

Technical Note

Date: 22-09-08

Subject: Control PID Inverters UMA1 and UMB1

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Version: 2

1. Programming Universal Motors Inverter for PID mode operation

Parameter	Name	Value	Information Detail
Group 02 – Motor data			
P02.01	Motor Rated Power	?	According to Motor plate
P02.02	Motor Rated Frequency	50 Hz	According to Motor plate
P02.03	Motor Rated Speed	?	According to Motor plate
P02.04	Motor Rated Voltage	400V	According to Motor plate
P02.05	Motor Rated Current	?	According to Motor plate
P02.27	Overload Protection	80%	According to formula: $M = I_{out} / P02.05 * P02.27$ M>116% Stops after 1 hour M>200% Stops after 1 minute M>400% Stops instantly
Group 00 – Basic			
P00.01	Command Channel	1	Control by terminals
P00.05	Frequency lower limit	?	Value that determines the stopping speed of auxiliary pumps
P00.06	Frequency command	7	PID Control Mode
P00.11	Acceleration ramp time	10seg	
P00.12	Deceleration ramp time	10seg	
P00.14	Switching frequency/carrier	8khz	
Group 01 – Control Start/Stop			
P01.18	Control on energy return	1	Automatic start if S1=1
Group 04 – Control SVPWM			
P04.09	Gain Compensation / Slip	0%	
Group 05 – Input Terminal			
P05.37	Setting minimum scale analog input AI2	2,0V	This value must also be changed to 2.0V, that equals to 4mA
Group 08 – Advanced Settings			
P08.06	Frequency in manual mode (jogging)	50Hz	Setting the operating frequency in manual mode
P08.07	Acceleration ramp time in manual mode	10seg	

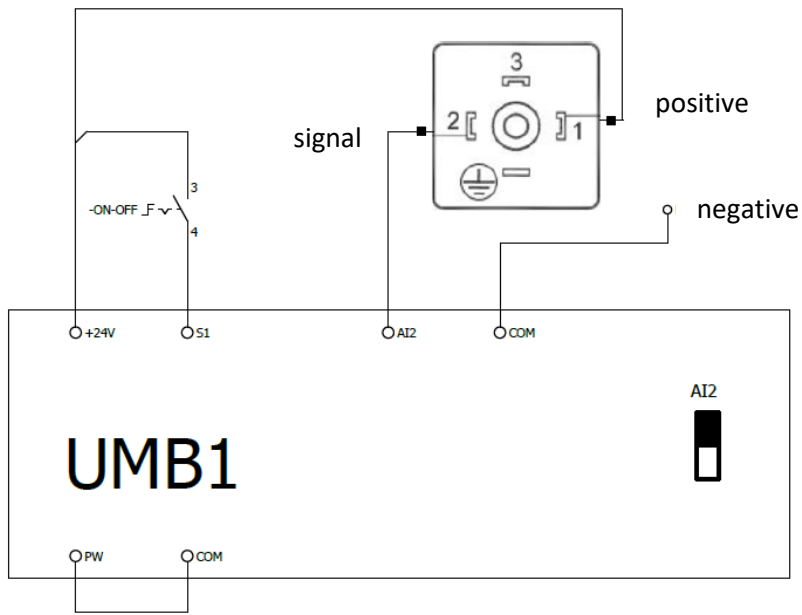
P08.08	Deceleration ramp time in manual mode	10seg	
Group 09 – PID Control			
P09.00	PID reference source	0	Setpoint defined by parameter P09.01
P09.01	Setpoint Reference	?%	100%=maximum scale transducer
P09.02	PID feedback source	1	Feedback connected in AI2
P09.04	PID proportional gain	1.0	
P09.05	PID integral time	0.1seg	
P09.10	Lower limit PID block	80%	100%=50Hz
Group 24 – Pump Group Control			
P24.00	Activation pump control block	1	1-active
P24.01	Fonte feedback PID	1	1-Analog input 2 (AI2)
P24.02	Hibernation mode selection	0	0-frequency <= P24.03
P24.03	Hibernation Frequency	41Hz	Frequency at which the inverter will go into hibernation
P24.05	Time to go into hibernation	20seg	Time it takes, after reaching the frequency in P24.03, to enter sleep mode
P24.06	Wake up mode selection	1	1-Wake Up <= P24.08
P24.08	Wake up pressure (%)	<P09.01	Pressure at which the inverter will activate the pump (wake up)
P24.09	Tempo para ativar wake up	5seg	Time it takes, after reaching the pressure in P24.08, to wake up.

Note:

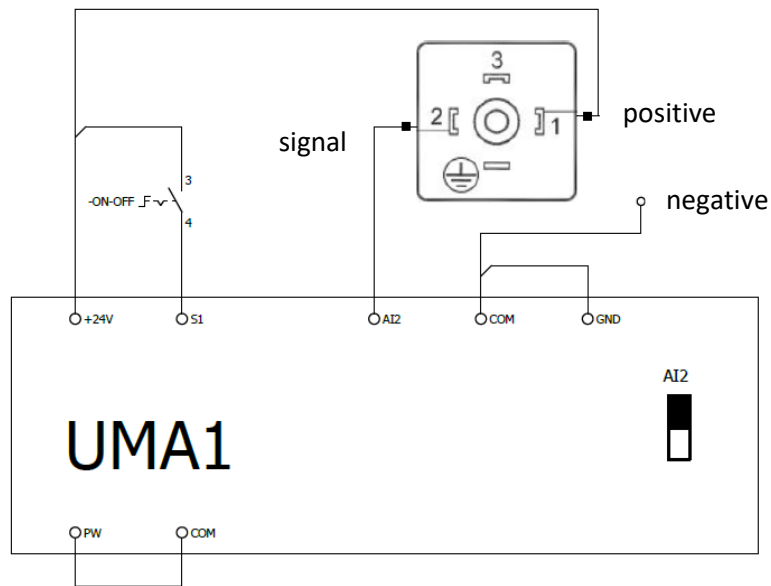
In both UMB1 and UMA1 it is necessary to change the switch/jumper AI2 so that the input AI2 works as current signal.

Setpoint is set via the inverter parameter P09.01 (0-100%) where the 100%=<=> maximum scale of the pressure transducer.

A shunt must be applied between COM and GND terminals in UMA1 series inverter.



Wiring diagram for UMB1 series inverters



Wiring diagram for UMA1 series inverters

Online Manuals



Note: the transducer used in the examples is a 2 pin transducer. There are transducers which may have 3. Refer to the transducer instructions.