



>>> > BERRIKUNTA TEKNOLOGIKOA
INNOVACIÓN EN LA TECNOLOGÍA

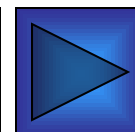
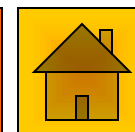
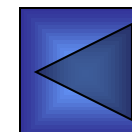
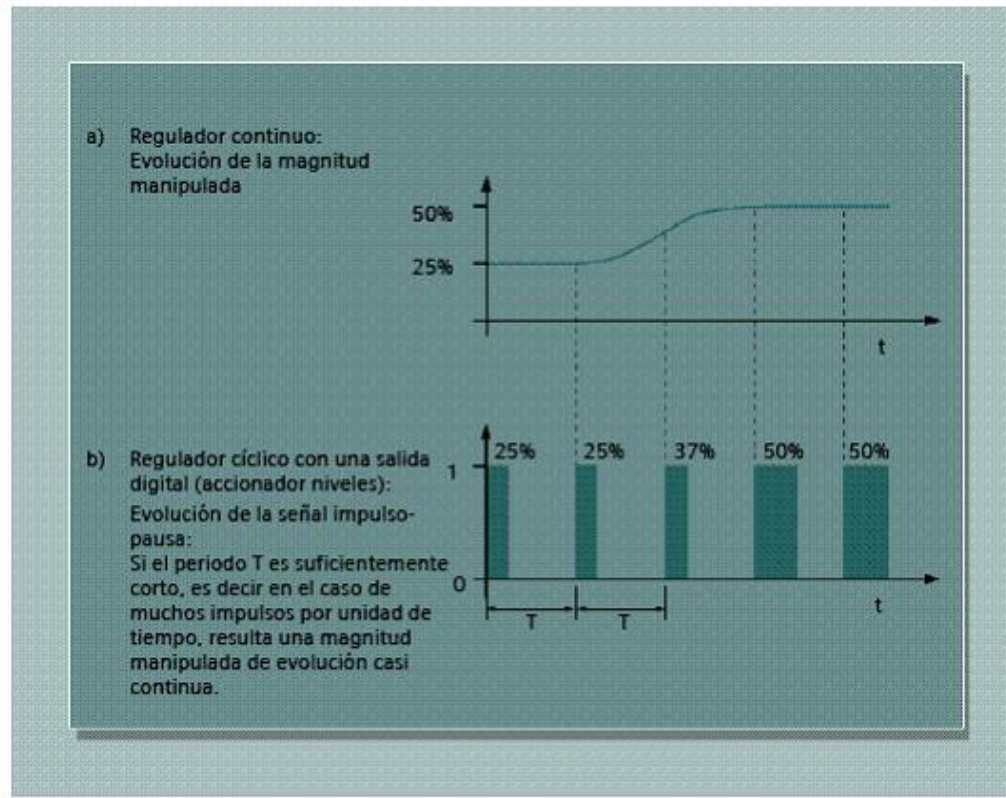
AUTOMATIZAZIO TALDEA ERREGULAZIOKO AZPITALDEA REGULACIÓN PID CON AUTÓMATA SIEMENS S7-300

3ª ACTIVIDAD: Regulación con la función FB41 (CONT_C)
con el autómata SIEMENS S7-300 -Teoría-





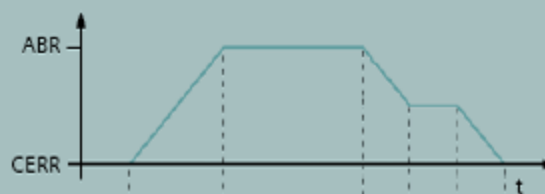
FB41 (CONT_C) Regulador continuo (Analógico)
FB43 (PULSGEN) Regulador continuo (Digital)



