CMS HD

Heavy Duty Multi-stage Vacuum Pumps

General Information

NFC

IO-Link

COVAL's **CMS HD** series of multi-stage Heavy Duty vacuum pumps for industry specific applications are the result of many years of listening to and getting feedback from manufacturers, integrators, and users in the food, packaging, and robotics industries.

The **CMS HD** multi-stage vacuum pumps meet their expectations in terms of power, robustness, ease of configuration and use, communication, and modularity, while remaining compact and light for a simplified integration in a smart factory.

Industry-specific applications

Advantages

- Robust: resistant to the harsh environments of production lines
- High performance: optimized multi-stage Venturi system that guarantees powerful suction flow rates and reduced compressed air consumption.
- Modular: configurable according to needs and easy maintenance.
- Communicating: efficient communication system for all use levels, clear and easy to read HMI, NFC technology for mobile use, and IO-Link communications interface for straightforward networking.

Main Specifications (depending on version)

- 80% vacuum
- 3 powerful suction flow rates:
  - CMSHD90X50__ → 24.72 SCFM
  - CMSHD90X100__ → 38.85 SCFM
  - CMSHD90X150__ → 56.50 SCFM
- With or without vacuum and blow-off control
- Vacuum control: NC, NO
- With or without vacuum switch
- Blow-off controlled or automatic timed
- 1 or 2 M12 connectors
- Digital inputs/outputs mode (SIO) / IO-Link
- 3 exhaust configurations
- Degree of protection: IP65
- PNP / NPN
- Supply pressure monitoring (pressure sensor)
- Supply voltage monitoring
- Vacuum network status analysis and monitoring with a network sizing tool to prevent pressure loss, as well as a clogging detection function
- Remote HMI option features the following:
  - High-visibility color display with clear multi-lingual messages and straightforward settings menu
  - Easy set up made possible by NFC technology and COVAL Vacuum Manager mobile application

A Complete Range

For each application, a suitable CMS HD:

CMSHD__NVO
- without control

CMSHD__SVOC15P / VVOC15P
- with vacuum and blow-off control
- without vacuum switch
- one M12 5-pin connector
- Digital inputs/outputs mode
- visual indicators of vacuum and blow-off controls

CMSHD__SVX_ / VVX_
- with vacuum and blow-off control
- with vacuum switch, and pressure sensor
- M12 connectors available in 3 versions:
  - one 5 or 8-pin connector
  - or two 4-pin connectors
- Digital inputs/outputs (SIO) / IO-Link Mode

Accessory: remote HMI
Part No.: HMIHD1M84P
Compatible with CMSHD___**VX**__
- 1.54" color LCD display
- 4-key keypad
- Can be moved up to 10 m
- NFC

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CMS HD, "tailor-made" solution

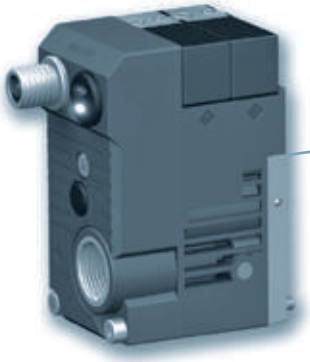
Different configurations available for the exhaust:

CMSHD____K
Silencer

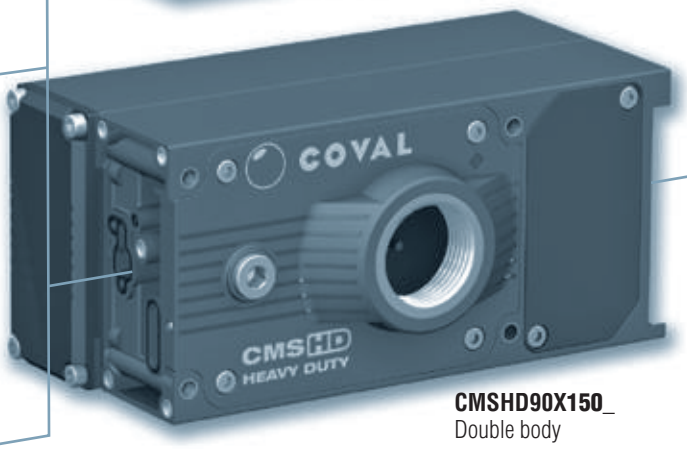
CMSHD__NVO_
Pressure connection end plate

CMSHD90X50_ / CMSHD90X100_
Simple body

CMSHD__SVO / VVO_
Control valve block for vacuum and blow-off without vacuum switch



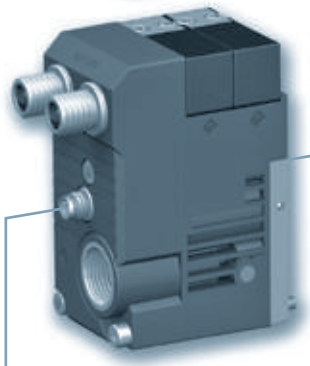
CMSHD____F
Diffuser



CMSHD____E
Collector exhaust

CMSHD90X150_
Double body

Note: Exhaust options are delivered mounted in line. They can be mounted by the user at 90° on the front panel of the CMS HD.



CMSHD_SVX / VVX_
Control valve block for vacuum and blow-off with vacuum switch, pressure sensor, compatible with remote HMI

