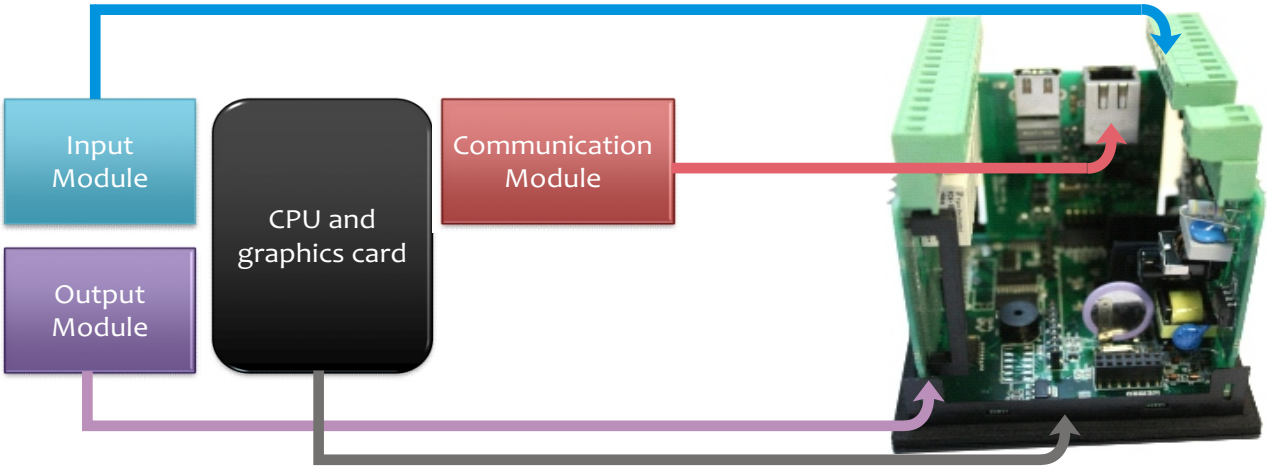
FLOUR MILLING MACHINE CONTROL WITH EPLC-96 SERIES

EPLC-96 series controller offers versatile control options for a wide range of applications developed in industries such as automotive, textile, food, cooling, machinery etc...It can be customized with different type of Input and Output card options to meet the specific requirements of the application. It supports CodeSys programming platform and can be programmed in 6 different languages. RS-232, RS-485, Ethernet communication options are available as well. The USB module option enables the device record the data to a flash drive or read the data from it.

- The variety of Input and Output card options
- Modular I/O structure with easily changable I/O cards
- Customizable according to the application
- Programming in Codesys software platform
- 6 different programming language support
- User friendly HMI interface
- Customizable front panel
- RS-232, RS-485, Ethernet, USB communication options



Input / Output Card Types

The number of available Input and Output card types is 6 and 7 respectively.

Input Card Types

A type Input Module
-12 x Digital Inputs
- 2 x High Speed Counter Inputs

B type Input Module
- 9 x Digital Inputs
- 2 x High Speed Counter Inputs
- 1 x Universal Analogue Input

C type Input Module
- 4 x Digital Inputs
- 1 x High Speed Counter Input
- 4 x TC Inputs

E type Input Module
- 4 x Digital Inputs
- 1 x High Speed Counter Input
- 4 x Analogue Inputs

G type Input Module
- 3 x Digital Inputs
- 1 x High Speed Counter Input
- 8 x PT-100 Inputs

H type Input Module
- 3 x Digital Inputs
- 1 x High Speed Counter Input
- 8 x Analogue Inputs

Output Card Types

T type Output Module
-11 x Transistor Outputs
- 2 x PWM Outputs

U type Output Module
- 11 x Transistor Outputs
- 2 x PWM Outputs
- 1 x 0-10Vdc or 0-20mAdc Analogue Output

V type Output Module
- 11 x Transistor Outputs
- 2 x PWM Outputs
- 2 x 0-10Vdc or 0-20mAdc Analogue Output

W type Output Module
- 2x5 NO Relay Outputs (Common Connection)

X type Output Module
- 2x5 NO Relay Outputs (Common Connection)
- 1 x 0-10Vdc or 0-20mAdc Analogue Output

Y type Output Module
- 6 NO Relay Outputs

Z type Output Module
- 5 NO Relay Outputs
- 1 x 0-10Vdc or 0-20mAdc Analogue Output

- 276 KB Program Memory
- 64 KB EEPROM Memory
- 12 KB RAM
- 2 KB Retain Memory
- 64 ns byte processing speed
- 23 ns bool processing speed

Example Application

Application: A flour milling machine control is required. The machine needs go through the following steps to perform adequately so the process of turning wheat into flour can be accomplished.

