UniDrive PRO 2.0 Network Conveyor Zone Controller Installation Guide

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UniDrive®

ZoneLogix® PRO 2.0

Network Conveyor Zone Controller
For use with all UniDrive® Brushless 24 VDC Motors

Part #301810

All-in-One Solution

In-Zone Package Handling Logic • BLDC Motor Drive • Networked Zone Control • PLC Interface Via EtherNet/IP

The UniDrive® ZoneLogix® PRO combines a brushless DC motor control and a networked intelligent conveyor zone controller into one compact, cost-effective system. It is easy to install and can be easily configured for use in several different operating modes.

ZoneLogix® PRO 2.0

The ZoneLogix® PRO 2.0 controller can be integrated into the most challenging material handling applications. This unit offers numerous features to control the movement of almost any object in a networked environment.

ZoneLogix® PRO 2.0 was designed to provide levels of operation ranging from basic motor speed and direction capability to advanced sophisticated implementations. A system can also include an optional ZoneLogix® PRO 2.0 Branch Monitor having a fieldbus module (EtherNet/IP) to address specific applications and networking requirements.

BI-DIRECTIONAL ZPA (ZERO PRESSURE ACCUMULATION)

- Complete conveyor or material handling system in one unit
- Each motor is paired with one ZoneLogix® PRO 2.0 controller which supervises its functions, sensor inputs & zone handling logic
- Unlimited configuration capabilities
- Automatic firmware & configuration updates
- Built-in fault detection and notification

ADVANCED MODE

Using a Branch Monitor with EtherNet/IP module

- Enhanced zone-to-zone configuration ability
- Built in I/O offers user interface options
- Ability to select one of multiple motor options
- Set maximum motor input current
- Set specific motor speeds
- Utilize added fault diagnostics & information
- Ability to leverage networking power of ZoneLogix® PRO 2.0 to provide automated package tracking and sophisticated PLC networking capabilities

ELECTRICAL SPECIFICATIONS

Input Voltage (PELV supply recommended)
Motor ratings based on operation at 24 VDC

- Minimum: 22 VDC

- Nominal (rating): 24 VDC
- Maximum: 28 VDC

Input Current (Amps)			
Output Power Wattage	**Current at Max Speed & No-load**	**Current at Rated Torque (Amps) Typ.**	**Maximum Current Setting**
25W	0.2	1.8A @ 8 in-lbs	3.0
48W	0.2	2.9A @ 15 in-lbs	4.0
60W	0.3	3.7A @ 15 in-lbs	5.0
80W	0.4	4.5A @ 15 in-lbs	6.0
100W	0.5	5.6A @ 15 in-lbs	7.0
120W	0.6	6.4A @ 14 in-lbs	7.5
Max input current <1.2 x max current setting (During overload)			

Six (6) Programmable PNP Inputs/Outputs (2 input only)

- Inputs
  Nominal Load: 24 VDC, 3 mA
  Minimum: 18 VDC
  Maximum: 28 VDC
- Outputs
  Nominal Load: 24 VDC, 500 mA (max), resistive and/or inductive
  Minimum: Input Voltage – 2 VDC
  Maximum: Input Voltage

ENVIRONMENTAL SPECIFICATIONS

Control Temperature Limits		
Condition	**Minimum Ambient**	**Maximum Ambient**
Operating (control mounted on metal)	-4°F (-20°C)	122°F (50°C)
Storage	-40°F (-40°C)	176°F (80°C)
Humidity (non-condensing)	10%	90%

CONTROL FUNCTIONS

Speed Control Range		
Motor Series	**Minimum Speed RPM**	**Maximum Speed RPM**
UD025	70	280
UD048	55	250
UD060	70	350
UD080	95	440
UD100	115	570
UD120	145	715

MISCELLANEOUS

Speed Control Method

- Programmable (over full speed range): (using ZoneLogix® PRO Branch Monitor)
- Override (dynamic speed adjustment): Using 1-9 VDC Analog Input – max speed 9 to 24 VDC
- Motor Acceleration to Max Speed Setting: 1 Second (typical)
- 25 starts/stops per minute (At Max Current Limit)

Stall Torque approximately 80% Rated Torque

- 15 in-lbf equals 1.7 N-m
- 1.0 lbf equals 4.45 Newtons
- 1.0 lb equals 0.454 kg
- 700 RPM gives 5.8 ft/sec (1.77 meters/sec) with a 1.9 inch diameter roller

For programming functionality and capabilities, please refer to the optional Branch Monitor User Manual.

