



Digitized Automation for a Changing World

Delta Telescopic Belt Conveyor Integrated Drive LTC Series



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As the global e-commerce size expands, the logistics industry flourishes along the same lines. The loading and unloading equipment common in the logistics industry uses traditional telescopic belt conveyors that feature large-size control cabinets and contain complex parts and wiring, which is not conducive to tuning and fast maintenance. It often takes a long time to fix when failures occur, which may result in parcels being stuck in the distribution center and reducing operation efficiency.

Aiming to overcome these obstacles, Delta has launched the Telescopic Belt Conveyor Integrated Drive LTC Series customized for the logistics industry. Considering the industrial trends and actual applications, the LTC Series integrates dual-motor drives and features built-in PLC, 35W/24V power supply, and wide voltage relays in a compact size. The LTC Series is value-added for the logistics industry, and is easy to implement, tune, and maintain.



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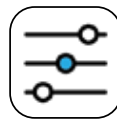
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Overview



Compact Size

Reduces control cabinet size by 60%



Fast Tuning

Simple parameters setting



Integrated Drive

Integrates motor drives and PLC



Easy Maintenance

Quick replacement



Easy Installation

Simple wiring for installation



Optimal Costs

Reduces the number of parts in the control cabinet

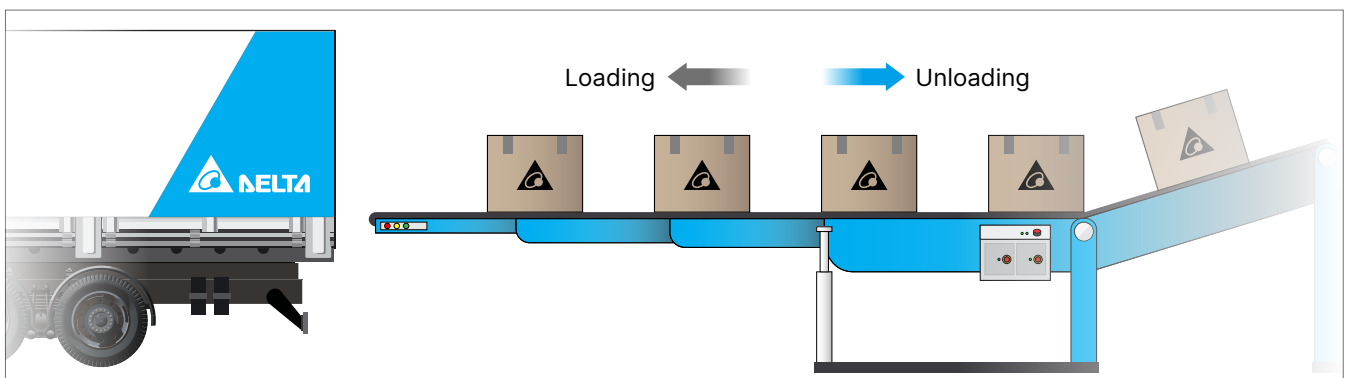
Power Range

380 ~ 480V_{AC} / 3-phase

Model	VFD2207LTC43A		VFD4015LTC43A	
Inverter Unit	VFD1	VFD2	VFD1	VFD2
Applicable Motor Power (kW)	2.2	0.75	4.0	1.5
Applicable Motor Power (HP)	3.0	1.0	5.5	2.0
Frame Size	A			

