

High Performance for Higher Efficiency



M5 Series Servo System

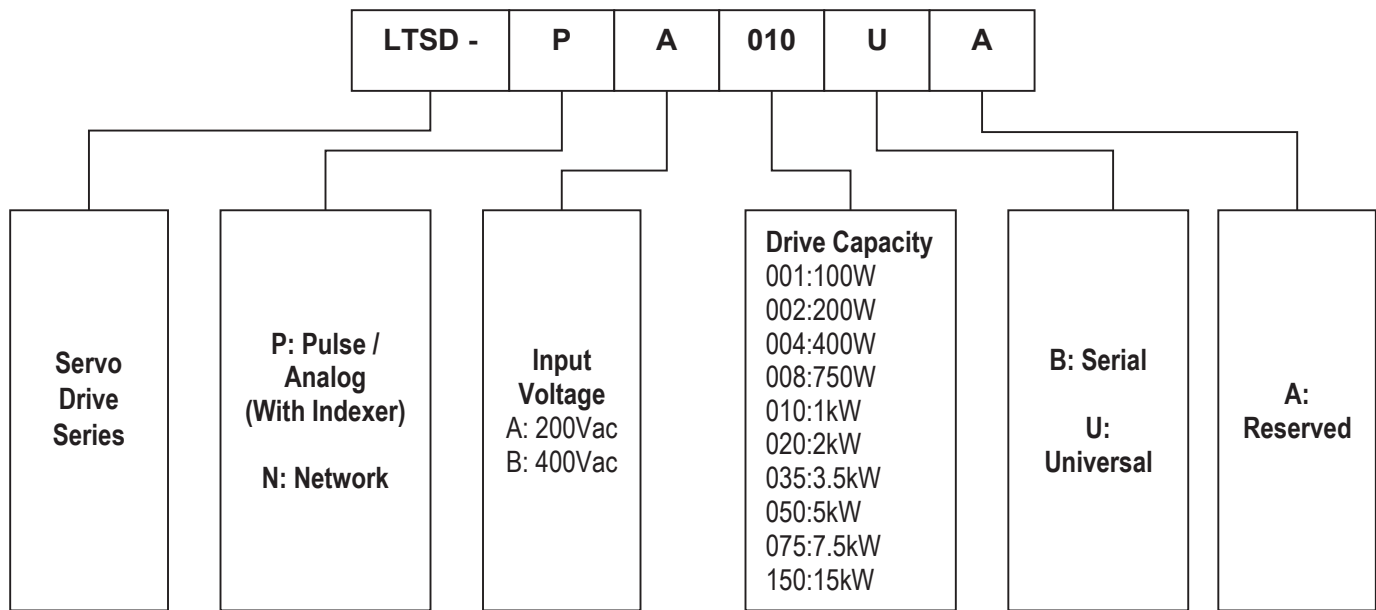
INDEX

Sr. No.	Contents	Page No.
1.	Servo Drive / Motor Designation	2
2.	Servo Drive – Identifying Parts	4
3.	Servo Drive / motor Combination Chart	7
4.	Servo Drive Characteristics	10
5.	External Dimensions of Servo Drive	15
6.	Servo Motor Characteristics	19
7.	External Dimensions of Servo Motor	24
8.	Cable & Accessories Details	28

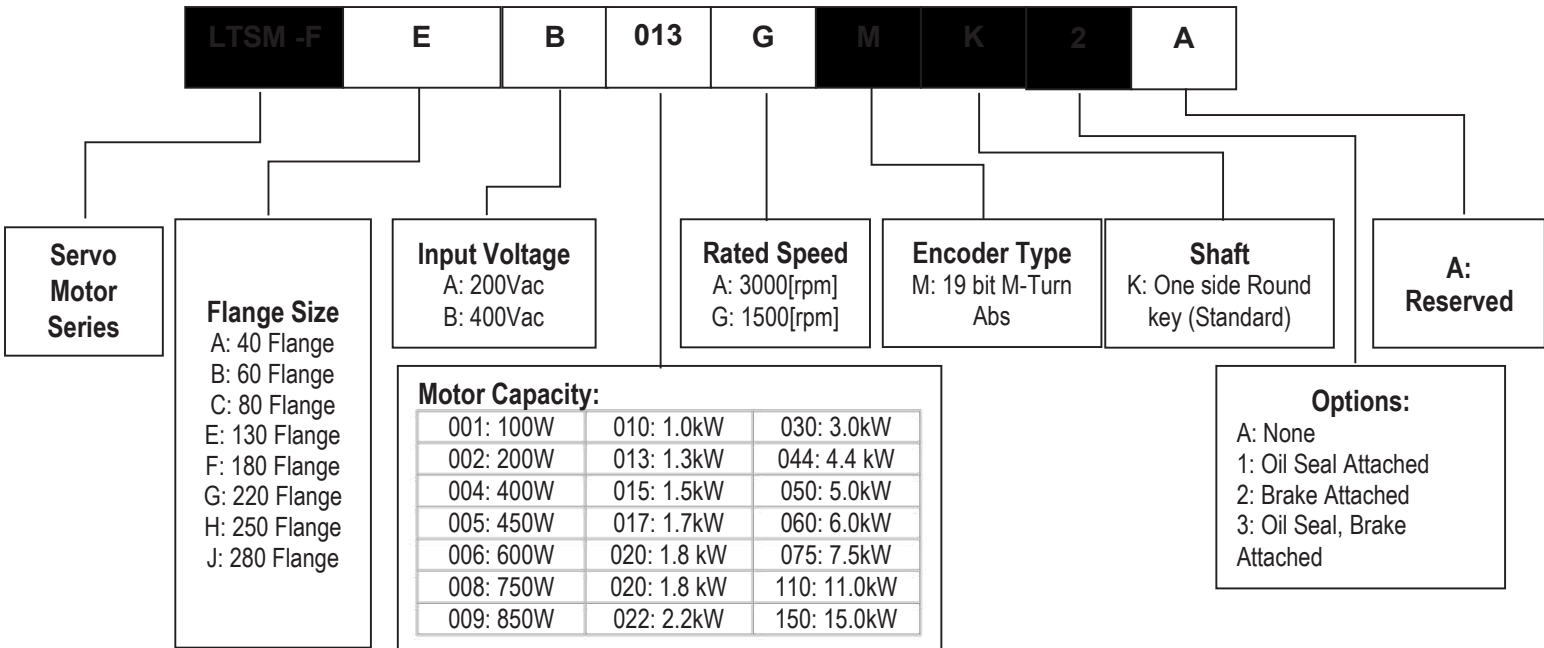
1. Servo Drive / Motor Designation



Servo Drive Designation



Servo Motor Designation



2. Servo Drive – Identifying Parts

All-in-One EtherCAT Communication Type LTSD-N

Real-time control through EtherCAT

- High speed, Real-time capability and Synchronization Mechanism
- EtherCAT communication speed (min. 250us, DC support)
- Supporting CoE, EoE and FoE
- Speed Response(=1.6kHz) Frequency

1. Display
2. State LED
3. Charge Lamp
4. Main Power Connector (L1, L2, L3)
5. DC Reactor Connector (PO, PI)
6. Regenerative Resistance Connector (B+, B, BI)
Short-Circuit B, BI terminals when standard type
Use B+, B terminals when using external resistor
7. Control Power Connector (C1, C2)
8. Servo Motor Connecting Terminal (U,V,W)
9. Connector for Analog Monitor
10. Node Address Setting Switch
11. USB Connector
12. EtherCAT Communication Port (IN)
13. EtherCAT Communication Port (OUT)
14. Safety Connector (STO)
15. Input / Output signal /Connector
16. Encoder Connector (ENCODER)
17. Ground Terminal

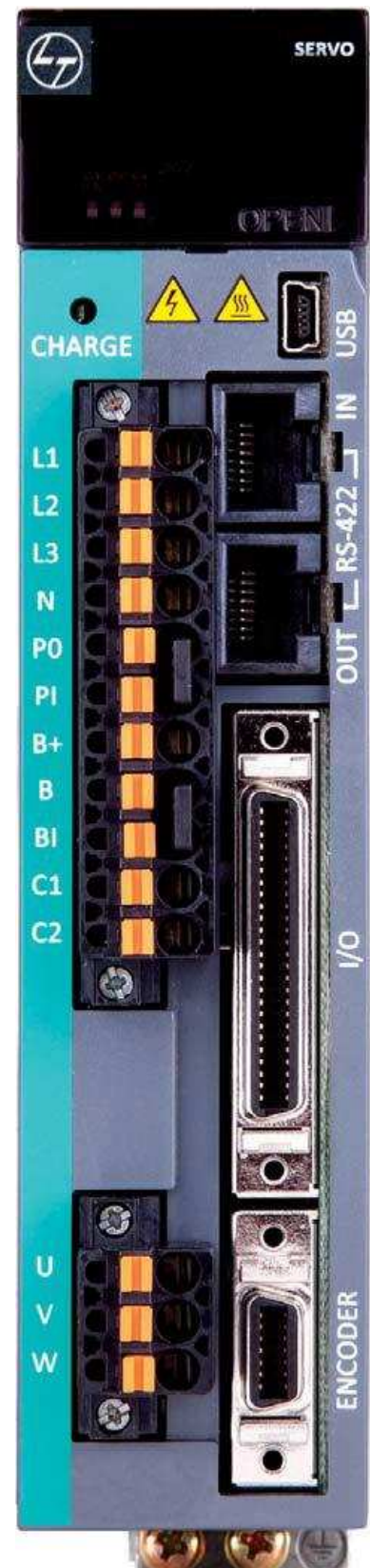


Indexer Function Type LTSD-P

Providing Program Function built-in single axis position determination module

- Supporting position control mode by pulse input
- Position control mode
- Possible to use without upper controller
- Modbus RTU Protocol (RS-422)

1. Display
2. Status LED
3. Charge Lamp
4. Main Power Connector (L1, L2, L3)
5. DC Reactor Connector(PO, PI) Short-Circuit When Not used
6. Regenerative Resistor Connector (B+, B, BI)
Short-Circuit B, BI terminals when standard type
Use B+, B terminals when using external resistor
7. Control Power connector (C1, C2)
8. Motor power connector(U, V, W)
9. Connector for analogue monitor
10. Switch for nod address setting
11. USB connector (USB)
12. RS-422 communication connector (CN3, CN4)
13. Control signal connector (I/O)
14. Encoder Connector (ENCODER)
15. Ground



3. Servo Drive / motor Combination Chart

Drive Combination Table – 200Vac

Rated Speed [rpm]	Max. Speed [rpm]	Flange Size	Wattage	Applicable Servo Motor	Applicable Servo Drive		Encoder Cable (L=3m)		Power Cable (L=3m)			Connector				
					With Pulse	With Network	INC	Abs	Power	Brake	Power + Brake	Power	Power + Brake			
3000	5000	□60	100	LTSM-FBA001AMKAA	LTSD-PA001UA	LTSD-NA001UA	XLCS-EN03ES E-LT	XLCS-EN03ES2E-LT + XLCS-BATT36-LT	XLCS-PN03LSE-LT	XLCS-BN03QSE-LT	NA	NA	NA			
			200	LTSM-FBA002AMKAA	LTSD-PA002UA	LTSD-NA002UA										
			400	LTSM-FBA004AMKAA	LTSD-PA004UA	LTSD-NA004UA										
		□80	600	LTSM-FCA006AMKAA	LTSD-PA008UA	LTSD-NA008UA										
			750	LTSM-FCA008AMKAA	LTSD-PA008UA	LTSD-NA008UA										
			1000	LTSM-FCA010AMKAA	LTSD-PA010UA	LTSD-NA010UA										
		□130	1500	LTSM-FEA015AMKAA	LTSD-PA020UA	LTSD-NA020UA	XLCS-EN03DS E-LT	XLCS-EN03DS2E-LT + XLCS-BATT36-LT	XLCS-PN03HSE-LT	NA	XLCS-PN03NBE-LT	XLC-PF00ESE-LT (MS 3108A 20-4S)	XLC-PF00MBE-LT (MS 3108A 20-15S)			
			2200	LTSM-FEA022AMKAA	LTSD-PA020UA	LTSD-NA020UA										
			3000	LTSM-FEA030AMKAA	LTSD-PA035UA	LTSD-NA035UA										
		□180	5000	LTSM-FFA050AMKAA	LTSD-PA050UA	LTSD-NA050UA			XLCS-PN03JSE-LT		XLCS-PN03LBE-LT	XLC-PF00FSE-LT (MS 3108A 22-22S)	XLC-PF00NB-LT (MS 3108A 24-10S)			
			1500	3000	□130	450								LTSM-FEA005GMKAA	LTSD-PA008UA	LTSD-NA008UA
						850								LTSM-FEA009GMKAA	LTSD-PA010UA	LTSD-NA010UA
1300	LTSM-FEA013GMKAA	LTSD-PA020UA				LTSD-NA020UA										
1700	LTSM-FEA017GMKAA	LTSD-PA020UA				LTSD-NA020UA										
3000	□180	1800	LTSM-FFA020GMKAA	LTSD-PA020UA	LTSD-NA020UA	XLCS-PN03ISE-LT			XLCS-PN03PBE-LT		XLC-PF00FSE-LT (MS 3108A 22-22S)	XLC-PF00NB-LT (MS 3108A 24-10S)				
		2700	3000	LTSM-FFA030GMKAA	LTSD-PA035UA		LTSD-NA035UA									
		3000	4400	LTSM-FFA044GMKAA	LTSD-PA050UA		LTSD-NA050UA	XLCS-PN03JSE-LT		XLCS-PN03LBE-LT			XLC-PF00FSE-LT (MS 3108A 22-22S)	XLC-PF00NB-LT (MS 3108A 24-10S)		

