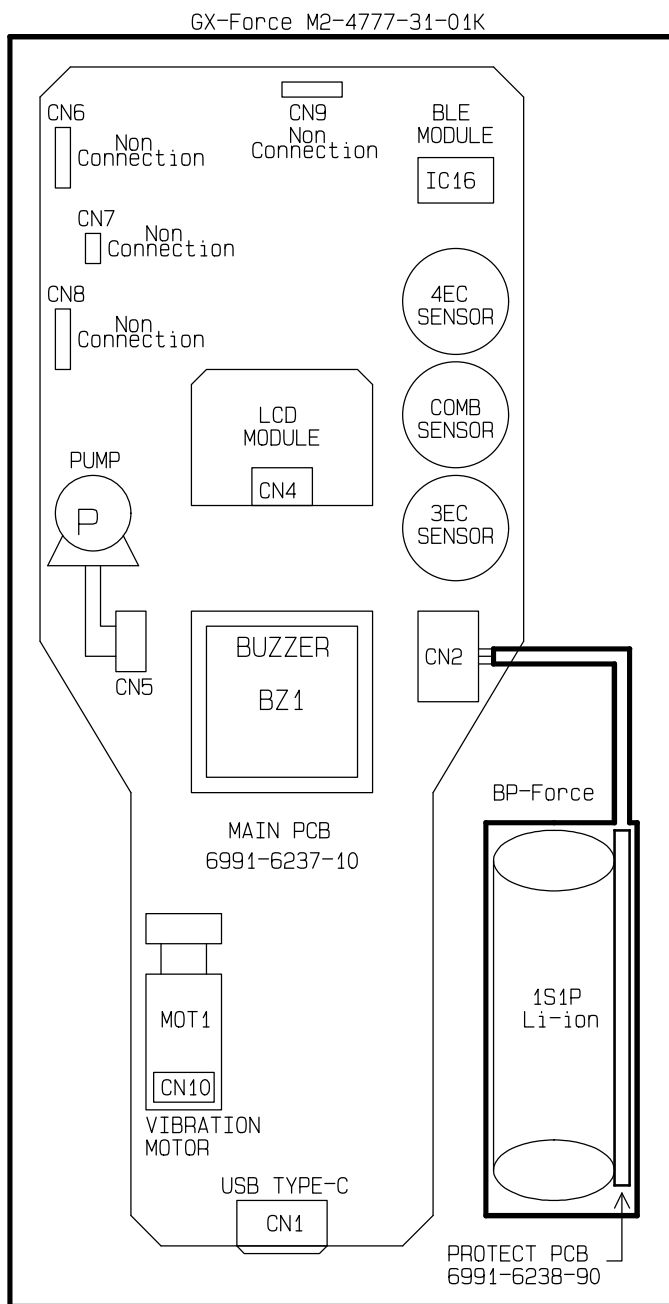


| | | | | |
|-----------------|----------------|------------------|-------------|---|
| 注 記 NOTES 2,22 | | 改版担当者 REV. BY | 改版日 REVISED | 名 称 NAME T +31 88 96 83000- F +31 88 96 83100 www.dekra-certification.com |
| 改版回数 REV. 11 | 総頁数 PAGES 1 | 古舘優作 | 2024.3.26 | GX-Force |
| 承認 APPROVED | 検 討 CHECKED | 製 図 DRAWN | 作成日 DATE | 図 番 DWG. NO. |
| 北村正英 | 小野圭 | 古舘優作 | 2021.10.6 | E 4 - 6 9 9 1 - 6 2 3 5 - 7 0 - 0 1 K |



CN1 is connected to a dedicated AC adapter(charge) or PC(communicate).
SELV or ES1 power supply only, Um=6.0V.

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| | | | | |
|--------------|------------|------------------|-------------|-------------------------------------|
| 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 | BLOCK DIAGRAM GX-Force |
| 承認 APPROVED | 検討 CHECKED | 製 図 DRAWN | 作成日 DATE | |
| 北村正英 | 小野圭 | 古舘優作 | 2021. 10. 6 | 図 番 DWG. NO. E4-6991-6236-40-01K |

[illegible]

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TOP CASE
MATERIAL : PC L-1225/100M or L-1250Z100
MANUFACTURER : TEIJIN LIMITED
UL FILE No. : E50075
COLOR : CLEAR
NO FILLERS
SUPERFICIAL AREA : 289mm²
RTI : 115°C
Outdoor Suitability : UL 746C : f1
Production method : Injection molding

BOTTOM CASE
MATERIAL : PC L-1225/100M or L-1250Z100
MANUFACTURER : TEIJIN LIMITED
UL FILE No. : E50075
COLOR : BLACK
NO FILLERS
SUPERFICIAL AREA : 341mm²
RTI : 115°C
Outdoor Suitability : UL 746C : f1
Production method : Injection molding

FILTER CASE
MATERIAL : PC or PET or PA
SUPERFICIAL AREA : 397mm²

PANEL SHEET
MATERIAL : PET PE84-0.125t
MANUFACTURER : U-CORPORATION Co., Ltd.
RESISTANCE LESS THAN 1Gd

RUBBER CAP
MATERIAL : CR
RESISTANCE LESS THAN 1Gd

PROTECTOR
MATERIAL : TPE LS8959R
MANUFACTURER : RIKEN TECHNOS CORPORATION
RESISTANCE LESS THAN 1Gd
NO SURFACE TREATMENT

REVISION

| REVISON | DATE | DRAWN | CHECKED | APPROVED | REMARKS |
|------------|---------|-------|---------|----------|---------|
| △ REVISION | 2022.05 | 佐藤 健 | | | |
| △ REVISION | 2022.23 | 後上 敦史 | | | |
| △ REVISION | 2022.15 | 佐藤 健 | | | |
| △ | | | | | |

RIKEN KENKI
株式会社 力研機械工業
〒477-0811 愛知県豊田市長久寺町1丁目1番地
TEL: 0565-23-1111 FAX: 0565-23-1112
E-MAIL: info@riken-kenki.co.jp
WEB: www.riken-kenki.co.jp

EXAMINATION SAMPLE

| 項目 | 内容 |
|------|-----------|
| 検査方法 | 試験機 |
| 検査場所 | 本社 |
| 検査日 | 2021.11.1 |
| 検査員 | 後上 敦史 |
| 承認者 | 武井 康典 |
| 検査結果 | 合格 |

OUTER STRUCTURE
GX-FORCE

M2-4,777-31-01.K
機殻情報 / CONFIDENTIAL

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TOP CASE
MATERIAL : PC L-1225/100M
UL FILE No. : E50075
MANUFACTURER : TEIJIN LIMITED
COLOR : CLEAR
NO FILLERS
SUPERFICIAL AREA : 289mm²
RTI : 115°C
Outdoor Suitability(UL 746C) : f1
Production method : Injection molding

BOTTOM CASE
MATERIAL : PC L-1225/100M or L-1250Z100
UL FILE No. : E50075
MANUFACTURER : TEIJIN LIMITED
COLOR : BLACK
NO FILLERS
SUPERFICIAL AREA : 341mm²
RTI : 115°C
Outdoor Suitability(UL 746C) : f1
Production method : Injection molding

FILTER CASE
MATERIAL : PC or PET or PA
SUPERFICIAL AREA : 397mm²

PANEL SHEET
MATERIAL : PET PE84-0.125t
MANUFACTURER : U-CORPORATION Co., Ltd.
RESISTANCE LESS THAN 1G^a

RUBBER CAP
MATERIAL : CR
RESISTANCE LESS THAN 1G^a

PROTECTOR
MATERIAL : TPE LS8959R
MANUFACTURER : RIKEN TECHNOS CORPORATION
RESISTANCE LESS THAN 1G^a
NO SURFACE TREATMENT

Labels:
LABEL A
LABEL B

Dimensions:
173, 64, 47

Superficial Areas:
NIPPLE : 173mm²
Panel Sheet : 289mm²
Filter Case : 276mm²
Top Case : 206mm²
Bottom Case : 99mm²
Rubber Cap : 204mm²
Protector : 204mm²
Label A : 399mm²
Label B : 202mm²