Part #301123

CONVEYOR OPERATING MODES

- **Basic Mode** (UD048 Motor only)
  Default Current limit is 4.0A
  Default Out-of-the-Box ZPA (Singulate)
  Refer to the User Manual for I/O Functions
- **Advanced Mode** (Requires Branch Monitor)
  Bi-Directional ZPA
  Full independent or multiple zone control
  Full PLC control via EtherNet/IP
  6 programmable I/O
  Refer to the Branch Monitor for Programmable
  Functions

Braking Method

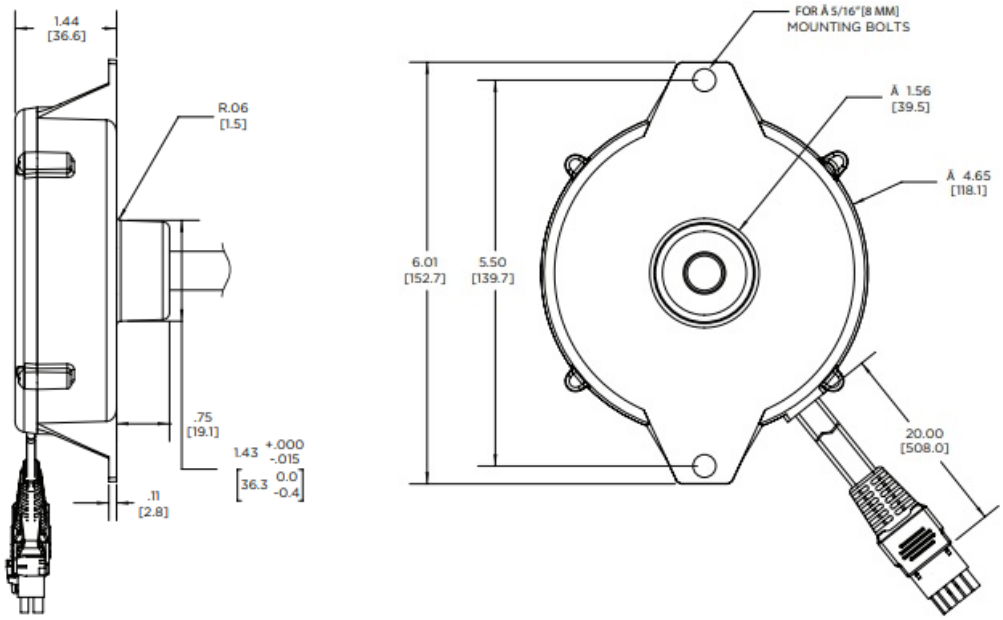
- **Dynamic Braking**
  Brings 44 lb (20kg) parcel to stop approx. 6″ after stop signal applied (UD048)
- **Zero-Motion Hold (ZMH) in ZPA mode**
  Restricts parcel from coasting after braking applied (80% rated torque)
- **Coasting (Disable Op mode)**
  Motor coasts to a stop

Protection (faults shown on Branch Monitor)		
Fault	**Condition**	**Response**
Over Speed	20% Over Maximum	Applies Dynamic Braking, operation resumes when speed drops
Stalled Motor	Speed Under 30 RPM	Control input current reduced, Stall Torque approximately 80% Rated Torque
Over Voltage on Input	Over 28 VDC	Applies Dynamic Braking, operation resumes when < 27 VDC
Under Voltage on Input	Under 20 VDC	Applies Dynamic Braking, operation resumes when > 22 VDC
Shutdown on Extreme Overcurrent	Can occur during Motor Overload	Automatic restart if overload removed within 10 Sec.
Control Over Temperature	Control PC Board > 80° C	Control Shuts down, operation resumes after temp drops 10°C

USE WITH ALL UNIDRIVE® BRUSHLESS 24 VDC MOTORS

(sizes from 25 watt up to 120 watt output power)

Common Motor Dimensions (output shaft may vary)
(see motor spec sheets for details)



