Clippard

### **CORDIS ELECTRONIC CONTROLS**



# Take Control with Cordis

Clippard's Cordis Series embodies precision, reliability, and innovation. These revolutionary electronic controls stand out from the competition because at their heart, they are powered by Clippard's renowned proportional valves. These trusted valves feature Clippard's unique spider technology, a patented breakthrough with a decades-long proven track record of delivering unparalleled precision to applications all over the world. Countless manufacturers have long relied on Clippard's valves as the foundation of their electronic controllers. Now, by taking control of the complete product, Clippard has achieved a perfect integration of the electronic and pneumatic technologies to deliver exceptional performance and reliability. One of the unique advantages with the Cordis line is that Clippard has full control of the design and manufacturing of the entire product, from the controllers to the valves themselves. This enables us to tailor the Cordis line precisely to your specific application needs, allowing for rapid customizations with unmatched efficiency.

The Cordis Series represents not just an electronic controller, but a comprehensive solution that embodies decades of expertise and industry leadership. Our commitment to quality, backed by our strong reputation, ensures that your projects will benefit from the utmost precision, reliability, and performance that Clippard can deliver.

Cordis [ kohr-dis ] adjective LATIN: of the heart









### **APPLICATIONS**

The Cordis Series provides exceptional pressure and flow control with unmatched precision and accuracy, making it ideal for a wide variety of applications including:

- High precision dispensing/pushing
- High precision vacuum/pulling
- Squeezing/gripping/snugging
- Dynamic pressure control
- Leak testing
- Blanketing
- Vacuum for gravity-fed fluid dispensing
- Vacuum through positive pressure
- Vacuum break
- Differential pressure control
- Positive pressure for dispensing
- Atomizing for coating
- Polishing / force control
- Force control frictionless cylinders
- Force control via load cell
- Packaging
- Carrier gases
- Tension control
- Gas blending
- Precise flow control
- Pressure and flow monitoring
- High pressure control

Call **1.877.245.6247** or reach out online to discuss how special calibration, testing, assembly, or other customizations might benefit your specific application.



Scan the QR code or visit: clippard.com/link/cordis-specials







## The Cordis Series

### Electronic Pressure Controller

Utilizes Clippard's proven EVP and DVP lines of electronic proportional valves to allow for steady, repeatable downstream pressure as demand or processes change. The result is precise, linear pressure control within a closed-loop system with ultrahigh resolution and repeatability.



### Custom Calibrated Pressure Sensors

These sensors are conditioned and offer a customized calibration around your application requirements, allowing for a full scale accuracy of 0.25% over the calibrated range. They can be used in conjunction with Clippard's Cordis pressure controller or as a standalone unit.



### Dynamic Pressure Controller

Provides precise and accurate pressure control in a compact and lightweight package. This high-performance pressure regulator is well-suited for a wide range of precision pressure control applications where space is limited.



### p. 6

Calibrated Range: Vacuum to 150 psig (10.3 bar) Available with IP65 rated housing No integral bleed required

Utilizes Clippard's proven DVP or EVP valves

Electronic fill and bleed pressure controller

### p. 10

Standalone or used with Cordis pressure controls

Customized calibration around your requirements

Static or dynamic applications

IP65 protection rating

### р. 12

Calibrated Range: 0 to 150 psig (10.3 bar)

Compact and cost effective

Non-relieving

Utilizes Clippard's proven DVP or EVP valves

### High Volume Booster

Provides the same precise linear pressure control within a closed-loop system with ultra-high resolution and repeatability, but with the added benefit of significantly higher flow capabilities.

### High Pressure Controller

Utilizes Clippard's EHV line of high pressure electronic valves to allow for steady, repeatable downstream pressure under static conditions. The result is precise, linear pressure control within a closed-loop system.

### Electronic Flow Controller

Utilizes an extremely fast-reacting mems technology sensor upstream from Clippard's proportional valve. Unlike other mass flow controllers, the Cordis flow controller requires less than one minute warm-up, features a pressure drop ≤14" (35.6 cm) H<sub>2</sub>O, and includes flow ranges as low as 0 to 30 sccm.



### p. 14

#### Higher flow

Calibrated Range: Vacuum to 150 psig (10.3 bar)

IP65 rated housing

Utilizes Clippard's proven EVP valves





#### Higher pressure

Calibrated Range: Vacuum to 1,000 psig (69 bar)

IP65 rated housing

Utilizes Clippard's high pressure EHV valves



### p. 18

Calibrated Range: 0 to 15 l/min

50:1 turndown ratio

 $\leq 14''$  (35.6 cm) H<sub>2</sub>O pressure drop

<1 minute warm-up

Optional integrated regulator

### ROHS 100% TESTED

### **CPC** PRESSURE CONTROLLER



The Cordis CPC is a closed-loop pressure control valve system designed to maintain a steady and repeatable downstream pressure as demand or process changes occur. It is available in a compact card style (CPC-C) or with an IP65 rated enclosure (CPC-H) for manufacturing and industrial environments, and is also available in a CE-approved version. All styles come standard with two Clippard proportional electronic valves designed for high resolution pressure control.