Drive Combination Table – 400Vac

Rated Speed [rpm]	Max. Speed [rpm]	Flange Size	Wattage	Applicable Servo Motor	Applicable Servo Drive		Encoder Cable (L=3m)		Power Cable (L=3m)			Connector			
					With Pulse	With Network	INC	Abs	Power	Brake	Power + Brake	Power	Power + Brake		
3000	5000	□130	900	LTSM-FEB009AMKAA	LTSD-PB010UA	LTSD-NB010UA	XLCS-EN03DSE-LT	XLCS-EN03DS2E-LT + XLCS-BATT36-LT	XLCS-PN03HSE-LT	NA	XLCS-PN03NBE-LT	XLC-PF00ESE-LT (MS 3108A 20-4S)	XLC-PF00MBE-LT (MS 3108A 20-15S)		
			1500	LTSM-FEB015AMKAA	LTSD-PB020UA	LTSD-NB020UA									
			2200	LTSM-FEB022AMKAA	LTSD-PB035UA	LTSD-NB035UA									
			3000	LTSM-FEB030AMKAA	LTSD-PB035UA	LTSD-NB035UA									
		□180	5000	LTSM-FFB050AMKAA	LTSD-PB050UA	LTSD-NB050UA			XLCS-PN03JSE-LT		XLCS-PN03LBE-LT	XLC-PF00FSE-LT (MS 3108A 22-22S)	XLC-PF00NB-LT (MS 3108A 24-10S)		
1500	3000	□130	450	LTSM-FEB005GMKAA	LTSD-PB010UA	LTSD-NB010UA			XLCS-EN03DS2E-LT + XLCS-BATT36-LT	XLCS-PN03HSE-LT	XLCS-PN03HSE-LT	NA	XLCS-PN03NBE-LT	XLC-PF00ESE-LT (MS 3108A 20-4S)	XLC-PF00MBE-LT (MS 3108A 20-15S)
			850	LTSM-FEB009GMKAA	LTSD-PB010UA	LTSD-NB010UA									
			1300	LTSM-FEB013GMKAA	LTSD-PB020UA	LTSD-NB020UA									
			1700	LTSM-FEB017GMKAA	LTSD-PB020UA	LTSD-NB020UA									
	2700	□180	1800	LTSM-FFB020GMKAA	LTSD-PB020UA	LTSD-NB020UA					XLCS-PN03ISE-LT	NA	XLCS-PN03PBE-LT	XLC-PF00FSE-LT (MS 3108A 22-22S)	XLC-PF00NB-LT (MS 3108A 24-10S)
			3000	LTSM-FFB030GMKAA	LTSD-PB035UA	LTSD-NB035UA	XLCS-PN03JSE-LT	NA			XLCS-PN03LBE-LT	XLC-PF00FSE-LT (MS 3108A 22-22S)	XLC-PF00NB-LT (MS 3108A 24-10S)		
			4400	LTSM-FFB044GMKAA	LTSD-PB050UA	LTSD-NB050UA									
			6000	LTSM-FFB060GMKAA	LTSD-PB075UA	LTSD-NB075UA									
	2200	□220	7500	LTSM-FFB075GMKAA	LTSD-PB075UA	LTSD-NB075UA	XLCS-PN03MSE-LT	NA			NA	XLC-PF00RS-LT (MS 3108A 32-17S)	NA		
			11000	LTSM-FGB110GMKAA	LTSD-PB150UA	LTSD-NB150UA									
			15000	LTSM-FGB150GMKAA	LTSD-PB150UA	LTSD-NB150UA									

4. Servo Drive Characteristics

Drive Features: LTSD-PA, 200VAC

Name Item		LTSD-PA							
		001U	002U	004U	008U	010U	020U	035U	050U
Input power	Main power	3-phase AC200 ~ 230[V](-15 ~ +10[%]), 50 ~ 60[Hz]							
	Control power	Single-phase AC200 ~ 230[V](-15 ~ +10[%]), 50 ~ 60[Hz]							
Rated current (A)		1.4	1.7	3	5.2	6.75	13.5	16.7	32
Peak current (A)		4.2	5.1	9	15.6	20.25	40.5	50.1	96
Control Performance	Speed control range	Maximum 1 : 5000							
	Frequency response	Maximum 1[kHz] or above(when 19bit Serial encoder is applied)							
	Speed change rate	±0.01 [%] or below (with load change of 0 ~ 100[%]) ±0.1[%] or below(temperature 25±10[°C]).							
	Accel / Decel Time	Straight or S-curve acceleration/deceleration (0~10,000[ms], 0~1,000[ms] Unit configurable)							
	Input Frequency	1[Mpps], line drive / 200[kpps], open collector							
	Input Pulse Type	Symbol + Pulse Series, CW+CCW, A/B Phase							
RS422 Communication Specifications	Communication Specifications	ANSI/TIA/EIA-422 Standard Specifications							
	Communication Protocol	MODBUS-RTU							
	Connector	RJ45 x 2							
	Synchro Method	Asynchronous							
	Transmission Speed	9600 /19200/38400/57600 [bps] (Can be configured at [0x3002])							
	Transmission Distance	Maximum 200 [m]							
	Power Consumption	100[mA] or below							
	Terminating Resistance	Dip S/W(On/Off), Built-In 120Ω							
Digital Input / Output	Digital Input	Input voltage range: DC 12[V] ~ DC 24[V] Total 16 input channel (selectable) 32 function inputs can be selectively allocated: (*SV_ON, *POT, *NOT, *A-RST, *START, *STOP, *REGT, *EMG, *HOME, *HSTART, *ISEL0, *ISEL1, *ISEL2, *ISEL3, *ISEL4, *ISEL5, PCON, GAIN2, P_CL, N_CL, MODE, PAUSE, ABSRQ, JSTART, JDIR, PCLR, AOVR, SPD1/LVSF1, SPD2/LVSF2, SPD3, PROBE1, PROBE2) Note) * Basic allocation signal.							
	Digital Output	Use rating: DC 24[V] ±10%, 120[mA], Total 8 input channel (selectable) 19 function inputs can be selectively allocated: (*ALARM±, *READY±, *BRAKE±, *INPOS1±, *ORG±, *EOS±, *TGON±, *TLMT±, VLMT±, INSPD±, ZSPD±, WARN±, INPOS2±, IOUT0±, IOUT1±, IOUT2± IOUT3±, IOUT4±, IOUT5±) Note) * Standard Allocation signal							
Analog Input / Output	Analog input	Total 2 channels analog speed override input(-10(V) ~ +10[V]), analog torque command input(-10(V) ~ +10(V))							
	Analog output	Total 2 channels, 15 function inputs can be selectively allocated							
USB Comm	Function	Firmware download, Parameter setting, Tuning, Secondary function, Parameter copy							
	Comm. Specifications	Complies with USB 2.0 Full Speed Specifications							
	Connection Device	PC or USB storing medium							
Internal function	Dynamic braking	Standard built-in(activated by servo alarm or servo OFF)							
	Regenerative braking	Built-in, external brake attachable							
	Display function	7 segments (5 DIGIT)							
	Self-setting function	Drive node address can be set using rotary switch							
	Additional function	Gain tuning, alarm history, JOG operation, origin search							
	Protection function	Excessive current, overload, excessive current limit, overheating, excessive voltage, low voltage, excessive speed, encoder fail, position following fail, current sensing fail							
Environment	Temperature	0 ~ +50[°C] / -20~ +65[°C]							
	Humidity	Below 90[%]RH(avoid dew-condensation)							
	Environment	Indoor, Avoid corrosive, inflammable gas or liquid, and electrically conductive dust.							

Drive Features: LTSD-PA, 400VAC

Name Item		LTSD-PB			
		010U	020U	035U	050U
Input power	Main power	3-phase AC380 ~ 480[V](-15 ~ +10[%]), 50 ~ 60[Hz]			
	Control power	Single-phase AC380 ~ 480[V](-15 ~ +10[%]), 50 ~ 60[Hz]			
Rated current (A)		3.7	8	10.1	17.5
Peak current (A)		11.1	24	30.03	47.25
Control Performance	Speed control range	Maximum 1 : 5000			
	Frequency response	Maximum 1[kHz] or above(when 19bit Serial encoder is applied)			
	Speed change rate	±0.01 [%] or below (with load change of 0 ~ 100[%]) ±0.1[%] or below(temperature 25±10[°C]).			
	Accel / Decel Time	Straight or S-curve acceleration/deceleration (0~10,000[ms], 0~1,000[ms] Unit configurable)			
	Input Frequency	1[Mpps], line drive / 200[kpps], open collector			
	Input Pulse Type	Symbol + Pulse Series, CW+CCW, A/B Phase			
RS422 Communication Specifications	Communication Specifications	ANSI/TIA/EIA-422 Standard Specifications			
	Communication Protocol	MODBUS-RTU			
	Connector	RJ45 x 2			
	Synchro Method	Asynchronous			
	Transmission Speed	9600 /19200/38400/57600 [bps] (Can be configured at [0x3002])			
	Transmission Distance	Maximum 200 [m]			
	Power Consumption	100[mA] or below			
	Terminating Resistance	Dip S/W(On/Off), Built-In 120Ω			
Digital Input / Output	Digital Input	Input voltage range: DC 12[V] ~ DC 24[V] Total 16 input channel (selectable) 32 function inputs can be selectively allocated: (*SV_ON, *POT, *NOT, *A-RST, *START, *STOP, *REGT, *EMG, *HOME, *HSTART, *ISEL0, *ISEL1, *ISEL2, *ISEL3, *ISEL4, *ISEL5, PCON, GAIN2, P_CL, N_CL, MODE, PAUSE, ABSRQ, JSTART, JDIR, PCLR, AOV, SPD1/LVSF1, SPD2/LVSF2, SPD3, PROBE1, PROBE2) Note) * Basic allocation signal.			
	Digital Output	Use rating: DC 24[V] ±10%, 120[mA], Total 8 input channel (selectable) 19 function inputs can be selectively allocated: (*ALARM±, *READY±, *BRAKE±, *INPOS1±, *ORG±, *EOS±, *TGON±, *TLMT±, VLMT±, INSPD±, ZSPD±, WARN±, INPOS2±, IOUT0±, IOUT1±, IOUT2± IOUT3±, IOUT4±, IOUT5±) Note) * Standard Allocation signal			
Analog Input / Output	Analog input	Total 2 channels analog speed override input(-10(V) ~ +10[V]), analog torque command input(-10(V) ~ +10(V))			
	Analog output	Total 2 channels, 15 function inputs can be selectively allocated			
USB Comm	Function	Firmware download, Parameter setting, Tuning, Secondary function, Parameter copy			
	Comm. Specifications	Complies with USB 2.0 Full Speed Specifications			
	Connection Device	PC or USB storing medium			
Internal function	Dynamic braking	Standard built-in(activated by servo alarm or servo OFF)			
	Regenerative braking	Built-in, external brake attachable			
	Display function	7 segments (5 DIGIT)			
	Self-setting function	Drive node address can be set using rotary switch			
	Additional function	Gain tuning, alarm history, JOG operation, origin search			
Environment	Protection function	Excessive current, overload, excessive current limit, overheating, excessive voltage, low voltage, excessive speed, encoder fail, position following fail, current sensing fail			
	Temperature	0 ~ +50[°C] / -20~ +65[°C]			
	Humidity	Below 90[%]RH(avoid dew-condensation)			
Environment		Indoor, Avoid corrosive, inflammable gas or liquid, and electrically conductive dust.			

Drive Features: LTSD-NA, 200VAC

Name Item		LTSD-NA							
		001U	002U	004U	008U	010U	020U	035U	050U
Input power	Main power	3-phase AC200 ~ 230[V](-15 ~ +10[%]), 50 ~ 60[Hz]							
	Control power	Single-phase AC200 ~ 230[V](-15 ~ +10[%]), 50 ~ 60[Hz]							
Rated current (A)		1.4	1.7	3	5.2	6.75	13.5	16.7	32
Peak current (A)		4.2	5.1	9	15.6	20.25	40.5	50.1	96
Control Performance	Speed control range	Maximum 1 : 5000							
	Frequency response	Maximum 1[kHz] or above(when 19bit Serial encoder is applied)							
	Speed change rate	±0.01 [%] or below (with load change of 0 ~ 100[%]) ±0.1[%] or below(temperature 25±10[°C]).							
	Torque Control Repetition Accuracy	Within ±1%							
EtherCAT Communication Specifications	Communication Standard	FoE (Firmware download) EoE (Parameter setting by UDP, Tuning, Secondary function, Parameter copy) CoE (IEC 61158 Type12, IEC 61800-7 CIA 402 Drive profile)							
	Physical Layer	100BASE-TX(IEEE802.3)							
	Connector	RJ45 x 2							
	Communication distance	Within connection between nodes 100[m]							
	DC(Distributed Clock)	By DC mode synchronism. minimum DC cycle: 250[us]							
	LED Display	LinkAct IN, LinkAct OUT, RUN, ERR							
	Cia402 Drive Profile	Profile Position Mode Profile Velocity Mode Profile Torque Mode Cyclic Synchronous Position Mode Cyclic Synchronous Velocity Mode Cyclic Synchronous Torque Mode Homing Mode							
Digital Input / Output	Digital Input	Input Voltage range : DC 12[V] ~ DC 24[V] Total 8 input channels (allocable) 12 functions can be used selectively for assignment. (*POT, *NOT, *HOME, *STOP, *PCON, *GAIN2, *P_CL, *N_CL, PROBE1, PROBE2, EMG, A_RST) *Basic allocation signal							
	Digital Output	Service rating: DC 24[V] ±10%, 120[mA] Total 4 input channels (allocable) Above 11 functions can be used selectively for assignment. (*BRAKE, *ALARM, *READY, *ZSPD, INPOS, TLMT, VLMT, INSPD, WARN, TGON, INPOS) *Basic allocation signal							
Safety Function		2 Input Channels (STO1, STO2), 1 Output Channels (EDM±)							
USB Comm	Function	Firmware download, Parameter setting, Tuning, Secondary function, Parameter copy							
	Comm. Specifications	Complies with USB 2.0 Full Speed Specifications							
	Connection Device	PC or USB storing medium							
Internal function	Dynamic braking	Standard built-in(activated by servo alarm or servo OFF)							
	Regenerative braking	Built-in, external brake attachable							
	Display function	7 segments (5 DIGIT)							
	Self-setting function	The [MODE] key changes the content displayed in 7 segments							
	Additional function	Auto gain tuning function							
Environment	Protection function	Overcurrent, overload, overvoltage, insufficient voltage, main power input problem, control power input problem, overspeed, motor cable, overheat(power module overheat, abnormal drive operation's temp), encoder problem, over-regenerative, sensor problem, communication problem							
	Temperature	0 ~ +50[°C] / -20~ +65[°C]							
	Humidity	Below 90[%]RH(avoid dew-condensation)							
Environment		Indoor, Avoid corrosive, inflammable gas or liquid, and electrically conductive dust.							

