APPLICATION NOTE

Product Family: GS Drives

Number: AN-GS-005

Date Issued: 06/09/03

Revision: Original

Subject:
Trim control of milling machine withDL06 and GS2 drives. (This can also be described as constant material removal control)

Application Description

An Automation Direct DL06 PLC with an EZ Text Panel controlling 2 GS2 AC micro drives. The motor current 0-10 vdc analog feedback from the cutting wheel drive is used to trim the feed drive on a milling machine.

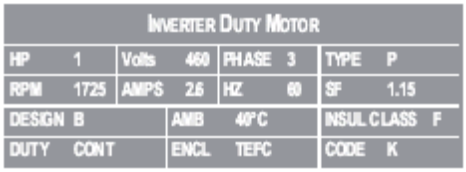
Specifications

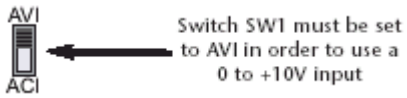
EZ Text Panel:	1 x EZ-220 1 x EZ-TEXTEDIT 1 x EZTEXT-PGMCBL 1 x EZ-2CBL-1 1 x PS24-050D (external power supply)
PLC:	1 x D0-06DR 1 x F0-2AD2DA-2 1 x PC-BRICK-SW 1 x D2-DSCBL
GS2 Drives	2 x GS2-43P0 (or applicable drive) 2 x GS2-43P0-FKIT 2 x GS2-43P0-LR (optional) 2 x GS2-43P0-BR (optional)

Process: Ideally when a machine is set to a specific speed, the speed will remain constant. With certain applications, where there are many things that will affect the speed regulation of a system, this is unrealistic. A milling machine is a perfect application to illustrate a method of trim control where things like tool wear, material density, mechanical friction, and many other process changes will be compensated for by trimming the feed drive with the cutting wheel drive

motor current feedback. In this application the cutting wheel drive will send a feedback signal of 0-10vdc into the F0-2AD2DA-2 analog option card. This signal can be used in the following ways:

- User sets a minimum feed drive speed via the EZ Text panel that is based on no load on the cutting wheel. The cutting wheel analog feedback signal is directly proportional to the motor current. This linear value can be used to subtract a proportional amount from the analog speed reference sent to the feed drive.
- User sets a minimum feed drive speed via the EZ Text panel that is based on no load on the cutting wheel. The feedback from the motor is now used as a process variable in a PID loop. The user determines an appropriate set point of the cutting wheel based on motor current. The error signal produced is adjusted to the feed drive speed reference.

