



CANLY

Standalone programmable I/O controller for the CAN bus

Datasheet Rev.: 1.1
Date: 20.05.2005

Features

- Microchip **MCP25050** CAN I/O expander
- **4 protected digital inputs**, configurable for switch to GND, 12V or 24V voltage input
- **4 digital open drain outputs**
- An **expansion** connector where all ports can be routed to an optional daughterboard with custom signal conditioning circuits
- **Voltage regulator** with input protection, suitable for vehicle operation
- 3 control LEDs.

Ordering Information

Art.-No. 01.0024

CANLY Standlone Programmable CAN I/O Controller Programmed to factory defaults.

Art.-No. 01.7007

Programming service, CANLY pre-programmed with user specified values

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Specifications

CAN Bus

Meets CAN specifications 2.0A (11 bit ID) and 2.0B (29 bit ID)

Bit Rate	Up to 1Mbit/s
Controller	Microchip MCP25050 @ 16MHz clock
Transceiver	Philips PCA82C251, for 24V systems
Connector	Standard 9-pin D-Sub connector for CAN bus, as per CiA DS102-1
Termination	On-board 120Ohm selectable

I/O

Inputs	Protected with schottky diodes and series resistor of 470 Ohms
Outputs	25V/0.6A, open drain
Expansion	10-way header for GP0-GP7, +5V, GND

Power Supply

Requirement	7...24VDC
Source	Supplied via CAN bus cable or dedicated DC supply

Mechanical

Size (L x W)	70 x 37 mm
Weight	26 g

Connector Specifications

CAN Bus

X2: CAN Bus Interface	
No.	Function
1	
2	CANL
3	CAN GND
4	
5	
6	AUX GND
7	CANH
8	
9	VCAN+

Pin 1 is marked with a square

CAN GND should be connected to shield of bus cable only.

The CANly module can be powered either from X4 or from X2. On X2, the positive voltage is applied to VCAN+, negative to AUX GND. If Module is powered from CAN Bus, connect pin 1 to 2 of X4 together.

Expansion

All I/O ports of the MCP25050 are routed to X1 via series resistors of 120 Ohms. When X1 is used to program the MCP25050, All connections to the module, including power supply, must be disconnected.

X1: Port Expansion		
No.	Function	Alt. Function
1	GP0	AN0
2	GP1	AN1
3	GP2	PWM1
4	GP3	PWM2
5	GP4	VREF-
6	GP5	VREF+
7	GP6	CLKOUT
8	GP7	RST/VPP
9	GND	
10	+5V	

Pin 1 is marked with a square.

Application Interface

X3: Application Interface		
No.	Function	Configuration
1	Input GP4	Switch to GND
2	Input GP5	Switch to GND
3	Input GP6	Switch to GND
4	Input GP7	0...5V
5	Output GP0	Open Drain, 25V/0.6A
6	Output GP1	Open Drain, 25V/0.6A
7	Output GP2	Open Drain, 25V/0.6A
8	Output GP3	Open Drain, 25V/0.6A

Power Supply

X4: Power		
No.	Function	
1	VCAN+ Output	9...24VDC
2	DC Input +	9...24VDC
3	GND	
4	GND	

Jumper Settings

Jumpers			
No.	Des.	ON	OFF
J1	TERM	120 Ohm Resistor between CANH and CANL	N.C.

LEDs		
No.	Des.	Function
D3	PWR	CANly board is powered
D4	RX	Receive data
D5	TX	Transmit data

Factory Default Programming

The MCP25050 controller contains an OTP memory which holds the default parameters. These parameters are transferred to RAM on power-up. The parameters in RAM can then be altered during run time by CAN messages as specified in the MCP25050 datasheet.

Please note that the EPROM is one time programmable only.

CAN Identifiers

Factory Default CAN Identifiers		
Id	Value	Used for
TXID0	0x3C	On bus messages
TXID1	0x3D	<ul style="list-style-type: none"> ▪ Command acknowledge ▪ Receiver overflow ▪ Error condition
TXID2	0x3E	Edge detect messages
RXMSK	0x7F8	Receive mask. Lower 3 bits don't care
RXF0	0x40	Filter for information request messages
RXF1	0x48	Filter for input messages to MCP25050

I/O Configuration.

Factory Default I/O Configuration		
Pin	In/Out	Used for
GP0	OUT	Digital output
GP1	OUT	Digital output
GP2	OUT	Digital output
GP3	OUT	PWM Output Period: 200us Duty: 150us Resolution: 10bit
GP4	IN	Digital Input, positive edge
GP5	IN	Digital Input, negative edge
GP6	IN	Digital Input, negative edge
GP7	IN	Digital Input, negative edge

Bit Timing

Factory Default Bit Timing CAN Bus Speed: 125kbit/s		
Parameter	Value	Description
BRP	4	Baudrate prescaler
PRSEG	3	Propagation segment
PHSEG1	6	Phase segment 1
PHSEG2	6	Phase segment 2
SJW	1	Synch jump width
SAM	1x	Bus line sampled once
WAKFIL	OFF	Wake-up filter disabled
BTLMODE	CNF3	Length of PHSEG2 determined by CNF3

Factory Default Bit Timing CAN Bus Speed: 1Mbit/s		
Parameter	Value	Description
BRP	1	Baudrate prescaler
PRSEG	1	Propagation segment
PHSEG1	3	Phase segment 1
PHSEG2	3	Phase segment 2
SJW	1	Synch jump width
SAM	1x	Bus line sampled once
WAKFIL	OFF	Wake-up filter disabled
BTLMODE	CNF3	Length of PHSEG2 determined by CNF3

Option Register 2

Factory Default Option Register 2 Settings		
Bit	Value	Used for
CAEN	1	Command Acknowledge enabled
ERREN	0	Error Recovery into Normal Mode
TXONEN	1	Will send message if error counter(s) go high enough
SLPEN	0	Sleep mode disabled
MTYPE	0	RTR is used for IRM (Remote Frame)
PDEFEN	0	PWM output default values disabled
PUSLP	0	SLEEP disabled when in Listen-only mode during power-up sequence
PUNRM	1	Enters "Normal" mode after completing self-configuration during power-up sequence