REVISION

| REVISON | DATE | REASON | DRAWN | CHECKED | APPROVED |
|------------|---------|--------|-------|---------|----------|
| △ REVISION | 2022.05 | 仕様変更 | 武井康典 | 後上敦史 | 後上敦史 |
| △ REVISION | 2022.23 | 仕様変更 | 武田直樹 | 後上敦史 | 後上敦史 |
| △ REVISION | 2022.15 | 仕様変更 | 武井康典 | 後上敦史 | 後上敦史 |

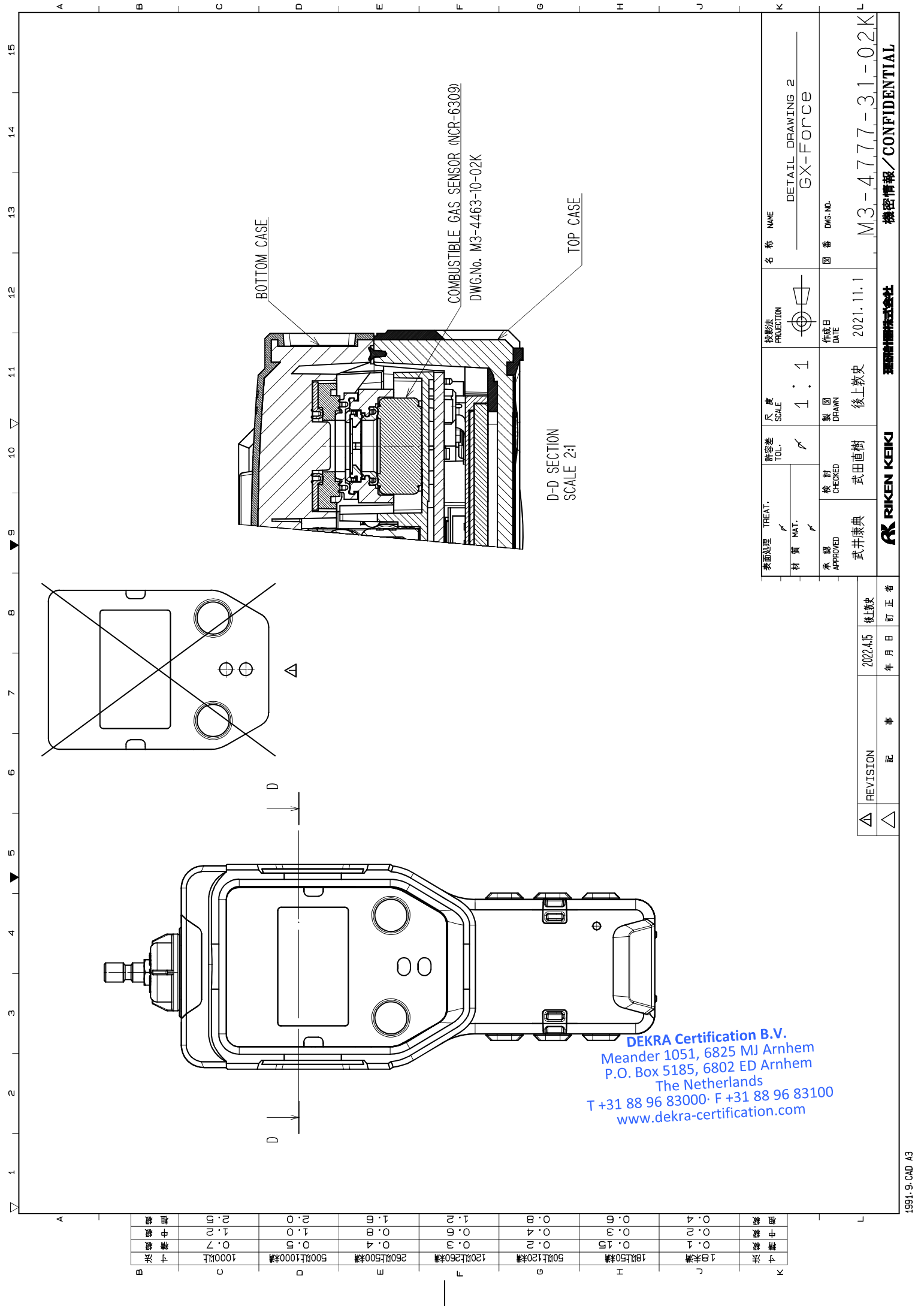
RIKEN KEKI

EXAMINATION SAMPLE


OUTER STRUCTURE
GX-FORCE

M2-4,777-31-01.K

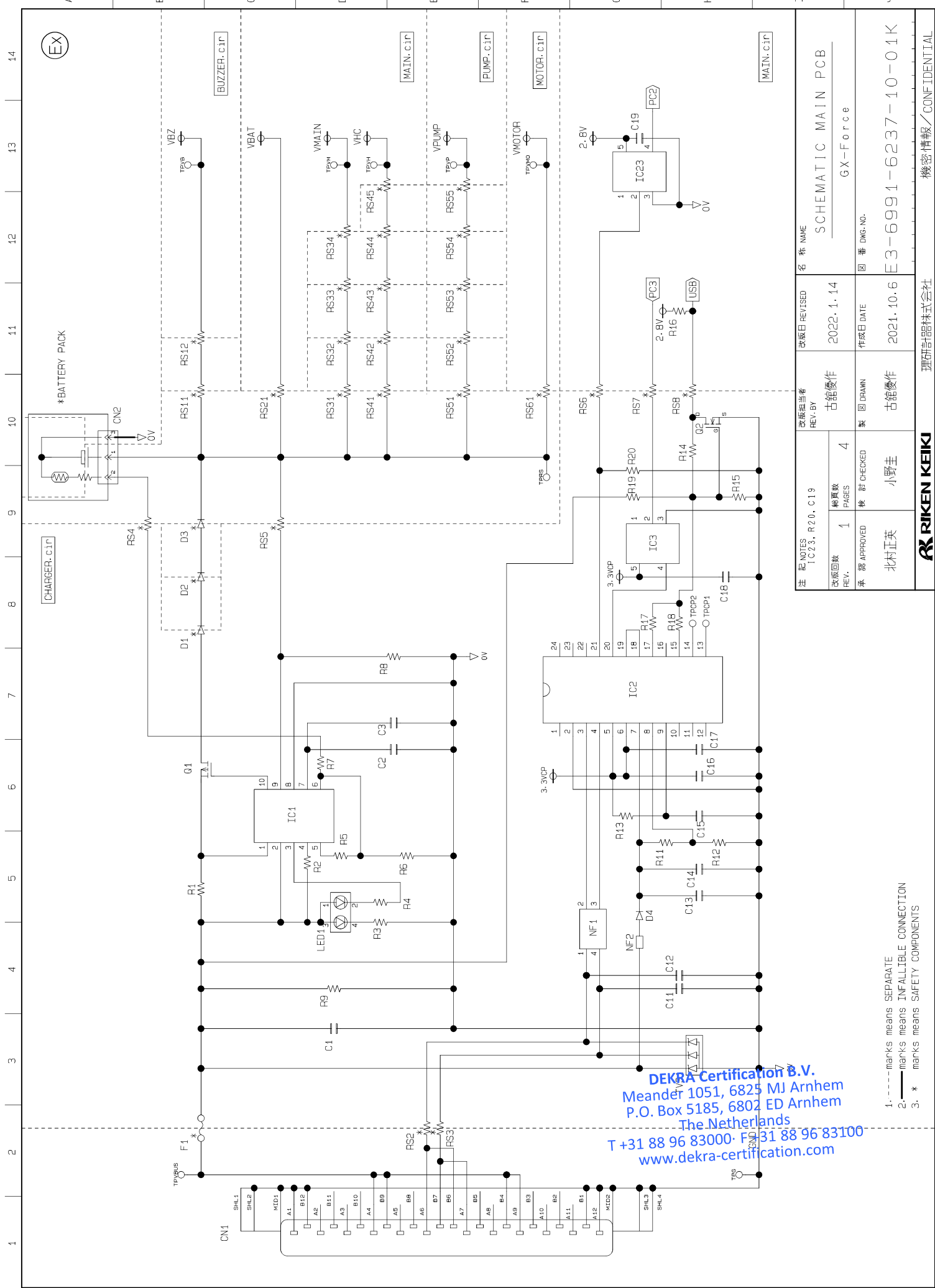
機殻情報 / CONFIDENTIAL

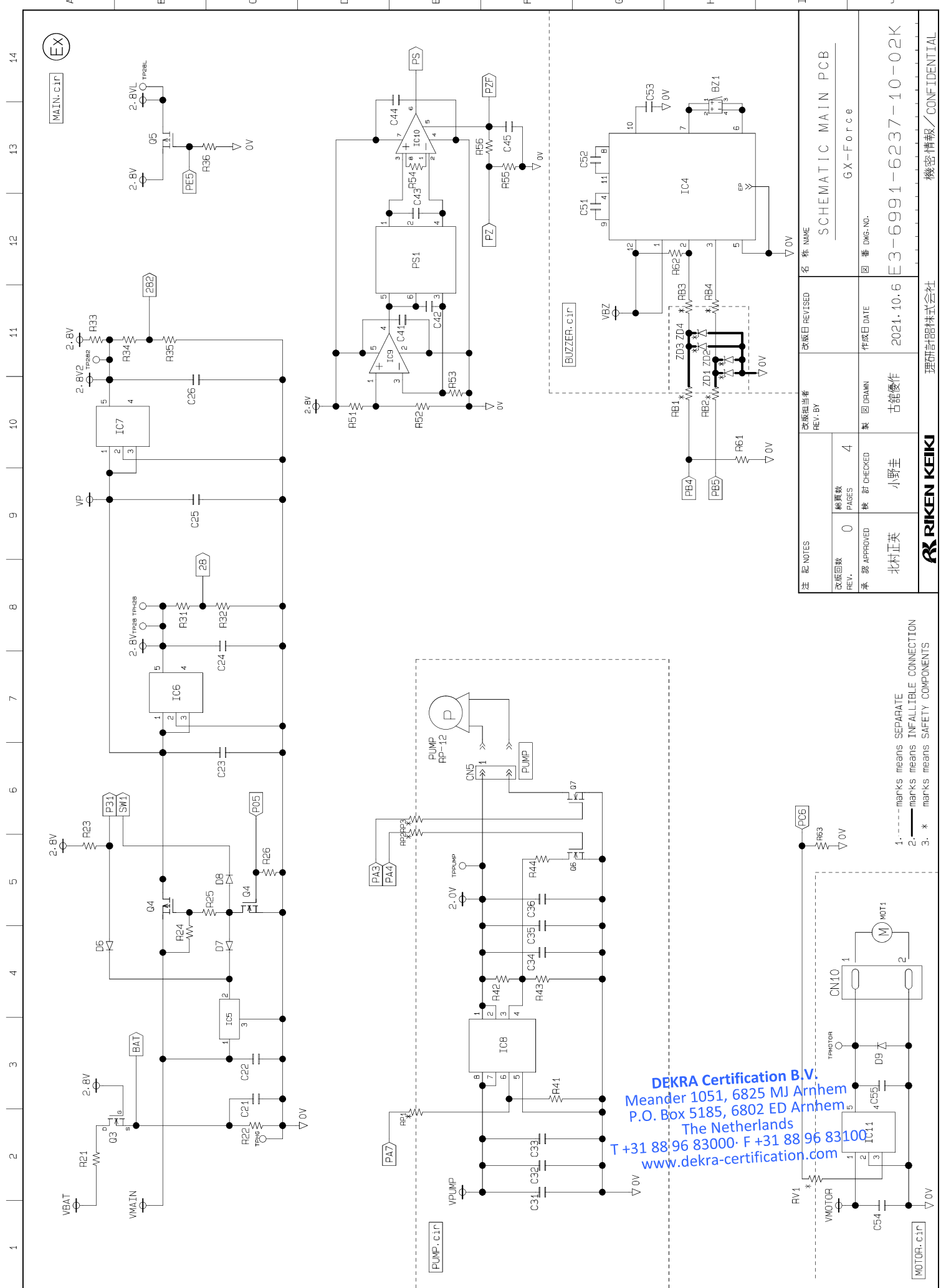


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| | | | | | |