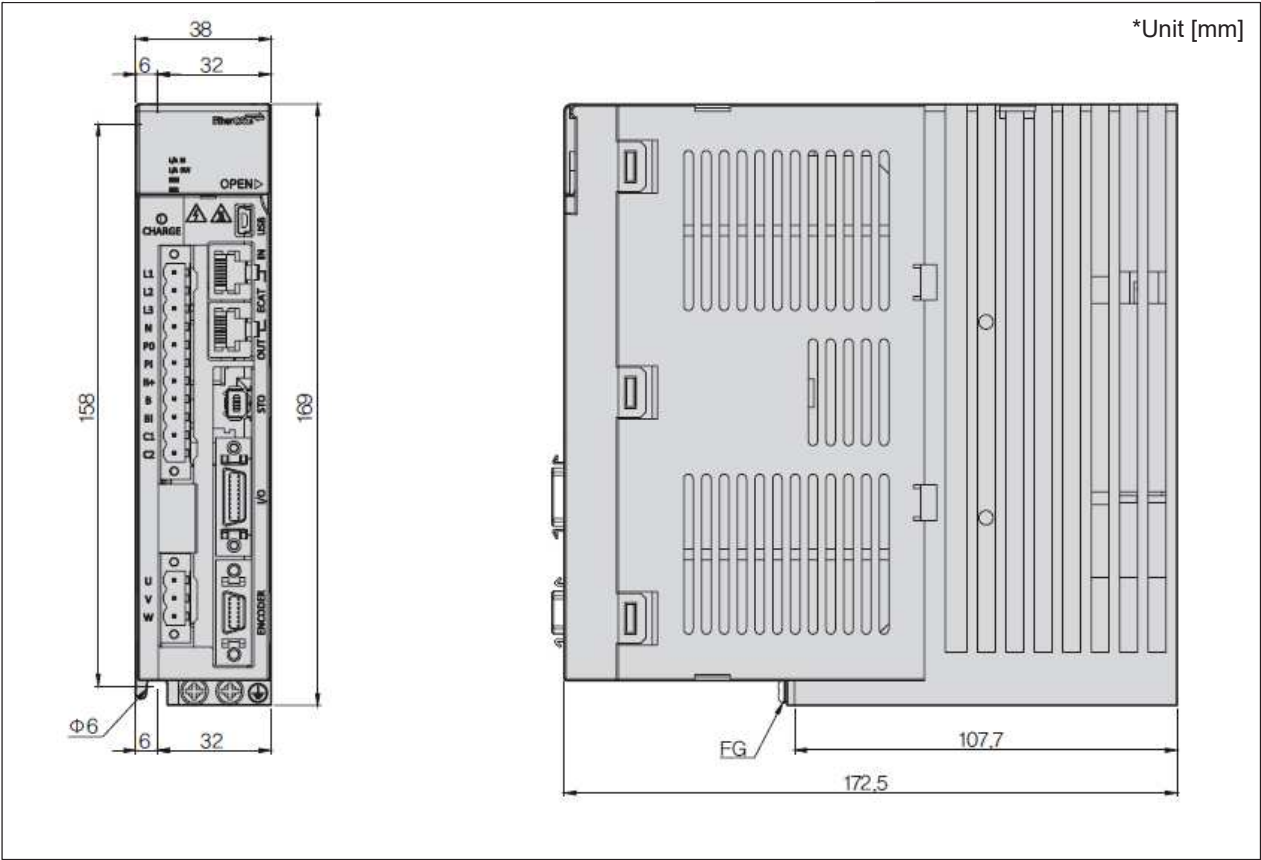
Drive Features: LTSD-NB, 400VAC

Name Item		LTSD-NB					
		010U	020U	035U	050U	075U	150U
Input power	Main power	3-phase AC380 ~ 480[V](-15 ~ +10[%]), 50 ~ 60[Hz]					
	Control power	Single-phase AC380 ~ 480[V](-15 ~ +10[%]), 50 ~ 60[Hz]					
Rated current (A)		3.7	8	10.1	17.5	22.8	39
Peak current (A)		11.1	24	30.3	47.25	57	97.5
Control Performance	Speed control range	Maximum 1 : 5000					
	Frequency response	Maximum 1[kHz] or above(when 19bit Serial encoder is applied)					
	Speed change rate	±0.01 [%] or below (with load change of 0 ~ 100[%]) ±0.1[%] or below(temperature 25±10[°C]).					
	Torque Control Repetition Accuracy	Within ±1%					
EtherCAT Communication Specifications	Communication Standard	FoE (Firmware download) EoE (Parameter setting by UDP, Tuning, Secondary function, Parameter copy) CoE (IEC 61158 Type12, IEC 61800-7 CIA 402 Drive profile)					
	Physical Layer	100BASE-TX(IEEE802.3)					
	Connector	RJ45 x 2					
	Communication distance	Within connection between nodes 100[m]					
	DC(Distributed Clock)	By DC mode synchronism. minimum DC cycle: 250[us]					
	LED Display	LinkAct IN, LinkAct OUT, RUN, ERR					
	Cia402 Drive Profile	Profile Position Mode Profile Velocity Mode Profile Torque Mode Cyclic Synchronous Position Mode Cyclic Synchronous Velocity Mode Cyclic Synchronous Torque Mode Homing Mode					
Digital Input / Output	Digital Input	Input Voltage range : DC 12[V] ~ DC 24[V] Total 8 input channels (allocable) 12 functions can be used selectively for assignment. (*POT, *NOT, *HOME, *STOP, *PCON, *GAIN2, *P_CL, *N_CL, PROBE1, PROBE2, EMG, A_RST) *Basic allocation signal					
	Digital Output	Service rating: DC 24[V] ±10%, 120[mA] Total 4 input channels (allocable) Above 11 functions can be used selectively for assignment. (*BRAKE, *ALARM, *READY, *ZSPD, INPOS, TLMT, VLMT, INSPD, WARN, TGON, INPOS) *Basic allocation signal					
Safety Function		2 Input Channels (STO1, STO2), 1 Output Channels (EDM±)					
USB Comm	Function	Firmware download, Parameter setting, Tuning, Secondary function, Parameter copy					
	Comm. Specifications	Complies with USB 2.0 Full Speed Specifications					
	Connection Device	PC or USB storing medium					
Internal function	Dynamic braking	Standard built-in(activated by servo alarm or servo OFF)					
	Regenerative braking	Built-in, external brake attachable					External
	Display function	7 segments (5 DIGIT)					
	Self-setting function	The [MODE] key changes the content displayed in 7 segments					
	Additional function	Auto gain tuning function					
	Protection function	Overcurrent, overload, overvoltage, insufficient voltage, main power input problem, control power input problem, overspeed, motor cable, overheat(power module overheat, abnormal drive operation's temp), encoder problem, over-regenerative, sensor problem, communication problem					
Environment	Temperature	0 ~ +50[°C] / -20~ +65[°C]					
	Humidity	Below 90[%]RH(avoid dew-condensation)					
	Environment	Indoor, Avoid corrosive, inflammable gas or liquid, and electrically conductive dust.					

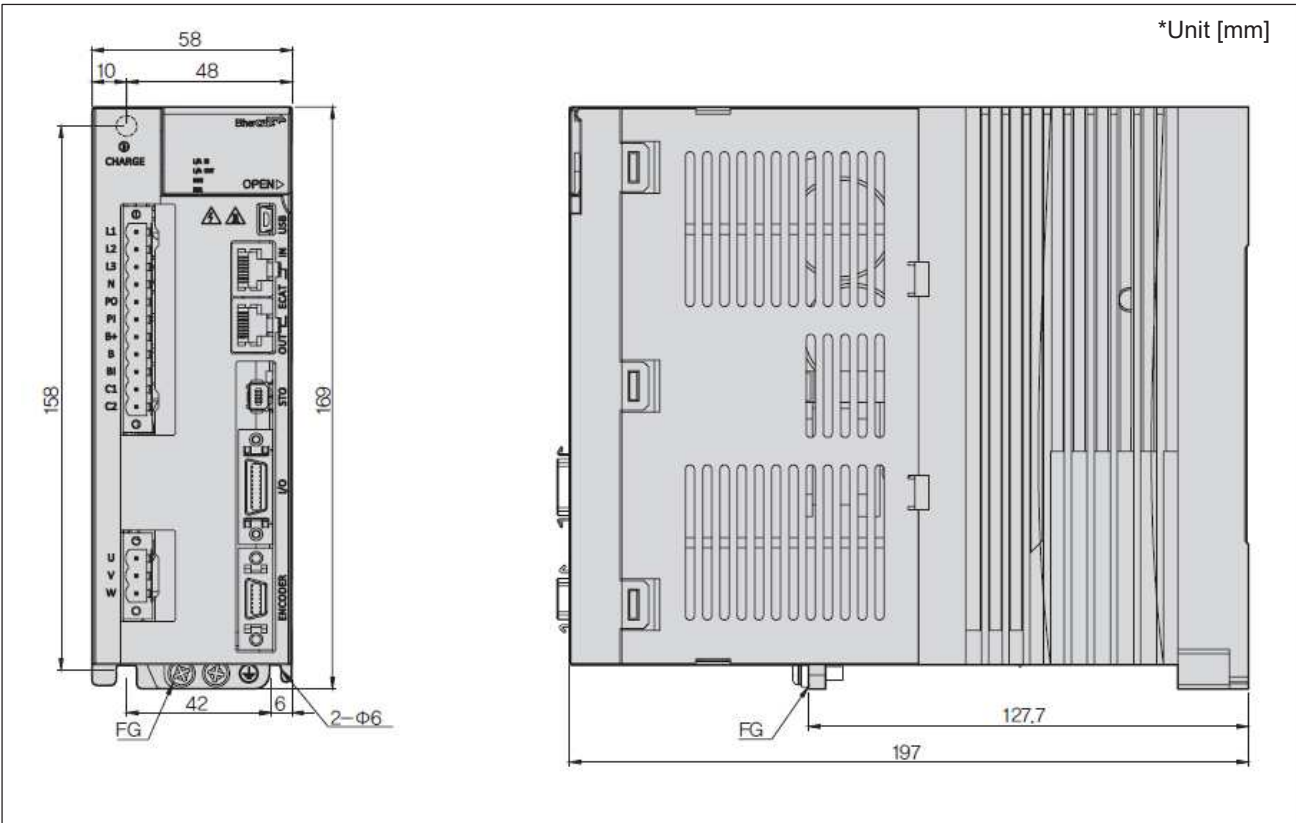
5. External Dimensions of Servo Drive

External Dimensions

100W-400W, [Weight: 1.0kg]

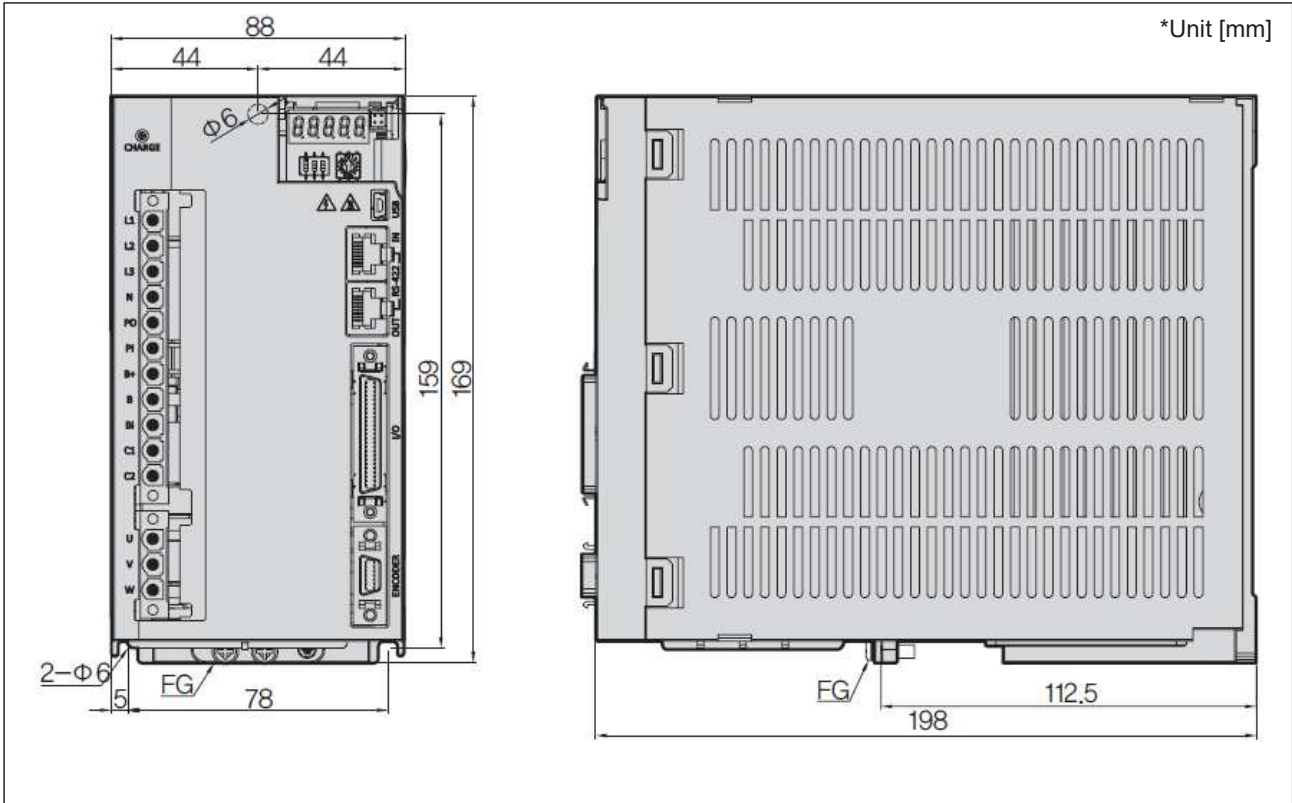


750W-1.0kW, [Weight: 1.5kg]

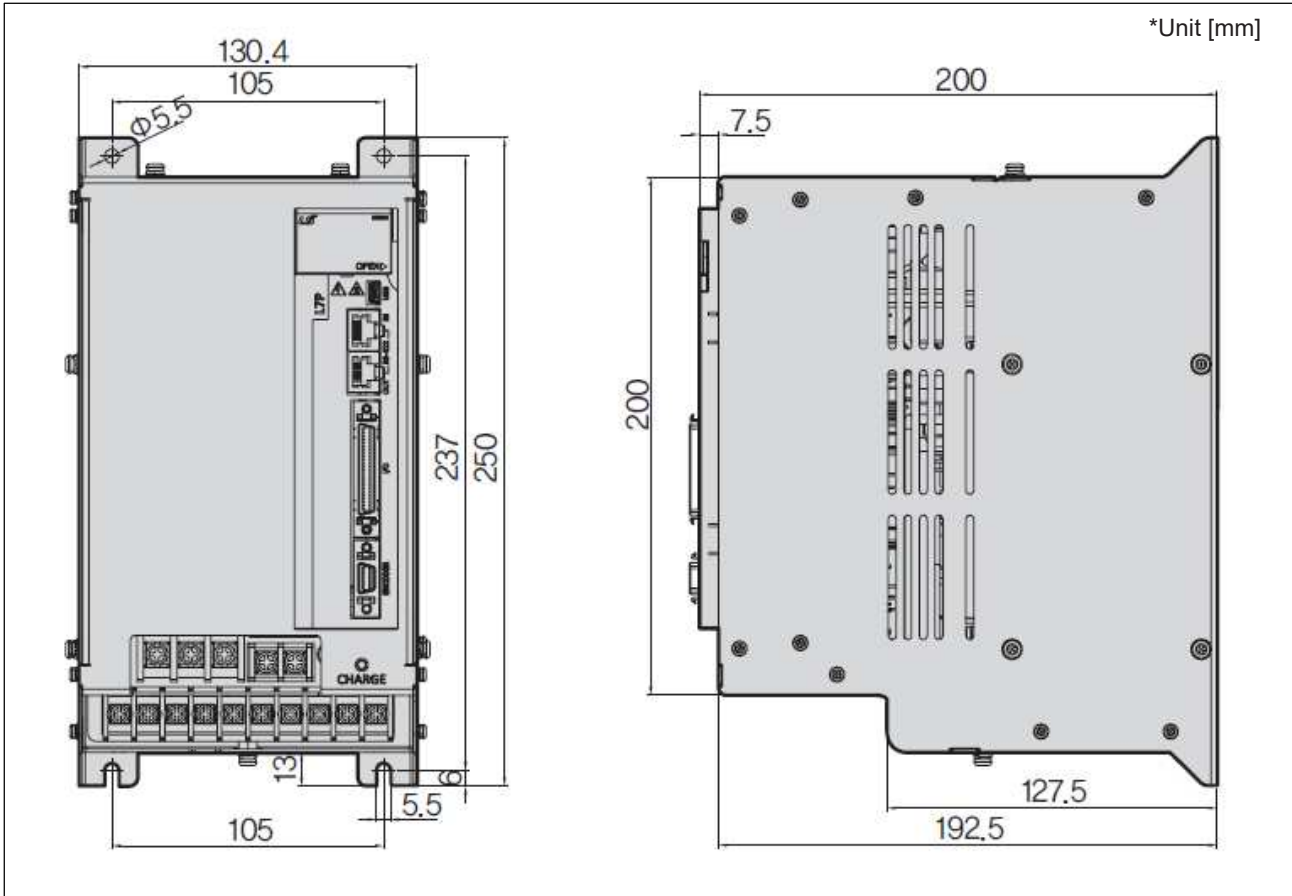


External Dimensions

2.0kW-3.5kW, [Weight: 2.5kg]

