

EZ500

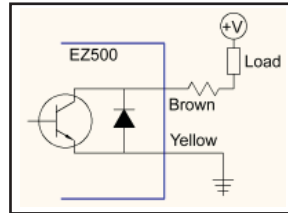
Underspeed Detection Motion Controller

EZ500 Installation Manual

TACHOMETER PULSE OUTPUT OPTION:

A Tachometer pulse output is available for connecting to digital tachometer displays or to a PC or PLC.

- One 15ms output pulse per revolution.
- 24VDC, 25mA maximum load
- NPN (Sinking) transistor output type.
- Tachometer and Data Output options cannot be combined on the same unit.



DATA OUTPUT OPTION (DC Models only):

Serial data is available for output to a PC or PLC based monitoring system.

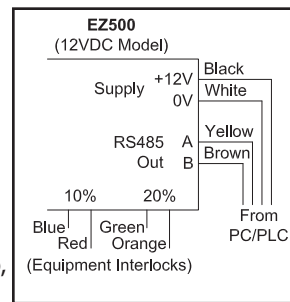
The EZ500 operates as a client/slave and sends the speed and status upon receiving a request from the PC/PLC server/master.

Data Format: ASCII, RS-485, 9600 Baud, N-8-1

Data Syntax:

- Data Request: "%", EZ500 ID, "#"
example: %01#
- Data Reply: "%", EZ500 ID, Status, Speed! CKS, "#"
example: %01,1,100!65#

Status Codes: 0=Startup, 1=Normal (OK), 2=10% Trip, 4=20% Trip, 8=5 Second Trip, 16=Slowed during Startup, 32=90 Second Max exceeded, 64=Not Calibrated.



EZ500 SPECIFICATIONS:

Supply voltage:	AC: 120VAC or 240VAC, 50/60Hz, 5VA DC: 12VDC or 24VDC, 100mA. Supply must be fused by installer.
Wiring:	3 pair 20 AWG, 4 pair for data/pulse option units.
Relays:	(2) N/O. Contacts: 5A @240VAC, 2A Inductive
Speed Range:	8-1000 RPM
Tachometer option:	15mS pulse output. 30VDC, 50mA max (NPN sinking).
Serial Data option:	ASCII: % speed and status code via RS-485 (DC models only)
Threads:	1/2"-13 male threads 5/8" wrench flats 1/2" NPT Conduit fitting
Dimensions:	6 3/4"H x 2 1/2"W x 1 3/4"D
EZMount Magnet:	1.9" Diameter x .5"H

GENERAL DESCRIPTION:

EZ500 is a shaft mounted, underspeed detection motion controller. Dual set-points provide relay outputs at 10% and 20% slowdowns, a Target LED provides visual indication of shaft rotation and a Status LED provides operating status.



THE EZ500 ADVANTAGE:

- 10% Slowdown Relay: Closes at 10% slowdown.
- 20% Slowdown Relay: Opens at 20% slowdown.
- Advanced start-up monitoring and protection.
- Easy one-step calibration.
- Status LED and Target LED rotation indicator.
- Tachometer pulse output option (NPN Sinking).
- Serial (ASCII) data output option for PC/PLC interface.
- 12VDC, 24VDC, 120VAC, 240VAC models available.
- EZ-Mount magnetic mount or 3/8"-16 threaded shaft options.

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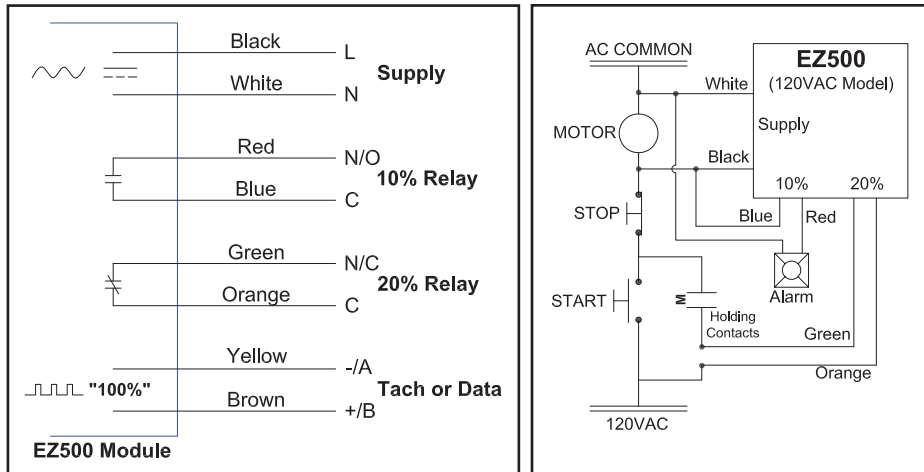
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3/16/2010

WIRING:

☞ Wire the EZ500 so it ONLY receives power when the Start button is pressed and the monitored equipment is running. Power to the EZ500 should be removed when the equipment is not running (i.e. the Stop button is pressed or the equipment interlocks have shut the equipment down). Fuse the AC supply for 5A max.



