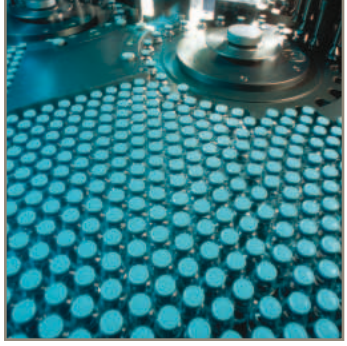

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

Hi-Drive Series

Flexible Servo Drive

ENGINEERING YOUR SUCCESS.

WARNING — USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
- The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.
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Parker Hannifin

The global leader in motion and control technologies

A world class player on a local stage

Global Product Design

Parker Hannifin has more than 40 years experience in the design and manufacturing of drives, controls, motors and mechanical products. With dedicated global product development teams, Parker draws on industry-leading technological leadership and experience from engineering teams in Europe, North America and Asia.

Local Application Expertise

Parker has local engineering resources committed to adapting and applying our current products and technologies to best fit our customers' needs.

Manufacturing to Meet Our Customers' Needs

Parker is committed to meeting the increasing service demands that our customers require to succeed in the global industrial market. Parker's manufacturing teams seek continuous improvement through the implementation of lean manufacturing methods throughout the process. We measure ourselves on meeting our customers' expectations of quality and delivery, not just our own. In order to meet these expectations, Parker operates and continues to invest in our manufacturing facilities in Europe, North America and Asia.

Electromechanical Worldwide Manufacturing Locations

Europe
Littlehampton, United Kingdom
Dijon, France
Offenburg, Germany
Filderstadt, Germany
Milan, Italy

Asia
Wuxi, China
Chennai, India

North America
Rohnert Park, California
Irwin, Pennsylvania
Charlotte, North Carolina
New Ulm, Minnesota

Offenburg, Germany

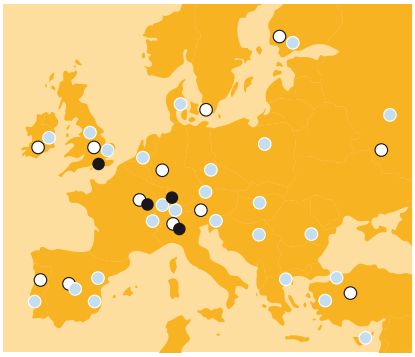
Local Manufacturing and Support in Europe

Parker provides sales assistance and local technical support through a network of dedicated sales teams and authorized technical distributors throughout Europe.

For contact information, please refer to the Sales Offices on the back cover of this document or visit www.parker.com

Milan, Italy

Littlehampton, UK



Electromechanical Manufacturing
Parker Sales Offices
Distributors

Dijon, France

Flexible Servo Drive - Hi-Drive

Overview

Description

Hi-Drive is a fully digital drive for brushless motors with currents from 2 to 450 A and operating from 230 VAC or 480 VAC supplies. Hi-Drive is able to control induction motors; its target market is where high precision, accuracy, performance, fieldbus connectivity and custom applications are required.
Hi-Drive features several built-in motion control functions, including current, torque and speed control, positioning with trapezoidal profiles, digital lock with variable ratio and phase correction, electronic cam, real-time mode, S-ramp positioning, homing functions and position capture.
An axis card with Power PC 400 MHz micro processor which is able to control up to 32 interpolated axes via CANopen DS402, further enhances the Hi-Drive functionality.
The Hi-Drive series is suited for simple as well as extremely sophisticated applications such as: Printing machines, wood and metal working machines, feeders, palletizers, applications with different interpolated axes and robots.

