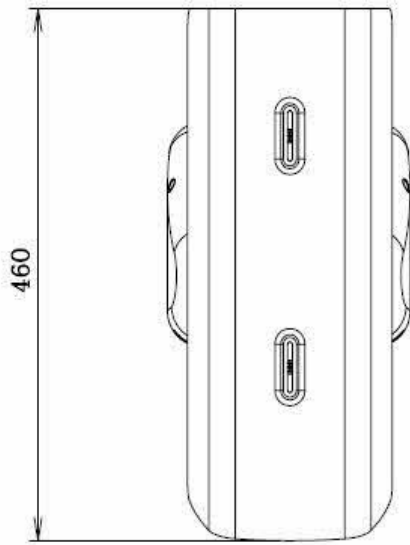
Items	Description	
	TNU-6320	
Network	Ethernet	RJ-45 (10/100BASE-T)
	Video Compression Format	H.264 (MPEG-4 Part 10/AVC) : Main/Baseline/High, Motion JPEG
	Resolution	1920x1080 / 1280x1024 / 1280x960 / 1280x720 / 1024x768 / 800x600 / 800x450 / 720x576 / 640x480 / 640x360 / 320x240 / 320x180
	Max. Framerate	H.264 : Max 60fps at all resolutions Motion JPEG : 1920x1080 / 1280x1024 / 1280x960 / 1280x720 / 1024x768 : Max. 15 fps 800x600 / 800x450 / 720x576 / 640x480 / 640x360 / 320x240 / 320x180 : Max. 30fps
	Smart Codec	Manual mode/Area-based / Sea, Face detection mode
	Video Quality Adjustment	H.264 : Compression Level, Target Bitrate Level Control MJPEG : Quality Level Control
	Bitrate Control Method	H.264 : CBR or VBR Motion JPEG : VBR
	Streaming Capability	Multiple Streaming (Up to 10 Profiles)
	Audio Compression Format	G.711 u-law / G.726 Selectable G.726 (ADPCM) 8KHz, G.711 8KHz G.726 : 16Kbps, 24Kbps, 32Kbps, 40Kbps
	Audio Communication	Bi-directional
	IP	IPv4, IPv6
	Protocol	TCP/IP, UDP/IP, RTP(UDP), RTP(TCP), RTCP, RTSP, NTP, HTTP, HTTPS, SSL, DHCP, PPPoE, FTP, SMTP, ICMP, IGMP, SNMPv1/v2c/v3(MIB-2), ARP, DNS, DDNS, QoS, PIM-SM, UPnP, Bonjour
	Security	HTTPS(SSL) Login Authentication Digest Login Authentication IP Address Filtering User access Log 802.1x Authentication
	Streaming Method	Unicast / Multicast
	Max. User Access	10 users at Unicast Mode

Items	Description	
	TNU-6320	
Network	Edge Storage	SD/SDHC/SDXC slot for supporting memory card - motion Images recorded in the SD/SDHC/SDXC memory card can be downloaded. NAS(Network Attached Storage)
	Application Programming Interface	ONVIF Profile S SUNAPI 2.0 SVNP 1.2 WiseNet Open Platform
	Webpage Language	English, French, German, Spanish, Italian, Chinese, Korean, Russian, Japanese, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek
	Web Viewer	- Supported OS : Windows 7, 8.1, 10, Mac OS X 10.9, 10.10, 10.11, 10.12 - Plug-in Free Webviewer Supported Browser : Google Chrome 54, MS Edge 30, Mozilla Firefox 49(Window 64bit only), Apple Safari9(Mac OS X only) - Plug-in Webviewer Supported Browser : MS Explore 11, Apple Safari 9(Mac OS X only)
	Central Management Software	SmartViewer, SSM
Environmental	Operating Temperature	-40°C ~ +55°C (-40°F ~ +131°F)
	Storage Temperature / Humidity	-45°C ~ +60°C (-49°F ~ +140°F) / Less than 90% RH
	Ingress Protection	IP66
Electrical	Explosion Certification	Safety(UL, KC-SDOC), EMC(FCC, CE, VCCI, RCM, KC)
	Input Voltage / Current	24VAC / 6A(MAX)
Mechanical	Power Consumption	100W(Heater On), 25W(Heater Off)
	Color / Material	Ivory / Aluminum die casting
	Dimension (WxHxD)	(W)219 × (H)528 × (D)460
	Weight	14kg (Camera main body)

PRODUCT OVERVIEW

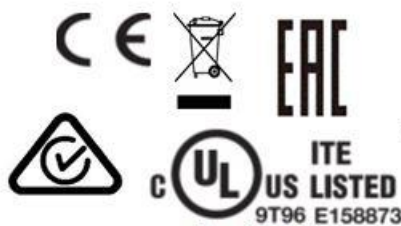
Unit : mm (inch)





NETWORK POSITIONING CAMERA

MODEL : TNU-6320
AC24V 60Hz, 6A



M/C: TNU-6320/KUS

Fac.ID: K



Mar. 2018

S/N:XXXXXXXXXXXXXXXXXX

MAC ADDRESS : XX-XX-XX-XX-XX-XX

CAN ICES-3(A)/NMB-3(A)

HANWHA TECHWIN CO.,LTD. MADE IN KOREA

Revision Date: 2020-05-20

Test Record No. 1

1. Test result relate only to the items tested.
2. The manufacturer submitted representative production samples of NETWORK POSITIONING CAMERA, TNU-6320.
3. Only the test listed were considered necessary.

The following tests were conducted:

Tests performed (name of test and test clause):	Testing location:
Input: Single-Phase (1.6.2)	
Loading - Wall and Ceiling Mounted Equipment (4.2.10)	
Heating (4.5.1, 1.4.12, 1.4.13)	
Component Failure (5.3.1, 5.3.4, 5.3.7)	
Abnormal Operation (5.3.1 - 5.3.9)	
Locked-Rotor Overload for DC Motors in Secondary Circuits (Annex B.7)	
The following tests were waived:	Rationale for Waiving

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

The following supplements are provided as part of this Test Record. NOTE: These supplements are only available to the Applicant via the myUL™ Client Portal.

Type	Supplement Id	Description
Datasheet	02-01	Datasheet

Revision Date: 2020-05-20

Test Record No. 2

No test was considered necessary in order to add model name; TNU-6321.

The following tests were conducted:

Tests performed (name of test and test clause): None	Testing location: None
The following tests were waived: None	Rationale for Waiving

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

The following supplements are provided as part of this Test Record. NOTE: These supplements are only available to the Applicant via the myULTM Client Portal.

Type	Supplement Id	Description