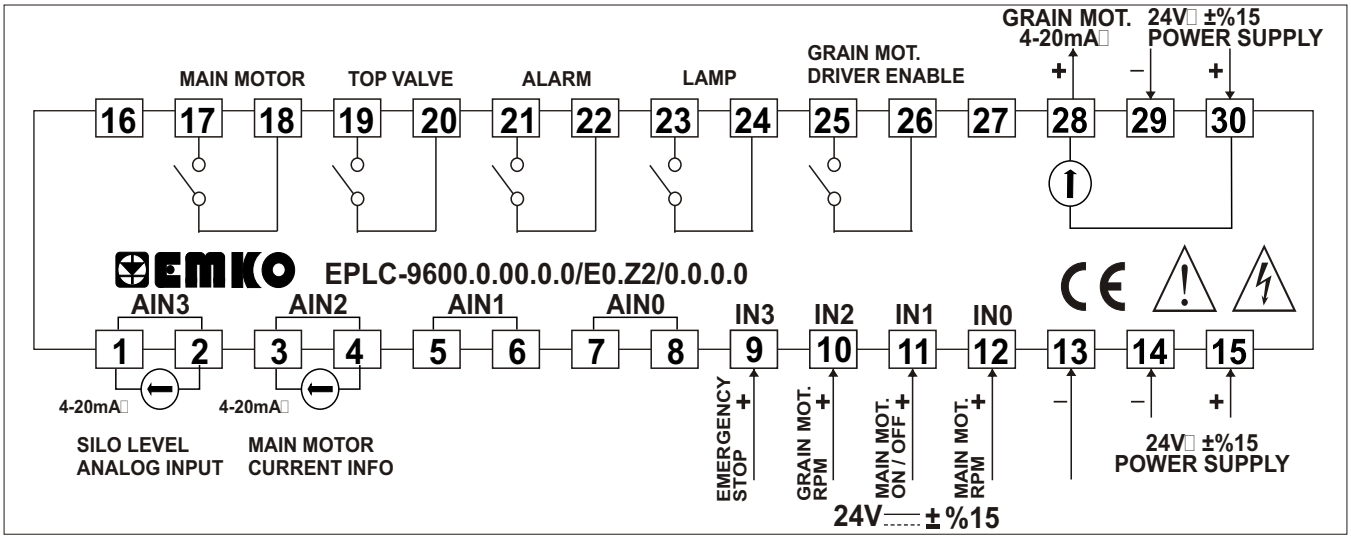
- Silo level check (with a ultrasonic level sensor)
- Grain motor current load check
- Manual and automatic control options
- Main motor control
- Grain motor RPM control (with an 4-20mA analogue output)
- Main and grain motors RPM reading
- Top valve control
- Alarm and illimunation
- Emergency stop

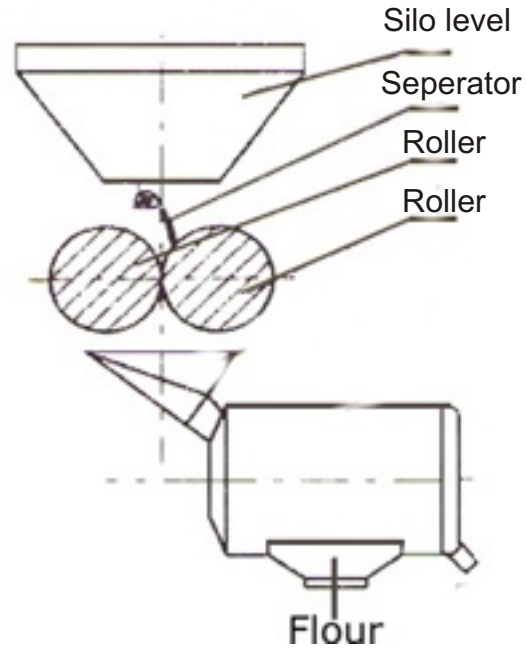
Following inputs and outputs are needed for this particular application.

- 2 x 4-20mA current input
- 3 x digital input
- 1 x high speed counter
- 5 x Relay outputs
- 1 x 4-20mA analogue output

When we look at the I/O module options, we select E type input and Z type output cards meeting our I/O requirements.

Electrical Connections





The programming of device should be done according to the operation principles of the milling machine given below.

-Wheat flows down through rollers.

-The speed of the rollers is adjusted according to silo level information read from level sensor.

-The safety of the system is ensured by monitoring the current load of grain motor constantly and shutting down the motors if any excessive current load is drawn by the grain motor.

The seperator valve should operate according to silo level.

- Manual and Auto operation modes should be available.

- The rotation speed of both motors should be monitored and if an undesired RPM increase occurs both motors should be shut down and the alarm should be activated.

- Emergency stop function and illumination of the machine should be controlled.

Before writing the program on CodeSys;

- Input and Output cards need to be selected.

- Available communication modules need to be defined.

- Variables need to be defined

- Visual texts and graphs should be created on visualization section.

Snapshots from programming window

After finishing the initial setups we can proceed with writing the program for this particular application. Programming can be done by using 6 different programming languages.

A snophot of ladder and st programming are presented below.