Remote HMI
Part No.: **HMIHD1M84P**

CMS HD

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General Information

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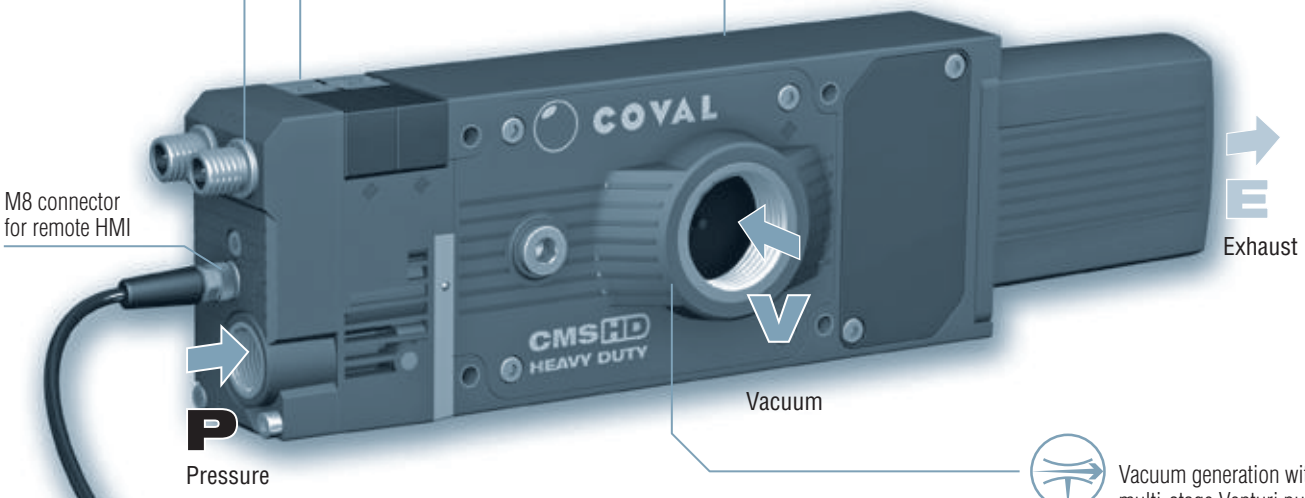
CMS HD with control and vacuum switch

Digital inputs/outputs (SIO) / IO-Link

M12 connectors available in 3 versions:
- one 5 or 8-pin connector
- or two 4-pin connectors

- NC, NO vacuum control
- Blow-off controlled or automatic timed

Onboard installation and diagnostic tools:
- Vacuum network sizing support and clogging detection
- Supply pressure and voltage monitoring



M8 connector for remote HMI

Pressure

Vacuum

Exhaust

Vacuum generation with multi-stage Venturi pump:
- high suction rates
- silent operation

Accessory: remote HMI
Part No.: HMIHD1M84P

Gripping status indicator light (2 colors)

1.54" high-visibility color LCD display with clear multilingual messages and straightforward settings menu

Settings keypad

Clear and efficient HMI:
includes all required inputs for full operation of CMS HD multi-stage vacuum pumps.

NFC

Straightforward setup and diagnostics made possible by NFC technology and COVAL Vacuum Manager mobile application.

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Integration and Performance

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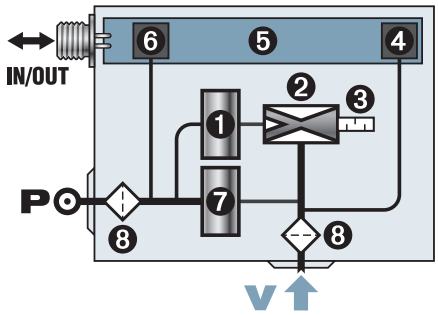
Integrated Functions

CMS HD multi-stage vacuum pumps include all the "vacuum" functions required for an easy, efficient and economical use of compressed air and suitable for any application:

❶ "Vacuum" solenoid valve
❷ Multi-stage Venturi pump
❸ Through-type silencer
❹ Electronic vacuum switch
❺ Integrated electronics
❻ Pressure sensor
❼ "Blow-off" solenoid valve
❽ Removable filter screens

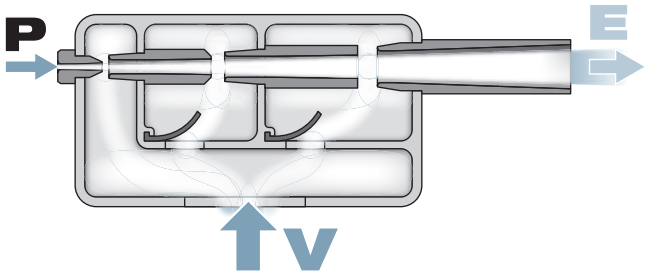


Primary Functions

Multi-stage technology consists of maximizing the energy input of the compressed air by cascading several stages of Venturi profiles and by combining their respective flows.

Intermediate valves allow the progressive isolation of each stage to obtain a maximum vacuum level.

This technology makes it possible to generate a high suction flow rate at a low vacuum level.

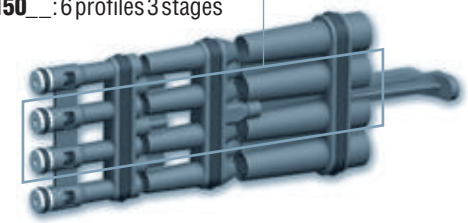


Performance Determined by CMS HD Model

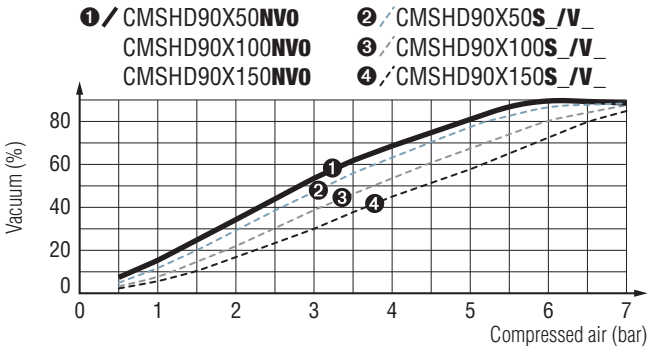
Model	Max. vacuum (%)	Air drawn in (SCFM)	Air consumed (SCFM)	Air pressure level* (bar)
CMSHD90X50	80	24.72	7.77	5.5
CMSHD90X100	80	38.85	14.83	5.5
CMSHD90X150	80	56.50	21.90	5.5

** 6 bar for versions with control:*
*CMSHD90X**50S**_ / CMSHD90X**50V**_ / CMSHD90X**100S**_ / CMSHD90X**100V**_*
** 6.5 bar for versions with control:*
*CMSHD90X**150S**_ / CMSHD90X**150V**_*

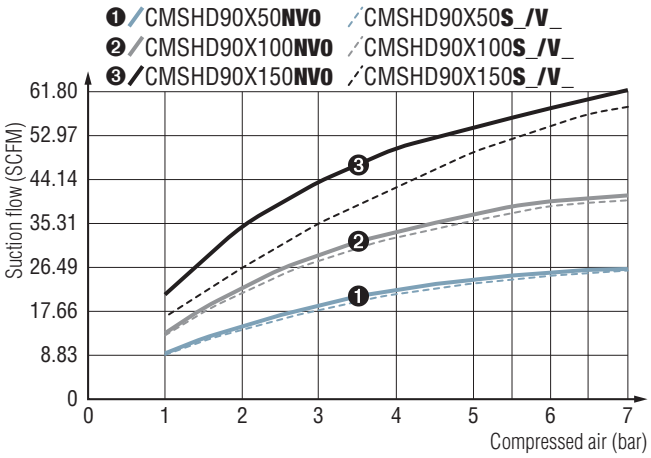
- CMSHD90X**50**__: 2 profiles 3 stages
- CMSHD90X**100**__: 4 profiles 3 stages
- CMSHD90X**150**__: 6 profiles 3 stages