Applications

Logistics Telescopic Belt Conveyor - Loading/Unloading



Features

Rated Output Current
150% for 60 seconds



Compact and Thin-type Design

94.6 mm



Integrated 24 V_{DC} 35 W Power Supply



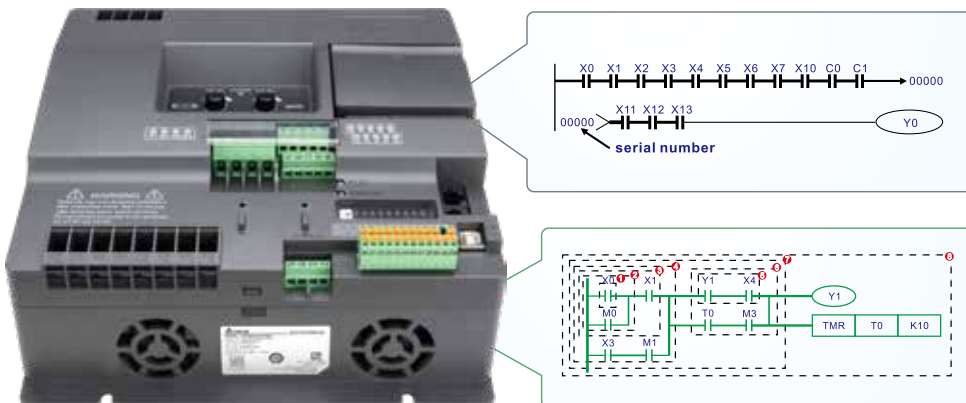
Sufficient I/O Terminals

- 21 DI (17 User-defined DI & 4 internal defined DI)
- 13 DO (8 User-defined DO & 5 Internal defined DO)



Integrated PLC

Integrates the Delta PLC (14k steps) with the motor drives to achieve secondary development



Features

LED Keypad

- 4 digits
- Supports status display: run, stop, forward, reverse
- Supports frequency setting knob (VR)
- RS-485 communication



Integrated Drive for Two Motors

Dual VR speed knobs to drive 2 asynchronous motors



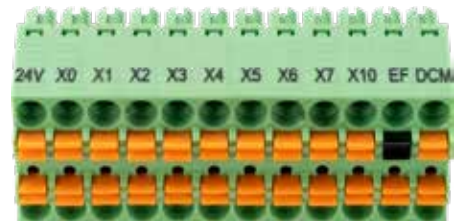
Built-in Load Relays

- 8 sets of high reliability, low failure rate relays
- All 8 sets support 220 V_{AC} and 24 V_{DC}; One of the sets supports 380 V_{AC} load
- Double-blade & single-throw relays (Y7-1 and Y7-2), designed for 380 V_{AC} brakes
- Equipped with relay replacement tool, easy to disassemble and replace



Emergency Stop Terminal for EF Input

Connects external emergency stop signals to the EF terminal to stop the inverters immediately without PLC programming



NPN/PNP Switch

NPN (Sink) or PNP (Source) mode can be switched according to the DI field signal



■ Appearance



1 Anti-contact Power Cables

2 Frequency Adjustment

- Sunken design to avoid collision of control knobs

3 DO Output Terminal Block

- Transparent cover to prevent accidental contact and enhance security

4 Fins

- Facilitates the arrangement and safety protection of motor brake cables

5 Binding Wire Block

- A pair of bridge holes for nylon cable tie installation
- A pair of round holes for push mount tie installation

6 PLC Upload / Download Port

- Standard USB-AM/BM square port, no need for adapter

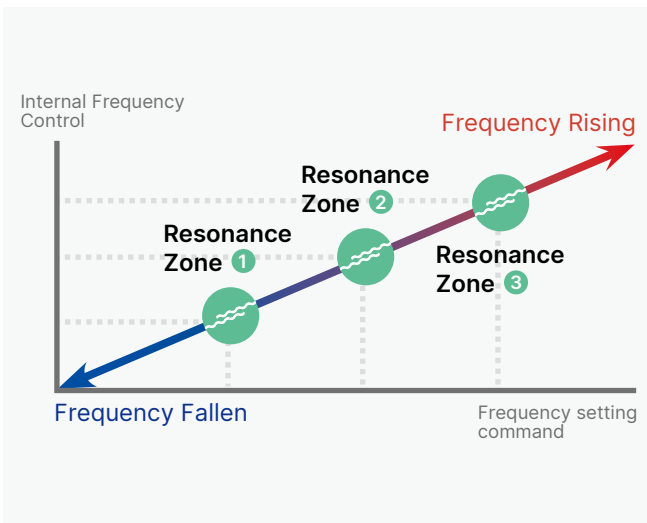
7 DI Input Terminal Block

- Vertical plug-in of DI signal cables
- Fast plug-in for easy wiring
- Optional SG+/SG- screw terminals for PLC RS-485 communication

