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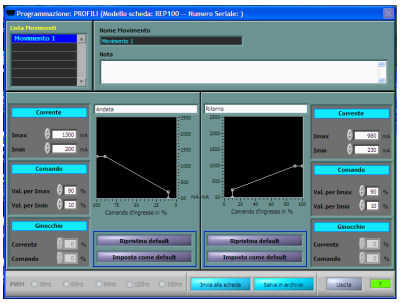
REP-A400

Electronic Control Automotive for Proportional Valves 4 Solenoid

The command REP-A400 was designed to control up to 4 valves Proportional valves open loop (is those who do not have the transducer positioning inside) or feedback. The REP-A400 is a microcontroller device that thanks to this technology, "DIGITAL" you can control any type and brand of proportional valve, a voltage between 10 and 30 V and a current between 0 and 2500mA. The setting of current and ramps is done with a PC with software GAMMA1.53 SUITE.
The controller has been placed in a box IP65 for easy connection to any system.

SPECIFICATIONS:

POWER: .....@ 8V to 30V
CONSUMPTION:.....300mA @ 12V
MICROCONTROLLER:.....32 bit
FLASH MEMORY:.....512Kb
RAM:.....64Kb
FREQUENCY :.....66MHz
DIGITAL INPUTS OPTOCOUPLED: 4
INPUTS: 4
RESOLUTION ANALOG INPUTS: 10Bit
OUTPUT POWER SUPPLY: .....2 from +5 V
MAX. POWER SUPPLY CURRENT: 100mA
POTENTIOMETER RECOMMENDED VALUES:.....4K7/10K
REFERENCE INPUT: .....0-5V / 0-10V / Frequency
..0-5V (2.5V middle) / 0-10V (5V central) / 0-Vcc / 4-20mA
FREQUENCY IN: .....@ 20Hz 20KHz
FREQUNZA IN mod. PTO: .....@ 50Hz 10KHz
PWM OUTPUTS:.....4
CURRENT ADJUSTMENT
PROPORTIONAL SOLENOID: .....from 0.05A @ 2.5 A
CURRENT ADJUSTMENT Imin., Imax: .....0 to 50%
SETTING TIME OF RAMP: .....0 - 10Sec
PWM: 60Hz-330Hz
PWM RESOLUTION: .....10 bit
TOLERANCE: ..... + / -2%
TEMPERATURE RANGE: .....-15 ° C to +80 ° C
TERMINATION: .....SHS Harness Connectors
SEALING:.....IP67-IP69K
FILTER EMI: optional.....All inputs and outputs
CAN-BUS: optional protocol provided by the customer
OUTPUT PROTECTED AGAINST SHORT CIRCUIT
SIGNAL VALVE BROKEN OR MISSING
PARAMETER Imin., Imax., Ramps,
Reference d 'Input, Power Valves, PWM working,
Adjusting sensitivity of the input signal



Picture Programming System Range 1 SUITE

PRODUCT COMPLIANCE WITH THE EUROPEAN RHOS 2002/95/EC
CE Certification
EMC European Standards EN61000-6-2 industrial immunity
EN 61000-6-4 Emission.

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MODELS:

Product Code: F00235-0000-000 REP-A400 Electronic Control Automotive For 4 Proportional Valves standard

OPERATION

The controller REP-A400 and integrated in a box with IP65 automotive connector SHS HARMESS 30 poles.
The system works on the principle of pulse width modulation PWM said rear and is actuated in order to obtain a current to the solenoid output current proportional to the input signal. Its 4 digital and analog inputs can be configured to voltage and function:

1. **Possibility Assign different functions to the digital inputs:**
   - Enable selected PWM
   - Enable PWM Ramp up selected
   - Acquisition encoder signals
2. **Possibility Assign an analog input control to its output PWM**
3. **Possibility to select different types of input analog among those indicated below**
   - 0-5 V
   - 0-10 V
   - 0-Vcc V (25-75%)
   - 4-20 mA
   - 0-2,5-5V (2,5 V at Center)
   - 0-5-10V (5 V at Center)
4. assigning an analog input to two PWM, alternating operation
5. Possibility of using the encoder signal as a reference position or speed reading
6. Ability to insert a feedback to the PWM control, the feedback will be selected from one of the analog inputs or encoder.
7. Possibility of eliminating feedback , so as to remove the control current on the valve and this speed up the system response.
8. Possibility to reduce the % of the PWM output if more outputs are active simultaneously

They were provided protections against output short circuit, overload indicated by the red LED is always on, if intervention is necessary to remove the power to rehabilitate the system, and also provided a current limitation in case of overheating, and protection against reverse polarity supply.
In the case of open circuit (coil), the red LED flashes overload
Faults are indicated with the LEDs inside the box and wanting transmitted via serial.