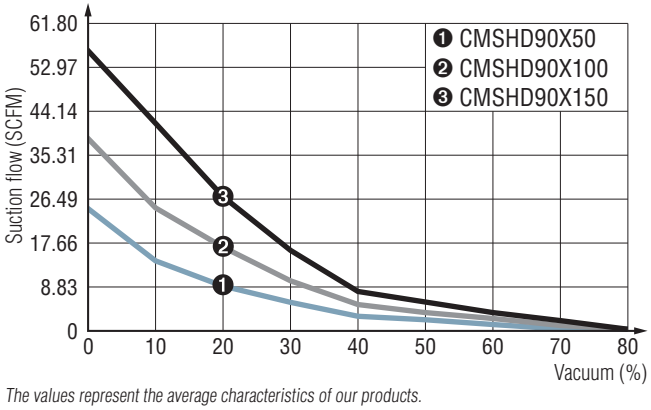
Vacuum / Compressed air



Suction flow / Compressed air



Suction Flow / Vacuum



The values represent the average characteristics of our products.

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Straightforward Communication

NFC

IO-Link

Easier Integration, Use, and Diagnostics

The **CMSHD__VX** Heavy Duty multi-stage vacuum pump series includes various features that enable setup, use, and diagnostics in all situations and at all levels (operators, process, networked factory), with the aim in mind of keeping the use and management of the pumps as straightforward as possible and thus allowing for their easy integration in your smart factory.

Settings, Diagnostics and Process Data

CONFIGURABLE SETTINGS

- Choice of language: EN, FR, DE, IT or ES
- "Object gripped" thresholds
- Automatic blow-off
- Vacuum measurement unit: kPa, %, mbar, inHg
- Pressure measurement unit: MPa, bar, psi
- Software updates, and more

DIAGNOSTICS

- Cycle counters (vacuum and blow-off control, objects gripped, objects lost, etc.)
- Vacuum network sizing support to prevent pressure loss
- Clogging detection function
- Supply pressure and voltage monitoring
- Software version
- Product part number and serial number

PROCESS INPUT DATA

- Vacuum and blow-off control

PROCESS OUTPUT DATA

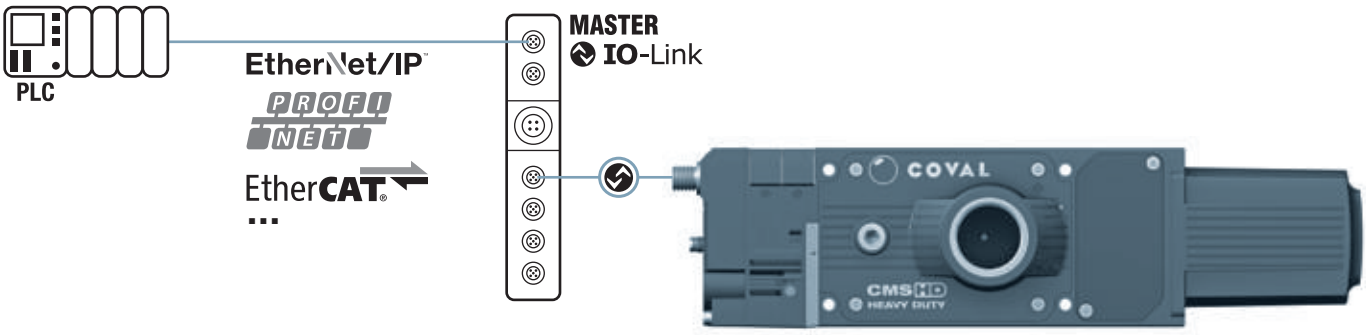
- Instantaneous vacuum level
- Object gripped and object lost information
- Alarms (high/low pressure, high/low voltage)
- Instantaneous pressure

IO-Link

The IO-Link system provides efficient real-time communication between **CMSHD__VX_** multi-stage vacuum pumps and any higher-level protocol (EtherNet/IP, PROFINET, EtherCAT, etc.) required to monitor the production line. It can be used to control pumps, configure settings, and get feedback to ensure maximum productivity.

Advantages:

- Straightforward wiring, installation, and setup
- Availability of diagnostic status data
- Simpler preventive maintenance and vacuum pump replacement without manual setup, and more
- Onboard installation and diagnostic tools



CMS HD

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Straightforward Communication

NFC

IO-Link

Remote HMI (accessory)

To make it easier to use and set up multi-stage piloted vacuum pumps, the CMS HD series has a remote HMI as an accessory.

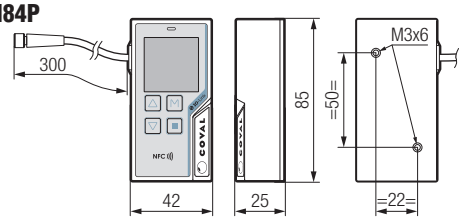
Advantages:

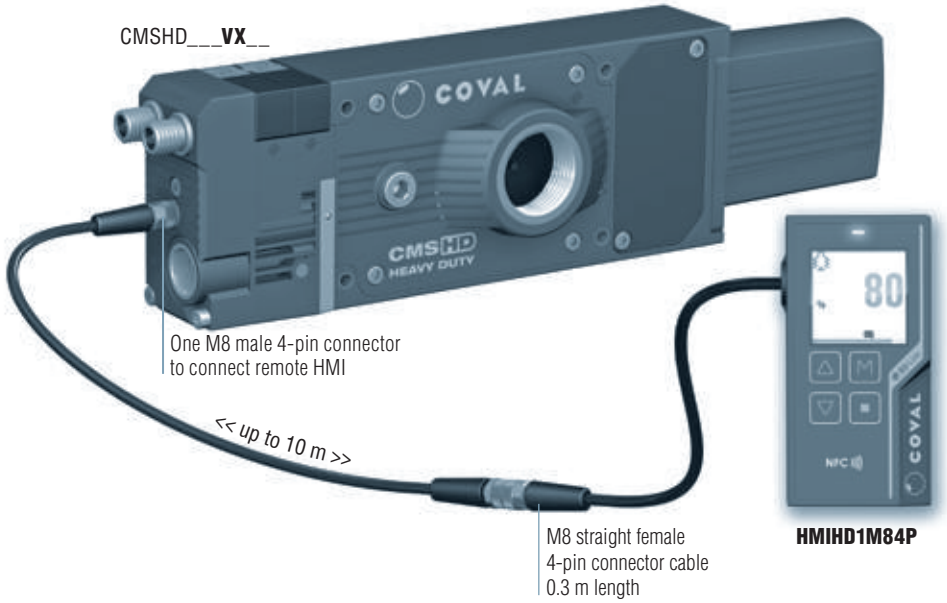
- Place the HMI in an easily accessible and visible area
- Use one HMI for several CMS HD multi-stage vacuum pumps
- Copy settings from one pump to another
- Use the CMS HD multi-stage vacuum pump without any HMI connected

CMS HD multi-stage vacuum pumps compatible with the remote HMI:

→ CMSHD___**VX**__ versions with M8 connector
(electrical connections: see p. 8/73)

→ **Remote HMI**
Part No.: **HMIHD1M84P**

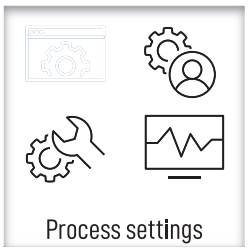


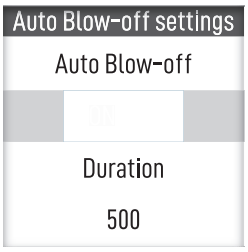


Remote HMI Dialog Front Panel

The remote HMI allows for easy and efficient reading of the pump's operation.
The high-visibility display includes all required inputs for full operation:

- Main information is easy to read
- Multilingual: EN - FR - DE - IT - ES
- Simple and clear event messages
- Intuitive settings and diagnostics menus
- Configurable display orientation: 0 - 90 - 180 - 270°
- Lockable to prevent undesired changes





Multilingual

EN FR DE IT ES

8

CMS HD

CMS HD

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Straightforward Communication

NFC

IO-Link

NFC

The NFC wireless technology integrated in remote HMI and in the COVAL Vacuum Manager application makes all setup and diagnostic functions available and modifiable on your mobile devices.

Additional features:

- Read/write settings with the power on or off
- Copy settings from one CMS HD to another
- Backup up to 5 setting configurations
- COVAL support: send a report including the settings and diagnostic data to COVAL for technical support

GET IT ON Google Play

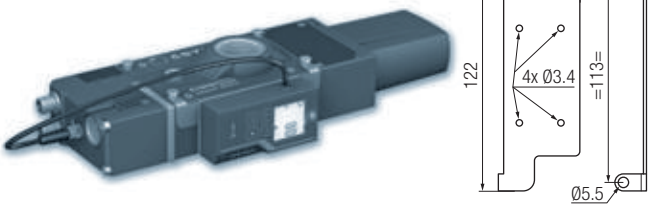
Download on the App Store

NFC APP: COVAL Vacuum Manager
Available for Android and iOS

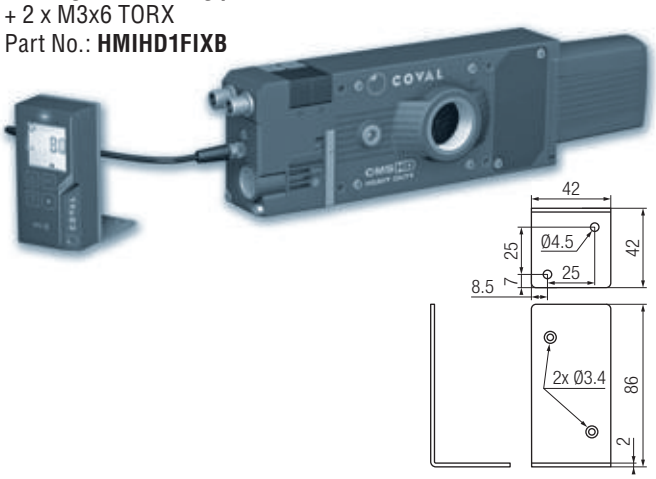
Accessories for remote HMI

Front mounting plate
+ 2 x M3x6 TORX
+ 2 x M5x50 CHC
Part No.: **HMIHD1FIXA**

Side mounting plate
+ 2 x M3x6 TORX
+ 2 x M5x50 CHC
Part No.: **HMIHD1FIXC**



90° angled mounting plate
+ 2 x M3x6 TORX
Part No.: **HMIHD1FIXB**



Connecting cable
M8 4-pin, female / M8 4-pin, male, compatible with cable chain
- 2 m length: Part No. **CDM8MF4PL2**
- 5 m length: Part No. **CDM8MF4PL5**
- Other lengths available upon request.

Note: all dimensions are in mm.

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Modularity and Maintenance

NFC

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Choice of 3 equipment options for the exhaust

Various configuration options are available for the CMS HD exhaust:

Through-type silencer
CMSHD___K version
- reduction of the noise level (-10 dBA compared to a diffuser)
- non-clogging

