

SENSITRON SEMICONDUCTOR



Motor Controllers

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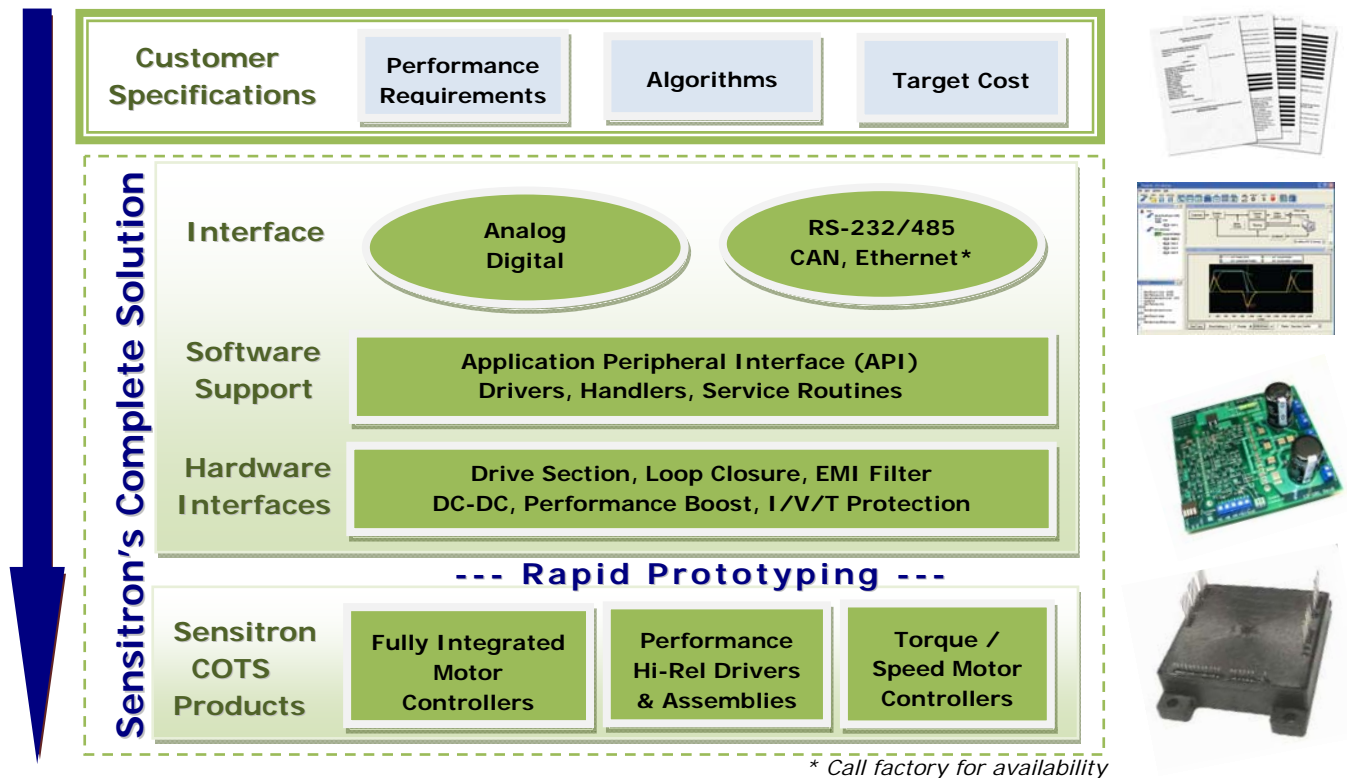
Total Motion Control Solutions

www.sensitron.com/motorcontrollers.htm

FROM YOUR SPECIFICATIONS...TO A COMPLETE SOLUTION!

