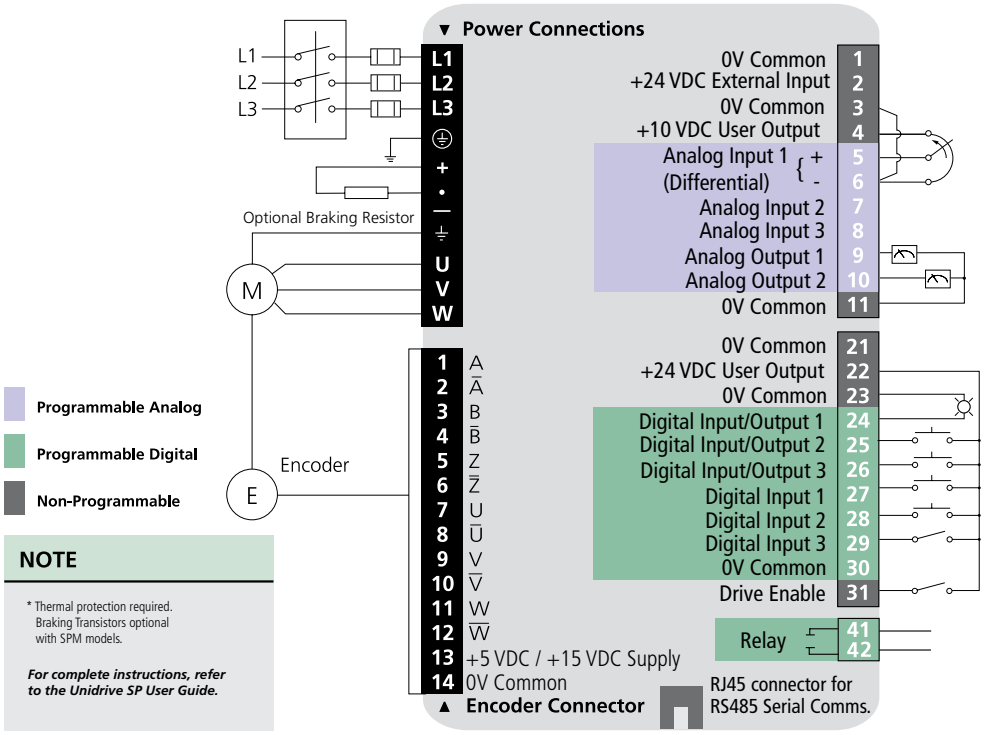
UNIDRIVE SP TERMINAL DIAGRAM



TERMINAL DESCRIPTION

Pin#	Function ①	Type/Description	Notes
1	0V Common		
2	+24 VDC External Input	Back up Power Supply for Control	60W, 24 VDC
3	0V Common	Common for External Analog Devices	
4	+10 VDC User Supply	Reference Supply	10 mA max
5	Analog Input 1 (Local Frequency/Speed Reference)	Differential Analog Input, Non-inverting Input, 16 bit	±10 VDC 100 k Ohms
6	Analog Input 1 (Local Frequency/Speed Reference)	Differential Analog Input, Inverting Input 16 bit	±10 VDC 100 k Ohms
7	Analog Input 2 (Remote Frequency/Speed Reference)	Single-ended Analog Input 10 bit	±10 VDC, 100 k Ohms or 4-20 mA, 200 Ohms ②
8	Analog Input 3	Single-ended Analog Input 10 bit	±10 VDC, 100 k Ohms or 4-20 mA, 200 Ohms ②
9	Analog Output 1 (Frequency/Speed Monitor)	Single-ended Analog Output, Bi-polar, 10 bit	±10 VDC or 0-20 / 4-20 mA ②
10	Analog Output 2 (Motor Torque Monitor)	Single-ended Analog Output, Bi-polar, 10 bit	±10 VDC or 0-20 / 4-20 mA ②
11	0V Common	Common External Analog Signals	

