Powerful Ladder Logic Instructions

Tough PLC has a powerful instruction set common to all models. These Instructions, in addition to normal logic instruction, includes Advanced Math with Log/Trig, ASCII, Interrupt routine, String, Subroutines, Data Conversion, Block Move, Drum Sequencer, Marquee communication and other Function blocks.

Advanced Instructions:

32-bit floating point calculations

The Tough PLC supports 32-bit floating point mathematical and logical operations. The data options allow you to use signed or unsigned integer data as well as floating point data type.

Data Conversion

This instruction is meant to make ladder programming EZ and flexible. You can copy the data in one register, convert its data type and save it into another register without altering the 'source' register. The data can be converted from binary to BCD or grey code or vice versa.

Move Block

This instruction adds convenience to handling data inside the ladder program. You can move blocks of memory. All you need to specify is starting point of your source address, number of data elements to move and starting point of destination memory address. Along with Move Block, Fill Block and Move table of Constants also make life of a programmer much simpler.

String

These instructions operate on ASCII string data type. You can Move string data between registers, base rung power flow upon string comparison and compute string length to store the length value in a different register.

Subroutines

Capability to use subroutines is a huge plus in Tough PLC programming. For large and complex programs, user can define many subroutines and use them in the main ladder program. These subroutines can be called from the main logic. Return instruction allows user to return to the main logic at any step.

Drum Sequencer

This is a time or event based sequencer that updates up to 16 outputs per step, up to 16 steps. Time base of each count is user defined and each step has its own counter. User can define an event to trigger the count. The rung power flow is allowed after completion of all the steps in a drum.

Marquee Instructions

Now you don't have to spend days to send signals to your marquee. Send to marquee instruction allows you to communicate to the marquee via ASCII strings. A unique message number is assigned to each message in the message database. This instruction looks up the message number, corresponding to the intended message to be displayed and sends it to the marquee. User can define actions if a message number cannot be found in the database.

Interrupt Routine

This is how your Tough PLC would process external events that require "instantaneous" response. User can write a separate interrupt logic routine. At the instance of an external event, the PLC would interrupt the main logic, execute this interrupt logic on a priority, and scan corresponding I/O. It would return to the main logic automatically after processing the interrupt routine.

ASCII Instructions

User can send/receive ASCII string data to/from any register in PLC to a predefined serial port. User can also define the Control address and character count of the source register. Similarly, user can send ASCII string data to a Marquee directly from the main logic.

Bit Move Instructions

Bit move instructions allow the user to move word data from a register type memory address to a bit in a discrete memory location and backward.

Advanced Math Instructions

Square root, Trig, Log (Base 10), Exponent (e^Operand), Natural Log (ln), SIN, COS, TAN, Inverse SIN, Inverse COS, Inverse TAN, Convert to Radians, Convert to Degrees.

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