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# **1. Integrated circuit products for bulk supply**

| Status                                     | Name                      | Model        | Quality Grade | Package | Reference Model | Foreign manufacturers | Function Description                                                                                                                                                             |
|--------------------------------------------|---------------------------|--------------|---------------|---------|-----------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. CAN Transceiver</b>                  |                           |              |               |         |                 |                       |                                                                                                                                                                                  |
| Batch Supply                               | CAN transceiver           | GKI65HVD230S | Q             | SOP8    | SN65HVD230      | TI                    | Operating voltage: 3.0V~3.6V; Compatible with ISO 11898-2 CAN bus standard; Maximum transmission rate: 1Mbps                                                                     |
| Batch Supply                               | CAN transceiver           | GKI2552S     | M、Q           | SOP8    | SN65HVD1050     | TI                    | Operating voltage: 4.5V~5.5V; I/O supply voltage: 2.5V~5.5V; Compatible with ISO 11898-2 CAN bus standard; Maximum transmission rate: 5Mbps                                      |
| Batch Supply                               | Isolated CAN Transceiver  | GKI1850S     | M、Q           | SOP16   | ISO1050         | TI                    | Logic side voltage: 1.8V~5.0V; Bus side voltage: 4.5~5.0V; Compatible with ISO 11898-2 CAN bus standard; Maximum transmission rate: 1Mbps; Isolation voltage: 5kV <sub>RMS</sub> |
| <b>2. RS-485/RS-422/RS-232 Transceiver</b> |                           |              |               |         |                 |                       |                                                                                                                                                                                  |
| Batch Supply                               | RS-485/RS-422 Transceiver | GKI3490S     | M、Q、N         | SOP8    | MAX3490         | MAXIM                 | Working voltage: 3.0V~5.5V; Maximum transmission rate: 10Mbps                                                                                                                    |
| Batch Supply                               | RS-485/RS-422 Transceiver | GKI3491S     | Q、N           | SOP14   | MAX3491         | MAXIM                 | Working voltage: 3.0V~5.5V; Maximum transmission rate: 10Mbps; with enable end                                                                                                   |
| End of March Arrival                       | RS-485 transceiver        | GKI3088S     | M、Q           | SOP8    | MAX3088         | MAXIM                 | Working voltage: 3.0V~5.5V; Maximum transmission rate: 10Mbps                                                                                                                    |

| Status                             | Name                                 | Model          | Quality Grade | Package       | Reference Model  | Foreign manufacturers | Function Description                                                                                                                                       |
|------------------------------------|--------------------------------------|----------------|---------------|---------------|------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Batch Supply                       | Isolation RS-485 Transceiver         | GKI2483S       | M、Q           | SOP16         | ADM2483          | ADI                   | Logic voltage: 1.8V~5.0V; Bus side voltage: 3.3V~5.0V; Maximum transmission rate: 2Mbps; Isolation voltage: 5kV <sub>RMS</sub>                             |
| Batch Supply                       | RS-232 transceiver                   | GKI3232 Series | M、Q           | SOP16TS SOP16 | MAX3232          | MAXIM                 | Working voltage: 3.0V~5.5V; Maximum transmission rate: 120kbps                                                                                             |
| <b>3. Voltage Level Translator</b> |                                      |                |               |               |                  |                       |                                                                                                                                                            |
| Batch Supply                       | 8-Bit Bidirectional Level Translator | GKI0108TS      | Q             | TSSOP20       | TXB0108PWR       | TI                    | V <sub>CCA</sub> :1.2V~3.6V;V <sub>CCB</sub> :1.65V~5.5V;V <sub>CCA</sub> ≤ V <sub>CCB</sub> ; Transmission delay time: 40ns                               |
| Batch Supply                       | 8-Bit Bidirectional Level Translator | GKIS0108TS     | Q             | TSSOP20       | TXS0108EPW       | TI                    | V <sub>CCA</sub> :1.4V~3.6V;V <sub>CCB</sub> :1.65V~5.5V;V <sub>CCA</sub> ≤ V <sub>CCB</sub> ; Maximum data rate: 100Mbps (push-pull),1.2Mbps (open-drain) |
| Batch Supply                       | 8 bit level Translator               | GKI8T245TS     | Q             | TSSOP24       | SN74LVC8T245DGG  | TI                    | V <sub>CCA</sub> :1.65V~5.5V;V <sub>CCB</sub> :1.65V~5.5V; With 3 output; Input voltage support up to 5.5V                                                 |
| Batch Supply                       | 16 bit level Translator              | GKI164245SS    | Q             | SSOP48        | SN74ALVC164245DL | TI                    | V <sub>CCA</sub> :2.3V~3.6V;V <sub>CCB</sub> :3V~5.5V; With 3 output; Input voltage support up to 5.5V                                                     |

| Status               | Name                    | Model     | Quality Grade | Package | Reference Model | Foreign manufacturers | Function Description                                                                                                                       |
|----------------------|-------------------------|-----------|---------------|---------|-----------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 4. Driver Interface  |                         |           |               |         |                 |                       |                                                                                                                                            |
| Batch Supply         | Quad LVDS line receiver | GKI9122TS | Q             | TSSOP16 | MAX9122         | MAXIM                 | Working voltage: 3.3V;<br>Maximum transfer rate: 500Mbps(250MHz)                                                                           |
| Batch Supply         | Quad LVDS Line Driver   | GKI9123TS | Q             | TSSOP16 | MAX9123         | MAXIM                 | Working voltage: 3.3V;<br>Maximum transmission rate:<br>800Mbps(400MHz)                                                                    |
| 5. Network Interface |                         |           |               |         |                 |                       |                                                                                                                                            |
| Bulk Supply          | Gigabit PHY             | GKI9322LQ | Q             | LQFP48  | RTL8211         | REALTEK               | Support 1000/100/10BASE-T;<br>Support RGMII(3.3V/2.5V/1.8V)/SerDes interface (SGMII/Fiber); low power consumption $\leq 895\text{mW}$      |
| Batch Supply         | Gigabit PHY             | GKI7100QF | M、Q           | QFN48   | RTL8211FS-VS    | REALTEK               | Support 1000/100/10BASE-T;<br>Support RGMII(3.3V/2.5V/1.8V)/SerDes interface (SGMII/Fiber)                                                 |
| 6. Driver            |                         |           |               |         |                 |                       |                                                                                                                                            |
| Batch Supply         | Half-Bridge Gate Driver | GKA2186S  | M、Q           | SOP8    | IRS2186         | INFINEON              | Operating voltage: 10V~20V; Pull current: 4A; Sour current: 6A; Support maximum bus system voltage: 700V; Maximum transmission delay: 35ns |

| Status       | Name             | Model        | Quality Grade | Package   | Reference Model | Foreign manufacturers | Function Description                                                                                                                                                         |
|--------------|------------------|--------------|---------------|-----------|-----------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7. MOSFET    |                  |              |               |           |                 |                       |                                                                                                                                                                              |
| Batch Supply | N-Channel MOSFET | GKA45N100PD  | M、 Q          | PDFN3 * 3 | /               | /                     | Drain-source breakdown voltage: 100V;<br>Drain-source on-resistance: 10m $\Omega$ ; @ VGS =10V, 15m $\Omega$ ; @ VGS = 4.5V; Maximum working current: 45A @ TA = 25 °C       |
| Batch Supply | N-Channel MOSFET | GKA90N100PD  | M、 Q          | PDFN5 * 6 | /               | /                     | Drain-source breakdown voltage: 100V;<br>Drain-source on-resistance: 7.0 m $\Omega$ ;<br>Maximum working current: 90A @ TA = 25 °C                                           |
| Batch Supply | N-Channel MOSFET | GKA295N150TO | M、 Q          | TOLL      | /               | /                     | Drain-source breakdown voltage: 150V;<br>Drain-source on-resistance: 3.9 m $\Omega$ ;<br>Maximum working current: 295A @ TA = 25 °C                                          |
| Batch Supply | N-Channel MOSFET | GKA140N200DD | M、 Q          | DDPAK     | /               | /                     | Drain-source breakdown voltage: 200V;<br>Drain-source on-resistance: 10m $\Omega$ ;<br>Maximum working current: 140A @ TA = 25 °C                                            |
| Batch Supply | N-Channel MOSFET | GKA200N30PD  | M、 Q          | PDFN5 * 6 | /               | /                     | Drain-source breakdown voltage: 30V;<br>Drain-source on-resistance: 1.1 m $\Omega$ ; @ VGS = 10V,1.6 m $\Omega$ ; @ VGS = 4.5V;<br>Maximum working current: 30A @ TA = 25 °C |
| Batch Supply | N-Channel MOSFET | GKA130N100T  | M、 Q          | TO-220AB  | /               | /                     | Drain-source breakdown voltage: 100V;<br>Drain-source on-resistance: 3.6 m $\Omega$ ;<br>Maximum working current: 130A @ TA = 25 °C                                          |