Features

- **Current, torque and speed control**
- **Positioner with trapezoidal profile and S-ramps**
- **Digital lock with variable ratio and phase correction**
- **Electronic cam**
- **Configurable feedback input**
- **Configurable second encoder input**
- **Fieldbus RS232, RS422/485, SBCCan, EtherCAT, CANopen DS402**
- **DC bus connection to clamping board is possible (mono or three-phased)**
- **Built-in braking resistor (to 45 A)**
- **Safety relay optional CAT.3 EN 954-1**
- **Built-in EMC filter: HID2...HID10, HID75...HID450**
- **Built-in three-phased line choke (HID75...HID155)**

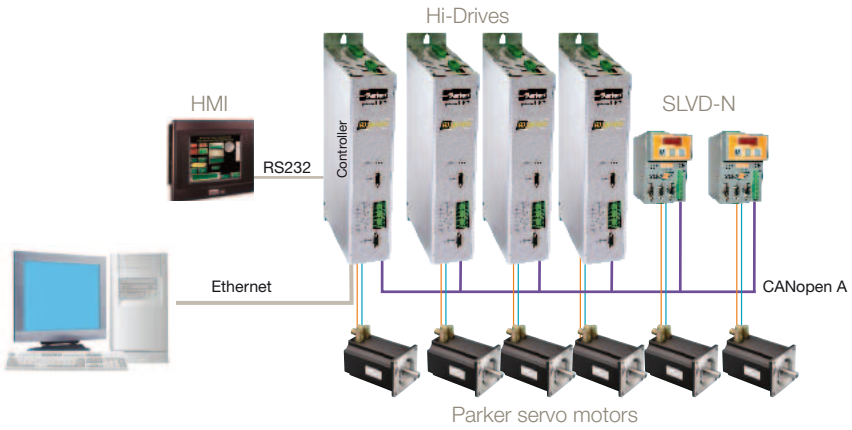
Technical Characteristics - Overview

Device	Nominal current [A]	Peak current [A]	Peak current time [s]	Frame size
HID2	2	4	2	1
HID5	5	10		
HID8	8	16		
HID10	10	20		
HID15	15	30		
HID16	16	32		2
HID25	25	50		
HID35	35	70		3
HID45	45	90		
HID75	75	135	3	4
HID100	100	180		5
HID130	130	234		
HID155	155	232		
HID250	250	375		6
HID450	450	675		-

Applications

Trajectory control of a six axis vertical robot

This is a six axis vertical robot that drives the globe in order to direct a laser pointer on the desired city, selected from the onboard operator panel or from a remote interface. The application is driven by six servo drives, controlled by a CN board integrated in one of the drives. In the board resides the interpolation and transformation part of the robot coordinates. The data for the optimized trajectory are transmitted to the individual axes via CANopen with DSP402 profile, at defined times by the sync protocol. In order to reach motion uniformity, the controller card transmits the demand speed together with the optimized motion data. Thus, every servo drive can internally execute a cubical interpolation of the information received. Moreover at every synch the real CN quota are sent back to the six joints.



The human-machine interface is represented by an industrial PC. By the PC, the operator choose in a graphical globe the city it wants to reach and gives the start/stop command.

Technical Characteristics

Technical Data

Hi-Drive

Model		HID2	HID5	HID8	HID10	HID15	HID16	HID25
	Unit							
Supply voltage and device currents								
Supply voltage	[V]	200...277 VAC single phase(±10 %) 50-60 Hz (±5 %) 200...480 VAC three phase (±10 %) 50-60 Hz (±5 %)						
Nominal current	[A]	2	5	8	10	15	16	25
Peak current	[A]	4	10	16	20	30	32	50
Peak current time	[s]	2						
Control Voltage	[V]	24 VDC (0/ +10 %)						
Overload		200 % for 2 s						

Model		HID35	HID45	HID75	HID100	HID130	HID155	HID250	HID450
	Unit								
Supply voltage and device currents									
Supply voltage	[V]	200...480 VAC three phase (±10 %) 50-60 Hz (±5 %)		380...480 VAC three phase (±10 %) 50-60 Hz (±5 %)					
Nominal current	[A]	35	45	75	100	130	155	250	450
Peak current	[A]	70	90	135	180	234	232	375	675
Peak current time	[s]	2		3					4.5
Control Voltage	[V]	24 VDC (0/ +10 %)							
Overload		200 % for 2 s							