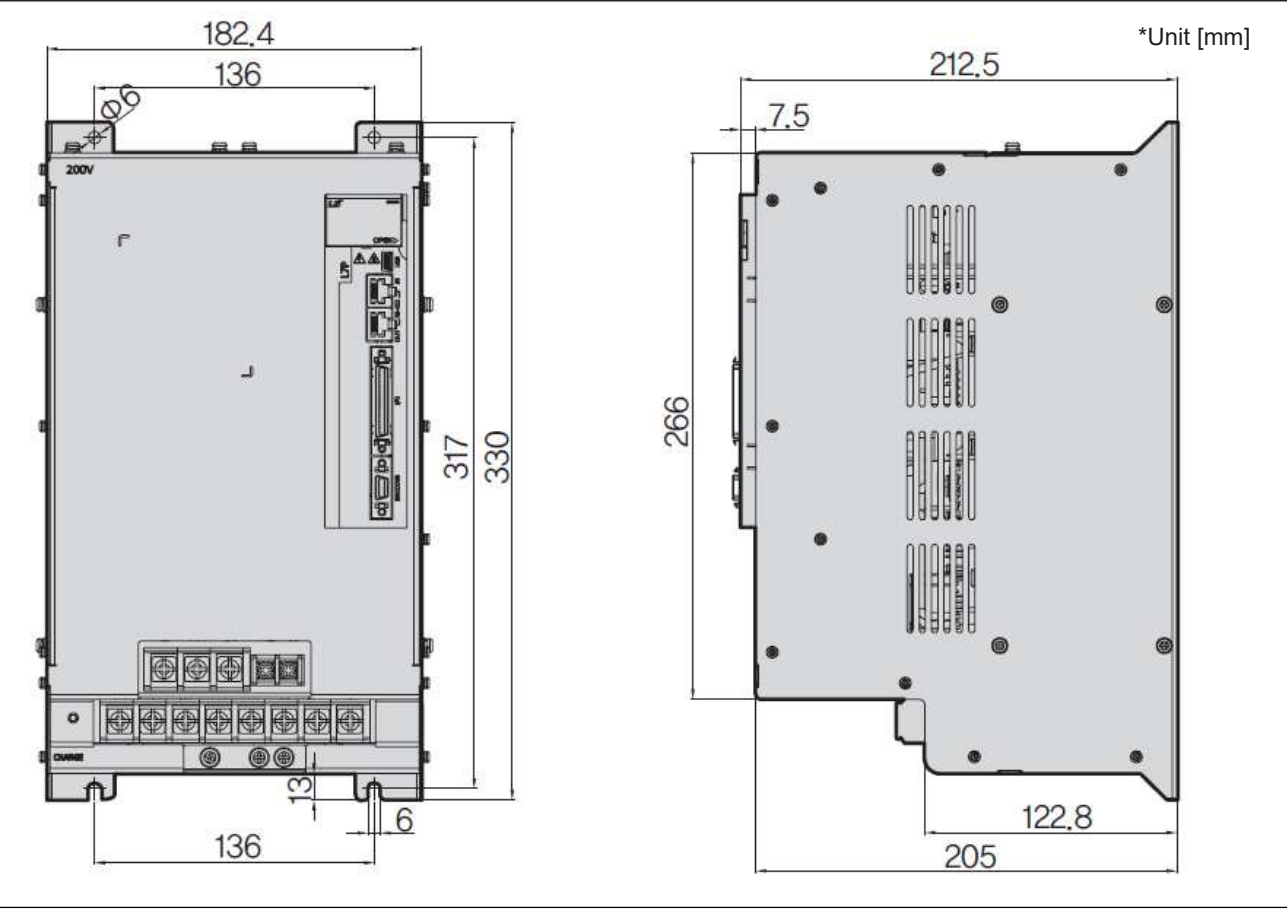


5.0kW, [Weight: 5.5kg]

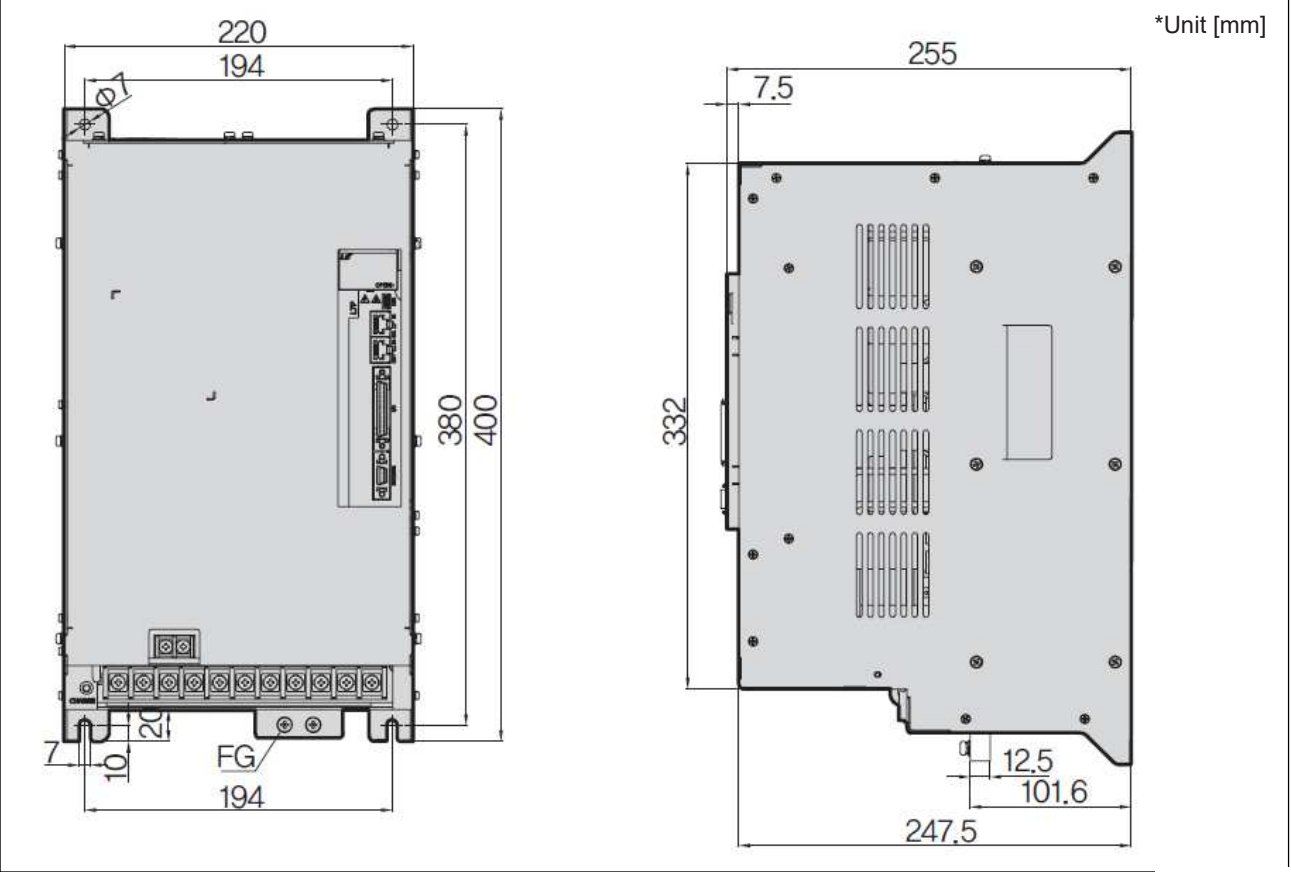


External Dimensions

7.5kW, [Weight: 8.5kg]



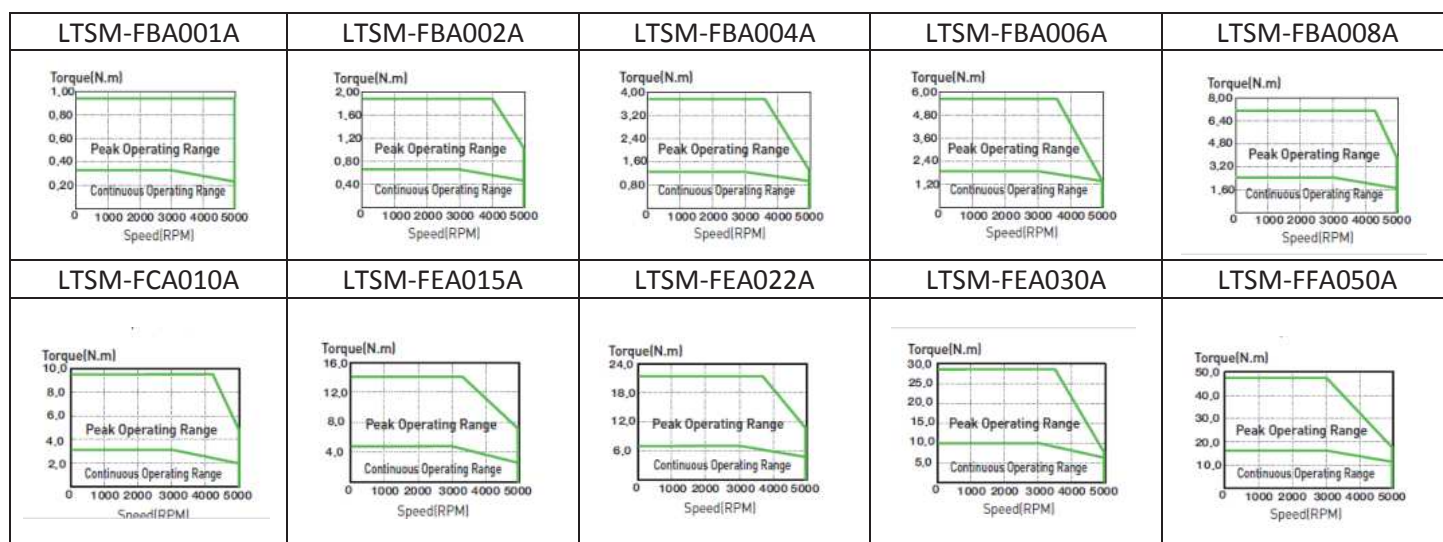
15.0kW, [Weight: 15.5kg]



6. Servo Motor Characteristics

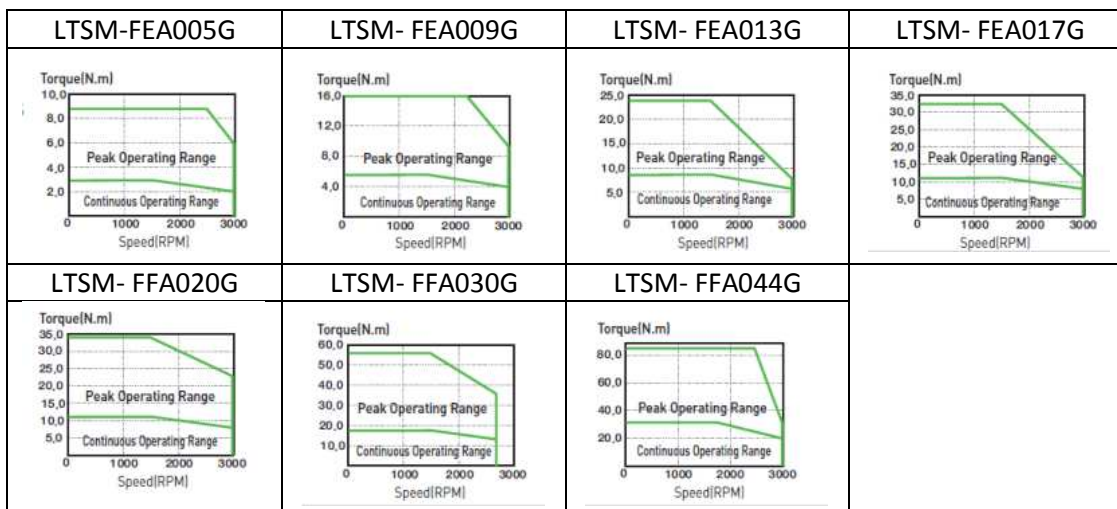
200vac Motor Specifications [Rated: 3000rpm]

Servo Motor (LTSM-□□□□□□□)		FBA 001A	FBA 002A	FBA 004A	FCA 006A	FCA 008A	FCA 010A	FEA 015A	FEA 022A	FEA 030A	FFA 050A
Applicable Drive (LTSD-□□□□□□□)		□A001U	□A002U	□A004U	□A008U		□A010U	□A020U		□A035U	□A050U
Flange[□]		□60			□80			□130			□180
Rated Output	[kW]	0.1	0.2	0.4	0.6	0.75	1	1.5	2.2	3	5
Rated torque	[N×m]	0.32	0.64	1.27	1.91	2.39	3.18	4.77	7	9.55	15.91
	[kgf×cm]	3.25	6.49	12.99	19.49	24.36	32.48	48.7	71.4	97.4	162.3
Max Instantaneous Torque	[N×m]	0.96	1.91	3.82	5.73	7.16	9.55	14.32	21.01	28.65	47.74
	[kgf×cm]	9.74	19.48	38.96	58.47	73.08	97.44	146.1	214.3	292.2	487
Rated Current	[A]	0.95	1.45	2.6	3.81	5.02	5.83	9.15	13.24	16.09	26.47
Max. Current	[A]	2.85	4.35	7.8	11.42	15.07	17.5	27.45	39.72	48.27	79.41
Rated rotation speed	[r/min]	3000									
Max. rotation speed	[r/min]	5000									
Inertia moment	[kg×m2x10-4]	0.091	0.147	0.248	0.897	1.264	1.632	10.18	14.62	19.04	46.56
	[gf×cm×s2]	0.093	0.15	0.253	0.915	1.29	1.665	10.39	14.92	19.43	47.51
Allowable Load Inertia Ratio		20 times of motor inertia			15 times of motor inertia		10 times of motor inertia				5 times of motor inertia
Rated power rate	[kW/s]	11.09	27.6	27.07	40.66	45.09	62.08	22.38	33.59	47.85	54.33
Encoder	Standard	Serial Type 19[bit]									
Specifications and features	Method of protection	Fully closed. self-cooling IP67 (excluding axis penetration)					Fully closed. self-cooling IP65 (excluding axis penetration)				
	Time rating	Continuous									
	Ambient temperature	Operating : 0 ~ 40[°C] Storage : -10 ~ 60[°C]									
	Ambient humidity	90[%]RH Below (avoid dew-condensation)									
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.									
	Anti-vibration	Elevation/vibration 49[m/s²](5G)									
Weight	[kg]	0.56	0.74	1.06	2.14	2.68	3.3	6.7	8.5	10.1	17.4