8 Cooling Fan

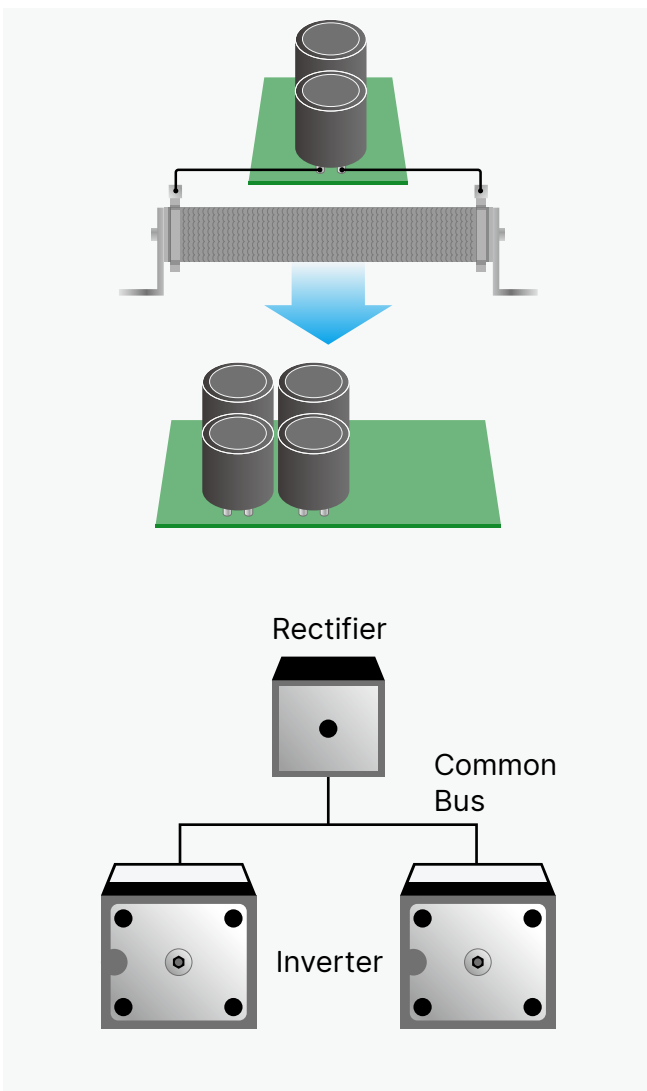
- Bottom air intake
- Dual fans to enhance heat dissipation

■ Highlight Functions



Skip Frequency

Skip Frequency function avoids motor vibration at a specific frequency band and protects the equipment. Users can restrict up to 3 zones of frequency range

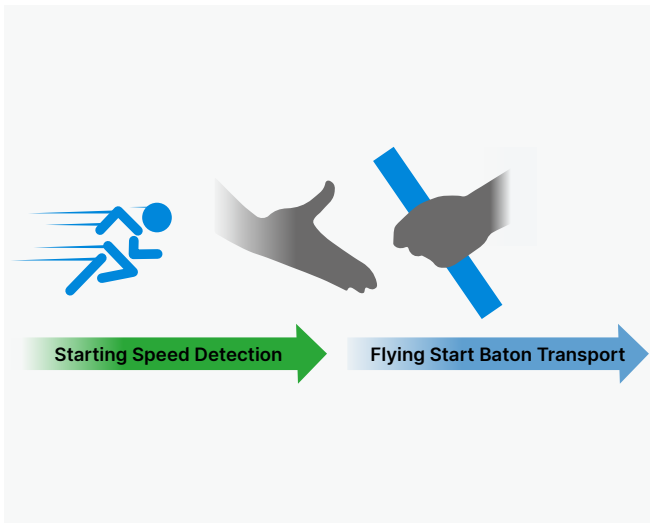


No Need for Brake Resistors

- Large capacitance
- Common bus design:
No need for optional brake and resistor, reduces implementation costs

