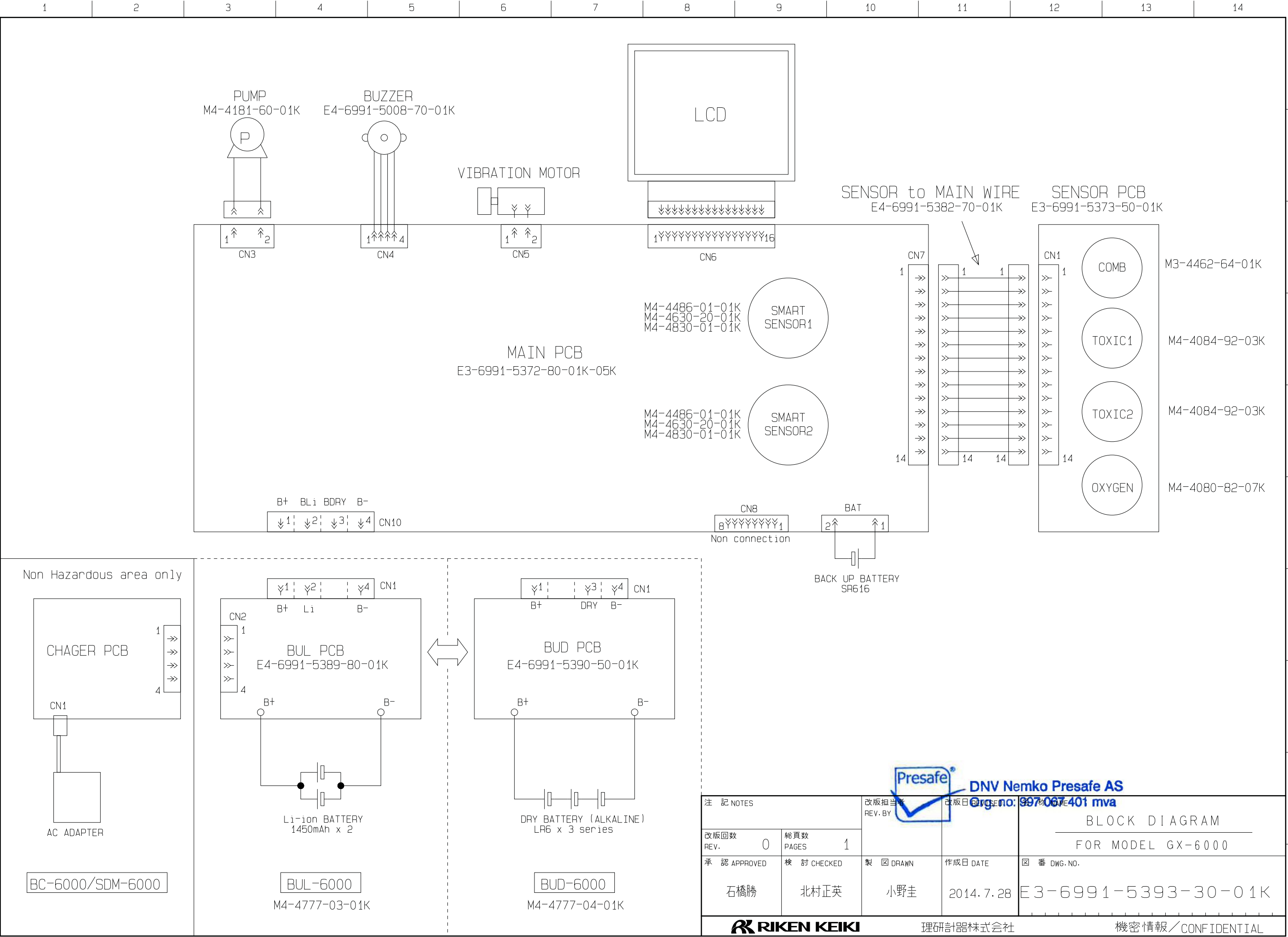


		DRAWING NAME	DRAWING No.	REV	DATE
	01	BLOCK DIAGRAM FOR MODEL GX-6000	E3-6991-5393-30-01K	0	2014.7.28
	02	DIAGRAM FOR I.S. KEEP FOR MODEL GX-6000	E3-6991-5361-10-01K	2	2014.12.16
	03	OUTER STRUCTURE GX-6000	M3-4777-01-01K	0	2014.7.18
	04	MAIN UNIT GX-6000	M2-4777-01-01K	1	2014.9.30
	05	SCHEMATIC MAIN PCB FOR MODEL GX-6000	E3-6991-5372-80-01K	0	2014.7.14
	06	SCHEMATIC MAIN PCB FOR MODEL GX-6000	E3-6991-5372-80-02K	0	2014.7.14
	07	SCHEMATIC MAIN PCB FOR MODEL GX-6000	E3-6991-5372-80-03K	0	2014.7.14
	08	SCHEMATIC MAIN PCB FOR MODEL GX-6000	E3-6991-5372-80-04K	0	2014.7.14
	09	SCHEMATIC MAIN PCB FOR MODEL GX-6000	E3-6991-5372-80-05K	0	2014.7.14
	10	PARTS LIST OF MAIN PCB	PLT-6991-5372-80 (1/4)	0	2014.7.14
	11	PARTS LIST OF MAIN PCB	PLT-6991-5372-80 (2/4)	3	2014.12.16
	12	PARTS LIST OF MAIN PCB	PLT-6991-5372-80 (3/4)	1	2014.11.5
	13	PARTS LIST OF MAIN PCB	PLT-6991-5372-80 (4/4)	0	2014.7.14
	14	MAIN PCB FOR MODEL GX-6000	E3-6991-5372-80-01A	0	2014.7.14
	15	MAIN PCB FOR MODEL GX-6000	E3-6991-5372-80-02A	0	2014.7.14
	16	SCHEMATIC SENSOR PCB FOR MODEL GX-6000	E3-6991-5373-50-01K	1	2014.11.5
	17	PARTS LIST OF SENSOR PCB	PLT-6991-5373-50 (1/1)	2	2014.12.16
	18	SENSOR PCB FOR MODEL GX-6000	E4-6991-5373-50-01A	1	2014.11.5
	19	SENSOR to MAIN WIRE FOR MODEL GX-6000	E4-6991-5382-70-01K	0	2014.7.14
	20	PUMP RP-12	M4-4181-61-01K	3	2013.1.29
	21	Buzzer BZ-9K	E4-6991-5008-70-01K	0	2011.2.28
	22	COMBUSTIBLE GAS SENSOR NC SENSOR	M3-4462-64-05K	3	2012.4.17
	23	TOXIC GAS SENSOR	M4-4084-92-03K	0	2014.7.30
	24	OXYGEN SENSOR	M4-4080-82-07K	0	2014.7.30
	25	SMART SENSOR Type-ESS	M4-4486-01-01K	0	2014.7.30
	26	TOXIC GAS SENSOR	M4-4084-30-08K	0	2014.7.30
	27	ESS SENSOR PCB	E3-6991-5384-10-01K	0	2014.7.14
	28	SMART SENSOR Type-DES	M4-4630-20-01K	0	2014.7.24
	29	DES SENSOR PCB	E3-6991-5385-90-01K	1	2015.5.25
	30	DES DIGITAL PCB	E3-6991-5386-60-01K	1	2015.2.24

		DRAWING NAME	DRAWING No.	REV	DATE
	31	T- 3/4 BPA LAMP OL-8270BPA	E4-6991-5129-60-01K	0	2012.2.24
	32	SMART SENSOR Type-PIS	M4-4830-01-01K	1	2015.3.25
	33	PIS SENSOR PCB	E4-6991-5387-30-01K	2	2015.3.25
	34	PIS DIGITAL PCB	E3-6991-5388-10-01K	1	2015.3.25
	35	BUL-6000	M3-4777-03-01K	0	2014.7.28
	36	BUL PCB	E3-6991-5389-80-01K	1	2014.9.5
	37	BUD-6000	M3-4777-04-01K	1	2015.3.6
	38	BUD PCB	E4-6991-5390-50-01K	1	2014.9.5
	39	DIAGRAM FOR I.S. KEEP FOR MODEL BC-6000 / SDM-6000	E4-6991-5395-80-01K	1	2014.9.5
*	40	LABEL	M4-4777-01-01K	7	2021.7.26
	41	LABEL BC-6000 / SDM-6000	M4-4777-01-02K	0	2014.7.28
	42	SCHEMATIC CHARGER PCB FOR MODEL BC-6000	E3-6991-5255-80-01K	0	2014.12.16
	43	CHARGER PCB FOR MODEL BC-6000	E3-6991-5255-80-01A	0	2014.12.16
	44	SCHEMATIC CHARGER PCB FOR MODEL SDM-6000	E3-6991-5445-60-01K	1	2015.3.5
	45	CHARGER PCB FOR MODEL SDM-6000	E3-6991-5445-60-01A	2	2015.6.12
	46	SMART SENSOR Type-OSS	M4-4080-01-01K	0	2015.2.24
	47	OSS SENSOR PCB	E4-6991-5457-00-01K	0	2015.2.24
	48	OSS DIGITAL PCB	E3-6991-5458-70-01K	0	2015.2.24
	49	OXYGEN SENSOR	M4-4080-01-02K	0	2015.2.24
	50	BC-6000	M3-4777-02-01K	1	2015.3.23
	51	SDM-6000	M3-4395-23-01K	1	2015.3.23

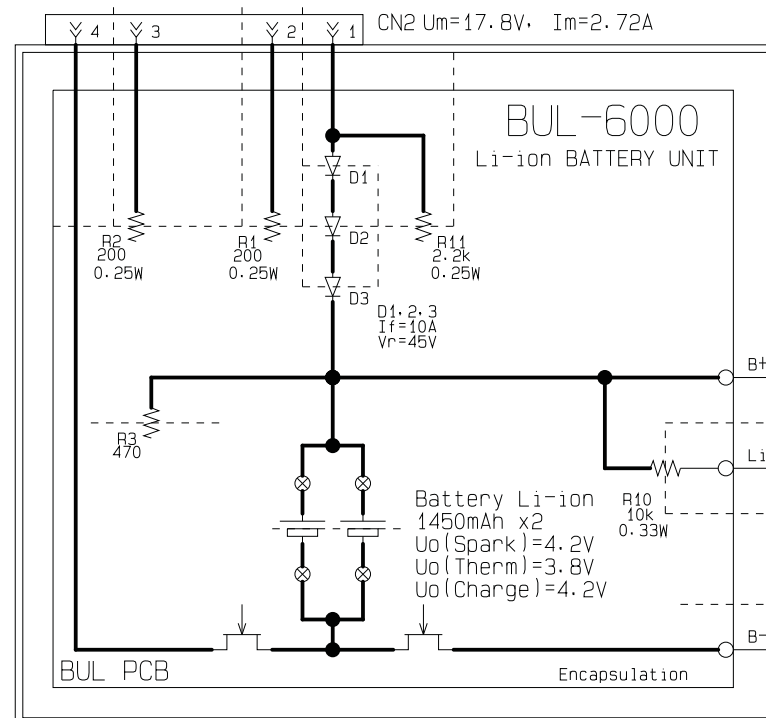
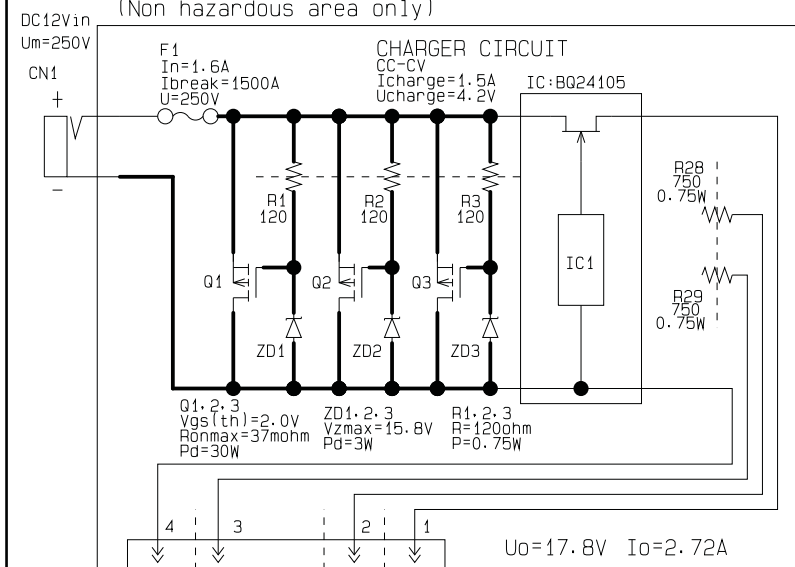


注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
No.40		小野圭	2021.7.26	INDEX
改版回数 REV.	7			総頁数 PAGES
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2015.3.6	E 3 - 6 9 9 1 - 5 4 7 0 - 7 0 - 0 1 K
<div>RIKEN KEIKI 理研計器株式会社 機密情報 / CONFIDENTIAL</div>				

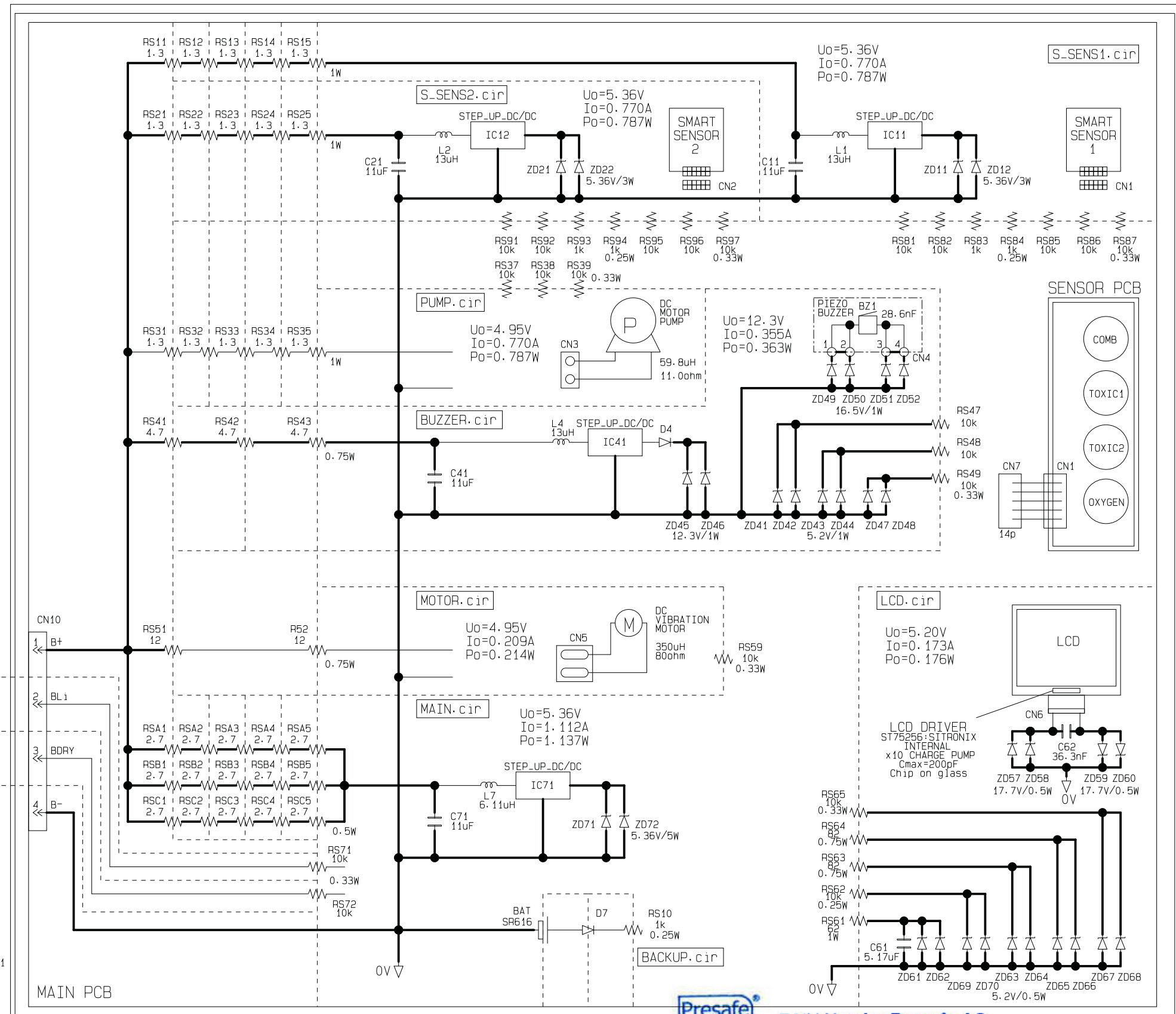
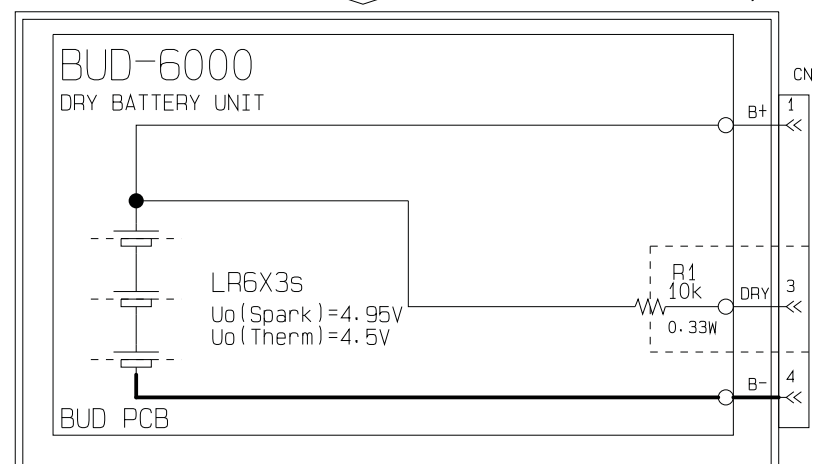


BATTERY CHARGER  
BC-6000/SDM-6000

(Non hazardous area only)



The battery unit  
even the end user is  
possible to replace.  
(Non hazardous area only)



(MEMO)

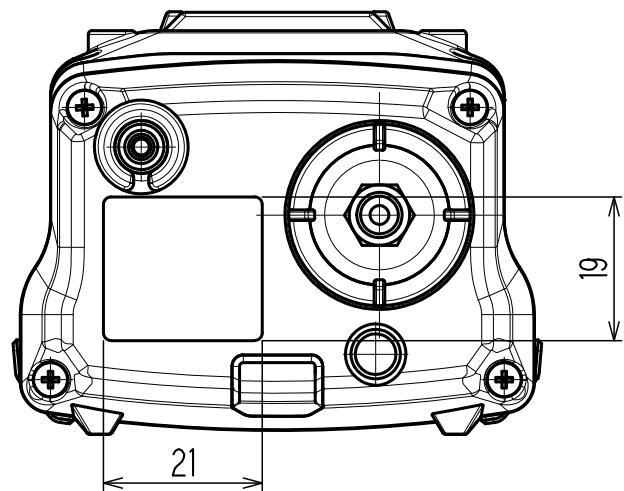
1. \_ \_ \_ \_ marks means SEPARATE

2.        marks means INFALLIBLE CONNECTION

注 記 NOTES RS78→RS71、RS79→RS72		改版担当者 REV. BY 小野圭	改版日 REVISION DATE 2014.12.16	図 番 DWG. NO. E3-6991-5361-10-01K
改版回数 REV. 2	総頁数 PAGES 1	製 図 DRAWN 小野圭	作成日 DATE 2014.6.23	図 番 DWG. NO. E3-6991-5361-10-01K
承 認 APPROVED 石橋勝		検 討 CHECKED 北村正英	DIAGRAM FOR I. S. KEEP FOR MODEL GX-6000	

寸法	精度	中級	粗級
18以下	0.1	0.2	0.4
18以上50以下	0.15	0.3	0.6
50以上120以下	0.2	0.4	0.8
120以上260以下	0.3	0.6	1.2
260以上500以下	0.4	0.8	1.6
500以上1000以下	0.5	1.0	2.0
1000以上	0.7	1.2	2.5

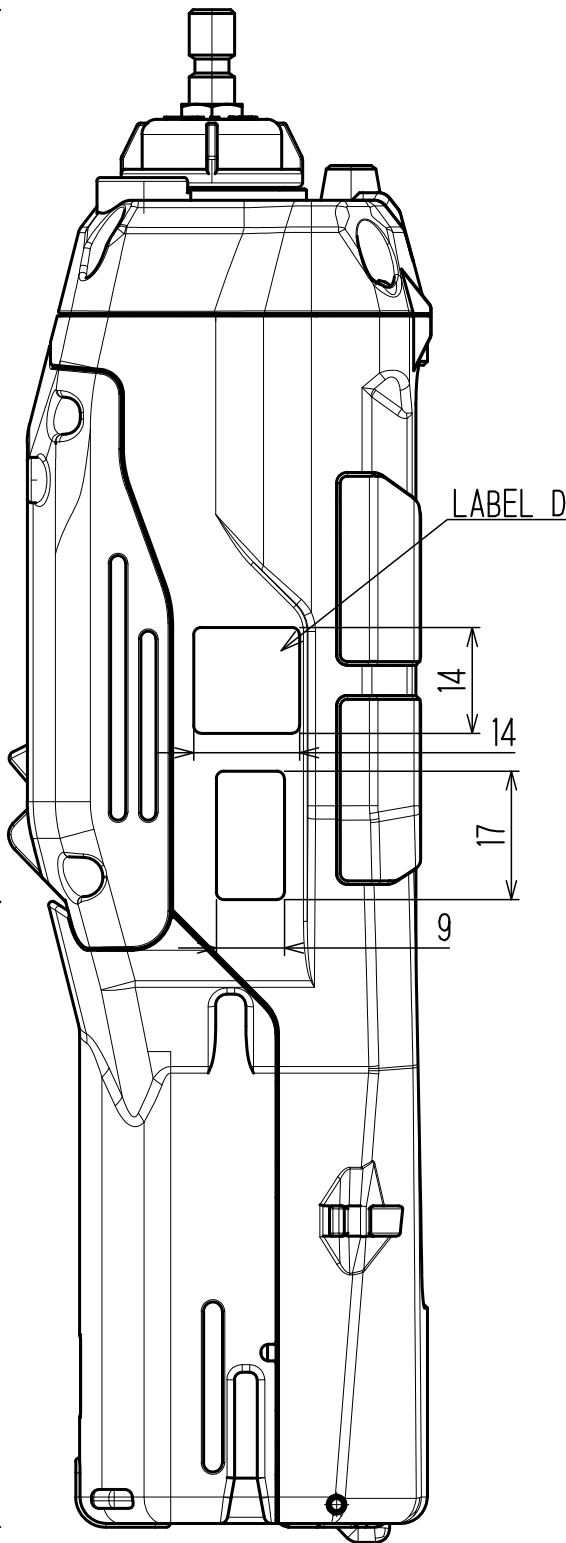
寸法	精度	中級	粗級
18以下	0.1	0.2	0.4
18以上50以下	0.15	0.3	0.6
50以上120以下	0.2	0.4	0.8
120以上260以下	0.3	0.6	1.2
260以上500以下	0.4	0.8	1.6
500以上1000以下	0.5	1.0	2.0
1000以上	0.7	1.2	2.5



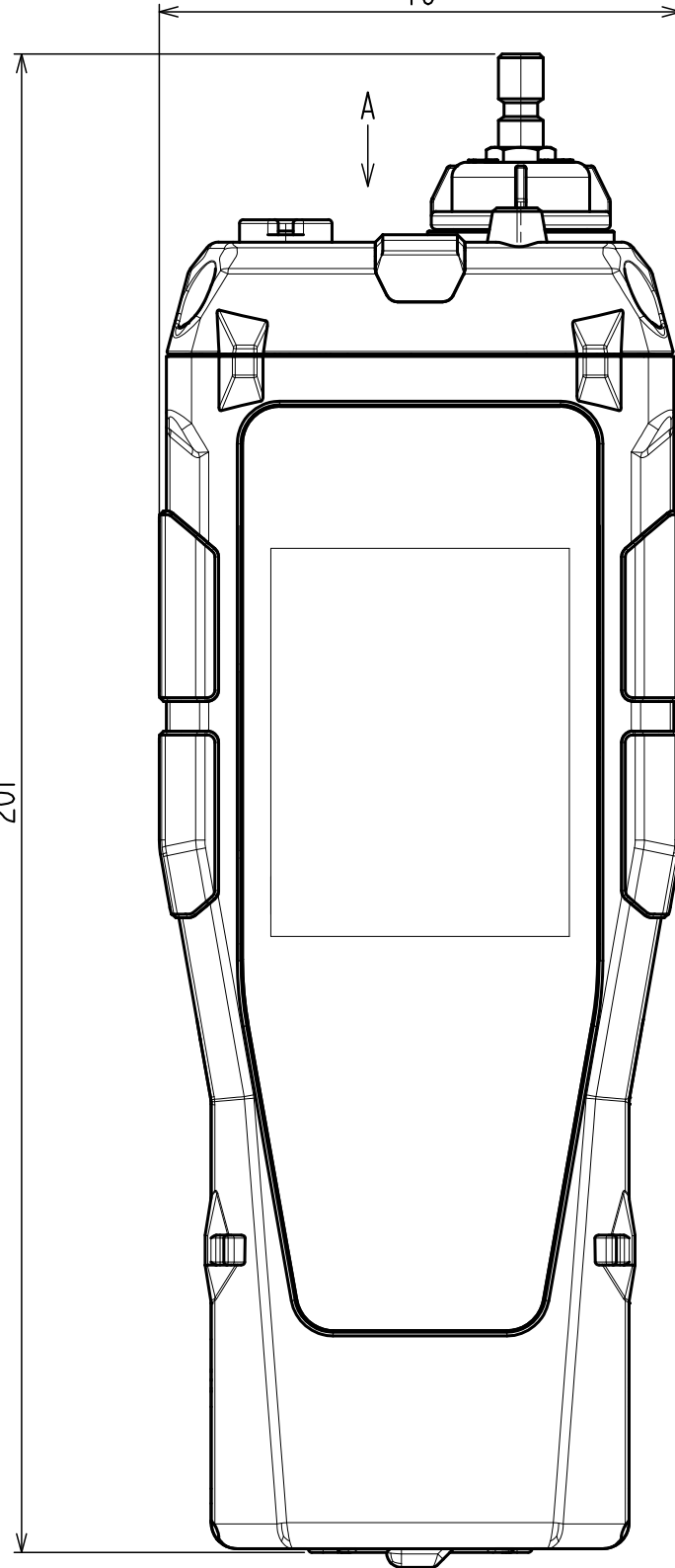
VIEW A

MAIN UNIT  
M2-4777-01-01K

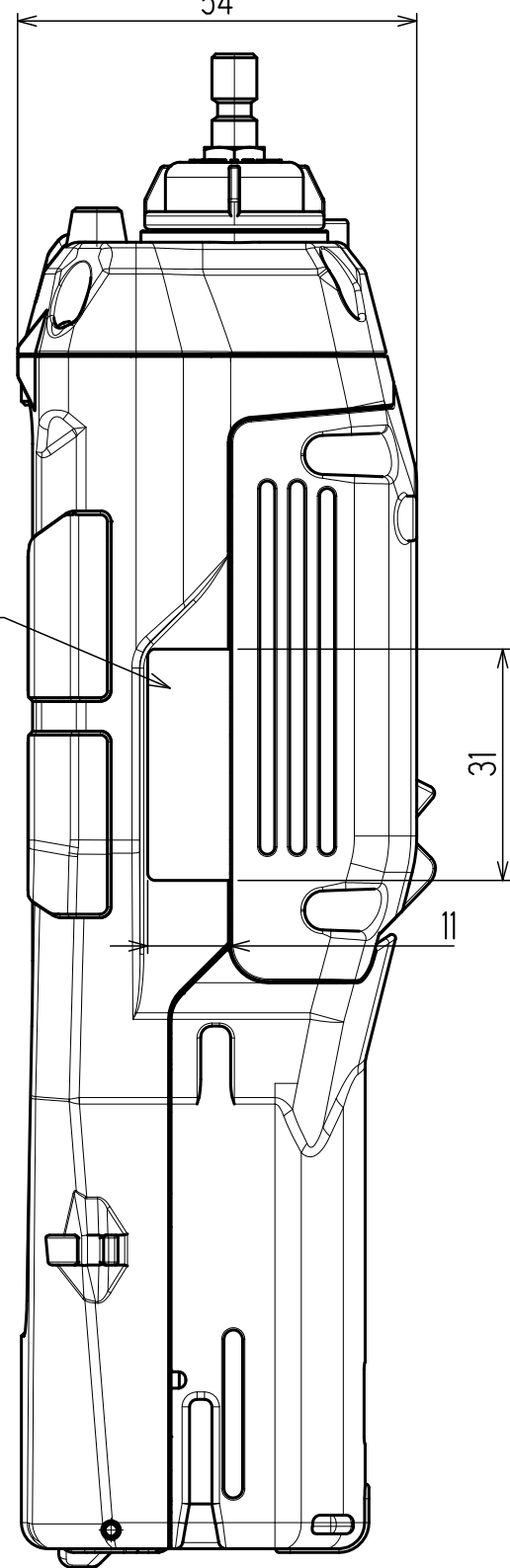
BATTERY UNIT  
BUL-8000  
M3-4777-03-01K  
OR  
BUD-8000  
M3-4777-04-01K



