

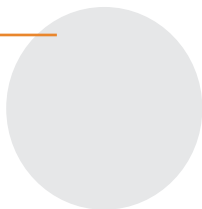


# INDUSTRIAL SOLUTION OVERVIEW

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SENSOR SOLUTIONS FOR A SAFER,  
CLEANER, MORE ELECTRIFIED AND  
CONNECTED WORLD

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# PRESSURE SENSORS & SWITCHES .....

## SH switches for HVAC



- PS80**
- Hermetically Sealed Sensor
  - Flexible Set Point Range
  - Operating Pressure - 0 to 750 psig (50 bar)
  - Certifications: UL, PED, ENEC



- 20PS**
- Automatic Reset, Single-pole, single throw switch
  - Factory calibrated set points vacuum to 750 psig
  - Life at Rated Current - 100,000 cycles (All - UL Recognition)
  - Dielectric Strength - 750 Vrms Open Contacts, 1550 Vrms Terminals to Fitting

## LP low pressure



- P992/P993**
- Silicon capacitive sensing element in a compact package
  - Pressure Range - 1, 2, 5, 10, ±1, ±2, ±5 Inches of H2O
  - Certifications - RoHS

## MP mid pressure



- 116CP/126CP**
- Ceramic capacitive technology housed in a small and innovative plastic package
  - Pressure Range – 0-230psi Sealed Gauge
  - Certifications - RoHS, REACH, CE; Drinking water safe options available



- 129CP**
- Low power consumption and digital I2C output
  - 0-16 bar (0-232 psi) sealed gauge



- 2CP5**
- Pressure Range – 0 to 15 psi, through 0 to 750 psi
  - Certifications - RoHS, REACH, CE, UL
  - Ingress Protection IP65

## PT pressure/temperature



- 112CP**
- Pressure and Temperature Measurement in one package
  - Pressure Range - 0 to 150 psi through 0 to 650 psi
  - Operating Temperature - -40°C to 135°C
  - Cycle Life - ≥ 1M cycles

## HP high pressure



- PTE7100/PTE7300**
- Micro silicon strain gauge design with best-in-class accuracy
  - Pressure range 0-8,700 PSI
  - Ingress Protection - IP65-IP67, IP68 Available for M12 with glass to metal seal
  - Certifications - RoHS, REACH, CE

## HL hydrostatic level



- Pressure ranges from 0.5mWG to 100mWG – 50mBar to 10 Bar
- Temperature range: -20 to +60°C
- Level accuracy: <0.1% FS BFSL
- Dual independent 4-20mA outputs



## FIND THE RIGHT PRESSURE PRODUCT

Sensata pressure sensors offer a [broad range](#) of mating connectors, overmolded electrical connections as well as pressure sensors with digital switching and monitoring capabilities.



# POSITION SENSORS & ENCODERS

## INC incremental



### H20; HS20; H25; HS25

- 2.0" and 2.5" shafted and through-shaft optical and magnetic encoders
- Max resolution – 10,000 – 80,000
- Max Mechanical Speed RPM – 6,000 - 30,000
- Certifications - ATEX, IECEx and cULus



### LP Series

- 90mm encoders with a low-profile design and enclosed terminal box
- Max resolution – 10,000
- Max Mechanical Speed RPM – 6,000
- ATEX, IECEx, cULus



### DHK5; DHM5; DH05

- 58mm through-shaft, blind-shaft and shafted optical encoder
- Max resolution – 500,000
- Max Mechanical Speed RPM – 6,000 - 12,000
- Output options - IO, PR, Q, SC5

## ABS absolute



### HS35

- Max Mechanical Speed RPM – 6,000
- Parallel, Serial (S3) or Analog Output
- IP65 Rating



### MHK5; MHM5; MH05

- 58mm absolute optical encode
- Max resolution – 16x14 Bits or 13x16 Bits
- Max Mechanical Speed RPM – 6,000
- Output options include SSI, CANopen, Profinet, Profibus, EtherNet/IP, EtherCAT, Power-Link, DeviceNet, Modbus and Parallel.



