Drive for Lift Application

L100

3-phase 380~440V 5.5~22kW

LS *ELECTRIC*

Contents

Lift Drive
L100

new

- Optimization
- Responsibility
- Compact
- Convenience

L100 series, the optimal solution for lifting applications

L100 series, the optimal solution for lifting apllications
Optimized for elevators and load lifting operation, the LS ELECTRIC L100 series offers best-in-class performance.
With size-optimized solutions for these applications, the L100 provides essential functions and options, which further enhance customer value.

Lift Drive
L100

Size reduction and performance enhancement.
Compact but powerful!
A competitive solution for your applications.

Size Reduction
53%

Enhanced Performce UP
Reduced Size DOWN

Compact

Along with performance enhancement, size was reduced by applying heat dissipation analysis and utilising a 3D design process.

Best-in-class size competitiveness
• 47% size level compared to iV5
• Half-sized compared to other company products (5.5/7.5kW, m3)

Optimization

L100 series provides powerful performance and optimal functions for elevator and lift systems.

Premium High Performance Vector Control

Selectable IM/PM loads

Optimal ontrol algorithm (Voltage/Speed/Flux) for smooth and precise operation

Save your commissioning time through optimal Auto-tuning and convenient Gain tuning

Essential Functions for Elevator operation
• Creepless optimal speed pattern (when Elevator IO applied)
• Anti-Rollabck control without Load Cell feedback
• Optimal Load Cell compensation control for Anti-Rollback
• Emergency rescue operation by battery in case of power failure
• Auto Light Load Search function
• Short Floor operation pattern
• Elevator IO makes your elevator control system simple
• Anti Hunting Regulator function
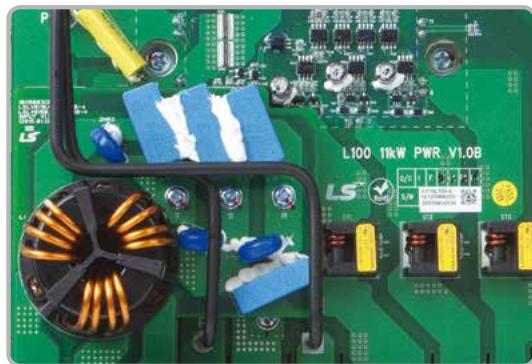
Responsibility
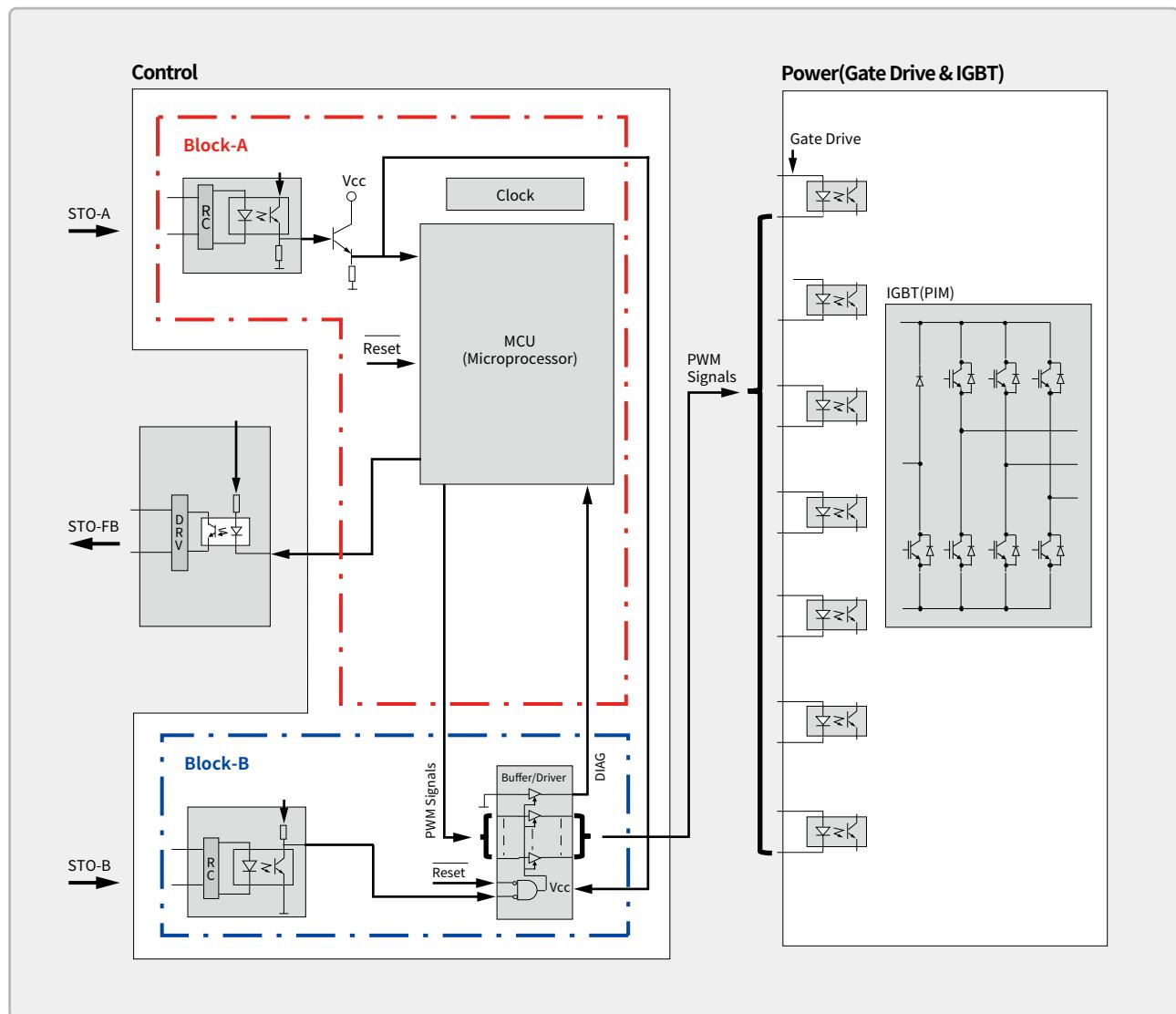
Designed for excellent enviornmental resistance.
Built-in safety function.