201



LABEL A



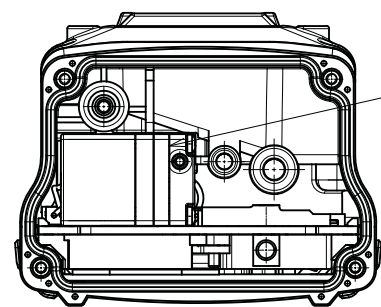
PROTECTION GRADE:MORE THAN IP 20

表面处理 TREAT.	許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	名 称 NAME
材 質 MAT.		1 : 1		OUTER STRUCTURE GX-6000
承 認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
青良治	近藤晴彦	海野裕作	2014. 7. 18	M3-4777-01-01K

△	記 事	年 月 日	訂 正 者	RIKEN KEIKI	理研計器株式会社	機密情報 / CONFIDENTIAL
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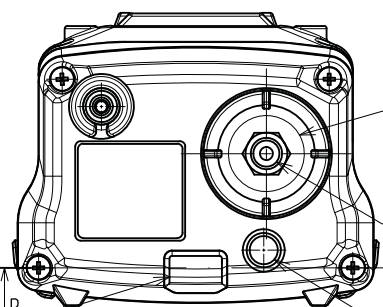
1 2 3 4 5 6 7 8 9 10 11



PUMP  
M4-4181-61-01K

ALARM LAMP  
MATERIAL:PC  
SURFACE AREA:120mm<sup>2</sup>

(FIGURE WITHOUT TOP COVER)

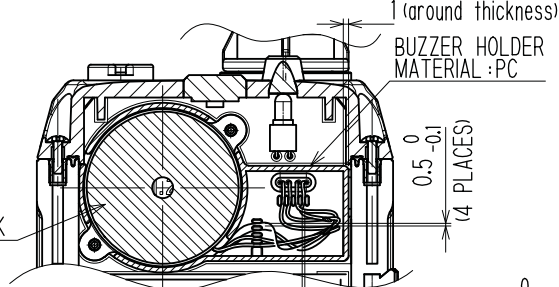


FILTER CASE  
MATERIAL:PC  
SURFACE AREA:397mm<sup>2</sup>

NIPPLE  
MATERIAL:STAINLESS STEEL

BUZZER  
E4-6991-5008-70-01K

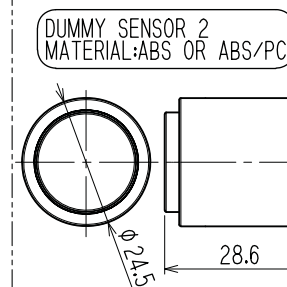
ALARM LAMP  
MATERIAL:PC  
SURFACE AREA:60cm<sup>2</sup>



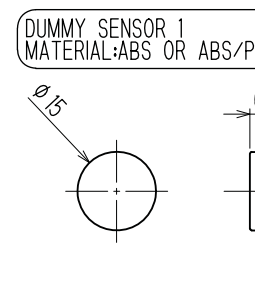
B-B SECTION

(CABLE CLAMPING FOR BUZZER)

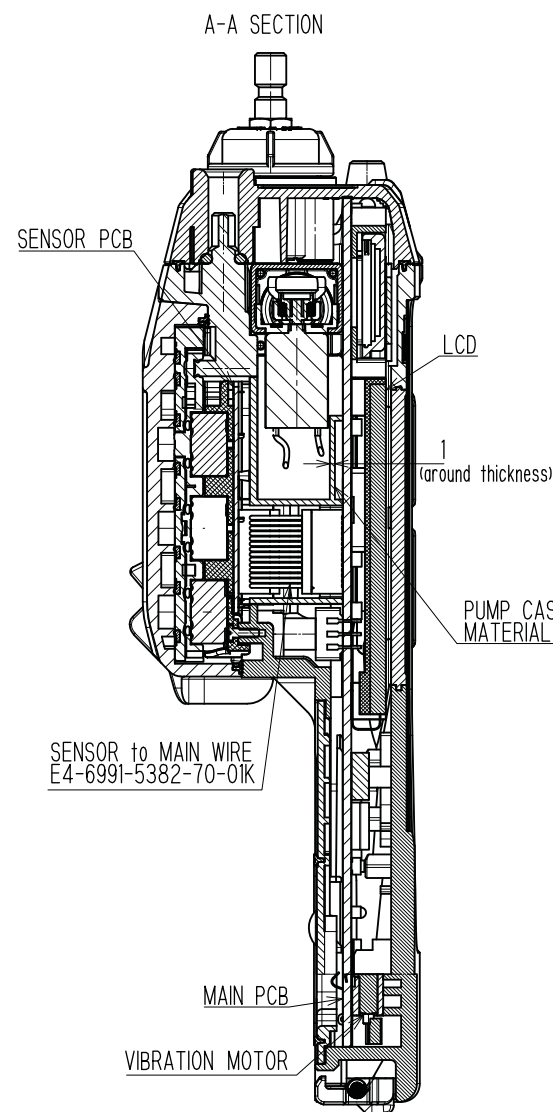
SENSOR COVER  
ABS/PC ESC9448N(BLACK)  
RESISTANCE LESS THAN 1[GΩ]  
RIKEN TECHNOS CORP



DUMMY SENSOR 2  
MATERIAL:ABS OR ABS/PC



DUMMY SENSOR 1  
MATERIAL:ABS OR ABS/PC



A-A SECTION

SENSOR PCB

LCD

1 (around thickness)

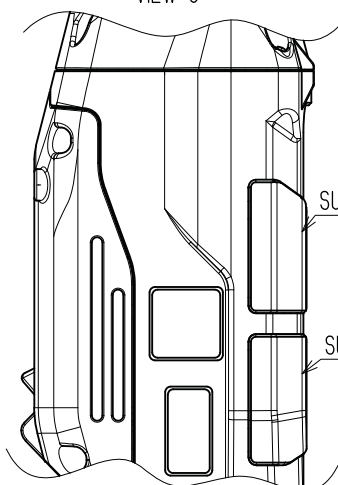
PUMP CASE  
MATERIAL:PC

SENSOR to MAIN WIRE  
E4-6991-5382-70-01K

MAIN PCB

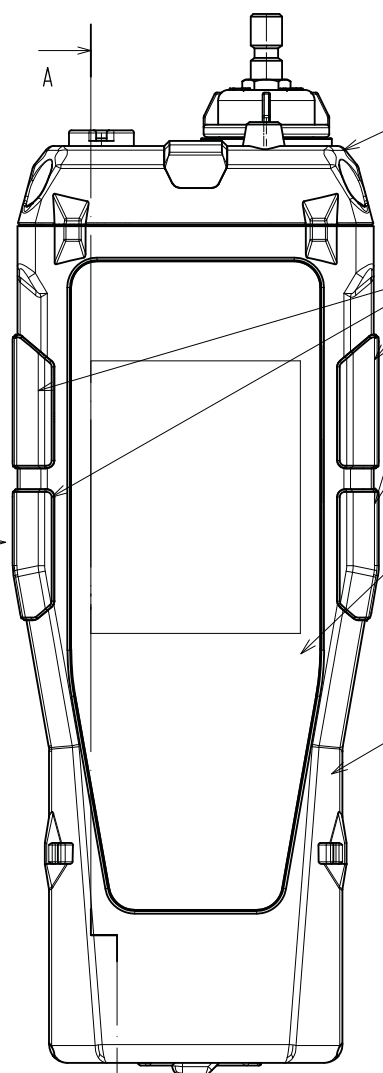
VIBRATION MOTOR

VIEW C



SURFACE AREA:290mm<sup>2</sup>

SURFACE AREA:290mm<sup>2</sup>



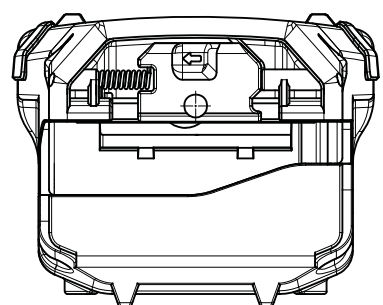
TOP COVER  
ABS/PC ESC9448N(BLACK)  
RESISTANCE LESS THAN 1[GΩ]  
RIKEN TECHNOS CORP

ALARM LAMP  
MATERIAL:PC

PANEL SHEET

△ PET ST-PET  
RESISTANCE LESS THAN 1[GΩ]  
ACHILLES CORP  
OR  
PET 300R  
RESISTANCE LESS THAN 1[GΩ]  
TOYOBO CO LTD

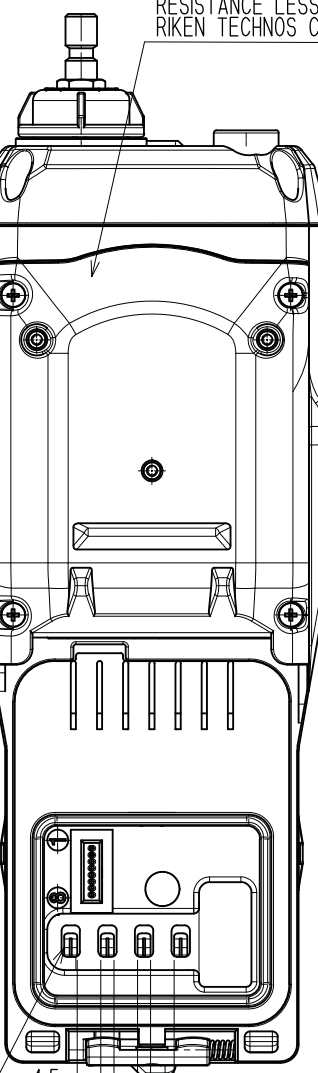
HOUSING  
ABS/PC ESC9448N(BLACK)  
RESISTANCE LESS THAN 1[GΩ]  
RIKEN TECHNOS CORP



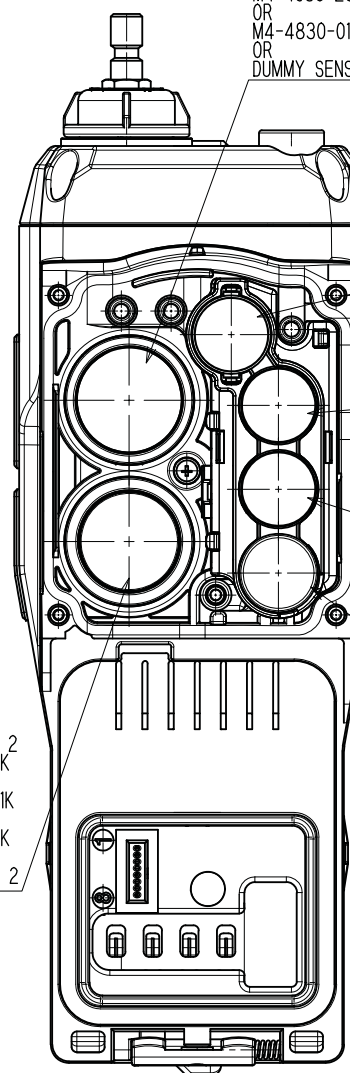
CONTACT FOR  
BUL-6000 OR  
BUD-6000

SURFACE AREA:290mm<sup>2</sup>

SURFACE AREA:290mm<sup>2</sup>



SMART SENSOR 2  
M4-4486-01-01K  
OR  
M4-4630-20-01K  
OR  
M4-4830-01-01K  
OR  
DUMMY SENSOR 2



SMART SENSOR 1  
M4-4486-01-01K  
OR  
M4-4630-20-01K  
OR  
M4-4830-01-01K  
OR  
DUMMY SENSOR 2

COMBUSTIBLE  
GAS SENSOR  
M3-4462-64-05K  
OR  
DUMMY SENSOR 1

TOXIC  
GAS SENSOR 1  
M4-4084-92-03K  
OR  
DUMMY SENSOR 1

TOXIC  
GAS SENSOR 2  
M4-4084-92-03K  
OR  
DUMMY SENSOR 1

OXYGEN SENSOR  
M4-4080-82-07K  
OR  
DUMMY SENSOR 1

(FIGURE WITHOUT SENSOR COVER,SENSOR PACKING)



DNV Nemko Presafe AS  
Org. no: 997 067 401 mva

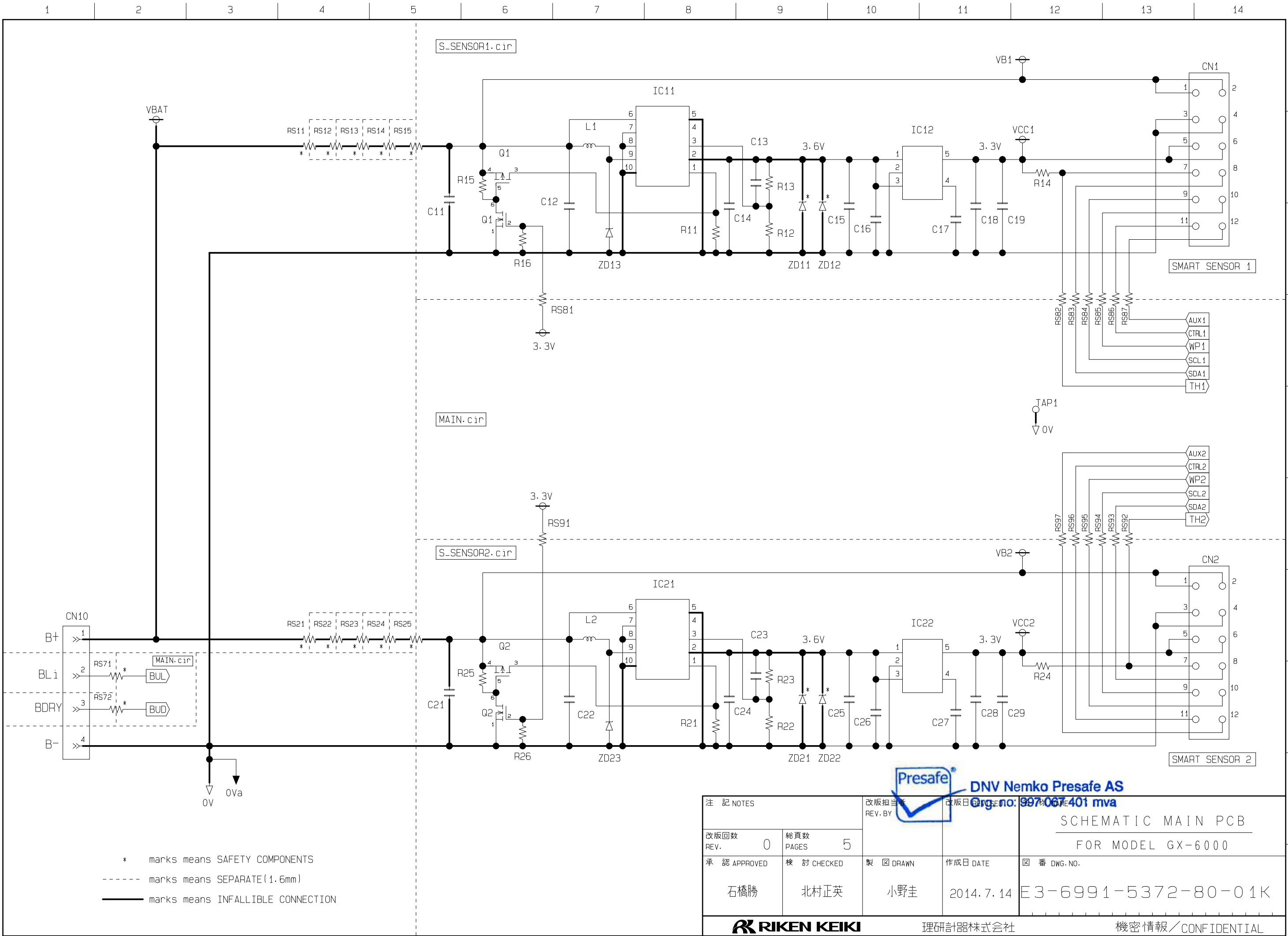
表面处理 TREAT.	許容差 TOL.	尺度 SCALE	投影法 PROJECTION	名称 NAME
材質 MAT.		1:1		MAIN UNIT GX-6000
承認 APPROVED	検討 CHECKED	製図 DRAWN	作成日 DATE	図番 DWG. NO.
青良治	近藤晴彦	海野裕作	2014.7.22	M2-4777-01-01K

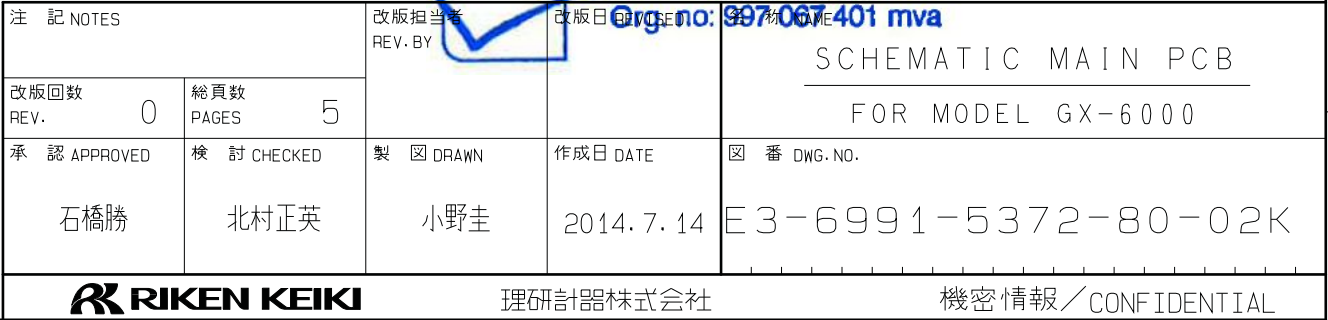
RIKEN KEIKI

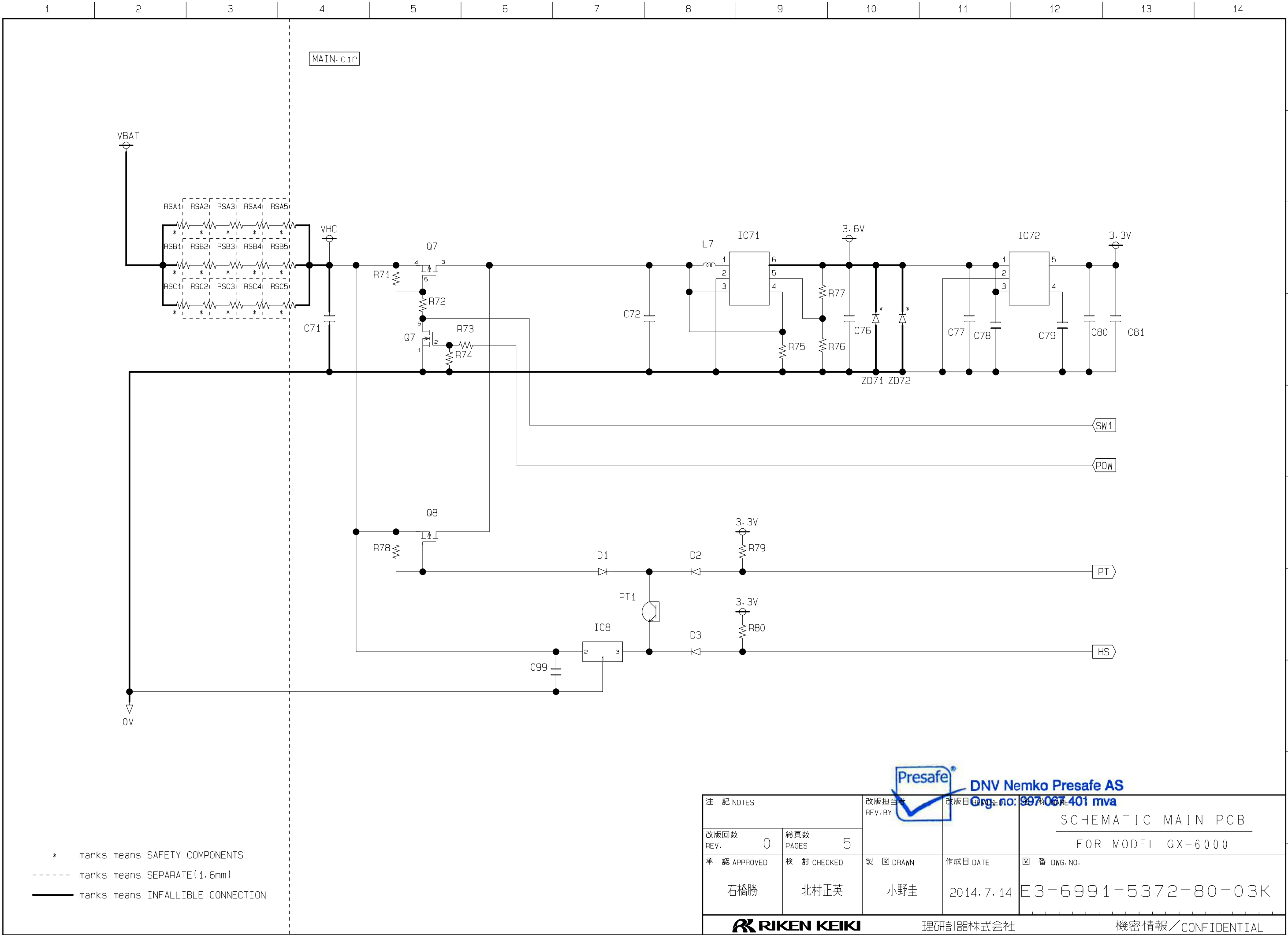
理研計測株式会社

機密情報/CONFIDENTIAL

ADD PANEL SHEET C5	2014.9.30	海野裕作
記事	年月日	訂正者

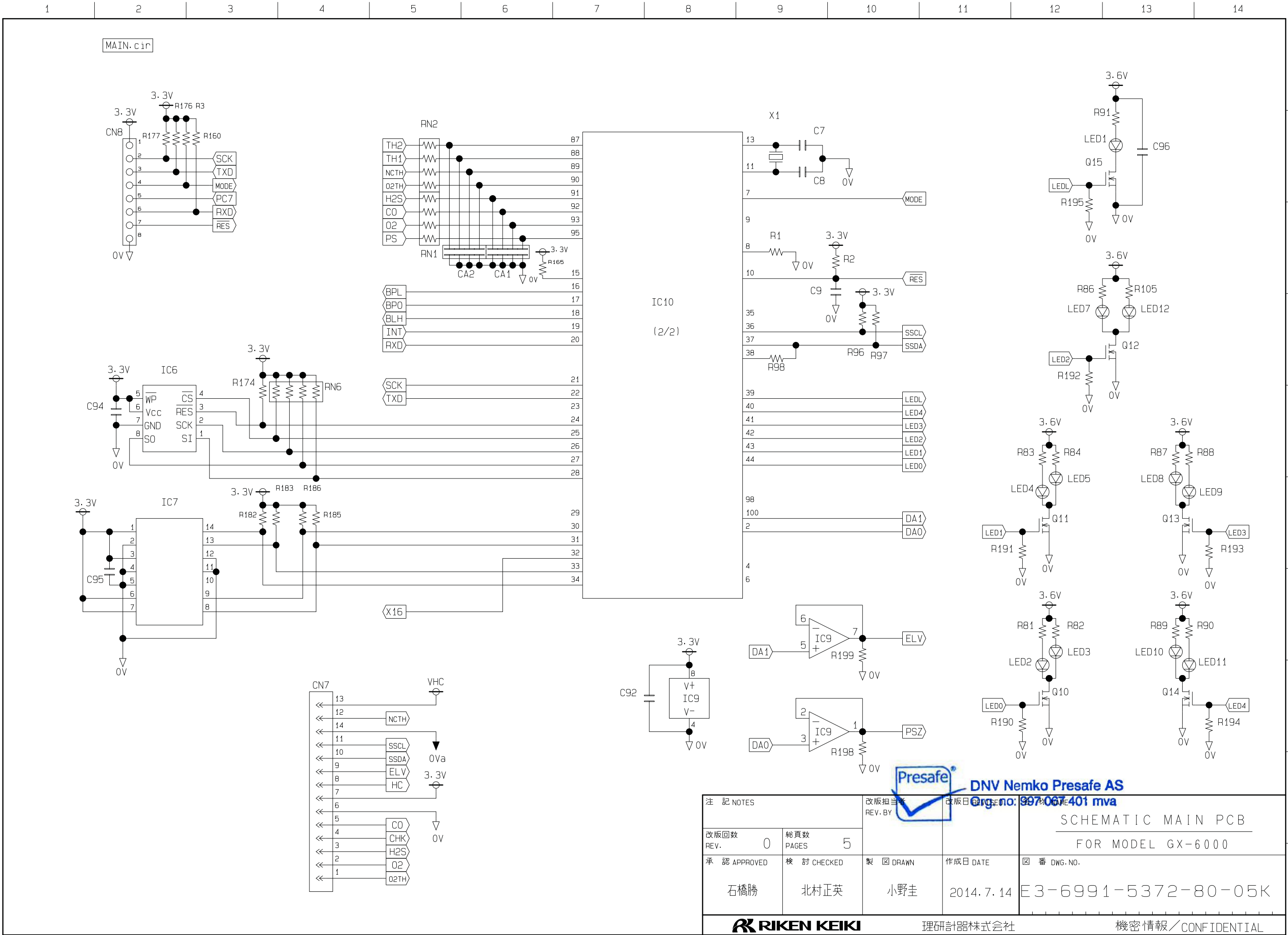












Mark of drawing	Kind of parts	Rating/Model of parts	Remarks
IC1	IC (IrDA module)	RPM841-H16	m
IC2	IC (IrDA encoder/decoder)	TIR1000IPW	m
IC3	IC (FRAM)	MB85RC256	m
IC4	IC (RTC)	RX-8564LC	m
IC5,9	IC (OPAMP)	S-89713B-K8T2	m
IC6	IC (Serial flash memory)	AT45DB081E-MHN	m
IC7	IC (Digital MEMS Accelerometer)	ADXL343	m
IC8	IC (Hole IC)	S-5716A -M3T1	m
IC10	IC (CPU)	R5F5210BBDFP	m
IC11,21	IC (DC/DC Converter)	TPS61020	m
IC71	IC (DC/DC Converter)	LTC3526	m
IC12,22,72	IC (Voltage regulator)	TPS73133	m
IC31	IC (Voltage regulator)	TPS79901	m
IC41	IC (DC/DC Converter)	TPS61041DRV	m
IC42	IC (Comparator)	TS3702IPT	m
IC51	IC (Voltage regulator)	S-1200B30-M5T1	m
Q1,2,4,7	N+Pch FET	NTLJD3119C	m
Q3	N-ch FET	SSM3K123TU	m
Q5,10-17	N-ch FET	SSM3K36TU or RUF025N02	m
Q8	P-ch FET	SSM3J130TU	m

NOTE	m marked parts are mounted or not. <div>  <div> DNV Nemko Presafe AS  Org. no: 997 067 401 mva </div> </div>		
REV.	0	NAME	PARTS LIST OF MAIN PCB
DATE	2014.7.14	DWG.No.	PLT-6991-5372-80 (1/4)
RIKEN KEIKI CO., LTD.			