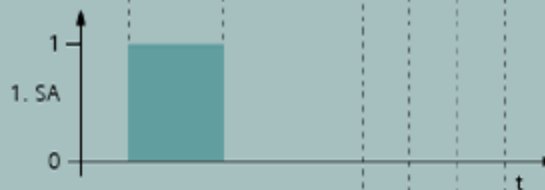


FB42 (CONT_S) Regulador discontinuo 3 estados

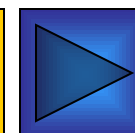
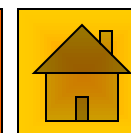
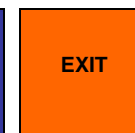
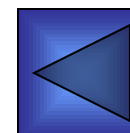
Regulador discontinuo:
(acción a 3 niveles)



1. Salida digital (SD):
Impulso para Abrir válvula



2. Salida digital (SD):
Impulso para Cerrar válvula

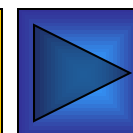
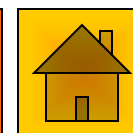
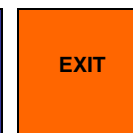
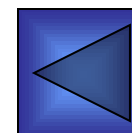




FB 41 (CONT_C). Entradas y salidas

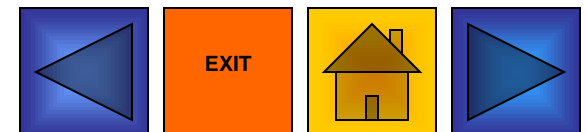
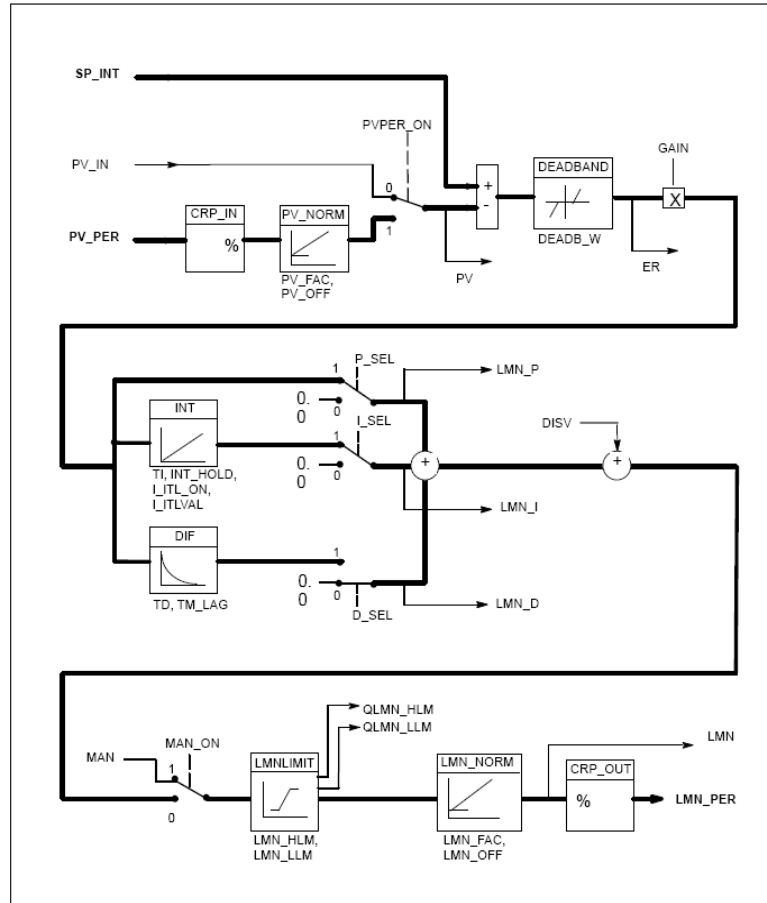
EM	"CONT C"	LMU
...	COM_RST	LMDN
...	MAN_ON	LMDN_PER
...	PUPER_ON	QLMDN_HLM
...	P_SEL	QLMDN_LLM
...	I_SEL	LMDN_P
...	INT_HOLD	LMDN_I
...	I_ITL_ON	LMDN_D
...	D_SEL	PII
...	CYCLE	ER
...	SP_INT	
...	PU_IN	
...	PU_PER	
...	MAN	
...	GAIN	
...	T1	
...	TD	

...	GAIN
...	T1
...	TD
...	TM_LAG
...	DEADB_D
...	LMDN_ILM
...	LMDN_LLM
...	PU_FAC
...	PU_OFF
...	LMDN_FAC
...	LMDN_OFF
...	I_ITLVAL
...	DISU