|---------------|------------|-----------|-----------|---|------------------------------|
| 表面処理 TREAT. | | 許容差 TOL. | 尺 度 SCALE | 投影法 PROJECTION | 名 称 NAME |
| 材 質 MAT. | 1/ | 1/ | 1 : 1 |  | DETAIL DRAWING 2 GX-Force |
| 承認 APPROVED | 検討 CHECKED | 製 図 DRAWN | | 作成日 DATE | 図 番 DWG.NO. |
| 武井康典 | 武田直樹 | 後上敦史 | | 2021.11.1 | M3-4777-31-02K |
| R RIKEN KEIKI | | | | | 機密情報 / CONFIDENTIAL |
| 理研計機株式会社 | | | | | |

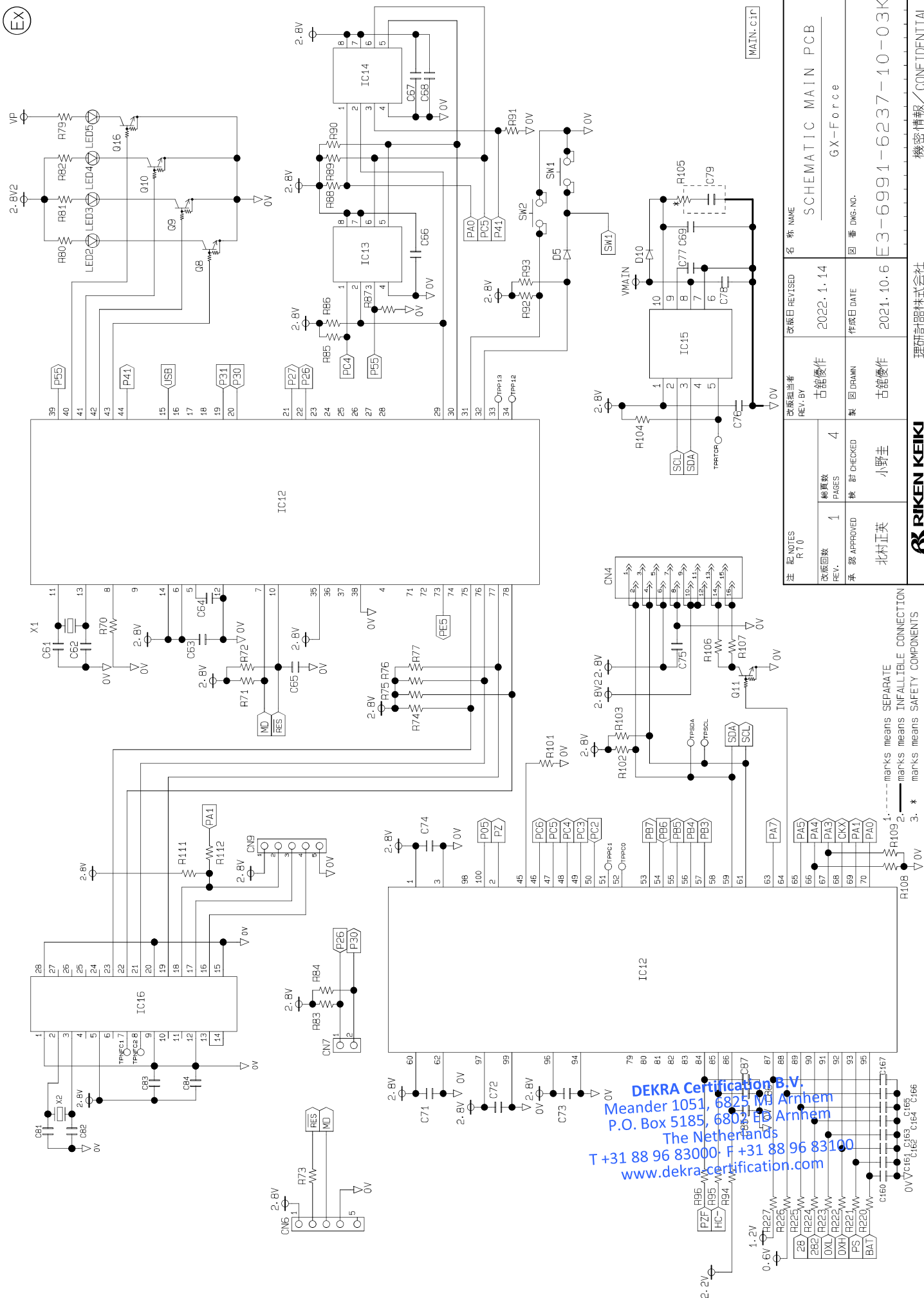
| | | | |
|---|----------|----------|-------|
| △ | REVISION | 2022.4.5 | 後上敦史 |
| △ | 記 事 | 年 月 日 | 訂 正 者 |