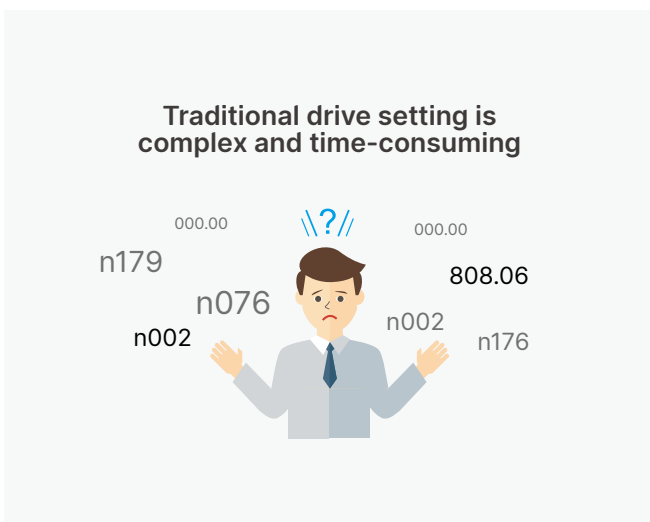
Regenerative Energy Suppression

Smart soft brake control:
Suppresses regenerative energy generated by sudden breaks to avoid reporting OV failure



Flying Start

- Ensures the drive runs smoothly under high inertial load without triggering the alarm, does not require the motor to stop
- When the drive restarts after momentary power loss (within 5s on LV), the speed searching allows the drive to activate flying start immediately and ensure a stable operation of the system without requiring the motor to fully stop in order to save time



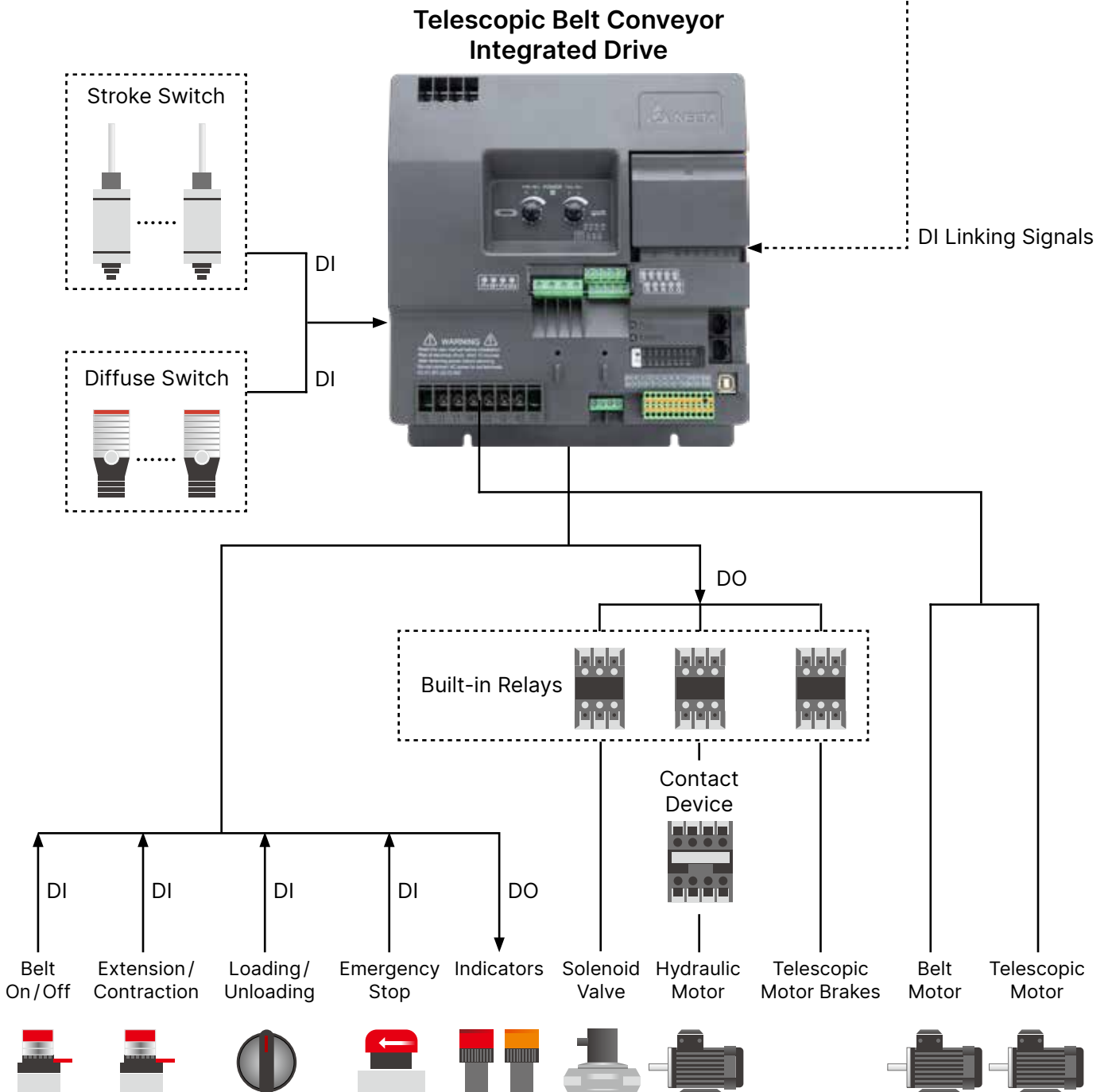
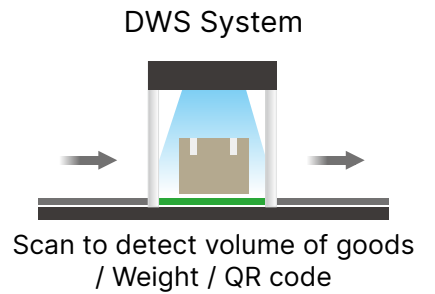
Simple Parameter Settings