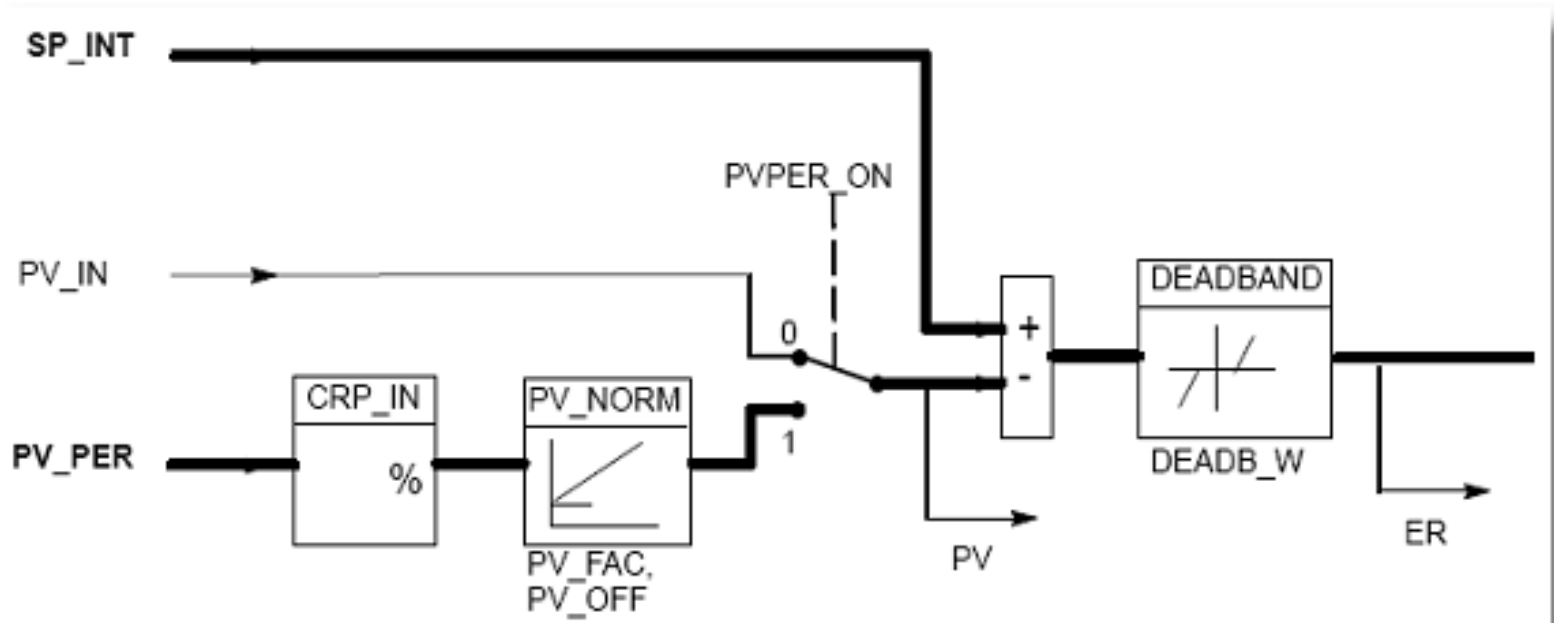


FB 41 (CONT_C). Diagrama de bloques

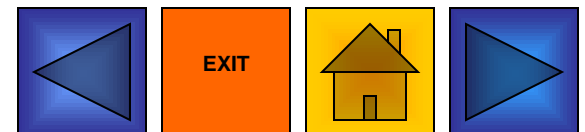