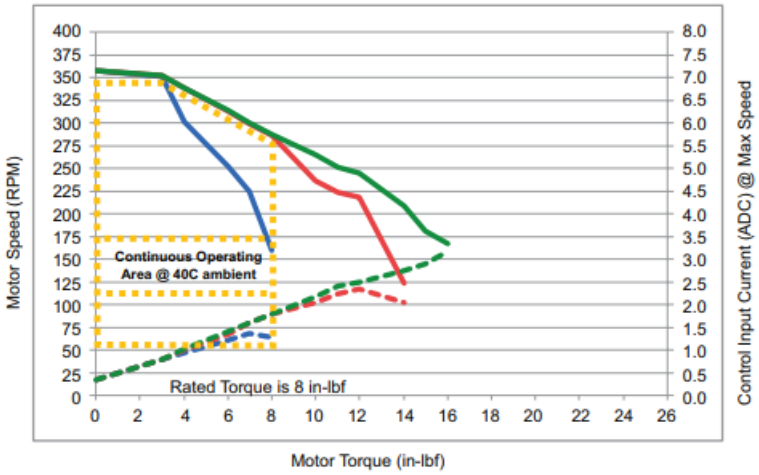
Plug and Play Simplicity
The UniDrive® motor is a rugged, reliable device that gives you a simple plug and play connection. You control your manufacturing lead-time.

Simple to Service
Motor Life is typically 10+ years, however, if a motor ever fails, it is easy to replace. Only one part number needs to be stocked for spares and repairs.

Features

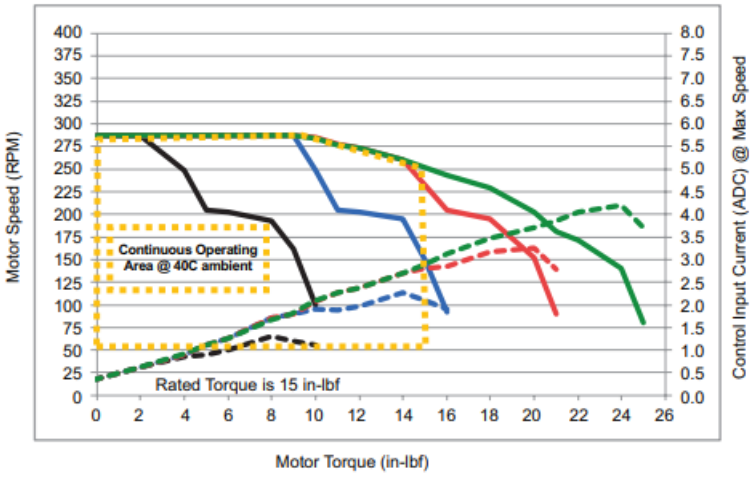
- Quiet, 24 VDC Brushless DC motor
- Pancake Style Motor, 4.65″ diameter x 1.44″ thickness
- Motor has various shaft options
- 20″ long motor cable with molded connector

UD025*



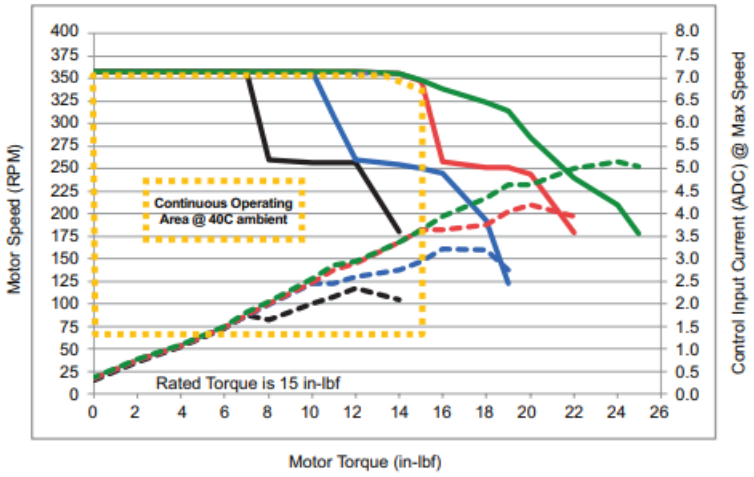
= 3A current limit = 1A current limit
= 2A current limit