### CHK5; CHM5; CH05

- 58mm High Performance single-turn absolute encoder
- Max resolution – 16 Bits
- Max Mechanical Speed RPM – 6,000 – 9,000
- Output options including BISS, SSI, CANopen, Gray Code, Natural Binary, Profibus, Pulse width modulation

## SE special environment



### Explosion proof: LP series

- 90 mm incremental and absolute encoders with a low profile hollow shaft design
- Designed for use in Class I, Div.1 & Zone 1 hazardous areas
- Max Resolution - Up to 10,000 PPR incremental or 16 BITS absolute
- Protection Class – IP65



### DSX5; DSM5; DSO5 –

#### Functional Safety

- 58mm incremental functional safety encoders
- SIL3/PLe, Cat. 4 with analog or digital electronic outputs
- Max Mechanical Speed RPM – 6,000
- Max Resolution up to 2500 bits



## HE hall effect



### ACW4; TCW4; HCW4

- Encapsulated, 50-52mm non contacting position sensor
- Range of Motion - 0° to 360° continuous rotation
- Magnet holder option fits shafts up to 14mm
- Interface options include Analog, SSI, CANopen, IO-Link



### 9960 Series

- Blind shaft 51mm non-contacting sensor
- Multiple termination options
- Range of Motion - 15° to 360°
- Up to IP69K rating



### 9360 Series

- Shafted 42mm rotary noncontacting sensor with dual outputs
- Range of Motion - 15° to 360°
- Programmable versions available

## PM potentiometers



### 9850/9860 series

- Low profile rotary potentiometer with dual output option
- Range of Motion - 85°, 130°
- High Linearity – 2%



### 6300 series

- Linear potentiometer for hydraulic or pneumatic cylinder position sensing
- Lengths from 50 mm to 1,000 mm
- Linearity – 0.7% to 0.08%



### 9600 series

- Spring return linear position sensor with 3 size options
- Size - 27 to 52mm x 13mm x 9mm
- Range of Motion - 12.7 to 38.1mm
- Linearity – 1% to 0.25%

## IDW inclinometers & draw wire solutions



### T-Series Inclinometer

- Plastic or heavy-duty metal housings
- Measurement ranges - ± 15°, ± 30°, ± 60°, and ± 360°
- Analog or CANopen output



### CD series

- Draw-wire components in a variety of incremental, absolute and potentiometric output options
- Measuring range - 700 to 50,000 mm
- Resolution and outputs varied by model

## SPECIALIZED SENSOR SUPPORT

In addition to its [wide selection of position sensors](#), Sensata | BEI Sensors also offers encoder accessories to complete your motion control installation including mechanical hardware, cable assemblies, mating connectors, power supplies and more.

**BEI**SENSORS

# LIQUID LEVEL & FLOW SENSORS



FS

flow sensors



### Industrial Standard Flow Switches

- Offered in a variety of sizes to fit a wide range of industry standard pipes
- European standard 15mm and 22mm tube and American 1/2" and 3/4" NPT thread or zconnections
- Temperature rated to 85°C (185°F)
- WRAS and NSF approvals
- Low pressure drop



### Ultrasonic Flowmeters

- Non-invasive technology with no moving parts
- Automatic viscosity & temperature compensation
- Low pressure drop
- LED indication of status

### Inline and paddle flow switches

- Choice of inline or paddle switch options for loads up to 4A inductive
- 0.6 or 3.0 l/min turn on flow rate
- Adjustable time delay for pump stop of 0-10 seconds
- Automatic shut down on flow stop



LS

level sensors



### Float Switches

- Vertical and horizontal, internal and external mounting
- Available in PPS, Polypropylene, Nylon and PVDF body material
- WRAS and NSF approved variants. UL recognized
- Maximum working temperature up to 120°C



### Optical Level Sensors

- Low cost general purpose liquid level sensors
- High reliability optical sensing
- Internal and external mounting options
- High and low output versions



### Cable End Sensors

- Cable mounted, N/O or N/C configurable
- Direct switching, 10 or 20A resistive
- WRAS approved variants
- Use in depths up to 100 meters



### Hydrostatic Level Sensors

- Pressure ranges from 0.5mWG to 100mWG – 50mBar to 10 Bar
- Temperature range: -20 to +60°C
- Level accuracy: <0.1% FS BFSL
- Dual independent 4-20mA outputs



## DISCOVER MORE...

Sensata's Cynergy3 brand has [level sensors](#) flow meters, and flow switches amongst its range of measuring instruments.