Mark of drawing	Kind of parts	Rating/Model of parts	Remarks
D1-3,10-16	Schottky barrier diode	RB160VA-40	m
D7	Schottky barrier diode	MMSD301, ON Semiconductor Vr = 30 V, If = 0.2 A	*
D4,8,9	Schottky barrier diode	MMSD301	m
ZD5	Zener diode	TFZ 5.1B	m
ZD61-70	Zener diode	TFZ 5.1B , ROHM Vz = 4.94 - 5.20V , 0.5W	*
ZD11,12,21,22	Zener diode	1SMB5918B, ON Semiconductor Vz = 4.84 - 5.36 V, 3W	*
ZD13,23	Zener diode	TFZ 6.8B	m
ZD41,42,43,44,47,48	Zener diode	KDZ4.7B , ROHM Vz = 4.70 – 5.20V , 1W	*
ZD45,46	Zener diode	KDZ11B , ROHM Vz = 11.0 – 12.3V , 1W	*
ZD49,50,51,52	Zener diode	KDZ15B , ROHM Vz = 14.7 – 16.5V , 1W	*
ZD57,58,59,60	Zener diode	TFZ 18B , ROHM Vz = 16.82 – 17.70V , 0.5W	*
ZD71,72	Zener diode	1N5338BG , ON Semiconductor Vz = 4.84 - 5.36 V, 5W	*
LED1	LED Lamp	HLMP-NW50 or NSPW300DS	m
LED2,3,4,5,7,8,9,10,11	LED Lamp	1105W	m
LED12	LED Lamp	HSMZ-C110	m
R1-3,5-9,11-16,21-26, R31-35,41-47,50,51, R61-63,71-84,86-90, R92-107,110-117,124, R130,131,140-142,160, R161,174,176,177, R182-186,189-199	Chip fixed resistor or Chip jumper	10 ohm-10M ohm / 1%, 0.1W or 50m ohm max, 1A (1608)	m
R48,49,91,109	Chip fixed resistor	2.2 ohm-100k ohm / 1%, 0.25W (3216)	m
RN1,2,3,4,5,6	Chip fixed resistor array	100 ohm-1M ohm x4 / 5%, 0.1W (1608 x 4)	m

NOTE

\* marked parts are for safety.  
m marked parts are mounted or not.  
( ) Parts size code



**DNV Nemko Presafe AS**  
Org. no: 997 067 401 mva

REV.	3	NAME	PARTS LIST OF MAIN PCB
DATE	2014.12.16	DWG.No.	PLT-6991-5372-80 (2/4)
RIKEN KEIKI CO., LTD.			

Mark of drawing	Kind of parts	Rating/Model of parts	Remarks
RS11-15,21-25,31-35	Chip fixed resistor	RK73HW3ATTE1R30F, KOA 1.3ohm / 1%, 1W	*
RS37-39,47-49,59,62, R65,71,72,81,82,85-87, R91,92,95-97	Chip fixed resistor	ESR18EZPD1002, ROHM 10k ohm / 0.5%, 0.33W	*
RS10,83,84,93,94	Chip fixed resistor	MCR18EZPF1001, ROHM 1k ohm / 1%, 0.25W	*
RS41,42,43	Chip fixed resistor	RK73HW2HTTE4R70F, KOA 4.7 ohm / 1%, 0.75W	*
RS51,52	Chip fixed resistor	RK73HW2HTTE12R0F, KOA 12 ohm / 1%, 0.75W	*
RS61	Chip fixed resistor	RK73HW3ATTE62R0F, KOA 62 ohm / 1%, 1W	*
RS63,64	Chip fixed resistor	RK73HW2HTTE82R0F, KOA 82 ohm / 1%, 0.75W	*
RSA1-5,RSB1-5, RSC1-5	Chip fixed resistor	RPL18T2R7F,TAIYOSHA 2.7 ohm / 1%, 0.5W	*
C1-6,12,16,18,22,26, C28,32,42,46,78,80, C82,84-89,92,94,95, C97-99	Chip multilayer capacitor	0.1uF / 10% , 50V	m
C7,8,13,23,34,43, C90,91	Chip multilayer capacitor	10pF-1000pF / 10% , 50V	m
C9,17,27,79	Chip multilayer capacitor	0.01uF / 10% , 50V	m
C11,21,41,71	Chip multilayer capacitor	10uF / 10% , 10V	m
C14,24,51,52,72,77, C83,93,96	Chip multilayer capacitor	1uF / 10% , 25V	m
C15,19,25,29,31,33	Chip multilayer capacitor	2.2uF / 10% , 16V	m
C44	Chip multilayer capacitor	0.47uF / 10% , 25V	m
C45	Chip multilayer capacitor	0.22uF / 10% , 25V	m
C61,76,81	Chip multilayer capacitor	4.7uF / 10% , 16V	m
C62	Chip multilayer capacitor	33000pF / 10% , 50V	m
CA1,2,3	Chip multilayer capacitor array	0.01uF x4 / 20%, 50V	m

NOTE

\* marked parts are for safety.  
m marked parts are mounted or not.



DNV Nemko Presafe AS  
Org. no. 997 067 401 mva

REV.

1

NAME

PARTS LIST OF MAIN PCB

DATE

2014.11.5

DWG.No.

PLT-6991-5372-80 (3/4)

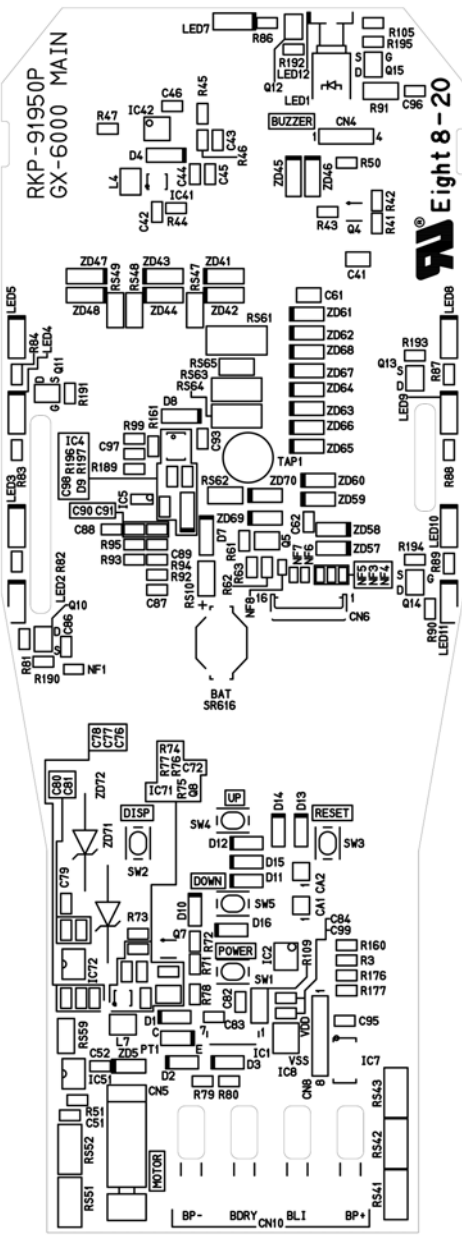
RIKEN KEIKI CO., LTD.



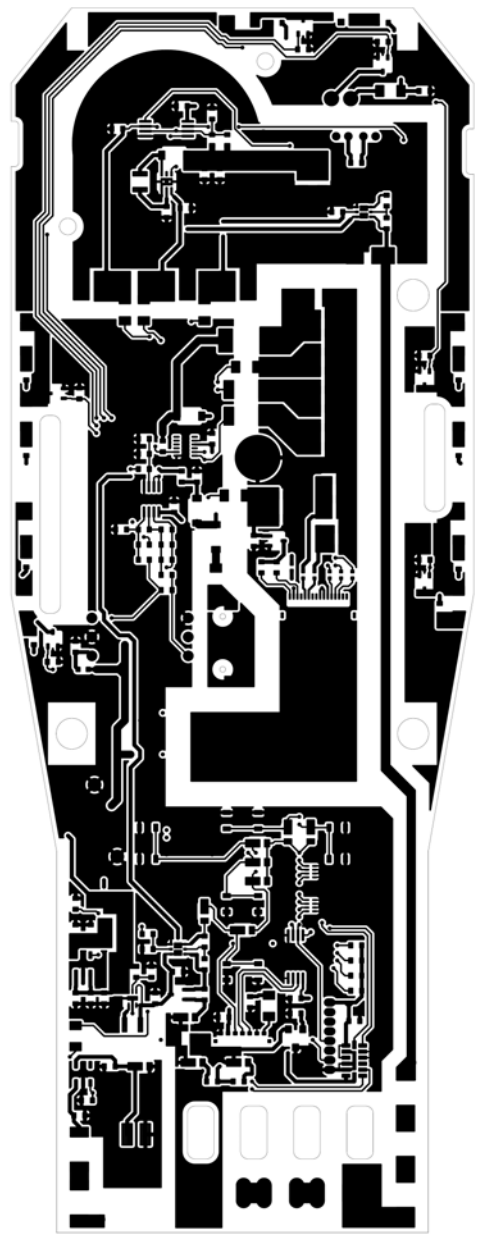
Mark of drawing	Kind of parts	Rating/Model of parts	Remarks
L1,2,4	Chip multilayer inductor	10uH / 30% (2520)	m
L7	Chip multilayer inductor	4.7uH / 30% (2520)	m
PT1	Photo transistor	PS1192HB	m
PS1	Pressure sensor	P-2000-101G	m
X1	Crystal	DSX321, 14.7456MHz	m
NF1,2	Noise filter	BLM18AG151	m
NF3-8	Noise filter	BLM15HD182	m
BAT	Silver oxide battery	SR616SW / Sony Vmax = 1.65V , Vtyp = 1.55V	*
LCD	LCD Module	BTD-128160B-FBWB / YEEBO	D
MOT	Vibration motor	A3BE-MT4 / SICOH	D
NOTE	* marked parts are for safety. m marked parts are mounted or not. D marked parts, refer to datasheet ( ) Parts size code		
REV.	0	NAME	PARTS LIST OF MAIN PCB
DATE	2014.7.14	DWG.No.	PLT-6991-5372-80 (4/4)
RIKEN KEIKI CO., LTD.			



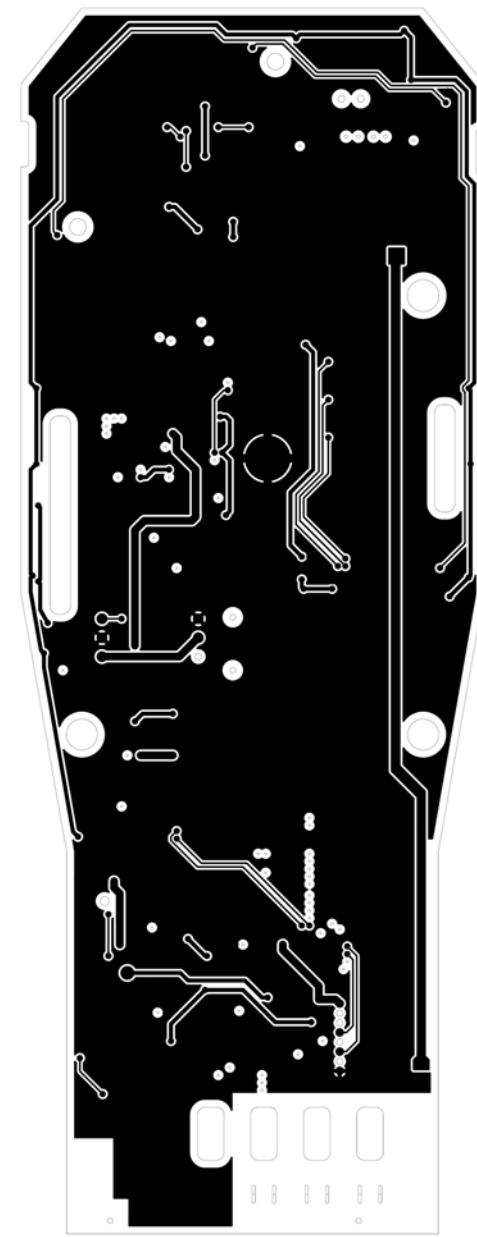
**DNV Nemko Presafe AS**  
Org. no: 997 067 401 mva



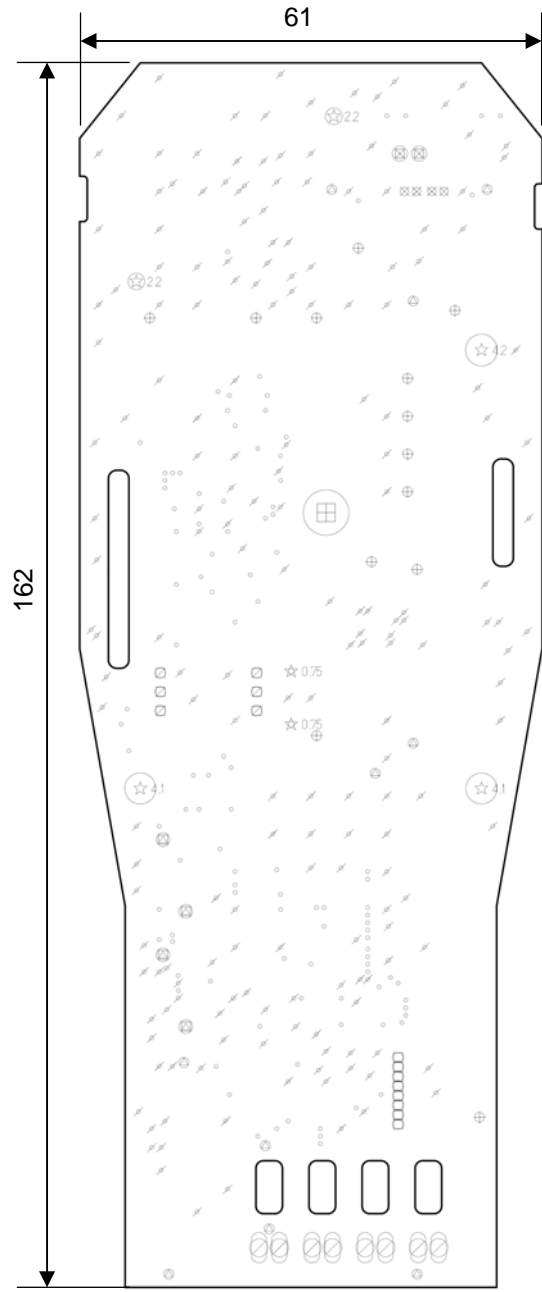
SILK PRINT FOR PARTS SIDE



PARTS SIDE



INNER LAYER(2 LAYER)



VIA HOLES FOR PARTS SIDE

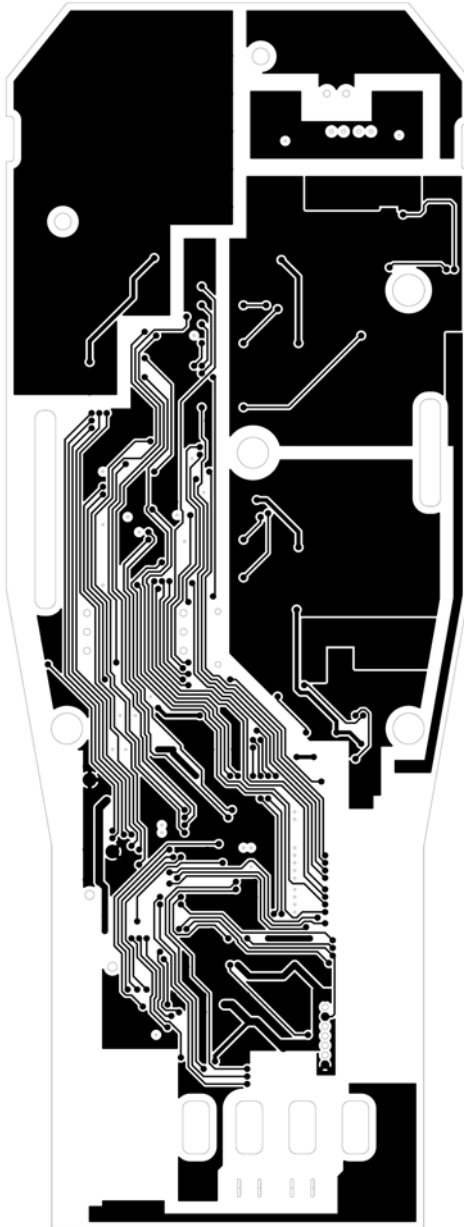
SPECIFICATION FOR PCB

- PCB No. : RKP-91950P
- Material : Glass epoxy
- Thickness : 1.6mm
- Layer number : 4  
(2+2 BVH , Between layer#2 and #3 is 0.6mm.)
- Thickness copper film  
Surface : 35um , Inner : 35um
- Copper thickness of the via's : 35um above.
- Minimum conductor width : 0.2mm
- CTI : 100 above

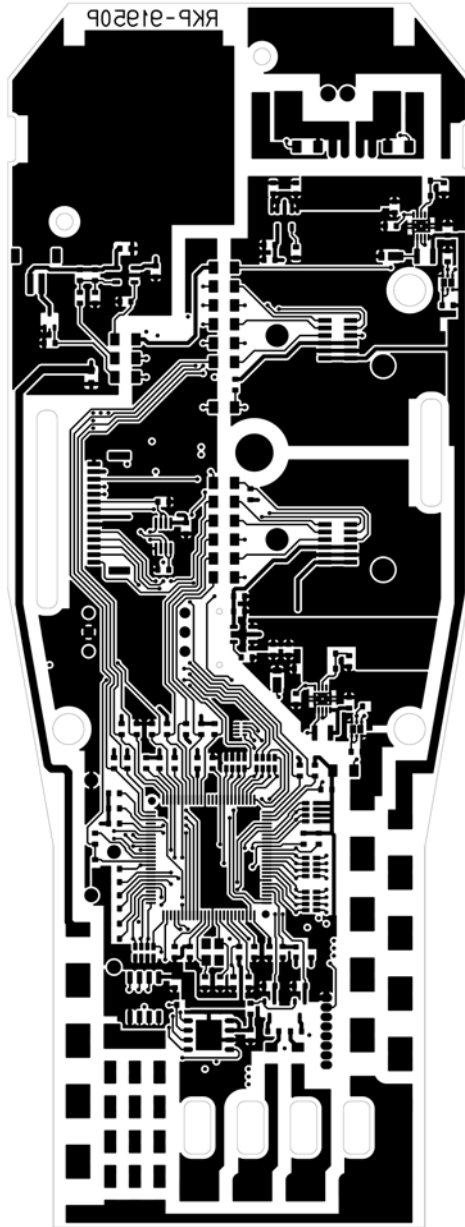
All drawings are view of parts side  
SCALE 1:1

MARK	DIAGRAM	HOLE
○	φ 0.3	1-4VIA
／	φ 0.3	1-2VIA
×	φ 0.5	1-4VIA
△	φ 0.7	1-4VIA
+	φ 0.7	1-2VIA
□	φ 0.85	1-4VIA
▣	φ 0.9	1-4VIA
▤	φ 0.9	1-4VIA
▥	φ 1.2	1-4VIA
▧	φ 4.1	1-4VIA
⊗	φ 0.4×2.4	1-4VIA
☆0.75	φ 0.75	NTH
☆2.2	φ 2.2	NTH
☆4.1	φ 4.1	NTH
☆4.2	φ 4.2	NTH

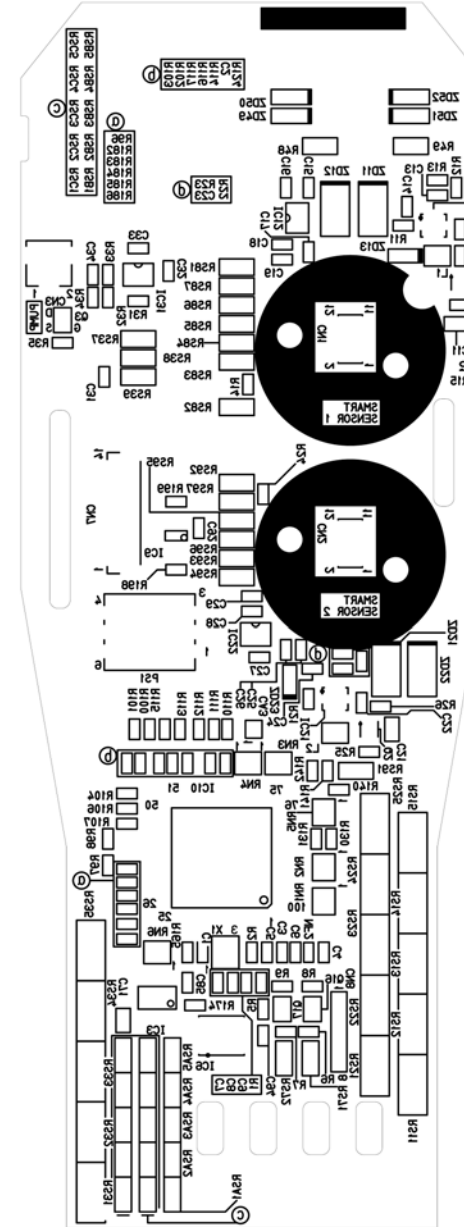
注 記 NOTES		改版担当者 REV. BY		改版日 REVISED DATE		改 訂 名 称 NAME	
改版回数 REV. 0		総頁数 PAGES 2					
承認 APPROVED 石橋勝		検 討 CHECKED 北村正英		製 図 DRAWN 小野圭		作成日 DATE 2014.7.14	
				図 番 DWG. NO. E 3 - 6 9 9 1 - 5 3 7 2 - 8 0 - 0 1 A			
RIKEN KEIKI				理研計器株式会社		機密情報/CONFIDENTIAL	



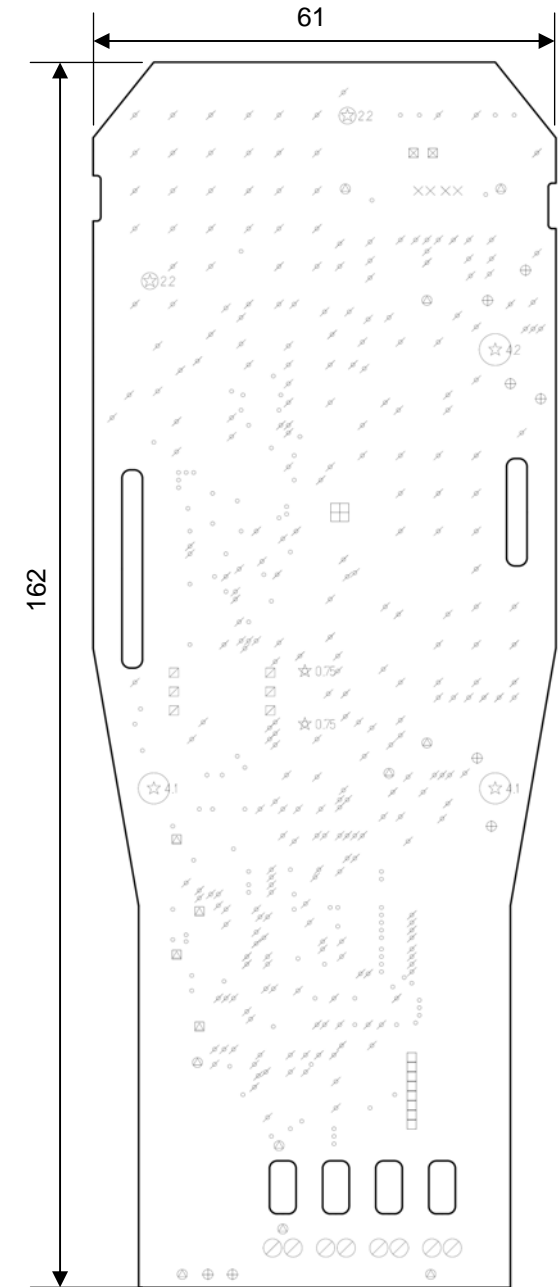
INNER LAYER(3 LAYER)



SOLDERING SIDE



SILK PRINT FOR SOLDERING SIDE



VIA HOLES FOR SOLDERING SIDE

SPECIFICATION FOR PCB

- PCB No. : RKP-91950P
- Material : Glass epoxy
- Thickness : 1.6mm
- Layer number : 4  
(2+2 BVH , Between layer#2 and #3 is 0.6mm.)
- Thickness copper film  
Surface : 35um , Inner : 35um
- Copper thickness of the via's : 35um above.
- Minimum conductor width : 0.2mm
- CTI : 100 above