Relay states shown here are with power applied and equipment running at normal (>90%) speed. Typical 120VAC wiring with 10% Alarm and 20% shutdown interlock.

CALIBRATION:

☞ **You must calibrate the EZ500 for proper operation and protection.**

To Install and Calibrate the EZ500:

- 1) Install the EZ500 by attaching (thread or magnet) to the end of the rotating shaft of the monitored equipment.
- 2) Wire the EZ500 per these installation instructions.
- 3) Start the equipment and allow it to come up to full normal operating speed. If the EZ500 shuts down the equipment before coming up to speed, see below*.
- 4) Swipe the Calibration Magnet across the "Calibration" point on side of unit.
- 5) The Status LED will flash Green 3 times to indicate a successful calibration.
- 6) 90% and 80% set-points are recalculated based on the new calibration.

* It may be necessary to "RESET" the EZ500 if it is calibrated for too high of a speed and doesn't allow your equipment to come up to full speed before shutting it down.

RESET THE EZ500: To RESET the EZ500 simply calibrate it at zero speed. Do this with the shaft not spinning, or, with the EZ500 removed from the shaft.

☞ **IMPORTANT:** After the EZ500 is RESET (not calibrated) it will allow the equipment to operate and will NOT shut it down based on time-outs or 10%, 20% slowdown trips. **You must re-calibrate the EZ500 for proper operation and equipment protection.**

FUNCTIONS:

☞ **EZ500 begins monitoring motion when power is applied.**

☞ **The Start-Up Delay and Time-out timers begin when power is applied.**

EZ500 provides dual setpoint underspeed detection with dual relay outputs. The advanced startup sequence monitors for the following conditions:

- Start-up Delay: No-motion at all detected 5-10 seconds from start:
8-20RPM=10 seconds, >20RPM = 5 seconds
- Slowdown: Any slowdown detected before reaching 90% speed.
- Max. Time-out: 30 second maximum time limit to reach 90%.

After reaching normal operating speed:

- 10% Slowdown: Relay #1 closes to sound an alarm.
- 20% Slowdown: Relay #2 opens to shut down equipment. Relay #1 opens.

Function	Description	10% Relay	20% Relay	Status LED
Apply Power	Startup sequence begins	Opens	Closes	Flash Red, Green once
Not Calibrated	EZ500 is not calibrated (RESET)	-	Closes	Alternate Red, Green
Calibrate OK	Swipe magnet to calibrate EZ500	-	-	3 rapid Green flashes
Ramp Up	Equipment comes up to speed	-	-	Flashing Green (1 Sec.)
Start-Up Delay	No Motion within 5-10 seconds	-	Opens	Flashing Red (1 sec.) *
Slowdown Trip	Slowdown before reaching 90%	-	Opens	Red flashing Orange *
Max Time-Out	Failure to reach speed in 30 sec.	-	Opens	Orange (green+red) *
Normal	Normal operation: Speed > 90%	-	-	Green
10% Slowdown	10% relay close, Sounds alarm	Closes	-	Flashing Red (1/2 sec.)
20% Slowdown	Equipment shutdown	Opens	Opens	Red *
Target LED	Rotation indicator	-	-	Target LED flashes Red

* 20% Relay Opens: The monitored equipment will shut down at this point. Power to the EZ500 is typically disconnected at this time so the Status LED will no longer light. The Status LED colors listed above are for diagnostic purposes only and will only be seen when the EZ500 is receiving power even after equipment shutdown.

"-" Indicates the relay does not change state.

EZ500 MODELS:

Supply	Standard	Tach Option	Data Option
120 VAC	945.000501	945.000502	N/A
240 VAC	945.000504	945.000505	N/A
12 VDC	945.000511	945.000512	945.000513
24 VDC	945.000514	945.000515	945.000516

Tach and Data options cannot be specified on the same unit.