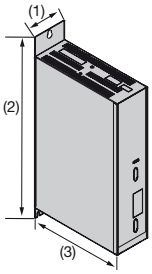
Ambient Conditions

Temperature range	
	Operating temperature 0...45 °C
Tolerated humidity	
	<85 % non condensing
Elevation of operating site	
	1000 m ASL (derate by 1.5 % every 100 m)
Product Enclosure Rating	
	IP20

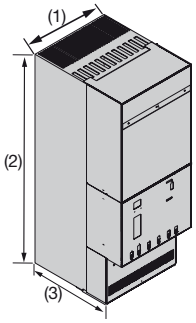
Standards and Conformance

In compliance with Directive 89/336/EEC following the standard:	
	• EN61800-3 (I° and II° environment) with built-in filter when available/A11 • Electromagnetic Compatibility
In compliance with Directive 73/23/EEC following the standard:	
	• EN 50178 (Safety, Low Voltage Directive) • EN 60204-1 • EN 61800-2 • EN 61800-5-1
Safety technology	
	EN 954-1/ISO 13849-1 (optional safety relay)
Conformance CE and UL	
	• UL508C (USA) • CSA 22.2 No. 14-05 (Canadian) • CE marked
ATEX	
	for use in or in connection with potentially explosive environments

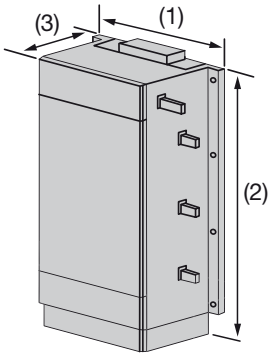
Dimensions



Sizes 1-2-3:



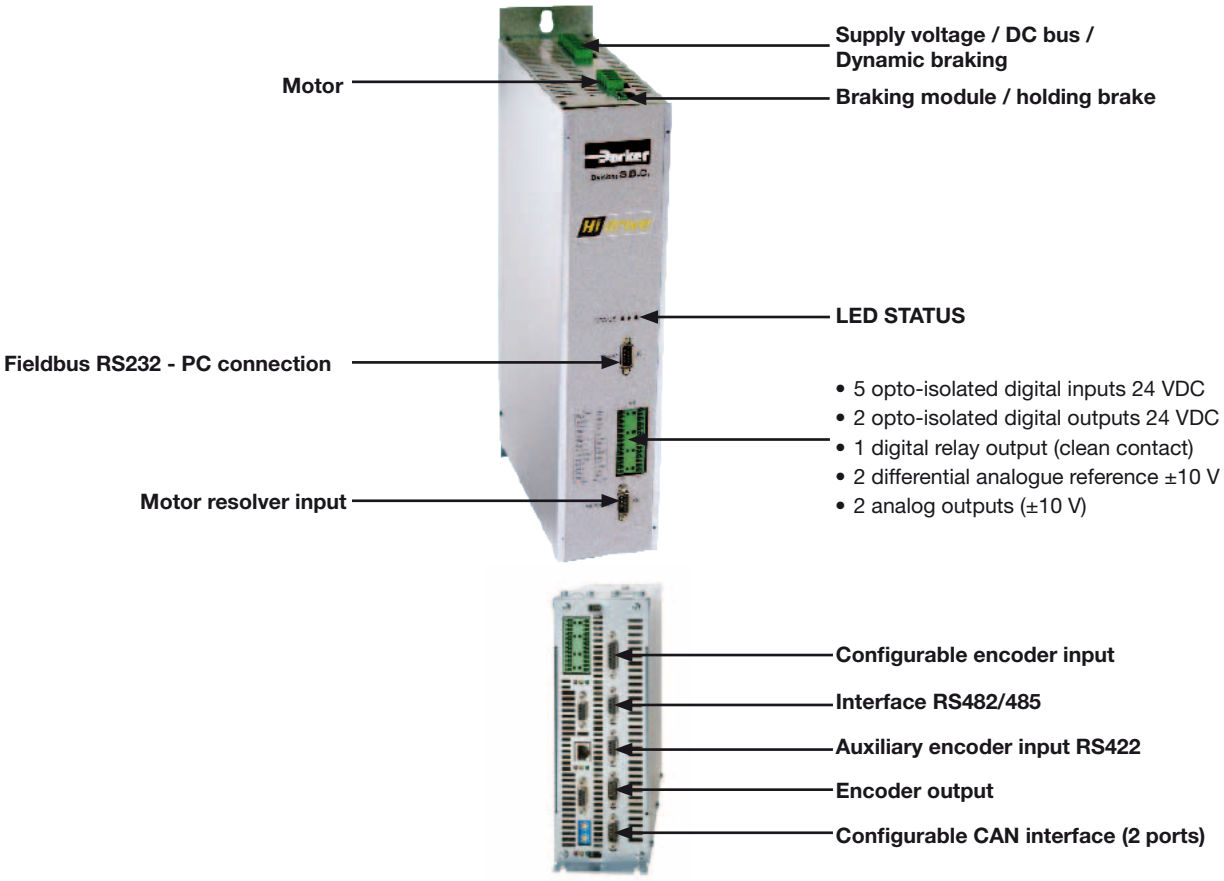
Sizes 4-5:



Size 6:

Model	Frame size	Height (2) [mm]	Width (1) [mm]	Depth (3) [mm]	Weight [kg]
HID 2-5-8-10-15	1	428	87	227	5.8
HID 15					-
HID 16-25	2	428	122		8.5
HID 35-45	3		227		16
HID 75	4	660	250	320	40
HID 100-130-155	5	720		365	59
HID 250	6	1145	600	465	100
HID 450	-	1400	900	465	-

Connection Layout



Accessories and Options

Keypad

SK161
Optional keypad, size 2x6 characters with upload/download functions (port RS232)

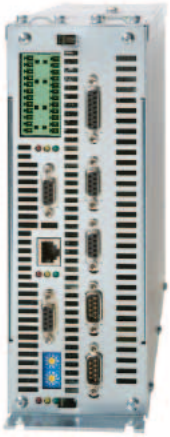
Cables

- Resolver cable
- Incremental encoder cable
- Absolute encoder EnDat + SinCos cable
- Absolute encoder Hiperface + SinCos cable
- Encoder SinCos cable
- Motor cable
- Servoventilation cable

Fieldbus Options

By selecting one of the numerous fieldbus options the Hi-Drive becomes a highly versatile networked drive. EtherCAT based on the Ethernet industry standard, has been implemented within the Hi-Drive to exploit operating performance of industrial PC's.

- EtherCAT
- CANopen (DS402)
- Profibus DP
- SBCCan (standard)