| | | | | |
|--------------|---------------------|------------------|-------------|--------------------|
| 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 | 4 | SCHEMATIC MAIN PCB |
| 承認 APPROVED | 北村正英 | 校 討 CHECKED | 製 図 DRAWN | GX-Force |
| 承認 APPROVED | 小野圭 | 校 討 CHECKED | 製 図 DRAWN | |
| 承認 APPROVED | 古館優作 | 校 討 CHECKED | 製 図 DRAWN | |
| 承認 APPROVED | 2021.10.6 | 校 討 CHECKED | 製 図 DRAWN | |
| 承認 APPROVED | E3-6991-6237-10-02K | 校 討 CHECKED | 製 図 DRAWN | |
| 承認 APPROVED | 理研音器株式会社 | 校 討 CHECKED | 製 図 DRAWN | |

- 1. --- marks means SEPARATE
- 2. --- marks means INFALLIBLE CONNECTION
- 3. * marks means SAFETY COMPONENTS



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| | | | | | | | | | | | |
|----------------|-----------------|------|--------------|-------------|------------------|------|-------------|-----------|--|----------|---------------------|
| 主 記 注 記 R70 | 改訂回数 REV. | 1 | 納置数 PAGES | 4 | 改版担当者 REV. BY | 古館優作 | 改版日 REVISED | 2022.1.14 | 名 称 NAME SCHEMATIC MAIN PCB GX-Force | | |
| | 承認者 APPROVED | 北村正英 | | 校 計 CHECKED | 小野圭 | | 製 図 DRAWN | 古館優作 | | 作成日 DATE | 2021.10.6 |
| R RIKEN KEIKI | | | | | | | | | | 理研計器株式会社 | 機密情報 / CONFIDENTIAL |

| Mark of drawing | Kind of parts | Rating/Model of parts | Remarks |
|-----------------------|--|--|------------------------------------|
| IC1 | IC (Battery Charger) | MCP73841-410I/NU [Microchip] | |
| IC2 | IC (USB/UART Bridge Controller) | CP2102N-A02-GQFN24 [Silicon Laboratories] | |
| IC3,IC23 | IC (Schmitt-Trigger Buffer) | SN74LVC1G17DCK [TI] | |
| IC4 | IC (Piezo Driver) | NJU72501MJE [JRC] | |
| IC5 | IC (MR Sensor) | SML35xLT [Honeywell] | |
| IC6,IC7,IC11 | IC (LDO) | S-1335XXX-M5 [ABLIC] | |
| IC8 | IC (LDO) | S-1133XXX-I8 [ABLIC] | |
| IC9 | IC (OPAMP) | TLV333IDCK [TI] | |
| IC10 | IC (Instrumentation amplifier) | INA317IDGK [TI] | |
| IC12 | IC (CPU) | R5F52318ADFP [RENESAS] | |
| IC13 | IC (FRAM) | MB85RS256B [FUJITSU] | |
| IC14 | IC (Serial Flash Memory) | AT25SF081B-SSHD [ADESTO] | |
| IC15 | IC (RTC) | RX8130CE [EPSON] | |
| IC16 | BLE Module | EYSHJN [TAIYO YUDEN] Refer to specification sheet Internal C = 1.5uFmax,L=10.8nH | |
| IC17 | IC (CPU) | R5F11CBCGNA [RENESAS] | |
| IC18 | IC (OPAMP) | LPV812DGK [TI] | |
| IC19,IC20 | IC (OPAMP) | LTC2064IMS8 [ADI] | |
| IC21 | IC (LDO) | LTC3025EDC [ADI] | |
| IC22 | IC (OPAMP) | TLV8812DGK [TI] | |
| Q1,Q5 | Pch MOS FET | RAF040P01 [ROHM] | |
| NOTE | Non-Safety Components may be replaced with equivalent components or may not be mounted. <div> DEKRA Certification B.V. Meander 1051, 6825 MJ Arnhem P.O. Box 5185, 6802 ED Arnhem The Netherlands T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com </div> | | |
| REV. | 2 | NAME | PARTS LIST OF MAIN PCB GX-Force |
| DATE | 2022.6.3 | DWG.No. | PLT-6991-6237-10 (1/4) |
| RIKEN KEIKI CO., LTD. | | | |

| Mark of drawing | Kind of parts | Rating/Model of parts | Remarks |
|---------------------------------|--|---|------------------------------------|
| Q2,Q3,Q6 | Pch MOS FET | RE1C002UN [ROHM] | |
| Q4 | N+Pch MOS FET | NTLJD3119C [ON Semi.] | |
| Q7 | Nch MOS FET | RQ5E040AJ [ROHM] | |
| Q8,Q9,Q10,Q11,Q16 | NPN Transistor | DTC114YUB [ROHM] | |
| Q12 | Pch MOS FET | SSM6J212FE [TOSHIBA] | |
| Q13 | N+Nch MOS FET | UT6K3TCR [ROHM] | |
| Q14,Q15 | Nch MOS FET | 2SK880 [ROHM] | |
| D1,D2,D3 | Schottky Barrier Diode | RBS3MM40A, [ROHM] If=3A,Vr=20V | * |
| D4 | Rectifier Diode | RRE02VSM4S [ROHM] | |
| D5,D6,D7,D8,D9,D10, D11 | Schottky Barrier Diode | RB751SM-40 [ROHM] | |
| ZD1,ZD2,ZD3,ZD4 | Zener Diode | TFZV4.7B [ROHM] Vz=4.55 – 4.80V , 0.5W | * |
| RS2,RS3 | Chip metal film fixed resistor | RK73HW3A2xx30R0F [KOA] 30 ohm / 1%, 2W, 200V | * |
| RS4,RS5 | Chip metal film fixed resistor | ESR18EZPF4700, [ROHM] 470 ohm / 1%, 0.5W, 200V | * |
| RS6,RS7,RS8,RP1,RP2, RP3,RV1 | Chip metal film fixed resistor | ESR18EZPD1002, [ROHM] 10k ohm / 0.5%, 0.5W, 200V | * |
| RS11,RS12 | Chip metal film fixed resistor | RK73HW3A2xx8R20F [KOA] 8.2 ohm / 1%, 2W, 200V | * |
| RS21 | Chip metal film fixed resistor | ESR18EZPF1003, [ROHM] 100k ohm / 1%, 0.5W, 200V | * |
| RS31,RS32,RS33,RS34 | Chip metal film fixed resistor | RK73HW3A2xx2R20F [KOA] 2.2 ohm / 1%, 2W, 200V | * |
| RS41,RS42,RS43,RS44, RS45 | Chip metal film fixed resistor | RK73HW3A2xx1R80F [KOA] 1.8 ohm / 1%, 2W, 200V | * |
| RS51,RS52,RS53,RS54, RS55 | Chip metal film fixed resistor | RK73HW3A2xx1R50F [KOA] 1.5 ohm / 1%, 2W, 200V | * |
| RS61 | Chip metal film fixed resistor | RK73HW3A2xx36R0F [KOA] 36 ohm / 1%, 2W, 200V | * |
| NOTE | * marked parts are Safety Components. Non-Safety Components may be replaced with equivalent components or may not be mounted. | | |
| REV. | 0 | NAME | PARTS LIST OF MAIN PCB GX-Force |
| DATE | 2021.11.18 | DWG.No. | PLT-6991-6237-10 (2/4) |
| RIKEN KEIKI CO., LTD. | | | |