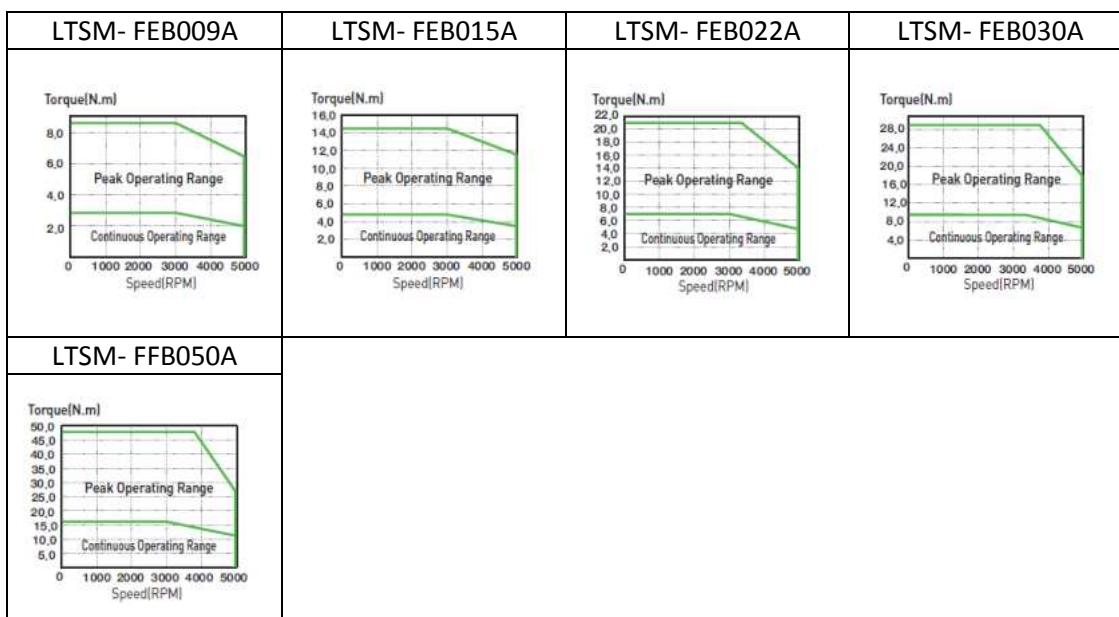
200vac Motor Specifications [Rated: 1500rpm]

Servo Motor (LTSM-□□□□□□□)		FEA 005G	FEA 009G	FEA 013G	FEA 017G	FFA 020G	FFA 030G	FFA 044G
Applicable Drive (LTSD-□□□□□□□)		□A008U	□A010U	□A020U	□A020U	□A020U	□A035U	□A050U
Flange[□]		□130				□180		
Rated Output	[kW]	0.45	0.85	1.3	1.7	1.8	2.9	4.4
Rated torque	[N×m]	2.86	5.41	8.27	10.82	11.45	18.46	28
	[kgf×cm]	29.22	55.19	84.41	110.38	116.9	188.3	285.7
Max Instantaneous Torque	[N×m]	8.59	16.23	24.82	32.46	34.35	55.38	84.03
	[kgf×cm]	87.66	165.57	253.23	331.14	350.6	564.9	851.1
Rated Current	[A]	4.56	6.67	11.9	13.36	12.16	15.98	30.7
Max. Current	[A]	13.68	20.01	35.7	40.08	36.48	47.94	92.1
Rated rotation speed	[r/min]	1500						
Max. rotation speed	[r/min]	3000		3000		2700		3000
Inertia moment	[kg×m ² ×10 ⁻⁴]	5.66	10.18	14.62	19.04	27.96	46.56	73.85
	[gf×cm×s ²]	5.77	10.39	14.92	19.43	28.53	47.51	75.36
Allowable Load Inertia Ratio		10 times of motor inertia				5 times of motor inertia		
Rated power rate	[kW/s]	14.49	28.74	46.81	61.46	46.92	73.14	106.15
Encoder	Standard	Serial Type 19[bit]						
Specifications and features	Method of protection	Fully closed. self-cooling IP65 (excluding axis penetration)						
	Time rating	Continuous						
	Ambient temperature	Operating : 0 ~ 40[°C] Storage : -10 ~ 60[°C]						
	Ambient humidity	90[%]RH Below (avoid dew-condensation)						
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.						
	Anti-vibration	Elevation/vibration 49[m/s ²](5G)						
Weight	[kg]	5	6.7	8.5	10.1	12.5	17.4	25.2



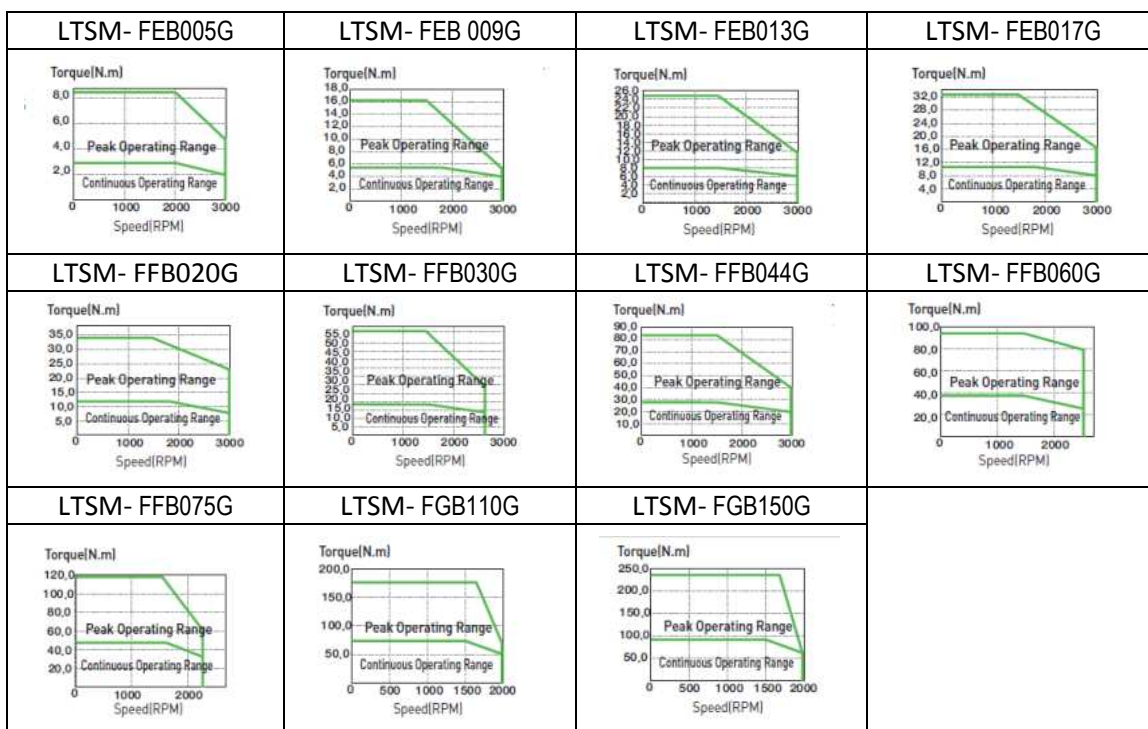
400vac Motor Specifications [Rated: 3000rpm]

Servo Motor (LTSM-□□□□□□□□)		FEB 009A	FEB 015A	FEB 022A	FEB 030A	FFB 050A
Applicable Drive (LTSD-□□□□□□□□)		□B010U	□B020U	□B035U	□B035U	□B050U
Flange[□]		□130				□180
Rated Output	[kW]	0.9	1.5	2.2	3	5
Rated torque	[N×m]	2.86	4.77	7	9.55	15.92
	[kgf×cm]	29.33	48.72	71.46	97.44	162.4
Max Instantaneous Torque	[N×m]	8.59	14.32	20.01	28.65	38.79
	[kgf×cm]	87.7	146.16	214.37	292.33	406.01
Rated Current	[A]	3.47	6.68	9.12	9.94	16.07
Max. Current	[A]	10.4	20.03	27.35	29.81	48.22
Rated rotation speed	[r/min]	3000				
Max. rotation speed	[r/min]	5000				
Inertia moment	[kg×m ² ×10 ⁻⁴]	5.659	10.179	14.619	19.04	46.56
	[gf×cm×s ²]	5.774	10.387	14.917	19.429	47.51
Allowable Load Inertia Ratio		10 times of motor inertia				5 times of motor inertia
Rated power rate	[kW/s]	14.5	22.4	33.55	47.89	54.4
Encoder	Standard	Serial Type 19[bit]				
Specifications and features	Method of protection	Fully closed. self-cooling IP65 (excluding axis penetration)				
	Time rating	Continuous				
	Ambient temperature	Operating : 0 ~ 40[°C] Storage : -10 ~ 60[°C]				
	Ambient humidity	90[%]RH Below (avoid dew-condensation)				
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.				
	Anti-vibration	Elevation/vibration 49[m/s ²](5G)				
Weight	[kg]	5.5	7.54	9.68	11.78	17.7



400vac Motor Specifications [Rated: 1500rpm]

Servo Motor (LTSM-□□□□□□□)		FEB 005G	FEB 009G	FEB 013G	FEB 017G	FFB 020G	FFB 030G	FFB 044G	FFB0 60G	FFB0 75G	FGB 110G	FGB 150G	
Applicable Drive (LTSD-□□□□□□□)		□B010U		□B020U			□B035U	□B050U	□B075U		□B150U		
Flange[□]		□130					□180					□220	
Rated Output	[kW]	0.45	0.85	1.3	1.7	1.8	2.9	4.4	6	7.5	11	15	
Rated torque	[N×m]	2.86	5.41	8.28	10.82	11.46	18.46	28.01	38.2	47.75	70.03	95.49	
	[kgf×cm]	29.23	55.22	84.45	110.43	116.93	188.39	285.83	389.7	487.21	714.57	974.42	
Max Instantaneous Torque	[N×m]	8.59	16.23	24.83	32.47	34.38	55.39	84.03	95.49	119.37	175.07	238.73	
	[kgf×cm]	87.7	166.65	253.35	331.3	350.79	565.16	857.49	974.4	1,218	1,786	2,436	
Rated Current	[A]	3.28	3.5	5.39	7.01	7.56	10.14	15.68	20.23	20.01	28.28	35.71	
Max. Current	[A]	9.83	10.5	16.16	21.02	22.69	30.12	47.04	50.58	50.03	68.83	87.7	
Rated Speed	[r/min]	1500											
Max. rotation speed	[r/min]	3000					2700	3000	2500	2200	2000		
Inertia moment	[kg×m2x10 ⁻⁴]	5.659	10.179	14.619	19.04	27.96	46.56	73.85	106.7	131.29	51.42	424.5	
	[gf×cm×s ²]	5.774	10.387	14.917	19.429	28.531	47.51	75.357	108.9	133.96	52.47	433.2	
Allowable Load Inertia Ratio		10 times of motor inertia					5 times of motor inertia						
Rated power rate	[kW/s]	14.5	28.77	46.85	61.52	46.96	73.21	106.25	136.7	173.64	168.3	214.8	
Encoder	Standard	Serial Type 19[bit]											
Specifications and features	Method of protection	Fully closed, self-cooling IP65 (excluding axis penetration)											
	Time rating	Continuous											
	Ambient temperature	Operating : 0 ~ 40[°C] Storage : -10 ~ 60[°C]											
	Ambient humidity	90[%]RH Below (avoid dew-condensation)											
	Atmosphere	Avoid direct sunlight, no corrosive gas, inflammable gas, oil mist, or dust.											
	Anti-vibration	Elevation/vibration 49[m/s ²](5G)											
Weight	[kg]	5.5	7.54	9.68	11.78	12.4	17.7	26.3	35.6	39.4	66.3	92.2	



7. External Dimensions of Servo Motor

Servo Motor Dimensions

FB Series

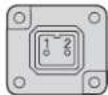
Plug Specifications



Power

Pin No.	Color	Signal
1	Red	U
2	White	V
3	Black	W
4	Green	Ground

[Power Connector Pin Table]



Brake

Pin No.	Signal
1	BK+
2	BK-

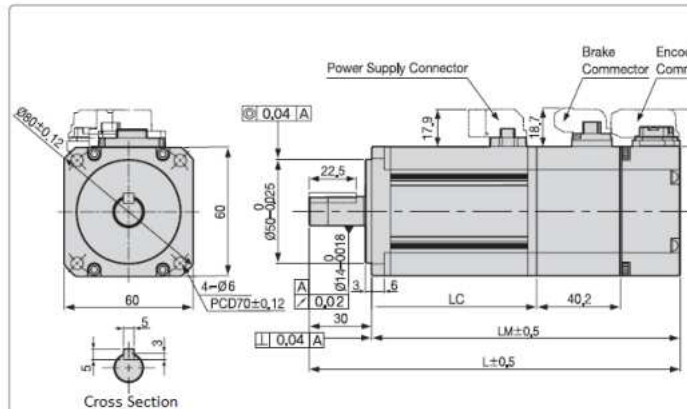
[Brake Connector Pin Table]



Encoder

Multi Turn (M)	
Pin No.	Signal
1	MA
2	SLO
3	GND_B
4	OV
5	SHIELD
6	MA
7	SLO
8	VDD_B
9	+5V

[Encoder Connector Pin Table]



Model	External Dimensions(mm)				Key				Weight (kg)
	L	LM	LC	S	H	T	W	U	
FBA01A	107.2(147.2)	77.2(117.2)	48.5(48.3)	14	-0.018	5	5	3	0.56(1.3)
FBA02A	118.2(158.2)	88.2(128.2)	59.5(59.3)	14	-0.018	5	5	3	0.74(1.48)
FBA04A	138.2(178.2)	108.2(148.2)	79.5(79.3)	14	-0.018	5	5	3	1.06(1.8)

Note1) Use DC[24V] for brake input power supply. Note2) The [] is for brake-attached type. Note3) For external dimensions for oil-sealed type. Please kindly contact us separately.

FC Series

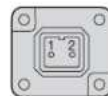
Plug Specifications



Power

Pin No.	Color	Signal
1	Black	U
2	White	V
3	Red	W
PE	Green	Ground

[Power Connector Pin Table]



Brake

Pin No.	Signal
1	BK+
2	BK-

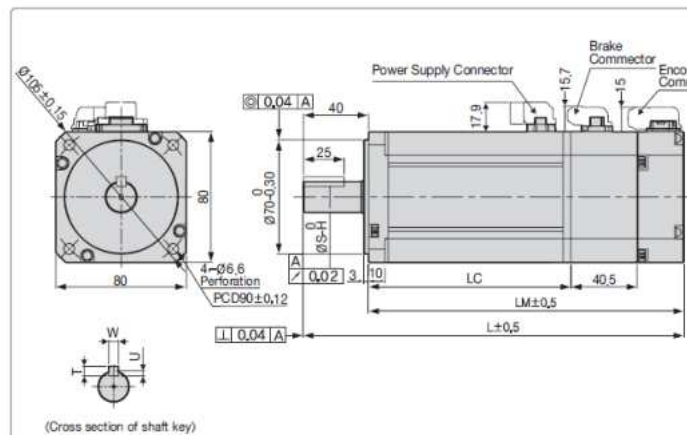
[Brake Connector Pin Table]



Encoder

Multi Turn (M)	
Pin No.	Signal
1	MA
2	SLO
3	GND_B
4	OV
5	SHIELD
6	MA
7	SLO
8	VDD_B
9	+5V

[Encoder Connector Pin Table]



Model	External Dimensions(mm)				Key				Weight(kg)
	L	LM	LC	S	H	T	W	U	
FCA006A	156.7(197.5)	116.7(157.5)	88(87.8)	19	-0.021	6	6	3.5	2.14(2.94)
FCA008A	174.7(215.5)	134.7(175.5)	106(105.8)	19	-0.021	6	6	3.5	2.68(3.48)
FCA010A	192.7(233.5)	152.7(193.5)	124(123.8)	19	-0.021	6	6	3.5	3.30(4.10)

Note1) Use DC[24V] for brake input power supply. Note2) The [] is for brake-attached type. Note3) For external dimensions for oil-sealed type. Please kindly contact us separately.

