

LSGT101 Gas turbine interlock module

LS communication Gas turbine interlock function

Summary



* Terminal block input / output unit

| | |
|---|--|
| -Distribution type input | : 1 |
| -Isolation type input | : 1 |
| -RTD input | : 1 |
| -Temperature input | : 2 |
| | Blade path temperature |
| | Exhaust gas temperature |
| -Gas turbine interlock output | : 4 |
| *USB connector | : 1 (For maintenance communication mini-B) |
| *Module operating ambient temperature range | : -5 to 60°C |

Overview Specifications

| ITEM | SPECIFICATION |
|-------------------------------|--|
| Distribution type input | 1, 4 to 20 mA / DC 24 V |
| Isolation type input | 1, 4 to 20 mA |
| RTD input | 92.16 to 127.08 Ω (Equivalent to -20°C to 70°C) × 1 |
| Blade path temperature input | -5 to 75 mV × 1 |
| Exhaust gas temperature input | -5 to 75 mV × 1 |
| Gas turbine interlock output | Open collector output × 4, Maximum voltage DC 30 V, Maximum load current 0.1 A |
| Self-diagnostic functions | Power voltage check, Clock check, Heartbeat check, CRC check, ADC communication error check, Analog signal range check |
| IDOL Implementation | Possible |
| Module Duplication | incompatible |
| Indicator | Display LED × 4: Run / Status / Network status A / Network status B Channel State LED × 16: Ch 1 to Ch 16 Arbitrarily set by internal logic |
| USB connector | For maintenance communication mini-B × 1 |
| Dielectric strength | AC 1500 V Digital input / output terminal - PE Between AC 1000 V Analog input / output terminal - PE Between |
| Environmental conditions | Ambient temperature (Operating / Storage) -5 to 60°C Ambient humidity (Operating / Storage) 0 to 95% RH (No condensation) |
| Operating power supply | DC 24 V ±20% Dual power reception (The voltage supplied from the backplane) |
| Shock / Vibration | 15 G 11 ms / 3.5 mm @5 to 8.4 Hz, 1 G @8.4 to 150 Hz |
| Dimensions | 152.5 mm (D) x 94 mm (H) x 46 mm (W) (Except projection) |

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Details Specifications

| ITEM | | SPECIFICATION | |
|---|---|--|---|
| Terminal block Input/output section | Ch 1: Distribution type input | Number of channels | 1 |
| | | Insulation method | Transformer insulation (Channel individual isolation) |
| | | Dielectric strength | AC 1000 V Analog input terminal - PE Between |
| | | Output voltage | 15 to 30 V (4 to 20 mA) |
| | When used as a transmitter input | Input current range | 4 to 20 mA (full scale) |
| | | Absolute precision @25°C | ±0.15% FS (±0.024 mA) |
| | | Temperature drift @-5 to 60°C | ±100 ppm/°C (Against full scale) |
| | Ch 2: Isolation type input | Number of channels | 1 |
| | | Insulation method | Digital Isolator Isolation (Channel Individual Isolation) |
| | | Dielectric strength | AC 1000 V Analog input terminal - PE Between |
| | | Input current range | 4 to 20 mA (full scale) |
| | | Signal input resistance | 300 Ω or less |
| | | Absolute precision @25°C | ±0.1% FS (±0.016 mA) |
| | Ch 3: RTD入力 | Temperature drift @-5 to 60°C | ±100 ppm/°C (Against full scale) |
| | | Number of channels | 1 |
| | | Insulation method | Photocoupler insulation (channel individual isolation) |
| | | Dielectric strength | AC 1000 V Analog input terminal - PE Between |
| | Ch 4, Ch 5: Blade path temperature input, Exhaust gas temperature input | Input resistance range | 92.16 to 127.08 Ω (Equivalent to -20 to 70°C) |
| | | Absolute precision @25°C | ±0.1% FS (full scale: 64.83 to 146.8 Ω) |
| | | Temperature drift @-5 to 60°C | ±100 ppm/°C (Against full scale) |
| | | Number of channels | 2 |
| | | Insulation method | Photocoupler insulation (channel individual isolation) |
| | Ch 6, Ch 7, Ch 8, Ch 9: Interlock output | Dielectric strength | AC 1000 V Analog input terminal - PE Between |
| | | Input voltage range | -5 to 75 mV |
| | | Absolute precision @25°C | ±0.1% FS (full scale: -10 to 80 mV) |
| | | Temperature drift @-5 to 60°C | ±100 ppm/°C (Against full scale) |
| | | Number of channels | 4 |
| | | Insulation method | Photocoupler insulation (channel individual isolation) |
| Dielectric strength | | AC 1500 V Digital output terminal - PE Between | |
| Operation cycle usable in DPS | Maximum applied voltage | DC 30 V | |
| | Contact breakdown current | 100 mA | |
| | Leakage current at OFF | 0.1 mA or less | |
| | Maximum residual voltage when ON | DC 1.2 V @100 mA | |
| | Communication specification between IOA | Communication method, Communication speed | 10 msec or more |
| | Self-diagnostic functions | | LVDS, 100 Mbps |
| | | | Power voltage check (24 V, 17 V, 3.3 V, 1.2 V, Other) *Refer to block diagram |
| | | | Clock check (FPGA-MCU, FPGA-CPU) |
| | | | Heartbeat check (FPGA-MCU, FPGA-CPU) |
| | | | CRC check (FPGA-MCU) |
| IDOL Implementation | | ADC communication error check | |
| | | Analog signal range check (Overrange, Underrange) | |
| Module Duplication | | Possible (Shortest calculation cycle : 1ms) Supplement: IDOL is the logic description language used in DIASYS-UP, DIASYS-UP/V. The internal logic of this module is described in IDOL. | |
| Protective function (Backplane supply power protection) | | Incompatible | |
| Indicator | Display LED | | Overvoltage protection, Overcurrent protection |
| | Channel State LED | | 4: RUN(Run) / STS(Status) / NSA(Network status A) / NSB(Network status B) |
| Serial interface | For maintenance | | 16: Ch 1 to Ch 16 Arbitrarily set by internal logic |
| Hot swap | | | 1: USB Serial (USB mini-B connector) |
| Power supply | | | Possible |
| Environmental conditions | Module ambient temperature | | DC 24 V ±20% (The voltage supplied from the backplane) |
| | Module ambient humidity | | (Operating / Storage) -5 to 60°C |
| Vibration | | | (Operating / Storage) 0 to 95% RH (No condensation) |
| | | | 3.5 mm @5 to 8.4 Hz |
| Shock | | | 1 G @8.4 to 150 Hz |
| Rated Current | | | 15 G 11 ms |
| Weight | | | 170 mA |
| Dimensions | | | 0.19 kg |
| Standard/Directive | | | 152.5 mm (D) x 94 mm (H) x 46 mm (W) (Except projection) |
| | | | EN 61131-2:2007, RoHS |