Built-In EMC Filter
• 1st Environment / Category C2 (Class B) CE

Built-In Safety (SIL 2)

Control

Block-A

STO-A

Vcc

Clock

Reset

MCU
(Microprocessor)

STO-FB

DRV

Block-B

STO-B

RC

PWM Signals

Buffer/Driver

Reset

Vcc

DIAG

Power(Gate Drive & IGBT)

Gate Drive

IGBT(PIM)

PWM
Signals
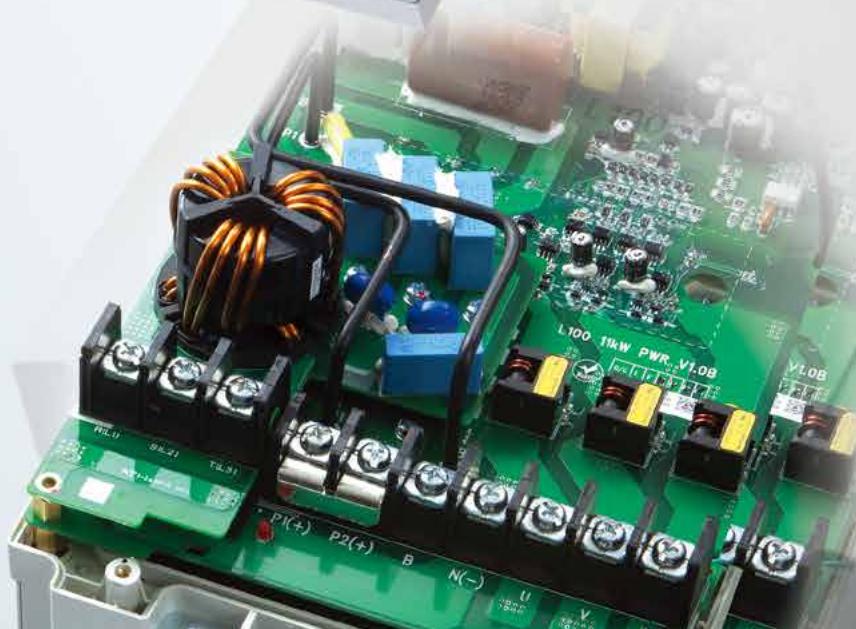
Convenience

Various features enhance user convenience in installation, commissioning and maintenance.

Status LED for operation monitoring
Easy LCD keypad (option) connection through front slide door
Built-in dynamic brake circuit
Removable terminal for easy maintenance
DriveView9 support
Built-in communication: CAN2.0B, RS-232C
Simultaneous control of 8 L100 units via CAN communication
DC Reactor connector
Easy replacement of cooling fan

Scan QR code to access the manual.

Application

L100 series are optimized for elevator and lift operation
with various encoder and elevator I/O options.

Incremental Encoder

• Incremental A/B Pulse
• Power: DC5V/12V/15V supply
• Input: A+[PA], A-, B+[PB], B-
• Output: RA, RB, RG (Encoder A, B phase return pulse)
• Support Encoder: Line Dive (+5V), Open Collector
  (+12V, +15V), Complementary

EnDat Encoder

• HEIDENHAIN Encoder (EnDat v2.2)
• Power: DC5V supply
• Input: SIN+, SIN-, COS+, COS-, DATA+, DATA-, CLK+, CLK-
• Output: RA, RB, RG
• Support Encoder: ECN413, ECN1313, ERN487, ERN1387

Elevator

- Precision control through SIN/COS encoder
- E/L master function via onboard option
- Optimal speed pattern generation / No creep speed
- Optimal Load Cell compensation
- Elevator I/O (ELIO) option
- Geared/gearless E/L operation
- Battery operation in case of power failure
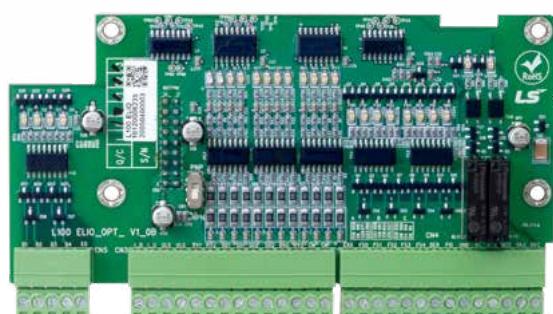
Automatic warehouse parking facility

- Built-in brake control function
- Powerful load balance function
- Dedicated DB Unit provided
- Zero speed control function
- Precision control through SIN/COS encoder
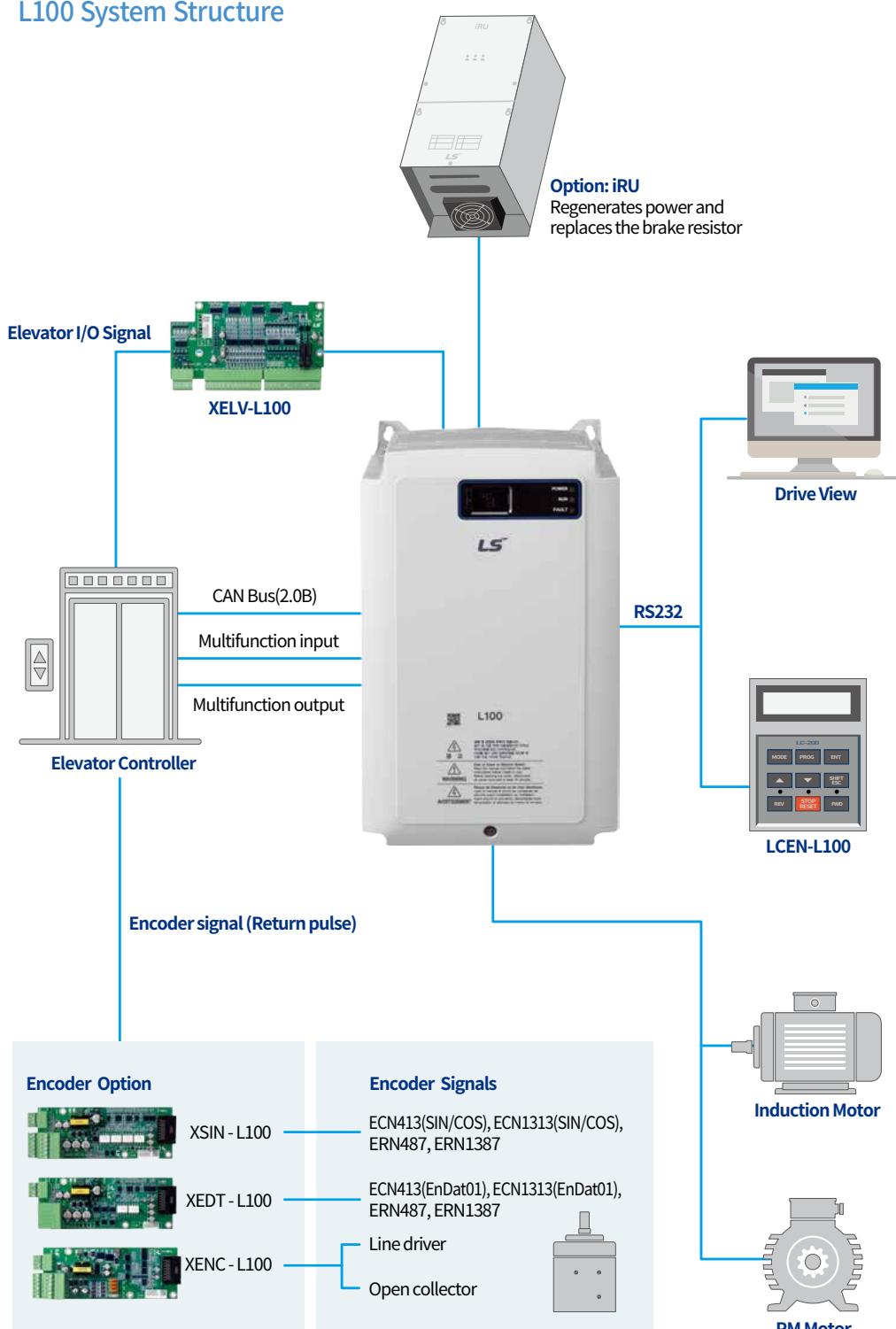
SIN/COS Encoder