Pin#	Function ①	Type/Description	Notes
21	0V Common		
22	+24 VDC User Output	User Supply	200 mA max
23	0V Common	Common for External Digital Inputs	
24	Digital I/O 1 (Zero Speed Output)	Digital Input/Output	0 to 24 VDC input, or 1 to 24 VDC, 100 mA max output
25	Digital I/O 2 (Reset Input) 100 mA max output	Digital Input/Output	0 to 24 VDC input, or 1 to 24 VDC
26	Digital I/O 3 (Run Forward Input)	Digital Input/Output	0 to 24 VDC input, or 1 to 24 VDC, 100 mA max output
27	Digital Input (Run Reverse)	Digital Input	0 to 24 VDC, 7.5 k Ohms
28	Digital Input (Local/Remote)	Digital Input	0 to 24 VDC, 7.5 k Ohms
29	Digital Input (Jog)	Digital Input	0 to 24 VDC, 7.5 k Ohms
30	0V Common	Common for External Digital Inputs	
31	Safe Torque Off Input (drive enabled)	Digital Input	0 to 24 VDC, 1 µsec sample
41	Status Relay (Drive Healthy)	Normally Open	240 VAC, 2A resistive
42	Status Relay (Drive Healthy)	Normally Open	240 VAC, 2A resistive

① Values in (parenthesis) designate default functions.
② 0-20, 4-20 mA modes are also available. See Unidrive SP User Guide.

UNIDRIVE SP SPECIFICATIONS

Environment

Ambient Operating Temperature	0° to 40°C (32° to 104°F) 0° to 50°C (32° to 122°F) with derating
Cooling method	Forced convection
Humidity	95% maximum non-condensing at 40°C (104°F)
Storage Temperature	-40° to 50°C (-40° to 122°F)
Altitude	0 to 3000 m (9,900 ft). Derate 1% per 100 m (328 ft) between 1000 m (3280 ft) and 3000 m (9,900 ft).
Vibration	Tested in accordance with IEC 68-2-34
Mechanical Shock	In accordance with IEC 68-2-27
Enclosure	NEMA 1 (IP 20), NEMA 12 (IP 54) through panel mounting
Electromagnetic Immunity	In compliance with IEC801 and EN50082-2, and complies with EN61800-3 with built-in filter
Electromagnetic Emissions	In compliance with EN50081-2 when the recommended RFI filter is used and EMC installation guidelines are followed

AC Supply Requirements

Voltage	200 to 240 VAC ±10% 380 to 480 VAC ±10% 500 to 575 VAC ±10% 500 to 690 VAC ±10%
Phase	3Ø (SP size Zero) 200-240V 1Ø or 3Ø)
Phase Imbalance Tolerance	2% negative phase sequence (equivalent to 3% voltage imbalance between phases)
Frequency	48 to 65 Hz
Input Displacement Power Factor	0.93

Control

Carrier Frequency	3, 4, 6, 8, 12,16 kHz - panel mounted drives 3, 4, 6 kHz - Free Standing and SPM drives
Output Frequency	0 to 3000 Hz (Open loop)
Output Speed	0 to 40,000 RPM (Closed loop)
Frequency Accuracy	±0.01% of full scale
Frequency Resolution	0.001 Hz
Analog Input Resolution	10 Bit + sign (Qty 2); 16 Bit + sign (Qty 1)
Serial Communications	2-wire RS485 4-wire RS232 or RS485 with SM-APPS module Protocol is ANSI x 3.28-2.5-A4, or Modbus RTU Baud rate 300 to 115,200.
Braking	DC injection braking (stopping and holding) standard. Dynamic braking transistor standard.
Control Power Ride Through	Up to 1 second depending on inertia and decel time

Protection

DC Bus Undervoltage Trip	175 / 350 / 435 VDC (approximately 124 / 247 / 307 VAC line voltage)
DC Bus Overvoltage Trip	415 / 830 / 990 VDC (approximately 293 / 587 / 700 VAC line voltage)
MOV Voltage Transient Protection	160 Joules, 1400 VDC clamping (Line to line and line to ground)
Drive Overload Trip	Current overload value is exceeded. Programmable for Normal Duty or Heavy Duty, Open loop or Closed loop operation
Instantaneous Overcurrent Trip	225% of drive rated current
Phase Loss Trip	DC bus ripple threshold exceeded
Overtemperature Trips	Drive heatsink, control board, and option module(s) monitoring
Short Circuit Trip	Protects against output phase to phase fault
Ground Fault Trip	Protects against output phase to ground fault
Motor Thermal Trip	Electronically protects the motor from overheating due to loading conditions

Approvals & Listings

UL, cUL	UL File #E171230
IEC	Meets IEC Vibration, Mechanical Shock and Electromagnetic Immunity Standards
CE	Designed for marking
NEMA	NEMA 1 enclosure type
VDE	Meets VDE Electromagnetic Emissions Standards
ISO 9002	Certified Manufacturing Facility

DIMENSIONS