| Status                  | Name          | Model        | Quality Grade | Package    | Reference Model | Foreign manufacturers | Function Description                                                                                                                                                       |
|-------------------------|---------------|--------------|---------------|------------|-----------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Batch Supply            | IGBT          | GKA75N650T   | M、 Q          | TO-247     | /               | /                     | Set-emitter breakdown voltage: 650V;<br>Set-emitter saturation voltage: 1.8V;<br>Maximum working current: 75A @ TA = 25 °C                                                 |
| <b>8. Driver Module</b> |               |              |               |            |                 |                       |                                                                                                                                                                            |
| Batch Supply            | Driver Module | GKA2703T01CM | I、 Q          | Customized | /               | /                     | Working voltage: 18V~36V, nominal voltage: 27V;F/R and PWM control level: 3.3V TTL; control power supply: 12V; rated output current: 3A; maximum output current: 10A       |
| Batch Supply            | Driver Module | GKA5620T01CM | I、 Q          | Customized | /               | /                     | Working voltage: 36V~69V, nominal voltage: 56V;F/R and PWM control level: 3.3V TTL; control power supply: 12V; rated output current: 20A; maximum output current: 40A      |
| Batch Supply            | Driver Module | GKA5740T01CM | I、 Q          | Customized | /               | /                     | Operating voltage: 36V~69V, nominal voltage: 57V;F/R and PWM control level: 3.3VTTL; With 12V control power supply; Rated output current: 40A; Maximum output current: 80A |
| Batch Supply            | Driver Module | GKA9010T01CM | I、 Q          | Customized | /               | /                     | Working voltage: 75V~105V, nominal voltage: 90V;F/R and PWM control level: 3.3V TTL; control power supply: 12V; rated output current: 10A; maximum output current: 25A     |

| Status                    | Name          | Model         | Quality Grade | Package    | Reference Model | Foreign manufacturers | Function Description                                                                                                                                                       |
|---------------------------|---------------|---------------|---------------|------------|-----------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Batch Supply              | Driver Module | GKA9020T01CM  | I、 Q          | Customized | /               | /                     | Operating voltage: 75V~105V, nominal voltage: 90V;F/R and PWM control level: 3.3V TTL; control power supply: 12V; rated output current: 20A; maximum output current: 30A   |
| Batch Supply              | Driver Module | GKA16040T01CM | I、 Q          | Customized | /               | /                     | Operating voltage: 120V~200V, nominal voltage: 160V;F/R and PWM control level: 3.3V TTL; Control power supply: 12V; Rated output current: 40A; Maximum output current: 60A |
| 9. ADC                    |               |               |               |            |                 |                       |                                                                                                                                                                            |
| Batch Supply              | 16-bit ADC    | GKAD7606LQ    | M、 Q、 N       | LQFP64     | AD7606BS TZ     | ADI                   | Operating voltage: 5V;16-bit, bipolar, 8-channel synchronous analog-to-digital data acquisition system (DAS); Conversion rate: 200Ksps                                     |
| Batch Supply              | 16-bit ADC    | GKAD9268QF    | Q、 N          | QFN64      | AD9268          | ADI                   | Operating voltage: 1.8V; dual channel; 16 bit; slew rate: 125Msps;1.8V CMOS parallel or LVDS output                                                                        |
| Bulk Supply               | 14-bit ADC    | GKAD9245QFC   | Q             | QFN32      | AD9245          | ADI                   | Operating voltage: 3V; single channel; 14 bits; conversion rate optional 20Msps, 40Msps, 65Msps, 80Msps                                                                    |
| 10. Operational Amplifier |               |               |               |            |                 |                       |                                                                                                                                                                            |

| Status       | Name                           | Model          | Quality Grade | Package  | Reference Model | Foreign manufacturers | Function Description                                                                                                                                                                 |
|--------------|--------------------------------|----------------|---------------|----------|-----------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Batch Supply | Instrumentation Amplifier      | GKA620S        | Q、 N          | SOP8     | AD620           | ADI                   | Operating voltage: $\pm 2.3V \sim \pm 18V$ ; low input offset voltage: $35\mu V$ ; common mode rejection ratio: 110dB( $G = 10$ )                                                    |
| Batch Supply | one-way operational Amplifier  | GKA07S         | Q、 N          | SOP8     | OP07            | TI                    | Operating voltage: $4.5V \sim 36V$ or $\pm 2.25V \sim \pm 18V$ ; low offset voltage drift: $0.25 \mu V / ^\circ C$                                                                   |
| Batch Supply | two-way operational Amplifier  | GKA158S        | Q、 N          | SOP8W    | LM158           | TI                    | Operating voltage: $3V \sim 30V$ or $\pm 1.5V \sim \pm 15V$ ;<br>Low Input Offset Voltage: 2mV                                                                                       |
| Batch Supply | two-way operational Amplifier  | GKA1558 Series | Q、 N          | DIP8SOP8 | LM1458          | TI                    | Operating voltage: $\pm 5V \sim \pm 15V$ ; Input offset voltage: 5mV; Input voltage range: $-12V \sim 12V$                                                                           |
| Batch Supply | two-way operational Amplifier  | GKA284S        | Q、 N          | SOP8     | OP284           | ADI                   | Operating voltage: $4V \sim 36V$ or $\pm 2.25V \sim \pm 18V$ ; Bandwidth: 3MHz; Low input offset voltage: $15\mu V$                                                                  |
| Batch Supply | four-way operational Amplifier | GKA400D        | Q             | DIP14    | OP400           | ADI                   | Operating voltage: $\pm 5V \sim \pm 15V$ ; Input offset voltage: $270 \mu V$ ; Low input offset voltage temperature drift: $1.2 \mu V / ^\circ C$ ; Signal voltage gain: 3000V/mV    |
| Batch Supply | fully differential amplifier   | GKA8138S       | Q             | SOP8     | AD8138AR        | ADI                   | Operating voltage: $+3V \sim \pm 5V$ ; Input offset voltage: 0.5mV (typical); Spurious free dynamic range (SFDR): -91dBc(5MHz input), -81dBc(20MHz input); Slew rate: 1100V/ $\mu s$ |