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| Mark of drawing | | Kind of parts | | Rating/Model of parts | Remarks |
|---|--|---|------------------------------------|--|---------|
| RB1,RB2, | | Chip metal film fixed resistor | | ESR18EZPF1001, [ROHM] 1k ohm / 1%, 0.5W, 200V | * |
| R1 | | Chip metal film fixed resistor | | 0.1ohm - 10ohm / 1%, 0.25W (3216) | |
| R2-R9,R11-R26, R31-36, R41-R44, R51-R56, R61-R63, R70-R77, R79-R96, R101-R104, R106-R109, R111,R112, R121-R134, R141-R145, R151-R159, R161-R178, R181-R186, R191-R196, R201-R204, R206, R211-R217, R220-R227, R231-R234, | | Chip metal film fixed resistor or Chip jumper | | 1 ohm-100M ohm / 1%, 0.125W or 50m ohm max, 1A (1608) | |
| R105 | | Chip metal film fixed resistor | | ESR18EZPF1500, [ROHM] 150 ohm / 1%, 0.5W, 200V | * |
| R160 | | Chip metal film fixed resistor or Chip jumper or Thermistor | | 10 ohm-100M ohm / 5%, 0.063W or 50m ohm max, 1A(1005) or Rt25 = 100 ohm – 100M ohm, 5%, B=3000K-5000K | |
| C1-3,C11-C18 | | Chip multilayer capacitor | | Total capacitance 120uFmax | |
| C19,C21-C26,C41-C45, C61-C69,C71-C78, C81-C87,C91-C98, C101-C107,C110-C118, C120-C126,C130-C136, C140-C145,C151-C153, C155,C160-C167, C171-C174, | | Chip multilayer capacitor | | Total capacitance 120uFmax | |
| C31-C36, | | Chip multilayer capacitor | | Total capacitance 8.0uFmax | |
| C51-C53, | | Chip multilayer capacitor | | Total capacitance 1.0uFmax | |
| C54,C55, | | Chip multilayer capacitor | | Total capacitance 5.0uFmax | |
| C79 | | Chip capacitor | | CPH3225A [SII] Cmax=14mF, Rmin=50ohm Refer to Specification sheet | |
| LED1 | | Bi-color LED Lamp | | 1211C [STANLEY] (1615 t0.7) | |
| NOTE | * marked parts are Safety Components. Non-Safety Components may be replaced with equivalent components or may not be mounted. | | | | |
| REV. | 1 | NAME | PARTS LIST OF MAIN PCB GX-Force | | |
| DATE | 2022.1.14 | DWG.No. | PLT-6991-6237-10 (3/4) | | |
| RIKEN KEIKI CO., LTD. | | | | | |

| Mark of drawing | Kind of parts | Rating/Model of parts | Remarks |
|--|--|--|------------------------------------|
| LED2,LED4 | LED Lamp | 1116 [STANLEY] (1608 t1.2) | |
| LED3 | LED Lamp | 1113 [STANLEY] (2110 t0.8) | |
| LED5 | LED Lamp | CSL0416WBCW [ROHM] (2812 t0.8) | |
| X1 | Quartz Crystal | 14.745MHz | |
| X2 | Quartz Crystal | 32.768KHz | |
| BZ1 | Piezo Buzzer | PKMCS1818E20A0 Cmax=42.9nF | |
| NF1 | Chip Common mode filter | DLW21HN900SQ2 (2012) | |
| NF2 | Chip Ferrite Beads or Chip metal film fixed resistor or Chip jumper | BLM18PG331 or 10ohm - 10Mohm / 1%, 0.1W or 50m ohm max, 1A (1608) | |
| NF21,NF22,NF23,NF31, NF32,NF33,NF41 | Chip Ferrite Beads or Chip metal film fixed resistor or Chip jumper | BLM15HD182 or 1ohm - 10Mohm / 1%, 0.063W or 50m ohm max, 1A (1005) | |
| F1 | Fuse | MFU1206FF00750 [VISHAY] In=0.75A Breaking capacity : 50A / 63Vdc | * |
| PS1 | Pressure sensor | 2SMPP-03 [OMRON] | |
| TVS1 | TVS Avalanche Diode Array | SP0503BAHT [Littelfuse] | |
| TH1 | Thermistor or Chip metal film fixed resistor or Chip jumper | Rt25 = 100 ohm – 100M ohm, 5%, B=3000K-5000K or 1 ohm-100M ohm / 1%, 0.125W or 50m ohm max, 1A (1608) | |
| MOT1 | Micro Vibration Motor | LE4A3GS1G4 [LEXIN] Lmax=300uH, Rmin=78.3ohm Refer to Specification sheet | |
| LCD | LCD Module | TS-SG04080001W [TECHSHINE] Refer to Specification sheet | |
| RB3,RB4, | Chip metal film fixed resistor | RK73HW2Hxx1501F [KOA] 1.5k ohm ±1%, 0.75W, 200V | * |
| NOTE | * marked parts are Safety Components. Non-Safety Components may be replaced with equivalent components or may not be mounted. | | |
| REV. | 1 | NAME | PARTS LIST OF MAIN PCB GX-Force |
| DATE | 2022.1.14 | DWG.No. | PLT-6991-6237-10 (4/4) |
| RIKEN KEIKI CO., LTD. | | | |



| MARK | DIAGRAM | HOLE |
|------|---------|------|
| □ | 0.2 | |
| ○ | 0.3 | |
| ⊙ | 0.4 | |
| ⊞ | 0.5 | |
| ⊕ | 0.6 | |
| ⊞ | 0.7 | |
| ⊕ | 0.72 | |
| ◇ | 0.74 | |
| ◇ | 0.8 | |
| ◇ | 3.01 | NTH |
| ⊞ | 3.21 | NTH |
| ⊙ | 3.24 | NTH |
| ⊞ | 4.01 | NTH |
| ⊕ | 5.61 | NTH |

PARTS NAME FOR PARTS SIDE

PARTS NAME FOR SOLDERING SIDE

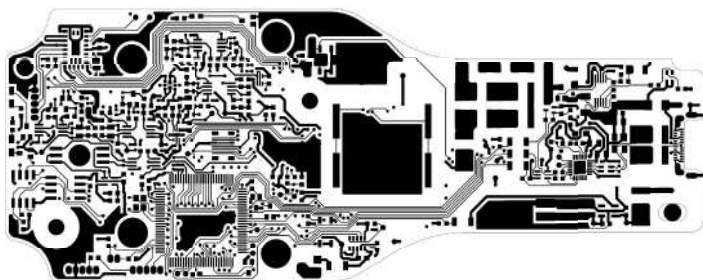
THROUGH HOLE

SPECIFICATION FOR PCB

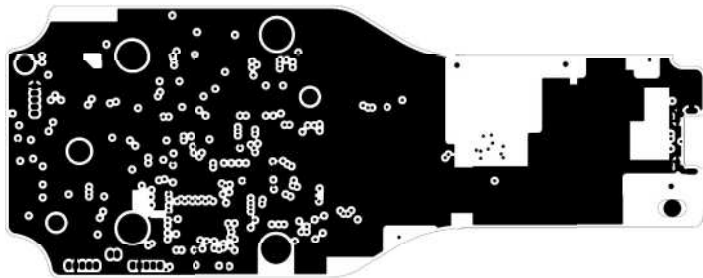
- PCB No. RK9-92892P
- Material: Glass epoxy
- Thickness: 1.6mm
- Layer number: 4
- (Between layer#2 and #3 is 1.0mm.)
- Thickess copper film
- Surface : 35um, Inner : 35um
- Copper thickness of the via's : 35um above.
- Minimum conductor width : 0.15mm
- CTI : 100 above.