The Cordis CPC series is available with 23 different pressure sensor ranges to choose from, allowing any calibration within vacuum through 150 psig (10.3 bar) range. A 24th option—remote sensor—allows for external downstream sensor feedback. Contact Clippard for more details.

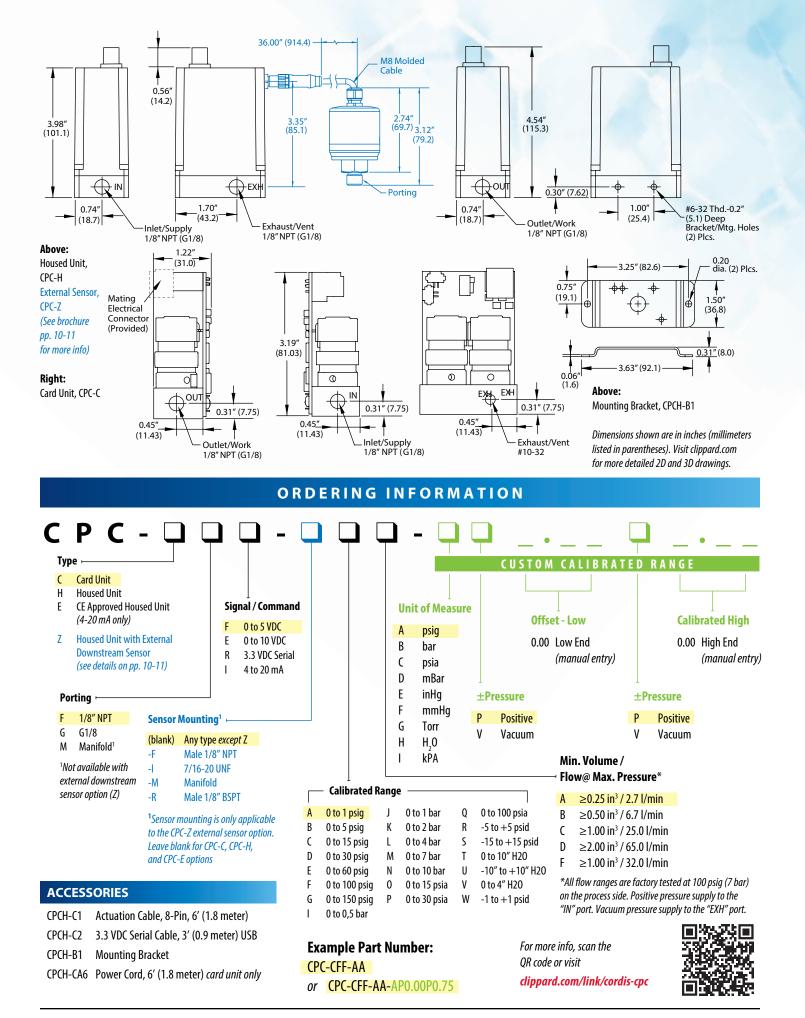
- Smooth linear control
- Integrated internal or external sensor feedback
- Multiple flow configurations
- Static or dynamic applications with the same proportional control
- Non-pulsing proportional fill and bleed
- Customizable pressure ranges, mounting options, and connections
- No integral bleed required to maintain 5 mV resolution
- No constant bleed
- Compatible with multiple inert gases
- Both housing and external sensor are IP65 rated

Accuracy	$\pm$ 0.25% of full scale
Calibrated Range	Vacuum to 150 psig (10.3 bar)
Current Draw	<250 mA max.
Filtration	40 micron filter (recommended)
LED Indicators	Power (red) and command mode (blue—solid indicates analog, flashing indicates serial)
Linearity	± 0.05% BFSL
Material, Wetted	Elastomers: Nitrile Manifold: Anodized aluminum Sensor: Polyamide Valves: Nickel plated brass
Max. Hysteresis	$\pm0.05\%$ of full scale
Medium	Clean, dry, non-corrosive gases
Mounting Attitude	Any
Operating Pressure Range	Vac. to 150 psig (10 bar)
Operating Temperature	32 to 120°F (0 to 49°C), proportional valves
Port Size	1/8″ NPT, G1/8, or manifold
Resolution	≤5 mV
Response Time	< 20 ms typical (application dependent)
Signal / Command	0 to 10 VDC, 4 to 20 mA, or 3.3 VDC serial
Туре	Card unit, housed unit, or CE approved housed unit
Typical Flow	2.7 to 65 l/min typical, $\pm 10\%$ @ 100 psig (7 bar)
Valve Type	Normally-closed proportional
Voltage	15 to 24 VDC
More Details	clippard.com/link/cordis-cpc

Equipment used for test and calibration is NIST traceable.







TDS CPC-01, Rev. 041224 (2/4)

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#### **RATED INLET PRESSURE FOR CALIBRATED RANGE**

## Calibration

The calibration of the Cordis series is performed at the time of manufacture to NIST traceable standards. Each unit is calibrated and the PIDs are set to the Cordis standard tuning. If specific application details are known prior to manufacture (recommended), the PIDs can be tuned in accordance with the known specifications to provide the most stable and repeatable control.