| Status                | Name                                   | Model         | Quality Grade | Package        | Reference Model | Foreign manufacturers | Function Description                                                                                                                                              |
|-----------------------|----------------------------------------|---------------|---------------|----------------|-----------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>11. Switch</b>     |                                        |               |               |                |                 |                       |                                                                                                                                                                   |
| Batch Supply          | Analog Switch                          | GKS406TS      | Q、N           | TSSOP28        | ADG406          | ADI                   | 1 out of 16; single/dual power supply; maximum rated voltage: 44V; maximum on-resistance: 125 $\Omega$ ;                                                          |
| Batch Supply          | Analog Switch                          | GKS408TS      | Q、N           | TSSOP16        | ADG408          | ADI                   | 1 out of 8; single/dual power supply; maximum rated voltage: 44V; maximum on-resistance: 100 $\Omega$ ;                                                           |
| <b>12. Comparator</b> |                                        |               |               |                |                 |                       |                                                                                                                                                                   |
| Batch Supply          | Ultra-low power consumption Comparator | GKA7239ST     | Q             | SOT23-5        | LMV7239         | TI                    | Operating Voltage: 2.7V~5V; Transmission Delay: 45ns; Rail-to-Rail Input; Push-Pull Output                                                                        |
| Batch Supply          | Dual voltage Comparator                | GKA193 Series | Q、N           | DIP8SOP<br>8   | LM193           | TI                    | Operating voltage: 2V~36V or $\pm 1V \sim \pm 18V$ ; output compatible with TTL, DTL, ECL, MOS and CMOS                                                           |
| Batch Supply          | Four-way voltage Comparator            | GKA139 Series | Q、N           | DIP14SO<br>P14 | LM139           | TI                    | Operating voltage: 2V~30V or $\pm 1V \sim \pm 15V$ ; output compatible with TTL, MOS and CMOS                                                                     |
| <b>13. DC/DC</b>      |                                        |               |               |                |                 |                       |                                                                                                                                                                   |
| Batch Supply          | DC/DC module                           | GKP1610QF     | Q             | QFN28          | /               | /                     | Input voltage: 2.4V~16V; Output voltage: 0.6V~5.5V; Maximum output current: 10A; Flexible configuration of switching frequency, soft start time and current limit |

| Status       | Name                  | Model     | Quality Grade | Package | Reference Model | Foreign manufacturers | Function Description                                                                                                                                                          |
|--------------|-----------------------|-----------|---------------|---------|-----------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                       |           |               |         |                 |                       | can be realized                                                                                                                                                               |
| Batch Supply | DC/DC module          | GKP4644B  | M、Q           | BGA77   | LTM4644         | ADI                   | Input voltage: 4V~14V; Output voltage: 0.6V~5.5V; Four outputs; Maximum output current: 4A @ single; Switching frequency: 1MHz                                                |
| Batch Supply | DC/DC module          | GKP1622B  | Q             | BGA25   | LTM4622         | ADI                   | Input voltage: 4.5V~18V; Output voltage: 0.6V~12V; Dual output; Maximum output current: 3A @ Single; Switching frequency: 560KHz                                              |
| Batch Supply | DC/DC module          | GKP4001L  | Q             | LGA8    | /               | /                     | Input voltage: 4.5V~48V; Positive output: 0.8V~0.98VIN, maximum output current: 700mA; Negative output:-0.8V~-15V, maximum output current: 400mA; Switching frequency: 1.6MHz |
| Batch Supply | DC/DC power chip      | GKP1653ST | M、Q           | SOT563  | MP1653          | MPS                   | Input voltage: 4.5V~48V; Conversion efficiency: 93% @ 3.3V; Output current: 3.0A                                                                                              |
| Batch Supply | DC/DC power chip      | GKP54331S | M、Q           | SOP8    | TPS54331DR      | TI                    | Input voltage: 4.5V~30V; Conversion efficiency: 95% @ 12V-5V; Output current: 2.5A                                                                                            |
| Batch Supply | Isolated DC/DC Module | GKP0505SM | M、Q           | SIP     | F0505S-1SR3     | MORNSUN               | Input and output voltage: 5V~5V; maximum power: 1W; isolation voltage: 3000VDC; conversion efficiency: 83%                                                                    |



| Status            | Name                            | Model            | Quality Grade | Package      | Reference Model | Foreign manufacturers | Function Description                                                                                                                                                                                                                                                                                                      |
|-------------------|---------------------------------|------------------|---------------|--------------|-----------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Batch Supply      | power supply monitoring circuit | GKQ706TS         | Q             | SOP8         | MAX706T         | MAXIM                 | Working voltage: 3.15V~5.5V;<br>Reset voltage: 3.08V;<br>With manual reset and watchdog timer function                                                                                                                                                                                                                    |
| Batch Supply      | power supply monitoring circuit | GKQ811xST Series | Q             | SOT-143      | MAX811          | MAXIM                 | Working voltage: 1.0V~5.5V;<br>Reset voltage threshold: 2.63V, 3.08V;<br>Quiescent current: 2uA;<br>Reset pulse width: 140ms                                                                                                                                                                                              |
| <b>16. Sensor</b> |                                 |                  |               |              |                 |                       |                                                                                                                                                                                                                                                                                                                           |
| Batch Supply      | Hall effect Sensor              | GKH41 Series     | M、Q、N         | TO92SSO T-23 | SS41            | HONEYWELL             | Input voltage: 3.6V~50V; Hall effect latching switch includes a voltage regulator, Hall voltage generator, temperature compensation circuit, small signal amplifier, Schmitt trigger and an open collector output with a current trap of up to 50 mA, with reverse battery protection and excellent temperature stability |
| Batch Supply      | Temperature sensor              | GKQ75 Series     | Q             | MSOP8S OP8   | LM75            | NXP                   | Operating voltage: 2.8V~5.5V; Temperature resolution: 0.125 °C; Sleep current: 0.2 μA; Temperature accuracy: ± 1 °C @-25 °C~+100 °C;± 2 °C @-55 °C~+125 °C                                                                                                                                                                |
| Batch Supply      | Temperature sensor              | GKQ18B20S        | M、Q           | SOP8         | DS18B20         | MAXIM                 | Operating voltage: 1.8V~5.5V; Temperature resolution: 12bit/14bit; Temperature measurement accuracy (within the range of                                                                                                                                                                                                  |

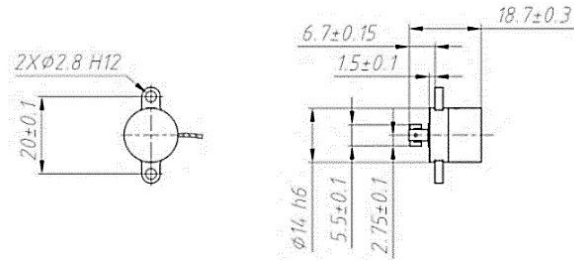
| Status                      | Name                          | Model     | Quality Grade | Package | Reference Model     | Foreign manufacturers | Function Description                                                                                                                                        |
|-----------------------------|-------------------------------|-----------|---------------|---------|---------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                             |                               |           |               |         |                     |                       | -55 °C~+125 °C );± 0.5 °C                                                                                                                                   |
| <b>17. Digital Isolator</b> |                               |           |               |         |                     |                       |                                                                                                                                                             |
| Batch Supply                | 4 channels Digital Isolator   | GKI11411S | M、 Q          | SOP16   | ADuM24xx<br>ISO784x | ADI                   | Operating voltage: 1.8V~5.5V; Maximum data transmission rate: 150Mbps; Low power consumption:<3mA/ch(10Mbps),<1.6mA/ch (DC); Low transmission delay:<16.5ns |
| Batch Supply                | two channels Digital Isolator | GKI11212S | M、 Q          | SOP16   | ADuM12xx            | ADI                   | Operating voltage: 1.8V~5.5V; Maximum data transmission rate: 100Mbps; Low transmission delay:<16.5ns                                                       |

## **2. Sensors**

# CJWRD1415-180CAN

## Main technical indicators

### 1. Overall dimensions:



2. Operating voltage:  $(5 \pm 0.2)V_{dc}$
3. Current consumption:  $\leq 55mA$
4. Resolution: 14bit
5. Output signal: CAN bus, baud rate 1Mhz
6. Data refresh time: 150us~850us, which can be adjusted freely based on 50us
7. Linearity:  $\leq 0.2\%$
8. Output stability: stable output angle runout  $\leq 0.033^\circ$
9. Electrical stroke:  $-180^\circ \sim 180^\circ$ , free to adjust the zero position
10. Angle correspondence:  $0^\circ$  corresponds to 0x 4000,  $-180^\circ$  corresponds to 0x 0 000,  $180^\circ$  corresponds to 0x7FFF
11. Mechanical travel:  $360^\circ$  without stop
12. Operating environment:  $(-55 \sim +125)^\circ C$
13. Insulation resistance:  $100V_{dc}, \geq 100 M\Omega$ ;
14. Working life: not less than 1000h