UD048*



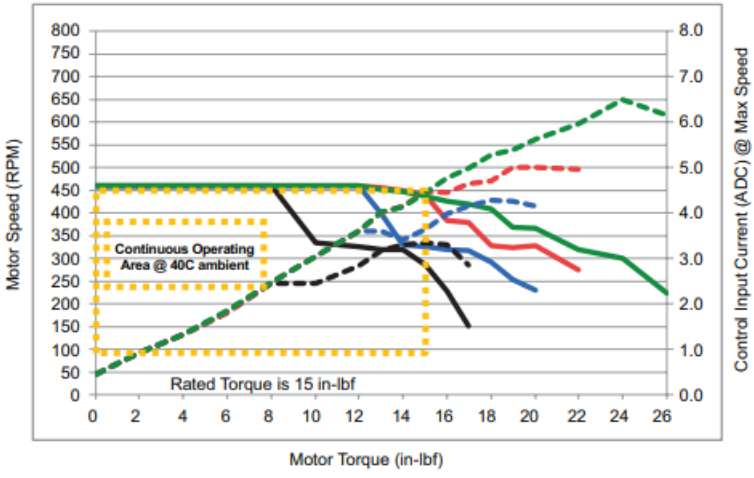
= 4A current limit
= 2A current limit
= 3A current limit
= 1A current limit

UD060*



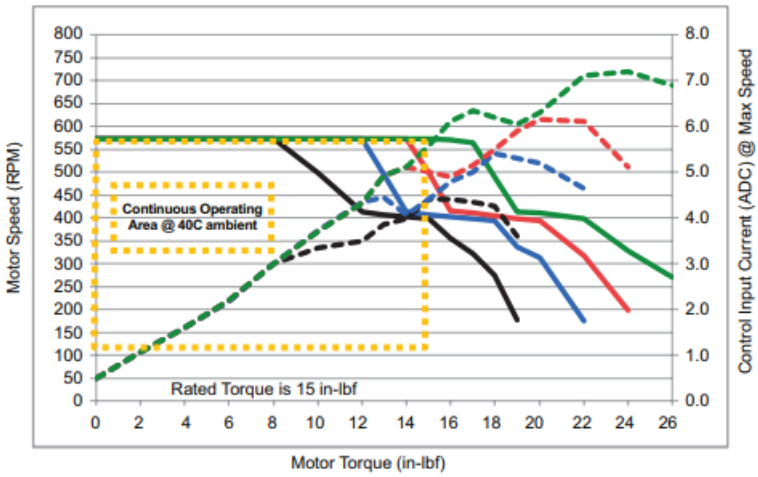
= 5A current limit
= 3A current limit
= 4A current limit
= 2A current limit

UD080*



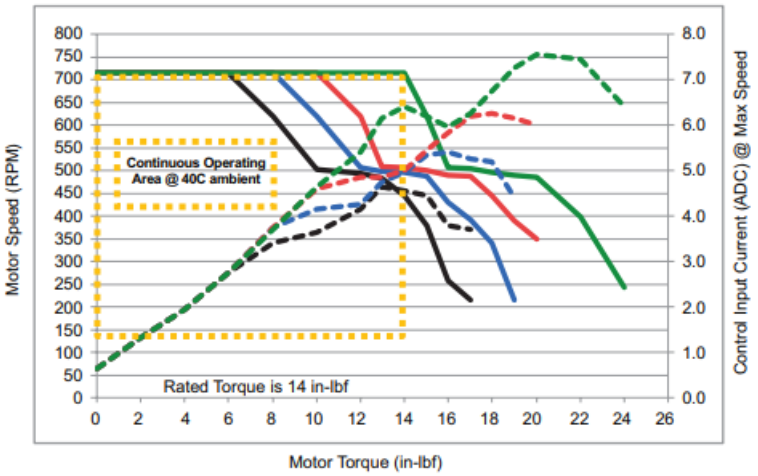
= 6A current limit
= 4A current limit
= 5A current limit
= 3A current limit