Sensitron offers an extensive line of integrated COTS Motor Controllers with the ability to tailor designs and fabrication to meet your application and manufacturing requirements:

- Speed/Velocity Controllers
- Torque Controllers
- Sensorless Controllers
- Field Oriented Controllers
- Integrated IGBT/MOSFET Drivers
- Cryogenic Cooler Controllers



Depending on your integration requirements, Sensitron offers many supporting functions to make your motor application as efficient as possible:

- Serial Interface:
 - SPI, RS-232, CAN, Ethernet, 1553*
- Analog & Digital Control (Input & Output)
- Hall, Resolver & Sensorless
- Isolated Interface Translators
- Bias and Power Drive Sections
- Motor LC and EMI Filtering
- Regulated Boost Converter
- Over and Reverse Voltage Protection
- Temperature Monitors and Protection
- Packaging Solutions and Enclosures
- Performance Boost

Get your evaluation kit and start your motor application by visiting us at www.sensitron.com , or call your local sales representative.

Field Oriented Controllers

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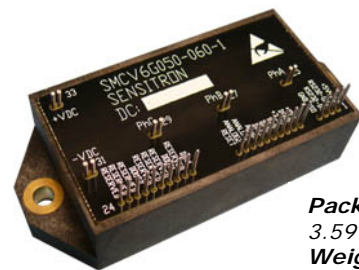
Features/Benefits

- Sinusoidal sensorless speed control with torque limiting
- Vector drive field oriented controller with space vector PWM
- Operation at DC bus from 28V to 600V
- 75A peak phase, 800V steady state operation
- IGBT's rated to 1200V, MOSFET rated to 250V
- Top Speed of 12500+ RPM
- Re-configurable Firmware
- Isolated RS232 interface with digital tach & direction output
- Smart gate drivers with de-sat protection
- Boot-strap powered high sided gate driver
- Closed-loop speed and current control
- DC bus voltage sensor

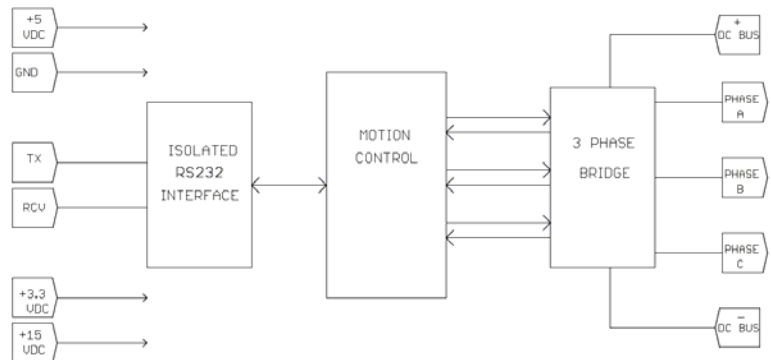
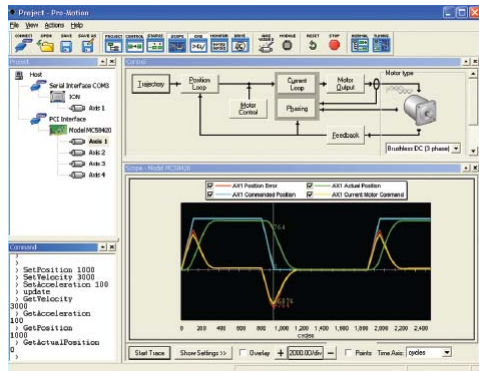
Major Advantage:

Flexibility of this design allows for use of a single device/part number for multiple motor applications with few hardware changes.

Best used in high reliability military and industrial motor control applications



Package Size:
3.59" x 1.55" x 0.80"
Weight:
5.0 oz



Software Features

- Excel-based software with motor drive GUI
- GUI controls motor and modifies parameters
- Built-in data logger

Fans and pumps applications are suitable in the following markets:

- Military Ground Vehicles
- Industrial Equipment
- Heavy Duty vehicles
- Air handlers
- Lifts

Part Number	Recommended Max Operating DC Bus Supply Voltage	Absolute Peak DC Bus Voltage	Recommended RMS Output Motor Current	Absolute Peak Output Motor Current
SMCV6G040-120	700	1200	25	42
SMCV6G050-060	350	600	35	56
SMCV6M060-025	150	250	35	60
SMCV6M080-010	60	100	50	80

3-Phase / BLDC Motor Controllers

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Sensorless Controllers, SMCS6 Series

- Speed/velocity controller without Hall sensor
- Configured in 2-quadrant mode
- Tacho output and Current output
- Programmable lead angle for high speed operation
- Direction input to control motor direction
- Programmable cycle by cycle current limiting
- Overvoltage/Coast input for power switch shutdown
- Enable/ Disable input
- Closed loop current controlled by input command

Major Advantage:

Simplicity for system integration, increased reliability and reduced system wiring.