- HEIDENHAIN Encoder
- Power: DC5V supply
- Input: SIN+, SIN-, COS+, COS-, SIN2+, SIN2-, COS2+, COS2-
- Output: RA, RB, RG
- Support Encoder: ECN413, ECN1313, ERN487, ERN1387

Elevator I/O (ELIO)
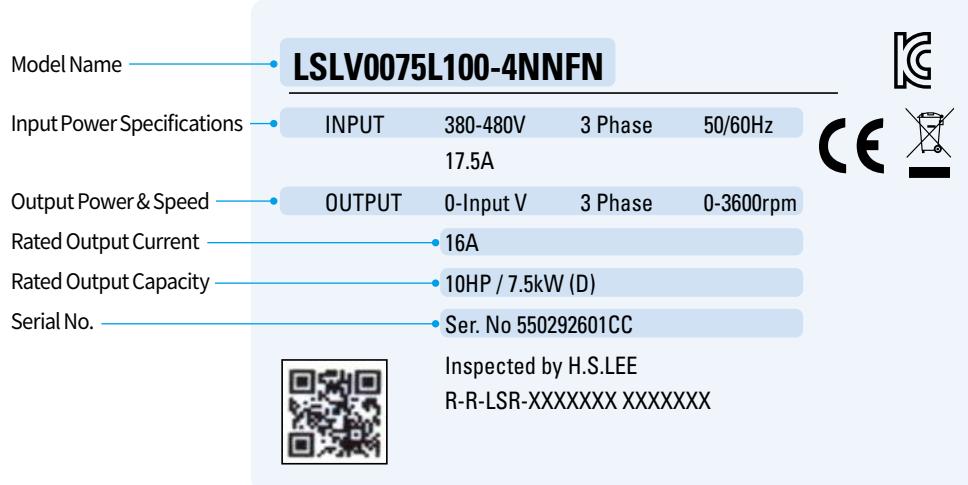
- Dedicated to elevator I/O terminal
- Digital input: 9 points for the elevator car control
  (photo-coupler isolation, PNP/NPN input mode)
- Digital output: 10 points for the position of the elevator car
  and operation control
  (isolated open collector 8 points, relay A (NO) 2 points)
- Fault information output: 4 points (isolated open collector)

L100 System Structure

Option: iRU
Regenerates power and replaces the brake resistor

Elevator I/O Signal

XELV-L100

Drive View

CAN Bus(2.0B)

Multifunction input

Multifunction output

RS232

Elevator Controller

L100

LCEN-L100

Encoder signal (Return pulse)

Induction Motor

Encoder Option	Encoder Signals
XSIN - L100	ECN413(SIN/COS), ECN1313(SIN/COS), ERN487, ERN1387
XEDT - L100	ECN413(EnDat01), ECN1313(EnDat01), ERN487, ERN1387
XENC - L100	Line driver
	Open collector

PM Motor

Model & Type

Drive Nameplate

Model Name	**LSLV0075L100-4NNFN**			
Input Power Specifications	INPUT	380-480V	3 Phase	50/60Hz
		17.5A		
Output Power & Speed	OUTPUT	0-Input V	3 Phase	0-3600rpm
Rated Output Current	16A			
Rated Output Capacity	10HP / 7.5kW (D)			
Serial No.	Ser. No 550292601CC			

Inspected by H.S.LEE
R-R-LSR-XXXXXXX XXXXXXX

Drive Model Name

LSLV	0075	L100	–	4	N	N	F	N

L100 series

Drive Capacity
0055 (5.5kW) ~ 0220 (22kW)

Input Voltage
4 : 400V (380~480V)

EMC Filter
F : EMC Filter Type

Reactor
N : Non DC Reactor Type

Keypad
N : Non Keypad

UL Type
N : Non UL Type

5.5~7.5kW   11~15kW   18.5~22kW

LSLV[][][][]L100-4NNFN		0055	0075	0110	0150	0185	0220
Motor Note 1)	[HP]	7.5	10	15	20	25	30
	[kW]	5.5	7.5	11	15	18.5	22
Rated Output	Catacity[kVA] Note 1)	9.1	12.2	18.3	22.9	29.7	34.3
	Current[A]	12	16	24	30	39	45
	Speed	Induction motor: 0~3600[RPM], Synchronous motor: 0~680[RPM]					
	Voltage	0 ~ 380(480V Note 2))					
Rated Input	Voltage	3 phase 380-480V (-10% ~ +10%) Note 3)					
	Frequency	50 ~ 60 Hz(±5%)					
	Current[A]	12.9	17.5	26.5	33.4	43.6	50.7
Weight[kg (lbs)]		3.3 (7.3)	3.4 (7.5)	4.6 (10.2)	4.8 (10.6)	7.5 (16.6)	8.0 (17.7)