UD100*



= 7A current limit
= 5A current limit
= 6A current limit
= 4A current limit

UD120*

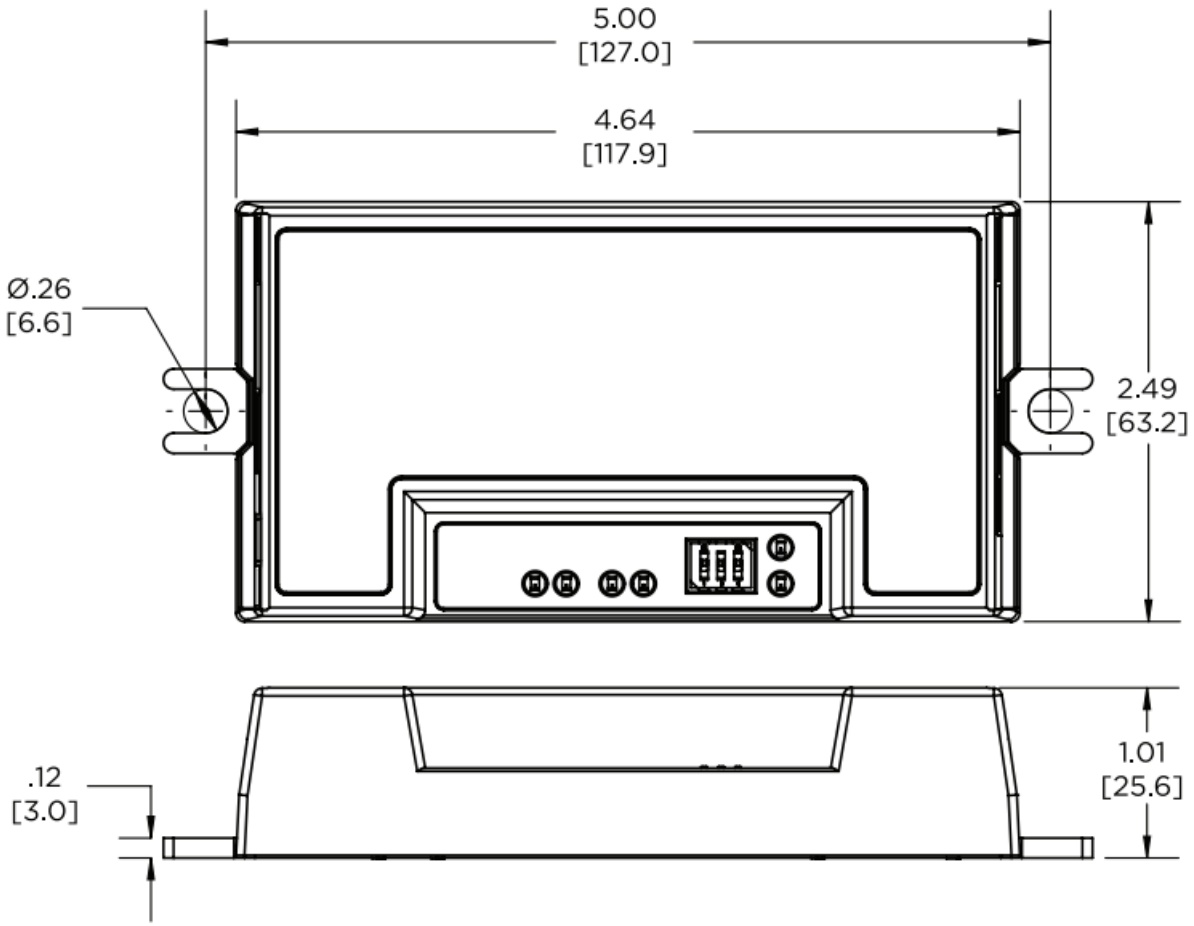


= 7.5A current limit
= 5A current limit
= 6A current limit
= 4A current limit

*Motor Speed (RPM) & Control Input Current (ADC) vs Load Torque (in-lbf) (at 24 VDC & 20C & max. speed setting)

ZONELOGIX® PRO ZONE CONTROLLER – DIMENSIONS & CONNECTORS

Controller Dimensions:



Mating Plugs & Cables:

Phoenix Contact P/N 1881338:	3pos Terminal Block Plug for Photo-Eye Sensor (2 plugs req., (1) included)
Phoenix Contact P/N 1881341:	4pos Terminal Block Plug for Control I/O (2 plugs req., (1) included)
Molex P/N 1722561002:	2pos Rectangular Plug, Black, without TPA (1 plug req., not included)
RJ-45 Communication Cable:	Modular Cable, Plug to Plug, 8p8c, RJ-45, Ethernet, < 3m (not included)
Molex P/N 2174711123	Black 16 AWG Pre-Crimped w/Molex 1722537023 Crimp Terminal 8.86″
Molex P/N 2174712123	Red 16 AWG Pre-Crimped w/Molex 1722537023 Crimp Terminal 8.86″

NOTE! Please see the installation and user manual for complete safety and setup instructions.

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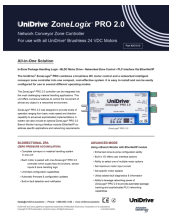
Documents / Resources



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PRO 2.0 Network Conveyor Zone Controller, PRO 2.0, Network Conveyor Zone Controller, Conveyor Zone Controller, Zone Controller