All drawings are view of parts side

SCALE 1:1

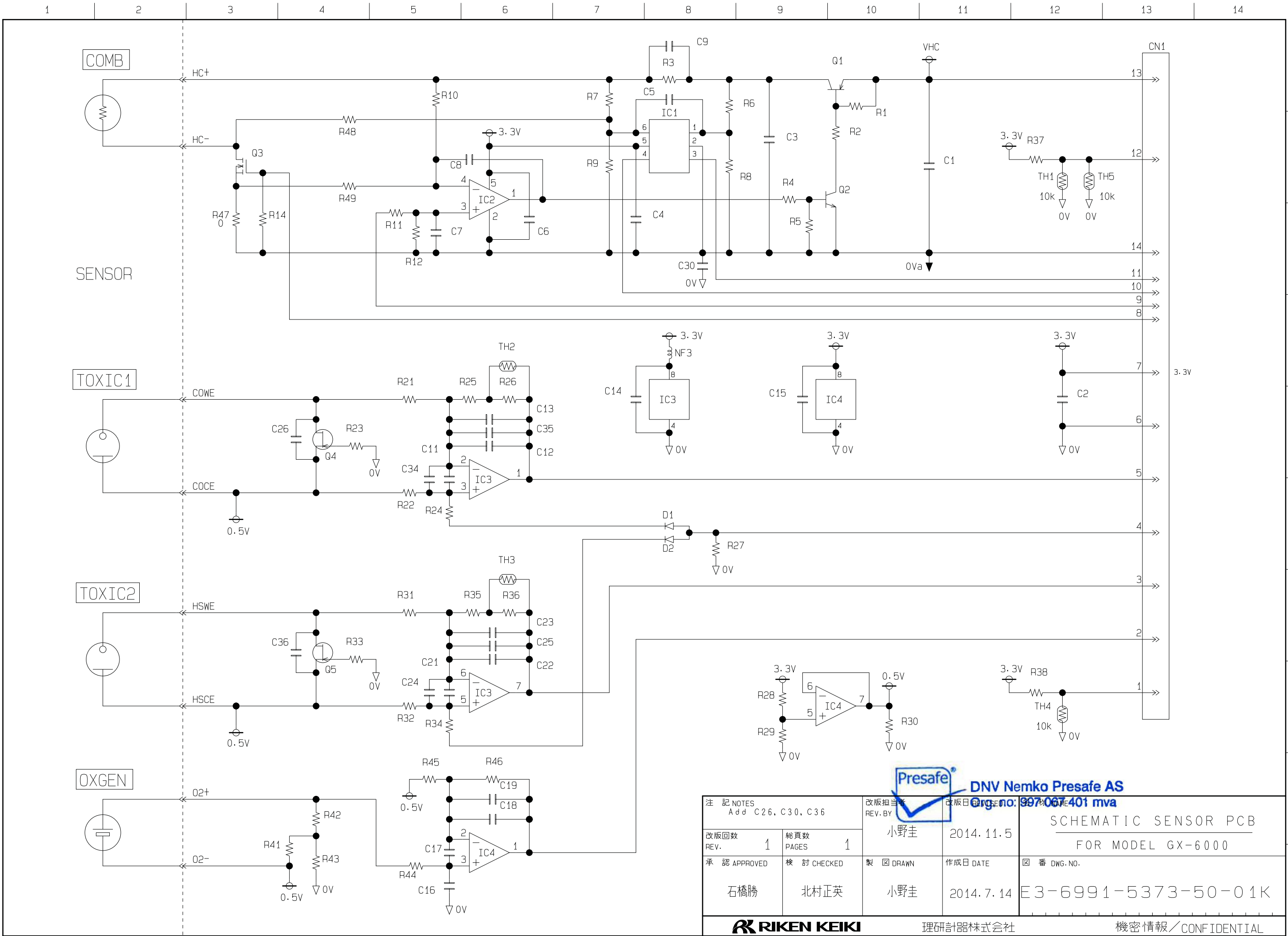
MARK	DIAGRAM	HOLE
○	φ 0.3	1-4VIA
／	φ 0.3	3-4VIA
×	φ 0.5	1-4VIA
△	φ 0.7	1-4VIA
+	φ 0.7	3-4VIA
□	φ 0.85	1-4VIA
▣	φ 0.9	1-4VIA
⊠	φ 0.9	1-4VIA
⊞	φ 1.2	1-4VIA
⊠	φ 4.1	1-4VIA
⊞	φ 0.4×2.4	1-4VIA
☆0.75	φ 0.75	NTH
☆2.2	φ 2.2	NTH
☆4.1	φ 4.1	NTH
☆4.2	φ 4.2	NTH

注 記 NOTES		改版担当者 REV. BY	改版日 REVISED DATE	改版理由 REVISED REASON
改版回数 REV.	0	総頁数 PAGES	1	
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014.7.14	E 3 - 6 9 9 1 - 5 3 7 2 - 8 0 - 0 2 A

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注 記 NOTES Add C26, C30, C36		改版担当者 REV. BY	小野圭	改版日 REVISION DATE 2014. 11. 5	SCHEMATIC SENSOR PCB FOR MODEL GX-6000
改版回数 REV.	1	総頁数 PAGES	1		
承認 APPROVED	石橋勝	検討 CHECKED	北村正英	製図 DRAWN 小野圭	作成日 DATE 2014. 7. 14
				図番 DWG. NO.	E3-6991-5373-50-01K

Mark of drawing	Kind of parts	Rating/Model of parts	Remarks
IC1	IC (A/D Converter)	ADS1110A0IDBV	m
IC2	IC (OPAMP)	OPA333AIDBV	m
IC3	IC (OPAMP)	OPA2379AIDCN	m
IC4	IC (OPAMP)	OPA2333AIDR	m
Q1	PNP Transistor	2SB1115	m
Q2	NPN Transistor	2SD2700	m
Q3	N-ch FET	SSM3K123TU	m
Q4,5	N-ch J-FET	2SK209	m
D1,2	Schottky barrier diode	RB160VA-40	m
R1,2,4-12,14,22-30, R32-38,41-47, TH1,2,3,4	Chip fixed resistor or Chip jumper or Chip thermistor	3.3 ohm-10M ohm / 1%, 0.1W or 50m ohm max, 1A or (1608) Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1608)	m
R3	Chip fixed resistor	1 ohm - 100 ohm / 1%, 0.25W (3216)	m
NF3,R21,R31	Noise filter	BLM18AG151	m
C1,2,3	Chip multilayer capacitor	1uF / 10%, 10V	m
C4-8,14-16,19	Chip multilayer capacitor	0.1uF / 10%, 25V	m
C9,11,12,17,18,21,22 C24,25,26,34,35,36	Chip multilayer capacitor	10pF-1000pF / 10%, 50V	m
C13,23	Chip multilayer capacitor	4.7uF / 10%, 10V	m
C30	Chip multilayer capacitor	0.01uF / 10%, 25V	m

NOTE

\* marked parts are for safety.  
m marked parts are mounted or not.  
( ) Parts size code

REV.	2	NAME	PARTS LIST OF SENSOR PCB
DATE	2014.12.16	DWG.No.	PLT-6991-5373-50 (1/1)
RIKEN KEIKI CO., LTD.			

Presafe®  
DNV Nemko Presafe AS  
Org. no: 997 067 401 mva





1 2 3 4 5 6 7

A

B

C

D

E

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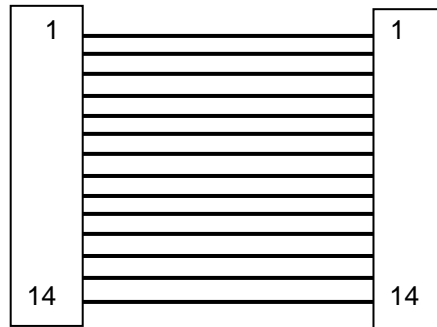
G

H

I

CN1  
CONNECTOR  
Model : NSHR-14V-S  
Manufacturer : JST

CN2  
CONNECTOR  
Model : NSHR-14V-S  
Manufacturer : JST



Wire : UL1571 AWG30  
Maximum wire length : 40mm



DNV Nemko Presafe AS  
Org. no: 997 067 401 mva

SENSOR to MAIN WIRE

FOR MODEL GX-6000

注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
改版回数 REV.	0			
総頁数 PAGES	1	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
承認 APPROVED	石橋勝			
検 討 CHECKED	北村正英	小野圭	2014.7.14	E 4 - 6 9 9 1 - 5 3 8 2 - 7 0 - 0 1 K

	1	2	3	4	5	6	7	
寸法 許容差	1000以上	1.2	0.7	1.2	2.5			
	500以上1000未満	2.0	1.0	0.5	1.6			
	250以上500未満	0.8	0.4	0.3	0.6			
	120以上250未満	0.8	0.4	0.2	0.6			
	50以上120未満	0.8	0.4	0.2	0.6			
	18以上50未満	0.3	0.15	0.4	0.2			
	18未満	0.4	0.2	0.1	0.1			
	精粗	0.1	0.2	0.1	0.1			
	中級	0.1	0.2	0.1	0.1			
	精粗	0.1	0.2	0.1	0.1			

△

SPECIFICATION OF MOTER

L=59.8μH(max) [CASE1]

R=11Ω(min) [CASE2]

CASE1 : One commutator segment contact the brush.

CASE2 : Two commutator segments contact the brush.

17.5

25.5

36.35

MOTOR

A12B-09-SS

~~A12B-09-S-X~~ △

C.I.KASEI CO.,LTD.

CABLE LENGTH

LESS THAN 48mm

△ Wall thickness

of insulation:0.25mm

CONNECTOR

ZHR-2

JST Mfg. Co., Ltd.

△	REVISION	2013.1.29	近藤晴彦
△	Correction	2012.4.9	島田聡
△	REVISION	2011.5.13	島田聡
△	Presafe 記	年 月 日	訂正者

名称 NAME

Org. no: 997 067 401 mva

PUMP

RP-12

図番 DWG. NO.

M4-4181-61-01K

表面处理 TREAT.	許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	名称 NAME
材 質 MAT.		2 : 1		Org. no: 997 067 401 mva
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
田島秀二	近藤晴彦	青良治	2011. 2. 24	M4-4181-61-01K

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1 2 3 4 5 6 7

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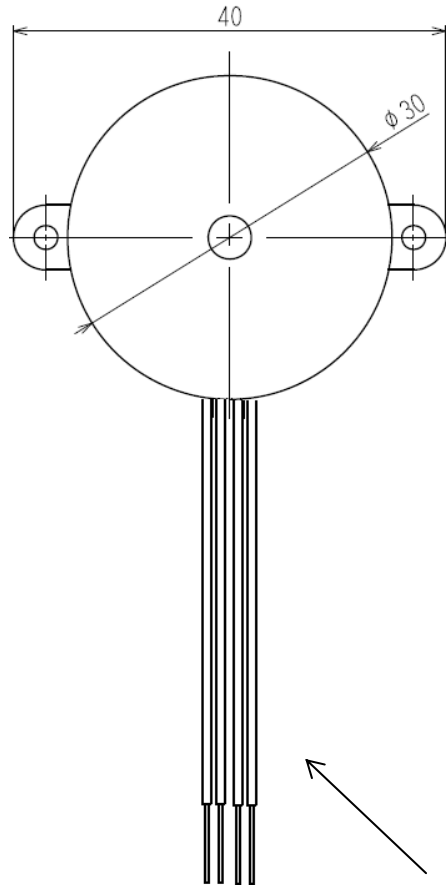
E

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G

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I



Cable: UL1571, AWG32  
Maximum length: 45mm

Piezo elements : M274C4  
Manufacturer : NIHON CERATEC  
Capacitance : 22 nF / 30%

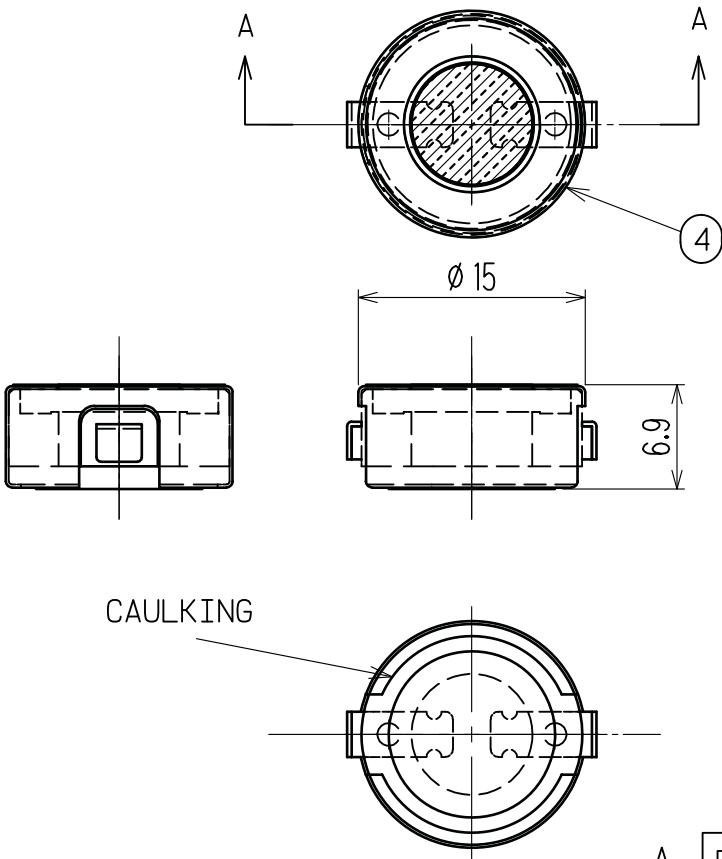


SCALE  $\sqrt{2}:1$   
**DNV Nemko Presafe AS**  
Org. no: 997 067 401 mva  
**Buzzer**

**BZ-9K**

注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
改版回数 REV.	0	総頁数 PAGES	1	
承認 APPROVED	検討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小暮晋祐	2011.02.28	E 4 - 6 9 9 1 - 5 0 0 8 - 7 0 - 0 1 K

寸法	精度	中級	粗級
1000以上	0.7	1.2	2.5
500以上1000未満	0.5	1.0	2.0
260以上500未満	0.4	0.8	1.6
120以上260未満	0.3	0.6	1.2
50以上120未満	0.2	0.4	0.8
18以上50未満	0.15	0.3	0.6
18未満	0.1	0.2	0.4
寸法	精度	中級	粗級



CAULKING

INSIDE SPACE  
CAPACITY 0.1CC

A-A SECTION

B DETAIL DRAWING

3<sup>+0.4</sup><sub>0</sub>  
※ EPOXY RESIN POTTED

MATERIAL:STAINLESS STEEL(SUS304) t0.2  
CHEMICAL COMPOSITIONS:

UNIT %	
C	0.08 or less
Si	1.00 or less
Mn	2.00 or less
P	0.045 or less
S	0.030 or less
Ni	8.00~10.50
Cr	18.00~20.00

① FLAME ARRESTOR

MATERIAL:SINTERED BRONZE METAL  
CHEMICAL COMPOSITIONS Cu:Sn=90:10

② BOTTOM CAP

MATERIAL:ALUMINIUM ALLOY(A5056)  
CHEMICAL COMPOSITIONS:

UNIT %			
Si	0.30 or less	Cr	0.05~0.20
Fe	0.40 or less	Zn	0.10 or less
Cu	0.10 or less	OTHER COMPONENTS	INDIVIDUAL 0.05 or less TOTAL 0.15 or less
Mn	0.05~0.20	Al	rem
Mg	4.5~5.6		

③ ELEMENT HOLDER  
HOLDER

MATERIAL:PHENOLIC RESIN  
MANUFACTURE:HITACHI CHEMICAL  
CP-J-1900

TERMINAL  
MATERIAL:PHOSPHOR BRONZE(C5191)  
CHEMICAL COMPOSITIONS: UNIT %

Pb	0.05 or less	Zn	0.20 or less
Fe	0.10 or less	P	0.03~0.35
Sn	5.5~7.0	Cu+Sn+P	99.5 or more

TERMINAL

HOLDER

DETAIL DRAWING

B-B SECTION

COIL

8 of active coils  
MATERIAL Pt

COIL DETAIL DRAWING

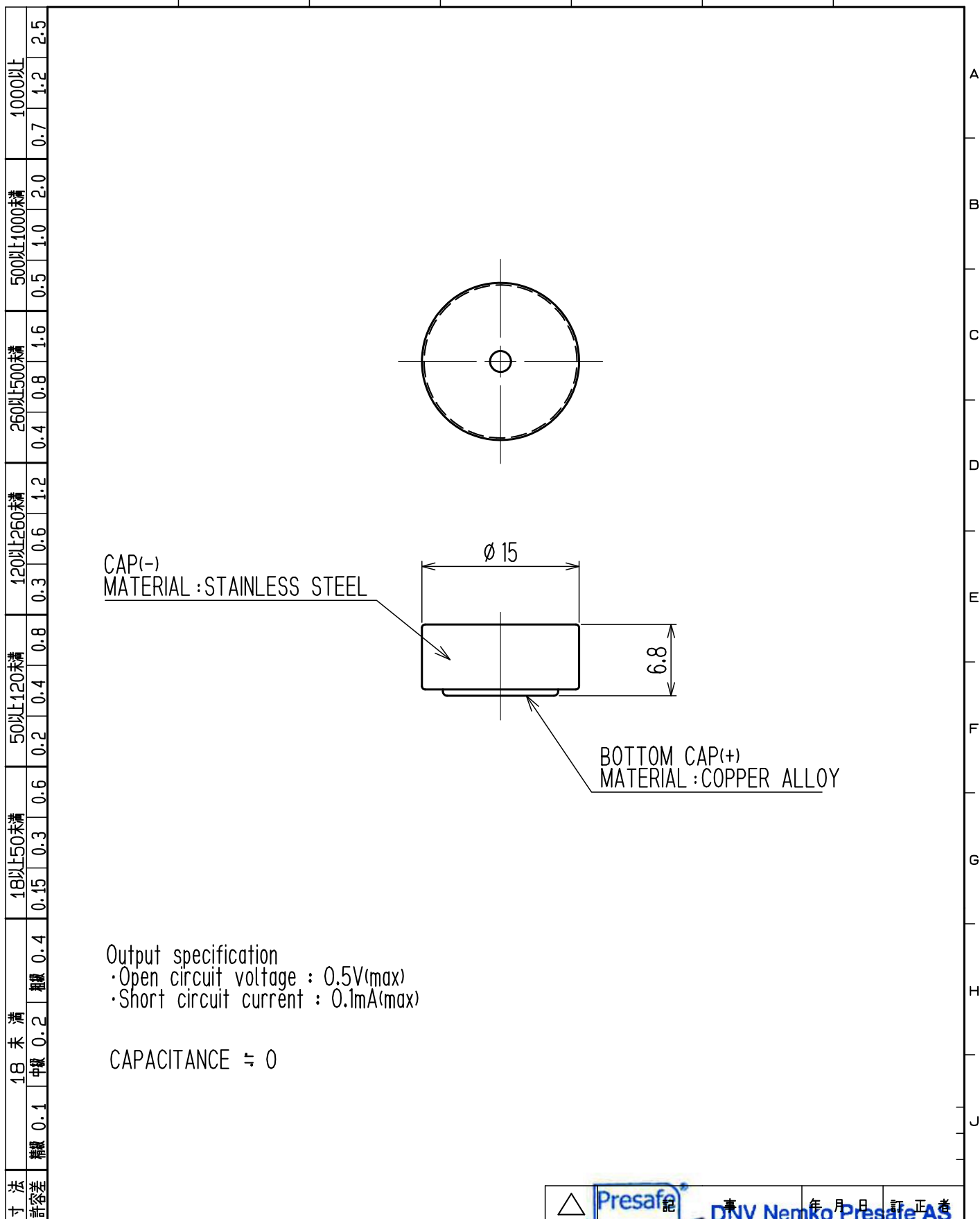
(Remarks)  
Binder in section1.2.6 of  
the type approval  
guide:Uses epoxy resin  
which has enough thermal  
stability at min.120℃

△	Correction	2012.4.17	島田聡
△	UP DATE	2007.8.30	武井康典
△	UP DATE	2007.5.21	中村幸男
△	記 事	年 月 日	訂 正 者

表面処理 TREAT.	許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	名 称 NAME
材 質 MAT.		2 : 1		COMBUSTIBLE GAS SENSOR △ NC SENSOR
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG.NO.
田島秀二	青良治	中村幸男	2007. 3. 16	M3-4462-64-05K
理研計器株式会社 RIKEN KEIKI CO.,LTD.				

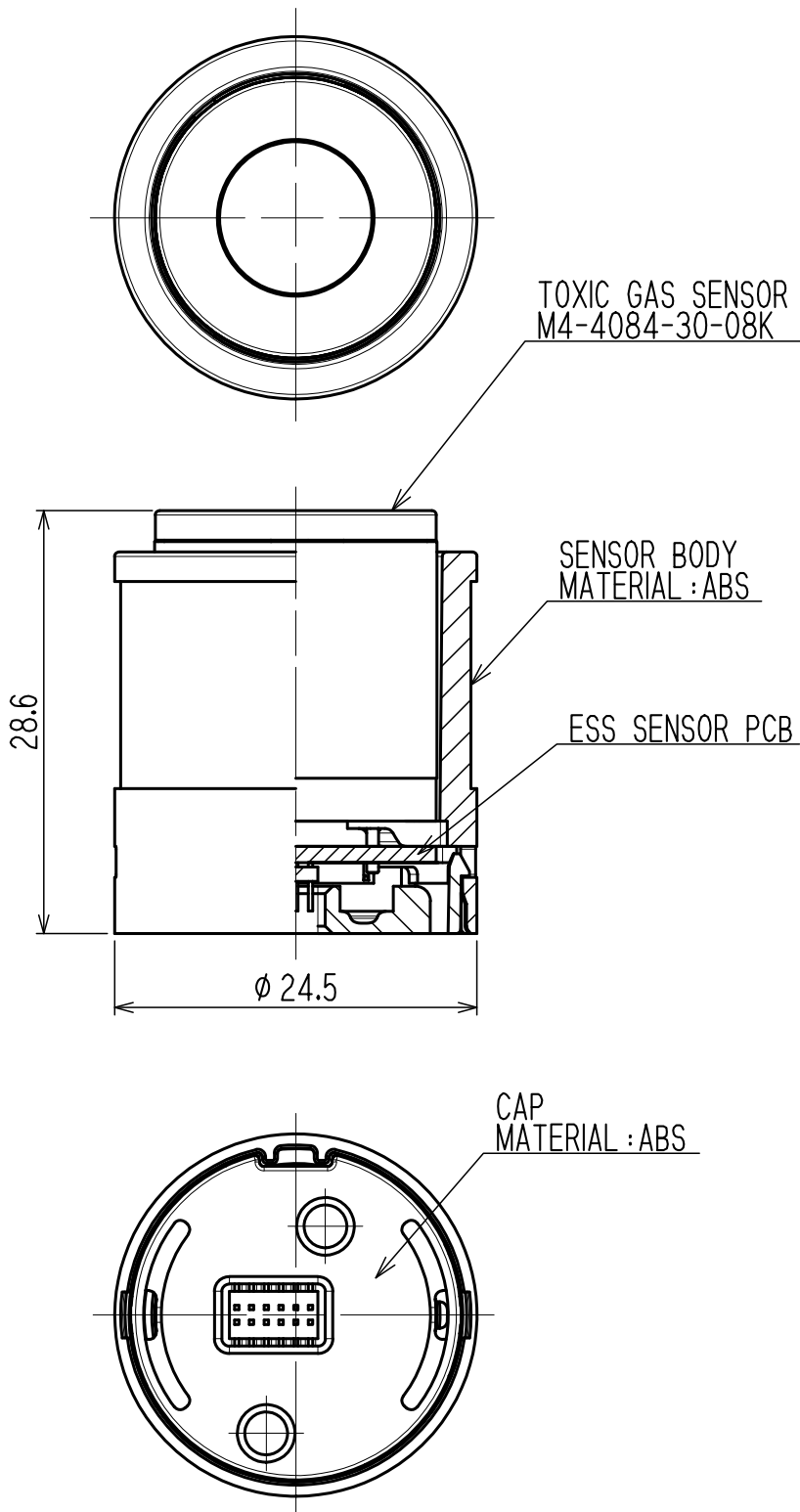






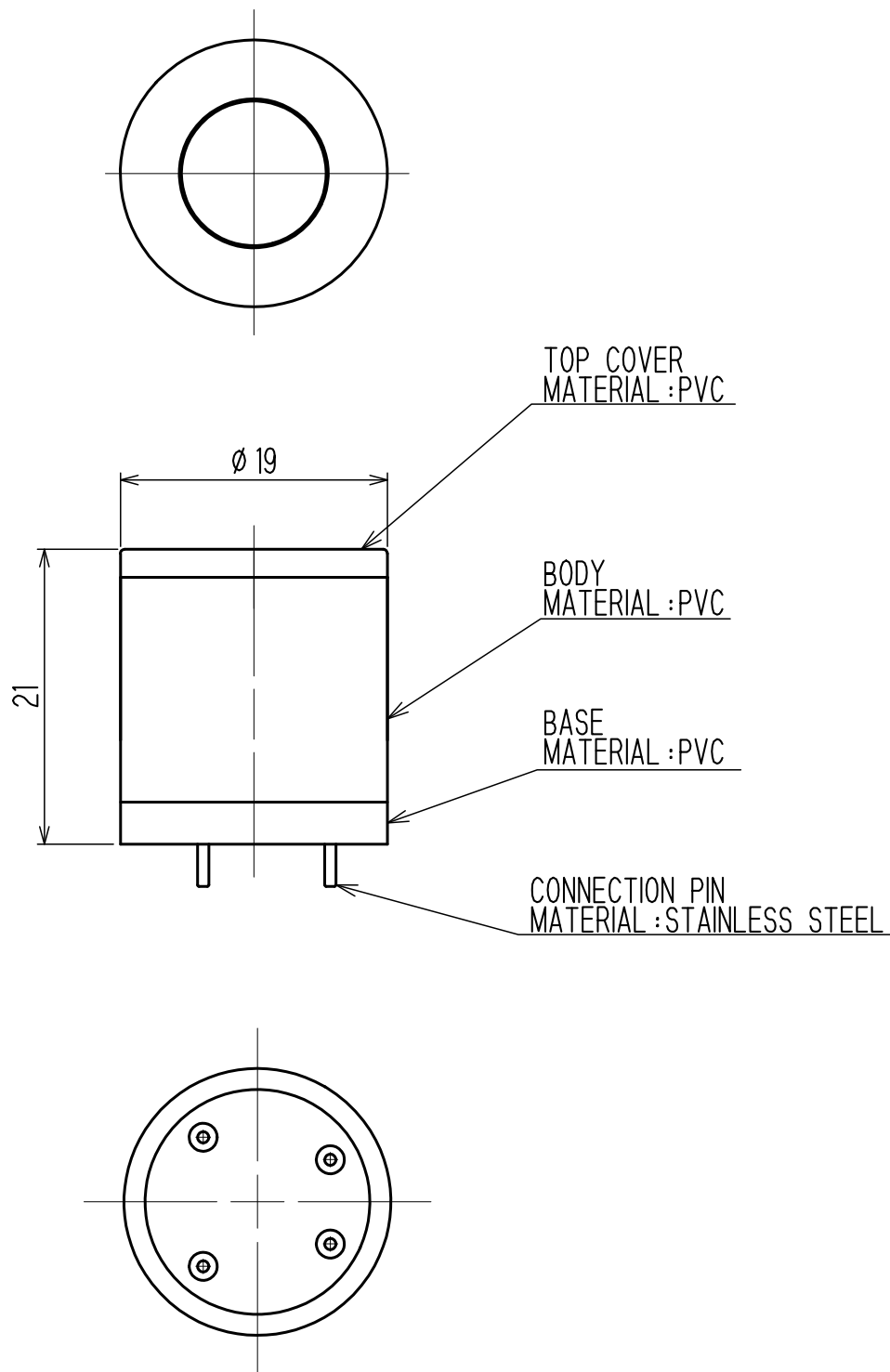
表面処理 TREAT.		許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	△ Presafe 記 事 年 月 日 訂 正 者	
材 質 MAT.					名 称 NAME	
承認 APPROVED		検 討 CHECKED	製 図 DRAWN	作 成 日 DATE	図 番 DWG. NO.	
青良治		近藤晴彦	海野裕作	2014. 7. 30	M4-4080-82-07K	
RIKEN KEIKI		理研計測株式会社		機密情報 / CONFIDENTIAL		