## Instructions for use and precautions

### 1. Wiring instructions:

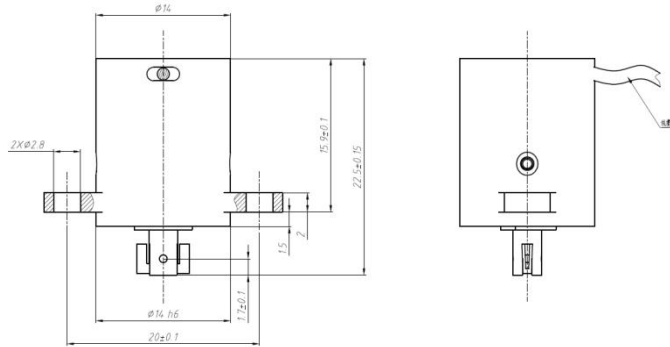
| Electrical characteristics | Quantity | Wire Specifications | Color  |
|----------------------------|----------|---------------------|--------|
| 5V power supply positive   | 1 line   | AFR-250-0.12        | red    |
| 5V supply negative         | 1 line   | AFR-250-0.12        | White. |
| Bus high end: CANH         | 1 line   | AFR-250-0.12        | Yellow |
| Bus Low Side: CANL         | 1 line   | AFR-250-0.12        | Blue   |

2. Output signal: digital signal, conforming to CAN protocol. CAN bus adopts common data frame, I.e. 1 frame data includes: frame header (1Byte)+ ID number (2 Byte)+ control (1Byte)+ data length identification (1Byte)+ data (2 Byte)+ CRC check (2 Byte)+ ACK code (1Byte);
3. Each sensor communication time and zero output position can be set. The zero mark command is 0 xE0AAAA. After zero mark, there is no need to power on again. The output signal is hexadecimal number. The sensor ID number setting command is 0 xED00XX(XX is the ID number currently set by the sensor). After setting, it needs to be powered on again.
4. The counter-clockwise rotation increases the output angle as viewed facing the output shaft.
5. When installing and using the sensor, do not pull or bend the cable with force, and do not drop the sensor from high places to avoid damage to the internal structure of the sensor.

# CJWRD14A-180CAN

## Main technical indicators

### 1. Overall dimensions:



- Operating voltage:  $(3.3 \pm 0.2)V_{dc}$
- Current consumption:  $\leq 65mA$
- Resolution: 14bit
- Output signal: CAN bus, baud rate 1Mhz
- Data refresh time: 150us~850us, which can be adjusted freely based on 50us
- Linearity:  $\leq 0.2\%$
- Output stability: stable output angle runout  $\leq 0.033^\circ$
- Electrical stroke:  $-180^\circ \sim 180^\circ$ , free to adjust the zero position
- Angle correspondence:  $0^\circ$  corresponds to 0x 4000,  $-180^\circ$  corresponds to 0x 0 000,  $180^\circ$  corresponds to 0x7FFF
- Mechanical travel:  $360^\circ$  without stop
- Operating environment:  $(-55 \sim +125)^\circ C$
- Insulation resistance:  $100V_{dc}, \geq 100 M\Omega$ ;
- Working life: not less than 1000h
- One continuous working time: not less than 1h

## Instructions for use and precautions

### 1. Wiring instructions:

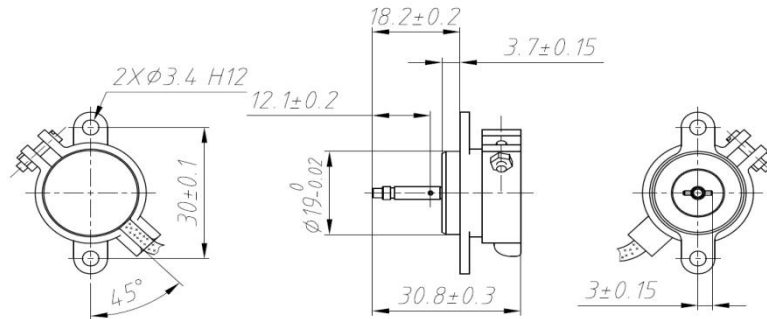
| Electrical characteristics | Quantity | Wire Specifications | Color  |
|----------------------------|----------|---------------------|--------|
| 3.3V power supply positive | 1 line   | AFR-250-0.12        | red    |
| 3.3V supply negative       | 1 line   | AFR-250-0.12        | White. |
| Bus high end: CANH         | 1 line   | AFR-250-0.12        | Yellow |
| Bus Low Side: CANL         | 1 line   | AFR-250-0.12        | Blue   |

- Output signal: conforming to CAN protocol, CAN bus adopts common data frame, I .e. 1 frame data includes: frame header (1Byte)+ ID number (2 Byte)+ control (1Byte)+ data length identification (1Byte)+ data (2 Byte)+ CRC check (2 Byte)+ ACK code (1Byte);
- Each sensor communication time and zero output position can be set. The zero mark command is 0 xE0AAAA. After zero mark, there is no need to power on again. The output signal is a hexadecimal number. The sensor ID number setting command is 0 xED00XX(XX is the ID number currently set by the sensor. After setting, it needs to be powered on again.
- The counter-clockwise rotation increases the output angle as viewed facing the output shaft.
- When installing and using the sensor, do not pull or bend the cable with force, and do not drop the sensor from high places to avoid damage to the internal structure of the sensor.
- The sensor output interval setting command is 0xEE 00 XX(XX is the timing transmission interval set by the current sensor), the selection range of XX is (02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15), and the time reference is 50us. After setting, power needs to be restarted.

# CJWRD20-180CAN

## Main technical indicators

### 1. Overall dimensions:



2. Operating voltage:  $(5 \pm 0.2)V_{dc}$
3. Current consumption:  $\leq 55mA$
4. Resolution: 14bit
5. Output signal: CAN bus, baud rate 1Mhz
6. Data refresh time: 150us~850us, which can be adjusted freely based on 50us
7. Linearity:  $\leq 0.2\%$
8. Output stability: stable output angle runout  $\leq 0.033^\circ$
9. Electrical stroke:  $-180^\circ \sim 180^\circ$ , free to adjust the zero position
10. Angle correspondence:  $0^\circ$  corresponds to 0x 4000,  $-180^\circ$  corresponds to 0x 0 000,  $180^\circ$  corresponds to 0x7FFF
11. Mechanical travel:  $360^\circ$  without stop
12. Operating environment:  $(-55 \sim +125)^\circ C$
13. Insulation resistance: 100Vdc,  $\geq 100 M\Omega$ ;
14. Working life: not less than 1000h
15. One continuous working time: not less than 1h

### Instructions for use and precautions

#### 1. Wiring instructions:

| Electrical characteristics | Quantity | Wire Specifications | Color |
|----------------------------|----------|---------------------|-------|
|----------------------------|----------|---------------------|-------|

|                                |        |              |        |
|--------------------------------|--------|--------------|--------|
| 5V power supply positive       | 1 line | AFR-250-0.12 | red    |
| 5V supply negative             | 1 line | AFR-250-0.12 | White. |
| Bus high end: CANH             | 1 line | AFR-250-0.12 | Yellow |
| Bus Low Side: CANL             | 1 line | AFR-250-0.12 | Blue   |
| Rudder identification signal H | 1 line | AFR-250-0.12 | Green  |
| Rudder identification signal L | 1 line | AFR-250-0.12 | Black  |

2. Output signal: digital signal, conforming to CAN protocol. CAN bus adopts common data frame, I.e. 1 frame data includes: frame header (1Byte)+ ID number (2 Byte)+ control (1Byte)+ data length identification (1Byte)+ data (2 Byte)+ CRC check (2 Byte)+ ACK code (1Byte);
3. Each sensor communication time and zero output position can be set. The zero mark command is 0 xE0AAAA, and there is no need to power on again after the zero mark.
4. The sensor identifies its own rudder identification information according to the level of the rudder identification signal.