# SOLID STATE RELAYS\* .....

PM

panel mount



### EL Series

- Mini-puck solid state relay
- Load current ratings from 5 to 30 Amps @ 24-280 VAC
- Back-to-back SCR output with low off state leakage current
- Flexible 5, 12 and 24 VDC control voltage options
- C-UL-US and TUV certified and CE compliant



### PM67 Series

- 67.5mm 3-phase solid state relay
- Ratings from 35 up to 75 Amps per phase @ 600 VAC
- Optional Over Temperature protection
- C-UL-US recognized and VDE approved



### Series 1

- Ratings from 10 to 125 Amps @ 24-280 VAC or 48-530 VAC
- Zero voltage (resistive loads) or instantaneous (inductive loads) turn-on output
- UL, CSA and TUV approved and CE compliant to EN 609050-1
- Also available in low noise



### DPI series

- Ratings of 20 and 40 Amps @ 24 to 600 VAC
- Push-in connections reduce wiring time by 30%

DIN

din rail mount



### SeriesOne DR

- Compact solid state relay
- Ratings of 3 to 12 Amps @ 280 VAC/600 VAC or 3 to 24 Amps @ 100 VDC
- UL and C-UL listed, HP rated, CE and RoHS compliant
- Class I, Div 2 rated for use in hazardous locations



### DR22 series

- 22.5mm solid state relay
- Ratings of 20, 30 and 35 Amps @ 48-600 VAC or 1-200 VDC
- Available in contactor or relay configuration, as well as back-to-back SCR or cost-effective TRIAC output
- C-UL-US approved



### DR67 series

- 67.5mm 3-phase solid state relay
- Ratings from 25 up to 75 Amps @ 600 VAC.
- Plug-in mount
- Built-in overvoltage protection
- C-UL-US listed and VDE approved

PCB

pcb mount



### ASO Series

- Mini-SIP solid state relay
- Ratings up to 2 Amps @ 12-280 VAC
- DC control voltage.



### CX Series

- SIP solid state relay
- Ratings of 5 Amps @ 12-280 VAC or 48-660 VAC
- AC or DC control voltage.
- UL, CSA and TUV certified



### MP Series

- SIP solid state relay
- Ratings up to 4 Amps @ 280 VAC or 3 Amps @ 60 VDC
- DC control voltage
- CE Compliant to EN60950-1

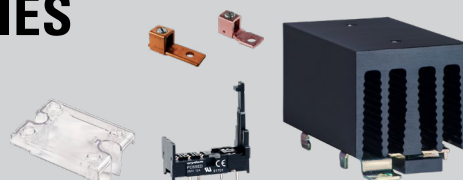
\*Additional lines of SSRs are available

For full range of our solid state relay offerings, please view our [selection guide](#)

**crydom**

## EXTENSIVE LINE OF ACCESSORIES

Besides offering many other SSR series beyond those shown above, Sensata | Crydom also offers a wide range of accessories.