寸法	18 未満	18以上50未満	50以上120未満	120以上260未満	260以上500未満	500以上1000未満	1000以上
許容差	精細 0.1 中級 0.2 粗級 0.4	0.15 0.3 0.6	0.2 0.4 0.8	0.3 0.6 1.2	0.4 0.8 1.6	0.5 1.0 2.0	0.7 1.2 2.5







表面処理 TREAT.		許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	<div> <div>△ Presafe 記</div> <div> <div>年 月 日</div> <div>訂 正 者</div> </div> </div>	
材 質 MAT.					<div> <div>名 称 NAME</div> <div> <div>Org. no: 997 067 401 mva</div> <div>SMART SENSOR</div> <div>Type-ESS</div> </div> </div>	
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.		
青良治	近藤晴彦	武井康典	2014. 7. 30	M4-4486-01-01K		
RIKEN KEIKI		理研計測株式会社		機密情報 / CONFIDENTIAL		

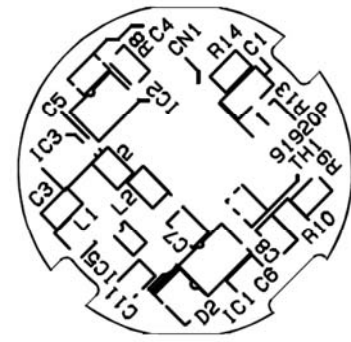
		寸 法																					
		18 未 満		18以上50未満		50以上120未満		120以上260未満		260以上500未満		500以上1000未満		1000以上									
精 度	0.1	中 級	0.2	粗 級	0.4	0.15	0.3	0.6	0.2	0.4	0.8	0.3	0.5	1.2	0.4	0.8	1.6	0.5	1.0	2.0	0.7	1.2	2.5



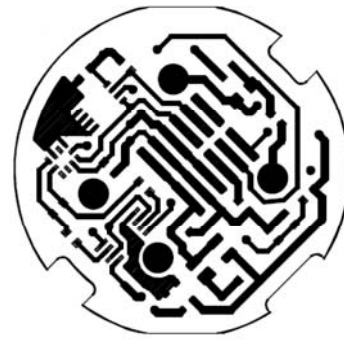
Output specification

- Open circuit voltage : 0.4V(max)
- Short circuit current : 0.1mA(max)

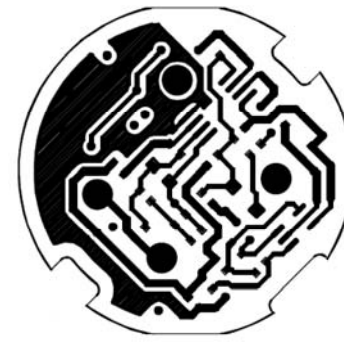
表面処理 TREAT.		許公差 TOL.	尺 度 SCALE	投影法 PROJECTION	 <div> <div>事</div> <div>年月日 訂正者</div> <div>Org. no: 997 067 401 mva</div> <div>TOXIC GAS SENSOR</div> </div>
材 質 MAT.					
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.	
青良治	近藤晴彦	武井康典	2014. 7. 30		M4-4084-30-08K
					



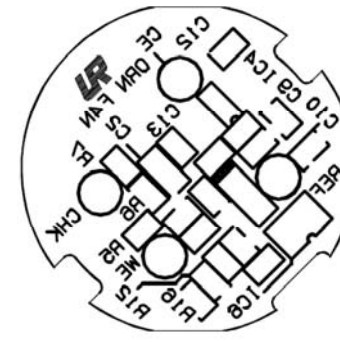
SILK PRINT FOR PARTS SIDE



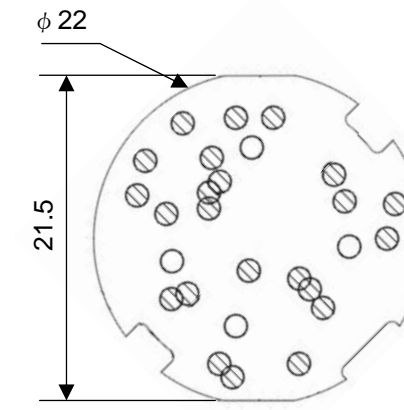
PARTS SIDE



SOLDERING SIDE



SILK PRINT FOR SOLDERING SIDE



THROUGH HOLE DATA

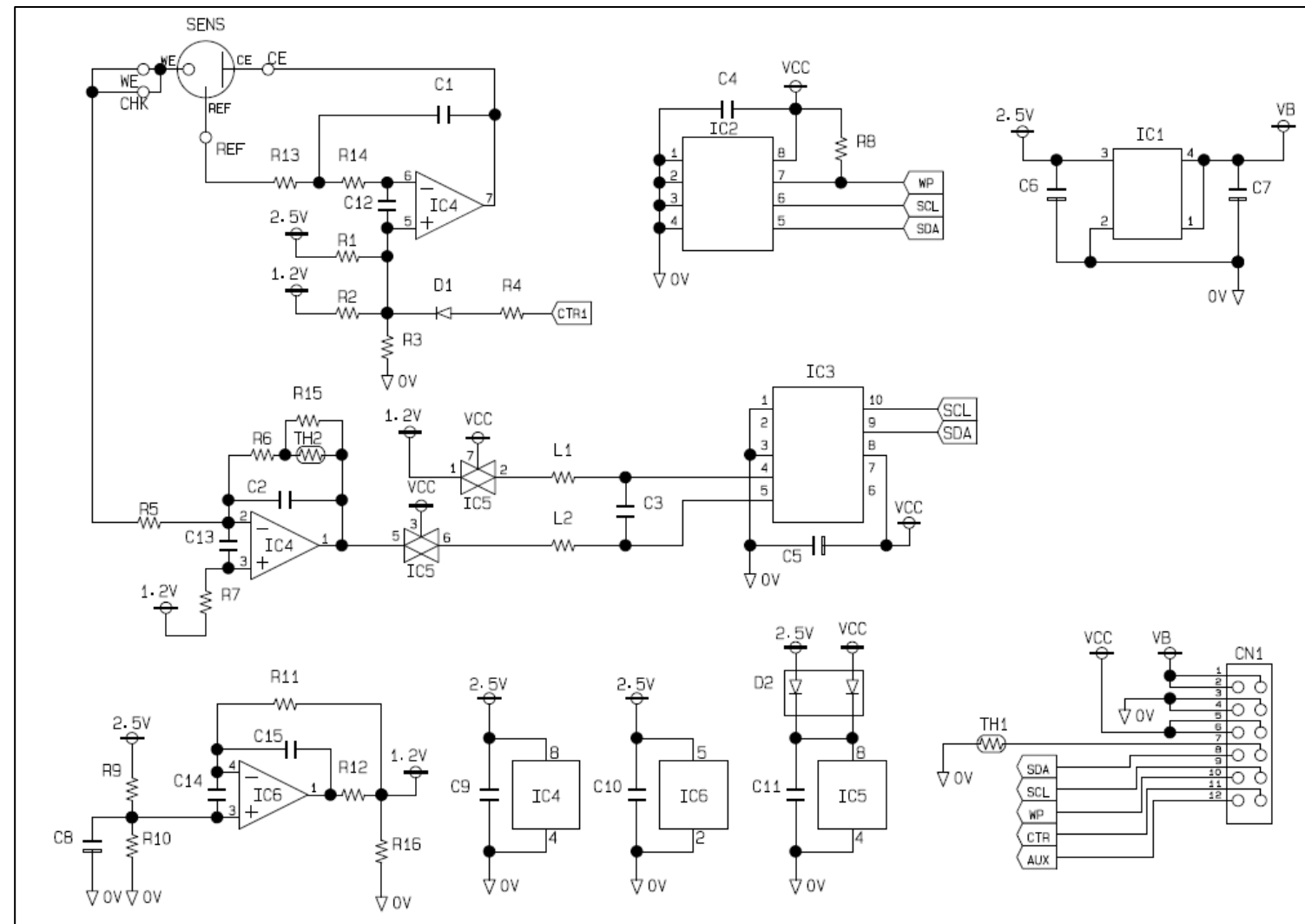
MARK	DIAGRAM	HOLE
①	φ 0.3	TH
○	φ 1.0	TH

### SPECIFICATION FOR PCB

- PCB No. : RKP-91920P
- Material : Glass epoxy
- Thickness : 1.2mm
- Layer number : 2
- Thickness copper film : 18um
- Minimum conductor width : 0.2mm
- CTI : 100 above

All drawings are view of parts side

SCALE 2:1



SCHEMATIC

### PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Voltage regulator)	S-1313D25-N4T1	m
IC2	IC (EEPROM)	S-24C16CI-I8T1	m
IC3	IC (A/D Converter)	ADS1114IRU	m
IC4	IC (OPAMP)	LT6004CMS8	m
IC5	IC (Logic)	HD74ALVC2G66	m
IC6	IC (OPAMP)	AD8500AKS	m
D1	Diode	1SS355	m
D2	Diode array	RB480Y (2elements)	m
TH1	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1005)	m
R1-16	Chip fixed resistor or Chip jumper	10 ohm - 1M ohm / 1%, 0.063W or 50m ohm max,1A (1005 )	m
C1,2	Chip multilayer capacitor	10uF / 10%, 6.3V	m
C4,5,6,7,9,10,11	Chip multilayer capacitor	0.1uF / 10%, 16V	m
C3,8,12,13,14	Chip multilayer capacitor	10pF-1000pF / 10%, 50V	m
C15	Chip multilayer capacitor	1uF / 10%, 10V	m
L1,2	Chip fixed resistor or Chip jumper or Noise filter	10 ohm - 1M ohm / 1%, 0.063W or 50m ohm max,1A (1005 ) or BLM15HD182	m

m marked parts are mounted or not

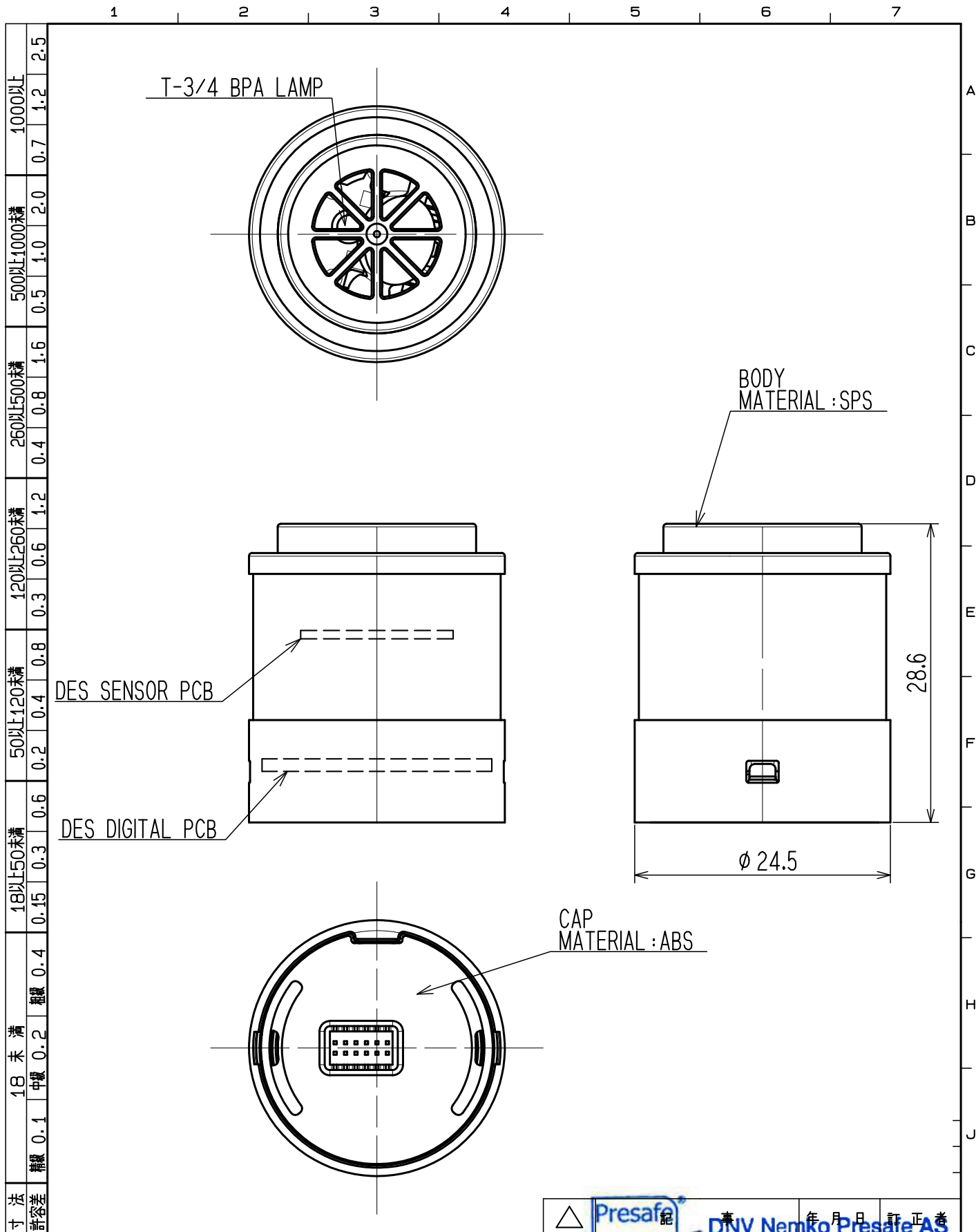
注 記 NOTES		改版担当者 REV. BY	改版日 REV. DATE	改版理由 REV. REASON
改版回数 REV.	0	総頁数 PAGES	1	
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014.7.14	E 3 - 6 9 9 1 - 5 3 8 4 - 1 0 - 0 1 K

RIKEN KEIKI

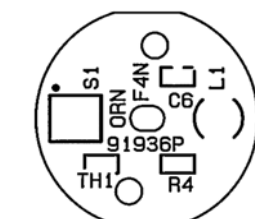
理研計器株式会社

機密情報/CONFIDENTIAL

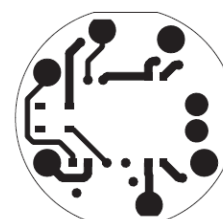




寸法 許容差 18 未満 0.1 0.2 0.4 0.15 0.3 0.6 0.2 0.4 0.8 0.3 0.6 1.2 0.4 0.8 1.6 0.5 1.0 2.0 0.7 1.2 1000以上		表面処理 TREAT. 材質 MAT.		許容差 TOL. 	尺度 SCALE 2 : 1	投影法 PROJECTION 	名称 NAME SMART SENSOR Type-DES	図番 DWG. NO. M4-4630-20-01K
承認 APPROVED 青良治		検討 CHECKED 武井康典		製図 DRAWN 近藤晴彦	作成日 DATE 2014. 7. 24	Presafe 記 DNV Nemko Presafe AS Org. no: 997 067 401 mva 年 月 日 訂正者		



SILK PRINT  
FOR PARTS SIDE



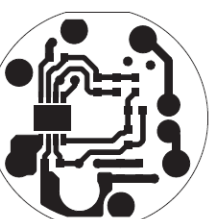
PARTS SIDE



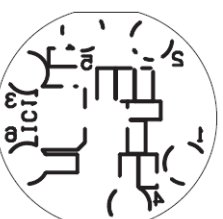
Lay.2



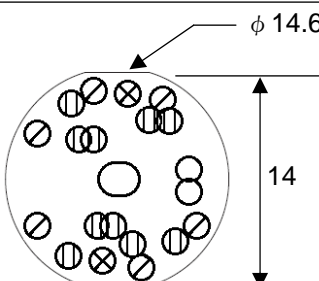
Lay.3



SOLDERING SIDE



SILK PRINT FOR  
SOLDERING SIDE

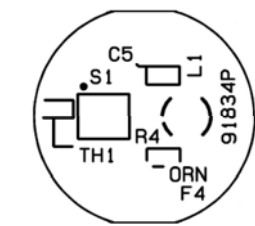


THROUGH HOLE  
DATA

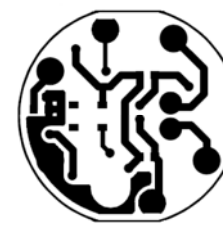
MARK	DIAGRAM	HOLE
⊙	φ 0.3	TH
○	φ 0.5	TH
⊗	φ 0.8	TH
⊗	φ 1.7	NTH

**SPECIFICATION FOR PCB**  
• PCB No. : RKP-91936P  
• Material : Glass epoxy  
• Thickness : 0.8mm  
• Layer number : 4  
• Thickness copper film : 18um  
• Minimum conductor width : 0.2mm  
• CTI : 100 above

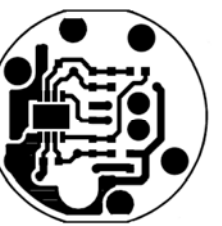
or



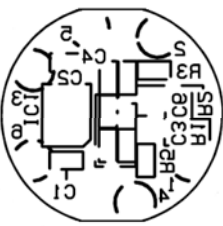
SILK PRINT  
FOR PARTS SIDE



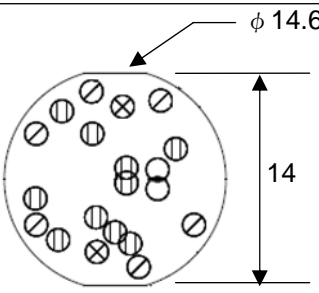
PARTS SIDE



SOLDERING SIDE



SILK PRINT FOR  
SOLDERING SIDE



THROUGH HOLE  
DATA

MARK	DIAGRAM	HOLE
⊙	φ 0.3	TH
○	φ 0.5	TH
⊗	φ 0.8	TH
⊗	φ 1.7	NTH

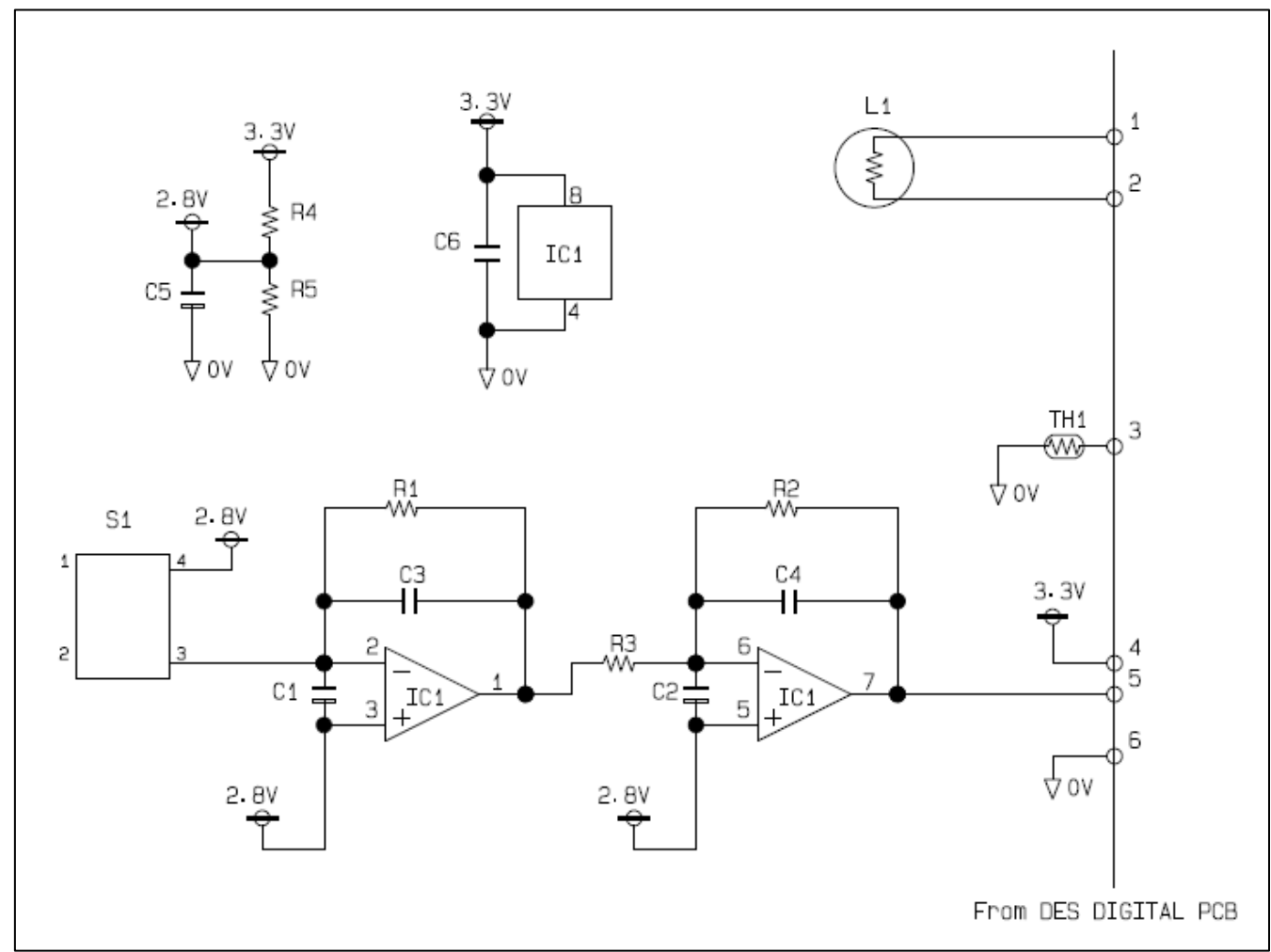
**SPECIFICATION FOR PCB**  
• PCB No. : RKP-91834P  
• Material : Glass epoxy  
• Thickness : 0.8mm  
• Layer number : 2  
• Thickness copper film : 18um  
• Minimum conductor width : 0.2mm  
• CTI : 100 above

All drawings are view of parts side  
SCALE 2:1

PARTS LIST

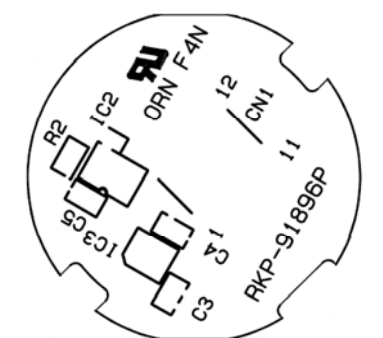
Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
S1	IR Sensor	IR1011	
IC1	IC (OPAMP)	LTC2055HDD	m
TH1	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1005)	m
R1,2,3,4,5	Chip fixed resistor or Chip jumper	10 ohm - 1M ohm / 1%, 0.063W or 50m ohm max,1A (1005)	m
C1,2	Chip multilayer capacitor	10pF-1000pF / 10%, 50V	m
C3	Chip multilayer capacitor	0.01uF / 10%, 25V	m
C4,5,6	Chip multilayer capacitor	0.1uF / 10%, 25V	m
L1	T-3/4 BPA LAMP	OL-8270BPA refer to E4-6991-5129-60-01K	

m marked parts are mounted or not



SCHEMATIC

注 記 NOTES		改版担当者 REV. BY		改版日 REVISED DATE		名 称 NAME	
Add RKP-91936P						DES SENSOR PCB	
改版回数 REV.	1	総頁数 PAGES	1	小野圭	2015.5.25		
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.			
石橋勝	北村正英	小野圭	2014.7.14	E 3 - 6 9 9 1 - 5 3 8 5 - 9 0 - 0 1 K			
RIKEN KEIKI		理研計器株式会社		機密情報 / CONFIDENTIAL			