FB 41 (CONT_C). Consigna y normalización. Error

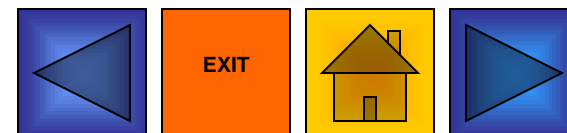
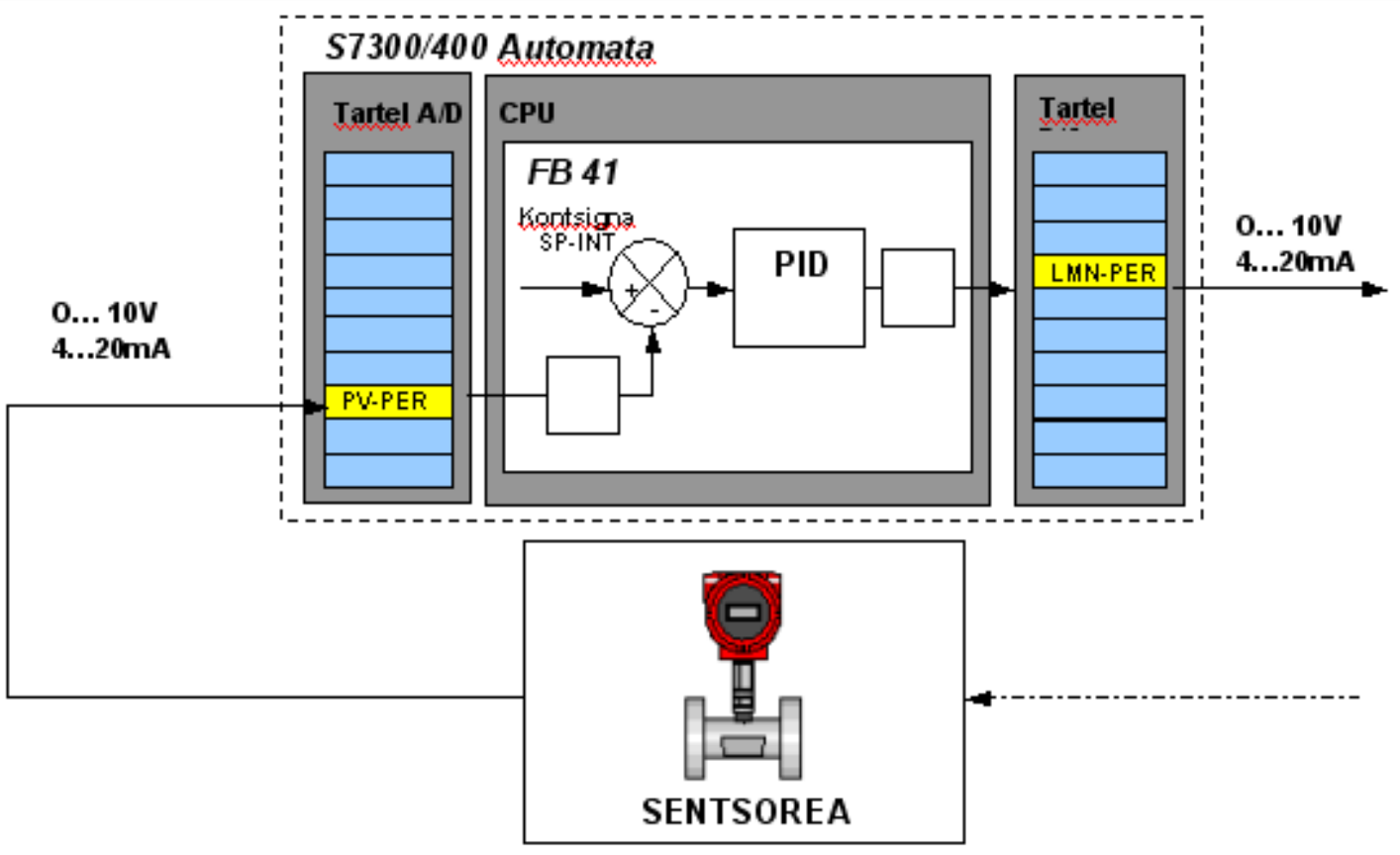