Combines industry know-how to provide parameter groups for the LTC Series to simplify operation and shorten tuning time

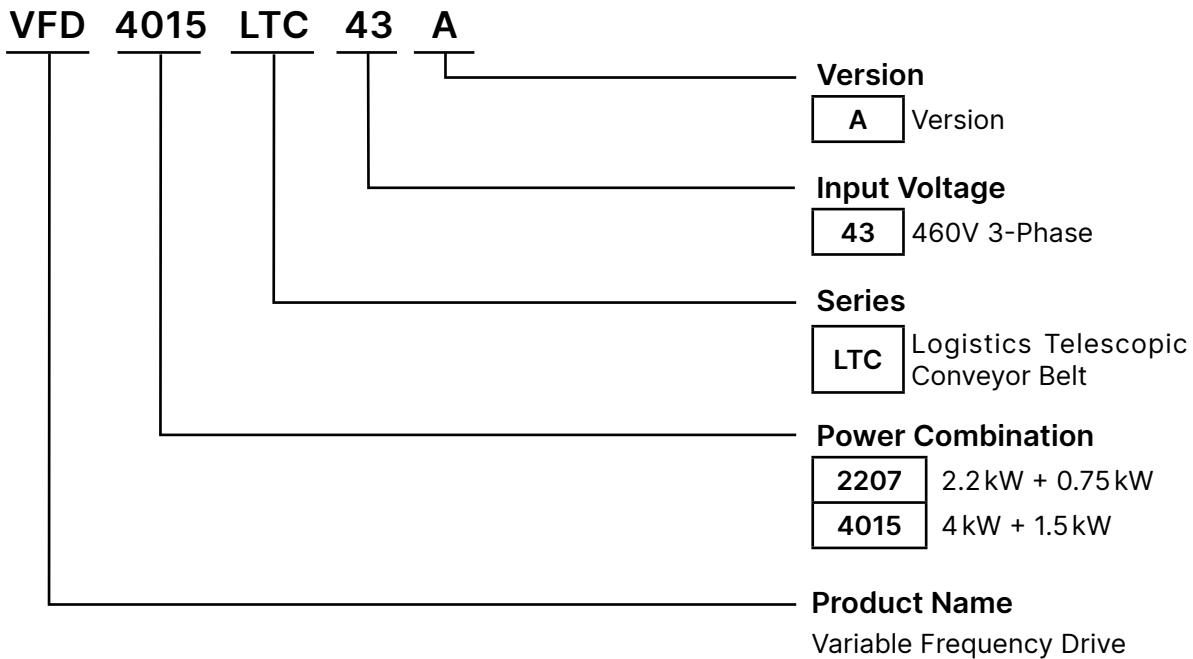


Solution Architecture

- Dimension Weight Scanning System
- Oil solenoid valve:
Reduces the pitch angle of the telescopic belt conveyor
- Hydraulic motor:
Increases the pitch angle of the telescopic belt conveyor



Model Name Description



Specifications

■ Controller

Frame		A			
VFD ____ LTC ____		VFD2207LTC43A		VFD4015LTC43A	
Description		VFD1	VFD2	VFD1	VFD2
Output Rating	Rated Capacity (kVA)	4.4	2.0	7.4	3.3
	Rated Current (A)	5.5	2.5	9.0	4.2
	Applicable Motor Power (kW)	2.2	0.75	4.0	1.5
	Applicable Motor Power (HP)	3	1	5.5	2
	Overload Capacity	150% of rated output current for 1 minute every 5 minutes			
	Max. Frequency (Hz)	0.1 ~ 400.0			
	Carrier Frequency (kHz)	2 ~ 12 (default 8)			
Input Rating	Input Current (A)	10.3		14.3	
	Rated Voltage / Frequency	3-phase AC 380V~480V (-10% ~ +10%), 50/60Hz			
	Operating Voltage Range	342 ~ 528 V _{AC}			
	Frequency Tolerance	47 ~ 63 Hz			
Efficiency (%)		95			
Net Weight (kg)		2.34		2.44	
Cooling Method		Fan cooling			
EMC Filter		Optional			

Load rating:

- While VFD1 is running continuously at 100%, VFD2 can still run continuously at 50% or periodically at 100% (up to 30 seconds per minute)
- When telescopic belt conveyors are not in use, these conditions have to be factored in, please contact Delta Customer Service for details

Specifications

■ PLC

Item	Specification	Notes
Control Mode	Alternating back-and-forth scanning method	
Input/Output Control Method	Cyclic refresh mode	
Processing Speed	Basic commands (several μ s)	Application commands (1~several dozen μ s)