# HIGH VOLTAGE RELAYS

HVR

high voltage relays



#### GIGAVAC High Voltage Relays

- Variety of voltages available from 2- 100kV
- Available in Single Pole Single Throw, Single Pole Double Throw, Double Pole Double Throw, and Latching Bi-Stable configurations



#### High Voltage Reed Relays

- Offered in industry standard packages with a choice of isolation voltages, coil voltages, contact forms and termination/mounting styles
- Suitable for applications up to 15kVdc
- UL approved



#### Radio Frequency Reed Relays

- Leverage rhodium contacts to provide low stable contact resistance in applications up to 20A, 2-32 MHz
- Available in miniature screen, screened, and fully screened, and miniature latching varieties
- UL approved



 cynergy<sup>3</sup>  
**GIGAVAC**

## AN IMPORTANT ROLE

Products play an important role in the field of medicine being used in defibrillators that save lives every day, with other applications including semi-conductor and insulation testing, military in-the-field communications, electrosurgical equipment and charging of electric vehicles.

# CONTACTORS AND FUSES



## C contactors



### GV Series

- Voltage ratings from 12V up to 1000Vdc
- Rated to switch loads in excess of 400 amps and interrupt short circuit currents up to 3500 amps (voltage dependent)



### GX/MX Series

- Specialized Contactors rated for 12V to 800V
- Up to 1000A Continuous Duty
- Ceramic or hermetically sealed options
- Options for Integrated Sensing and Military Applications



### Gigavac MiniFACTORS

- Compact sealed contactors for loads to 80A
- Normally open, normally closed, and PC Mount versions are available.
- Models available with with UL Recognition, cRUUs, as well as solar energy requirements under NEC 690.11 and NEC 690.12



### HX Series

- Ceramic and epoxy sealed contactors for applications to 1500 volts,
- UL508 approved for 1000V switching.
- Ideal for harsh environments; exceed sealing requirements of IP67 and IP69

## S solutions



### Custom Solutions

- Application Specific Designs
- Purpose Engineered Products
- Simple Modifications to Full Value Added Packages



### PCB Solutions

- Cost Effective Installation
- Power Distribution Solutions
- 12V to 1000V
- Up to 600A Continuous Duty



## CERTIFICATIONS

GIGAVAC sealed power contactors and battery disconnect products are CE approved, conforming to all relevant European requirements, and built following ISO and IATF certified processes. Many of our contactors are UL Certified in addition to being compliant with other worldwide certifications.

# MOTOR PROTECTION AND TEMPERATURE MANAGEMENT

MP

motor protectors

## Appliance protectors

Bimetal motor protectors used in appliance applications. Used to protect against motor overheating, caused by locked rotor or running overload conditions. A broad variety of models and series is available.



- A broad variety of models and series available, like for ex. 7AM, 15AM, 17AM, 8CM series and more.

## Auto DC Motor Protectors

Electro-mechanical motor protector for automotive applications based on the Klixon® bimetal snap-action disc. These products operate as a current and thermal sensitive power cut-out for all automotive accessory motor applications.



- **5AP Motor Protector:** Thermal motor protection reacting to both current and temperature; Wide variety of standard thermal configuration; Terminal material provides trouble-free welding
- **6AP Motor Protector:** Operates in wide temperature and current ranges, while providing consistent performance characteristics and excellent reliability.

## Compressor Motor Protectors

Hermetically sealed bimetal protectors used to protect against AC motor overheating, caused by locked rotor or running overload conditions in single phase or three phase compressor applications.



- 15HM/16HM Single Phase Series Motor Protectors
- 34HM/35HM/37HM Three Phase Series Motor Protectors



## Starting Relays and Combos

Bimetal enabled Relay and PTC used for motor starting and to protect against AC motor overheating, caused by a locked rotor or running overload conditions.

- 5SPL Low power combo starter/Motor protector
- LPC3 Low power starter/Motor protector
- Terminal Board LPC3 Starter/Motor protector
- ASCOM Starter/Motor protector = 6SP?
- EUCOM Starter/Motor protector = 8EA
- 11SP Combo starter/Motor protector
- 5SP Combo starter/Motor protector

## Phenolic Motor Protectors

Single and three-phase phenolic motor protectors are equipped with a bimetallic snap acting disc, on which the contacts are mounted, and through which the current flows. Manual reset versions are also available for applications where automatic restarting may be hazardous to equipment or operations.