CALIBRATION

The REP-A400 can be adjusted to suit your needs through PC SUITE software GAMMA1.53
The software is a system of programming and data acquisition to be applied to products of the family Rep. Built on platform LAB-VIEW of National Instrument allows to modify the minimum current, the maximum current, the ramps, the reference input and the regulation of the sensitivity of the input signal.
This system allows to reduce the time of programming and configuration of the tabs proportional REP thanks to the internal data base that allows the user to retrieve data and programs of the various models of control units when you want it.
The most remarkable of the system is that of PROFILES fig.1 and fig.2 RAMPS.
The software comes combined with an adapter cable for RS232 or USB as well as the transmission of data also powers the card.

REP-A400

Electronic Control Automotive for Proportional Valves 4 Solenoid

General Programming

Register	Value	Meaning
Vref	Vref	Max Voltage input (exeple Volt es. Vmax = 5V Value Register = 5) If the value is same at 256 (0xFF) the voltage max input will be Vcc
Dither	Freq	The value write will be the frequency to PWM to 30 at 350 Hz

Programming BLOCK PWM to 1 at 4

Register	Value	Meaning
Type of Block	0 1 2 3	No use Block with con Valve Proportional Single solenoid Block with con Valve Proportional Double solenoid Block more inputs one valve Poportional
Selection Analog Input 1	0-3 8	Number analog input More inputs one valve Poportional
Feedback Enable	0 1 2	No feedback One feedback : by current valves Doble feedback : by current valves and outside value
Type of Enable	0 1 2	By Analog value By Encoder By Input frequency
Selection input feedback	0-3 1 o 2 1 o 2	If the "Type to feedback " is = 0 Number Input Analog If the "Type to feedback " is = 1 Number Encoder If the "Type to feedback " is = 2 Number input Frequencymeter (use TC to Microcon-troller)
Output valve 1	0-3	Number valve PWM output
Output valve 2	0-3	Number Valve PWM output– If it was selected the control double effect
Type of Output	0 -1	0 – Output Proportional , 1 – Output ON/OFF
Digital input Block PWM	0-3 o 0xFF	Number digital input (0xFF for disable)
Digital input Disable Ramp	0-3 o 0xFF	Number digital input (0xFF for disable)
Digital input Downgrate PWM output	0-3 o 0xFF	Number digital input (0xFF for disable)
Downgrate Percentege PWM output	0-100%	Downgrate percentege to current to valve
Coefficient PROPORTIONAL external PID	FLOAT	Value FLOAT Changeable (4 BYTE)
Coefficient DERIVED external PID	FLOAT	Value FLOAT Changeable (4 BYTE)
Coefficient INTEGRATED external PID	FLOAT	Valude FLOAT Changeable (4 BYTE)

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REP-A400

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Programming Analog Input

Register	Value	Meaning
Type of Input	0	Input No SENZA Zero central
	1	Input with Zero Central
	2	Input 4-20 mA
	3	Input 25% -75% Vcc
Max value to Input		If the "Type Input" is = 0 or 1 The Voltage max is expressed in Vx10 for exeple 5V = value register 50

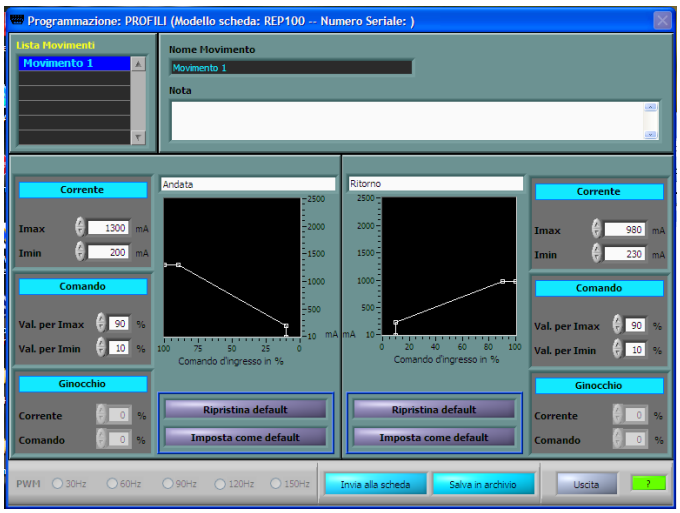
Programming Digital Input

Register	Value	Meaning
Type of input For Input 0 e 1	0	NPN
	1	PNP
Type of input For Input 2, 4 e 5	0	NPN
	1	PNP
Type of input For Input3 ,6 e 7	0	NPN
	1	PNP