All drawings are view of parts side
SCALE 1:1

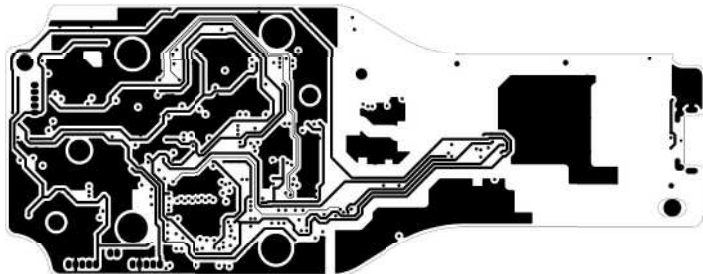
| 注 記 NOTES | | 改版担当者 REV. BY | 改版日 REVISED | 名 称 NAME |
|----------------------|-------------|---------------------|-------------|--------------|
| ALL drawings | | | | |
| 1 総頁数 PAGES | 1 | 古館優作 | 2022. 1. 17 | MAIN PCB |
| 承認 APPROVED | 検 討 CHECKED | 製 図 DRAWN | 作 成 日 DATE | GX-Force |
| 北村正英 | 小野圭 | 古館優作 | 2021. 10. 6 | 図 番 DWG. NO. |
| | | E3-6991-6237-10-01A | | |
| 理研計器株式会社 RIKEN KEIKI | | | | |
| 機密情報 / CONFIDENTIAL | | | | |



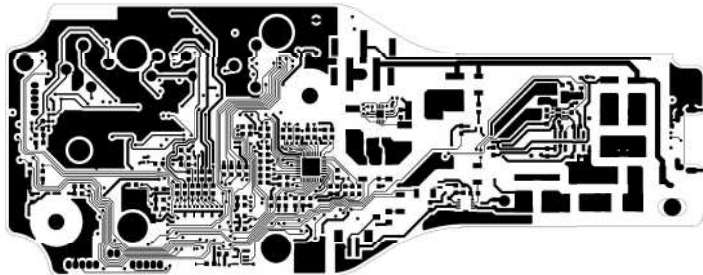
PARTS SIDE



INNER LAYER (2 LAYER)





INNER LAYER (3 LAYER)

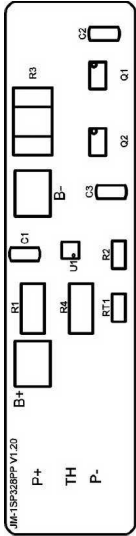


SOLDERING SIDE

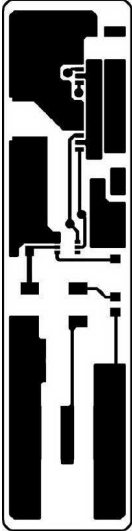
All drawings are view of parts side
SCALE 1:1

| | | | | | |
|--|--------------------------------|------------------|----------|--------------|---------------------------------|
| 注 記 NOTES | | 改版担当者 REV. BY | | 改版日 REVISED | 名 称 NAME |
| 改版回数 REV. | All drawings 1 総頁数 PAGES | 古館優作 | | 2022. 1. 17 | MAIN PCB GX-Force |
| 承認 APPROVED | 検 査 CHECKED | 製 図 DRAWING | 作成日 DATE | 図 番 DWG. NO. | |
| 北村正英 | 小野圭 | 古館優作 | | 2021. 10. 6 | E3-6991-6237-10-02A |
|  RIKEN KEIKI | | | | | 理研計器株式会社 機密情報 / CONFIDENTIAL |

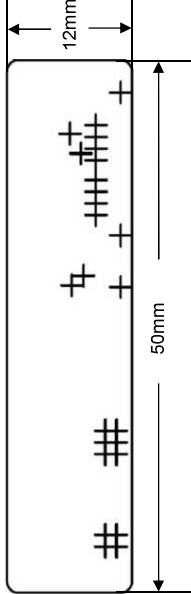
| | | | | | |
|--|----------------|---------------|--------------|---|-------------|
| 表面処理 TREAT. | | 許容差 TOL. | 尺 度 SCALE | 投影法 PROJECTION | 名 称 NAME |
| 材 質 MAT. | ✓ | ✓ | 1 : 1 |  | BP-Force |
| 承認 APPROVED | 檢 討 CHECKED | 製 図 DRAWN | | | |
| 武井康典 | 武田直樹 | 後上敦史 | | | |
| | | 作 成 日 DATE | | 図 番 DWG. NO. | |
| | | 2021.11.26 | | M3-4777-3.1-03K | |
|  RIKEN KEIKI | | | | | |
| 五研機械株式会社 機密情報／CONFIDENTIAL | | | | | |



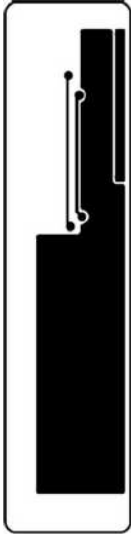
SILK PRINT FOR PARTS SIDE



PARTS SIDE



THROUGH HOLE



SOLDERING SIDE

All drawings are view of parts side
SCALE 2:1

SPECIFICATION FOR PCB

- PCB No. : JM-1SP328PP
- Material : Glass epoxy
- Thickness : 0.8mm
- Layer number : 2
- Thickness copper film : 35um
- Minimum conductor width : 0.3mm
- CTI : 100 above

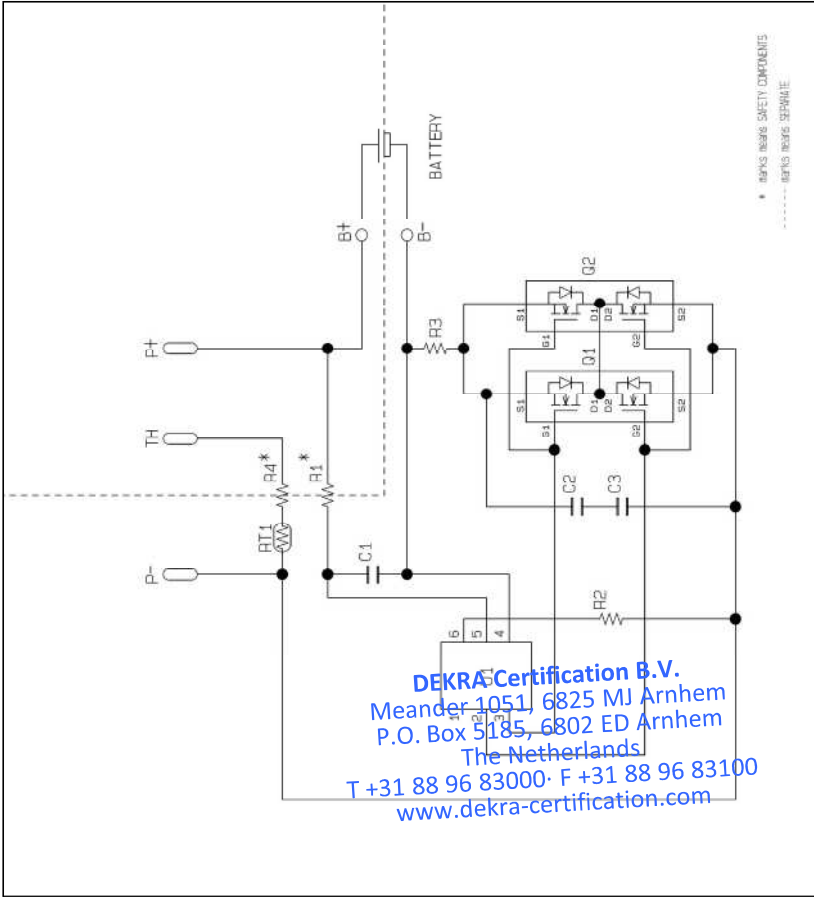
PARTS LIST

| Mark of drawing | Kind of parts | Rating / Model of parts | Remarks |
|-----------------|---|---|---------|
| U1 | Protect IC | S-8240ACK-16T1 [ABLIC] | |
| Q1,Q2 | Nch MOSFET | SM9989DSQAC [Sinopower] | |
| RT1 | NTC Thermistor | RT25 = 1k ohm - 470k ohm / 5%, B=3000K-5000K (1608) | |
| R1 | Chip metal film fixed resistor | 330 ohm / 1%, 0.5W, 200V (3216) | * |
| R2 | Chip fixed resistor or Chip jumper | 10ohm - 10Mohm / 1%, 0.1W or 50m ohm max.1A (1608) | |
| R3 | Chip fixed resistor or Chip jumper or PTC Thermistor | 0.01ohm - 0.1ohm / 1%, 1W or 50m ohm max.2A (6432) or 1812L300SLPR [Littelfuse] | |
| R4 | Chip fixed resistor | 150 ohm / 1%, 0.5W, 200V (3216) | * |
| C1,C2,C3 | Chip multilayer capacitor | Total capacitance 1.6uF max | |

* marked parts are Safety Components.