### Understanding the Numbers

What do you get when you use a Cordis CPC unit in your application? As the world's technology grows, the demand for tighter control, accuracy, and resolution is the direction that is expected. Cordis provides these requirements and gives you the ability to truly hone in your controlling pressures which ensures significantly better output quality.

Sensor	Accuracy ±0.25%	Hysteresis ±0.05%	<b>Resolution</b> ≤5 mV
1 psig (0.1 bar)	±0.0025 psig	$\pm 0.0005$ psig	0.0005 psig
5 psig (0.3 bar)	±0.0125 psig	±0.0025 psig	0.0025 psig
15 psig (1 bar)	±0.0375 psig	±0.0075 psig	0.0075 psig

Ordering Code	Calibrated Range	Maximum Inlet Pressure
A	0 to 1 psig	10 psig
В	0 to 5 psig	30 psig
C	0 to 15 psig	30 psig
D	0 to 30 psig	60 psig
E	0 to 60 psig	100 psig
F	0 to 100 psig	115 psig
G	0 to 150 psig	165 psig
I.	0 to 0.5 bar	2 bar
J	0 to 1 bar	2 bar
K	0 to 2 bar	4 bar
L	0 to 4 bar	7 bar
м	0 to 7 bar	8 bar
N	0 to 10 bar	11 bar
0	0 to 15 psia	10 psig
Р	0 to 30 psia	45 psig
Q	0 to 100 psia	165 psig
R	-5 to +5 psid	25 psig
S	-15 to +15 psid	45 psig
т	0 to 10" H <sub>2</sub> O	5 psig
U	-10" to 10" H <sub>2</sub> O	6 psig
V	0 to 4" H <sub>2</sub> O	4 psig
W	-1 to +1 psid	8 psig

\*Sensor must have an output of 0.5 to 4.5, 0 to 5, or 0 to 10 VDC. Sensor data sheet must be provided for proper calibration of the Cordis unit. Contact Clippard to discuss.

### How to Select Your Pressure Controller

#### **TYPE** - Card unit, housed unit, or CE approved housing

Housings are ideal for exposed units when protection is recommended. IP65 housing is translucent so LEDs are visible. Housing also comes with an 8-pin connector. Wire harness not included with either unit.

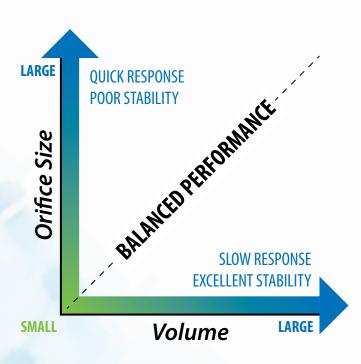
**PORTING** - 1/8 NPT or G1/8 manifold mount

SIGNAL/COMMAND - 0-5 or 0-10 VDC, 4-20 mA, or 3.3 VDC serial What is the minimum/maximum pressure in your application? This is critical to verify for proper valve selection.

PRESSURE RANGE - Vac to 150 psig (10.3 bar)

**MIN. VOLUME / FLOW** @ MAX. PRESSURE

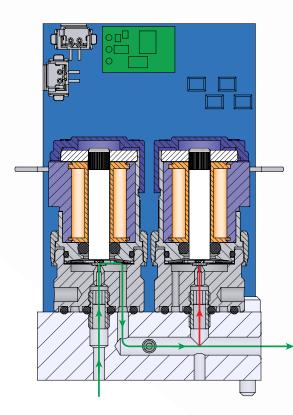
≥0.25 in<sup>3</sup> / 2.7 l/min (EVP) ≥0.50 in<sup>3</sup> / 6.7 l/min (EVP) ≥1.00 in<sup>3</sup> / 25.0 l/min (EVP) ≥1.00 in<sup>3</sup> / 32 l/min (DVP)  $\geq$  2.00 in<sup>3</sup> / 65.0 l/min (DVP)



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### How It Works

Using our proportional valves allows you to very precisely ramp up or ramp down your output providing smooth and quiet transition from one set point to another.



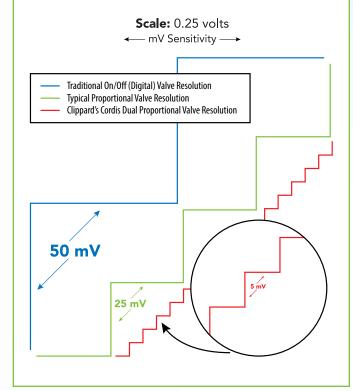
step 1	Cordis is given a setpoint command via 0-5 or 0-10 VDC, 4-20 mA, or 3.3 VDC serial
step 2	Cordis compares the setpoint command to the feedback signal from the internal/ external sensor
step 3	If the command is higher than the sensor feedback, the inlet valve opens (filling) If the command is lower than the sensor feedback, the exhaust valve opens (bleeding)

The reverse of the aforementioned process is used when working with vacuum. Vacuum supply is ported to the exhaust and the inlet valve allows atmosphere or positive supply pressure in where transitioning from a lower level of vacuum.