Programming Input Encoder

Register	Value	Meaning
Pulse for around	n	Pulse for around

Fig.1

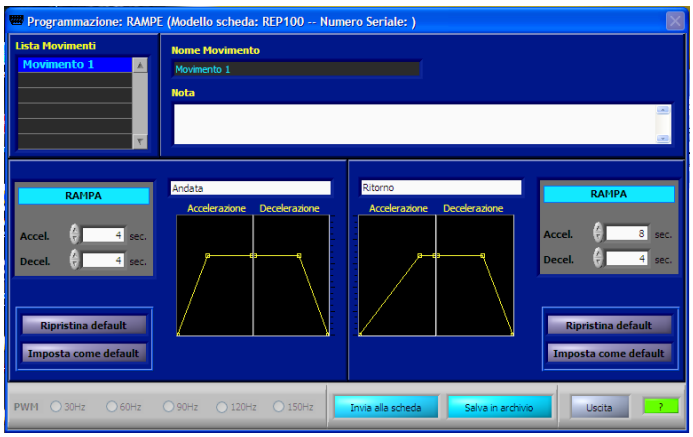


SPECIFICATIONS:

POWER adapter or PC Rep: 5V
CONSUMPTION: 20mA
TEMPERATURE RANGE: .....-15 ° C to 70 ° C
DEGREE OF PROTECTION:.....IP55
CABLE EQUIPMENT: 1pcs
OUTPUT CONNECTOR RJ45 I2C
INPUT RS 232
STORING DATA ON DATA BASE
CABLE normal ethernet: 1m
PRODUCT CONFORMITY WITH EUROPEAN STANDARDS RHOS 2002/95/EC

Electronic Control Automotive for Proportional Valves 4 Solenoid

Fig.2



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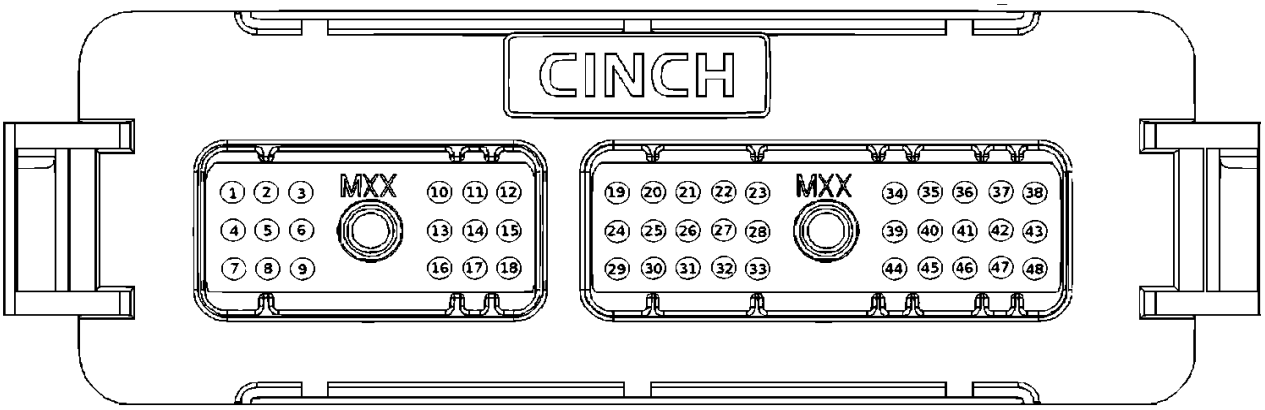
REP-A400