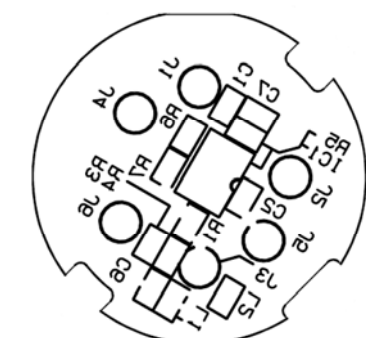
SILK PRINT FOR PARTS SIDE



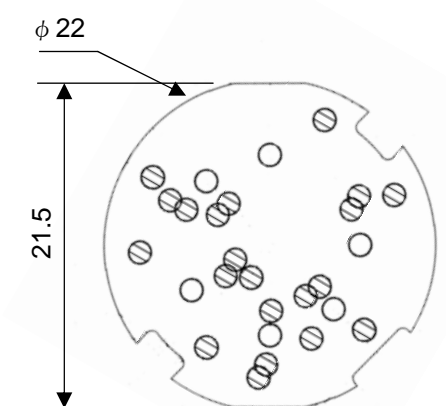
PARTS SIDE



SOLDERING SIDE



SILK PRINT FOR SOLDERING SIDE



THROUGH HOLE DATA

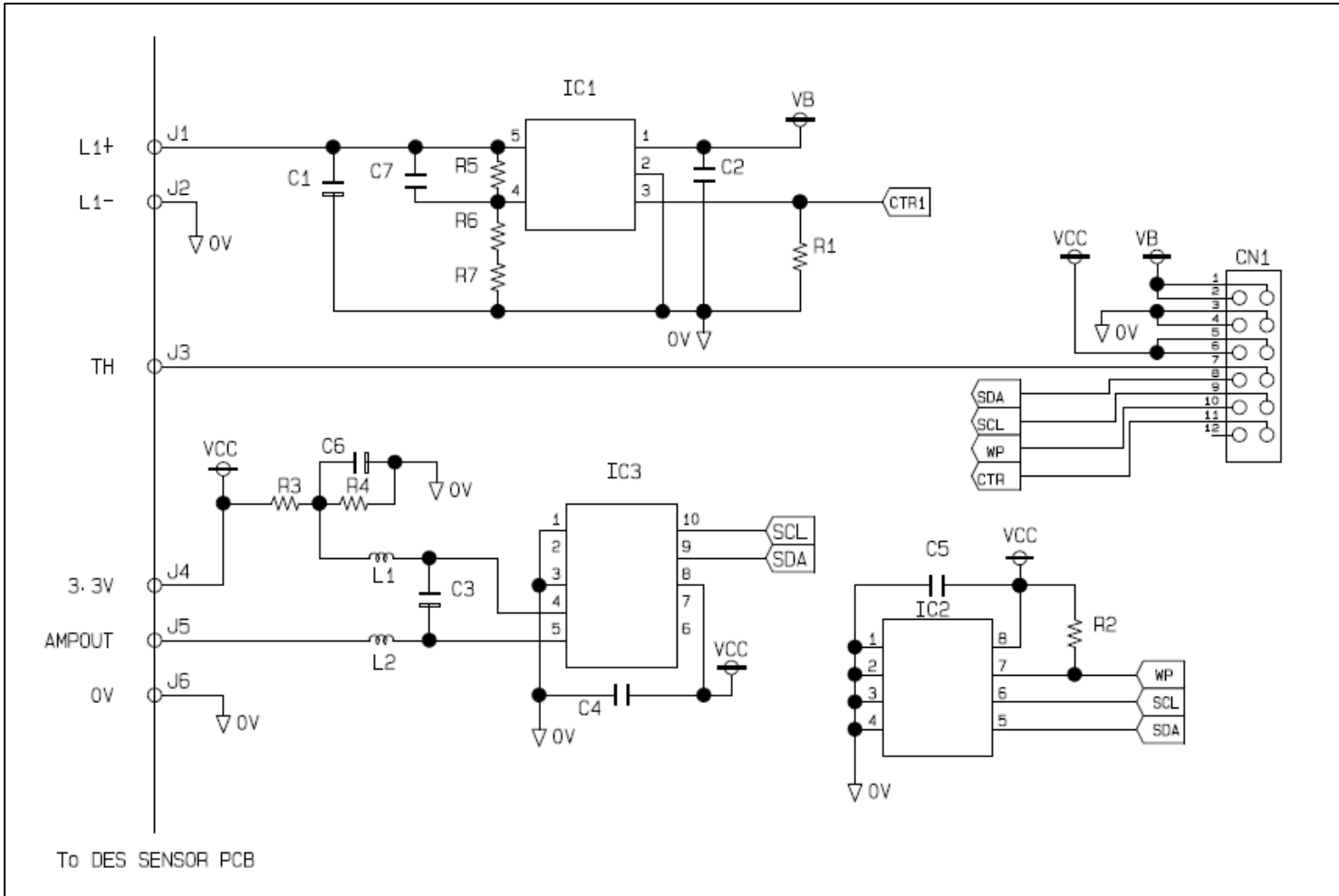
MARK	DIAGRAM	HOLE
⊙	φ 0.3	TH
○	φ 0.9	TH

SPECIFICATION FOR PCB

- ・PCB No. : RKP-91896P
- ・Material : Glass epoxy
- ・Thickness : 1.2mm
- ・Layer number : 2
- ・Thickness copper film : 35um
- ・Minimum conductor width : 0.3mm
- ・CTI : 100 above

All drawings are view of parts side

SCALE 2:1



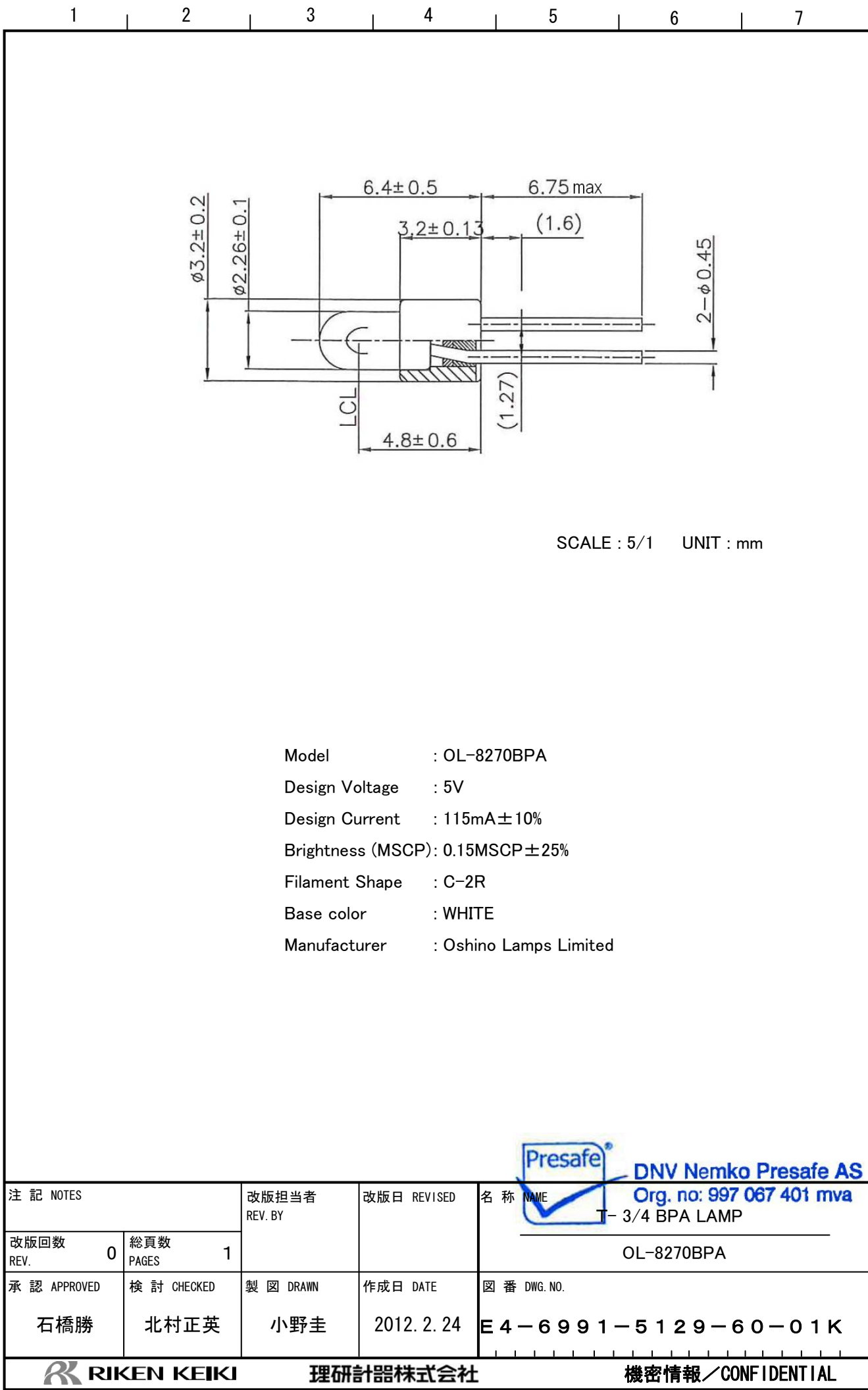
SCHEMATIC

PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Voltage regulator)	TPS73201DBV	m
IC2	IC (EEPROM)	S-24C16CI-I8T1	m
IC3	IC (A/D Converter)	ADS1114IRU	m
R1,2,3,4,5,6,7	Chip fixed resistor or Chip jumper	10 ohm - 1M ohm / 1%, 0.063W or 50m ohm max, 1A (1005 )	m
C1,2	Chip multilayer capacitor	4.7uF / 20%, 6.3V	m
C3,4,5,6	Chip multilayer capacitor	0.1uF / 10%, 25V	m
C7	Chip multilayer capacitor	1uF / 10%, 10V	m
L1,2	Chip fixed resistor or Chip jumper or Noise filter	10 ohm - 1M ohm / 1%, 0.063W or 50m ohm max, 1A (1005 ) or BLM15HD182	m


m marked parts are mounted or not

注 記 NOTES		C1、C2 change		改版担当者 REV. BY	改版日 REVISED 2015.2.24	DES DIGITAL PCB	
改版回数 REV.	1	総頁数 PAGES	1	小野圭	2015.2.24		
承認 APPROVED	検討 CHECKED		製 図 DRAWN	作成日 DATE	図 番 DWG. NO.		
石橋勝	北村正英		小野圭	2014.7.14	E 3 - 6 9 9 1 - 5 3 8 6 - 6 0 - 0 1 K		
RIKEN KEIKI				理研計器株式会社		機密情報 / CONFIDENTIAL	



Presafe® DNV Nemko Presafe AS  
Org. no: 997 067 401 mva  
T- 3/4 BPA LAMP

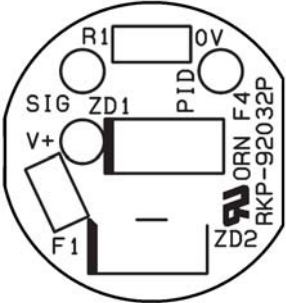
		寸 法																					
		18 未 満		18以上50未満		50以上120未満		120以上260未満		260以上500未満		500以上1000未満		1000以上									
精 度	0.1	中 級	0.2	粗 級	0.4	0.15	0.3	0.6	0.2	0.4	0.8	0.3	0.5	1.2	0.4	0.8	1.6	0.5	1.0	2.0	0.7	1.2	2.5

表面处理 TREAT.	許容差 TOL.	尺 度 SCALE	投影法 PROJECTION	名 称 NAME Org. no: 997 067 401 mva SMART SENSOR Type-PIS
材 質 MAT.				
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
青良治	近藤晴彦	武井康典	2014. 7. 30	M4-4830-01-01K
 <b>RIKEN KEIKI</b>			<b>理研計測株式会社</b>	
機密情報 / <b>CONFIDENTIAL</b>				


1234567

A

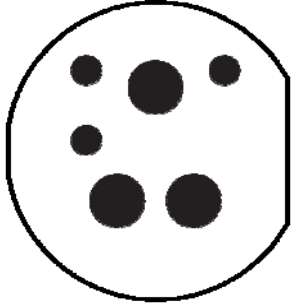
B



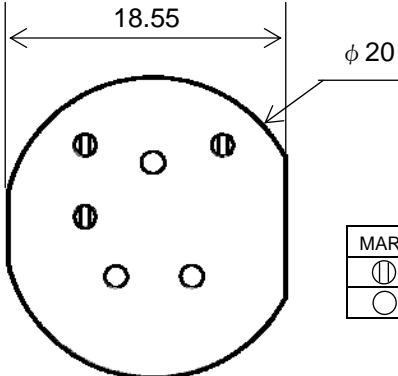
SILK PRINT FOR PARTS SIDE



PARTS SIDE



SOLDERING SIDE



THROUGH HOLE DATA

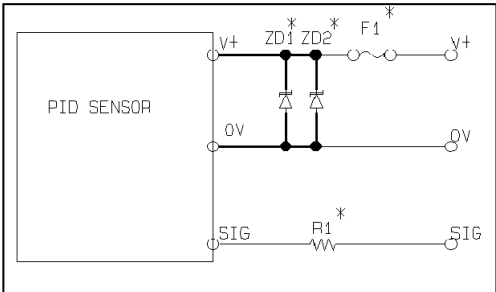
**SPECIFICATION FOR PCB**

- PCB No. : RKP-92032P
- Material : Glass epoxy
- Thickness : 0.8mm
- Layer number : 2
- Thickness copper film : 35um
- Minimum conductor width : 1.0mm
- CTI : 100 above

MARK	DIAGRAM	HOLE
⊕	φ 0.6	TH
○	φ 1.8	TH

All drawings are view of parts side

SCALE 2:1



SCHMATIC

PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
PID SENSOR	VOC GAS SENSOR	MINI PID 3PIN, Ion Science Ltd. IECEX BAS 07.0030U	Ex comp.
F1	Fuse	MCF2 125mAR08B4, SOC In=250mA, DC72V	Safety comp.
ZD1,ZD2	Zener diode	1SMB5917B,ON Semiconductor Vz = 4.46 – 4.94 V, 3W	Safety comp.
R1	Chip fixed resistor	1k ohm / 1%, 0.25W (3216)	Safety comp.

注 記 NOTES

改版回数 REV.	2	総頁数 PAGES	1
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改版担当者 REV. BY

小野圭

改版日 REVISED

2015.3.25

承認 APPROVED

石橋勝

検 討 CHECKED

北村正英

製 図 DRAWN

小野圭

作成日 DATE

2014.7.14

図 番 DWG. NO.

E 4 - 6 9 9 1 - 5 3 8 7 - 3 0 - 0 1 K

名称 NAME

PIS SENSOR PCB

Presafe

DNV Nemko Presafe AS

Org. no: 997 067 401 mva

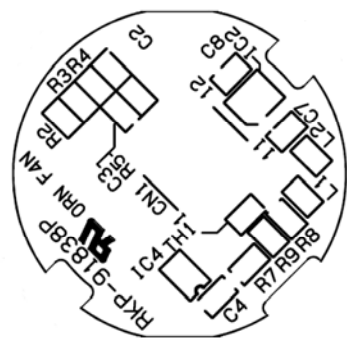
機密情報 / CONFIDENTIAL

RIKEN KEIKI

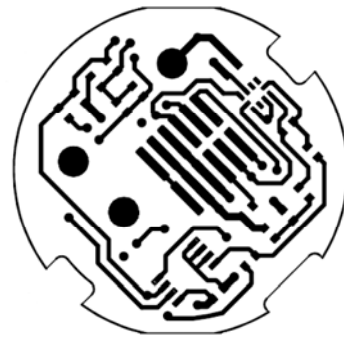
理研計器株式会社

機密情報 / CONFIDENTIAL





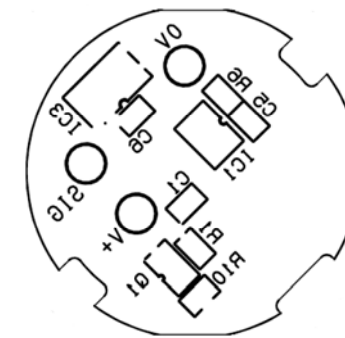
SILK PRINT FOR PARTS SIDE



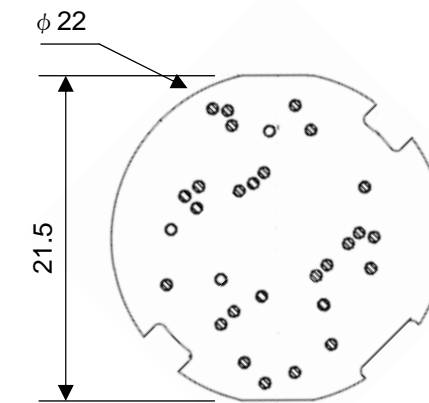
PARTS SIDE





SOLDERING SIDE



SILK PRINT FOR SOLDERING SIDE



THROUGH HOLE DATA

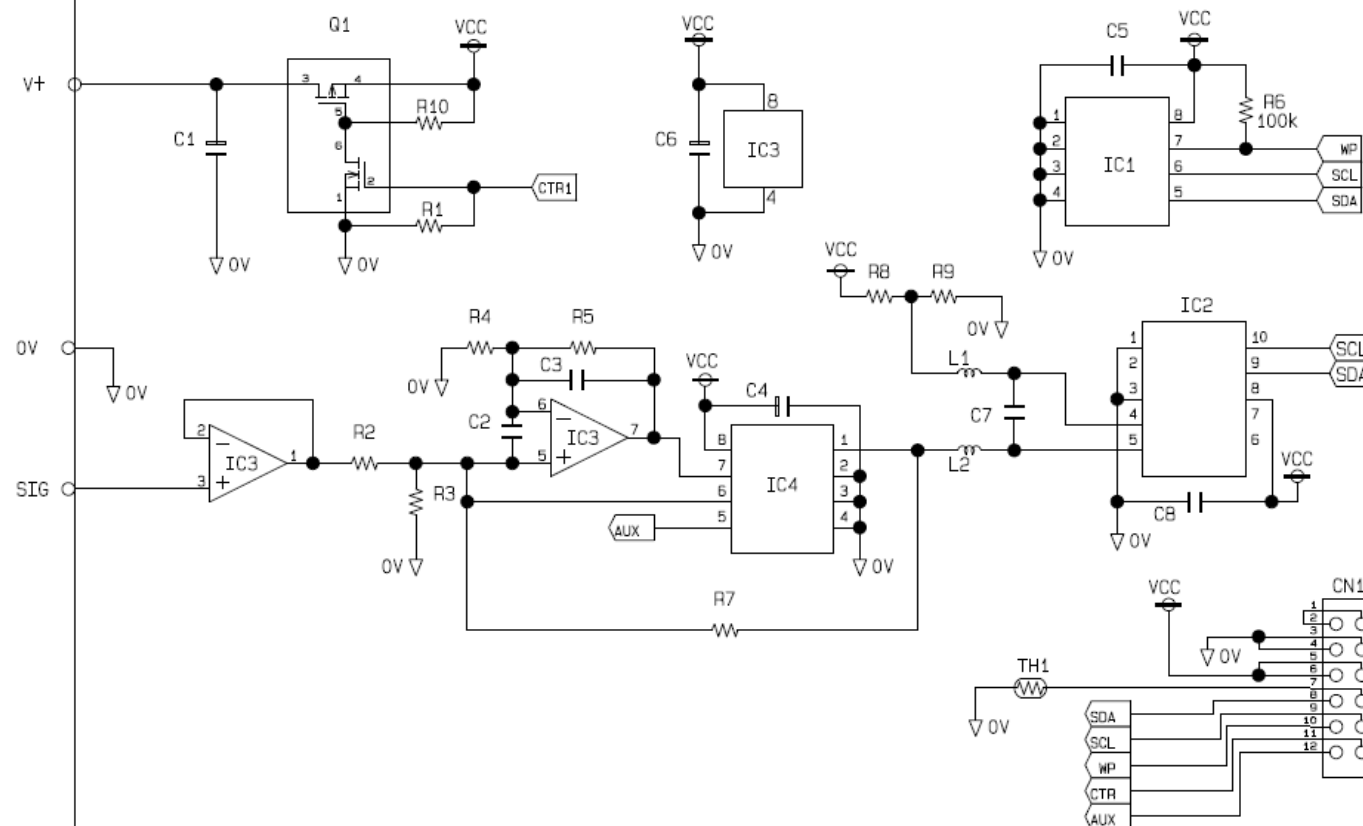
MARK	DIAGRAM	HOLE
	$\phi$ 0.3	TH
	$\phi$ 1.0	TH

## SPECIFICATION FOR PCB

- PCB No. : RKP-91838P
- Material : Glass epoxy
- Thickness : 1.2mm
- Layer number : 2
- Thickness copper film : 18um
- Minimum conductor width : 0.3mm
- CTI : 100 above

All drawings are view of parts side

SCALE 2:1



To PID SENSOR PCB

SCHEMATIC

## PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (EEPROM)	S-24C16CI-I8T1	m
IC2	IC (A/D Converter)	ADS1114IRU	m
IC3	IC(OPAMP)	OPA2378AIDCN	m
Q1	N+P-ch FET	EM6M2	m
TH1	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1005)	m
R1-10	Chip fixed resistor or Chip jumper	10 ohm – 1M ohm / 1%, 0.063W or 50m ohm max, 1A (1005 )	m
C1,2,4,5,6,7,8	Chip multilayer capacitor	0.1uF / 10%, 16V	m
C3	Chip multilayer capacitor	10pF-1000pF / 10%, 50V	m
L1,2	Chip fixed resistor or Chip jumper or Noise filter	10 ohm – 1M ohm / 1%, 0.063W or 50m ohm max, 1A (1005 ) or BLM15HD182	m

m marked parts are mounted or not

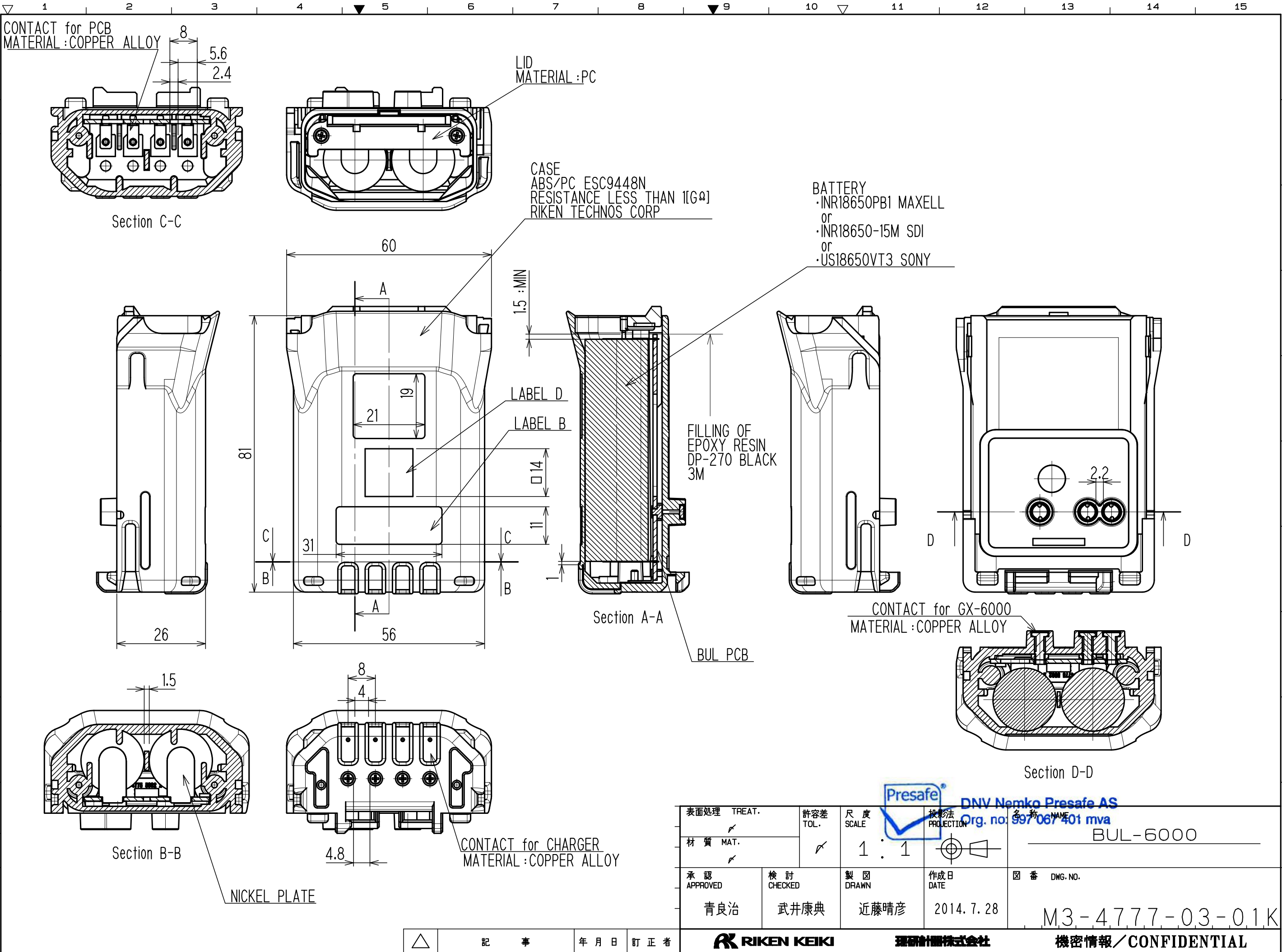


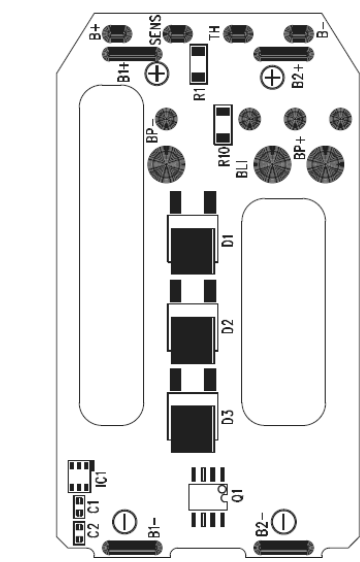
REVISED: 名称 NAME

## PIS DIGITAL PCB

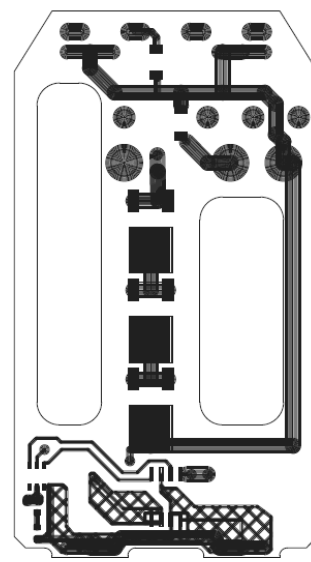
注 記 NOTES	PID=>PIS	改版担当者 REV. BY	改版日 REV. DATE	097-067 401 mva <b>PIS DIGITAL PCB</b>
改版回数 REV.	0 総頁数 PAGES	1 小野圭	2015.3.25	
承認 APPROVED	検討 CHECKED	製図 DRAWN	作成日 DATE	図番 DWG. NO.
石橋勝	北村正英	小野圭	2014.7.14	E 3 - 6 9 9 1 - 5 3 8 8 - 1 0 - 0 1 K

寸法	精度	中級	粗級
1000以上	0.7	1.2	2.5
500以上1000未満	0.5	1.0	2.0
260以上500未満	0.4	0.8	1.6
120以上260未満	0.3	0.6	1.2
50以上120未満	0.2	0.4	0.8
18以上50未満	0.15	0.3	0.6
1日未満	0.1	0.2	0.4
寸法	精度	中級	粗級