Best used for speed control applications not requiring dynamic direction reversal



Part Number "M" MOSFET output stage "G" IGBT output stage	Recommended Max Operating DC Bus Supply Voltage	Absolute Peak DC Bus Voltage	Recommended RSM Output Current	Absolute Peak Output Current	Rds(on) ID = 20A
	Volts	Volts	Amps	Amps	mΩ
SMCS6M40-10-1	60	100	40	60	5
SMCS6M40-25-1	150	250	30	40	35
SMCS6G25-60-1	350	600	15	25	-
SMCS6G070-060-1	350	600	50	70	-
SMCS6G-060-120-1	700	1200	30	60	-

Available in both hermetic and non-hermetic. Remove the -1 from the part number for the hermetic option.

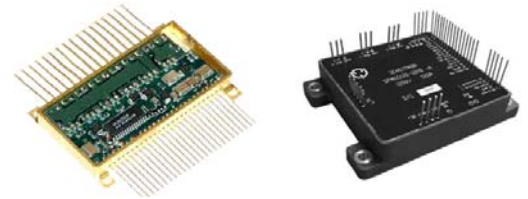
Torque Controllers, SMCT6 Series

- Complementary 4-quadrant operation
- Direction/current controlled by bi-directional input
- Overvoltage/Coast input for power switch shutdown
- Programmable cycle by cycle current limiting
- Tacho output with average output proportional to speed
- Current and Direction outputs
- Enable/Disable input
- Closed loop speed /current controlled by input command

Major Advantage:

High linearity through zero motor current

Best used for high performance servo systems that require holding torque through zero motor current



Part Number "M" MOSFET output stage, "G" IGBT output stage	Recommended Max Operating DC Bus Supply Voltage	Absolute Peak DC Bus Voltage	Recommended RSM Output Current	Absolute Peak Output Current	Rds(on) ID = 20A
	Volts	Volts	Amps	Amps	mΩ
SMCT6M40-10-1	60	100	40	50	5
SMCT6G150-010-1	60	100	150	180	3
SMCT6M40-25-1	150	250	30	40	35
SMCT6G20-60-1	350	600	10	20	-
SMCT6G120-060-1	350	600	80	120	-
SMCT6G070-060-1	350	600	50	70	-
SMCT6G060-120-1	700	1200	25	60	-

Available in both hermetic and non-hermetic. Remove the -1 from the part number for the hermetic option.

3-Phase BLDC Motor Controllers

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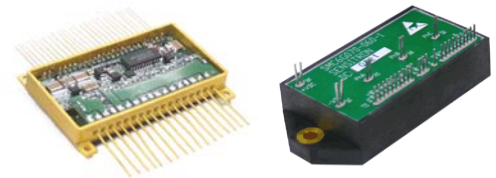
Speed/Velocity Controllers, SMC6 Series

- Operation at DC bus from 28V to 800V
- 2 or 4-quadrant mode configuration
- Direction input to control motor direction
- Overvoltage/Coast input for shutdown of all power switches
- Programmable cycle by cycle current limiting
- Tacho output with average output proportional to speed
- Current and Direction outputs
- Enable/Disable input
- 60° to 120° Commutation
- Available evaluation interface board for system testing

Major Advantage:

Efficiency and options

Best used as two quadrant speed controller for controlling/driving fans, pumps, and motors in small size applications



Part Number "M" MOSFET output stage "G" IGBT output stage	Recommended Max Operating DC Bus Supply Voltage	Absolute Peak DC Bus Voltage	Recommended RMS Output Current	Absolute Peak Output Current	Rds(on) ID =20A
	Volts	Volts	Amps	Amps	m Ω
*SMC6M40-10-1	60	100	30	60	15
SMC6M070-010-1	60	100	50	70	5
*SMC6M40-25-1	150	250	30	60	35
*SMC6G20-60	350	600	15	20	-
*SMC6G25-60-1	350	600	15	25	-
SMC6G070-060-1	400	600	50	70	-
SMC6G060-120-1	700	1200	30	60	-

* Available interchangeable in hermetic and non-hermetic. Remove the -1 from the part number for the hermetic option.