Program Language	Instruction List (IL) + Ladder Diagram (LD)	
Program Capacity	14,000 steps	
I/O Points	DI (X): 17 + 4 = 21 DO (Y): 8 + 5 = 13	X: 17 user-defined DI & 4 internal defined DI Y: 8 user-defined DO & 5 internal defined DO

■ Motor Drive

Item	Specifications	
Inverter Control Characteristics	Control Mode	Sine wave PWM method / (V/F control)
	Frequency Setting Resolution	0.01Hz
	Output Frequency Resolution	0.01Hz
	Torque	Auto-torque compensation, slip compensation, reaches 150% of rated torque when starting torque is 5.0Hz
	Overload Capacity	150% of rated output current for 60 seconds
	Skip Frequency	Three points can be set from 0.1 ~ 400.0Hz
	Accel./Decel. Time	0.1~600 seconds (two steps of acceleration/deceleration time can be set separately)
	Stall Prevention Level	The range of motor load rated current (0 ~ 200%)
	DC Braking	Operated from 0 ~ 400.0Hz when drive stops. Starting time for DC current 0 ~ 100% of rated current, 0 ~ 60 seconds, and stopping time also 0 ~ 60 seconds
	V/F Curve	Adjustable V/F curve settings
Protection Functions	Overvoltage, over-current, low-voltage, external fault interruption, motor overload, drive overload, drive overheat	
Built-in Functions for Integrated Drive	Built-in AVR (Automatic Voltage Regulation) function, acceleration/deceleration S-curve settings, over-voltage, over current stall prevention, fault record, torque compensation, slip compensation, EF (External Fault) function, carrier frequency adjustment, upper and lower limit settings of output frequency, parameter reset, restart after fault, NPN/PNP mode selection	
External Keypad Panel	Not included (optional accessories PU08/PU08V)	
Certifications	CE, GB/T12668.3	