EtherCAT®

CANopen

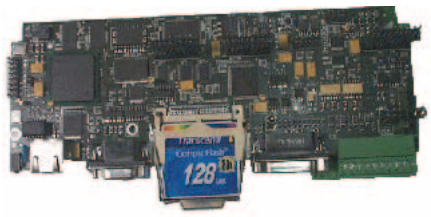
PROFI® BUS

Axis Board

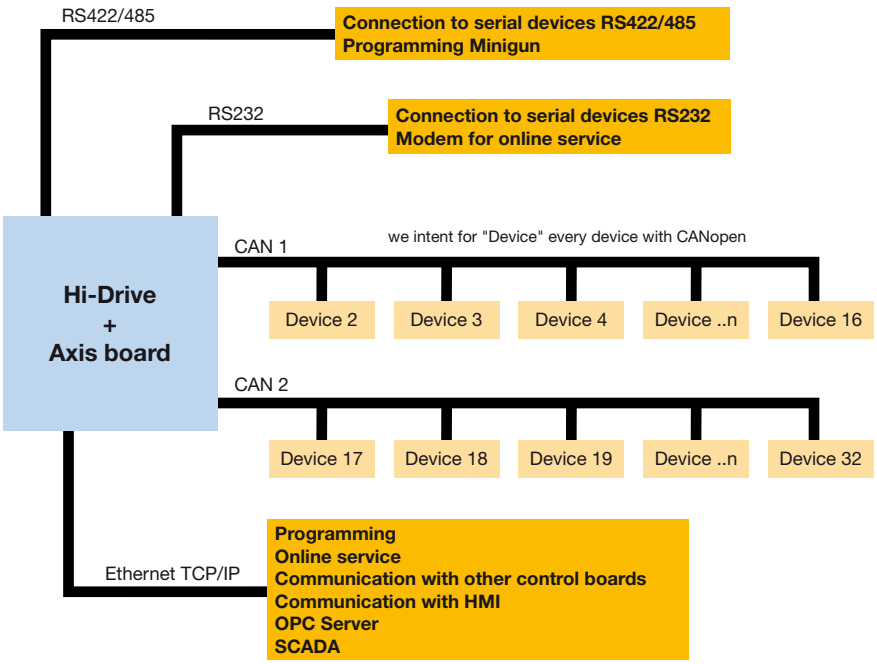
High performances CN

This board is an axis controller which can be integrated into the Hi-Drive in order to increase the servo drive performance.
The board can generate trajectories of "n" interpolated axes with a low dissipated power, piloting the slave axis via CANopen DSP402.
Managing resident I/O and field bus remote I/O the CN board can be linked to the plant network or to any operator panels via Ethernet TCP/IP. The board is equipped with an embedded OPC server.
Equipped with a multitasking real time operating system and can be programmed using standard programming and motion control languages.

- Power PC 400 MHz microprocessor
- Real time multitasking RTE operating system
- Cycle tasks, event control and background
- Interpolation of up to 32 axes for CPU
- CANopen DS402 communication channels
- Libraries with a wide range of function blocks
- 64 MB RAM, 128 MB extractable flash memory and 128 kB EEPROM
- RS232, RS485 and Ethernet



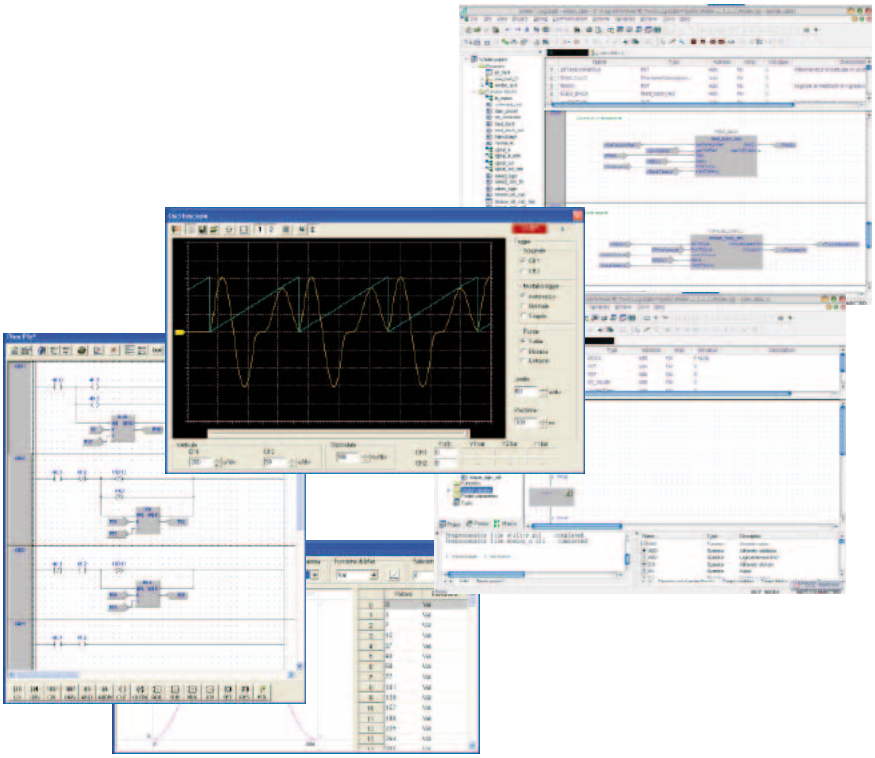
Programming language	
Structured text	for motion control functions
Ladder diagram	for machine cycles programming
ISO	for tool machines programming
RHLL	for robot programming