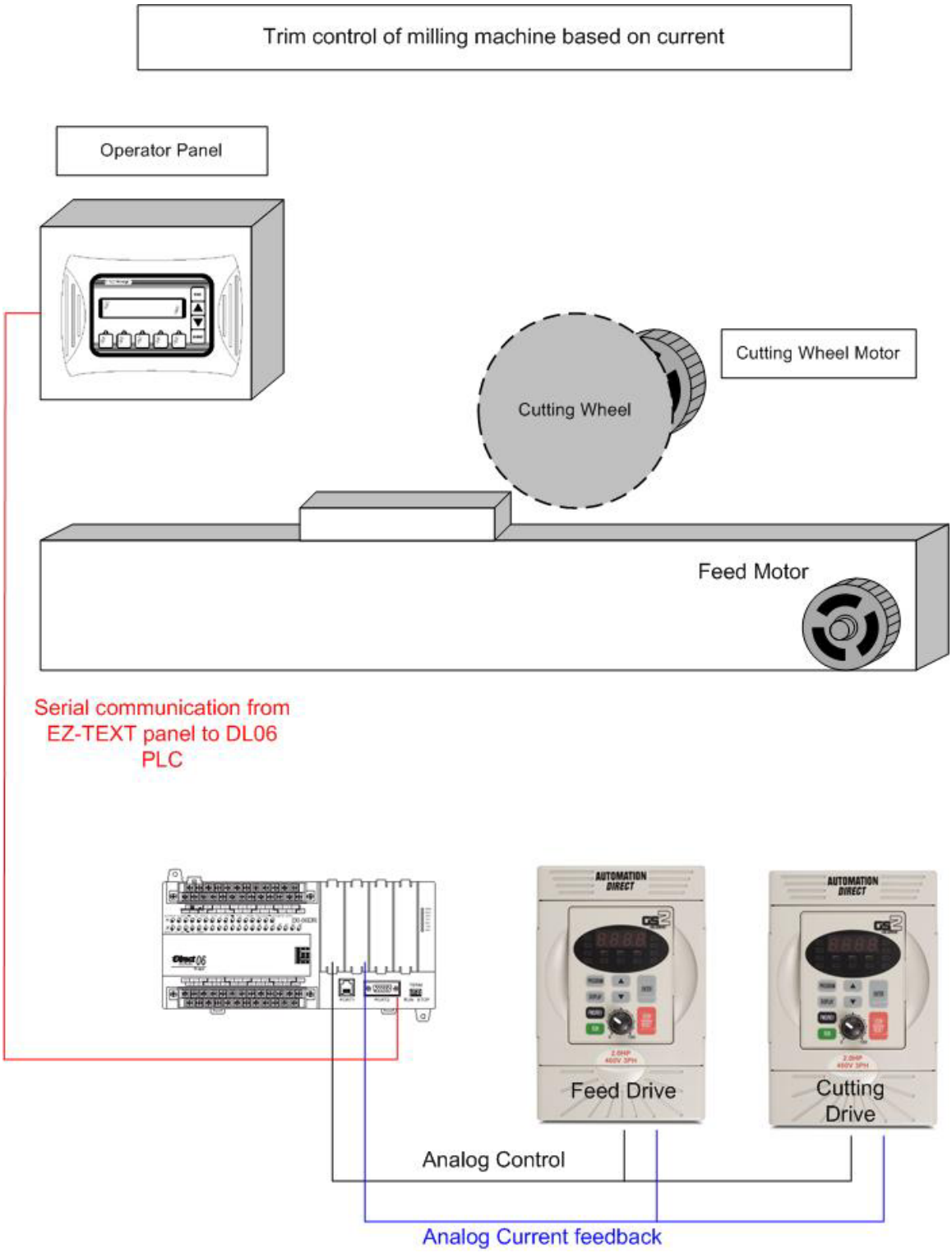


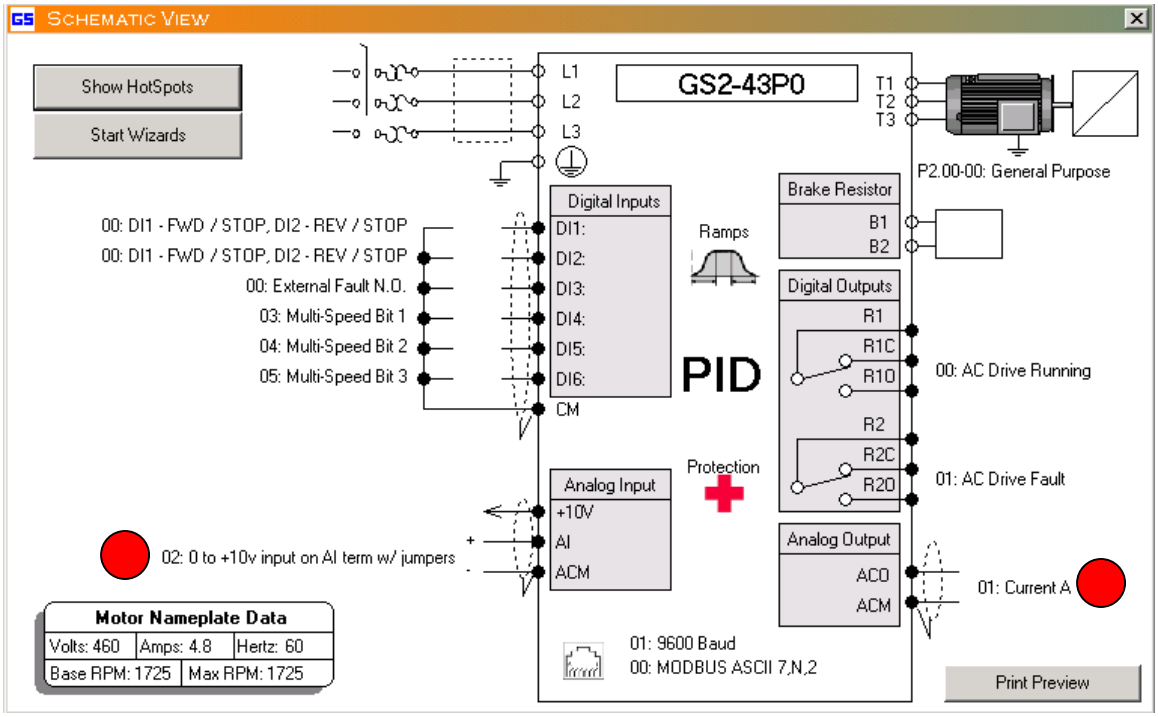


GS2 Programming for analog control and Current feedback:

GS2-43P0	DEFAULT	NEW	COMMENTS
P 0.00	480	460	Motor Nameplate Voltage Setting
P 0.01	5	4.8	Motor Nameplate Amps Setting
P0.02	60	60	Motor Base frequency
P0.03	1750	1725	Motor base RPM
P0.04	1750	1725	Motor Maximum RPM
P1.01	10	5	Acceleration time
P1.02	30	10	Deceleration time
P3.00	0	1	External control
P4.00	0	2	Analog 0-10vdc control
P4.11	0	1	Analog output (motor current)
P8.00	0	3	RPM display

Basic Diagram:





GSoft View of drive set-up

Technical Assistance: If you have questions regarding this Application Note, please contact us at 770-844-4200 for further assistance.