MITSUBISHI POWER

LSSVT13   Servo valve interface module

LS communication   Transmitter   Servo valve interface   Valve position demand output (0 to 250 mA/0 to 500 mA)

■Summary

✱Terminal block input / output unit

・52 G ON Digital input	:	1
・External forced closed input	:	1
・Valve position demand output	:	1

03 type	:0 to 250 mA
04 type	:0 to 500 mA

・Valve position feedback input	:	1

Distributor input

・Analog output	:	1
・Analog input	:	3

✱Auxiliary output connector

・Analog output	:	3
✱USB connector	:	1 (For maintenance communication mini-B)
✱Module operating ambient temperature range	:	-5 to 60°C

■Overview Specifications

ITEM	SPECIFICATION
52 G ON Digital input	DC 24 V × 1, minimum ON Current 2 mA
External forced closed input	DC 24 V × 1, minimum ON Current 2 mA
Valve position demand output	0 to 250 mA / 0 to 500 mA × 1
Valve position feedback input	Distributor input × 1, 4 to 20 mA
Analog output	1 to 5 V DC × 1 (Minus common)
Analog input	1 to 5 V DC × 3 (Minus common)
Analog output(Auxiliary output connector)	1 to 5 V DC × 3
Self-diagnostic functions	Power voltage check, Clock abnormal check, Heartbeat check, CRC check, ADC communication error check, I/O signal range check
IDOL Implementation	Possible
Module Duplication	Supported (backplane uses LSIOB02 or LSIOB03) However, the signal of the auxiliary output connector does not support duplication
Indicator	Display LED × 4: Run / Status / Network status A / Network status B General purpose display LED × 16: Ch 1 to Ch 16 It can be arbitrarily set with internal logic
USB connector	1(For maintenance communication mini-B)
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	
Ch 1: 52 G ON Digital input	Number of channels		1	
	Insulation method		Photocoupler insulation	
	Dielectric strength		AC 1500 V Digital input terminal − PE Between	
	Current range	ON current	DC 2 mA or more Sense supply voltage: DC 24 V ±10%	
		OFF current	DC 1 mA or less	
Ch 2: External forced closed input	Number of channels		1	
	Insulation method		Photocoupler insulation	
	Dielectric strength		AC 1500 V Digital input terminal − PE Between	
	Current range	ON current	DC 2 mA or more Sense supply voltage: DC 24 V ±10%	
		OFF current	DC 1 mA or less	
Ch 3,Ch 4: Valve position demand output *The type of 03/04 is switched by EMS	Number of channels		1	
	Insulation method		Transformer insulation	
	Dielectric strength		AC 1000 V Analog output terminal − PE Between	
	Rated output current		03 type	0 to 250 mA (full scale)
			04 type	0 to 500 mA (full scale)
	Load resistance range		03 type	18 to 32 Ω
			04 type	
	Absolute precision	@25℃	03 type	±0.1% FS (±0.25 mA) @10 to +250 mA
			04 type	±0.1% FS (±0.5 mA) @10 to +500 mA
	Temperature drift	@−5 to 60°C	03 type	±100 ppm/°C (Against full scale)
			04 type	
	Output current monitor		Built-in	
		Absolute precision @25℃	03 type	±0.3% FS (±0.75 mA) @10 to +250 mA
			04 type	±0.3% FS (±1.5 mA) @10 to +500 mA
		Temperature drift @−5 to 60°C	03 type	±200 ppm/°C (Against full scale)
			04 type	
Ch 5: Valve position feedback input (Distributor input)	Number of channels		1	
	Insulation method		Transformer insulation (Individual isolation)	
	Dielectric strength		AC 1000 V Analog input terminal − PE Between	
	Input current range		4 to 20 mA (full scale)	
	Output voltage		15 to 30 V (4 to 20 mA)	
	Absolute precision	@25℃	±0.15% FS (±0.016 mA)	
	Temperature drift	@−5 to 60°C	±100 ppm/°C (Against full scale)	
Ch 7: Analog output	Number of channels		@−5 to 60℃	
	Insulation method		Digital isolator insulation	
	Dielectric strength		AC 1000 V Analog output terminal − PE Between	
	Rated output voltage		1 to 5 V (full scale)	
	Minimum load resistance		2 kΩ	
	Absolute precision	@25℃	±0.3% FS (±12 mV)	
	Temperature drift	@−5 to 60°C	±200 ppm/°C (Against full scale)	
Ch 8+, Ch 8−, Ch 9+: Analog input (Ch 9−: ground) Ch 9− is common ground	Number of channels		3	
	Insulation method		Digital isolator insulation	
	Dielectric strength		AC 1000 V Analog input terminal − PE Between	
	Rated input voltage		1 to 5 V (full scale)	
	Input resistance		100 kΩ or more	
	Absolute precision	@25℃	±0.3% FS (±12 mV)	
	Temperature drift	@−5 to 60°C	±200 ppm/°C (Against full scale)	