Servo Motor Dimensions

FE Series

Plug Specifications

[Power]



Spec.: MS3102A20-4P
[Standard]



Spec.: MS3102A20-15P
[Brake-attached type]

Power

Pin No.	Signal
A	U
B	V
C	W
D	Ground

Pin No.	Signal	Pin No.	Signal
A	U	D	Ground
B	V	E	BK+
C	W	F	BKPin

[Encoder]

Serial type

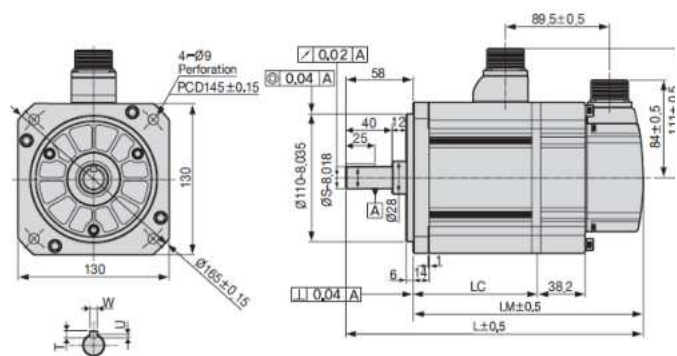


Spec: MS3102A20-29P

Encoder

Pin No.	Signal	Pin No.	Signal
A	MA	M	-
B	MA	N	-
C	SLO	P	-
D	SLO	R	-
E	VOD_B	H	+5V
F	GND_B	G	0V
K	-	J	SHIELD
L	-		

(Multi Turn Encoder Connector Pin Table)



(Cross section of shaft key)

Model	External Dimensions(mm)				Key				Weight(ka
	L	LM	LC	S	T	W	U		
FEA005G, FEB009A, FEB005G	197.3(235.3)	139.3(177.3)	89.8(89.6)	19	5	5	3	5.04(6.58)	
FEA015A, FEA009G, FEB015A, FEB009G	217.3(255.3)	159.3(197.3)	109.8(109.6)	19	5	5	3	6.74(8.28)	
FEA022A, FEA013G, FEB022A, FEB013G	237.3(275.3)	179.3(217.3)	129.8(129.6)	22	6	6	3.5	8.48(10.02)	
FEA030A, FEA017G, FEB030A, FEB017G	255.3(293.3)	197.3(235.3)	147.8(147.6)	24	7	8	4	10.05(11.59)	

Note1) Use DC[24V] for brake input power supply. Note2) The () is for brake-attached type.

FF Series

Plug Specifications

[Power]



Spec.: MS3102A22-22P
[Standard]



Spec.: MS3102A24-10F
(Brake-attached type)

Power

Pin No.	Signal
A	U
B	V
C	W
D	Ground

Pin No.	Signal	Pin No.	Signal
A	U	D	Ground
B	V	E	BK+
C	W	F	BK-

[Encoder]

Serial type

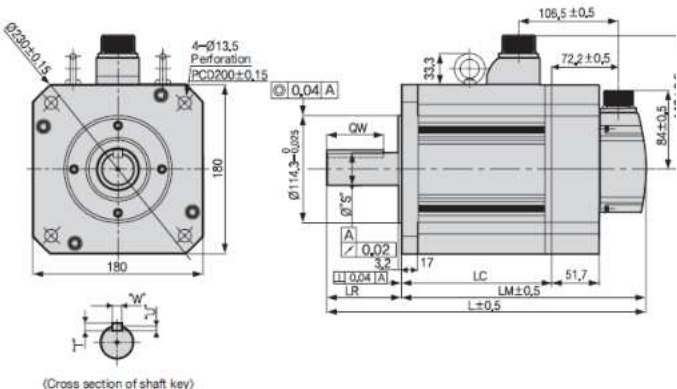


Spec.: MS3102A20-29F

Encoder

Pin No.	Signal	Pin No.	Signal
A	MA	M	-
B	MA	N	-
C	SLO	P	-
D	SLO	R	-
E	VDD_B	H	+5V
F	GND_B	G	0V
K	-	J	SHIELD
L	-		

(Multi-Turn Encoder Connector Pin Table)



Model	External Dimensions[mm]				Key					Weight(kg)	
	L	LM	LC	LR	S	QW	T	W	U		
FFA020G, FFB020G	257.5(308.9)	178.5(229.9)	129(128.7)	79	35+ ^{0.21} _{-0.1}	60	8	10	5	12.5(19.7)	
FFA050A, FFA030G, FFB050A, FFB030G	287.5(338.9)	208.5(259.9)	159(158.7)							17.4(24.6)	
FFA044G, FFB044G	331.5(382.9)	252.5(303.9)	203(202.7)							25.2(32.4)	
FFB060G	384.5(435.9)	305.5(356.9)	256(255.7)		42- ⁰ _{-0.318}			12		33.8(41.0)	
FFB075G	439.5	326.5	277	113						38.5(45.7)	

Note1) 4.4kW or above models have eye bolts

Note2] Use DC[24V] for brake input power supply.

Note3] The () is for brake-attached type.

Note4) Use MS3102A32-17 for FF75G Power connector.

8. Cable & Accessories Details

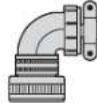
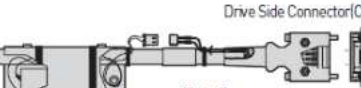
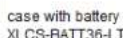
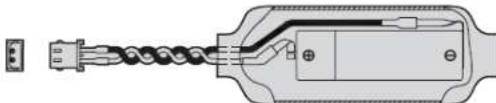
Encoder Cable

Type	Product Type	Model Name ^{Note1)}	Applicable Drive ^{Note2)}	Applicable Motor	Specifications																																																														
For Signal	Incremental Encoder Cable	XLCS-E□□□ES-□	LTSD-NA□□□U PA□□□U	All Models of LTSM-FBA FCA Series	Motor Side Connector Drive Side Connector(CN2) Front Direction Rear Direction Tyco Connector (7Circuits) <table><thead><tr><th>PIN No.</th><th>Encoder Signal</th></tr></thead><tbody><tr><td>1</td><td>MA</td></tr><tr><td>2</td><td>SLO</td></tr><tr><td>3</td><td>-</td></tr><tr><td>4</td><td>OV</td></tr><tr><td>5</td><td>SHIELD</td></tr><tr><td>6</td><td>MA</td></tr><tr><td>7</td><td>SLO</td></tr><tr><td>8</td><td>-</td></tr><tr><td>9</td><td>+5V</td></tr></tbody></table> (Motor Side Connector) <table><thead><tr><th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr></thead><tbody><tr><td>1</td><td>-</td><td>8</td><td>-</td></tr><tr><td>2</td><td>-</td><td>9</td><td>-</td></tr><tr><td>3</td><td>MA</td><td>10</td><td>-</td></tr><tr><td>4</td><td>MA</td><td>11</td><td>-</td></tr><tr><td>5</td><td>SLO</td><td>12</td><td>-</td></tr><tr><td>6</td><td>SLO</td><td>13</td><td>-</td></tr><tr><td>7</td><td>OV</td><td>14</td><td>+5V</td></tr><tr><td colspan="2">PLATE</td><td colspan="2">SHIELD</td></tr></tbody></table> (Drive Side Connector) 1. Motor Side Connector • Cap Spec. : 2201825-1(Tyco) • Socket Spec. : 2174065-4(Tyco) 2. Drive Side Connector(CN2) • Case Spec. : 10314-52A0-008(3M) or SM-14J(Suntone) • Connector Spec. : 10114-3000VE(3M) or SM-14J(Suntone) 3. Cable Spec. : 3P×0.25SQ or 3P×24AWG	PIN No.	Encoder Signal	1	MA	2	SLO	3	-	4	OV	5	SHIELD	6	MA	7	SLO	8	-	9	+5V	PIN No.	Encoder Signal	PIN No.	Encoder Signal	1	-	8	-	2	-	9	-	3	MA	10	-	4	MA	11	-	5	SLO	12	-	6	SLO	13	-	7	OV	14	+5V	PLATE		SHIELD							
	PIN No.	Encoder Signal																																																																	
1	MA																																																																		
2	SLO																																																																		
3	-																																																																		
4	OV																																																																		
5	SHIELD																																																																		
6	MA																																																																		
7	SLO																																																																		
8	-																																																																		
9	+5V																																																																		
PIN No.	Encoder Signal	PIN No.	Encoder Signal																																																																
1	-	8	-																																																																
2	-	9	-																																																																
3	MA	10	-																																																																
4	MA	11	-																																																																
5	SLO	12	-																																																																
6	SLO	13	-																																																																
7	OV	14	+5V																																																																
PLATE		SHIELD																																																																	
For Signal	Absolute Encoder Cable	XLCS-E□□□ES2-□ + XLCS-BATT36-LT	LTSD-NA□□□U PA□□□U	All Models of LTSM-FBA FCA Series	Motor Side Connector Drive Side Connector(CN2) Front Direction Rear Direction Tyco Connector (7Circuits) <table><thead><tr><th>PIN No.</th><th>Encoder Signal</th></tr></thead><tbody><tr><td>1</td><td>MA</td></tr><tr><td>2</td><td>SLO</td></tr><tr><td>3</td><td>GND_B</td></tr><tr><td>4</td><td>OV</td></tr><tr><td>5</td><td>SHIELD</td></tr><tr><td>6</td><td>MA</td></tr><tr><td>7</td><td>SLO</td></tr><tr><td>8</td><td>VOD_B</td></tr><tr><td>9</td><td>+5V</td></tr></tbody></table> (Motor Side Connector) <table><thead><tr><th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr></thead><tbody><tr><td>1</td><td>-</td><td>8</td><td>-</td></tr><tr><td>2</td><td>-</td><td>9</td><td>-</td></tr><tr><td>3</td><td>MA</td><td>10</td><td>-</td></tr><tr><td>4</td><td>MA</td><td>11</td><td>-</td></tr><tr><td>5</td><td>SLO</td><td>12</td><td>-</td></tr><tr><td>6</td><td>SLO</td><td>13</td><td>-</td></tr><tr><td>7</td><td>OV</td><td>14</td><td>+5V</td></tr><tr><td colspan="2">PLATE</td><td colspan="2">SHIELD</td></tr></tbody></table> (Drive Side Connector) case with battery XLCS-BATT36-LT <table><thead><tr><th>PIN No.</th><th>Encoder Signal</th></tr></thead><tbody><tr><td>1</td><td>BATTE (VOD_)</td></tr><tr><td>2</td><td>BATTER (GND_)</td></tr></tbody></table> (Battery Connector) 1. Motor Side Connector • Cap Spec. : 2201825-1(Tyco) • Socket Spec. : 2174065-4(Tyco) 2. Drive Side Connector(CN2) • Case Spec. : 10314-52A0-008(3M) or SM-14J(Suntone) • Connector Spec. : 10114-3000VE(3M) or SM-14J(Suntone) 3. Cable Spec. : 4P×0.25Q or 4P×24AWG 4. Battery Connector Spec. : 5267-02A(MOLEX)	PIN No.	Encoder Signal	1	MA	2	SLO	3	GND_B	4	OV	5	SHIELD	6	MA	7	SLO	8	VOD_B	9	+5V	PIN No.	Encoder Signal	PIN No.	Encoder Signal	1	-	8	-	2	-	9	-	3	MA	10	-	4	MA	11	-	5	SLO	12	-	6	SLO	13	-	7	OV	14	+5V	PLATE		SHIELD		PIN No.	Encoder Signal	1	BATTE (VOD_)	2	BATTER (GND_)
	PIN No.	Encoder Signal																																																																	
1	MA																																																																		
2	SLO																																																																		
3	GND_B																																																																		
4	OV																																																																		
5	SHIELD																																																																		
6	MA																																																																		
7	SLO																																																																		
8	VOD_B																																																																		
9	+5V																																																																		
PIN No.	Encoder Signal	PIN No.	Encoder Signal																																																																
1	-	8	-																																																																
2	-	9	-																																																																
3	MA	10	-																																																																
4	MA	11	-																																																																
5	SLO	12	-																																																																
6	SLO	13	-																																																																
7	OV	14	+5V																																																																
PLATE		SHIELD																																																																	
PIN No.	Encoder Signal																																																																		
1	BATTE (VOD_)																																																																		
2	BATTER (GND_)																																																																		

Note1) □ □ □ of Model Name indicates the kind and length of cable. And the declaration is as below.

Cable Length(m)	3	5	10	20
General Cable	N03	N05	N10	N20
Robotic Cable	F03	F05	F10	F20

Encoder Cable

Type	Product Type	Model Name	Applicable Drive	Applicable Motor	Specifications																																																																										
For Signal	Absolute Encoder Cable	XLCS-E□□□DS2 + XLCS-BATT36-LT	LTSD-NA□□□U PA□□□U	All Models of LTSM-FEA/FEB FFA/FFB FGB Series	 Motor Side Connector  Drive Side Connector(C  case with battery XLCS-BATT36-LT In case of Absolute Encoder Cable only)  MS3108B20-29S <table> <tr> <th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr> <tr><td>A</td><td>MA</td><td>M</td><td>-</td></tr> <tr><td>B</td><td>MA</td><td>N</td><td>-</td></tr> <tr><td>C</td><td>SLO</td><td>P</td><td>-</td></tr> <tr><td>D</td><td>SLO</td><td>R</td><td>-</td></tr> <tr><td>E</td><td>VDD_B</td><td>H</td><td>+5V</td></tr> <tr><td>F</td><td>GND_B</td><td>G</td><td>OV</td></tr> <tr><td>G</td><td>-</td><td>J</td><td>SHIELD</td></tr> <tr><td>L</td><td>-</td><td></td><td></td></tr> </table> (Motor Side Connector)  <table> <tr> <th>PIN No.</th><th>Encoder Signal</th><th>PIN No.</th><th>Encoder Signal</th></tr> <tr><td>1</td><td>-</td><td>8</td><td>-</td></tr> <tr><td>2</td><td>-</td><td>9</td><td>-</td></tr> <tr><td>3</td><td>MA</td><td>10</td><td>-</td></tr> <tr><td>4</td><td>MA</td><td>11</td><td>-</td></tr> <tr><td>5</td><td>SLO</td><td>12</td><td>-</td></tr> <tr><td>6</td><td>SLO</td><td>13</td><td>-</td></tr> <tr><td>7</td><td>OV</td><td>14</td><td>+5V</td></tr> </table> PLATE SHIELD (Drive Side Connector)  <table> <tr> <th>PIN No.</th><th>Encoder Signal</th></tr> <tr><td>1</td><td>BATT (VDD)</td></tr> <tr><td>2</td><td>BATT (GND)</td></tr> </table> (Driver Side Connector) - Motor Side Connector(MS : Military Standard) - Plug Spec. : MS3108B20-29S - Drive Side Connector(CN2) - Case Spec. : 10314-52A0-008(3M) or SM-14J(Suntone) - Connector Spec. : 10114-3000VE(3M) or SM-14J(Suntone) - Cable Spec. : 4P×0.25Q or 4P×24AWG - Battery Connector Spec. : 5267-02A(MOLEX) In case of Absolute Encoder Cable only)	PIN No.	Encoder Signal	PIN No.	Encoder Signal	A	MA	M	-	B	MA	N	-	C	SLO	P	-	D	SLO	R	-	E	VDD_B	H	+5V	F	GND_B	G	OV	G	-	J	SHIELD	L	-			PIN No.	Encoder Signal	PIN No.	Encoder Signal	1	-	8	-	2	-	9	-	3	MA	10	-	4	MA	11	-	5	SLO	12	-	6	SLO	13	-	7	OV	14	+5V	PIN No.	Encoder Signal	1	BATT (VDD)	2	BATT (GND)
PIN No.	Encoder Signal	PIN No.	Encoder Signal																																																																												
A	MA	M	-																																																																												
B	MA	N	-																																																																												
C	SLO	P	-																																																																												
D	SLO	R	-																																																																												
E	VDD_B	H	+5V																																																																												
F	GND_B	G	OV																																																																												
G	-	J	SHIELD																																																																												
L	-																																																																														
PIN No.	Encoder Signal	PIN No.	Encoder Signal																																																																												
1	-	8	-																																																																												
2	-	9	-																																																																												
3	MA	10	-																																																																												
4	MA	11	-																																																																												
5	SLO	12	-																																																																												
6	SLO	13	-																																																																												
7	OV	14	+5V																																																																												
PIN No.	Encoder Signal																																																																														
1	BATT (VDD)																																																																														
2	BATT (GND)																																																																														
Battery For Encoder	Battery	XLCS-BATT36-LT	LTSD-NA□□□U PA□□□U	All Models of LTSM-	 <table> <tr> <th>PIN No.</th><th>Signal</th><th>Color</th></tr> <tr><td>1</td><td>+</td><td>Red</td></tr> <tr><td>2</td><td>-</td><td>Black</td></tr> </table> - Plug Spec. : 5264-02 (Molex) - Plug Pin Spec. : 5263PBT (Molex) - Battery Spec. : ER6V/3.6V, 2000mAh (TOSHIBA)	PIN No.	Signal	Color	1	+	Red	2	-	Black																																																																	
PIN No.	Signal	Color																																																																													
1	+	Red																																																																													
2	-	Black																																																																													

Note1) □ □ □ of Model Name indicates the kind and length of cable. And the declaration is as below.