$$CPR_IN = PV_PER \frac{100}{27648}$$



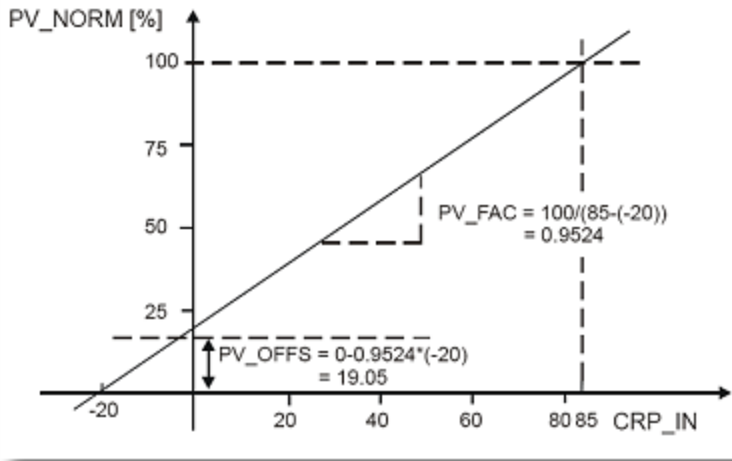


FB 41 (CONT_C). Conexión del sensor.



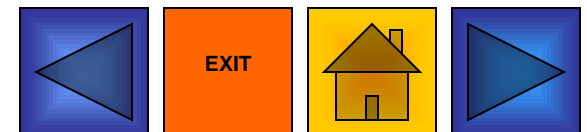
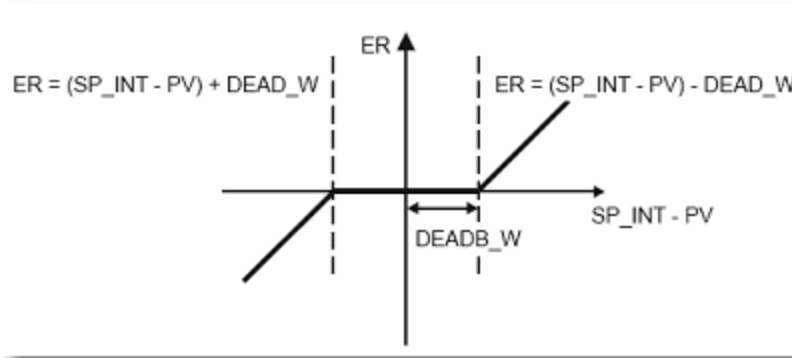