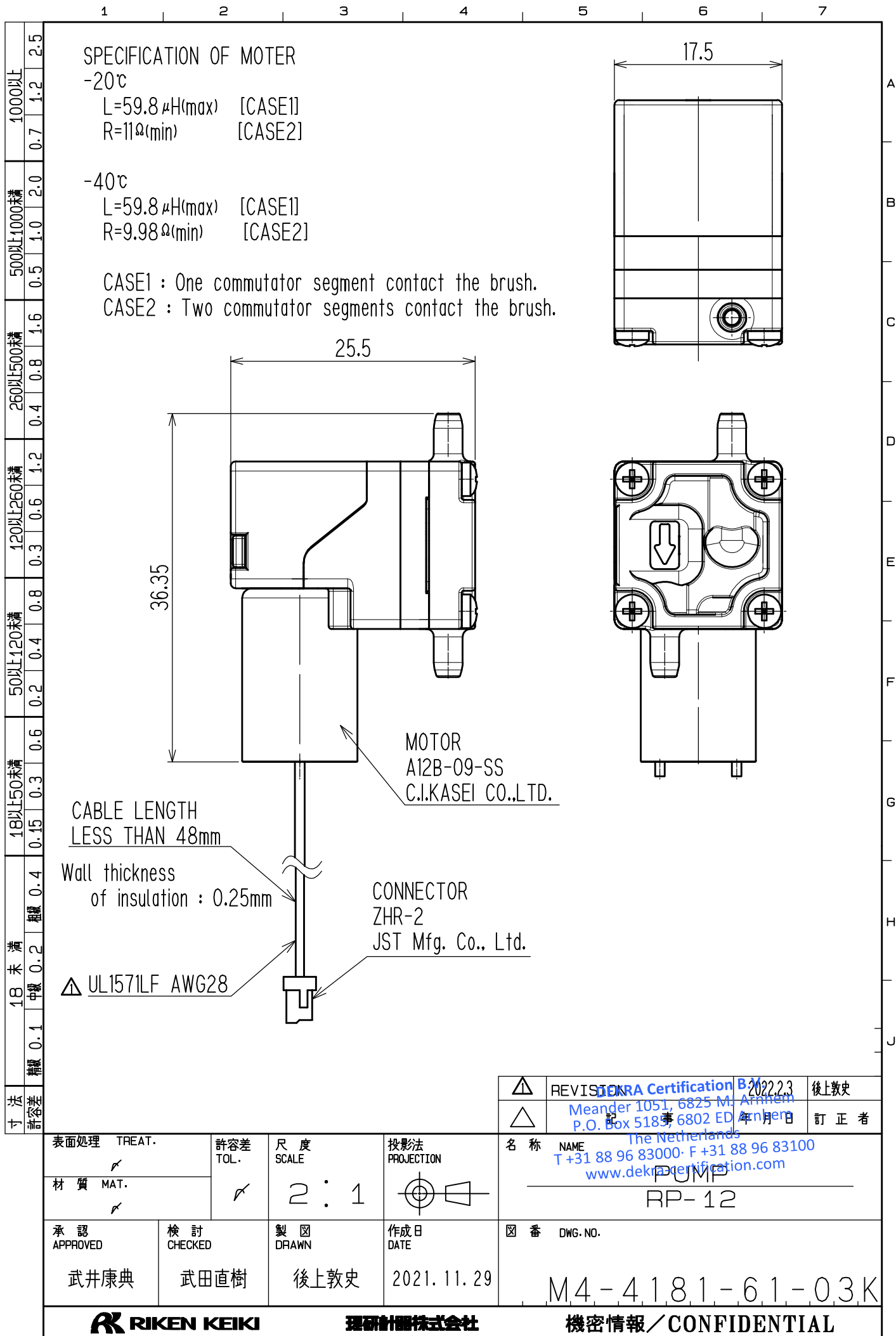
All components may be replaced with equivalent components or may not be mounted.

| 注 記 NOTES | | 改版担当者 REV. BY | 改版日 REVISED | 名称 NAME |
|---------------------|---------------------------|---------------------|----------------|-----------------|
| 改版回数 REV. | SCHEMATIC 総頁数 PAGES | 古館優作 | 2022.1.24 | PROTECT PCB |
| 承認 APPROVED | 検討 CHECKED | 製 図 DRAWN | 作成日 DATE | BP-Force |
| 北村正英 | 小野圭 | 古館優作 | 2021.10.6 | 国 番 DWG. NO. |
| E3-6991-6238-90-01K | | 機密情報 / CONFIDENTIAL | | |



SCHEMATIC

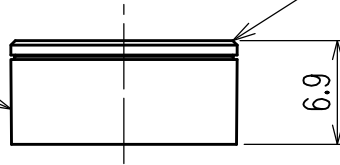
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P.O. Box 5185, 6802 ED Arnhem
The Netherlands
T +31 88 96 83000: F +31 88 96 83100
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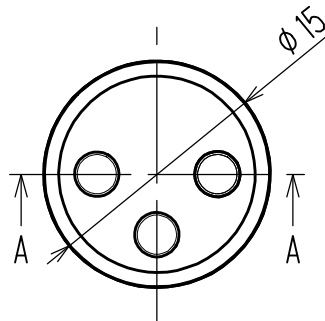
| | | | | | | | | |
|-----|----|-------------------------|--------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| 寸法 | 公差 | 18未満 | 18以上50未満 | 50以上120未満 | 120以上260未満 | 260以上500未満 | 500以上1000未満 | 1000以上 |
| 精度 | 公差 | 粗 0.4 中 0.2 精 0.1 | 粗 0.4 中 0.3 精 0.15 | 粗 0.4 中 0.2 精 0.2 | 粗 0.6 中 0.3 精 0.3 | 粗 0.8 中 0.4 精 0.4 | 粗 1.0 中 0.5 精 0.5 | 粗 1.2 中 0.7 精 0.7 |
| 2.5 | | | | | | | | |

SENSOR BODY
MATERIAL:PP

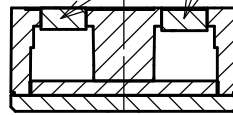
TOP CAP
MATERIAL:PP



6.9



TERMINAL



DOES NOT CONTAIN PCB
NOR ELECTRONIC COMPONENTS.

A-A SECTION

No Inductors
No Capacitors
No Resistors are contained.