Diffuser
CMSHD___F version
- ultra-compact

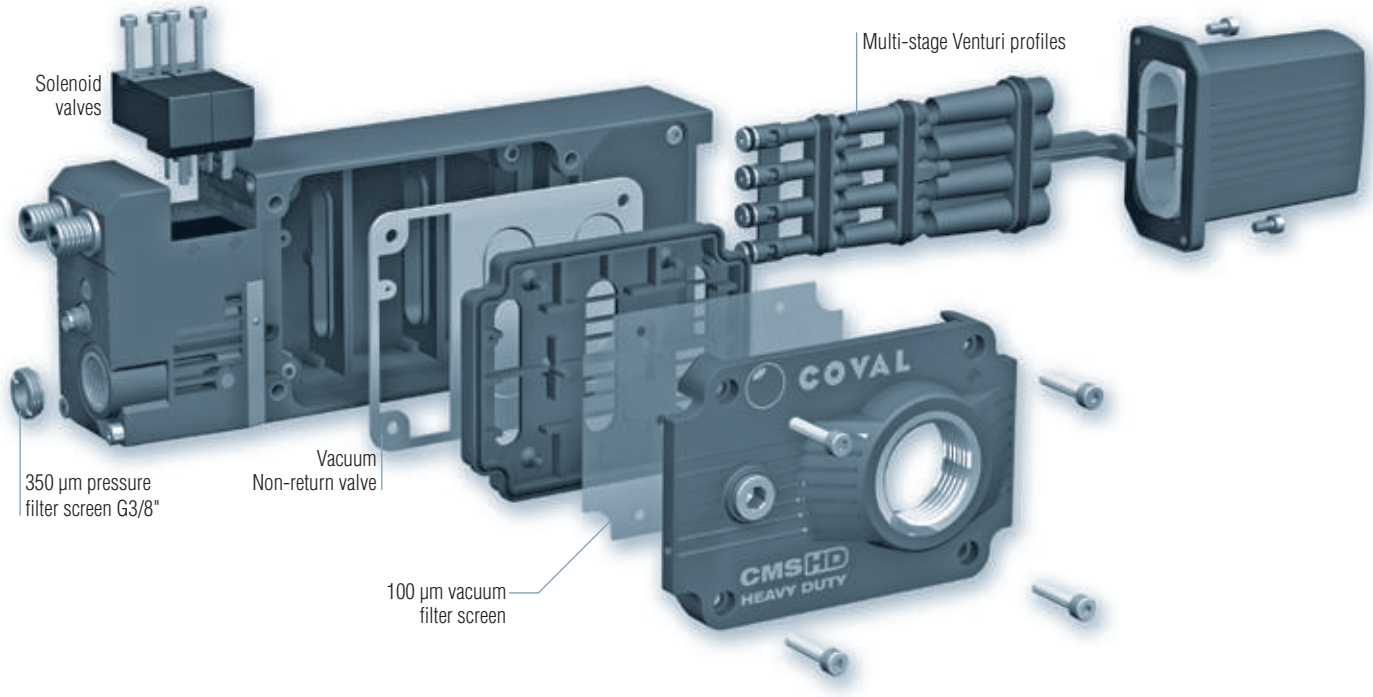
Exhaust collector
CMSHD___E version
- G1" female connection

The exhaust options are delivered in-line but, depending on the environment, they can be positioned by the user on the front panel.

Modularity/Maintenance

The CMS HD multi-stage vacuum pumps have been designed to withstand the demands from all your applications and to guarantee a high level of performance. However, handling certain parts may require replacement or cleaning.

The modular design of the CMS HD multi-stage pumps ensures easy maintenance as the functions are all easily accessible.



CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Selection guide

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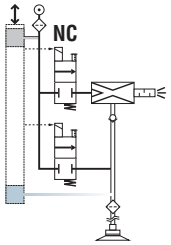
Vacuum Control: 2 Solutions

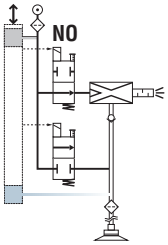
Model CMSHD__S: vacuum pump with **NC** vacuum control and **NC** blow-off control. In the event of power failure, vacuum is no longer generated. In the event of compressed air failure, the vacuum is no longer maintained.



- NC blow-off and vacuum control: solenoid valves
- Choice of blow-off settings (only on CMSHD___**SVX**_ models):
  - controlled by external signal
  - automatic timer from 50 to 9999 ms (advantage: saves one controller output)

Model CMSHD__V: vacuum pump with **NO** vacuum control and **NC** blow-off control. In the event of power failure, vacuum is still generated: part is held in place ➔ fail-safe.

In the event of compressed air failure, the vacuum is no longer maintained.

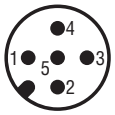


- NO vacuum control solenoid valve
- NC blow-off control solenoid valve
- Blow-off controlled by external signal

Electrical Connections

VOC15P:

- One M12 5-pin male connector



1	/
2	24 V DC suction command (1)
3	0 V - GND
4	24 V DC blow-off command
5	/

VXC18X:

- One M12 8-pin male connector

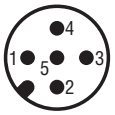
1	24 V DC object gripped DO1
2	24 V DC
3	/
4	24 V DC suction command (1)
5	24 V DC object lost DO2 - C/Q (2)
6	24 V DC blow-off command
7	0 V - GND
8	/

- One M8 4-pin male connector → remote HMI

1	24 V DC
2	RS485 (DATA+)
3	0 V - GND
4	RS485 (DATA-)

VXC15X:

- One M12 5-pin male connector



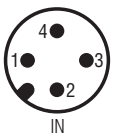
1	24 V DC
2	24 V DC suction command (1)
3	0 V - GND
4	24 V DC object gripped DO1 - C/Q
5	24 V DC blow-off command

- One M8 4-pin male connector → remote HMI

1	24 V DC
2	RS485 (DATA+)
3	0 V - GND
4	RS485 (DATA-)

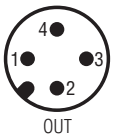
VXC24X:

- Two M12 4-pin male connectors



IN

1	/
2	24 V DC blow-off command
3	0 V - GND
4	24 V DC suction command (1)



OUT

1	24 V DC
2	24 V DC object lost DO2 (2)
3	0 V - GND
4	24 V DC object gripped DO1 - C/Q
5	/

- One M8 4-pin male connector → remote HMI

1	24 V DC
2	RS485 (DATA+)
3	0 V - GND
4	RS485 (DATA-)

: connections for IO-Link

(1) 24 V DC suction command, depending on version:
*- **S**: 24 V DC vacuum control*
*- **V**: 24 V DC vacuum off command*

(2) DO2 configurable:
- Object lost (default)
- or Power supply fault (below 21.6 V or above 26.4 V)
- or Pressure fault (below 5 bar or above 8 bar)

CMS HD

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Configuring a Vacuum Pump

NFC

IO-Link

CMS HD Without Control

CMSHD90X	100	N	V0	G4	K

SUCTION FLOW RATE	
24.72 SCFM	50
38.85 SCFM	100
56.50 SCFM	150

EXHAUST	
K	Through-type silencer
E	Exhaust collector
F	Diffuser

Sample part number consisting of a multi-stage vacuum pump without control:

CMSHD90X100NV0G4K

Multi-stage vacuum pump without control, max. vacuum 80%, suction flow rate 38.85 SCFM with Through-type silencer