### **EXCEPTIONAL RESOLUTION**

Clippard's dual proportional valve Cordis pressure controller provides 5 mV resolution using a 0-10 VDC command with 1,000 mV per volt. This means that at 5 mV, you'll have 200 potential steps or command changes that the Cordis will respond to within 1 volt.

For 4-20 mA command, the resolution would equal ≤0.008 mA, or 200 potential steps/commands within 1.6 mA (10% of 4-20 mA range).







### **CPS** PRESSURE SENSORS



These piezoresistive silicone pressure sensors can either be used as feedback for the Cordis pressure controller or as standalone transducers. They are conditioned and offer a customized calibration around your specific application requirements, which allows for a full-scale accuracy of 0.25% over the calibrated range.

Multiple mounting options enable the sensor to be placed downstream or in a remote location from the pressure controller. This creates a quicker response and helps avoid any lag in the system.

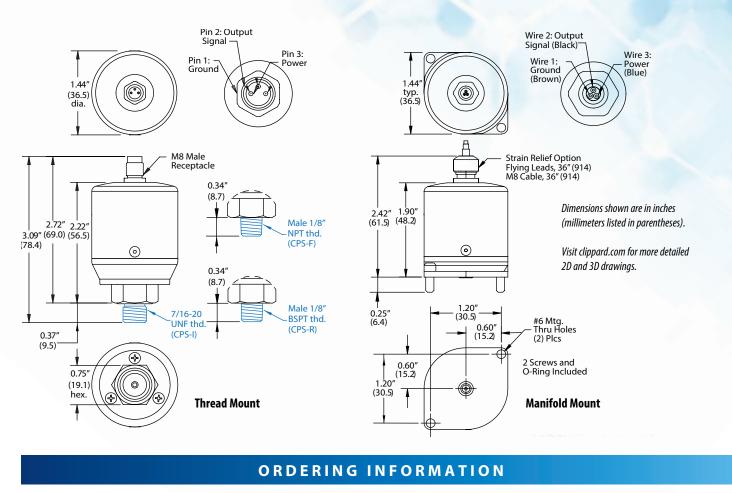
The manifold mount option lends itself well to analytical value-added assemblies. All wetted materials are oxygen compatible and manifold mounting eliminates any possible contamination during assembly.

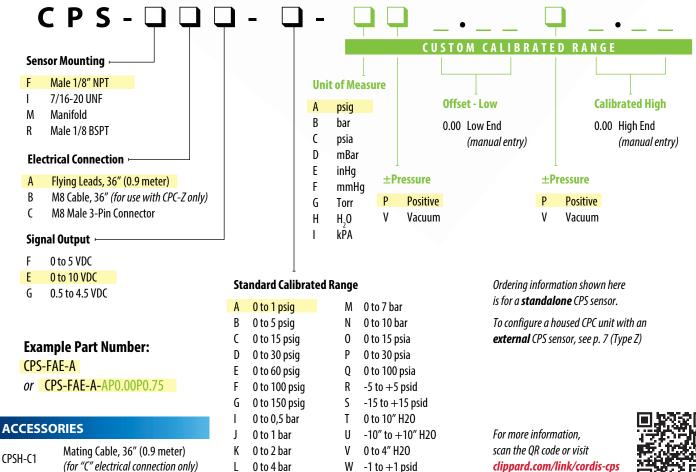
Accuracy	$\pm 0.25\%$ of full scale
Calibrated Pressure Range	Vac. to 150 psig (10.3 bar)
Current Draw	<20 mA (sensor only)
Linearity	±0.25% BFSL
Material, Wetted	Body: Aluminum Fitting: ENP Brass Manifold: Anodized aluminum O-rings: FKM Sensor: Polyamide
Medium	Clean, dry, non-corrosive gases
Mounting Attitude	Any
Operating Temperature	32 to 158°F (0 to 70°C)
Porting	1/8 NPT, 7/16-20, manifold or male 1/8" BPST
Protection Rating	IP65
Response Time	<5 ms
Signal Output	0 to 5, 0 to 10, or 0.5 to 4.5 VDC
Supply Voltage	12 to 24 VDC
More Details	clippard.com/link/cordis-cps

- Standalone unit or used in conjunction with Cordis pressure controller
- Downstream sensor feedback
- Multiple VDC signal outputs
- Static or dynamic applications
- Multiple electrical connection options
- Customizable pressure ranges and mounting options

• IP65







### **CP1** PRESSURE CONTROLLER



Clippard's Cordis CP1 Pressure Controller utilizes Clippard's proven EVP and DVP proportional valves to allow for steady, accurate, repeatable downstream pressure control as demand or process changes. The result is incredibly precise, linear pressure control within a closed-loop system that provides ultra-high resolution and repeatability.