~~CAPACITANCE \leq 0~~

~~INDUCTANCE \leq 0~~

| | | | |
|---|----------|-----------|------|
| △ | REVISION | 2018.3.29 | 武井康典 |
| △ | REVISION | 2018.3.19 | 武井康典 |
| △ | REVISION | 2018.3.19 | 武井康典 |

| | | | | |
|-------------|-------------|-----------|----------------|------------------------|
| 表面処理 TREAT. | 許容差 TOL. | 尺 度 SCALE | 投影法 PROJECTION | 名 称 NAME |
| 材 質 MAT. | | 2 : 1 | | 3EC SENSOR TYPE-ESR |
| 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 | 2017. 8. 21 | M4-4482-02-01K |

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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|-----------|----------------|----------------|------------|------------|-------------|--------|---|------------|-----------|------|---|------------|-----------|------|---|--|-----------|-----|-------------|----------|----------|----------------|---------|---------|--|-------|--|-------|-------------|------------|----------|----------|-------------|------|-------|------|--------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 寸法 公差 | 精度 0.1 | 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 粗級 0.2 | 粗級 0.4 | 0.15 | 0.3 | 0.6 | 0.2 | 0.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 中級 0.2 | 粗級 0.4 | 0.15 | 0.3 | 0.6 | 0.2 | 0.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 中級 0.2 | 粗級 0.4 | 0.15 | 0.3 | 0.6 | 0.2 | 0.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 中級 0.2 | 粗級 0.4 | 0.15 | 0.3 | 0.6 | 0.2 | 0.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 中級 0.2 | 粗級 0.4 | 0.15 | 0.3 | 0.6 | 0.2 | 0.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 中級 0.2 | 粗級 0.4 | 0.15 | 0.3 | 0.6 | 0.2 | 0.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 中級 0.2 | 粗級 0.4 | 0.15 | 0.3 | 0.6 | 0.2 | 0.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 中級 0.2 | 粗級 0.4 | 0.15 | 0.3 | 0.6 | 0.2 | 0.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 中級 0.2 | 粗級 0.4 | 0.15 | 0.3 | 0.6 | 0.2 | 0.4 | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <div><div>LABEL A</div><div><div>20</div><div>18</div><div><div><div><div>Ex</div><div>II 1G Ex da ia IIC T4 Ga (with NCR-6309) II 1G Ex ia IIC T4 Ga (without NCR-6309) -20℃ ≤ Ta ≤ +60℃ Warning ・Read manual for safety info. DEKRA 24ATEX0018X IECEx DEK 24.0016X Um=6.0V</div><div><div>CE</div><div>XXXX</div></div></div></div></div><div><div>Certification No.</div><div><div>△</div><div>△</div></div></div></div><div><div>LABEL B</div><div><div>30</div><div>10</div><div><div>MODEL GX-Force</div><div>INST.No. []</div><div>RIKEN KEIKI Co., Ltd. 2-7-6, Azusawa, Itabashi-ku, Tokyo, 174-8744, Japan</div></div></div></div></div> <table><tr><td>△</td><td>Correction</td><td>2024.3.26</td><td>後上敦史</td></tr><tr><td>△</td><td>Correction</td><td>2024.2.13</td><td>後上敦史</td></tr><tr><td>△</td><td>Option Certification By Meander 1051, 6825 Mj, Arnhem P.O. Box 518, 6802 ED, Arnhem The Netherlands T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com</td><td>2024.2.13</td><td>訂正者</td></tr></table> <table><tr><td>表面処理 TREAT.</td><td>許容差 TOL.</td><td>尺度 SCALE</td><td>投影法 PROJECTION</td><td>名称 NAME</td></tr><tr><td>材質 MAT.</td><td></td><td>2 : 1</td><td></td><td>LABEL</td></tr><tr><td>承認 APPROVED</td><td>検討 CHECKED</td><td>製図 DRAWN</td><td>作成日 DATE</td><td>図番 DWG. NO.</td></tr><tr><td>武井康典</td><td>河原井英樹</td><td>後上敦史</td><td>2023. 12. 22</td><td>M4-4777-31-13K</td></tr></table> <div><div>RIKEN KEIKI</div><div>理研計測株式会社</div><div>機密情報 / CONFIDENTIAL</div></div> | | | | | | | | | △ | Correction | 2024.3.26 | 後上敦史 | △ | Correction | 2024.2.13 | 後上敦史 | △ | Option Certification By Meander 1051, 6825 Mj, Arnhem P.O. Box 518, 6802 ED, Arnhem The Netherlands T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com | 2024.2.13 | 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 | | LABEL | 承認 APPROVED | 検討 CHECKED | 製図 DRAWN | 作成日 DATE | 図番 DWG. NO. | 武井康典 | 河原井英樹 | 後上敦史 | 2023. 12. 22 | M4-4777-31-13K |
| △ | Correction | 2024.3.26 | 後上敦史 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| △ | Correction | 2024.2.13 | 後上敦史 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| △ | Option Certification By Meander 1051, 6825 Mj, Arnhem P.O. Box 518, 6802 ED, Arnhem The Netherlands T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com | 2024.2.13 | 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 | | LABEL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 承認 APPROVED | 検討 CHECKED | 製図 DRAWN | 作成日 DATE | 図番 DWG. NO. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 武井康典 | 河原井英樹 | 後上敦史 | 2023. 12. 22 | M4-4777-31-13K | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Safety information

Overview

GX-Force is a suction type portable gas monitor which can measure up to 4 gases using 3 sensors.

GX-Force measure the combustible gases (LEL), oxygen (O₂), hydrogen sulfide (H₂S), and carbon monoxide (CO).

Display measurement results on an LCD and issue gas alarms (via LED and buzzer) as needed. The models also wirelessly transmit measurement results to a host using Bluetooth.

Power sources

The GX-Force draws power from an integrated rechargeable Li-ion battery that is not user-replaceable.

A dedicated AC adapter is used for recharging the Li-ion battery.

Specification for safety

Ex da ia IIC T4 Ga (with combustible gas sensor NCR-6309)

Ex ia IIC T4 Ga (without combustible gas sensor NCR-6309)



II 1 G Ex da ia IIC T4 Ga (with combustible gas sensor NCR-6309)

II 1 G Ex ia IIC T4 Ga (without combustible gas sensor NCR-6309)

- Ambient temperature range for use: -20°C to +60°C
- Ambient temperature range during battery charging: +10°C to +40°C

Electrical data

- BP-Force is specified for chargeable lithium-ion batteries.
- Uses one PANASONIC NCR18650GA battery.
- The battery should be charged with the dedicated AC adapter or by power from IEC60950-certified SELV power source, or IEC62368-1-certified ES1 power source.
The maximum voltage from the charger shall not exceed 6.0Vdc.
- It is also possible to perform USB data communication with a PC that meets the above requirements.
- Batteries should only be charged in non-hazardous locations.

Certificate numbers

- IECEx Certificate: IECEx DEK 24.0016X
- ATEX Certificate: DEKRA 24ATEX0018X

List of standards

- | | |
|-----------------------|-----------------------|
| · IEC 60079-0:2017 | · EN IEC 60079-0:2018 |
| · IEC 60079-1:2014-06 | · EN60079-1:2014 |
| · IEC 60079-11:2011 | · EN60079-11:2012 |

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P.O. Box 5185, 6802 ED Arnhem
The Netherlands
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www.dekra-certification.com

Use/ Maintenance/ Adjustment

WARNINGS

- Do not attempt to disassemble or modify the instrument.
- The combustible gas sensor NCR-6309, to measure LEL, is the only part of this Gas Monitor system with flame - proof construction.
- This product is an explosion-proof product and is not to be disassembled or modified with the exception of specified parts.
- NCR-6309 must not be exposed to ultraviolet light.
- This product integrates a sensor having flameproof construction.
- If assembly is not performed as specified, explosion protection performance will be compromised. When replacing the sensor and filter, properly install genuine parts and torque to specification.
- Do not replace sensor or filter in a hazardous location.
- If the enclosure is damaged it shall be repaired before further use.
- The Sensor shall not be exposed to ultraviolet light or used in equipment in which it is not fully enclosed.
- Do not charge in a hazardous location.
- Do not charge the unit with a non-genuine charger.
- When connecting to a PC via USB, the PC must be charged by IEC60950-certified SELV power source, or IEC62368-1-certified ES1 power source. The maximum voltage from the PC shall not exceed 6.0Vdc.
- The re-adjustment and parts replacement etc including the gas calibration shall be contacted to our nearest agent or RIKEN KEIKI Co., Ltd.
- When using the product in hazardous areas, take the following precautions to safeguard against static electricity hazards:
 1. Wear anti-static clothing and conductive shoes (anti-static work shoes).
 2. When using the product indoors, stand on a conductive work floor (with a leakage resistance of 10MΩ or less).

Instruments No.

INST. No. 00 0 000 0000 00
A B C D E

- A: Year of manufacture (0 to 9)
B: Month of manufacture (1 to 9 for Jan.-Sep.; XYZ for Oct., Nov., Dec.)
C: Manufacturing lot
D: Serial number
E: Factory codes



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Fax : +81-3-3558-9110
E-mail : intdept@rikenkeiki.co.jp
Web site : <http://www.rikenkeiki.co.jp>

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