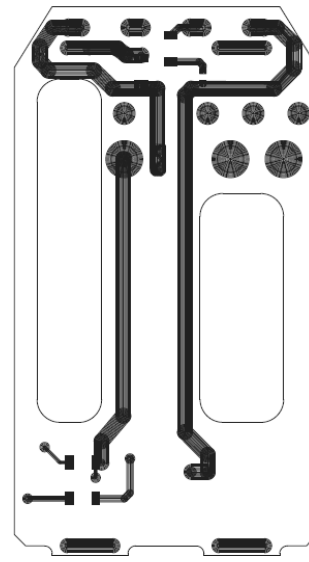




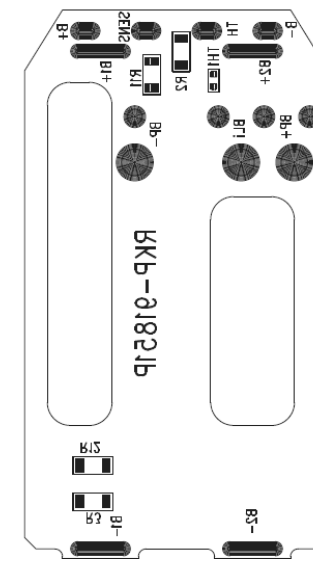
SILK PRINT FOR PARTS SIDE



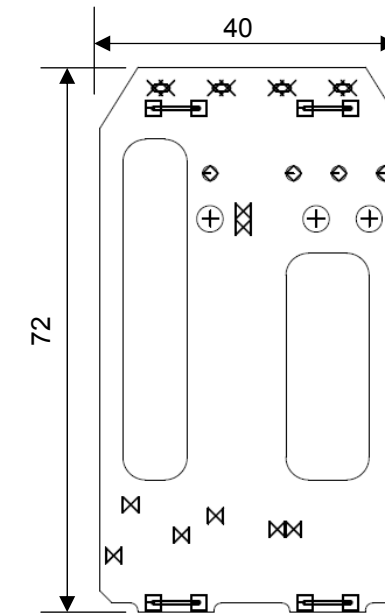
PARTS SIDE



SOLDERING SIDE








SILK PRINT FOR SOLDERING SIDE



THROUGH HOLE DATA

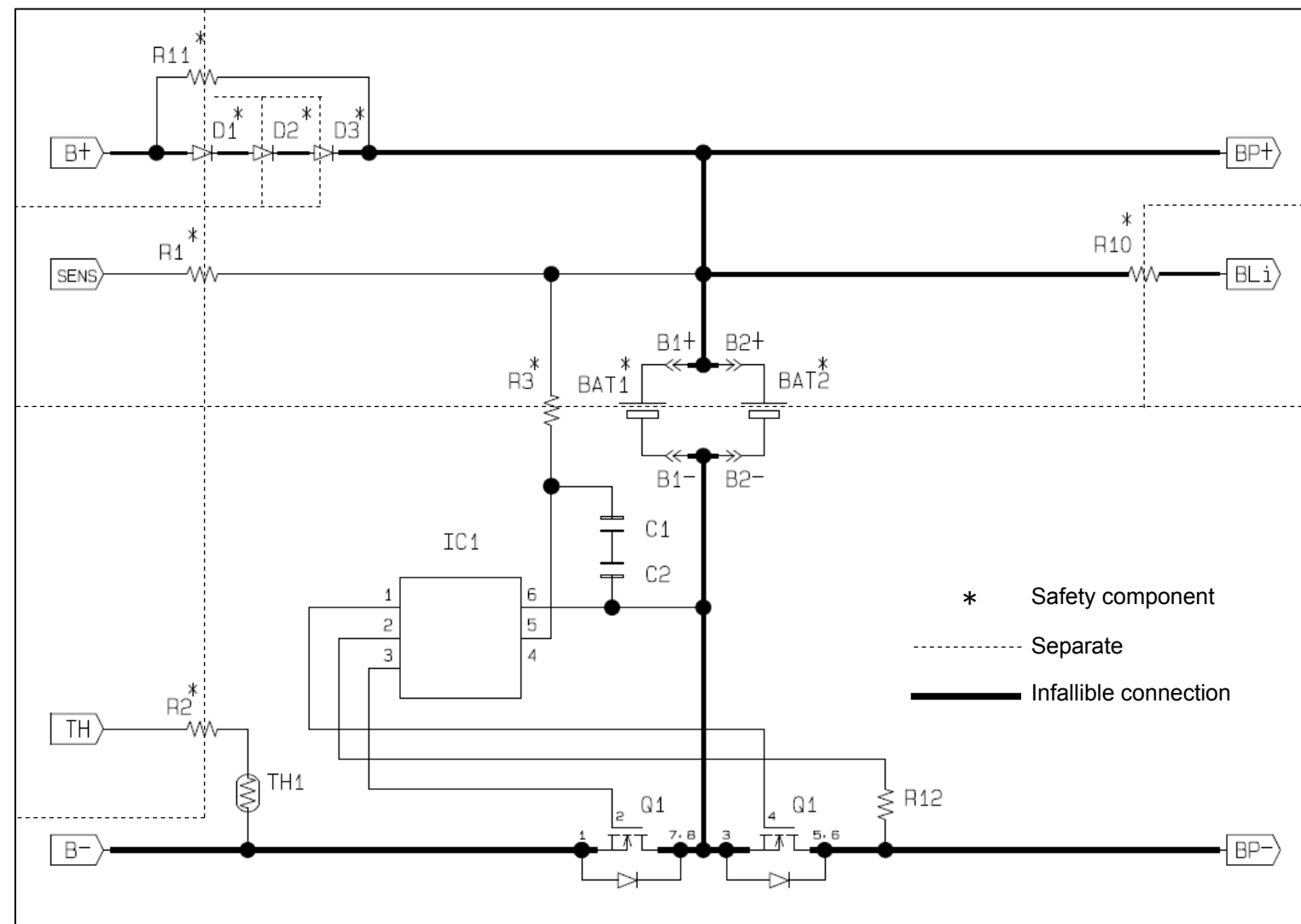
### SPECIFICATION FOR PCB

- PCB No. : RKP-91851P
- Material : Glass epoxy
- Thickness : 1.6mm
- Layer number : 2
- Thickness copper film : 35um
- Minimum conductor width : 0.3mm
- CTI : 100 above

MARK	DIAGRAM	HOLE
	3.5	TH
	0.8×6.5	TH
	0.5×6.5	TH
	2	TH
	0.8	TH

All drawings are view of parts side

SCALE 1:1



### SCHEMATIC

## PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Protection IC)	S-8261	
Q1	FET	FDS6961A	
D1,2,3	Schottky barrier diode	MBRD1045, On semiconductor Vr = 45V, If = 10A	*
R1,2	Chip fixed resistor	MCR18EZP_2000, ROHM or RK73H2BT_2000, KOA 200ohm / 1% , 0.25W	*
R3	Chip fixed resistor	MCR18EZP_4700, ROHM or RK73H2BT_4700, KOA 470ohm / 1% , 0.25W	*
R10	Chip fixed resistor	MCR18EZP_1002, ROHM or RK73H2BT_1002, KOA 10k ohm / 1% , 0.25W	*
R11	Chip fixed resistor	MCR18EZP_1002, ROHM or RK73H2BT_1002, KOA 2.2k ohm / 1% , 0.25W	*
R12	Chip fixed resistor	200Ω-10kΩ / 1% , 0.25W (3216)	
C1,2	Chip multilayer capacitor	0.1uF / 10%, 50V	m
TH1	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1005)	

m marked parts are mounted or not

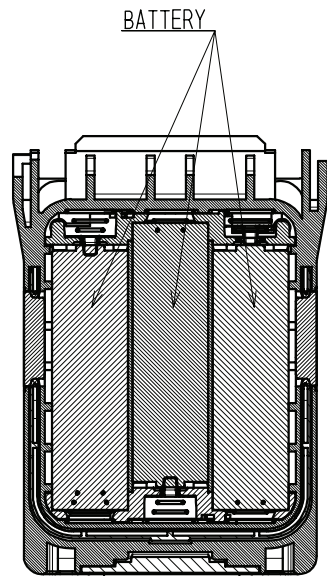
担当者	改版
-----	----

DNV Nemko Presafe AS  
REVISED 名称 NAME  
397 067 401 mva

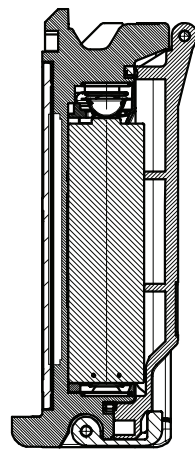
**BUL PCB**

注 記 NOTES		改版担当者 REV. BY	改版日 REVISED 2014.9.5	図 番 DWG. NO. E 3 - 6 9 9 1 - 5 3 8 9 - 8 0 - 0 1 K
改版回数 REV.	1	小野圭	2014.9.5	
承認 APPROVED	検討 CHECKED	製 図 DRAWN	作成日 DATE	
石橋勝	北村正英	小野圭	2014.7.14	

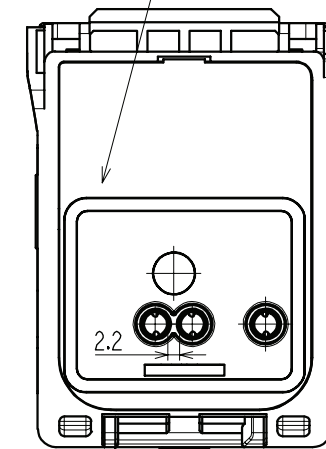
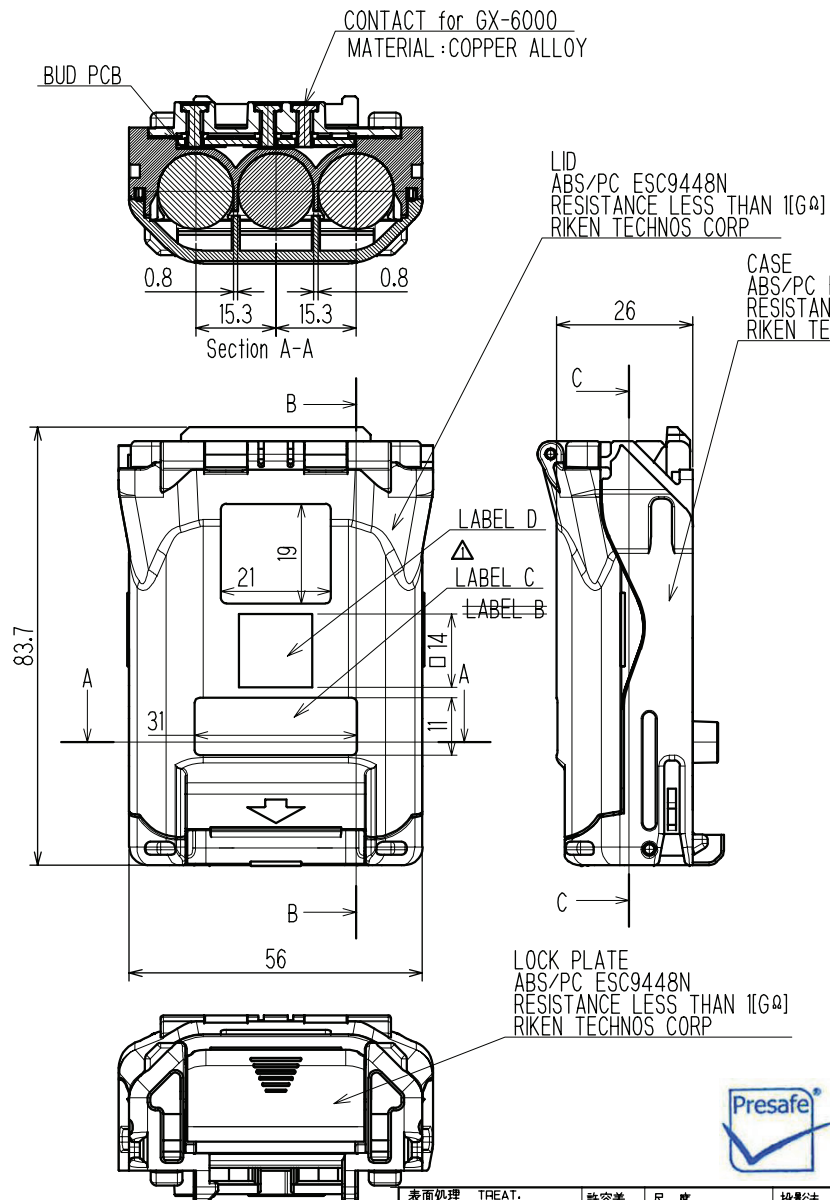
寸法	15未満	15以上50未満	50以上120未満	120以上260未満	260以上500未満	500以上1000未満	1000以上	寸法
精度	0.1	0.15	0.2	0.3	0.4	0.5	0.7	精度
中級	0.2	0.3	0.4	0.5	0.8	1.0	1.2	中級
粗級	0.4	0.6	0.8	1.2	1.6	2.0	2.5	粗級



Section C-C



Section B-B



DNV Nemko Presafe AS  
Org. no: 997 067 401 mva

表面処理 TREAT.	許容差 TOL.	尺度 SCALE	投影法 PROJECTION	名称 NAME
材質 MAT.		1 : 1		BUD-6000
承認 APPROVED	検討 CHECKED	製図 DRAWN	作成日 DATE	図番 DWG. NO.
青良治	武井康典	近藤晴彦	2014. 7. 28	M3-4777-04-0.1K

△	REVISION E9	2015.3.6	海野裕作
△	記 事	年 月 日	訂 正 者

RIKEN KEIKI

海野計測株式会社

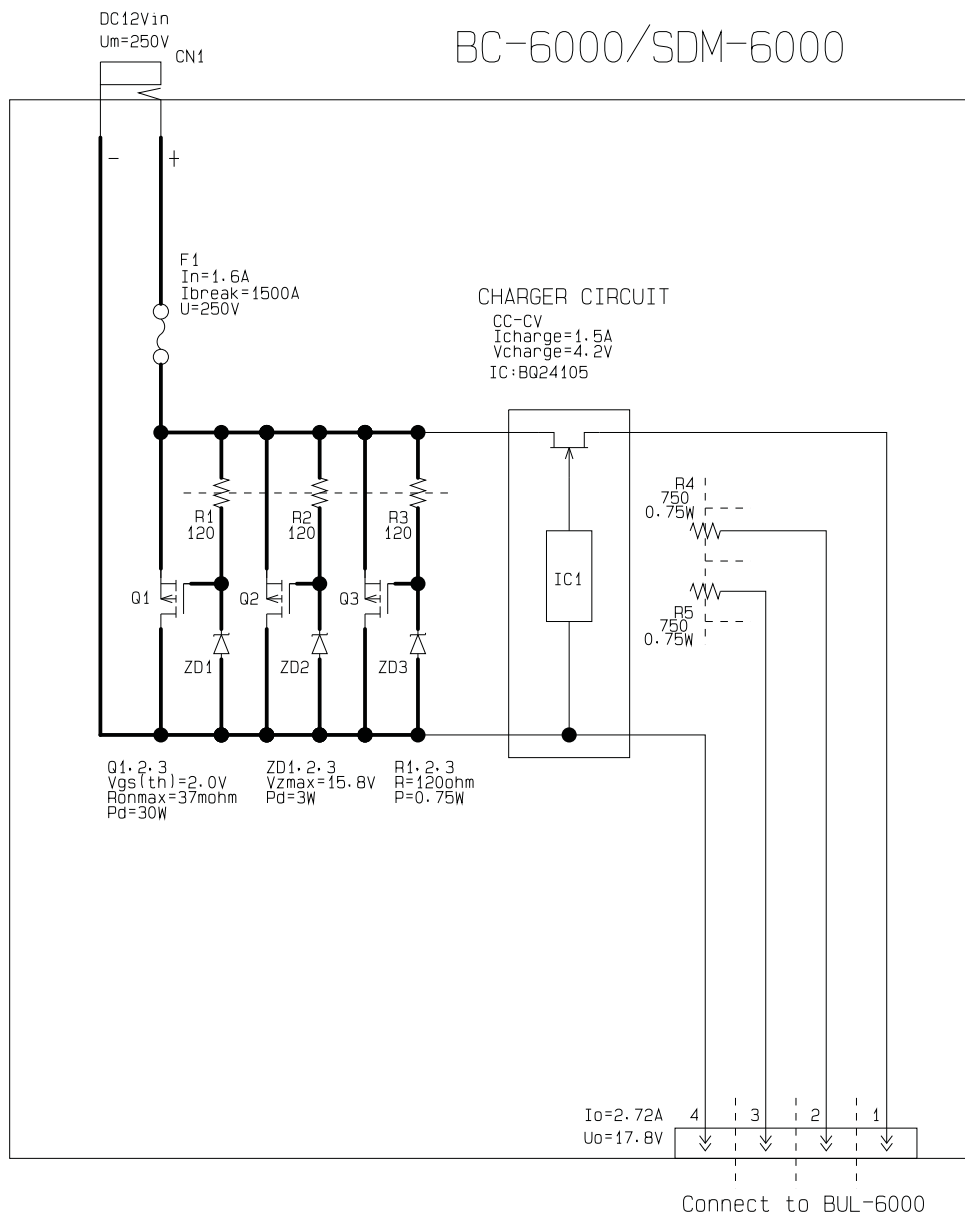
機密情報/CONFIDENTIAL





# BATTERY CHARGER

## BC-6000/SDM-6000



(MEMO)

1. - - - - marks means SEPARATE

2. ——— marks means INFALLIBLE CONNECTION



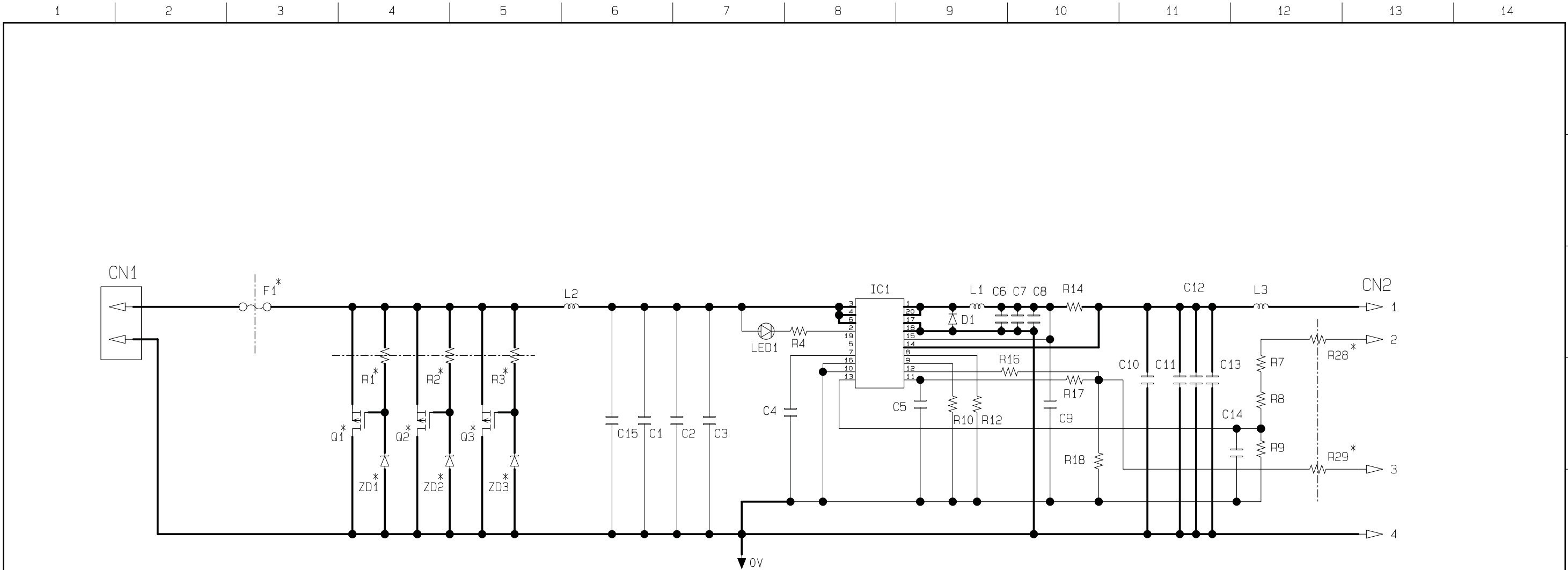
DNV Nemko Presafe AS  
Org. no: 997 067 401 mva

注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名 称 NAME
改版回数 REV.	1	小野圭	2014. 9. 5	DIAGRAM FOR I. S. KEEP
総頁数 PAGES	1			FOR MODEL BC-6000/SDM-6000
承認 APPROVED	検討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014. 7. 30	E4-6991-5395-80-01K







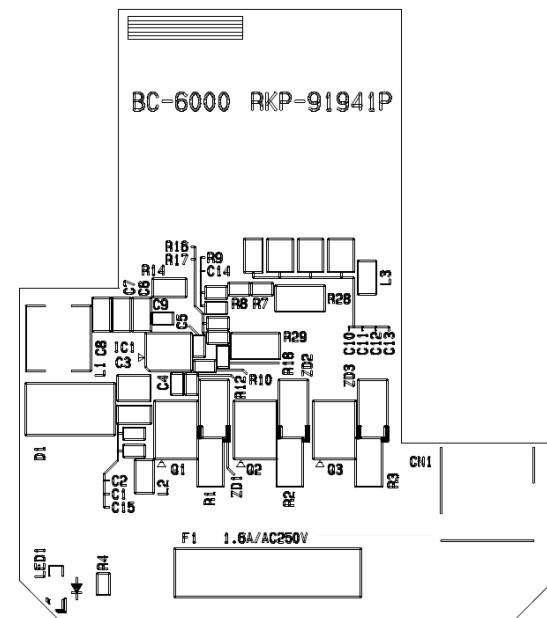


\* marks means safety components

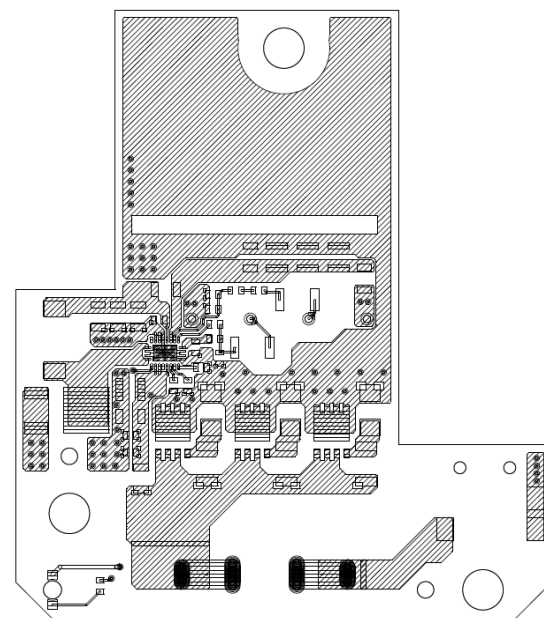
----- marks means separate

———— marks means infallible connection

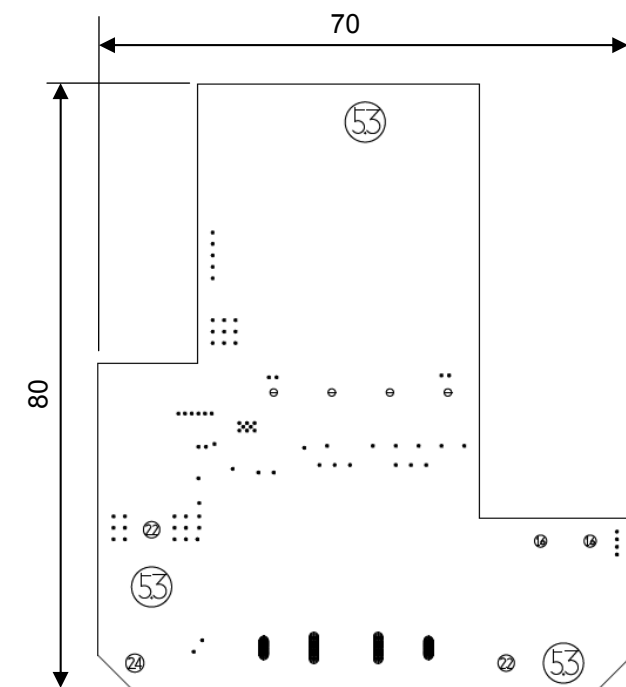
注 記 NOTES		改版担当者 REV. BY		改版日 REVISE DATE	Presafe® DNV Nemko Presafe AS Obj no: 997-067-401 mva
改版回数 REV.	0	総頁数 PAGES	1		
承認 APPROVED	石橋勝	検討 CHECKED	北村正英	製図 DRAWN	小野圭
				作成日 DATE	2014. 12. 16
				図番 DWG. NO.	E3-6991-5255-80-01K
RIKEN KEIKI		理研計器株式会社		機密情報 / CONFIDENTIAL	



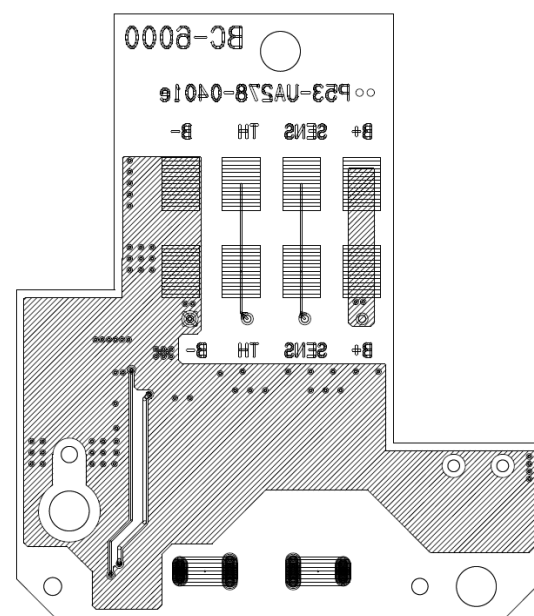
SILK PRINT FOR PARTS SIDE



PARTS SIDE



VIA HOLES



SOLDERING SIDE

All drawings are view of parts side  
SCALE 1:1

MARK	DIAGRAM	HOLE
⊗	Φ0.3	TH
⊖	Φ1.0	TH
⊕	Φ1.2	TH
⑬	Φ1.6	NTH
⑳	Φ2.2	NTH
㉔	Φ2.4	NTH
㉟	Φ5.3	NTH

SPECIFICATION FOR PCB

- PCB No. : RKP-91941P
- Material : Glass epoxy
- Thickness : 1.6mm
- Layer number : 2
- Thickness copper film : 35um
- Copper thickness of the via's : 35um above.
- Minimum conductor width : 0.3mm
- CTI : 175 above