About compliant module type

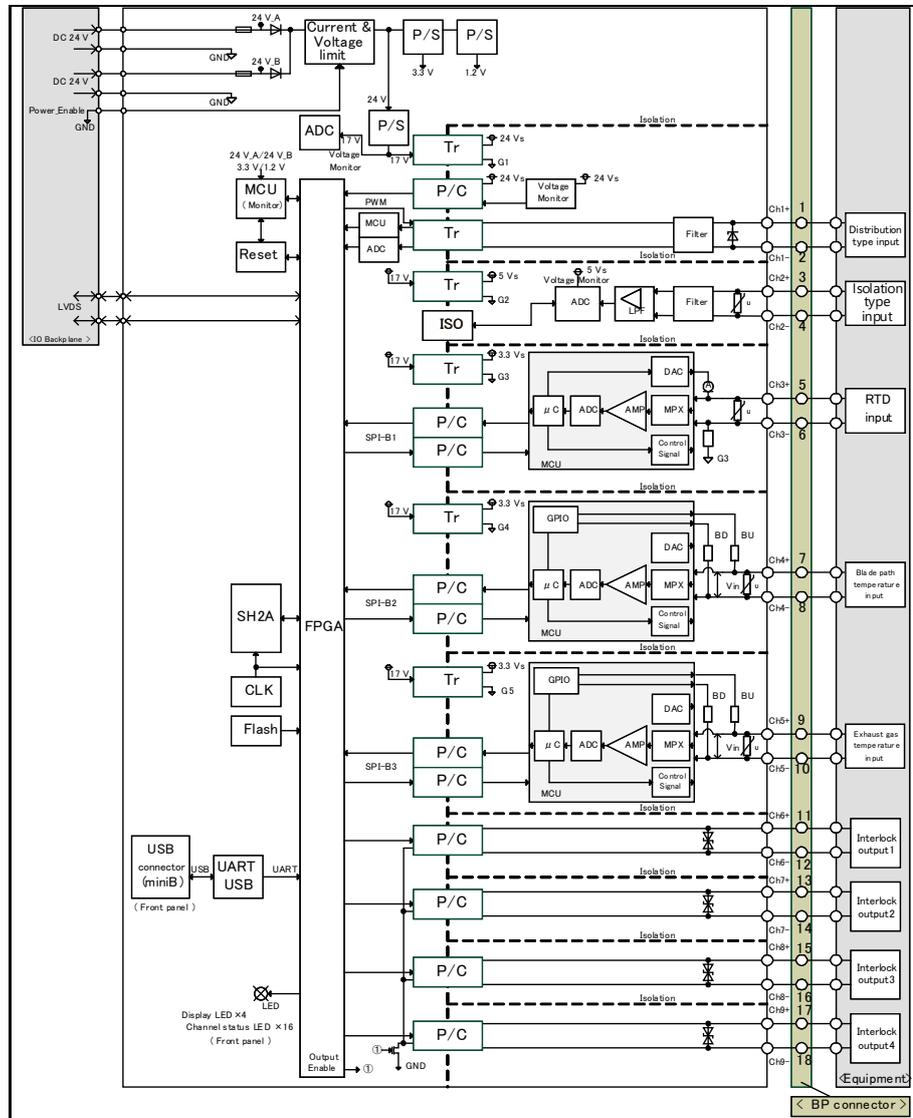
For compliant modules of this product, please refer to "Compliant backplane list (CGS-S9901-E-XX)".

For compliant modules of this product, please refer to "Compliant accessory connector list (CGS-S9902-E-XX)".

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Block diagram



| | | | |
|---|--------------------------------------|---|---------------------------------|
| P/S | : Power supply | MCU | : Micro control unit |
| SH2A | : Renesas SH-2A micro processor | FPGA | : Field programmable gate array |
| CLK | : Clock generation circuit | LED | : Light emitting diode |
| ISO | : Digital isolator | ADC | : Analog digital converter |
| LPF | : Low pass filter | GND,G1,G2,G3,G4,G5 | : Ground |
| LVDS | : Low Voltage Differential Signaling | BP | : Backplane |
| PWM | : Pulse width modulation | DAC | : Digital analog converter |
| MPX | : Multiplexer | μ C | : Micro controller |
| P/C | : Photo Coupler | Tr | : Transformer |
| AMP | : Amplifier | Flash | : Flash ROM |
|  | : Varistor |  | : Resistor |
|  | : Fuse |  | : Diode |
|  | : Zener diode |  | : Bidirectional diode |

When using, please read the instruction manual attached to the product carefully and use it properly.

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