CMS HD With Control

CMSHD90X	100	S	VX	C15X	G4	K	D

SUCTION FLOW RATE	
24.72 SCFM	50
38.85 SCFM	100
56.50 SCFM	150

GENERATOR CONTROL	
Vacuum pump with **NC** vacuum control and **NC** blow-off control. Choice of blow-off settings (only on CMSHD__**SVX**_models): ▪ Controlled by external signal ▪ Automatic timer from 50 to 9999 ms (advantage: saves one controller output).	S
Vacuum pump with **NO** vacuum control and **NC** blow-off control. ▪ Blow-off controlled by external signal	V

VACUUM SWITCH / HMI		CONNECTORS	
Multi-stage vacuum pump without vacuum switch and HMI	V0	C15P	▪ One M12 5-pin male PNP
▪ Simplified CMS HD with control, without settings and dialogs ▪ Digital inputs/outputs mode (SIO)			
Multi-stage vacuum pump with integrated vacuum switch and pressure sensor, without HMI	VX	C15X	▪ One M12 5-pin male configurable as PNP or NPN ▪ One M8 4-pin male for remote HMI
▪ Electronic vacuum switch ▪ Digital Output DO1 "object gripped" 24 V DC / NO ▪ Digital input/outputs mode (SIO) / IO-Link ▪ Compatible with remote HMI			 IO-Link
		C18X	▪ One M12 8-pin male configurable as PNP or NPN ▪ One M8 4-pin male for remote HMI ▪ Digital Output DO2 configurable 24 V DC / NO
			 IO-Link
		C24X	▪ Two M12 4-pin male configurable as PNP or NPN ▪ One M8 4-pin male for remote HMI ▪ Digital Output DO2 configurable 24 V DC / NO
			 IO-Link

EXHAUST*	
K	Through-type silencer
E	Exhaust collector
F	Diffuser

** Exhaust accessories are delivered mounted in line by default.*

PRESSURE SENSOR	
None on **V0** versions	–
Standard on **VX** versions	D

Sample part number consisting of a multi-stage vacuum pump with control:

CMSHD90X100SVXC15XG4FD

Multi-stage vacuum pump with control, max. vacuum 80%, suction flow rate 38.85 SCFM, NC vacuum and blow-off control, one M12 5-pin connector and one M8 4-pin connector, with diffuser

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Examples of Composed Part Numbers

NFC

IO-Link

CMSHD90X50NVOG4E

Multi-stage vacuum pump without control, max. vacuum 80%, suction flow rate 24.72 SCFM with exhaust collector.

CMSHD90X150NVOG4K

Multi-stage vacuum pump without control, max. vacuum 80%, suction flow rate 56.50 SCFM with through-type silencer.

CMSHD90X100SVOC15PG4F

Multi-stage vacuum pump with control, max. vacuum 80%, suction flow rate 38.85 SCFM, NC vacuum and blow-off control, one M12 5-pin connector, with diffuser.

CMSHD90X100VVXC15XG4ED + HMIHD1M84P + HMIHD1FIXA

Multi-stage vacuum pump with control, max. vacuum 80%, suction flow rate 38.85 SCFM, NO vacuum control and NC blow-off control, one M12 5-pin connector and one M8 4-pin connector, with exhaust collector + remote HMI and front mounting plate.

CMSHD90X150SVXC24XG4KD

Multi-stage vacuum pump with control, max. vacuum 80%, suction flow rate 56.50 SCFM, NC vacuum and blow-off control, one M12 5-pin connector and one M8 4-pin connector, with through-type silencer.