Note1) The rated motor capacity is based on a standard 4-pole motor. 400 V inverters
are designed for a 440 V supply voltage.
Note2) The maximum output voltage cannot exceed the input voltage.
Note3) If the input voltage is greater than 480 V, apply input voltage derated by
10% from the rated input voltage. Also, install an AC reactor in the power
input side if the voltage imbalance between the phases is greater than 2%.
[Voltage imbalance [%] = Max voltage [V] - Min voltage [V] / Three-phase
average voltage [V] x 67 (IEC 61800-3 (5.2.3)]
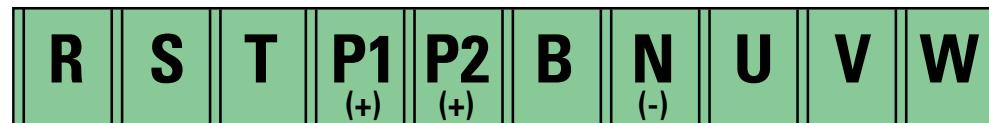
Item			Description	
Circuit system			Voltage type inverter with IGBT	
Control	Control method	Induction motor (IM)	- Speed (sensored) - V/F control - Slip compensation	
		Synchronous motor (PM)	Speed(Sensored)	
	Speed control	Induction motor (IM)	Analog settings: ± 0.1 % (25 ±10°C) of max speed (1800 rpm) Digital settings: ± 0.1 % (0-40°C) of max speed (1800 rpm)	
		Synchronous motor (PM)	Analog settings: ± 0.1 % (25 ±10°C) of max speed (680 rpm) Digital settings: ± 0.015 % (0-40°C) of max speed (680 rpm)	
	Speed setting resolution		Analog settings: ± 0.1 % of max speed Digital settings: 0.1 rpm	
	Speed control response speed		50Hz	
	Overload capacity		Rated current: 150%, 1 min.	
	Acceleration /Deceleration	Time settings	0.00-600.0 sec	
		Combination	4 acceleration/deceleration time choices	
		Pattern	Linear, S-Curve	
Braking	Braking method		Resistance discharge braking	
	Braking torque		150%	
	Braking resistor		External braking resistor (installation required)	
Input	Speed configuration		- Digital settings via the keypad - Analog input settings	- Multistep configurations via terminal input - Speed control via optional add-on modules
	Analog input		2 channels (V1, I1) 0→10 V, 10→0 V, -10→10 V, 10→-10 V 0→20 mA, 20→0 mA 2 choices for multifunction analog input: speed or torque bias	
	Terminal contact input		FX, RX, BX, RST, P1, P2, P3, P4, P5, P6, P7 Various functions may be assigned to multifunction input terminals (P1-P7).	
Output	Analog output		2 channels (AO1, AO2) -10→10 V, 10→-10 V, 0→10 V, 10→0 V output Various multifunction analog output options	
	Terminal contact output		Multifunction terminal contact output: 4 channels (A1-C1, A2-C2, A3-C3, A4-C4) Fault terminal contact output: 1 channel (30A-30C, 30B-30C)	
Protective functions (Trip)			Over Current, Ground Fault, Over Voltage, Low Voltage, Over Load, Inv OLT, InvOver Heat, InvThem OP, EThermal, External-B, Arm Short, Encoder Err, BX, Over Speed, COM Error, HW-Diag, EEP Error, FAN Error, BatRUN Fault, Input PO, Output PO, SpdDev Err, SAFETY A/B, A3 Safety, ADC Error, Flr/FHM Data, EnDat Error	
Protective functions (Alarm)			Fan alarm, Inverter overheat alarm, Overload alarm	
Working environment	Surrounding environment		Indoors, prevent contact with direct sunlight and corrosive gases (Pollution Degree 2 Environment).	
	Ambient temperature		14°F-104°F (-10°C-40°C, no icing)	
	Ambient humidity		Relative humidity less than 95% RH (no condensation)	
	Cooling type		Forced fan cooling structure	
	Protection structure		IP00	
	Operation altitude/ oscillation		No higher than 3,280 ft (1,000 m). Less than 9.8 m/sec^2 (1.0 G).	

Power Terminal Block

DB Resistor (Optional)

P1(+) P2(+) B N(-)

3 phase AC input
(380/440Vac)
(50/60Hz)

MCCB ACR MC

R
S
T
E

U
V
W

LSLV-L100

M

ENC

Control Terminal Block

Emergency backup power 220 VAC — Insulation transformer

AC1
AC2

Encoder Add-on Module
- EnDat
- SIN/COS
- Incremental Pulse

Safety circuit
24 V output
Form A Contact input
Form B Contact input

SC
SA
SB

FWD. run/stop command — FX
REV. run/stop command — RX
Emergency stop — BX
Reset — RST

SW2
ON OFF
(120Ω)

CNH — CAN+
CNL — CAN-
CNS — Common

CAN Communication

A01 — Multifunc. output1
A02 — Multifunc. output2
GND — Common

Analog output
(-10~+10V)

Multifunc. input 1 — P1
Multifunc. input 2 — P2
Multifunc. input 3 — P3
Multifunc. input 4 — P4
Multifunc. input 5 — P5
Multifunc. input 6 — P6
Multifunc. input 7 — P7
Common — CM

SW1
PNP
NPN

Multifunction input

ELIO Add-on Module

SW1
PNP
NPN

30A
30C
30B

Fault contact output
AC 250V, 1A
DC 30V, 1A

I_D
I_U
DLS
ULS
RV1
RV2
SD1
SU1
SD2
SU2
DAC
RV3
CM

CAR OPERATION INPUT

FS0
FS1
FS2
FS3
FS4
DER
FID
UND
MCA
MCC
BKA
BKC
EXG

CAR OPERATION OUTPUT

A1
C1
A2
C2
A3
C3
A4
C4

Multifunction output
AC 250V, 1A
DC 30V, 1A

Standard voltage (+12V) — VR
Analog input 1 (-10V~+10V) — V1
Analog input 2 (0V~20mA) — I1
Common — GND

FAULT OUTPUT

● : Power terminal ■ : Inverter ground ○ : Control terminal

Main Power Terminal

Main Power Terminal Arrangement

LSLV-L100 (5.5~22kW)

| R | S | T | P1 (+) | P2 (+) | B | N (-) | U | V | W |

E
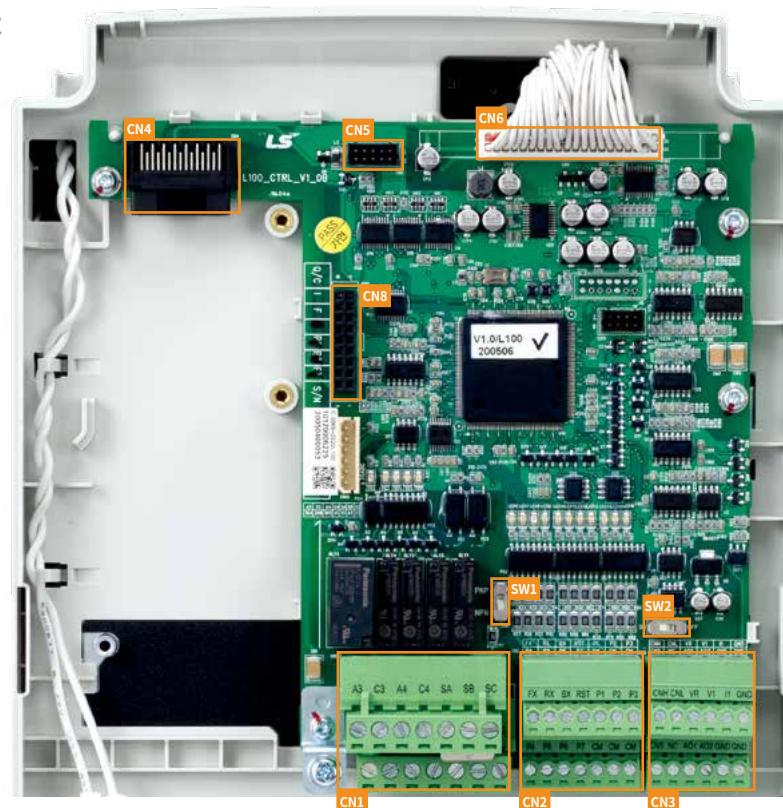
Main Power Terminal Descriptions

Terminal	Name	Description
R/S/T (L1/L2/L3)	AC power input terminals	3-phase AC power connection.
P1 (+)	DC link P(+) terminal	DC link wiring connections. (P1 and P2 terminals are jumped together when a DC reactor is not used)
P2(+)	DC link P(+) terminal	
N(-)	DC link N(-) connection	Common terminal for DC link connection
B	Brake resistor terminal	Brake resistor wiring connection. (Connect a brake resistor to P2 and B terminals)
U/V/W	Output terminals to motor	3-phase motor (induction motor, synchronous motor) wiring connections.