Software

MotionWiz and LogicLab

The free MotionWiz configuration software is available to configure the Hi-Drive system with just a few clicks of the mouse. MotionWiz features a simple and user-friendly interface to speed up installation, optimization and diagnostics procedures. To simplify configuration, MotionWiz shows a typical Windows® environment on the monitor with dialogue windows and toolbars. MotionWiz permits performing operations in both "online" mode, directly in the device, and in "offline" mode on a remote PC. In this case, personalized configuration can be sent to the mechanism subsequently. To simplify the configuration of systems with a large number of axis but with different cuts and the same operating mode, MotionWiz permits maintaining the same mechanism configuration and only changing the type of selected motor. Inside the MotionWiz configurator is a database containing the data of standard Parker motors.
MotionWiz incorporates "picoPLC", a built-in PLC environment programmable with standard languages. PicoPLC allows the external word to communicate with the drive and to execute function sequences. If the customer application requires additional calculation resources, an option board programmable with PLC commands in accordance with IEC61131-3 can be inserted.



Order Code

Hi-Drive

	1	2	3	4	5	Y1	Y2	Y3	9	10
Order example	**HID**	**X**	**2**	**S**	**S**	**I**	**E5**	**C2**	**R**	**M**

1	**Device family**	
	HID	Servo drive
2	**Version**	
	Empty field	Standard version
	X	ATEX device version
3	**Device current (nominal current rms)**	
	2	2 A
	5	5 A
	8	8 A
	10	10 A
	15	15 A
	16	16 A
	25	25 A
	35	35 A
	45	45 A
	75	75 A
	100	100 A
	130	130 A
	155	155 A
	250	250 A
	450	450 A
4	**Protocol**	
	S	SBCCan (standard)
	D	CANopen (DS402)

5	**Second input encoder**	
	S	for SinCos - 1 V_{pp} signal
	E	for digital signals after quadrature - RS422
	H	for SinCos signal + Hall sensor
Y1...Y3	**Option cards (slot1, slot2, slot3)**	
	Empty field	without option
	P	PROFIBUS DP
	I	I/O option (8 digital inputs, 8 digital outputs)
	E5	EtherCAT
	C	Axis board, without compact flash
	C1	Axis card for up to 1.5 axes (with CANopen DS402)
	C2	Axis card for up to 4 axes (with CANopen DS402)
	C3	Axis card for up to 32 axes (with CANopen DS402)
9	**Safety technology**	
	Empty field	without option
	R	Built-in Safety relay cat. 3 in accordance with EN 954-1
10	**Memory**	
	Empty field	without option
	M	Memory area for retentive variables

Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374.

AEROSPACE

Key Markets
- Aircraft engines
- Business & general aviation
- Commercial transports
- Land-based weapons systems
- Military aircraft
- Missiles & launch vehicles
- Regional transports
- Unmanned aerial vehicles

Key Products
- Flight control systems & components
- Fluid conveyance systems
- Fluid metering delivery & atomization devices
- Fuel systems & components
- Hydraulic systems & components
- Inert nitrogen generating systems
- Pneumatic systems & components
- Wheels & brakes

CLIMATE CONTROL

Key Markets
- Agriculture
- Air conditioning
- Food, beverage & dairy
- Life sciences & medical
- Precision cooling
- Processing
- Transportation