■ Operating Environment

Characteristics		Description
Environment	Protection Rating	IP20
	Pollution Degree	2
	Installation Location	An altitude of lower than 1,000 m, indoor; Indoor operation without corrosive gases, liquids, and dust
	Ambient Temperature	Non-condensing, non-freezing -10 ~ +45°C. Derate when operated with full-load in temperature above 45°C to protect service life
	Storage Temperature	-20°C ~ +60°C
	Humidity	Below 90% RH (non-condensing)
	Vibration	2.0 mm, peak to peak, value range from 2 ~ 13.2Hz; 0.7 ~ 1.0 G range from 13.2 ~ 55Hz; 1.0 G, range from 55 ~ 512 Hz; Compliance with IEC 60068-2-6

■ Operating Temperature and Protection Level

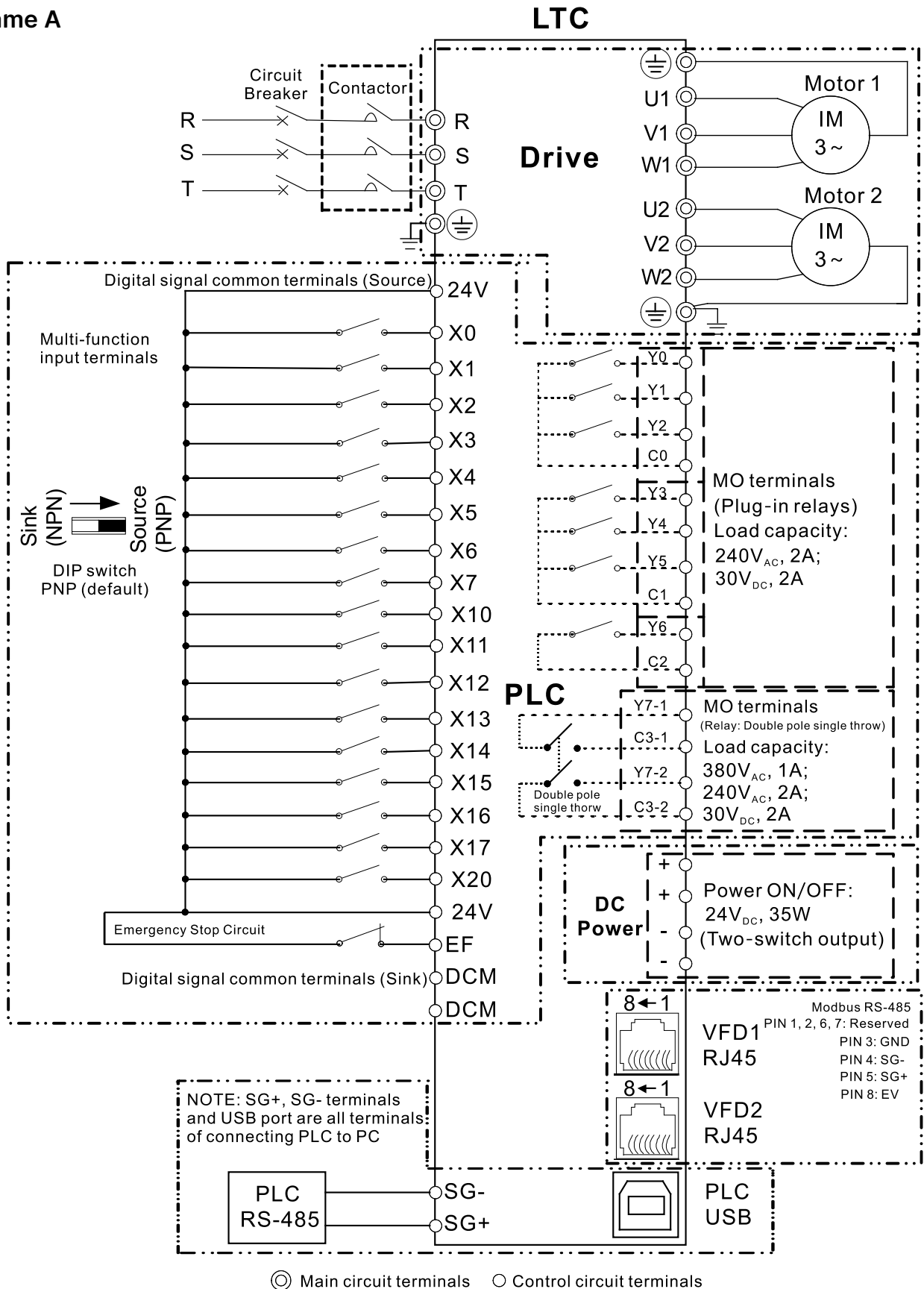
Models	Frame Size	Protection Rating	Operating Temperature
VFD2207LTC43A	Frame A	IP20	-10°C ~ +45°C
VFD4015LTC43A	Frame A	IP20	-10°C ~ +45°C