⚠ • Both P1 (+) and P2 (+) terminals are for DCP (+) connections.
• N (-) terminal is for DCN (-) connection. It is not a "neutral" contact.

Control Power Terminal

Control Power Terminal Arrangement

CN1 Terminal Descriptions

A3	C3	A4	C4	SA	SB	SC
30A	30B	30C	A1	C1	A2	C2

CN2 Terminal Descriptions

FX	RX	BX	RST	P1	P2	P3
P4	P5	P6	P7	CM	CM	CM

CN3 Terminal Descriptions

CNH	CNL	VR	V1	I1	GND
CNS	-	AO1	AO2	GND	GND

SW1 (PNP/NPN) Switch
SW2 (120Ω ON/OFF) Switch

Control Board Descriptions
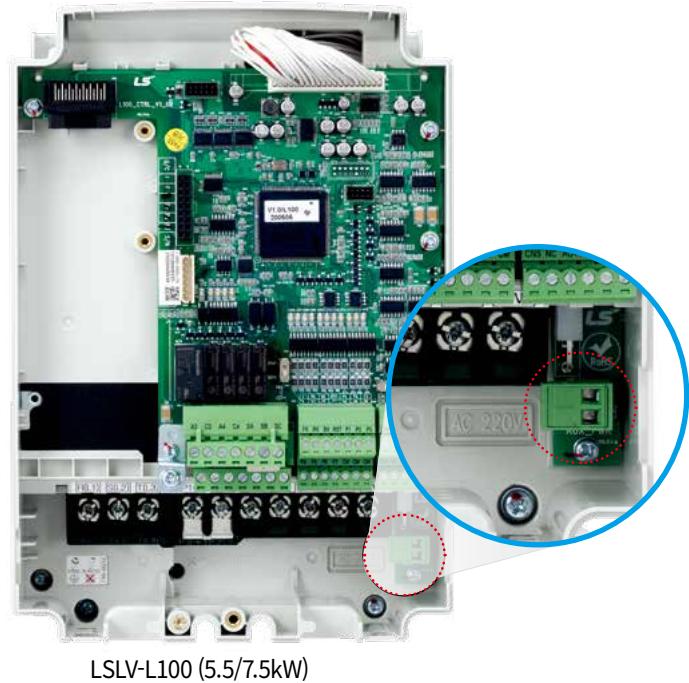
Function	Label	Name	Description
Control board	CN1	Terminal output	Connector for fault relay (30A, 30B, 30C), multifunction terminal output (A1/C1 – A4/C4), and safety circuit terminal input (SA, SB, SC)
	CN2	Terminal input	Connector for digital terminal input: FX, RX, BX, RST, P1 –P7
	CN3	Analog I/O	Connector for analog terminal input (V1, I1), analog terminals output (AO1, AO2), and CAN communication
	CN4	Add-on module connector	Use this connector when using add-on module boards.
	CN5	Keypad connector	Connects to keypad.
	CN6	Power board connector	Connects to power board.
	CN8	ELIO add-on module connector	Use this connector when using ELIO add-on module boards.
	SW1 [Note 1]	Digital input NPN/PNP selection switch	NPN/PNP mode selection switch Up: PNP, Down: NPN (default)
	SW2 [Note 2]	Communication terminating resistor switch	For connecting the terminating resistor (120 Ω) when the inverter is connected to the end of communication node. Left: Terminating resistor ON Right: Terminating resistor OFF (default)

Note1) Refer to "Step 8 NPN/PNP mode selection for detailed information.
Note2) Refer to "Step 9 Setting terminating resistor" for detailed information.

Control Power Terminal Descriptions

Function	Label		Name	Description
CN2 Terminal input	FX		Forward operation/stop command	In NPN input mode, operates when connected to CM terminal. When FX and RX are ON/OFF at the same time, the VFD stops.
	RX		Reverse operation/stop command	
	BX		Emergency stop	In NPN input mode, triggered when connected to CM terminal and operates a free run stop or deceleration stop. It does not provide a fault signal.
	RST		Fault clearance	Fault status clears when the inverter is ON after the cause of the fault is removed.
	P1		Multifunction input terminals	- Configurable for the following multifunction inputs: - Multi speed operation L/M/H - Acc/Dec time - Form B contact for external fault signal - Timer input - Cancel soft start - ASR gain switching - ASR P/PI switching - Flux command switching - Enable/disable max. torque - Enable/disable torque bias - A3 safety - Enable/disable battery operation - Disable low voltage trip detection
	P2			
	P3			
	P4			
	P5			
	P6			
	P7			
	CM		COMMON	Common terminal for analog terminal input and output. - In NPN mode, function is ON when each multifunction terminal and CM terminal are connected. - In PNP mode, function is ON when an external 24 V power source is connected to CM terminal.
CN1 Safety input	SA		Terminal for Safety Form A contact connection	Terminal for Safety Form A connection. Terminals SA and SC must be connected for inverter operation (disconnection triggers a protection feature).
	SB		Terminal for Safety Form B contact connection	Terminal for Safety Form BA connection. Terminals SB and SC must be connected for inverter operation (disconnection triggers a protection feature).
	SC		Safety 24 V power	24 V power supply for safety A/B connections.
CN3 Analog input	VR		Potentiometer for analog input	Maximum output voltage: +12 V / Potentiometer: 10 kΩ
	V1		Voltage input	Used for voltage input applications: -10→10 V, 10→-10 V, 0→10 V, 10→0 V
	I1		Current input	Used for current input applications: 0→20 mA, 20→0 mA
	GND		COMMON	Common terminal for analog terminal input.
CN3 Analog output	AO1		Analog output 1	Output voltage range: -10 V→10 V, 10 V→-10 V, 0 V→10 V, 10 V→0 V. Select one of the following: - Analog input value - Command before and after acceleration/deceleration - Speed control input command - Motor speed - Speed deviation - Motor speed follow-up - Speed control output - Torque bias - Forward direction torque limit - Reverse direction torque limit
	AO2		Analog output 2	- Torque limit during regeneration - Torque command - Torque current command - Torque current - Flux command - Flux current command - Flux current - Q-axis current control output - D-axis current control output - D-axis voltage - Q-axis voltage - Output current - Output voltage - Output power - DC-link voltage - Inverter temperature.
	GND		COMMON	Common terminal for analog terminal outputs
CN1 Multifunc-tion output	A1	C1	Multifunction output contact 1 (Form A contact)	Select one of the following: - Inverter operation available - Zero velocity detection - Speed detection - Speed detection (non-polar) - Speed arrival - Timer output - Low voltage alert - In operation - In regeneration - Inverter overheat alert - Speed agreement - Torque detection - Torque limit detection - Overload alert - Stopping - MC output - Fan fault - ALLS status - At constant speed - Brake output
	A2	C2	Multifunction output contact 2 (Form A contact)	
	A3	C3	Multifunction output contact 3 (Form A contact)	
	A4	C4	Multifunction output contact 4 (Form A contact)	
	30A		Fault signal (Form A contact)	Output signal is generated when a fault occurs. Does not output when the emergency stop is activated.
	30B		Fault signal (Form B contact)	
	30C		COMMON	Common terminal for output contacts A and B.
CN3 Analog I/O (CAN I/O)	CNH		CAN HIGH	High, low, common signal terminals for CAN communication.
	CNL		CAN LOW	
	CNS		CAN COMMON	
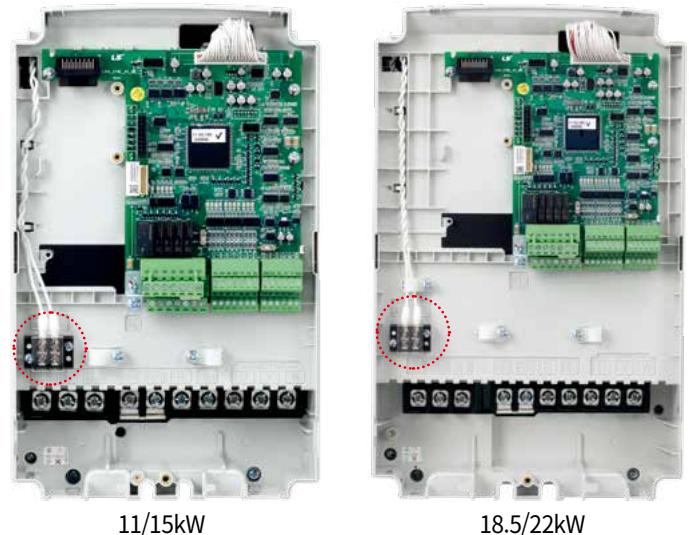
The L100 inverter includes an auxiliary power terminal block. The auxiliary terminals enable the control board to operate without mains power (R/S/T) using auxiliary control power (220 V AC).