TS

thermostats and temperature Sensors



## 1NT/3NT Thermostats

- Fixed temperature thermostats
- UL/CSA and KEMA/ENEC recognition
- Low cost and high impact strength



## 5100 Series Thermostats

- Hermetically sealed thermostat probe
- Meets MIL-STD-202 shock specifications
- Operating Temperature: +1.67°C to 249°C



## 5003 Series Thermostats

- Low-profile, 1/2" disc button style
- Operating Temperature: +1.67°C to 162.78°C
- ROHS Compliant



## 6600/6700 Sub-Miniature Thermostats

- Factory-calibrated thermal switches for PCBs
- 8-Pin DIP configuration or TO220 Package
- ROHS Compliant



## 3000 Series Temperature Sensors

- 10KΩ NTC Thermistor or 100Ω RTD
- Temperature sensing range of -40°C to 125°C
- Flying lead connector



## 4000 Series Temperature Sensors

- 1000Ω RTD
- Temperature sensing range of -40°C to 85°C
- IP69K



## 5024 Series Temperature Sensors

- 10KΩ NTC Thermistor
- Temperature sensing range of -55°C to 300°C
- IP67



## DARTS Temperature Sensors

- Thin film platinum RTD based temperature sensors
- Temperature ranges from -40° up to 850°C
- Ideal for demanding air conditioning, refrigeration and industrial applications

**KLIXON**  
®

## DISCOVER MORE...

Sensata offers rugged industrial [thermostats and temperature sensors](#) with a wide range of form factors and connection options to supply a solution for many industrial applications. A multitude of package designs for harsh and challenging environments span a range of -70° to 850°C.



# CIRCUIT BREAKERS .....

## CB circuit breakers



- 202 Series (AP, UP, M39019)**
- Up to 20A AC & DC
  - MIL-PRF-39019
  - Ambient temperature range – 40° C and +100° C



- 209 Series (209, 219, 229, 249)**
- Current Ratings - Up to 125A 10,000AIC
  - UL (489,489A, 1500), TUV



- 213 Series (T, R, CR, PP, CPP, PR, CPR)**
- UL489A, UL1077, TUV
  - Up to 30A AC & DC
- 214 Series (IAL, IEL, IUL, LEL, CEL)**
- Up to 100A DC & 70A AC
  - Ambient Temperature –40° C to +85° C
  - UL489A, UL1500, TUV



- 217 Series (IAG, IEG, IUG, LEG, LEJ)**
- Electrical Characteristics - Up to 50A AC & DC
  - Ambient Temperature –40° C to +85° C
  - UL489A, UL1077, TUV



- 218 Series (JLE, JRE, JTEP)**
- Current Ratings Up to 1,200A
  - UL489, UL489A, TUV, CCC



- 260 Series (IPA, IPAP)**
- Up to 30A AC & DC
  - UL489A, UL1077, TUV, CCC



**Precision Circuit Breakers**  
Broad portfolio of single pole or three pole versions from 1/2amp to 100amps. Temperature non-compensated and thermal.

- Aircraft circuit breakers (temperature compensated)
- Aircraft circuit breakers (non-temperature compensated)
- Thermal circuit breakers



**Automotive Circuit Breakers**  
Designed for wire harness protection in 12Volt automotive applications. These devices are available both as a cycling (SAE Type 1) or non-cycling (SAE Type 2) device; used as an alternative to standard fuses for the protection of circuits that may experience momentary overloads.

- EXT200/500 Thermal Circuit Breakers
- Maxi Breaker Series Miniature Circuit Breaker
- Mini 100 Circuit Breaker

## PC power controls



**Modular Distribution Systems**  
Easy-to-use plug and play, scalable, electrical power bus modules.



**Linegard GFCI/ELCI**  
Linegard™ ground fault circuit interrupters (GFCI) and equipment leakage circuit interrupters (ELCI)

- PGFM Series GFCI Ground Fault Protection Sensing Module



**High Voltage Fuses**

- DC Fuses for EV, Energy Storage & Charger
- High Speed Fuses for Industrial Power Supply and UPS
- SMD Fuses for Electronic Device & Battery
- SMD Fuses for High Power Application
- Cartridge Fuses for DMI
- 10x38 Midget Fuse
- Cartridge Fuses for Industrial Power
- Cartridge Fuses for HVDC, Air
- Conditioner & Household Appliances
- Photovoltaic and Telecom Protection



**AIRPAX**

## DISCOVER MORE...

Protect valuable equipment and personnel with our high-quality solutions.

