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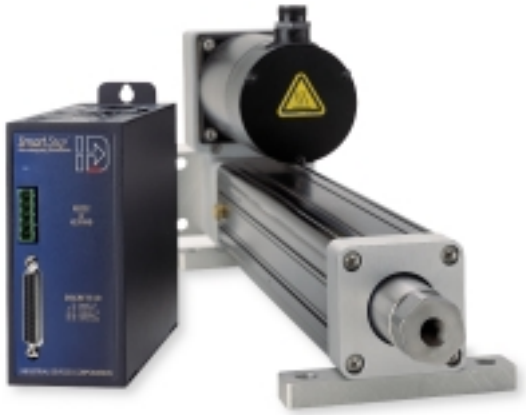
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Find the *Danaher Motion / IDC SmartStep-23* at our website: *Click HERE*

Overview

IDC's SmartStep is a complete, packaged microstepping drive/control that provides a user friendly system, as well as many compelling features and benefits. Consider a SmartStep when your application requires:

- **High Throughput.** The SmartStep has the same outstanding dynamic performance as the NextStep® microstepping drive which incorporates the latest in Anti–Resonance technology to maximize the torque, and optimize the performance of step motors.
- **Ease of Integration.** The SmartStep uses IDC's IDeal™ programming language, and Application Developer software package which simplifies system set–up and integration.
- **Small Panel Space.** The SmartStep has an internal heatsink and fan which keeps the panel space required for each unit small, and allows multiple units to be stacked together in multi–axis applications.
- **Smoother performance** across the entire motion profile.
- **Up to 8 amps of motor current.** The SmartStep is compatible with both standard and enhanced 17 frame to 42 frame step motors.

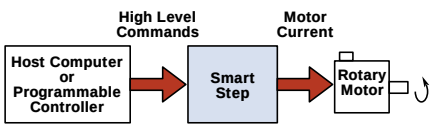


Additional SmartStep Features

- CE rated
- Flash memory allows the SmartStep to be completely reconfigured from a file obtained via the Internet for easy upgrades of both hardware and firmware
- 60K memory, up to 400 programs standard
- RS–232 communications standard, RS–485 optional
- Operates from 120 VAC standard, or 240 VAC optional
- All system configuration and drive settings are software configurable, which means there are no switches to set
- High Speed Registration input
- Faster microprocessor and data bus improves the SmartStep's computational horsepower compared to the S6961
- Go Immediate Mode. This mode of operation allows the controller to multitask between motion control and I/O operations
- User scaling of position, velocity, and acceleration
- Descriptive variables, math and conditional branching
- Accepts encoder feedback for Stall Detection, Closed Loop operation, and Position Maintenance
- 1–99 Axis of immediate control via host RS–232C communication
- Compatible with IDC's Application Developer Software
- Sixteen configurable I/O (8 inputs, 8 outputs,) 1 dedicated home and 2 dedicated end of travel inputs
- Optically isolated I/O, 12/24 VDC compatible
- Compatible with IDC's S series step motors, and P/K series enhanced step motors. See page G-52 for more information on IDC step motors
- A handful of accessories simplify integration. See page G-30 for information.

For 17 or 23 frame step motor applications IDC has developed the SmartStep23. Some of the features included in the SmartStep23 are:

- The SmartStep23 provides up to 3 amps of current which makes it ideal for 17 or 23 frame step motor applications
- Same outstanding dynamic performance as the NextStep microstepping drive
- Operates from 120 VAC
- All the same features and benefits found in the SmartStep



Compatible Mechanics:
EC2-S, EC3-S, EC4-S, EC5-S
NV-S, N2-S, R2A-S, R3-S, R4-S
Positioning Tables

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707-789-1000 • 800-747-0064 • E-mail: info@idcmotion.com

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Specifications

	SmartStep	SmartStep23	SmartStep–240
AC Power Input	90-120 VAC Single Phase, 50/60 Hz, 500 VA max, @ 7.9 amp setting	90-120 VAC Single Phase, 50/60 Hz, 250 VA max, @ 3.0 amp current setting	100-240 VAC Single Phase, 50/60 Hz, 500 VA max, @ 3.9 amp setting
Motor Current	0-7.9 amps, 0.1 amp increments If current setting is higher than 6 amps, drive will fold back current to 6 amps when the motor is at rest	0-3 amps, 0.1 amp increments	0-3.9 amps, 0.1 amp increments
Bus Voltage	160 VDC nominal	160 VDC nominal	320 VDC nominal
System Resolution	36,000 steps/motor rev		

Motor Compatibility

Type	2 phase, hybrid permanent magnet; 0.9°, 1.8° or 7.2° full step
Inductance	2-60 mH for SmartStep and SmartStep23; 8-240 mH for SmartStep-240.