Electronic Control Automotive for Proportional Valves 4 Solenoid

CONNECTION



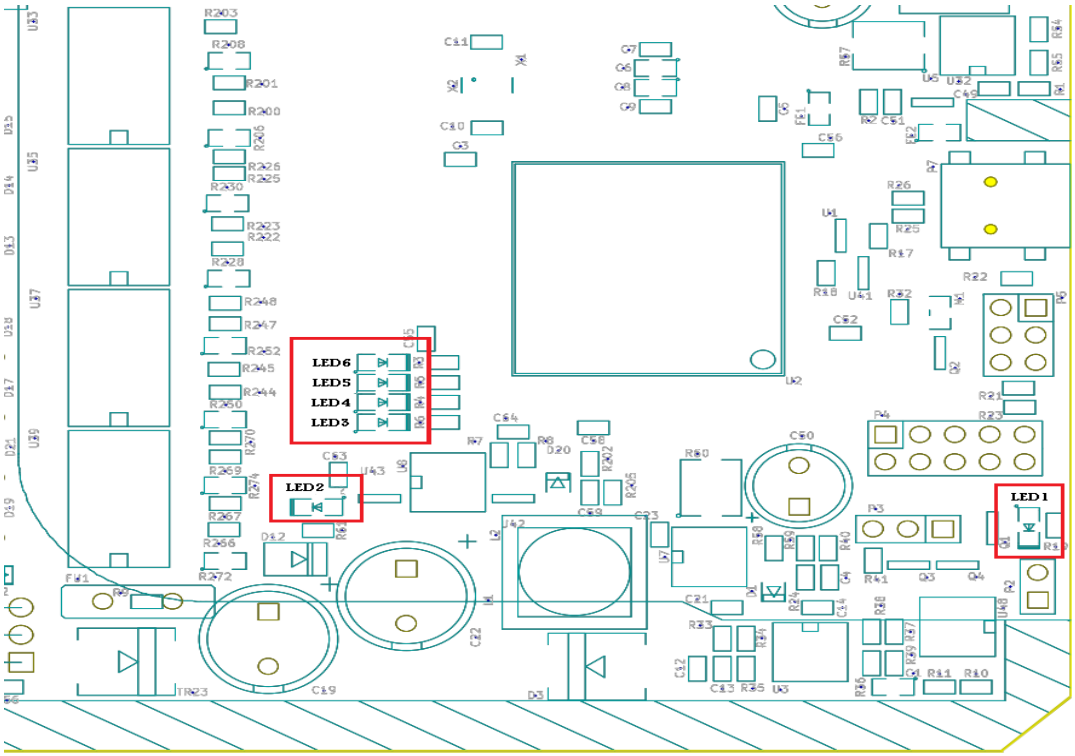
Description:

Input	Code	Pz	Description
Analog Input	AN_0	8	Analog 0
	AN_1	4	Analog 1
	AN_2	1	Analog 2
	AN_3	2	Analog 3
Digital Input	DIG_0	8	Digital 0
	DIG_1	9	Digital 1
	DIG_2 / Zero Encoder 1	18	Digital 2
	DIG_3 / B Encoder 2	32	Digital 3
	DIG_4 / A Encoder 1	17	Digital 4
	DIG_5 / B Encoder 1	16	Digital 5
	DIG_6 / A Encoder 2	30	Ingresso Digitale 6
	DIG_7 /Zero Encoder 2	31	Digital 7
Vref	Vref	15	Output Reference Voltage
PWM	PWM_0	37	Pwm 0
	PWM_1	36	Pwm 1
	PWM_2	35	Pwm 2
	PWM_3	34	Pwm 3
	PWM_4	23	Output Pressure Valve
OUT DIGITALE	OUT ON/OFF	33	Out DG 1
Connection Gamma	GAMMA_USART_TX	10	
	GAMMA_USART_RX	13	
CAN	CanH	19	
	CanL	29	
Ground	GND	48	Graund
	GND	47	Graund
	GND	46	Graund

Electronic Control Automotive for Proportional Valves 4 Solenoid

	GND	45	Graund
	GND	44	Graund
	GND	38	Graund
	GND	28	Graund
	GND	27	Graund
	GND	26	Graund
	GND	25	Graund
	GND	24	Graund
	GND	14	Graund
	GND	5	Graund
Supply	Vsupply	43	Supply
	Vsupply	42	Supply
	Vsupply	41	Supply
	Vsupply	40	Supply
	Vsupply	39	Supply