The CP1 Series consists of a microcontroller, an internal pressure sensor, and a Clippard proportional valve. The inlet valve is connected to the moderately regulated supply pressure. Once a command is increased, the proportional valve opens up to allow supply pressure to pass over the sensor element which provides an active feedback for the microcontroller to satisfy the set point in the process. If at any point the sensor detects a value higher than the set point, the proportional valve closes and allows the process to consume the higher downstream pressure.

Accuracy	±0.25% of full scale
Calibrated Range	0 to 0.5 psig (0.03 bar) min. 0 to 150 psig (10.3 bar) max.
Current Draw	<250 mA max.
Filtration	40 micron filter (recommended)
Flow	2.7 to 65 l/min typical, $\pm 10\% @$ 100 psig (7 bar)
LED Indicators	Power (red)
Linearity	± 0.5% BFSL
Material, Wetted	Elastomers: FKM Manifold: Anodized aluminum Sensor: Polyamide Valves: Nickel plated brass
Max. Hysteresis	$\pm0.5\%$ of full scale
Medium	Clean, dry, non-corrosive gases
Mounting Attitude	Any
Operating Pressure Range	Vac. to 150 psig (10.3 bar)
Operating Temperature	32 to 120°F (0 to 49°C), proportional valves
Porting	#10-32 thd, 1/8" NPT, G1/8, or manifold
Resolution	≤5 mV
Response Time	< 20 ms typical (application dependent)
Signal / Command	0 to 5 V, 0 to 10 VDC
Supply Voltage	15 to 24 VDC
Туре	Card unit
Valve Function	Normally-closed proportional
More Details	clippard.com/link/cordis-cp1

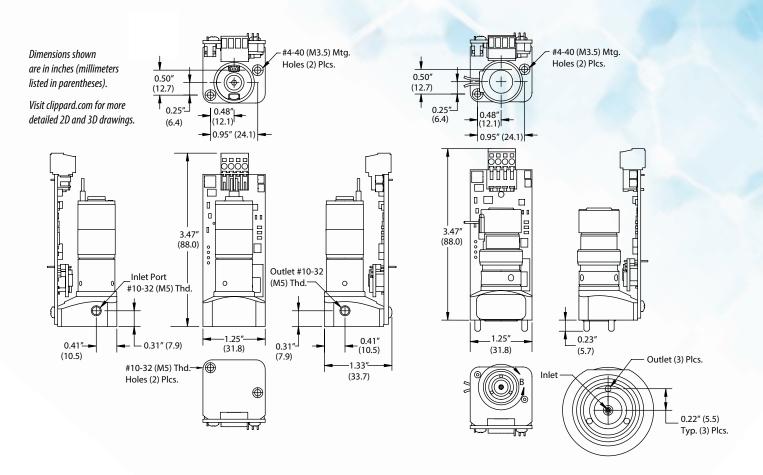
Equipment used for test and calibration is NIST traceable.

- Smooth, linear control
- Integrated internal feedback
- Multiple flow configurations
- Dynamic proportional pressure control
- Non-pulsing proportional fill
- Customizable pressure ranges and mounting options
- Compatible with multiple inert gases
- Customizable calibrated ranges

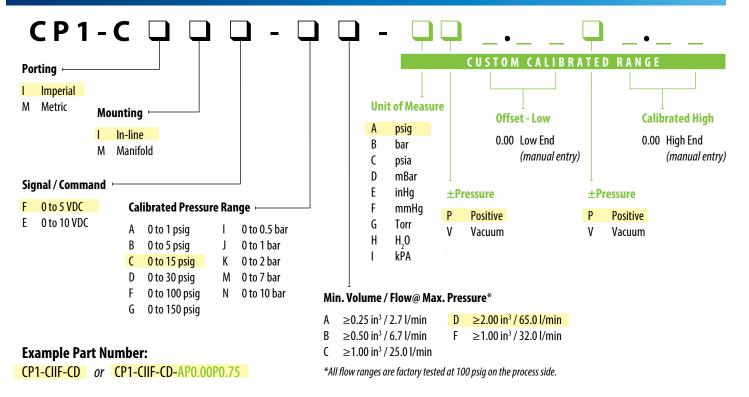








### ORDERING INFORMATION



### ACCESSORIES

CPCH-CA4

Power Cord, 6' (card unit only)

For more info, scan the QR code or visit clippard.com/link/cordis-cp1





### **CHV** HIGH VOLUME BOOSTER



Utilizing the same microcontroller, integrated pressure sensors, and two Clippard EVP proportional valves, Clippard's Cordis booster series provides precise linear pressure control similar to that of the CPC series with the added benefit of phenomenal forward and reverse flow characteristics. With the inlet and exhaust valves connected to the pilot area of the integral volume booster, the comparative circuit responds to the given command by referencing the on-board sensor located on the output control path of the booster. If at any point the on-board downstream sensor indicates a value higher or lower than the set point command, the comparative circuit immediately opens either the exhaust or inlet valve to maintain stable and accurate control pressure in the application process, but with significantly high flow capabilities.