LSLV-L100 (5.5/7.5kW)

Descriptions

Label	Name	Description	Voltage
AC1, AC2	Auxiliary input voltage	Used to connect to single phase AC input voltage.	220V(-10 ~ +10%), 50/60Hz

11/15kW

18.5/22kW

LED for Status Display
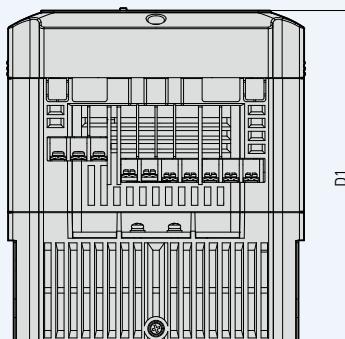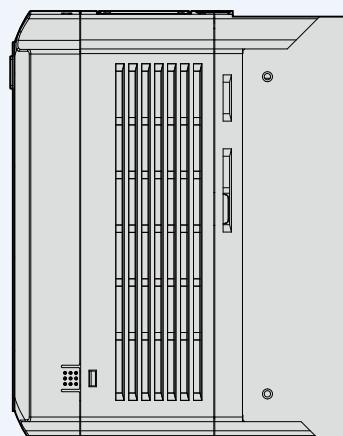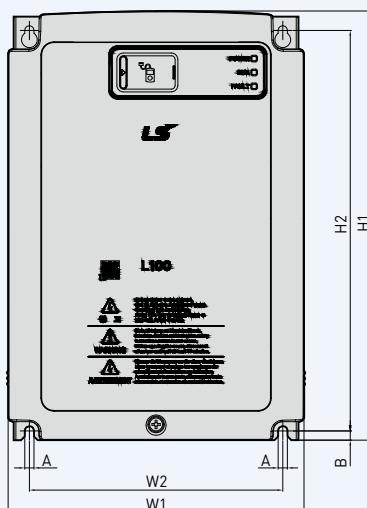
	Indicator	Color	Description
❶	POWER	GREEN	Turns on when power is supplied to the control board.
❷	RUN	BLUE	Turns on when power is supplied to the control board.
❸	FAULT	RED	Flashes in 0.5 second intervals when the inverter operation is abnormal.

Dimensions

**LSLV-L100
(5.5~22kW)**

mm(inches)

Drive Capacity	W1	W2	H1	H2	D1	A	B	Weight[kg (lbs)]
LSLV055L100-4	160 [6.30]	137 [5.39]	232 [9.13]	217 [8.54]	181 [7.16]	5 [0.20]	5 [0.20]	3.3 (7.3)
LSLV075L100-4								3.4 (7.5)
LSLV110L100-4	180 [7.09]	157 [6.18]	290 [11.42]	274 [10.79]	205 [8.07]	5 [0.20]	5 [0.20]	4.6 (10.2)
LSLV150L100-4								4.8 (10.6)
LSLV185L100-4	220 [8.66]	194 [7.64]	350 [13.78]	331 [13.78]	223 [8.78]	6 [0.24]	6 [0.24]	7.5 (16.6)
LSLV220L100-4								8.0 (17.7)

Incremental Encoder

For more information, please refer to the Incremental Encoder Option User Manual.

PCB Board and Terminals

CN2

5PE	12PE	15PE	GE	GE	GE
A+[PA]	A-	B+[PB]	B-	GE	GE

CN3

RA	RG	RB	RG

JP1 switch (LD/OC select)

- LD : Line Drive Type Encoder select
- OC : Open Collector (or Complementary) Type Encoder select

Terminal Descriptions

Item		Indication	Name	Description
Encoder signal	Input pulse (CN2)	5PE	+5 V power	+5 V line drive power for encoder
		12PE	+12 V power	+12 V open collector power for encoder
		15PE	+15 V power	+15V open collector power for encoder
		GE	Ground	Ground for encoder power
		A+[PA] / A-	Encoder phase A signal	For a line drive encoder, connect output signal cables for phases A+ and A-. Open collector (or complementary) encoders utilize A+[PA] signals and GE.
		B+[PB] / B-	Encoder phase B signal	For a line drive encoder, connect output signal cables for phases B+ and B-. Open collector (or complementary) encoders utilize B+[PB] signals and GE.
	Output pulse (CN3)	RA	Encoder phase A return signal	Terminal for encoder phase A return signal
		RB	Encoder phase B return signal	Terminal for encoder phase B return signal
		RG	Ground	Ground for encoder return signals

Note) • Comply with the encoder's power specifications when connecting the cables. Faulty cable connections may damage the encoder.
• The LED indicator will flash in 1 second intervals if the cable connections and parameter settings are correct.

EnDat Encoder

For more information, please refer to the EnDat Encoder Option User Manual.