Note: -10°C ~ +45°C, no need to derate; +45°C ~ +60°C, needs derating



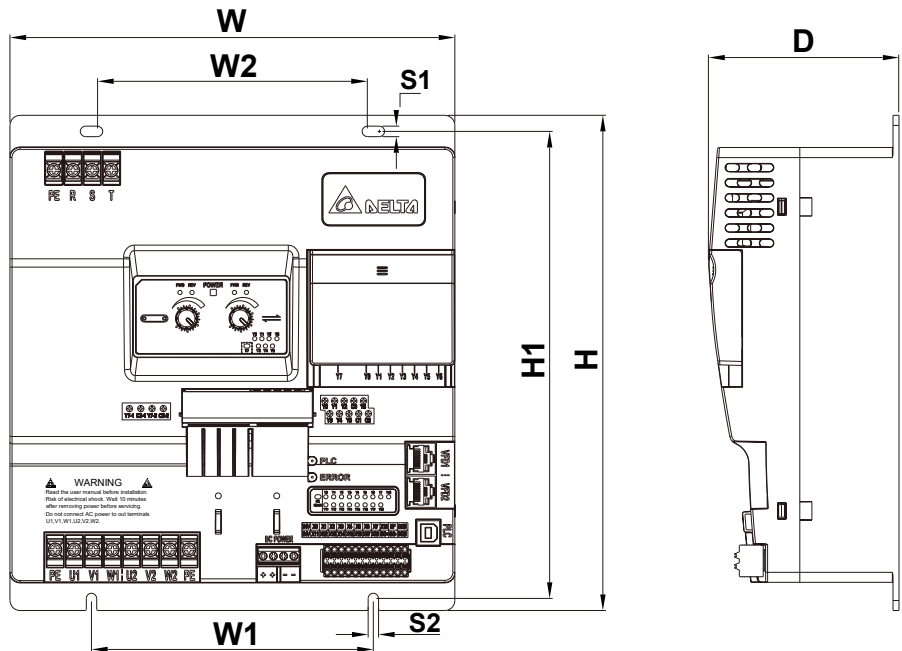
Wiring

Frame A



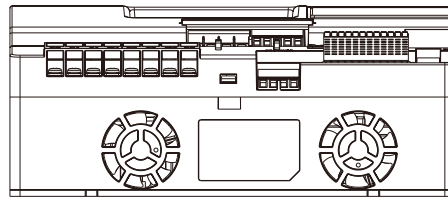
Dimensions

Frame A (IP20)




Models

- VFD2207LTC43A
- VFD4015LTC43A



Frame		W	W1	W2	H	H1	D	S1	S2
A	mm	221.0	140.0	134.0	246.0	232.0	94.6	5.2	5.2
	inch	8.70	5.51	5.28	9.69	9.13	3.72	0.20	0.20

Ordering Information

Frame Size		Power Range	Models
Frame A		460V: 2.2 kW + 0.75 kW	VFD2207LTC43A
		460V: 4.0 kW + 1.5 kW	VFD4015LTC43A

Note: VFD5515LTC43A (460V: 5.5kW + 1.5kW) available soon



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