--- Rapid Prototyping ---

Evaluation Boards for Three Phase Brushless DC Motor Controllers



Sensitron's Evaluation Boards provide quick evaluation testing without having to design the system board interface! **For more information, please contact us at sales@sensitron.com**

Integrated IGBT/MOSFET Drivers

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www.sensitron.com/drivers.htm



Features/Benefits

- Optically isolated gate drives
- Current sensing / Over current shutdown
- Temperature sensing / Over temperature shutdown
- Short circuit protection

Major Advantage:

Standard off-the shelf product with a wide voltage and current range containing sensing & shutdown features not widely available in industry standard drivers

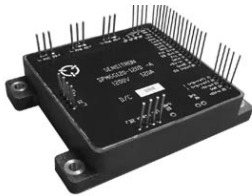
Dual miniature 100V, 7.5A H-bridge with drivers and current sense are also available. Contact sales@sensitron.com

MOSFET Drivers

- Up to 400V Max Bus DC Operating Voltage
- Up to 600V Max Peak DC Bus Voltage
- 20-150A Continuous Drain Current

Three Phase MOSFET Drivers

Part Number	Recommended Max Operating DC Bus Voltage	Absolute Peak DC Bus Voltage	Recommended RMS Output Current	Absolute Peak Output Current	Rds(on)
	Volts	Volts	Amps	Amps	mΩ
SPM6M080-010D	60	100	50	80	5
SPM6M070-025D	150	250	35	70	35
SPM6M020-060D	350	600	15	20	50



IGBT Drivers

- Up to 700V Max Bus DC Operating Voltage
- Up to 1200V Max Peak DC Bus Voltage
- 60-140A Continuous Drain Current

Three Phase IGBT Drivers

Part Number	Recommended Max Operating DC Bus Voltage	Absolute Peak DC Bus Voltage	Recommended RMS Output Current	Absolute Peak Output Current	-
	Volts	Volts	Amps	Amps	
SPM6G070-060D	350	600	25	70	-
SPM6G060-120D	700	1200	35	60	-

Note: Contact factory for custom configurations or higher power ratings

High Current Drivers (>100 Amps)

In addition to our standard features, our **High Current Drivers** also feature:

- Isolated temperature sensing
- Optional high side bias supply
- Isolated current monitor output for each one of the three phases

Part Number	Recommended Max Operating DC Bus Voltage	Absolute Peak DC Bus Voltage	Recommended RMS Output Current	Absolute Peak Output Current	Rds(on)
	Volts	Volts	Amps	Amps	mΩ
SPM6M150-010D	60	100	50	180	3
SPM6G150-060D	350	600	70	150	-
SPM6G120-120D	700	1200	50	120	-

Motor Controller Assemblies

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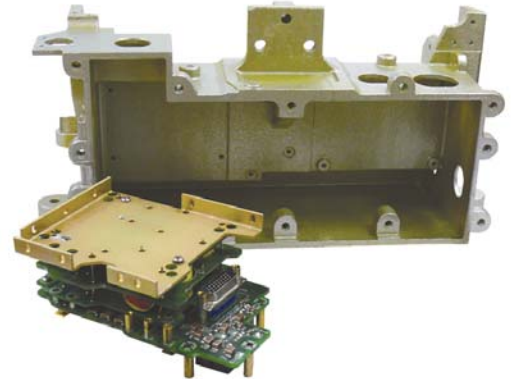
www.sensitron.com/motorcontrollers.htm