PCB Board and Terminals

CN2

5PE	5PE	GE	GE	SIN+	SIN-
COS+	COS-	DATA+	DATA-	CLK+	CLK-

CN3

RA	RG	RB	RG

Terminal Descriptions

Item	Indication		Name	Description
EnDat Encoder input (CN2)	5PE		Encoder power	+5 V encoder power
	GE			0V
	SIN+	SIN-	Encoder SIN signal	Encoder's SIN+/SIN- signal
	COS+	COS-	Encoder COS signal	Encoder's COS+/COS- signal
EnDat Communication (CN2)	DATA+	DATA-	Encoder data	Data input and output signals for receiving pole position data from the EnDat encoder. Used in ECN413 and ECN1313 encoders.
	CLK+	CLK-	Encoder clock	Clock signal for receiving data from the EnDat encoder. Used in ECN413 and ECN1313 encoders.
Encoder output (CN3)	RA		Encoder output phase A	Encoder A/B phase output signal Open collector output
	RB		Encoder output phase B	
	RG		Common output terminal	

Endat Specifications

Encoder type	ECN413(EnDat01 Note 1)), ECN1313(EnDat01 Note 1)), ERN487 Note 2), ERN1387 Note 2)
Encoder pulse numbers	2048

Note1) EnDat01 is HEIDENHAIN Ordering Code and support EnDat 2.2 interface.
Note2) When applying ERN series encoder in EnDat encoder option, set PAR_23 Enc Type to Sin/Cos_All and use only SIN/COS signal.

SIN/COS Encoder

For more information, please refer to the SIN/COS Encoder Option User Manual.

PCB Board and Terminals

CN2

5PE	5PE	GE	GE	SIN+	SIN-
COS+	COS-	SIN2+	SIN2-	COS2+	COS2-

CN3

RA	RG	RB	RG

Terminal Descriptions

Item	Indication		Name	Description
SIN/COS Encoder input (CN2)	5PE		Encoder power	+5 V encoder power
	GE			0V
	SIN+	SIN-	Encoder SIN signal	Encoder's SIN+/SIN- signal
	COS+	COS-	Encoder COS signal	Encoder's COS+/COS- signal
	SIN2+	SIN2-	Encoder SIN2 signal	Encoder's SIN2+/SIN2- signal
	COS2+	COS2-	Encoder COS2 signal	Encoder's COS2+/COS2- signal
Encoder output (CN3)	RA		Encoder output phase A	Encoder A/B phase output signal Open collector output
	RB		Encoder output phase B	
	RG		Common output terminal	

SIN/COS Specifications
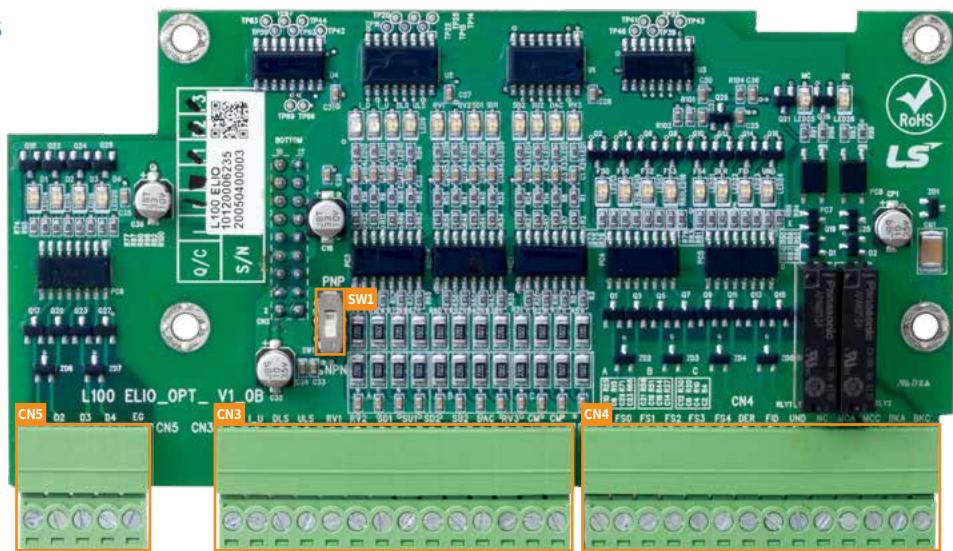
Encoder type	ECN413(SIN/COS) [Note 1], ECN1313(SIN/COS) [Note 1], ERN487 [Note 1], ERN1387
Encoder pulse numbers	2048

Note1) When using the ECN series encoder in the SIN/COS encoder option, set PAR_23 Enc Type to 'Sin/Cos_All' and use only SIN/COS signals.

Elevator I/O Option

For more information, please refer to the Elevator I/O Option User Manual.

PCB Board and Terminals

CN3

I_D	I_U	DLS	ULS	RV1	RV2	SD1	SU1	SD2	SU2	DAC	RV3	CM	CM

CN4

EXG	FS0	FS1	FS2	FS3	FS4	DER	FID	UND	NC	MCA	MCC	BKA	BKC

CN5

D1	D2	D3	D4	EG

SW1 setting (PNP/NPN selection)

- PNP: Operates with an external 24 V power supply.
- NPN: Operates internally connected to CM. (Default: NPN)

Terminal Descriptions
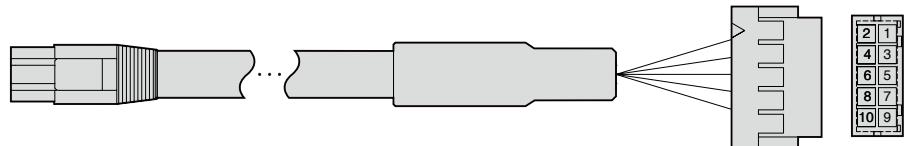
Item	Indication	Name	Description
Elevator terminal input	I_D	Downside inductor signal	Downside inductor signal for detecting car position
	I_U	Upside inductor signal	Upside inductor signal for detecting car position
	DLS	Down Limit Switch	Car descent limit switch. Descending of a car is prohibited when the switch is turned on.
	ULS	Up Limit Switch	Car ascent limit switch. The car is prohibited from ascending when the switch is turned on.
	RV1	Reserved	
	RV2	Reserved	
	SD1	Downside Deceleration Switch 1	1st Deceleration Switch for forced deceleration while descending
	SU1	Upside Deceleration Switch 1	1st Deceleration Switch for forced deceleration while ascending
	SD2	Downside Deceleration Switch 2	2nd Deceleration Switch for forced deceleration while descending
	SU2	Upside Deceleration Switch 2	2nd Deceleration Switch for forced deceleration while ascending
	DAC	Deceleration approval signal	Deceleration approval signal for the controller
	RV3	Reserved	
	CM	COMMON	Turned ON when each terminal input is connected to CM (24G).
Elevator terminal output	EXG	COMMON	Common ground for each terminal output.
	FS0	Requested floor for stop / current floor bit 0	Data format for requested floor for stop / current floor (Floors 1 – 32)
	FS1	Requested floor for stop / current floor bit 1	Bit4 Bit3 Bit2 Bit1 Bit0
	FS2	Requested floor for stop / current floor bit 2	FS4 FS3 FS2 FS1 FS0
	FS3	Requested floor for stop / current floor bit 3	Floor 1 : OFF OFF OFF OFF OFF
	FS4	Requested floor for stop / current floor bit 4	Floor 32 : ON ON ON ON ON
	DER	Signal for requesting deceleration approval	When this signal is input, the controller outputs the deceleration approval signal (DAC) if the requested floor for a stop matches the calling floor.
	FID	Floor identification signal	ON: Requested floor for a stop (previous floor), OFF: Current floor
	UND	Deceleration signal	Turns ON when the motor is decelerating.
	MCA/ MCC	Contactor operation relay Form A contact	Operates the contactor for shutting down the inverter output.
	BKA/ BKC	Brake operation relay Form A contact	Operates the traction machine brake.
Fault output	D1	Fault information BIT0 (LSB)	Outputs 4-bit fault data when the inverter is malfunctioning. Elevator faults have priority in the output over inverter faults. Set one of the multifunction outputs AX1 – AX4 to "E/L Fault" to distinguish elevator faults from inverter faults. When a fault occurs, it is an elevator fault if the multifunction terminal set to "E/L Fault" is ON; it is an inverter fault if the multifunction terminal set to "E/L Fault" is OFF.
	D2	Fault data BIT 1	
	D3	Fault data BIT 2	
	D4	Fault data BIT 3	
	EG	COMMON	Common ground for open collector outputs for faults.