CMS HD

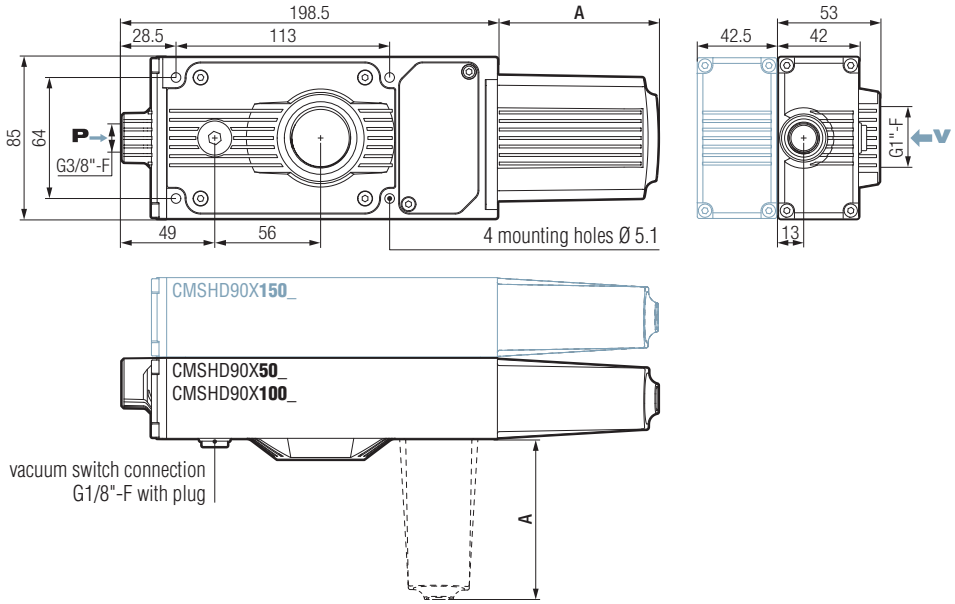
Heavy Duty Multi-stage Vacuum Pumps

Dimensions

NFC

IO-Link

CMS HD Without Control

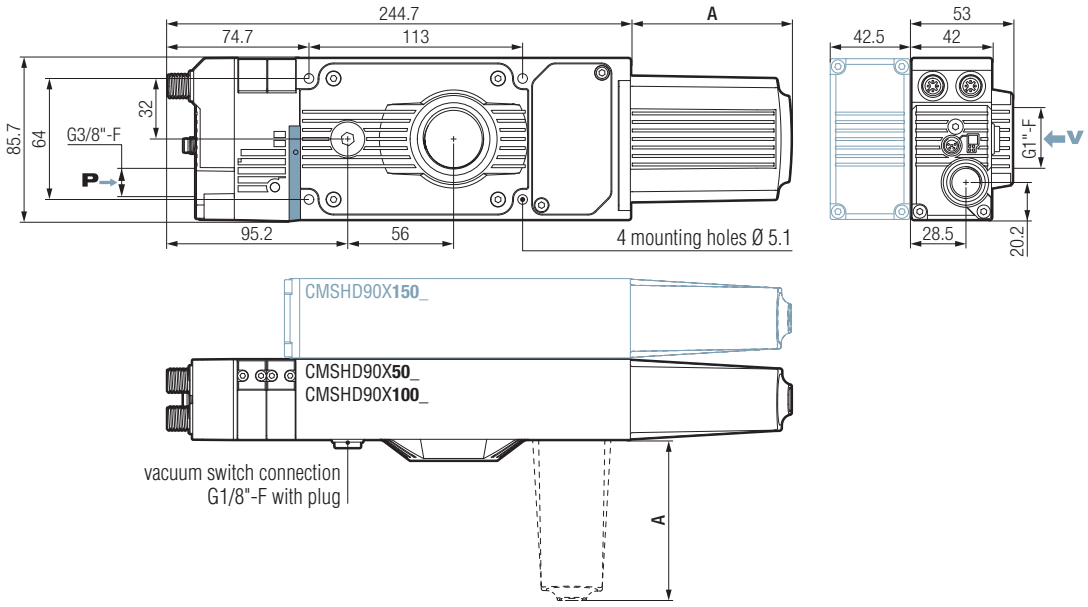


Note: all dimensions are in mm.

3D COVAL Data

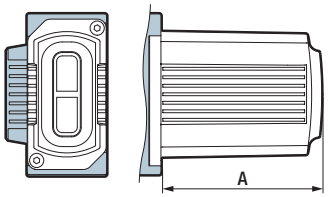
You can access 3D files of all our products in formats compatible with the main CAD software on our website **www.coval.com**

CMS HD With Control

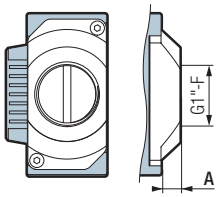


Exhaust Options

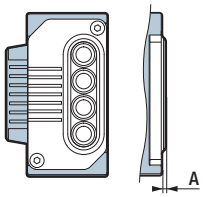
Through-type silencer
CMSHD___**K** version



Exhaust collector
CMSHD___**E** version



Diffuser
CMSHD___**F** version



Exhaust Type	A
Silencer	85
Collector	10
Diffuser	2

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Technical specifications

NFC

IO-Link

- Supply: non-lubricated air, filtered to 5 microns, according to standard ISO 8573-1:2010 [3:4:4]
- Operating pressure: from 2 to 8 bar
- Optimal dynamic pressure:
  - CMSHD_**NVO** (without control): 5.5 bar
  - CMSHD90X50**S**/50**V**/100**S**/100**V**_ (with control): 6 bar
  - CMSHD90X150**S**/150**V**_ (with control): 6,5 bar
- Pressure connection: G3/8"-F with removable 350 µm filter screen
- Vacuum connection: G1"-F with removable 100 µm filter screen
- Connection for version with exhaust collector: G1"-F
- Vacuum switch connection G1/8"-F
- Max. vacuum: 80%
- Air suction flow rate: 24.72 to 56.50 SCFM
- Air consumption: 7.77 to 21.90 SCFM
- Noise level:
  - with silencer:
    - CMSHD90X**50**__**K**: 59 dBA
    - CMSHD90X**100**__**K**: 62 dBA
    - CMSHD90X**150**__**K**: 67 dBA
  - with diffuser (CMSHD__**F** version): + 10 dBA to the silencer version
- Degree of protection: IP65
- Max. operating frequency: 4 Hz
- Endurance: 50 million cycles
- Weight:
  - CMSHD without control:
    - CMSHD__**50**/**100**: 645 g
    - CMSHD__**150**: 1330 g
  - CMSHD with control:
    - CMSHD__**50**/**100**: 890 g
    - CMSHD__**150**: 1575 g
- Operating temperature: from 32 to 122° F
- Materials: PA GF, brass, aluminum, steel, NBR, PU, FKM
- M12 and M8 male connectors (depending on version)

Integrated electronics

- 24 V DC power supply (regulated ±10%)
- Vacuum measuring range: 0 to 99%
- Pressure measuring range: 0 to 10 bar
- Vacuum and pressure measurement accuracy: ±1.5% of the range, compensated for temperature
- Inputs/outputs protected against reversed wiring and polarity
- Consumption: 170 mA max. (without load)
- Input/Output switching mode: PNP or PNP/NPN configurable
- Digital inputs/outputs mode (SIO) / IO-Link

DO1/DO2 output signals (only on CMSHD___**VX**__ models)

- Configurable as PNP or NPN
- NO or NC
- Breaking capacity: 330 mA
- DO1: object gripped output (factory setting 40%)
- DO2 configurable (see parameter settings)

Diagnostics

- Instantaneous vacuum level (unit transmitted over IO-Link: mbar)
- Available information: Object gripped, object lost
- Cycle counters (vacuum, blow-off, object gripped, object lost, etc.)
- Vacuum network sizing support to prevent head losses
- Clogging detection function
- Supply pressure monitoring
- Supply voltage monitoring
- Product part number and serial number
- Software version

Indicator on model CMSHD__**VOC15P**___

- Status LED for control functions:
  - green LED: vacuum control
  - orange LED: blow-off control

Information displayed on remote HMI

- LED gripping status indicator on front panel
  - Green: object gripped
  - Red: object lost
- 1.54" high-visibility color LCD display:
  - Displays vacuum level with bar graph and thresholds
  - Warns when service life has been exceeded (> 50 million cycles)
  - Explicit fault messages
  - "Suction cup" icon indicating the status of control functions:
    - Green suction cup: vacuum control
    - Orange suction cup: blow-off control
    - Red suction cup: simultaneous vacuum and blow-off control
  - Configurable display orientation: 0 - 90 - 180 - 270°

Parameter settings available with the remote HMI or IO-Link (only on CMSHD___**VX**__ models)

- Choice of blow-off type:
  - Controlled
  - Automatic timed, adjustable from 50 to 9999 ms
- Object gripped (L1) control thresholds
- Whenever required by the application, specific threshold and hysteresis settings that are different from the initial factory settings can be defined: L1 = 40%, h1 = 10%
- DO2 configurable (24 V DC) (only on CMSHD___**VXC24X**_ and **VXC18X**_ models):
  - Object lost (default)
  - or Power supply fault (below 21.6 V or above 26.4 V)
  - or Pressure fault (below 5 bar or above 8 bar)