Leftmost column spans: "Terminal block Input / output unit"

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ITEM				SPECIFICATION
Auxiliary output connector	Analog output	Number of channels		3
		Insulation method		Digital isolator insulation
		Dielectric strength		AC 500 V Analog output terminal – PE Between
		Rated output voltage		1 to 5 V (full scale)
		Minimum load resistance		2 kΩ
		Absolute precision	@25°C	±0.3% FS (±0.12 mV)
		Temperature drift	@−5 to 60°C	±200 ppm/°C (Against full scale)
Calculation cycle usable in DPS				10 msec or more
Communication specification between IOA	Communication method , Communication speed			LVDS, 100 Mbps
Self-diagnostic functions				Power voltage check (24 V, 17 V, 3.3 V, 1.2 V, Other) ∗Refer to Block diagram Clock abnormal check (FPGA-MCU, FPGA-CPU) Heartbeat check (FPGA-MCU, FPGA-CPU) CRC check (FPGA-MCU) ADC communication error check I/O signal range check (Analog input channel: Overrange, Underrange)
IDOL Implementation				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.
Module Duplication				Supported (backplane uses LSIOB02 or LSIOB03) However, the signal of the auxiliary output connector does not support duplication
Protective function (Backplane supply power protection)				Overvoltage protection, Overcurrent protection
Indicator	Display LED			4: RUN(Run) / STS(Status) / NSA(Network status A) / NSB(Network status B)
	General purpose display LED			16: Ch 1 to Ch 16 Arbitrarily set by internal logic
Serial interface	For maintenance			1: USB Serial (USB mini-B connector)
Hot swap				Possible
Operating power supply				DC 24 V ±20% Dual power reception (The voltage supplied from the backplane)
Environmental conditions	Module ambient temperature			(Operating / Storage) −5 to 60°C
	Module ambient humidity			(Operating / Storage) 0 to 95% RH (No condensation)
Vibration				3.5 mm @5 to 8.4 Hz 1 G @8.4 to 150 Hz
Shock				15 G 11 ms
Rated Current				840 mA
Weight				0.24 kg
Dimensions				152.5 mm (D) x 94 mm (H) x 46 mm (W) (Except projection)
Standard/Directive				EN 61131-2:2007, RoHS

About compliant module type

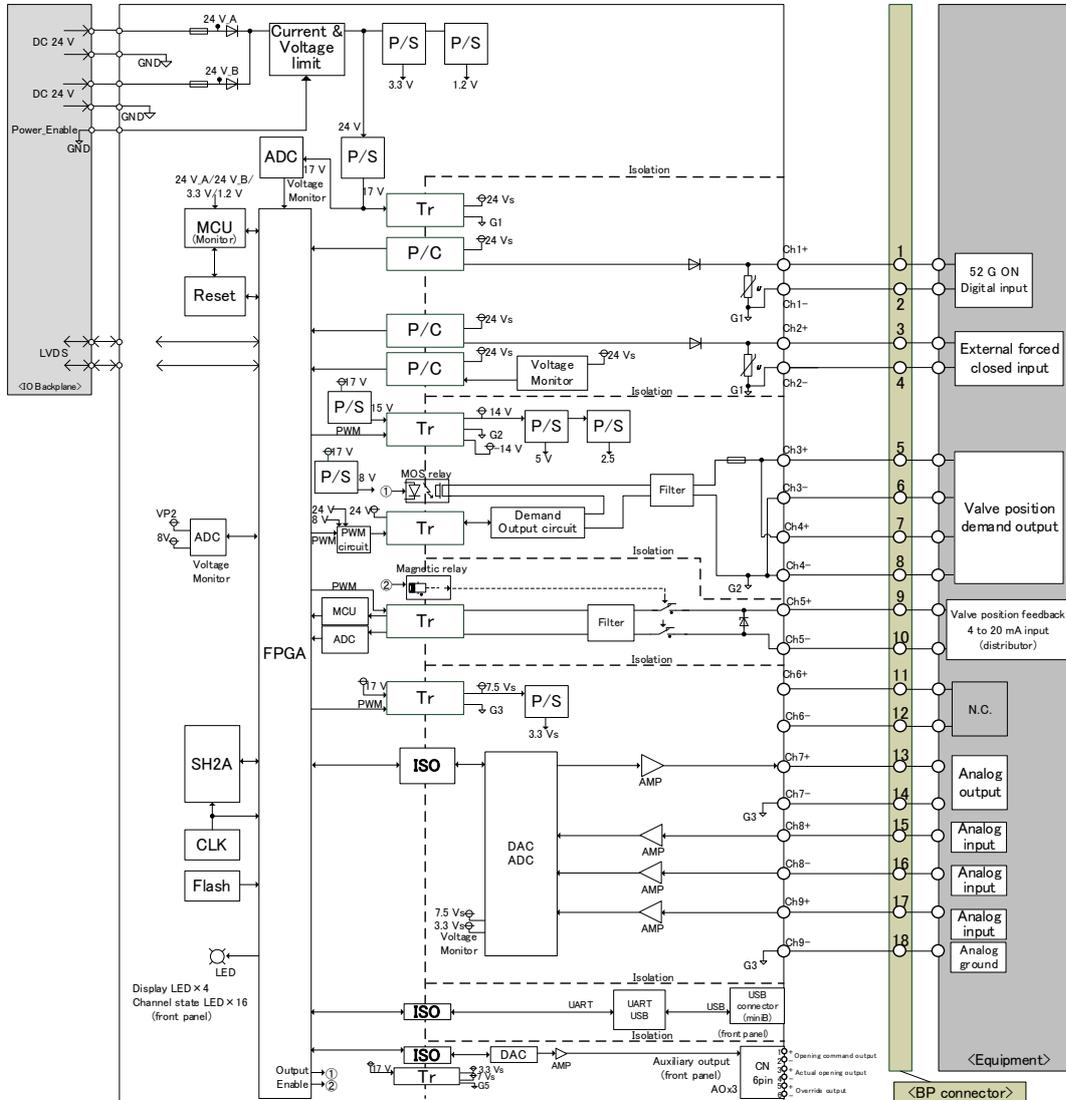　For compliant modules of this product, please refer to ″ Compliant backplane list (CGS-S9901-E-XX) ″.