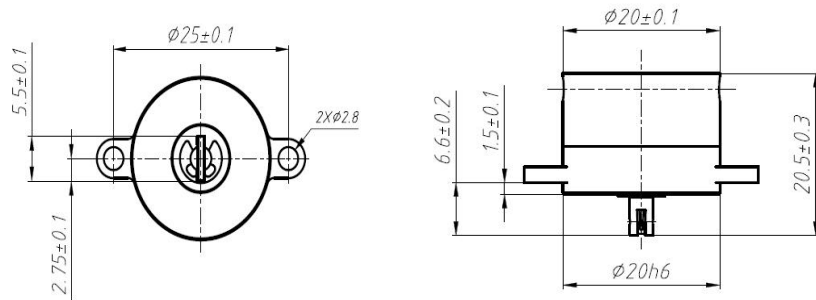
| Electrical characteristics     | Color | 1 rudder (ID: 0 x000000a1) | 2 rudder (ID: 0 x000000a2) | 3 rudder (ID: 0 x000000a3) | 4 rudder (ID: 0 x000000a4) |
|--------------------------------|-------|----------------------------|----------------------------|----------------------------|----------------------------|
| Rudder identification signal H | Green | Power supply ground (GND)  | Power supply VCC(5V)       | Power supply ground (GND)  | Power supply VCC(5V)       |
| Rudder identification signal L | Black | Power supply ground (GND)  | Power supply ground (GND)  | Power supply VCC(5V)       | Power supply VCC(5V)       |

5. The counter-clockwise rotation increases the output angle as viewed facing the output shaft.
6. When installing and using the sensor, do not pull or bend the cable with force, and do not drop the sensor from high places to avoid damage to the internal structure of the sensor.

# CJWRD20B-180CAN

## Main technical indicators

### 1. Overall dimensions:



2. Operating voltage:  $(5 \pm 0.2)$  Vdc
3. Current consumption:  $\leq 65$  mA
4. Resolution: 16bit
5. Output signal: CAN bus, baud rate 1Mhz
6. Data refresh time: 150us~850us, which can be adjusted freely based on 50us
7. Linearity:  $\leq 0.2\%$
8. Output stability: stable output angle runout  $\leq 0.033^\circ$
9. Electrical stroke:  $-180^\circ \sim 180^\circ$ , free to adjust the zero position
10. Angle correspondence:  $0^\circ$  corresponds to 0x 4000,  $-180^\circ$  corresponds to 0x 0 000,  $180^\circ$  corresponds to 0x7FFF
11. Mechanical travel:  $360^\circ$  without stop
12. Operating environment:  $(-55 \sim +125)^\circ\text{C}$

13. Insulation resistance: 100Vdc,  $\geq 100 \text{ M}\Omega$  ;
14. Working life: not less than 1000h
15. One continuous working time: not less than 1h

## Instructions for use and precautions

### 1. Wiring instructions:

| Electrical characteristics | Quantity | Wire Specifications | Color  |
|----------------------------|----------|---------------------|--------|
| 5V power supply positive   | 1 line   | AFR-250-0.2         | Red    |
| 5V supply negative         | 1 line   | AFR-250-0.2         | White. |
| Bus high end: CANH         | 1 line   | AFR-250-0.2         | Yellow |
| Bus Low Side: CANL         | 1 line   | AFR-250-0.2         | Blue   |

2. Output signal: digital signal, conforming to CAN protocol. CAN bus adopts common data frame, I .e. 1 frame data includes: frame header (1Byte)+ ID number (2 Byte)+ control (1Byte)+ data length identification (1Byte)+ data (2 Byte)+ CRC check (2 Byte)+ ACK code (1Byte);
3. Each sensor communication time and zero output position can be set. The zero mark command is 0 xE0AAAA, and there is no need to power on again after the zero mark.
4. The counter-clockwise rotation increases the output angle as viewed facing the output shaft.
5. When installing and using the sensor, do not pull or bend the cable with force, and do not drop the sensor from high places to avoid damage to the internal structure of the sensor.

### **3. Dynamically Tuned Gyroscope**

## Basic parameters of dynamically tuned gyroscopes

| Test Item                                                  |                                       | Unit     | Dynamically tuned gyroscope model |           |           |          |           |           |          |
|------------------------------------------------------------|---------------------------------------|----------|-----------------------------------|-----------|-----------|----------|-----------|-----------|----------|
|                                                            |                                       |          | GO1254-3                          | GO1254-3B | GO1074-2  | GO1074-4 | DTY-03A   | DTY-04    |          |
| Motor                                                      | Starting current                      | A        | ≤ 0.3                             | ≤ 0.3     | ≤ 0.2     | ≤ 0.2    | ≤ 0.3     | ≤ 0.3     |          |
|                                                            | Synchronization time                  | s        | ≤ 25                              | ≤ 25      | ≤ 7       | ≤ 7      | ≤ 20      | ≤ 20      |          |
|                                                            | Working current                       | A        | ≤ 0.2                             | ≤ 0.2     | ≤ 0.16    | ≤ 0.16   | ≤ 0.2     | ≤ 0.2     |          |
|                                                            | inertia time                          | s        | 55 to 99                          | 50 to 70  | 10 to 20  | 10 to 20 | 40 to 70  | 10 to 15  |          |
|                                                            | Synchronous speed                     | r/min    | 10000                             | 10000     | 7500      | 7500     | 10000     | 10000     |          |
| Forward output zero position                               |                                       | mv       | ≤ 60                              | ≤ 40      | ≤ 25      | ≤ 25     | ≤ 60      | ≤ 60      |          |
| 8 Positions<br>Drift Accuracy                              | D(X) <sub>F</sub> , D(Y) <sub>F</sub> | (°)/h    | ≤ 15                              | ≤ 10      | ≤ 35      | ≤ 35     | ≤ 10      | ≤ 40      |          |
|                                                            | D(X) <sub>X</sub> , D(Y) <sub>Y</sub> | (°)/h/g  | ≤ 1.5                             | ≤ 1       | ≤ 2.5     | ≤ 2.5    | ≤ 2       | ≤ 6       |          |
|                                                            | D(X) <sub>Y</sub> , D(Y) <sub>X</sub> | (°)/h/g  | ≤ 3                               | ≤ 2       | ≤ 3.5     | ≤ 3.5    | ≤ 2.5     | ≤ 12      |          |
|                                                            | D(X) <sub>Z</sub> , D(Y) <sub>Z</sub> | (°)/h/g  | ≤ 0.65                            | ≤ 0.3     | ≤ 0.7     | ≤ 0.7    | ≤ 0.5     | ≤ 3       |          |
|                                                            | θ                                     | rad      | 0.01                              | 0.01      |           | 0.01     | 0.01      | 0.015     |          |
|                                                            | γ                                     | rad      | 0.008                             | 0.005     |           | 0.008    | 0.008     | 0.012     |          |
|                                                            | σ <sub>X</sub> , σ <sub>Y</sub>       | (°)/h    | ≤ 0.1                             | ≤ 0.05    | ≤ 0.3     | ≤ 0.15   | ≤ 0.1     | ≤ 0.1     |          |
|                                                            | K <sub>X</sub> , K <sub>X</sub>       | (°)/h/mA | ≥ 670                             | 670~850   | ≥ 1600    | ≥ 1600   | ≥ 650     | ≥ 540     |          |
| Fixed position drift                                       |                                       | (°)/h    | ≤ 0.03                            |           |           |          | ≤ 0.03    | ≤ 0.1     |          |
| Fixed successive start repeatability                       |                                       | (°)/h    |                                   |           |           |          |           | ≤ 0.3     |          |
| Difference between D(X) <sub>X</sub> and D(Y) <sub>Y</sub> |                                       | (°)/h/g  | ≤ 0.3                             | ≤ 0.2     |           | ≤ 0.3    | ≤ 0.2     |           |          |
| Difference between D(X) <sub>Y</sub> and D(Y) <sub>X</sub> |                                       | (°)/h/g  | ≤ 0.25                            | ≤ 0.2     |           | ≤ 0.25   | ≤ 0.2     |           |          |
| By-Day Drift                                               | ΔD(X) <sub>F</sub> ΔD(Y) <sub>F</sub> | (°)/h    | ≤ 0.4                             | ≤ 0.3     | ≤ 1       | ≤ 0.2    | ≤ 0.3     |           |          |
|                                                            | ΔD(X) <sub>X</sub> ΔD(Y) <sub>Y</sub> | (°)/h/g  | ≤ 0.2                             | ≤ 0.2     | ≤ 0.3     | ≤ 0.2    | ≤ 0.2     |           |          |
|                                                            | ΔD(X) <sub>Y</sub> ΔD(Y) <sub>X</sub> | (°)/h/g  | ≤ 0.2                             | ≤ 0.18    | ≤ 0.3     | ≤ 0.7    | ≤ 0.12    |           |          |
|                                                            | ΔD(X) <sub>Z</sub> ΔD(Y) <sub>Z</sub> | (°)/h/g  | ≤ 0.15                            | ≤ 0.12    | ≤ 0.2     | ≤ 0.15   | ≤ 0.15    |           |          |
| Rated measuring range                                      |                                       | (°)/s    | ± 60                              |           | ± 250     |          | ± 60      | ± 100     |          |
| Maximum instantaneous measuring range                      |                                       |          | ± 80                              |           | ± 300     |          | ± 80      | ± 150     |          |
| Power                                                      | Drive motor                           | V        | 500Hz 20V                         |           | 500Hz 26V |          | 500Hz 20V | 500Hz 18V |          |
|                                                            | Sensor                                | V        | 16kHz 7V                          |           |           |          |           |           | 16kHz 5V |
|                                                            | preamplifier                          | V        | DC ± 15V                          |           |           |          |           |           |          |