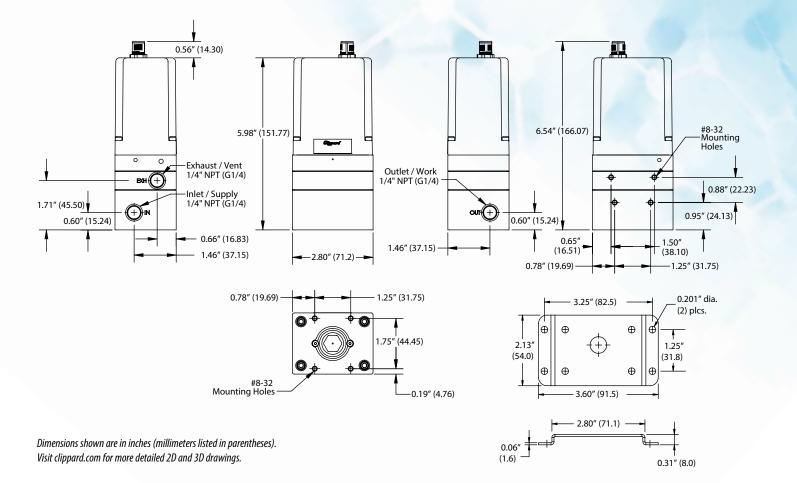
Accuracy	$\pm 0.50\%$ of full scale
Current Draw	<250 mA max.
Filtration	40 micron filter (recommended)
Flow Characteristics	42.5 scfm (~1,200 l/min) @ 80 psig (5.5 bar) typical
Function	Normally-closed proportional
Hysteresis	$\pm 0.50\%$ of full scale, max.
LED Indicators	Power (red) and command mode (blue—solid indicates analog, flashing indicates serial)
Linearity	±0.50% BFSL
Material, Wetted	Aluminum, nitrile, FKM, brass
Medium	Clean, dry, non-corrosive gases
Mounting Attitude	Any
Operating Pressure Range	Vac to 150 psig (10.3 bar)
Port Size	1/4″ NPT, G1/4
Protection Rating	IP65
Resolution	≤35 mV
Response Time	< 20 ms typical (application dependent)
Signal/Command	Electrical: 0 to 5 or 0 to 10 VDC; 4 to 20 mA Serial: 3.3 VDC
Supply Voltage	15 to 24 VDC
Temperature Range	32 to 120°F (0 to 40°C), proportional valve
More Details	clippard.com/link/cordis-chv

Equipment used for testing and calibration is NIST traceable.

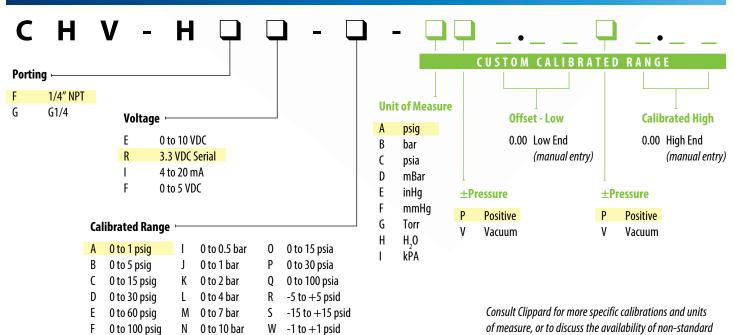
### **Applications**

- Pneumatic clutch and brake
- Test stands and production line equipment to control accurate test pressures
- Dancer arm tension control
- Nitrogen or other inert gas blanketing control
- Resistance welding tip force control
- Atomizing and fan control for painting and coating
- Low pressure with high accuracy and resolution at high flow
- Variable vacuum or vacuum through positive pressure control, either absolute or gauge reference

- Smooth linear control
- Integrated downstream sensor feedback
- Analog and 3.3V serial command
- Significant forward and reverse flow characteristics
- Static or dynamic applications
- High resolution
- Proportional fill and bleed control
- Customizable pressure ranges and mounting options
- No integral bleed required to maintain high resolution
- Ideal for use with expensive inert gases



ORDERING INFORMATION



#### ACCESSORIES

G

CPCH-C1	Actuation Cable, 8-Pin, 6' (1.8 meters)
CPCH-C2	3.3 VDC Serial Cable, 3' (0.9 meters)
CPCH-B3	Mounting Bracket

0 to 150 psig

Example Part Number: CHV-HFR-A or CHV-HFR-A-AP0.00P0.75

For more info, scan the QR code or visit clippard.com/link/cordis-chv

commands and other options.



### **CHP** HIGH PRESSURE CONTROLLER



The Cordis CHP series utilizes Clippard's EHV and EHS lines of high pressure electronic valves to allow for steady, repeatable downstream pressure under static conditions. The result is precise, linear pressure control within a closed loop system.

The CHP features a microcontroller, integrated pressure sensor, and two high pressure Clippard spider valves. The inlet valve is connected to the moderately regulated supply pressure and the exhaust valve is connected to a port that vents excess pressure to atmosphere. Once a command is increased, the inlet valve opens up to allow supply pressure to pass over the sensor element which provides an active feedback for the microcontroller to satisfy the set point in the process. If at any point the sensor detects a value higher than the set point, the exhaust valve will modulate open to vent off the excess pressure to maintain a stable and accurate control pressure in the process.