3-Phase Brushless DC Motor Control with EMI Filter

Features/Benefits

- 400HZ 3-phase input, driver output to 10A peak
- Hall sensor commutation
- 6 Pulse 3-phase output drive
- Locked rotor operation and protection
- 12 pole motor operation with internal tach.
- 25 RPM to 5000 RPM closed loop operation

MIL-STD-704 and MIL-STD-461 Compliant



High Power 3 Phase BLDC Motor Drive Assembly

Features/Benefits

- AC inputs 110V, 220V, 440V (55-400HZ)
- 3-Phase input fuses, small size
- Hall sensor or sensorless drive
- AC rectification and AC current surge limiter
- Regenerative brake limiter
- Screw terminal power connectors and DB25 signal interface

Compatible with other Sensitron Controllers

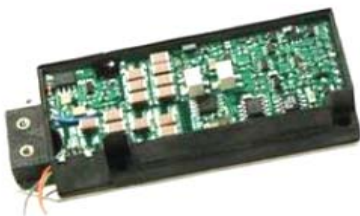


Cyrogenic Cooler Controllers

Features/Benefits

- Voltage programmable precision AC power source
- Feedback loop to sense the refrigerant temperature, the output AC voltage automatically adjusts for constant temperature
- +28VDC power and contains one temp sensor input, one 17VAC output and temperature and voltage adjustments

Best used to drive an AC motor



Also Available: 0.3 Watt and 1.5 Watt Controllers

- Input voltage: 17-32Vdc , input current up to 6A (or 1.35A for the 0.3W)
- Output current is 13.5 VRms
- Operating frequency is 60Hz +/- 1 Hz, with efficiency over 90%
- Operates continuously with maximum of 94W DC input @65°C ambient



Sensitron Advantage

Complete controller and power stages available
Wide COTS standard product range to fit most high power motors
Compact design-ease of system integration, increased reliability
Flexible, battle-tested technology allows for reduced design time
Electrical/mechanical design optimized for small space/footprint
Minimal power dissipation and wide-temperature range operation

Please visit our website:

<http://www.sensitron.com>

The screenshot shows the Sensitron Semiconductor website homepage. At the top left is the logo "SENSITRON SEMICONDUCTOR". To the right are search fields for "Part Number" and "Product Type" with "GO" buttons. A navigation menu includes "Products", "Support", "Company", "My Sensitron", and "Contact Us". The main content area features a "PRODUCT HIGHLIGHT: Solid State Power Management MULTI-CHANNEL" with an image of a circuit board. Below this is a banner for "YOUR POWER SOLUTIONS PROVIDER" with images of an airplane, an oil rig, a satellite, and a truck. A text box below the banner states: "Sensitron is a leading manufacturer of high reliability power electronic solutions. Markets served include the complete spectrum of high reliability markets including space, aerospace, and defense." The page is divided into several product categories: "Discrete Diodes and Die Products" (listing Zener Diodes, TVS Diodes, Rectifier Diodes, Wafer Chips, Chips with Moly), "Motor Controllers and Drivers" (listing Speed/Velocity, Sensorless, and Torque Fully Integrated Motor Controllers, MOSFET and IGBT Drivers, MIL-STD-740 and MIL-STD-461 Compliant 3-Phase Brushless), "Power Rectification" (listing Schottky Rectifiers, Bridge Rectifiers, Discrete IGBT and MOSFETS, SIC, Schottky Rectifiers and Bridges, Voltage Regulators), and "Solid State Power Management" (listing Cobra Series of Programmable Multi-Channel Solid State Power Controllers, line of programmable Solid State Power Controller Modules, Solid State Relays). There are also sections for "In The News:" (with dates October 2009 and September 2009) and "New Product:" (listing HIGH VOLTAGE ULTRAFAST RECTIFIERS). A footer contains a list of product types: Discrete IGBTs, High Voltage / Bridges / Diode Assemblies, MOSFETs, Motor Controllers / Drivers, Oil Cooled / Rotating Rectifier, Power Factor Correction (PFC Correction), Power Converters, Power Rectifiers, Schottky Rectifiers, and Silicon Carbide Rectifier.

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