<Output codes for elevator faults>

Fault	D4	D3	D2	D1
No Fault	OFF	OFF	OFF	OFF
FHM RUN Fail	OFF	OFF	OFF	ON
Flr Data Fail	OFF	OFF	ON	OFF
ChkSum Err	OFF	OFF	ON	ON
NotRdy (E/L)	OFF	ON	OFF	OFF
Decel	OFF	ON	OFF	ON
Acc/Dec	OFF	ON	ON	OFF
SDS Error	OFF	ON	ON	ON
IND Reverved	ON	OFF	OFF	OFF
Indicator Fail	ON	OFF	OFF	ON
CmdSrc	ON	OFF	ON	OFF
NotRdy (FHM)	ON	OFF	ON	ON

<Output codes for inverter faults>

Fault	D4	D3	D2	D1
No Fault	OFF	OFF	OFF	OFF
Arm Short	OFF	OFF	OFF	ON
FAN Error	OFF	OFF	ON	OFF
Ground Fault	OFF	OFF	ON	ON
Over Current	OFF	ON	OFF	OFF
Over Voltage	OFF	ON	OFF	ON
Encoder Err / EnDat Error	OFF	ON	ON	OFF
Low Voltage / Low Voltage2	OFF	ON	ON	ON
Inv OverHeat	ON	OFF	OFF	OFF
E-Thermal / Over Load	ON	OFF	OFF	ON
Input PO / Output PO	ON	OFF	ON	OFF
Ext. Trip-B	ON	OFF	ON	ON
Inv. OLT	ON	ON	OFF	OFF
Mag Det Err	ON	ON	OFF	ON
InvThem OP	ON	ON	ON	OFF
Over Speed Spd Dev Err	ON	ON	ON	ON

LCD Keypad

Type	Description
LCEN-L100	LCD Keypad with L100 Remote Connection (iV5 Common)
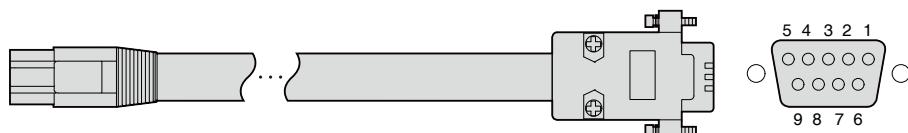
## L100 Keypad Remote Cable

Type	Description
A2MT-L100	L100 LCD Keypad Remote Cable, 2m
A3MT-L100	L100 LCD Keypad Remote Cable, 3m
A5MT-L100	L100 LCD Keypad Remote Cable, 5m

※ LCD Keypad and Remote Cable are composed of a set

L100 RS232 COM Cable

Type	Description
S2MT-L100	L100 RS232 to COM connection cable, 2m

Compatible Circuit Breaker, Leakage Breaker and Magnetic Contactor Models (Manufactured by LS ELECTRIC)

Motor Capacity(kW)	Drive Type	Circuit Breaker / Leakage Breaker	Magnetic Contactor
5.5	LSLV055L100-4	TD125U/30A, EBS33b30A	MC-32a
7.5	LSLV075L100-4	TD125U30A, EBS33b30A	MC-32a
11	LSLV110L100-4	TD125U/50A, EBS53b50A	MC-40a
15	LSLV150L100-4	TD125U/60A, EBS103b60A	MC-50a
18.5	LSLV185L100-4	TD125U/80A, EBS103b80A	MC-65a
22	LSLV220L100-4	TD125U/100A, EBS103b100A	MC-65a

※ For detailed order types, refer to the circuit breakers and earth leakage breakers catalog.

AC Input Fuse, AC Reactor and DC Reactor Specifications

Motor Capacity(kW)	Drive Type	AC Input Fuse	AC Reactor	DC Reactor
5.5	LSLV055L100-4	32 A, 600V	1.22 mH, 19 A	3.20 mH, 17 A
7.5	LSLV075L100-4	35 A, 600V	0.78 mH, 27 A	2.50 mH, 25 A
11	LSLV110L100-4	50 A, 600V	0.59 mH, 35 A	1.90 mH, 32 A
15	LSLV150L100-4	63 A, 600V	0.46 mH, 44 A	1.40 mH, 41 A
18.5	LSLV185L100-4	70 A, 600V	0.40 mH, 52 A	1.00 mH, 49 A
22	LSLV220L100-4	100 A, 600V	0.30 mH, 68 A	0.70 mH, 64 A

※ The peripheral devices cannot be used if the symmetrical current exceed 35kA at the drive maximum rated voltage.

Braking Resistor Specifications

The standard for braking torque is 150% and the working rate (%ED) is 5%[Note 1].
If the working rate is 10%, the rated capacity for braking resistance must be calculated at twice the standard.

Drive Type	Catacity (5% ED)	
	[Ω]	[W][Note 2]
LSLV055L100-4	85	800
LSLV075L100-4	60	1200
LSLV110L100-4	40	2400
LSLV150L100-4	30	2400
LSLV185L100-4	20	3600
LSLV220L100-4	20	3600

Note 1) ED is based on 100 seconds.
Note 2) Rated capacity is based on the self-cooled type.

Braking Resistor Wiring

A temperature sensor is installed to the LS braking resistor to prevent fire.
Refer to the followings when using the braking resistor.

Terminal type	Terminals on the braking resistor	Terminals on the inverter	Operation
Power	B1, B2	P2(+), B	-
Control	T1, T2	P7, CM	Define one of multifunction input terminals (P1–P7) on the control terminal as "external trip signal contact B". The contact is ON in a room temperature and becomes OFF when overheated.

Memo

FUTURING SMART ENERGY

We open up a brighter future through
efficient and convenient energy solutions.

Safety Instructions

• For your safety, please read user's manual thoroughly before operating.

• Contact the nearest authorized service facility for examination, repair, or adjustment.

• Please contact qualified service technician when you need maintenance.
 Do not disassemble or repair by yourself!

• Any maintenance and inspection shall be performed by the personnel having expertise concerned.

• According to The WEEE Directive, please do not discard the device with your household waste.

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