uPLC

Introduction

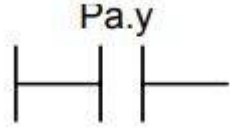
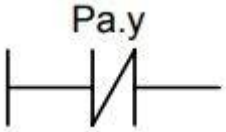
The internal u-PLC is used to connect the external world (inputs/outputs) with the world of the parameters of the integrated drive NLi linear motor. The PLC can be used to copy digital input to a binary parameter, to copy a binary parameter to a digital output and to execute mathematical and Boolean operations. The PLC program must be inserted as a list of instructions by using the keyboard or by the serial line using a PC and an interface program. A PLC program written to meet the needs of a large number of applications corresponds to the default parameters. In most cases it is not necessary to program the PLC itself. The main features of the uPLC are:

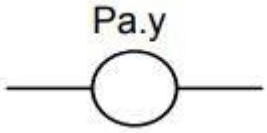
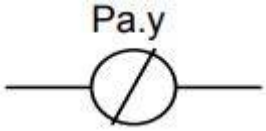
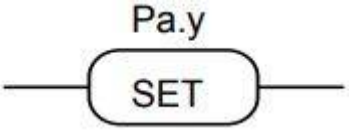
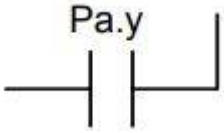
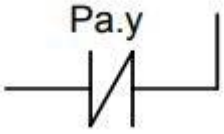
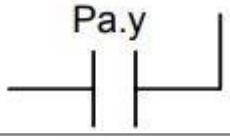
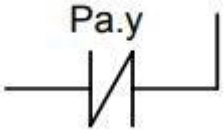
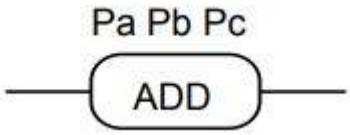
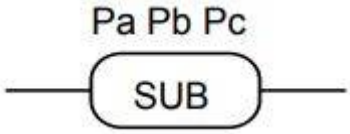
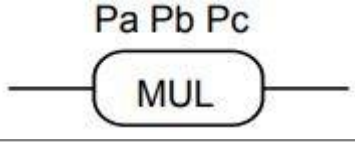
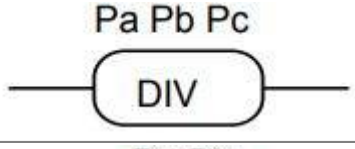
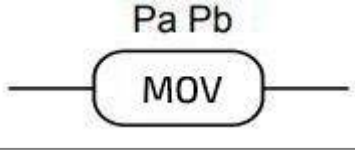
1. 64 program steps
2. 6msec of fixed scanning time
3. 2 timers
4. 15 different instructions
5. stack depth equal to 1
6. mathematical operations 16 / 32 bits

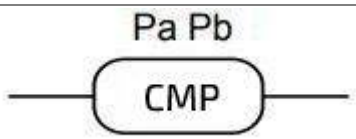
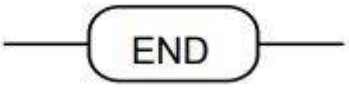
uPLC feature is available using Firmware version >= 5E41

Please note that when the uPLC is running the 3 digital ouputs are under control of the PLC program ! So, the PLC program can associate every events to these 3 digital outputs instead of the standard options.

PLC instructions

Symbol	Instruction	Parameter	Comment
	LD	Pa,y	loads the y bit of the Pa parameter on the stack
	LDn	Pa,y	loads the negated y bit of the Pa parameter on the stack

	OUT	Pa,y	sets the y bit of the Pa parameter to the value loaded on the stack
	OUTn	Pa,y	places the y bit of the Pa parameter to the value of stack negating it
	SET	Pa,y	if the stack = 1, the y bit of the Pa parameter is set to 1
	RES	Pa,y	if the stack = 1, the y bit of the Pa parameter is set to 0
	AND	Pa,y	if the bit loaded on the stack contains the result of the logical AND operation between itself and the y bit of the Pa parameter
	ANDn	Pa,y	the bit of the stack contains the result of the logical AND operation between itself and the y bit of the negated Pa parameter
	OR	Pa,y	the bit loaded on the stack contains the result of the logical OR operation between itself and the y bit of the Pa parameter
	ORn	Pa,y	the bit on the stack contains the result of the logical OR operation between itself and the y bit of the negated Pa parameter
	ADD	Pa,Pb,Pc	if the bit on the stack = 1, the addition operation is executed on the parameters in which: Pc = Pa + Pb
	SUB	Pa,Pb,Pc	if the bit on the stack = 1, the subtraction operation is executed on the parameters in which: Pc = Pa – Pb
	MUL	Pa,Pb,Pc	if the bit on the stack = 1, the multiplication operation is executed on the parameters in which: Pc = Pa · Pb
	DIV	Pa,Pb,Pc	if the bit on the stack = 1, the division operation is executed on the parameters in which: Pc = Pa / Pb. If Pb is equal to 0 the division operation is not executed
	MOV	Pa, Pb	if the bit on the stack = 1, Pa register is copy to Pb register

	CMP	Pa, Pb	if the bit on the stack = 1, Compare Pa register with Pb register. If Pa is equal to Pb Register 8671 bit 3 is set to 1, if Pa < Pb bit 2 is set to 1, if Pa > Pb bit 4 is set to 1.
	END		end of program