Cable Length(m)	3	5	10	20
General Cable	N03	N05	N10	N20
Robotic Cable	F03	F05	F10	F20

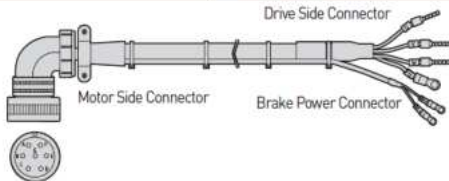
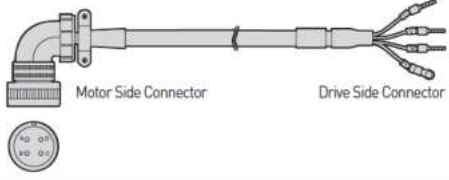
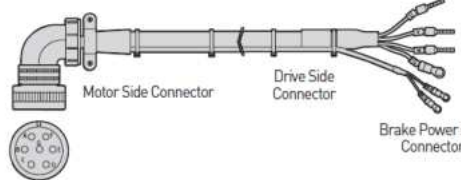
Power Cable: 200vac Motor

Type	Product Type	Model Name	Applicable Drive	Applicable Motor	Specifications										
For Power	Power Cable (Small Capacity)	XLCS-P □□□LS-□	LTSD-NA□□□U PA□□□U	All Models of LTSM-FBA FCA SERIES	Motor Side Connector Drive Side Connector Front Direction Rear Direction <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Ground</td></tr></table> 1. Motor Side Connector • Plug Spec. : SM-JN8FT04(Suntone) • Socket Spec. : SMS-201(Suntone) 2. Drive Side Connector (U,V,W,FG) • U, V, W Pin Spec. : 1512(Ferrule) • FG Pin Spec. : 1.5x4 (Ring Terminal) 3. Cable Spec. : 4C×0.75SQ or 4C×18AWG 4. In case of FAL products, Please install Power Cable first before connecting Encoder Cable	PIN No.	Signal	A	U	B	V	C	W	D	Ground
					PIN No.	Signal									
A	U														
B	V														
C	W														
D	Ground														
For Power	Brake Cable for Flat Motor (Small Capacity)	XLCS-B □□□QS-□	LTSD-NA□□□U PA□□□U	All Models of LTSM-FBA FCA SERIES	Motor Side Connector Drive Side Connector Front Direction Rear Direction <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>1</td><td>BK+</td></tr><tr><td>2</td><td>BK-</td></tr></table> 1. Motor Side Connector • Plug Spec. : KN5FT02SJ1 • Socket Spec. : ST-KN-S-C1B-3500 2. Drive Side Connector • Connecting terminal Spec. : 1.5x3(Ring Terminal) 3. Cable Spec. : 2C×0.55Q or 2C×20AWG	PIN No.	Signal	1	BK+	2	BK-				
					PIN No.	Signal									
1	BK+														
2	BK-														
For Power	Power Cable (Middle Capacity)	XLCS-P □□□HS	LTSD-NA□□□U PA□□□U	All Models of LTSM-FEA SERIES	Motor Side Connector Drive Side Connector Front Direction Rear Direction <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Ground</td></tr></table> 1. Motor Side Connector • Plug Spec. : MS3108A20-4S 2. Drive Side Connector • FG Pin Spec. : 22x6(Ring Terminal) 3. Cable Spec. : 4C×2.55Q or 4C×14AWG	PIN No.	Signal	A	U	B	V	C	W	D	Ground
					PIN No.	Signal									
A	U														
B	V														
C	W														
D	Ground														

Note1) □ □ □ of Model Name indicates the kind and length of cable. And the declaration is as below.

Cable Length(m)	3	5	10	20
General Cable(N)	N03	N05	N10	N20
Robotic Cable(F)	F03	F05	F10	F20

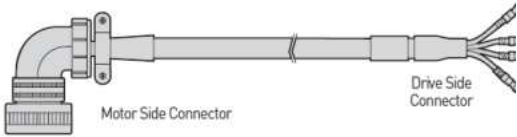
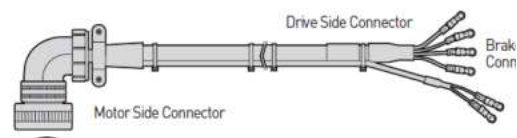
Power Cable: 200vac Motor

Type	Product Type	Model Name ^(Note1)	Applicable Drive ^(Note2)	Applicable Motor	Specifications										
For Power	Power Cable (Brake Type)	XLCS-P □□□NB	LTSD-NA□□□U PA□□□U	All Models of LTSM-FEA SERIES											
					PIN No.	Signal	PIN No.	Signal	A	U	D	Ground	B	V	E
PIN No.	Signal	PIN No.	Signal												
A	U	D	Ground												
B	V	E	BK+												
C	W	F	BK-												
For Power	Power Cable (Middle Capacity)	XLCS-P □□□IS	LTSD-NA□□□U PA□□□U	LTSM-FFA020G / FFA030G											
					PIN No.	Signal	1	U	2	V	3	W	4	Ground	
PIN No.	Signal														
1	U														
2	V														
3	W														
4	Ground														
For Power	Power Cable (Brake Type)	XLCS-P □□□PB	LTSD-NA□□□U PA□□□U	LTSM-FFA020G / FFA030G											
					PIN No.	Signal	A	U	B	V	C	W	D	Ground	E
PIN No.	Signal														
A	U														
B	V														
C	W														
D	Ground														
E	BK+														
F	BK-														

Note1) □ □ □ of Model Name indicates the kind and length of cable. And the declaration is as below.

Cable Length(m)	3	5	10	20
General Cable(N)	N03	N05	N10	N20
Robotic Cable(F)	F03	F05	F10	F20

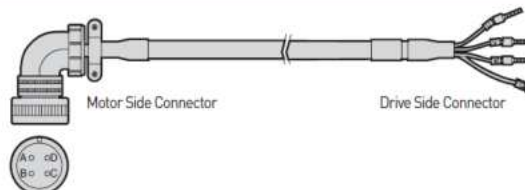
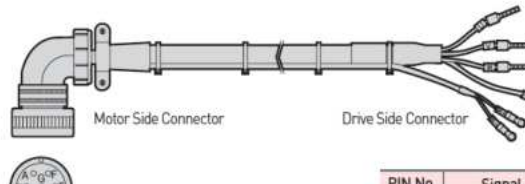
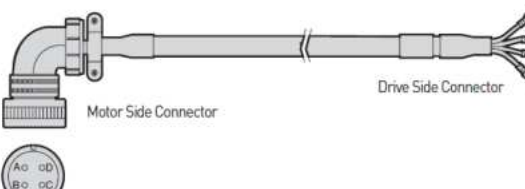
Power Cable: 200vac Motor

Type	Product Type	Model Name ^{Note1)}	Applicable Drive ^{Note2)}	Applicable Motor	Specifications												
For Power	Power Cable (Middle Capacity)	XLCS-P □□□JS	LTSD- NA□□□U PA□□□U	LTSM- FFA050A / FFA044G	 <table><tr><th>PIN No.</th><th>Signal</th><th>PIN No.</th><th>Signal</th></tr><tr><td>A</td><td>U</td><td>C</td><td>W</td></tr><tr><td>B</td><td>V</td><td>D</td><td>Ground</td></tr></table> - Motor Side Connector - Plug Spec. : MS3108A22-22S(MS) - Drive Side Connector - Connecting terminal Spec. : 6.0x5(Ring Terminal) - Brake Power Side Connector - Cable Spec. : 4Cx6.0SQ or 4Cx10AWG	PIN No.	Signal	PIN No.	Signal	A	U	C	W	B	V	D	Ground
					PIN No.	Signal	PIN No.	Signal									
A	U	C	W														
B	V	D	Ground														
 <table><tr><th>PIN No.</th><th>Signal</th><th>PIN No.</th><th>Signal</th></tr><tr><td>A</td><td>U</td><td>D</td><td>Ground</td></tr><tr><td>B</td><td>V</td><td>E</td><td>BK+</td></tr><tr><td>C</td><td>W</td><td>F</td><td>BK-</td></tr></table> - Motor Side Connector - Plug Spec. : MS3108A24-10S - Drive Side Connector - Connecting terminal Spec. : 6x5(Ring Terminal) 4Cx6.0SQ or 4Cx10AWG - Brake Power side Connector - Connecting terminal Spec. : 1.5x3(Ring Terminal) - Cable Spec. : 2Cx0.75SQ or 2Cx18AWG	PIN No.	Signal	PIN No.	Signal	A	U	D	Ground	B	V	E	BK+	C	W	F	BK-	
PIN No.	Signal	PIN No.	Signal														
A	U	D	Ground														
B	V	E	BK+														
C	W	F	BK-														

Note1] □□□ of Model Name indicates the kind and length of cable. And the declaration is as below.

Cable Length(m)	3	5	10	20
General Cable(N)	N03	N05	N10	N20
Robotic Cable(F)	F03	F05	F10	F20

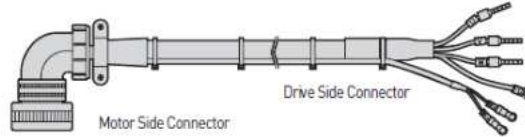
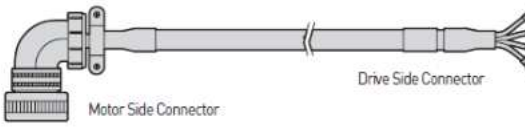
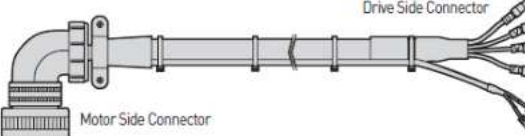
Power Cable: 400vac Motor

Type	Product Type	Model Name ^(Note1)	Applicable Drive ^(Note2)	Applicable Motor	Specifications														
For Power	Power Cable	XLCS-P □□□ HS	LTSD- NB□□□U PB□□□U	All Models of LTSM- FEB Series	 <table><thead><tr><th>PIN No.</th><th>Signal</th><th>PIN No.</th><th>Signal</th></tr></thead><tbody><tr><td>A</td><td>U</td><td>C</td><td>W</td></tr><tr><td>B</td><td>V</td><td>D</td><td>Ground</td></tr></tbody></table> 1. Motor Side Connector • Plug Spec. : MS3108A 20-4S 2. Drive Side Connector(U,V,W,FG) • U, V, W Pin Spec. : 1512(Ferrule) • FG Pin Spec. : 1.5x4(Ring Terminal) 3. Cable Spec: 4Cx1.5SQ or 4Cx15AWG	PIN No.	Signal	PIN No.	Signal	A	U	C	W	B	V	D	Ground		
	PIN No.	Signal	PIN No.	Signal															
A	U	C	W																
B	V	D	Ground																
For Power	Power Cable (Brake Type)	XLCS-P □□□ NB	LTSD- NB□□□U PB□□□U	All Models of LTSM- FEB Series	 <table><thead><tr><th>PIN No.</th><th>Signal</th></tr></thead><tbody><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Ground</td></tr><tr><td>E</td><td>BK+</td></tr><tr><td>F</td><td>BK-</td></tr></tbody></table> 1. Motor Side Connector • Plug Spec. : MS3108A 20-15S 2. Drive Side Connector (U,V,W,FG) • U, V, W Pin Spec. : 1512(Ferrule) • FG Pin Spec. : 1.5 x 4(Ring Terminal) 3. Power Cable Spec. : 4Cx1.5SQ or 4Cx15AWG 4. Brake Power side Connector • Connecting terminal Spec. : 1.5 x 3(Ring Terminal) 5.Brake Cable Spec. : 2Cx0.75SQ or 2Cx19AWG	PIN No.	Signal	A	U	B	V	C	W	D	Ground	E	BK+	F	BK-
PIN No.	Signal																		
A	U																		
B	V																		
C	W																		
D	Ground																		
E	BK+																		
F	BK-																		
For Power	Power Cable	XLCS-P □□□ IS	LTSD- NB□□□U PB□□□U	LTSM- FFB020A / FFB020G / FFB030G	 <table><thead><tr><th>PIN No.</th><th>Signal</th></tr></thead><tbody><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Ground</td></tr></tbody></table> 1. Motor Side Connector • Plug Spec. : MS3108A 22-22S(MS) 2. Drive Side Connector (U,V,W,FG) • U, V, W Pin Spec : 2512(Ferrule) • FG Pin Spec. : 2.5x4 (Ring Terminal) 3. Cable Spec. : 4Cx2.5SQ or 4Cx14AWG	PIN No.	Signal	A	U	B	V	C	W	D	Ground				
PIN No.	Signal																		
A	U																		
B	V																		
C	W																		
D	Ground																		

Note1) □ □ □ of Model Name indicates the kind and length of cable. And the declaration is as below.
In case of 400V products, you can use Robotic Cable only.