FB 41 (CONT_C). Normalización. Banda muerta



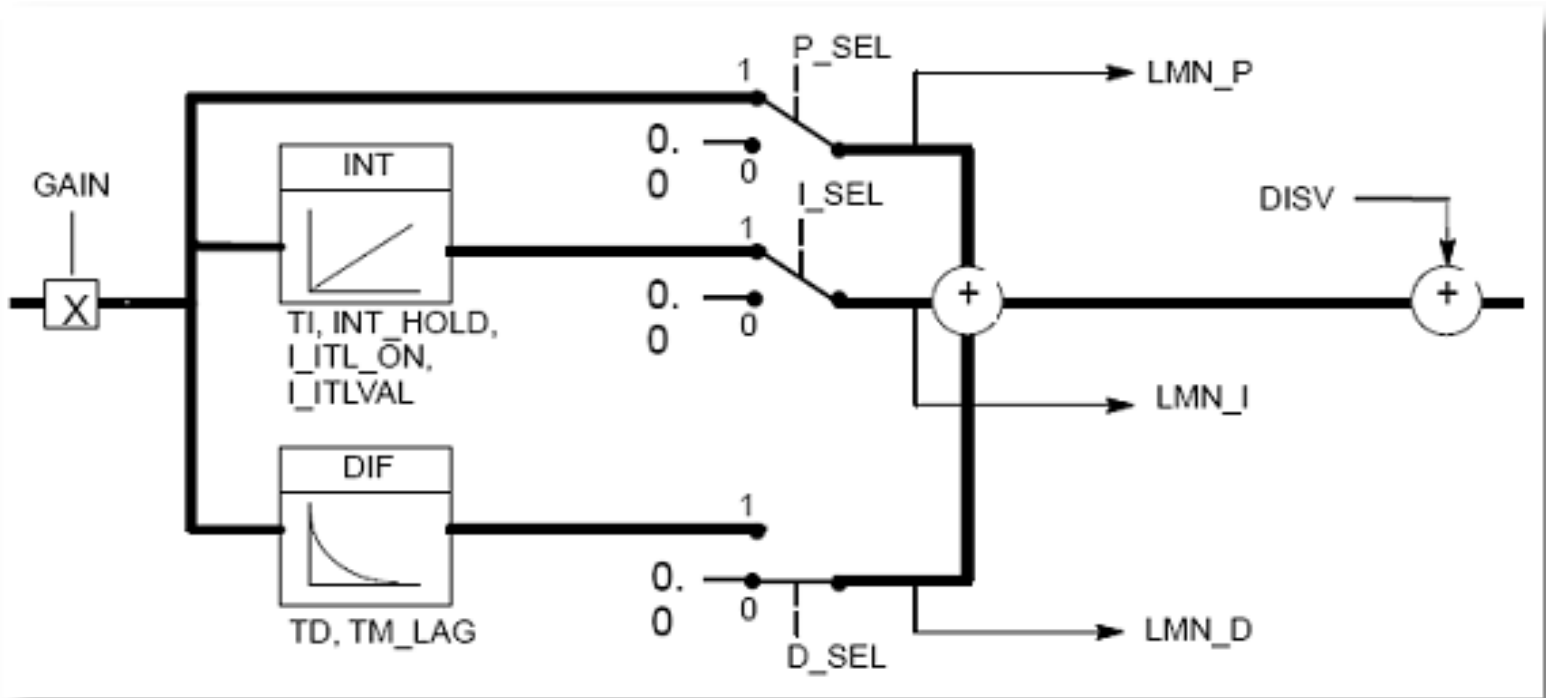
$$CPR_IN = PV_PER \frac{100}{27648}$$

$$PV_NORM(Irteera) = CPR_IN(Irteera) * PV_FAC + PV_OFF$$

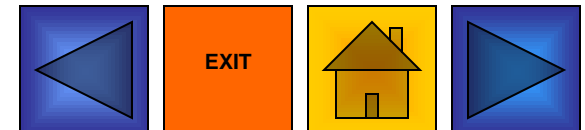




FB 41 (CONT_C). Algoritmo de regulación PID



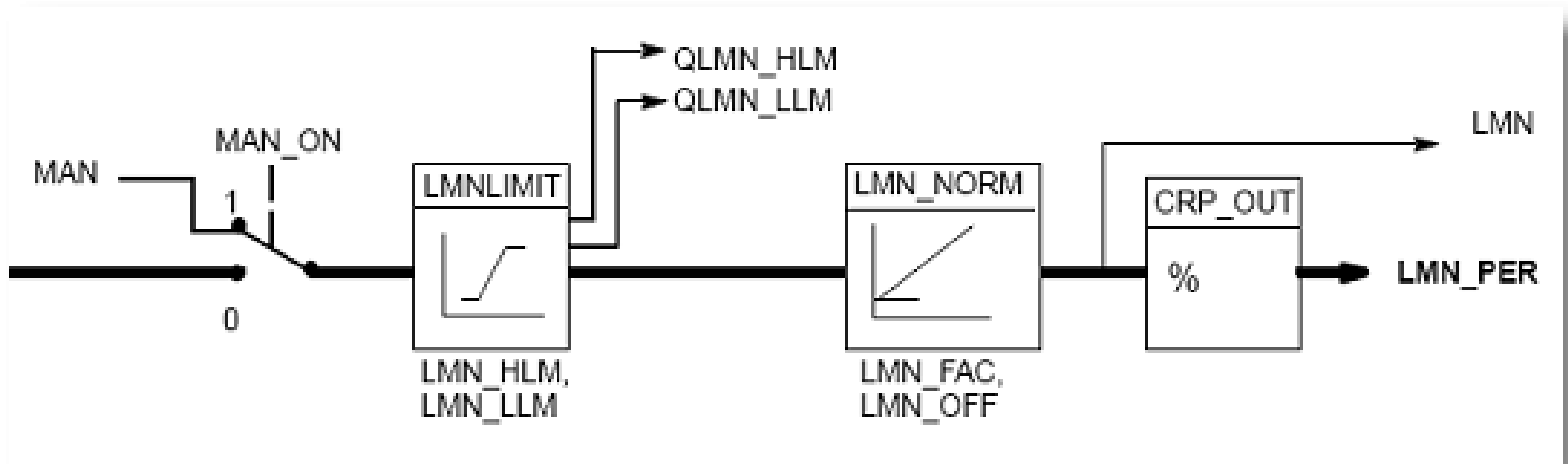
$$LMN_ (t) = GAIN * (Er + \frac{1}{Ti} \int Er \cdot dt) + Td \frac{dEr}{dt}$$