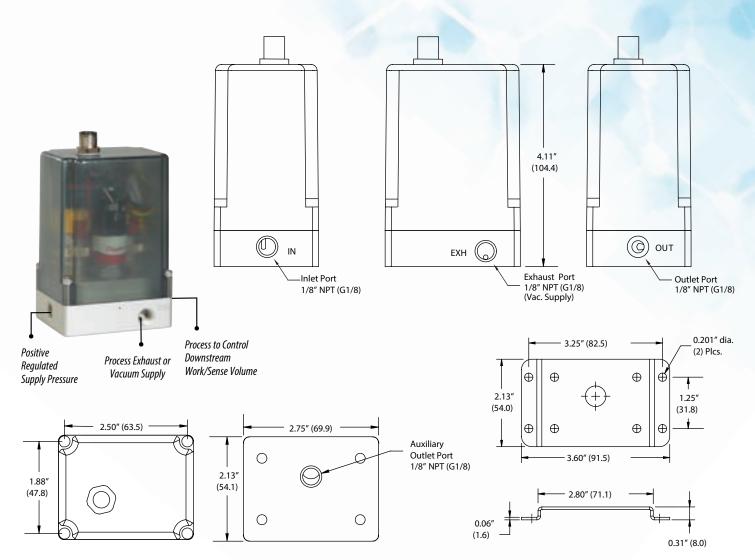
- Smooth, linear control
- Integrated internal or external sensor feedback
- Real-time adjustable PID control
- Customizable pressure ranges and mounting options
- Heavy duty stainless steel sensor
- · Designed for static volume pressure control
- On-board microprocessor with access to proportional and integral settings
- Adaptable to a variety of sensors that can close the loop around pressure



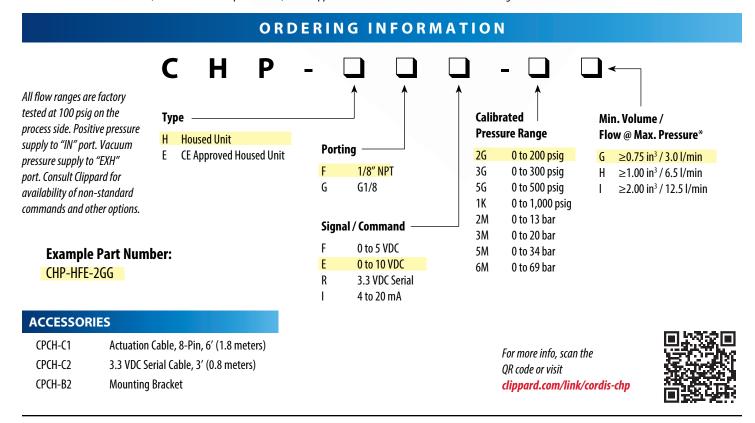
Accuracy	±0.5% of full scale
Calibrated Range	0 to 1,000 psig (69 bar)
Current Draw	<250 mA max.
Filtration	40 micron filter (recommended)
Function	Normally-closed
LED Indicators	Power (red) and command mode (blue—solid indicates analog, flashing indicates serial)
Linearity	≤0.2%
Material, Wetted	Sensor: Stainless steel Manifold: Anodized aluminum Valves: Nickel-plated brass body, viton core
Max. Hysteresis	≤0.25% of full scale
Max. Inlet	550 psig (37.9 bar) ≤ 500 psig (34.5 bar) 1,100 psig (75.8 bar) ≥ 501 psig
Medium	Clean, dry, non-corrosive gases
Mounting Attitude	Any
Operating Pressure Range	Vac. to 1,000 psig (69 bar)
Porting	1/8″ NPT, G1/8
Protection Rating	IP65
Resolution	≤50 mV
Response Time	<20 ms typical (application dependent)
Signal / Command	0-5 or 0-10 VDC, 4-20 mA, or 3.3 VDC serial
Supply Voltage	15 to 24 VDC
Temperature Range	32 to 180°F (0 to 82°C), <i>valves</i>
Temperature Range	

### Applications

- Leak testing
- Burst testing of catheters
- Maintaining internal pressure of tubing during extrusion
- Piloting one-to-one
- Piloting ratio valves
- Monitoring onboard sensor for data acquisition
- Tubing extrusion piloting



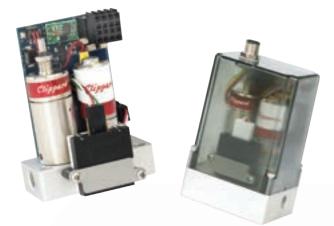
Dimensions shown are in inches (millimeters listed in parentheses). Visit clippard.com for more detailed 2D and 3D drawings.



