



IDCA-10

Intelligent DC Brushed Motor Drive

Motor Control Technologies, LLC

www.mocontech.com



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 3-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 25°C operating temperature unless otherwise stated.

Characteristic	Symbol	Min	Typ	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	A
Peripheral Voltage (+5V0) I _{out} = 0 A I _{out} = 250 mA I _{out} = 500 mA ⁽³⁾	+5V0	--	5.5 5.1 4.6	-- -- --	V V V
Peripheral Output Current ⁽³⁾	I _{Pmax}	--	--	500	mA
Quiescent Current Bridge Enabled +V _S = 8V +V _S = 28V Bridge Disabled +V _S = 8V +V _S = 28V	I _Q	-- -- -- --	31.5 18.5 26.8 13.5	-- -- -- --	mA mA mA mA
Control I/O input limits	V _I	-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 ⁽⁵⁾ +V _S = 28V +V _S = 18V +V _S = 12V +V _S = 8V	R _{MOT}	2.3 1.5 1.0 0.75	-- -- -- --	-- -- -- --	Ω
Operating Temperature Range	T _{OP}	-40	--	85	°C

Notes:

- 1) Inability to adequately dissipate heat from the drive unit will result in lower continuous current limit due to over temperature shutdown limits.
- 2) H-bridge IC junction temperature.
- 3) 500 mA loads are not to exceed 30s in duration.
- 4) R_{BR} value measured when the bridge junction temperature at 25 C.
- 5) 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.