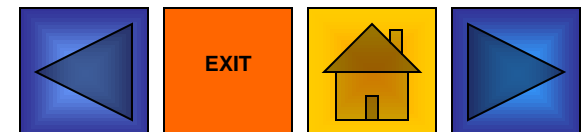
FB 41 (CONT_C). Salida manual/automático

$$LMN_ (t) = GAIN * (Er + \frac{1}{Ti} \int Er \cdot dt) + Td \frac{dEr}{dt} \quad \text{Si } MAN_ON = 0$$



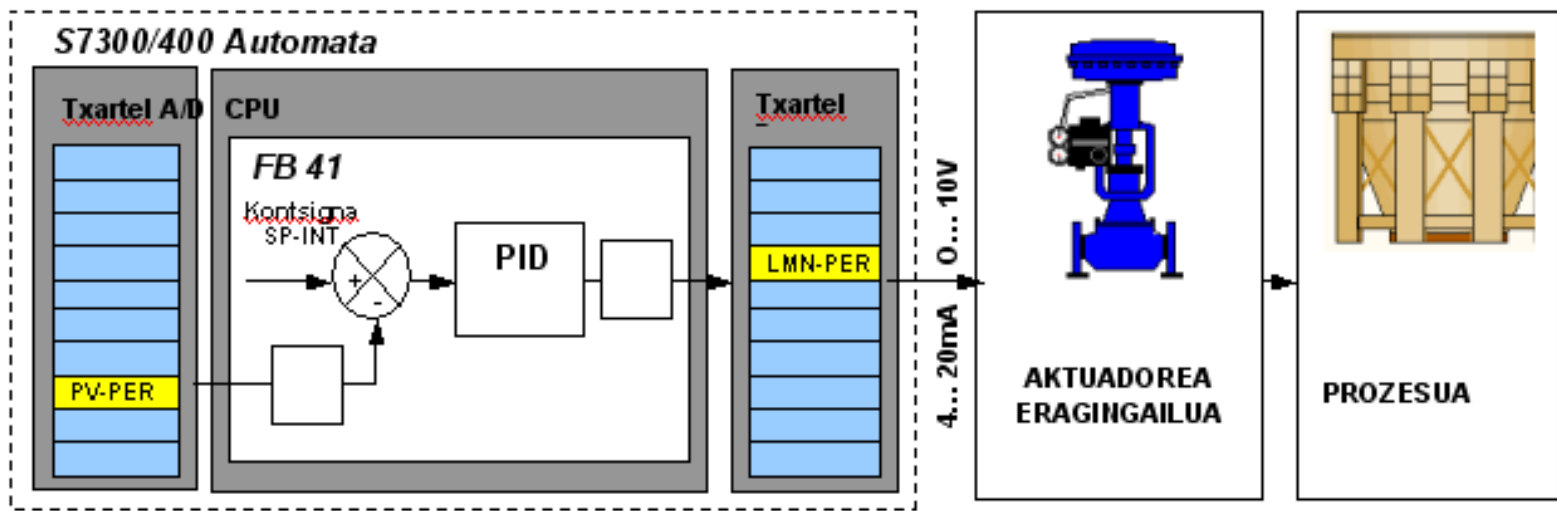
$$LMN = LMNLIMIT * LMN_FAC + LMN_OFF$$

$$LMN_PER = LMN \frac{27648}{100}$$





FB 41 (CONT_C). Conexión del actuador



0%	0	0V / 4 mA
50%	13.824	5V / 12 mA
100%	27.648	10V / 20 mA