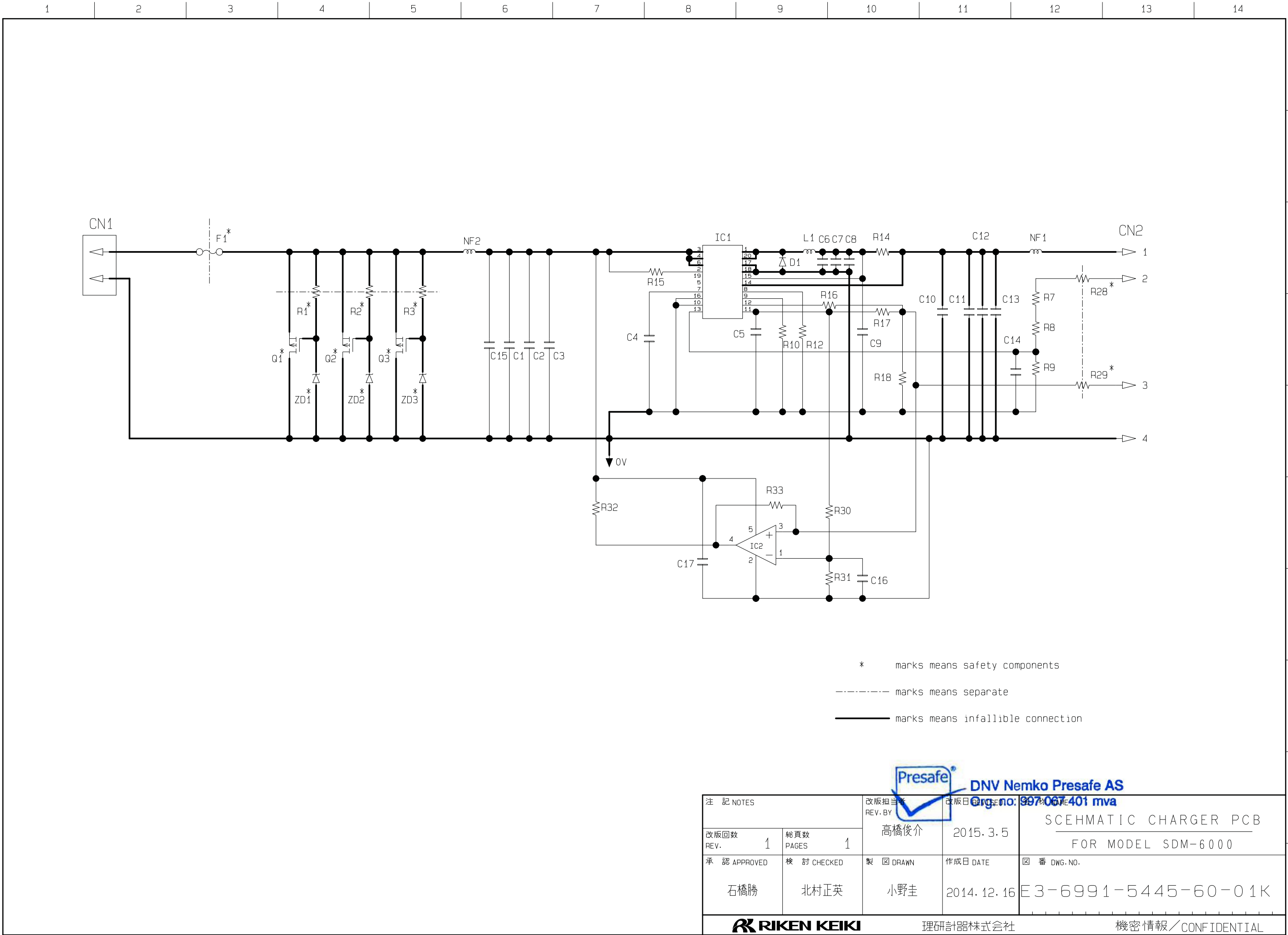
PARTS LIST

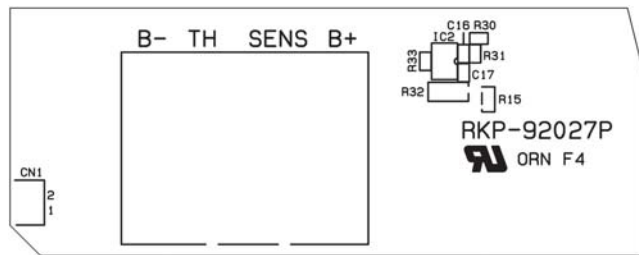
Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Battery charger)	BQ24105RHLR	
D1	Schottky barrier diode	MBRD1045	
F1	Fuse	021601.6P Littelfuse In=1.6A, Ibreak=1500A@250Vac	*
Q1,Q2,Q3	P-ch MOSFET	TPCA8507-H TOSHIBA Ron_max=37mΩ , Pd=30W	*
ZD1,ZD2,ZD3	1SMB5929B	1SMB5929B ON Semiconductor Vz= 14.25V -15.75V ,Pd=3W	*
R1,R2,R3	Chip fixed resistor	RK73HW2H_1200F KOA 120Ω/1% ,0.75W	*
R4,R7,R8,R9,R10, R12,R16,R17,R18	Chip fixed resistor or Chip jumper	100Ω - 1MΩ/1% , 0.1W (1608) or 50mΩ max ,1A	m
R14	Chip fixed resistor	0.068Ω - 0.2Ω/1% , 0.25W (3216)	
R28,R29	Chip fixed resistor	RK73HW2H_7500F KOA 750Ω/1% ,0.75W	*
C1	Chip multilayer capacitor	1uF / 10% , 50V	m
C2,C6,C7,C8,C10	Chip multilayer capacitor	10uF / 10% , 25V	m
C3	Chip multilayer capacitor	22uF / 10% , 25V	m
C4	Chip multilayer capacitor	0.068uF / 10% , 50V	m
C5,C9,C15	Chip multilayer capacitor	0.1uF / 10% , 50V	m
C1,C12,C13	Chip multilayer capacitor	47uF / 10% , 16V	m
C14	OPEN	OPEN	
L1	Inductor	10uH / 20%	
L2,L3	Chip ferrite beads	BLM31PG391	m
LED1	LED Lamp	SML-811U	m

\* marked parts are for safety

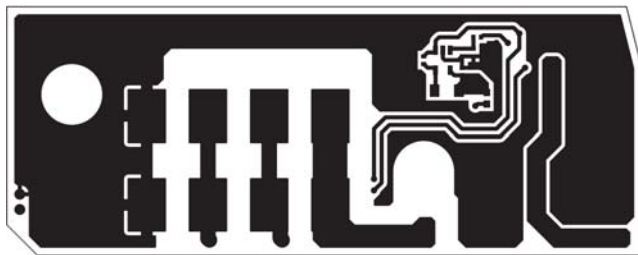
m marked parts are mounted or not

注 記 NOTES		改版担当者 REV. BY	改版日 REVISED DATE	名 称 NAME <b>CHARGER PCB</b>
改版回数 REV.	0	総頁数 PAGES	1	FOR MODEL BC-6000
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
石橋勝	北村正英	小野圭	2014.12.16	E 3 - 6 9 9 1 - 5 2 5 5 - 8 0 - 0 1 A

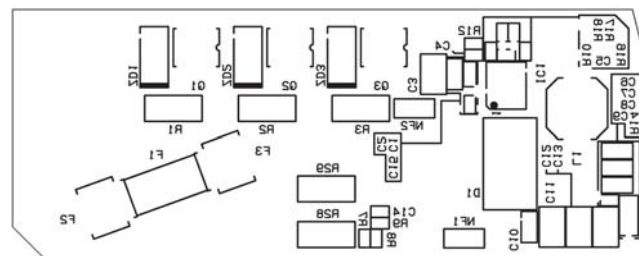




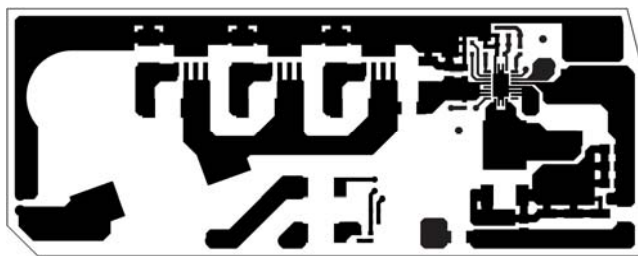
SILK PRINT FOR SOLDERING SIDE



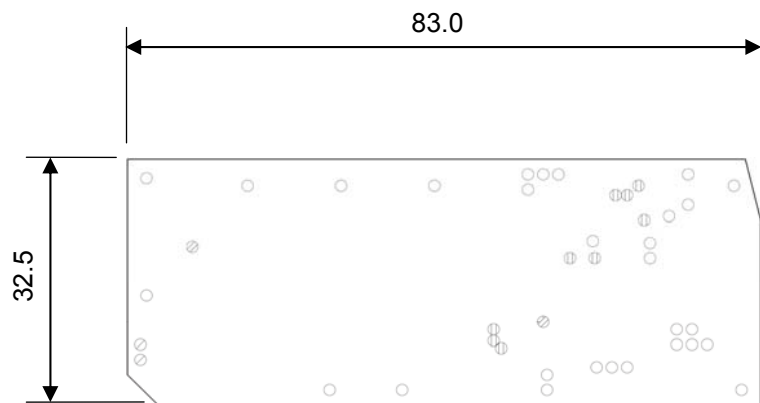
SOLDERING SIDE



SILK PRINT FOR PARTS SIDE



PARTS SIDE



All drawings are view of soldering side

SCALE 1:1

VIA HOLES

MARK	DIAGRAM	HOLE
⊙	Φ0.4	TH
○	Φ0.7	TH
⊗	Φ0.8	TH
⊘	Φ5.6	NTH

SPECIFICATION FOR PCB

- PCB No. :RKP-92027P
- Material : Glass epoxy
- Thickness : 1.6mm
- Layer number : 2
- Thickness copper film : 35um
- Copper thickness of the via's : 35um above.
- Minimum conductor width : 0.3mm
- CTI : 175 above

PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Battery charger)	BQ24105RHLR	
IC2	IC(Comparator)	TL331	
D1	Schottky barrier diode	MBRD1045	
F1	Fuse	021601.6P Littelfuse In=1.6A, Ibreak=1500A@250Vac	*
Q1,Q2,Q3	P-ch MOSFET	TPCA8507-H TOSHIBA Ron_max=37mΩ , Pd=30W	*
ZD1,ZD2,ZD3	1SMB5929B	1SMB5929B ON Semiconductor Vz= 14.25V -15.75V ,Pd=3W	*
R1,R2,R3	Chip fixed resistor	RK73HW2H_1200F KOA 120Ω /1% ,0.75W	*
R7,R8,R9,R10,R12, R16,R17,R18,R30, R31,R33	Chip fixed resistor or Chip jumper	100Ω - 4.7MΩ /1% , 0.063W (1005) or 50mΩ max ,1A	m
R14	Chip fixed resistor	0.068Ω - 0.2Ω /1% , 0.25W (3216)	
R15	Chip fixed resistor or Chip jumper	100Ω - 1MΩ /1% , 0.1W (1608) or 50mΩ max ,1A	m
R28,R29	Chip fixed resistor	RK73HW2H_7500F KOA 750Ω /1% ,0.75W	*
R32,	Chip fixed resistor or Chip jumper	100Ω - 1MΩ /1% , 0.125W (3216) or 50mΩ max ,1A	m
C1,	Chip multilayer capacitor	1uF / 10%,25V	m
C3,	Chip multilayer capacitor	22uF / 10% 25V	m
C11,C12,C13	Chip multilayer capacitor	47uF / 10%,16V	m
C5,C9, C14,C15, C16,C17	Chip multilayer capacitor	0.1uF / 10%, 25V	m
C2,C6,C7,C8,C10	Chip multilayer capacitor	10uF / 10%, 16V	m
C4,	Chip multilayer capacitor	0.22uF / 10%, 10V	m
L1	Inductor	10uH / 20%	
NF1,NF2	Chip ferrite beads	BLM31PG391	m

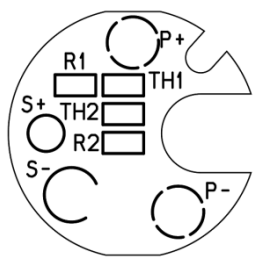
\* marked parts are for safety

m marked parts are mounted or not

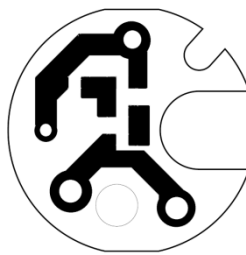
注 記 NOTES		改版担当者 REV. BY		改版日 REVISION	名 義 者 Ogawa 097-067 401 mva
C4,C14		小野圭		2015.6.12	
改版回数 REV.	2	総頁数 PAGES	1		
承認 APPROVED	検 討 CHECKED	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.	
石橋勝	北村正英	小野圭	2014.12.15	E 3 - 6 9 9 1 - 5 4 4 5 - 6 0 - 0 1 A	



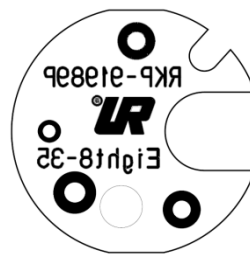




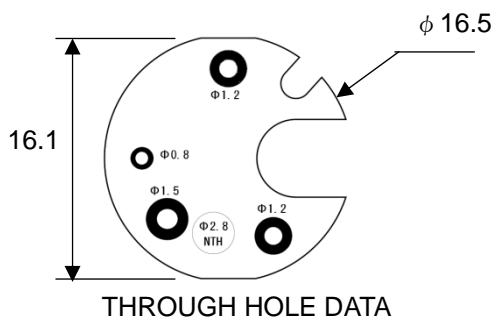
SILK PRINT FOR PARTS SIDE



PARTS SIDE



SOLDERING SIDE



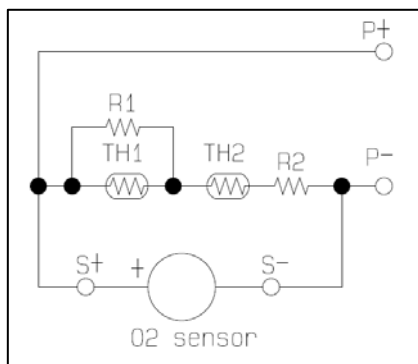
THROUGH HOLE DATA

SPECIFICATION FOR PCB

- PCB No. : RKP-91989P
- Material : Glass epoxy
- Thickness : 0.8mm
- Layer number : 2
- Thickness copper film : 35um
- Minimum conductor width : 0.5mm
- CTI : 100 above

All drawings are view of parts side

SCALE 2:1



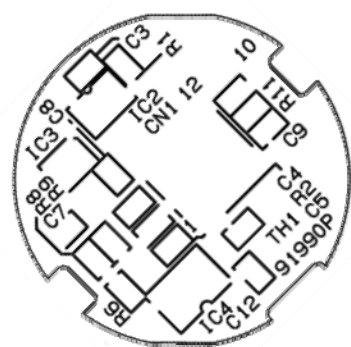
SCHEMATIC

PARTS LIST

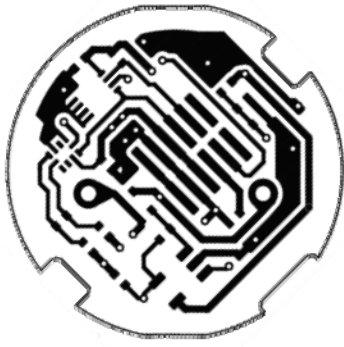
Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
O2 SENSOR	OXYGEN SENSOR	Refer to M4-4080-01-01K	
R1,2	Chip fixed resistor or Chip jumper	10 ohm – 1M ohm / 1%, 0.1W or 50m ohm max, 1A (1608 )	m
TH1,2	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1608)	m

m marked parts are mounted or not

注 記 NOTES		改版担当者 REV. BY	改版日 REVISED	名称 NAME  <b>DNV Nemko Presafe AS</b> Org. no: 997 067 401 mva <b>OSS SENSOR PCB</b>
改版回数 REV.	0			
総頁数 PAGES	1	製 図 DRAWN	作成日 DATE	図 番 DWG. NO.
承認 APPROVED	検 討 CHECKED			
石橋勝	北村正英	小野圭	2015.2.24	E 4 - 6 9 9 1 - 5 4 5 7 - 0 0 - 0 1 K



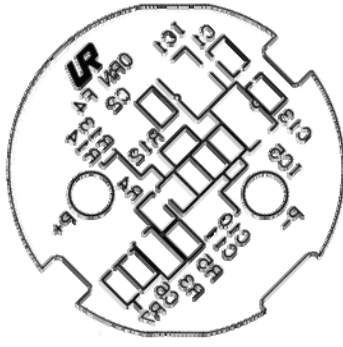
SILK PRINT FOR PARTS SIDE



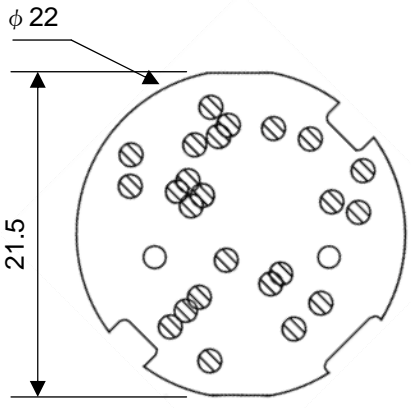
PARTS SIDE



SOLDERING SIDE



SILK PRINT FOR SOLDERING SIDE



THROUGH HOLE DATA

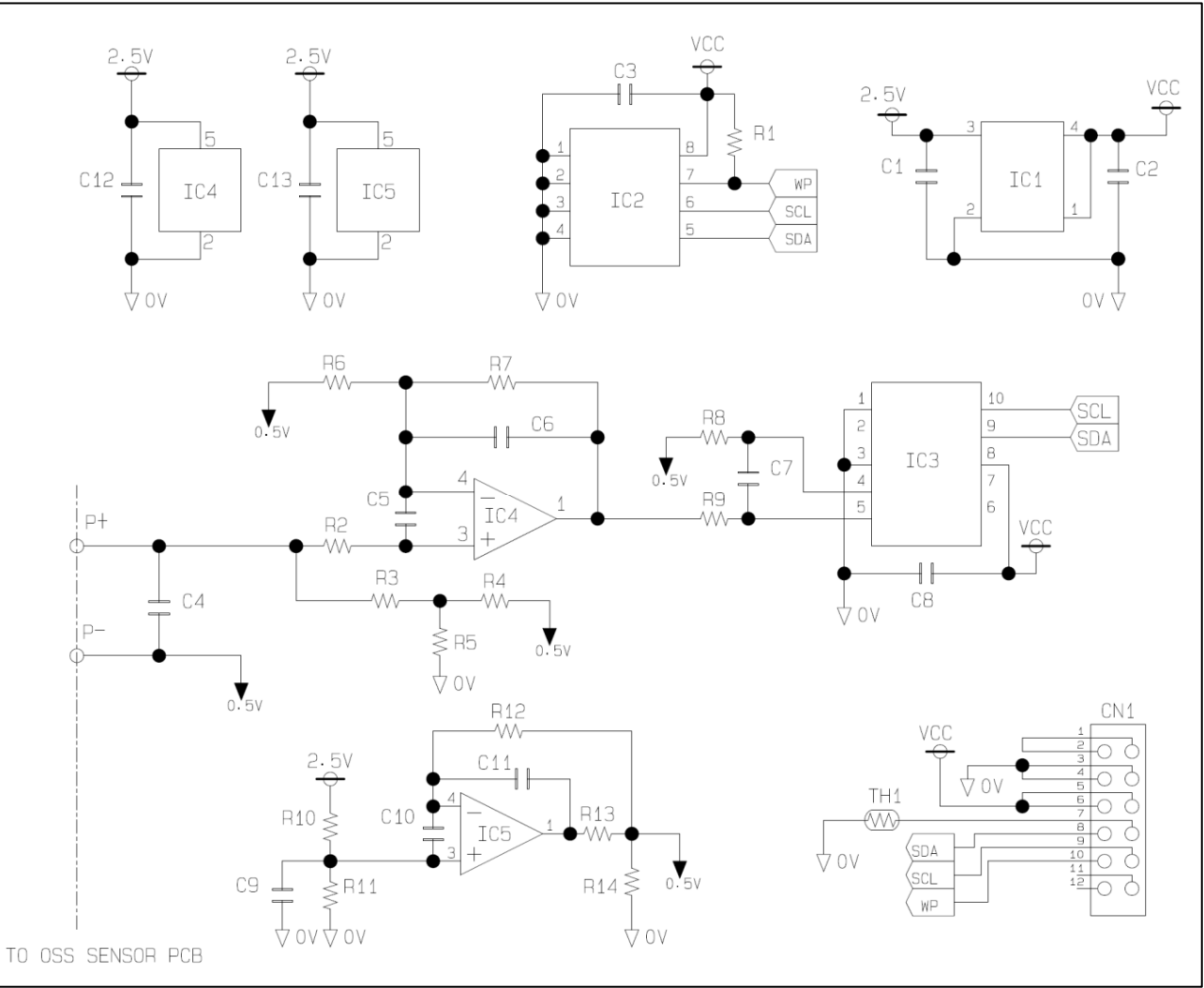
MARK	DIAGRAM	HOLE
⊙	φ 0.3	TH
○	φ 1.0	TH

SPECIFICATION FOR PCB

- PCB No. : RKP-91990P
- Material : Glass epoxy
- Thickness : 1.2mm
- Layer number : 2
- Thickness copper film : 18um
- Minimum conductor width : 0.3mm
- CTI : 100 above

All drawings are view of parts side

SCALE 2:1



SCHEMATIC

PARTS LIST

Mark of drawing	Kind of parts	Rating / Model of parts	Remarks
IC1	IC (Voltage regulator)	S-1313D25-N4T1	m
IC2	IC (EEPROM)	S-24C16CI-I8T1	m
IC3	IC (A/D Converter)	ADS1114IRU	m
IC4	IC(OPAMP)	OPA333AIDBV	m
IC5	IC(OPAMP)	AD8500AKS	m
TH1	Chip thermistor	Rt25 = 470 ohm -100 k ohm / 5%, B=3000K-5000K (1005)	m
R1-14	Chip fixed resistor or Chip jumper	10 ohm - 1M ohm / 1%, 0.063W or 50m ohm max,1A (1005 )	m
C1,2,3,8,12,13,	Chip multilayer capacitor	0.1uF / 10%, 25V	m
C4	Chip multilayer capacitor	0.01uF / 10%, 25V	m
C5,7,10	Chip multilayer capacitor	10pF-1000pF / 10%, 50V	m
C6,11	Chip multilayer capacitor	1uF / 10%, 10V	m
C9	Chip multilayer capacitor	100pF-6800pF / 10%, 50V	m

m marked parts are mounted or not

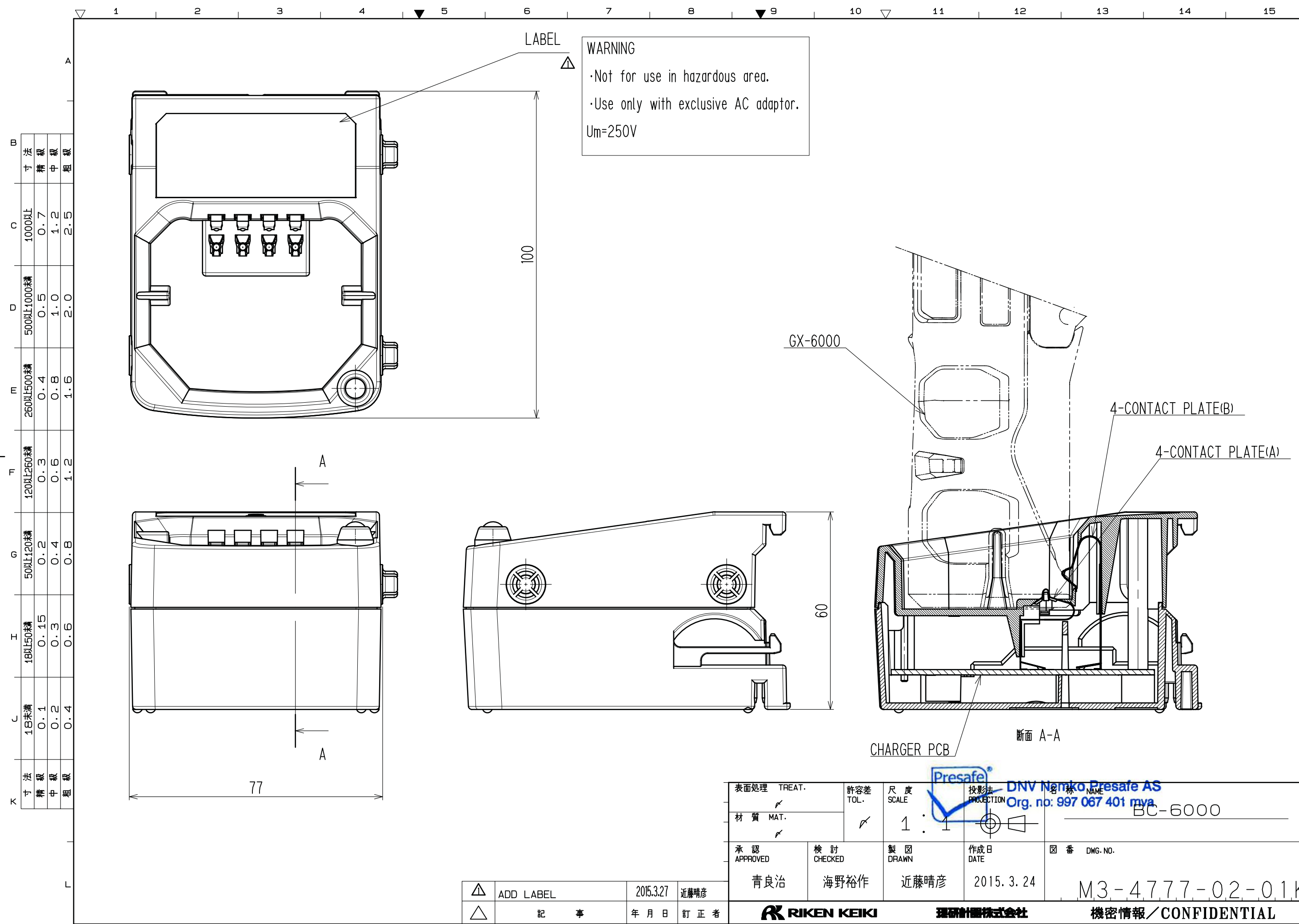
注 記 NOTES		改版担当者 REV. BY		改版日 REVISED DATE	
改版回数 REV.		総頁数 PAGES		承認 APPROVED	
0		1		検 討 CHECKED	
承認 APPROVED		製 図 DRAWN		作成日 DATE	
石橋勝		小野圭		2015.2.24	
北村正英		図 番 DWG. NO.		E 3 - 6 9 9 1 - 5 4 5 8 - 7 0 - 0 1 K	

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WARNING

- ・Not for use in hazardous area.
- ・Use only with exclusive AC adaptor.

Um=250V

寸法	精度	中級	粗級
1000以上	0.7	1.2	2.5
500以上1000未満	0.5	1.0	2.0
260以上500未満	0.4	0.8	1.6
120以上260未満	0.3	0.6	1.2
50以上120未満	0.2	0.4	0.8
18以上50未満	0.15	0.3	0.6
18未満	0.1	0.2	0.4
寸法	精度	中級	粗級

△	ADD LABEL	2015.3.27	近藤晴彦
△	記事	年月日	訂正者

表面处理 TREAT.	許容差 TOL.	尺度 SCALE	投影法 PROJECTION	名称 NAME
材質 MAT.		1 : 1		BC-6000
承認 APPROVED	検討 CHECKED	製図 DRAWN	作成日 DATE	図番 DWG. NO.
青良治	海野裕作	近藤晴彦	2015. 3. 24	M3-4777-02-01K
RIKEN KEIKI 理研計器株式会社 機密情報 / CONFIDENTIAL				