#### 877-245-6247 | clippard.com 17



### **CFC** FLOW CONTROLLER



The Cordis flow controller utilizes an extremely fast-reacting mems technology sensor upstream from a proportional valve, with the option of a DR-2 regulator for accurate and precise pressure control in a small package. Unlike other mass flow controllers that require a 30 minute warm-up time, large differential pressures, and limited flow ranges, the award-winning Cordis requires less than one minute warm-up, its pressure drop is  $\leq 14''$  (35.6 cm) H<sub>2</sub>O, and it features flow ranges as low as 0 to 30 sccm. Standard control options include 0.1 to 5 or 0.2 to 10 VDC, 4.32 to 20 mA, and 3.3 VDC Serial.

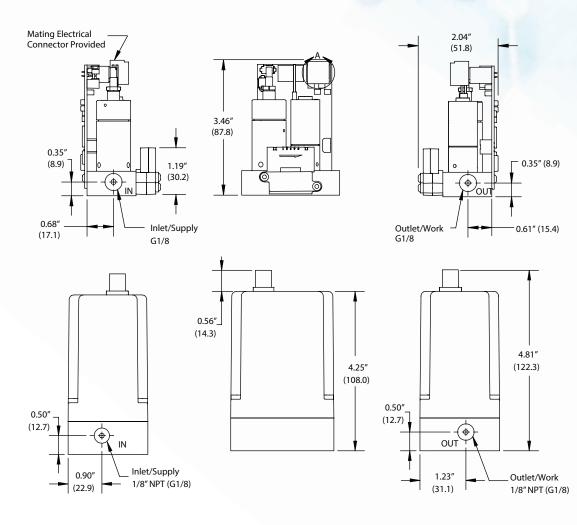
- 50:1 turndown ratio
- Compact size and weight
- ≤14" H2O pressure drop
- <1 minute warm-up</li>
- Multiple low flow ranges
- <50 ms response times</li>
- ≤25 mV resolution
- Optional integrated regulator
- OEM style card unit or IP65 housed unit for light industrial applications

Accuracy	≤2% of full scale
Current Draw	≤250 mA max.
Filtration	40 micron filter (recommended)
Flow Range Sensors	0 to 0.03 l/min, 0 to 0.2 l/min, 0 to 0.5 l/min, 0 to 1 l/min, 0 to 4 l/min, 0 to 6 l/min, 0 to 15 l/min
Function	Normally-closed proportional
Hysteresis	≤1% max.
Inlet	60 psig max. (4.1 bar)
LED Indicators	Power (red) and command mode (blue—solid indicates analog, flashing indicates serial)
Linearity	≤1%
Material, Wetted	Manifold: Anodized aluminum IP65 Housing: Polycarbonate Regulated Supply: ENP brass Sensor: Polyamide Valve, EVP: ENP brass Valve, DVP: Stainless steel, PPS
Medium	Clean, dry, non-corrosive gases
Mounting Attitude	Any
Operating Flow Range	0-15 l/min
Porting	1/8″ NPT, G1/8
Pressure Drop	$\leq 14''$ (35.6 cm) H <sub>2</sub> 0
Protection Rating	IP65 (housed unit only)
Repeatability	≤1%
Resolution	≤25 mV
Response Time	<50 ms typical (application dependent)
Signal/Command	0.2 to 10 VDC, 4.32 to 20 mA, 3.3 VDC serial
Supply Voltage	15 to 24 VDC
Temperature Range	32 to 120°F (0 to 49°C), proportional valves
Turndown Ratio	50:1
Warm-Up Period	<1 minute
More Details	clippard.com/link/cordis-cfc

*The Cordis is highly modifiable for OEM applications. Contact us today to discuss your specific needs.* 



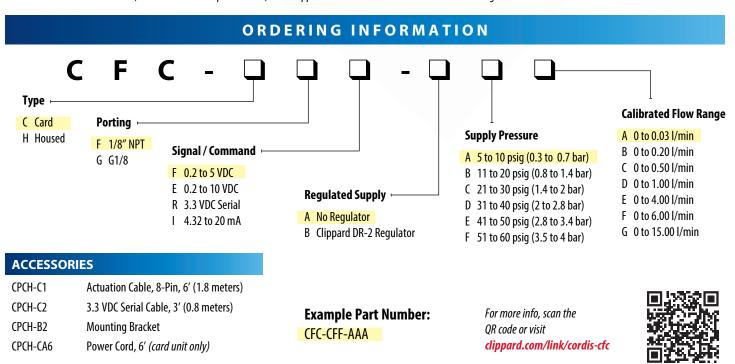
Card Unit (CFC-C)





Housed Unit (CFC-H)

See p. 17 for mounting bracket dimensions (utilizes same mounting bracket as CHP) Dimensions shown are in inches (millimeters listed in parentheses). Visit clippard.com for more detailed 2D and 3D drawings.



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#### **ELECTRONIC VALVES**

**PROPORTIONAL VALVES** 

**ISOLATION VALVES** 

**ELECTRONIC CONTROLS** 

**CUSTOM SOLUTIONS** 

**PRESSURE REGULATORS** 

**CONTROL VALVES** 

DIRECTIONAL CONTROL VALVES

**AIR PILOT VALVES** 

**AIR PREPARATION EQUIPMENT** 

FITTINGS, HOSE, & TUBING



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