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

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■Block diagram

DC 24 V
24 V.A
GND
DC 24 V
24 V.B
GND
Power_Enable
GND

Current & Voltage limit

P/S 3.3 V
P/S 1.2 V

ADC
24 V
P/S
17 V
17 V

24 V.A/24 V.B/
3.3 V/1.2 V

Voltage Monitor

MCU (Monitor)

Reset

LVDS

〈IO Backplane〉

Isolation

Tr
24 Vs
G1
P/C
24 Vs

P/C
24 Vs
P/C
24 Vs
Voltage Monitor
24 Vs

Isolation

17 V
P/S 15 V
PWM
Tr 14 V
G2
P/S 5 V
P/S 2.5
14 V

17 V
P/S 8 V

MOS relay

Filter

Demand Output circuit

VP2
8 V
ADC
Voltage Monitor

24 V 24 Vs
8 V
PWM circuit
Tr

Isolation

Magnetic relay
PWM

MCU
ADC
Tr
Filter

Isolation

17 V
PWM
Tr 7.5 V
G3
P/S 3.3 Vs

SH2A

CLK

Flash

ISO

DAC
ADC

AMP
AMP
AMP

7.5 Vs
3.3 Vs
Voltage Monitor

LED
Display LED × 4
Channel state LED × 16
(front panel)

FPGA

ISO
UART
UART USB
USB
USB connector (miniB)
Isolation
Isolation
(front panel)

Output ①
Enable ②
17 V
ISO
DAC
AMP
Tr
3.3 Vs
G5
Auxiliary output (front panel)
CN 6pin
AOx3
Opening command output
Actual opening output
Override output

Ch1+
Ch1−
Ch2+
Ch2−
Ch3+
Ch3−
Ch4+
Ch4−
Ch5+
Ch5−
Ch6+
Ch6−
Ch7+
Ch7−
Ch8+
Ch8−
Ch9+
Ch9−

G1
G1
G2
G3
G3

1　52 G ON Digital input
2
3　External forced closed input
4
5　Valve position demand output
6
7
8
9　Valve position feedback 4 to 20 mA input (distributor)
10
11　N.C.
12
13　Analog output
14
15　Analog input
16　Analog input
17　Analog input
18　Analog ground

〈Equipment〉

〈BP connector〉

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	: Ground
LVDS	: Low Voltage Differential Signaling	BP	: Backplane
DP	: Digital potentio meter	DDS	: Direct digital synthesizer
PWM	: Pulse width modulation	DAC	: Digital analog converter
AMP	: Amplifier		: Zener diode
P/C	: Photo Coupler	Tr	: Transformer
N.C	: No Connection	CN	: Connector
AO	: Analog Output	Flash	: Flash ROM
	: Varistor		: Resistor
	: Fuse		: Diode

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