LED DESCRIPTION



REP-A400

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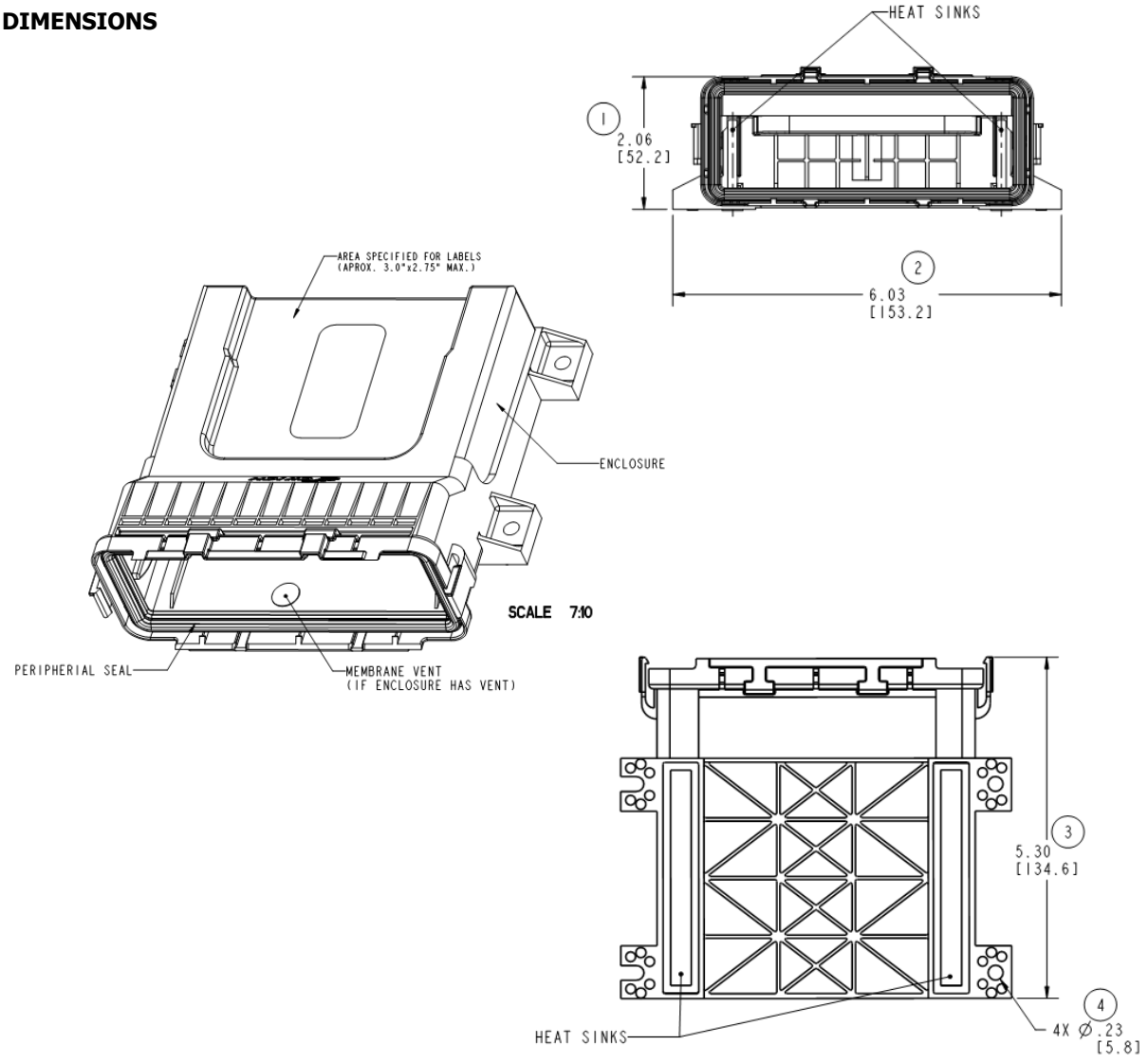
LED Number	Functionality	Description
LED1	Refresh WDT	If the LED lamp the software is RUN
LED2	Vcc	5V Vcc – If is ON there is 5V
LED3	Overcurrent	If is ON there is a short to the Digital Output
LED4	Warning	If Lamp there isn't connected a valve
LED5	Output Current	If is ON tere is a current up the 100mA PWM Output is OK
LED6	Da definire	No connected

DIMENSIONS



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