Key Products
- CO^2 controls
- Electronic controllers
- Filter driers
- Hand shut-off valves
- Hose & fittings
- Pressure regulating valves
- Refrigerant distributors
- Safety relief valves
- Solenoid valves
- Thermostatic expansion valves

ELECTROMECHANICAL

Key Markets
- Aerospace
- Factory automation
- Food & beverage
- Life science & medical
- Machine tools
- Packaging machinery
- Paper machinery
- Plastics machinery & converting
- Primary metals
- Semiconductor & electronics
- Textile
- Wire & cable

Key Products
- AC/DC drives & systems
- Electric actuators
- Controllers
- Gantry robots
- Gearheads
- Human machine interfaces
- Industrial PCs
- Inverters
- Linear motors, slides and stages
- Precision stages
- Stepper motors
- Servo motors, drives & controls
- Structural extrusions

FILTRATION

Key Markets
- Food & beverage
- Industrial machinery
- Life sciences
- Marine
- Mobile equipment
- Oil & gas
- Power generation
- Process
- Transportation

Key Products
- Analytical gas generators
- Compressed air & gas filters
- Condition monitoring
- Engine air, fuel & oil filtration & systems
- Hydraulic, lubrication & coolant filters
- Process, chemical, water & microfiltration filters
- Nitrogen, hydrogen & zero air generators

FLUID & GAS HANDLING

Key Markets
- Aerospace
- Agriculture
- Bulk chemical handling
- Construction machinery
- Food & beverage
- Fuel & gas delivery
- Industrial machinery
- Mobile
- Oil & gas
- Transportation
- Welding

Key Products
- Brass fittings & valves
- Diagnostic equipment
- Fluid conveyance systems
- Industrial hose
- PTFE & PFA hose, tubing & plastic fittings
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects

HYDRAULICS

Key Markets
- Aerospace
- Aerial lift
- Agriculture
- Construction machinery
- Forestry
- Industrial machinery
- Mining
- Oil & gas
- Power generation & energy
- Truck hydraulics

Key Products
- Diagnostic equipment
- Hydraulic cylinders & accumulators
- Hydraulic motors & pumps
- Hydraulic systems
- Hydraulic valves & controls
- Power take-offs
- Rubber & thermoplastic hose & couplings
- Tube fittings & adapters
- Quick disconnects

PNEUMATICS

Key Markets
- Aerospace
- Conveyor & material handling
- Factory automation
- Food & beverage
- Life science & medical
- Machine tools
- Packaging machinery
- Transportation & automotive

Key Products
- Air preparation
- Compact cylinders
- Field bus valve systems
- Grippers
- Guided cylinders
- Manifolds
- Miniature fluidics
- Pneumatic accessories
- Pneumatic actuators & grippers
- Pneumatic valves and controls
- Rodless cylinders
- Rotary actuators
- Tie rod cylinders
- Vacuum generators, cups & sensors

PROCESS CONTROL

Key Markets
- Chemical & refining
- Food, beverage & dairy
- Medical & dental
- Microelectronics
- Oil & gas
- Power generation

Key Products
- Analytical sample conditioning products & systems
- Fluoropolymer chemical delivery fittings, valves & pumps
- High purity gas delivery fittings, valves & regulators
- Instrumentation fittings, valves & regulators
- Medium pressure fittings & valves
- Process control manifolds

SEALING & SHIELDING

Key Markets
- Aerospace
- Chemical processing
- Consumer
- Energy, oil & gas
- Fluid power
- General industrial
- Information technology
- Life sciences
- Military
- Semiconductor
- Telecommunications
- Transportation

Key Products
- Dynamic seals
- Elastomeric o-rings
- EMI shielding
- Extruded & precision-cut, fabricated elastomeric seals
- Homogeneous & inserted elastomeric shapes
- High temperature metal seals
- Metal & plastic retained composite seals
- Thermal management