Amplifier

Switching Frequency	20 kHz
Protection	
Short Circuit	Amp disabled if phase to phase, or phase to ground short detected
Brownout (Under Voltage)	Amp disabled if supply drops below 90 VAC (100 VAC for -240 version)
Over Temperature	Amp disabled if heatsink exceeds 70° C
Interlock	Amp disabled if interlock connection is broken on motor connector
Regen/Over Voltage	Amp disabled if regen condition causes bus voltage to exceed 220 VDC for 120 VAC input voltage, or 440 VDC for 240 VAC input voltage

Current Settings

Rest	Software selectable. If selected, will reduce motor current to 1 amp after no motion has occurred for 20 minutes. Full current level will resume upon receipt of next motion command. Reduces drive and motor temperature
Idle	Software selectable. If selected will reduce current to 75% of drive setting if no motion is commanded for 10 ms. Full current level will resume when motion is commanded. Reduces drive and motor temperature.
Waveform	Software selectable. Configures the shape of the current waveform. Default is pure sinusoid. Selecting On changes waveform to -4% 3rd harmonic. Optimizes smoothness and step-to-step accuracy.

Additional SmartStep Specifications

Inputs 8 Programmable, Limits, Home	12 VDC or 24 VDC compatible, optically isolated, as little as 3.0 mA sinking current required
Incremental Encoder	Optically isolated, differential line driven 5 VDC signal, 2 mHz max frequency (post quadrature); 5 VDC, 200 mA available on SmartStep to power encoder
Outputs 8 Programmable	Open collector, 12 VDC or 24 VDC compatible, optically isolated, 100 mA max sink current per output. 350 mA total sink current
LED Indications	Green—functioning normally; Red—Fault; Amber—FLASH fault

Environment

Operating Ambient Temp.	Max. ambient temperature of 50°C (122°F) @ 6 amps current setting
Storage Temperature	-40°C to 80°C (-40°F to 176°F)
Humidity	0% to 90% non-condensing
Dimensions	5.9” (L) x 2.5” (W) x 6.3” (H)

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Accessories

SmartStep I/O Accessories



Optional Keypad

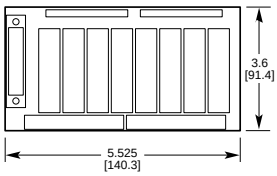
- Both a programming tool and an operator interface
- Menu-driven set up, online help function, diagnostic screens and trace mode provide straightforward set up, troubleshooting and program debugging
- Easy to read, backlit 40-character display
- Connects to control or mounts remotely
- Scratch-proof, large keys
- Displays current position and I/O status
- Keypad is protected to NEMA 4 (IP65) standards when panel is mounted with gasket
- See page G-38 for more information on keypad.



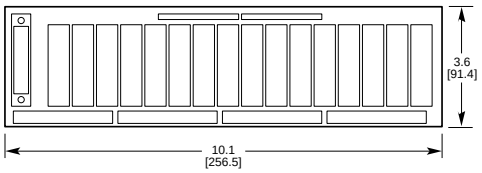
OPTO44 Board

OPTO rack that accepts up to 8 OPTO modules (up to 4 OPTO inputs and 4 OPTO outputs). OPTO I/O is useful when your application needs to switch on and off large voltages or currents (i.e., turning on a solenoid, switching on and off a 230 VAC brake, etc.). OPTO44 racks parallel all 16 I/O points to a second set of screw terminals so unconditioned I/O may still be used.

OPTO44 Dimensions



OPTO88 Dimensions

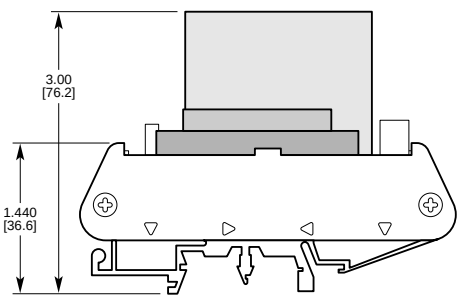




OPTO88 Board

OPTO rack that accepts up to 16 OPTO modules (up to 8 OPTO inputs and 8 OPTO outputs). OPTO I/O is useful when your application needs to switch on and off large voltages or currents (i.e., turning on a solenoid, switching on and off a 230 VAC brake, etc.). OPTO44 racks parallel all 16 I/O points to a second set of screw terminals so unconditioned I/O may still be used.

OPTO44/88 Rack Dimensions



Add 0.7 [17.8] for Greyhill G5 modules.