Cable Length(m)	3	5	10	20
Robotic Cable(F)	F03	F05	F10	F20

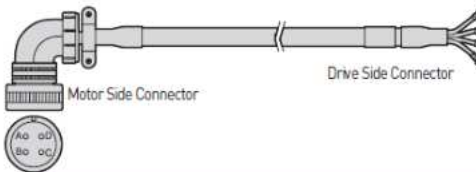
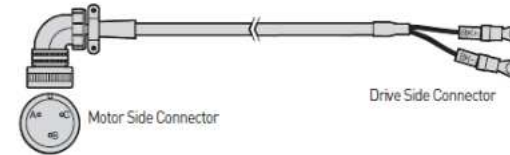
Power Cable: 400vac Motor

Type	Product Type	Model Name ^{Note1)}	Applicable Drive ^{Note2)}	Applicable Motor	Specifications									
For Power	Power Cable (Brake Type)	XLCS-P □□□ PB	LTSD- NB□□□U PB□□□U	LTSM- FFB020A / FFB020G / FFB030G	 Motor Side Connector Drive Side Connector									
					 <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Ground</td></tr><tr><td>E</td><td>BK+</td></tr><tr><td>F</td><td>BK-</td></tr></table> 1. Motor Side Connector • Plug Spec. : MS3108A 24-10S(MS) 2. Drive Side Connector • U, V, W Pin Spec. : 1512 • FG Pin Spec. : 1.5 x 3(Ring Terminal) 3. Power Cable Spec. : 4Cx1.5SQ or 4Cx15AWG 4. Brake Power side Connector • Connecting terminal Spec. : 1.5 x 3(Ring Terminal) 5. Brake Cable Spec. : 2Cx0.75SQ or 2Cx18AWG	PIN No.	Signal	A	U	B	V	C	W	D
PIN No.	Signal													
A	U													
B	V													
C	W													
D	Ground													
E	BK+													
F	BK-													
For Power	Power Cable (Middle Capacity)	XLCS-P □□□ JS	LTSD- NB□□□U PB□□□U	LTSM- FFB050A / FFB044G / FFB060G	 Motor Side Connector Drive Side Connector									
					 <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Ground</td></tr></table> 1. Motor Side Connector • Plug Spec. : MS3108A 22-22S(MS) 2. Drive Side Connector (U,V,W,FG) • U, V, W Pin Spec. : 4.0x 5(Ring Terminal) 3. Cable Spec. : 4Cx4.0SQ or 4Cx11AWG	PIN No.	Signal	A	U	B	V	C	W	D
PIN No.	Signal													
A	U													
B	V													
C	W													
D	Ground													
For Power	Power Cable (Brake Type)	XLCS-P □□□ LB	LTSD- NB□□□U PB□□□U	LTSM- FFB050A / FFB044G / FFB060G	 Motor Side Connector Drive Side Connector									
					 <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Ground</td></tr><tr><td>E</td><td>BK+</td></tr><tr><td>F</td><td>BK-</td></tr></table> 1. Motor Side Connector • Plug Spec. : MS3108A 24-10S(MS) 2. Drive Side Connector • U, V, W Pin Spec. : 4.0X5(Ring Terminal) 3. Power Cable Spec. : 4Cx4.0SQ or 4Cx11AWG 4. Brake Power side Connector • Connecting terminal Spec. : 1.5 x 3(Ring Terminal) 5. Brake Cable Spec. : 2Cx0.75SQ or 2Cx18AWG	PIN No.	Signal	A	U	B	V	C	W	D
PIN No.	Signal													
A	U													
B	V													
C	W													
D	Ground													
E	BK+													
F	BK-													

Note1) □ □ □ of Model Name indicates the kind and length of cable. And the declaration is as below.
In case of 400V products, you can use Robotic Cable only.

Cable Length(m)	3	5	10	20
Robotic Cable(F)	F03	F05	F10	F20

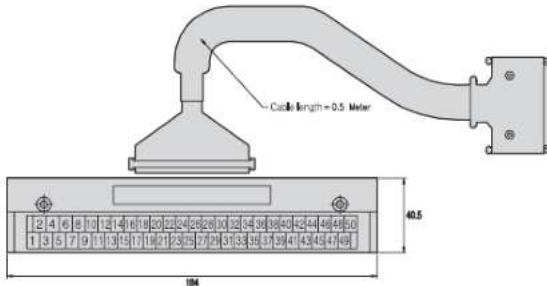
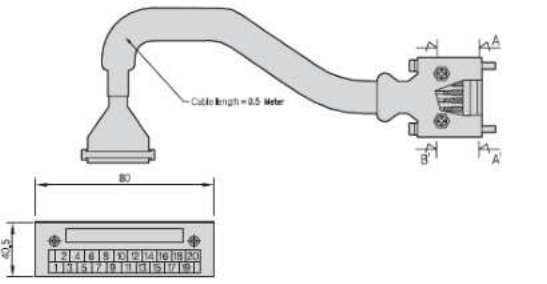
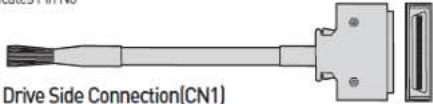
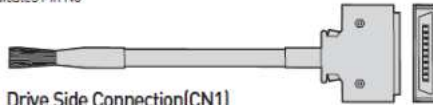
Power Cable: 400vac Motor

Type	Product Type	Model Name ^{Note1)}	Applicable Drive ^{Note2)}	Applicable Motor	Specifications														
For Power	Power Cable (Middle Capacity)	XLCS-P □□□MS	LTSD- NB□□□U PB□□□U	LTSM- FFB075G / FGB110G / FGB150G	 <table><tr><th>PIN No.</th><th>Signal</th><th>PIN No.</th><th>Signal</th></tr><tr><td>A</td><td>U</td><td>C</td><td>W</td></tr><tr><td>B</td><td>V</td><td>D</td><td>Ground</td></tr></table>	PIN No.	Signal	PIN No.	Signal	A	U	C	W	B	V	D	Ground		
					PIN No.	Signal	PIN No.	Signal											
A	U	C	W																
B	V	D	Ground																
1. Motor Side Connector • Plug Spec. : MS3108A 32-17S(MS) 2. Drive Side Connector(U,V,W,FG) • U, V, W Pin Spec. : 10x5(Ring Terminal) 3. Cable Spec: 4Cx10SQ or 4Cx7AWG																			
For Power	Brake Cable (same with 200V)	XLCS-P □□□SB	LTSD- NB□□□U PB□□□U	LTSM- FFB075G / FGB110G / FGB150G	 MS3108B14S-7S (2Circuits) <table><tr><th>PIN No.</th><th>Signal</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Ground</td></tr><tr><td>E</td><td>BK+</td></tr><tr><td>F</td><td>BK-</td></tr></table>	PIN No.	Signal	A	U	B	V	C	W	D	Ground	E	BK+	F	BK-
					PIN No.	Signal													
A	U																		
B	V																		
C	W																		
D	Ground																		
E	BK+																		
F	BK-																		
1. Motor Side Connector • Plug Spec. : MS3108B 14-7S(MS) 2. Brake Power side Connector • Connecting terminal Spec. : 1.5x3(Ring Terminal) 3. Cable Spec. : 2Cx0.75SQ or 2Cx19AWG																			

Note1) □ □ □ of Model Name indicates the kind and length of cable. And the declaration is as below.
In case of 400V products, you can use Robotic Cable only.

Cable Length(m)	3	5	10	20
General Cable(N)	N03	N05	N10	N20
Robotic Cable(F)	F03	F05	F10	F20

IO Cable

Type	Product Type	Model Name (Note1)	Applicable Drive (Note2)	Specifications
T/B	CN1 T/B	XLCS-VSCN1T-□□	LTSD-P	 • Extended CN1 T/B • Available Cable Length : 0.5[m], 1[m], 1.5[m], 2[m], 3[m]
	CN1 T/B	XLCS-L7NCN1T-□□	LTSD-N	 • Extended CN1 T/B • Available Cable Length : 0.5[m], 1[m], 1.5[m], 2[m]
IO Cable	CN1 Cable	XLC-CN1-□□A	LTSD-P	(Upper Controller) Indicates Pin No (Drive Connection Side CN1)  Drive Side Connection(CN1) • Case Spec. : 10350-52A0-008(3M) • Connector Spec. : 10150-3000VE(3M) • Cable Spec. : 20276-SB 25P(AWG28)
	CN1 Cable	XLCS-CN1-□□A	LTSD-N	(Upper Controller) Indicates Pin No (Drive Connection Side CN1)  Drive Side Connection(CN1) • Case Spec. : 10320-52A0-008(3M) • Connector Spec. : 10120-3000VE(3M) • Cable Spec. : ROW-SB0.1C×20C(AWG28)

Note1) □ □ □ of Model Name indicates the kind and length of cable. And the declaration is as below.

Cable Length(m)	3	5	10	20
General Cable(N)	N03	N05	N10	N20
Robotic Cable(F)	F03	F05	F10	F20

XLC-VSCN1T

Cable Length(m)	0.5	1	1.5	2	3
Declaration	None	01	015	02	03

XLCS-L7NCN1T

Cable Length(m)	0.5	1	1.5	2	3
Declaration	None	01	015	02	03

Electrical Standard Products (ESP) Offices:

HEAD OFFICE

L&T Electrical & Automation
L&T Business Park, TC 2, Tower 'B'
3rd Floor, Gate No 5
Saki Vihar Road, Powai
Mumbai 400 072
Tel: 022-67052874 / 2737 / 1156
e-mail: cic@LNTEBG.com

BRANCH OFFICES

L&T Electrical & Automation
501, Sakar Complex I
Opp. Gandhigram Rly. Station
Ashram Road
Ahmedabad 380 009
Tel: 079 4900 4000/4001
e-mail: esp-ahm@LNTEBG.com

L&T Electrical & Automation
No 38, Cubbon Road
Bengaluru 560 001
Tel: 080-46136103 / 100
e-mail: esp-blr@LNTEBG.com

L&T Electrical & Automation
131/1, Zone II, Maharana Pratap Nagar
Bhopal 462 011
e-mail: esp-bho@LNTEBG.com

L&T Electrical & Automation
Plot No. 559, Annapurna Complex
Lewis Road
Bhubaneswar 751 014
Tel: 0674-2436690 / 2436696
e-mail: esp-bsr@LNTEBG.com

L&T Electrical & Automation
Aspire Towers, 4th Floor
Plot No. 55, Phase-I
Industrial & Business Park
Chandigarh 160 002
Tel: 0172-4646840 / 41 / 42 / 46 / 53
e-mail: esp-chd@LNTEBG.com

L&T Electrical & Automation
L&T Construction Campus
TC-1 Building, II Floor
Mount-Poonamallee Road
Manapakkam
Chennai 600 089
Tel: 044-2270 6800
e-mail: esp-maa1@LNTEBG.com

L&T Electrical & Automation
67, Appuswamy Road, Post Bag 7156
Opp. Nirmala College
Coimbatore 641 045
Tel: 0422-4588120 / 1 / 5
e-mail: esp-cbe@LNTEBG.com

L&T Electrical & Automation
3rd Floor, 1&2 Vijay Park,
Main Chakrata road
Ballupur Chowk
Dehradun 248001
Tel: +91 9582252411

L&T Electrical & Automation
Khairasol, Degaul Avenue
Durgapur 713 212
Tel: 0343-2540448 / 2540449 / 2540443
e-mail: esp-dgp@LNTEBG.com

L&T Electrical & Automation
5, Milanpur Road, Bamuni Maidan
Guwahati 781 021
Tel: +91 8876554417
e-mail: esp-ghy@LNTEBG.com

L&T Electrical & Automation
2nd Floor, Vasantha Chambers
5-10-173, Fateh Maidan Road
Hyderabad 500 004
Tel: 040-67015052
e-mail: esp-hyd@LNTEBG.com

L&T Electrical & Automation
Monarch Building, 1st Floor
D-236 & 237, Amrapali Marg
Vaishali Nagar
Jaipur 302 021
Tel: 0141-4385914 to 18
e-mail: esp-jai@LNTEBG.com

L&T Electrical & Automation
Akashdeep Plaza, 2nd Floor
P. O. Golmuri
Jamshedpur 831 003
Jharkhand
Tel: 0657-2340502 / 08
e-mail: esp-jam@LNTEBG.com

L&T Electrical & Automation
Skybright Bldg; M. G. Road
Ravipuram Junction, Ernakulam
Kochi 682 016
Tel: 0484-4409420 / 4 / 5 / 7
e-mail: esp-cok@LNTEBG.com

L&T Electrical & Automation
3-B, Shakespeare Sarani
Kolkata 700 071
Tel: 033-48006001
e-mail: esp-ccu@LNTEBG.com

L&T Electrical & Automation
No. 10, Fortuna Tower, 2nd Floor
Rana Pratap Marg, Near NBRI
Lucknow 226001
e-mail: esp-lko@LNTEBG.com

L&T Electrical & Automation
No: 73, Karpaga Nagar, 8th Street
K. Pudur
Madurai 625007
Tel: 0452-2567405 / 2561068 / 2561657
e-mail: esp-mdu@LNTEBG.com

L&T Electrical & Automation
L&T Business Park, TC 2, Tower 'B'
3rd Floor, Gate No 5
Saki Vihar Road, Powai
Mumbai 400 072
Tel: 022-67052874 / 2737 / 1156
e-mail: esp-bom@LNTEBG.com

L&T Electrical & Automation
Unnati Building, 2nd Floor
Automation Campus
A-600, TTC Industrial area
Shil-Mahape road, Mahape
Navi Mumbai 400710
Tel: +91 22 67226502 / 67226300

L&T Electrical & Automation
12, Shivaji Nagar
North Ambajhari Road
Nagpur 440 010
Tel: 0712-2260012 / 6606421
e-mail: esp-nag@LNTEBG.com

L&T Electrical & Automation
32, Shivaji Marg,
Near Moti Nagar,
P. O. Box 6223
New Delhi 110 015
Tel: 011-41419514 / 5 / 6
e-mail: esp-del@LNTEBG.com

L&T Electrical & Automation
Grand Chandra, 2nd Floor
Fraser Road
Opposite Doordarshan Kendra
Patna 800001
e-mail: esp-patna@LNTEBG.com

L&T Electrical & Automation
L&T House
P. O. Box 119
191/1, Dhole Patil Road
Pune 411 001
Tel: 020-48544395 / 48544279
e-mail: esp-pnq@LNTEBG.com

L&T Electrical & Automation
Crystal Tower,
4th Floor, G. E. Road
Telibandha
Raipur 492 006
Tel: 0771-4283214
e-mail: esp-raipur@LNTEBG.com

L&T Electrical & Automation
3rd Floor
Vishwakarma Chambers
Majura Gate, Ring Road
Surat 395 002
Tel: 0261-2473726
e-mail: esp-sur@LNTEBG.com

L&T Electrical & Automation
Radhadaya Complex
Old Padra Road
Near Charotar Society
Vadodara 390 007
Tel: 0265-6613610 / 1 / 2
e-mail: esp-bar@LNTEBG.com

L&T Electrical & Automation
Door No. 49-38-14/3/2, 1st floor,
NGGO's Colony, Akkayyapalem,
Visakhapatnam 530 016
Tel: 0891-2791126 / 2711125
e-mail: esp-viz@LNTEBG.com

Product improvement is a continuous process. For the latest information and special application, please contact any of our offices listed here. Product photographs shown for representative purpose only.



L&T Electrical & Automation, Electrical Standard Products

L&T Business Park, TC-2, Tower B, 3rd Floor, Gate No. 5, Saki Vihar Road, Powai,
Mumbai - 400 072, INDIA www.lntebg.com

Customer Interaction Center (CIC)

BSNL / MTNL (toll-free): 1800 233 5858 Reliance (toll-free): 1800 200 5858
Tel: 022 6774 5858 Email: cic@lntebg.com Web: www.lntebg.com