| Test Item                         |                             | Unit   | Dynamically tuned gyroscope model |           |                    |          |             |                    |
|-----------------------------------|-----------------------------|--------|-----------------------------------|-----------|--------------------|----------|-------------|--------------------|
|                                   |                             |        | GO1254-3                          | GO1254-3B | GO1074-2           | GO1074-4 | DTY-03A     | DTY-04             |
| TEST TEMPERATURE                  |                             | ℃      | 55±1                              |           | Normal temperature | 55±1     | 60±1        | Normal temperature |
| Working life                      |                             | h      | 800                               |           |                    |          |             |                    |
| Environmental conditions          | Temperature                 | ℃      | -40 to 60                         |           |                    |          |             |                    |
|                                   | Vibration (Random Spectrum) | RMS(g) | 4.18                              |           | 5.5                | 4.9      |             |                    |
|                                   | Shock (half sine)           | g      | 40                                |           | 50                 |          |             |                    |
|                                   | Acceleration                | g      | 25                                |           | 40                 |          |             |                    |
| Overall dimension                 |                             | mm     | φ55 × 84.5                        |           | φ40 × 78           |          | φ50 × 76    | φ34 × 64           |
| Mounting dimension (4 long holes) |                             | mm     | φ61 uniform                       |           | φ45 uniform        |          | φ56 uniform | φ34 uniform        |
| Weight                            |                             | g      | ≤ 700                             |           | ≤ 370              |          | ≤ 560       | ≤ 230              |
| Interface Model                   |                             | --     | CDbF-25Z                          |           |                    |          |             |                    |

Note:(1) $\theta$  is the installation error angle and  $\gamma$  is the quadrature error angle.

(2) The day-to-day drift parameters are calculated by  $1\sigma$  only for the G01074-4 type and  $3\sigma$  for the rest.

# Basic parameters of G01254-3 dynamically tuned gyroscope

## 1. Power supply

- a) Drive motor: AC 500Hz ,20V;
- b) Sensor: AC 16KHz ,7V;
- c) Preamplifier: DC  $\pm 15V$ .

## 2. Motor performance

- a) Starting current: no more than 0.3 A;
- b) Operating current: no more than 0.2 A;
- c) Synchronization time: no more than 25 s;
- d) Inertia time: 55~90 s;
- e) Synchronous speed: 10000 r/min.

## 3. Eight position drift accuracy

### 3.1 one-time test accuracy

- a) Torquer scale factor  $K_X, K_Y$ : not less than 670 ( $^{\circ}$ )/h/mA ;
- b) Constant drift error  $D(X)_F, D(Y)_F$ : not more than 15( $^{\circ}$ )/h ;
- c) Axial drift error coefficient  $D(X)_X, D(Y)_Y$ : not more than 1.5 ( $^{\circ}$ )/h/g ;
- d) Orthogonal drift error coefficient  $D(X)_Y, D(Y)_X$ : not more than 3 ( $^{\circ}$ )/h/g ;
- e) Radial drift error coefficient  $D(X)_Z, D(Y)_Z$ : not more than 0.65 ( $^{\circ}$ )/h/g ;
- f) Installation error angle  $\theta$ : no more than 0.01 rad;
- g) Orthogonal error angle  $\gamma$ : no more than 0.008 rad;
- h) Eight-position residuals  $\sigma_X, \sigma_Y$ : no more than 0.1 ( $^{\circ}$ )/h.

### 3.2 Day-to-Day Drift Accuracy

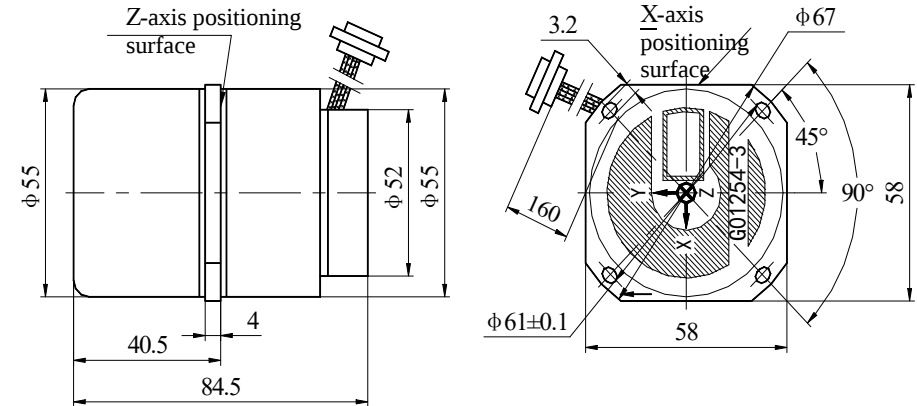
- a)  $\Delta D(X)_F \Delta D(Y)_F$ : no more than 0.4 ( $^{\circ}$ )/h ;
- b)  $\Delta D(X)_X \Delta D(Y)_Y$ : no more than 0.2 ( $^{\circ}$ )/h/g ;
- c)  $\Delta D(X)_Y \Delta D(Y)_X$ : no more than 0.2 ( $^{\circ}$ )/h/g ;
- d)  $\Delta D(X)_Z \Delta D(Y)_Z$ : no more than 0.15 ( $^{\circ}$ )/h/g.

## 4. Rate Range

- a) Long-term work:  $\pm 60$  ( $^{\circ}$ )/s;
- b) Instantaneous operation:  $\pm 80$  ( $^{\circ}$ )/s.

## 5. Quality: not more than 700g

## 6. Outline and installation dimensions (see the figure below)



## Basic parameters of G01254-3B dynamically tuned gyroscope

### 1. Power supply

- a) Drive motor: AC 500Hz ,20V;
- b) Sensor: AC 16KHz ,7V;
- c) Preamplifier: DC  $\pm 15V$ .

### 2. Motor performance

- a) Starting current: no more than 0.3 A;
- b) Operating current: no more than 0.2 A;
- c) Synchronization time: no more than 25 s;
- d) Inertia time: 50~70 s;
- e) Synchronous speed: 10000 r/min.