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Accessories

DB25BO Breakout Board

This accessory converts the DB25 I/O connector on the SmartStep to screw terminals.



SS-IO and SS-IO-6 Cables

I/O cables that connect SmartStep to other devices or PLC.

SS-IO cable is 2 ft
SS-IO-6 cables is 6 ft



SS-RS232 Cable

Cable for connecting SmartStep to PC (9-pin comm. port).



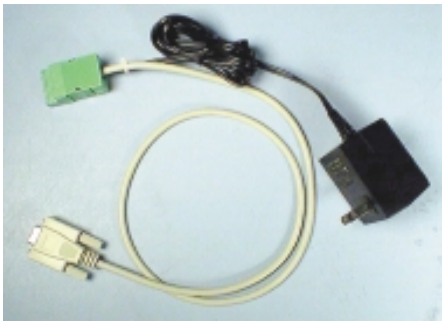
SS-PNP-BO Breakout Board

Screw terminal breakout board that converts the SmartStep's sinking outputs to sourcing outputs.



PCS-5004 Cable

PC-keypad cable for copying programs between keypad and PC (5 VDC power supply not included).

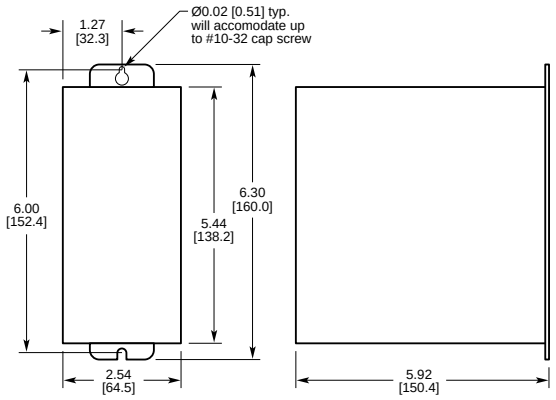


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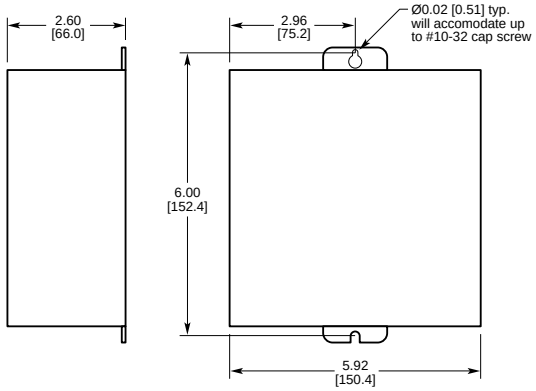
Specifications

Mounting Dimensions in [mm]

Minimum Width (Standard)



Minimum Depth (must order as an option)



How To Order

Model	Description
SmartStep	Single axis, 7.9 amp programmable microstepping drive/ control, operates from 120 VAC
SmartStep–240	Single axis, 3.9 amp programmable microstepping drive/ control, operates from 240 VAC
SmartStep23	Single axis, 3 amp programmable microstepping drive/ control, operates from 120 VAC

Option	Description
RS485	RS–485 option
FP	Front Panel option
MD	Minimum Depth Option
DB25	Includes DB25BO Breakout Board

To confirm your selection, review the checklist on page G-6.

SmartStep Accessories

Model	Description
OPTO44	OPTO breakout board (4I/4O). First 4 slots must be inputs; last 4 slots must be outputs.
OPTO88	OPTO (8I/8O). First 8 slots must be inputs; last 8 slots must be outputs.
DB25BO	25 pin D-Shell to screw terminal I/O connector for SmartStep
SS–IO	25 pin D–Shell I/O cable
SS–RS232	RS–232 cable for PC to SmartStep
SS-PNP-BO	25 pin D-Shell to screw terminal adapter that converts outputs to PNP logic
PCS-5004	PC to keypad RS-232 cable

OPTO44 Position*

1	2	3	4	5	6	7	8

OPTO88 Position*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Inputs

Code	I/O Module Description
A	DC/AC In, 10-32 VDC, 12-32 VAC
B	DC In, TTL
C	DC In, 35-60 VDC
D	AC In, 90-140 VAC
E	AC In, 180-240 VAC
I	Input test switch
J	Analog In, 0–10 volts
K	Analog In, 4–20 mA
X	Empty

Outputs

Code	Output Module Description
F	DC Out, 5-60 VDC, 3 Amps
G	AC Out, 12-140 VAC, 3 Amps
H	AC Out, 24-280 VAC, 3 Amps
X	Empty

* If no OPTO modules are desired, leave blank.

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