+ Additional settings available with the remote HMI

(performed with 4-key membrane keyboard):

- Choice of language: EN, FR, DE, IT, or ES
- Choice of vacuum measurement unit (kPa, %, mbar, inHg)
- Choice of pressure measurement unit (MPa, bar, psi)
- Monostable electrical manual controls

Communication

IO-Link

- Revision: 1.1
- Transmission rate: COM3 - 230.4 kbit/s
- Min. cycle time: 1 ms
- SIO mode: Yes
- Process Data Input (PDI): 6 bytes
- Process Data Output (PDO): 1 byte
- IO device description file (IODD) available for download

NFC

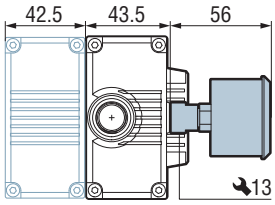
- COVAL VACUUM MANAGER Mobile app available:
  - Android, version 8.1 and higher
  - iOS, version 13 and higher

NFC
IO-Link

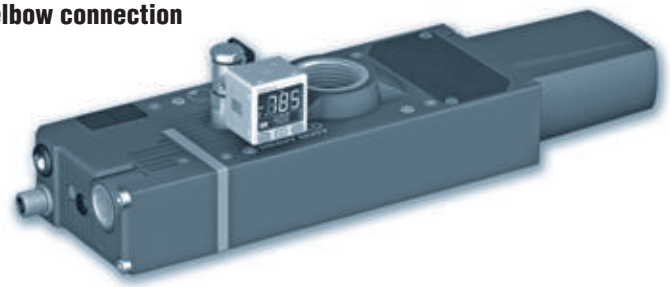
To visualize the vacuum level

Vacuum gauge Ø 40 mm
Part No. VAF11140RDM18G

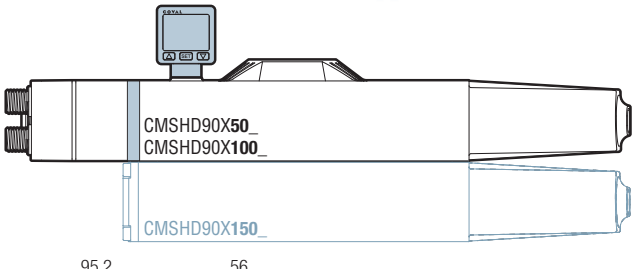
- Damping: by silicone movement (patented).
- Measuring: Bourdon tube in CuSn.
- Precision: cl. 2.5 (+/- 2.5% of max. scale value).
- Frame: black ABS
- Vacuum connection: G1/8"-M

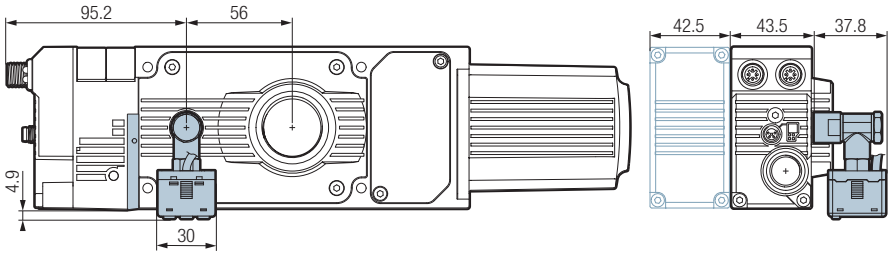


Electronic vacuum switch with 3-color display with adjustable elbow connection
Part No. PSD100CPNPRCOM18G



- One M8 4-pin connector.
- 1 PNP digital output (NO or NC). Max. load current: 125 mA, Max. supply voltage: 24 VDC, Residual voltage: ≤ 1.5 V.
- 1 analog output (Output voltage: 1 to 5 V ≤ ± 2.5% F.S. (within rated pressure range), linearity: ≤ ± 1% F.S. / Output impedance: approx. 1 kΩ)
- Pressure rating range: 0 ~ -101.3 kPa.
- Pressure setting range: 10 ~ -101.3 kPa.
- Max. pressure: 300 kPa.
- Fluid: Air, non-corrosive/non-flammable gas.
- Hysteresis: adjustable.
- Response time: ≤ 2.5ms, with anti-vibration function.
- 7 segment LCD display : 2 color (red/green) main display, orange sub-display (refresh rate: 5 times/1sec.).
- Choice of pressure unit display: kPa, MPa, kgf/cm², bar, psi, InHg, mmHg.
- Power supply voltage: 12 to 24 V DC ±10%.
- Current consumption: ≤ 40mA (without load).
- Repeatability (switch ouptut): ≤ ±0.2% F.S. ±1 digit.
- Protection: IP40.
- Ambient temperature range: 32 to 122°F (operation).
- Adjustable elbow connection 360°: G1/8"-M

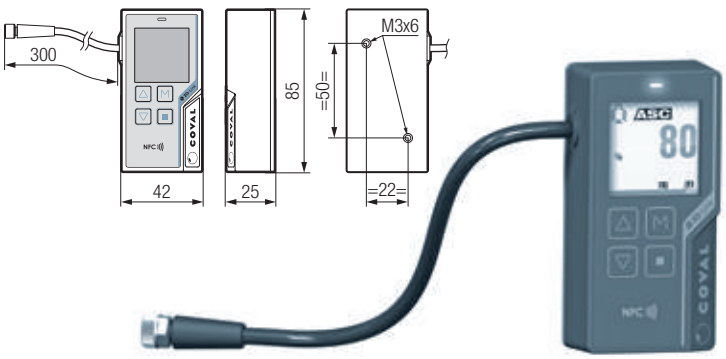




Remote HMI

(for CMSHD___**VX**__ only)
Part No. HMIHD1M84P

- With M8 4-pin female connector, 0.3m length



Accessories for remote HMI (see details on p. 8/71)
- Front mounting plate: Part No. **HMIHD1FIXA**
- 90° angled mounting plate: Part No. **HMIHD1FIXB**
- Side mounting plate: Part No. **HMIHD1FIXC**
- M8 4-pin, female / M8 4-pin, male, connecting cable:
  - 2 m length: Part No **CDM8MF4PL2**
  - 5 m length: Part No **CDM8MF4PL5**
  - Other lengths available upon request.