### 3. Eight position drift accuracy

#### 3.1 one-time test accuracy

- a) Torquer scale factor  $K_X, K_Y$  :670~850 ( $^{\circ}$ )/h/mA ;
- b) Constant drift error  $D(X)_F, D(Y)_F$ : not more than 10( $^{\circ}$ )/h ;
- c) Axial drift error coefficient  $D(X)_X, D(Y)_Y$ : not more than 1 ( $^{\circ}$ )/h/g ;
- d) Orthogonal drift error coefficient  $D(X)_Y, D(Y)_X$ : not more than 2 ( $^{\circ}$ )/h/g ;
- e) Radial drift error coefficient  $D(X)_Z, D(Y)_Z$ : not more than 0.3 ( $^{\circ}$ )/h/g ;
- f) Installation error angle  $\theta$ : no more than 0.01 rad;
- g) Orthogonal error angle  $\gamma$ : no more than 0.005 rad;
- h) Eight-position residuals  $\sigma_X, \sigma_Y$ : no more than 0.05 ( $^{\circ}$ )/h.

### 3.2 Day-to-Day Drift Accuracy

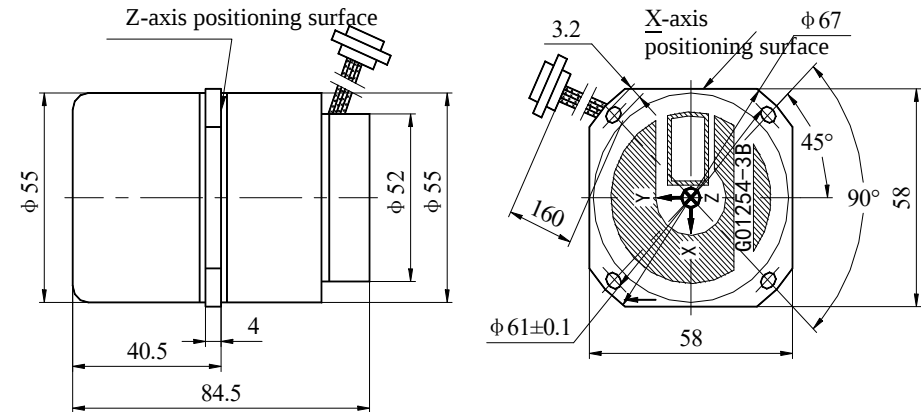
- a)  $\Delta D(X)_F \Delta D(Y)_F$ : no more than 0.3 ( $^{\circ}$ )/h ;
- b)  $\Delta D(X)_X \Delta D(Y)_Y$ : no more than 0.2 ( $^{\circ}$ )/h/g ;
- c)  $\Delta D(X)_Y \Delta D(Y)_X$ : no more than 0.18 ( $^{\circ}$ )/h/g ;
- d)  $\Delta D(X)_Z \Delta D(Y)_Z$ : not more than 0.12 ( $^{\circ}$ )/h/g.

### 4. Rate Range

- a) Long-term work:  $\pm 60$  ( $^{\circ}$ )/s;
- b) Instantaneous operation:  $\pm 80$  ( $^{\circ}$ )/s.

### 5. Quality: not more than 700g

### 6. Outline and installation dimensions (see the figure below)



# Basic parameters of G01074-2 dynamically tuned gyroscope

## 1. Power supply

- a) Drive motor: AC 500Hz ,26V;
- b) Sensor: AC 16KHz ,7V;
- c) Preamplifier: DC  $\pm 15$ V.

## 2. Motor performance

- a) Starting current: no more than 0.2 A;
- b) Operating current: no more than 0.16 A;
- c) Synchronization time: no more than 7 s;
- d) Inertia time: 10~20 s;
- e) Synchronous speed: 7500 r/min.

## 3. Eight position drift accuracy

### 3.1 one-time test accuracy

- a) Torquer scale factor  $K_X, K_Y$ : not less than 1600 ( $^\circ$ )/h/mA ;
- b) Constant drift error  $D(X)_F, D(Y)_F$ : not more than 35( $^\circ$ )/h ;
- c) Axial drift error coefficient  $D(X)_X, D(Y)_Y$ : not more than 2.5 ( $^\circ$ )/h/g ;
- d) Orthogonal drift error coefficient  $D(X)_Y, D(Y)_X$ : no more than 3.5 ( $^\circ$ )/h/g ;
- e) Radial drift error coefficient  $D(X)_Z, D(Y)_Z$ : not more than 0.7 ( $^\circ$ )/h/g ;

- f) Eight-position residuals  $\sigma_X, \sigma_Y$ : no more than 0.3 ( $^\circ$ )/h.

## 3.2 Day-to-Day Drift Accuracy

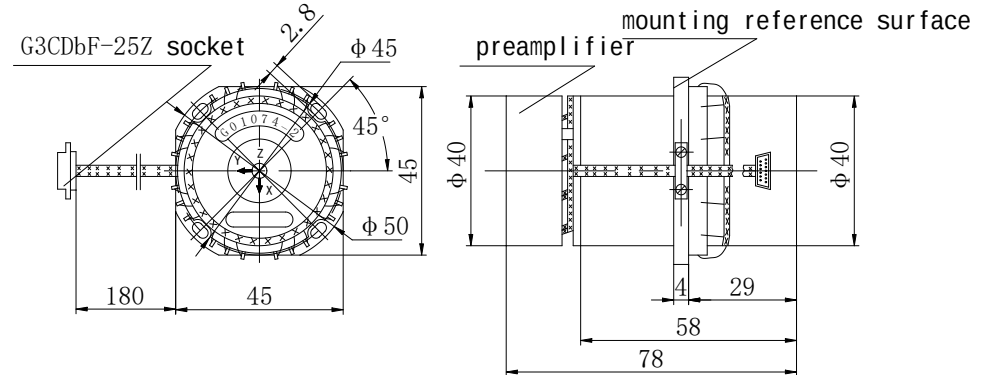
- a)  $\Delta D(X)_F \Delta D(Y)_F$ : no more than 1( $^\circ$ )/h ;
- b)  $\Delta D(X)_X \Delta D(Y)_Y$ : no more than 0.3 ( $^\circ$ )/h/g ;
- c)  $\Delta D(X)_Y \Delta D(Y)_X$ : no more than 0.3 ( $^\circ$ )/h/g ;
- d)  $\Delta D(X)_Z \Delta D(Y)_Z$ : not more than 0.2 ( $^\circ$ )/h/g.

## 4. Rate Range

- a) Long-term work:  $\pm 250$  ( $^\circ$ )/s;
- b) Instantaneous operation:  $\pm 300$  ( $^\circ$ )/s.

## 5. Quality: not more than 370g

## 6. Outline and installation dimensions (see the figure below)



# Basic parameters of G01074-4 dynamically tuned gyroscope

## 1. Power supply

- a) Drive motor: AC 500Hz ,26V;
- b) Sensor: AC 16KHz ,7V;
- c) Preamplifier: DC  $\pm 15$ V.

## 2. Motor performance

- a) Starting current: no more than 0.2 A;
- b) Operating current: no more than 0.16 A;
- c) Synchronization time: no more than 7 s;
- d) Inertia time: 10~20 s;
- e) Synchronous speed: 7500 r/min.

## 3. Eight position drift accuracy

### 3.1 one-time test accuracy

- a) Torquer scale factor  $K_x, K_y$ : not less than 1600 ( $^\circ$ )/h/mA ;
- b) Constant drift error  $D(X)_F, D(Y)_F$ : not more than 35( $^\circ$ )/h ;
- c) Axial drift error coefficient  $D(X)_x, D(Y)_y$ : not more than 2.5 ( $^\circ$ )/h/g ;
- d) Orthogonal drift error coefficient  $D(X)_y, D(Y)_x$ : no more than 3.5 ( $^\circ$ )/h/g ;
- e) Radial drift error coefficient  $D(X)_z, D(Y)_z$ : not more than 0.7 ( $^\circ$ )/h/g ;
- f) Installation error angle  $\theta$ : no more than 0.01 rad;
- g) Orthogonal error angle  $\gamma$ : no more than 0.008 rad;
- h) Eight-position residuals  $\sigma_x, \sigma_y$ : no more than 0.15 ( $^\circ$ )/h.

