

IDCA-10

Intelligent DC Brushed Motor Drive

Motor Control Technologies, LLC <u>www.mocontech.com</u>



The IDCA-10 is an integrated servo control system designed specifically for DC brushed motors. MCT brings a unique solution to motor control with this innovative product. The IDCA-10 possesses a dedicated PID control loop, localizing control functions on the motor hardware. The IDCA-10 is designed with flexibility in mind and is easily configured for a number of different operating modes. Operating modes include:

- Open-loop speed control
- Closed-loop speed control
- Closed loop position control.

Digital communication is made available via a configurable 4-wire SPI or 2-wire SMBus/I²C serial bus. An optional stand-alone mode allows the user to utilize a single analog input signal to control the IDCA-10 in place of the serial bus.

The IDCA-10 also incorporates two encoder channels to interface with shaft encoders common to many motor assemblies. Two external inputs allow easy integration with limit/proximity switches to implement motor stops or fixed-position motor deceleration.

The IDCA-10 is ready to use right out of the box. An anodized aluminum heat sink and enclosure may be used as a stand-alone base, or integrated into existing hardware. The IDCA-10 also provides a convenient +5V regulated output to power encoders or other electronic components.

IDCA-10 Electrical Characteristics

All values are specified at 25C operating temperature unless otherwise stated.

Characteristic	Symbol	Min	Тур	Max	Unit
Supply Voltage	+V _S	8		28	V
Motor Output Voltage	OUT _n	0		+V _S - 0.5	V
Continuous Output Current (1)	I _{out}	0		5	А
Peripheral Voltage (+5VO) $I_{out} = 0 A$ $I_{out} = 250 \text{ mA}$ $I_{out} = 500 \text{ mA}^{(3)}$	+5V0	 	5.5 5.1 4.6	 	V V V
Peripheral Output Current (3)	IP _{max}			500	mA
Quiescent Current Bridge Enabled +Vs = 8V +Vs = 28V Bridge Disabled +Vs = 8V +Vs = 28V	IQ	 	31.5 18.5 26.8 13.5	 	mA mA mA mA
Control I/O input limits	Vı	-10		10	V
Control I/O logic levels High level input voltage Low level input voltage	V _{IH} V _{IL}	2.3		1.0	V V
Serial Bus Clock Speed SPI I2C		300 40		10,000 10,000	Hz Hz
PWM Output Frequency	f _{PWM}	1		10	kHz
Bridge Resistance (4)	R _{BR}		240		mΩ
Recommended Motor Winding Resistance +Vs = 28V +Vs = 18V +Vs = 12V +Vs = 8V	R _{мот}	2.3 1.5 1.0 0.75	 	 	Ω
Operating Temperature Range	T _{OP}	-40		85	°C

Notes:

- Inability to adequately dissipate heat from the drive unit will result in lower continuous current limit due to over temperature shutdown limits.

- H-bridge IC junction temperature.
 500 mA loads are not to exceed 30s in duration.
 R_{BR} value measured when the bridge junction temperature at 25 C.
 Motor winding resistances less than that noted for R_{MOT} can result in excessive bridge currents during breaking, and can cause serious damage to the IDCA-10.