Our broad portfolio includes highly configurable, customizable breaker [families](#) that offer stable trip performance, reliable operation and high power density in an array of shapes and sizes to facilitate mechanical integration.

# MOTORS AND ACTUATORS



## BLDC brushless DC motors



### Frameless BLDC motors

- Highest energy product permanent magnet rotor design for improved efficiency
- High pole count rotor for smooth operation
- Custom inner or outer rotating member designs
- Sine and trapezoidal based BEMF winding configuration options



### Housed BLDC motors

- Precision high speed balanced rotor assemblies for smooth operation
- Low cogging options for reduced vibration
- Variety of high quality (ABEC 5 or better) open, shielded and sealed bearing options are available
- Patented audible noise reduction techniques

## LVCA linear voice coil actuators



### Cylindrical Frameless VCAs

- Direct-drive, zero backlash and cog free operation for accurate motion
- Capable of withstanding billions of cycles of use
- Constructed with high energy product rare earth magnets
- Moving coil and moving magnet designs available



### Cylindrical Semi-Housed VCAs

- Precision shaft with multiple options available
- Zero cogging and backlash free
- Life tested in excess of 500 million cycles



### Cylindrical Housed VCAs

- Housing offers additional mechanical and environmental protection
- Designs available with magnet springs and/or latches
- Different shaft options available
- Life tested in excess of 500 million cycles

## RVCA rotary voice coil actuators



### Rotary VCAs

- Ideal for high acceleration applications that require angular movement
- Wide range of torque and excursion angles
- Various mechanical mounting options available
- Arc-segment and cylindrical designs available

## DK VCA developer's kit



### Developer's kit

- Self-contained kit including a VCA with built-in feedback sensor and a programmable controller with software and cables.
- Available with 7 different VCA models coupled with 4 different servo drives.

**BEI KIMCO**

## CUSTOM DESIGN CAPABILITIES

Sensata | BEI Kimco also offers custom brushless DC motor and voice coil actuator designs and is dedicated to providing the best solution for our partner's motion control application.



# OPERATOR CONTROLS



## R

### rockers

- Switch and analog rocker designs
- Life greater than 1 million cycles
- Protection Class IP65
- Integrated temperature compensation and short circuit protection



## JS

### joysticks

#### AJ11

- Single-Axis Joystick with >5 Million life cycles
- Analog Output
- IP65 Protection



#### SAL

- Single-Axis Joystick with >10 Million life cycles
- Output Options: Analog, CAN, PWM
- IP67 Protection



#### AJ3

- Dual-Axis Joystick with >5 Million life cycles
- Output Options: Analog, CAN, PWM
- Mounting type: Top / Bottom Mount



#### AJN

- Dual-Axis Joystick with >10 Million life cycles
- Output Options: CAN, PWM
- Highly modular, customizable design



## CUSTOMIZING YOUR MACHINES

Sensata provides complete integrated control systems for industry leading OEM's of material handling and aerial access equipment. Based on our standard product and technology building blocks, we can develop integrated control systems, armrest solutions and switch assemblies to fit your specific machine and application requirements.



## Contact us now

Regional head offices:

United States of America  
Sensata Technologies  
Attleboro, MA  
Phone: 508-236-3800

Netherlands  
Sensata Technologies Holland B.V.  
Hengelo  
Phone: +31 74 357 8000

China  
Sensata Technologies China Co., Ltd.  
Shanghai  
Phone: +8621 2306 1500

[www.sensata.com](http://www.sensata.com)