## 3.2 Day-to-Day Drift Accuracy

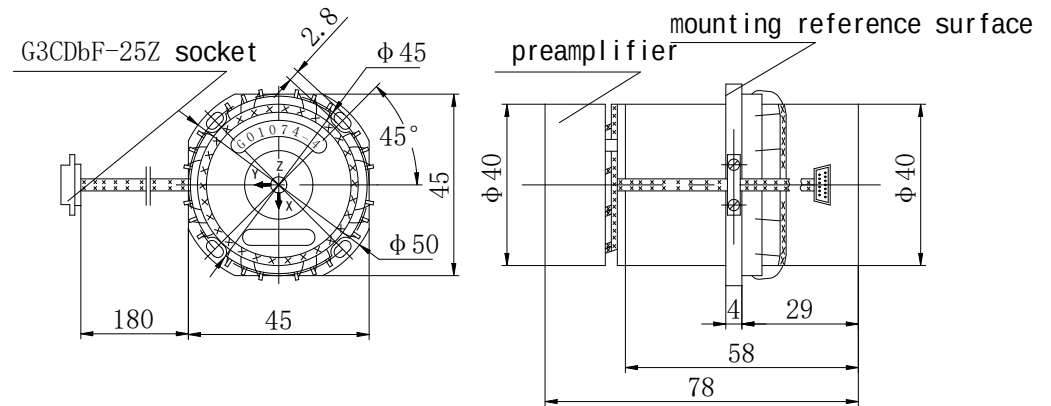
- a)  $\Delta D(X)_F \Delta D(Y)_F$ : no more than 0.7( $^\circ$ )/h ;
- b)  $\Delta D(X)_x \Delta D(Y)_y$ : no more than 0.2 ( $^\circ$ )/h/g ;
- c)  $\Delta D(X)_y \Delta D(Y)_x$ : no more than 0.2 ( $^\circ$ )/h/g ;
- d)  $\Delta D(X)_z \Delta D(Y)_z$ : not more than 0.15 ( $^\circ$ )/h/g.

## 4. Rate Range

- a) Long-term work:  $\pm 250$  ( $^\circ$ )/s;
- b) Instantaneous operation:  $\pm 300$  ( $^\circ$ )/s.

## 5. Quality: not more than 370g

## 6. Outline and installation dimensions (see the figure below)



# Basic parameters of DTY-03A dynamically tuned gyroscope

## 1. Power supply

- a) Drive motor: AC 500Hz ,20V;
- b) Sensor: AC 16KHz ,7V;
- c) Preamplifier: DC  $\pm 15V$ .

## 2. Motor performance

- a) Starting current: no more than 0.3 A;
- b) Operating current: no more than 0.2 A;
- c) Synchronization time: no more than 25 s;
- d) Inertia time: 40~70 s;
- e) Synchronous speed: 10000 r/min.

## 3. Eight position drift accuracy

### 3.1 one-time test accuracy

- a) Torquer scale factor  $K_X, K_Y$ : not less than 650 ( $^{\circ}$ )/h/mA ;
- b) Constant drift error  $D(X)_F, D(Y)_F$ : not more than 10( $^{\circ}$ )/h ;
- c) Axial drift error coefficient  $D(X)_X, D(Y)_Y$ : not more than 2 ( $^{\circ}$ )/h/g ;
- d) Orthogonal drift error coefficient  $D(X)_Y, D(Y)_X$ : not more than 2.5 ( $^{\circ}$ )/h/g ;
- e) Radial drift error coefficient  $D(X)_Z, D(Y)_Z$ : not more than 0.5 ( $^{\circ}$ )/h/g ;
- f) Installation error angle  $\theta$ : no more than 0.01 rad;
- g) Orthogonal error angle  $\gamma$ : no more than 0.008 rad;
- h) Eight-position residuals  $\sigma_X, \sigma_Y$ : no more than 0.1 ( $^{\circ}$ )/h.

### 3.2 Day-to-Day Drift Accuracy

- a)  $\Delta D(X)_F \Delta D(Y)_F$ : no more than 0.3 ( $^{\circ}$ )/h ;
- b)  $\Delta D(X)_X \Delta D(Y)_Y$ : no more than 0.2 ( $^{\circ}$ )/h/g ;
- c)  $\Delta D(X)_Y \Delta D(Y)_X$ : no more than 0.12 ( $^{\circ}$ )/h/g ;
- d)  $\Delta D(X)_Z \Delta D(Y)_Z$ : not more than 0.15 ( $^{\circ}$ )/h/g.

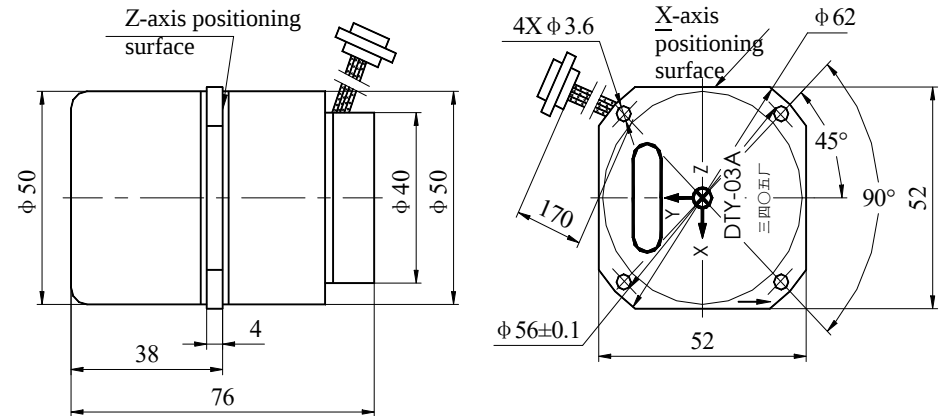
## 4. Fixed position drift ( $1\sigma$ ): not more than 0.03 ( $^{\circ}$ )/h

## 5. Rate Range

- a) Long-term work:  $\pm 60$  ( $^{\circ}$ )/s;
- b) Instantaneous operation:  $\pm 80$  ( $^{\circ}$ )/s.

## 6. Quality: not more than 560g

## 7. Outline and installation dimensions (see the figure below)



# Basic parameters of DTY-04 dynamically tuned gyroscope

## 1. Power supply

- a) Drive motor: AC 500Hz ,18V;
- b) Sensor: AC 16KHz ,5V;
- c) Preamplifier: DC  $\pm 15V$ .

## 2. Motor performance

- a) Starting current: no more than 0.25 A;
- b) Operating current: no more than 0.185 A;
- c) Synchronization time: no more than 10 s;
- d) Inertia time: 10~15 s;
- e) Synchronous speed: 10000 r/min.

## 3. Gyroscope drift accuracy

### 3.1 one eight-position test accuracy

- a) Torquer scale factor  $K_X, K_Y$ : not less than 540 ( $^{\circ}$ )/h/mA ;
- b) Constant drift error  $D(X)_F, D(Y)_F$ : not more than 40( $^{\circ}$ )/h ;
- c) Axial drift error coefficient  $D(X)_X, D(Y)_Y$ : not more than 6 ( $^{\circ}$ )/h/g ;
- d) Orthogonal drift error coefficient  $D(X)_Y, D(Y)_X$ : not more than 12 ( $^{\circ}$ )/h/g ;
- e) Radial drift error coefficient  $D(X)_Z, D(Y)_Z$ : not more than 3 ( $^{\circ}$ )/h/g ;
- f) Installation error angle  $\theta$ : no more than 0.015 rad;

- g) Orthogonal error angle  $\gamma$ : no more than 0.012 rad;

- h) Eight-position residuals  $\sigma_X, \sigma_Y$ : no more than 0.1( $^{\circ}$ )/h.

### 3.2 fixed position drift ( $1\sigma$ ): not more than 0.1 ( $^{\circ}$ )/h

### 3.3 fixed successive start repeatability ( $1\sigma$ ): not more than 0.3 ( $^{\circ}$ )/h

## 4. Rate Range

- a) Long-term work:  $\pm 100$  ( $^{\circ}$ )/s.;
- b) Instantaneous operation:  $\pm 150$  ( $^{\circ}$ )/s.

## 5. Quality: not more than 230g

## 6. Outline and installation dimensions (see the figure below)

