



BENSHAW
Applied Motor Controls



H2 Series Multi-Purpose Drive

2021 Product Catalog

Rapid | Rugged | Global



Benshaw's standard products are stocked in warehouses in the USA and Canada... ready for shipment to support your critical needs:

Benshaw.com

In the USA, call or fax

Phone: 412.968.0100

Fax: 412.968.5415

In Canada, call or fax

Phone: 519.291.5112

Fax: 519.291.2595

BenshawExpress.com

If you prefer to order online, BenshawExpress.com provides direct digital access to our complete inventory of standard controls, drives and spare parts - 24 hours a day, seven days a week, 365 days a year.

Save time with 24/7 online access at benshawexpress.com

Benshaw Express is a convenient, time-saving tool for Benshaw authorized distributors.

The Benshaw web store enables users 24/7 access to:

- Check price and availability
- Place orders
- Track open orders
- Obtain tracking for shipped orders
- View freight charges for recent shipments
- View invoices
- Customized levels of access

Access Benshaw Express by following the link on Benshaw.com or directly at BenshawExpress.com.

H2 SERIES - MULTI-PURPOSE DRIVE

The Benshaw H2 Series sets the new standard for variable frequency drives. It can be used as a general purpose industrial drive with V/Hz or Vector control (with ratings for normal or heavy duty applications from 5-800HP). For fan and pumps applications, simply use the built-in macros designed to meet the basic requirements of the water/wastewater, irrigation and HVAC industries.

This multi-purpose drive complies with industries standards including UL/cUL, CE and has built-in EMC filters (standard in all 480V models). Compact, yet full-featured...the H2 Series is the ideal choice for OEMs, panel builders and end users.



STANDARD FEATURES - HARDWARE

- Dual rating - Normal and Heavy Duty
- 240V: 7.5HP~25HP (ND), 5HP~20HP (HD)
- 480V: 7.5HP~800HP (ND), 5HP~600HP (HD)
- Protected Chassis IP20
- LCD Display/Keypad
- EMC Filter (480V only, 7.5-40HP and 150-800HP)
- Internal Brake IGBT (240V all, 480V \leq 40HP)
- Single Phase Input (derating required)
- Plenum Rated

STANDARD FEATURES - SOFTWARE

- Quick Start Menu on Power Up
- Control - V/Hz, Sensorless Vector Control, Slip Compensation
- Auto Tuning
- Macro Selection - Pump, Fan, or Constant Torque
- Torque Limits
- PID Control
- Regen Avoidance
- Kinetic Energy Buffering (KEB), Ride Through
- Decel Brake Control

H2 SERIES PUMP / FAN SOFTWARE - STANDARD FEATURES

- PID control with sleep and wake-up, broken pipe and under load detection
- Multi Motor Control - One drive to control the starting and stopping of up to 5 auxiliary motors
- Lead/lag and alternating control
- Pre-fill and Soft-fill
- Standard BACnet and Metasys-N2
- Fire mode input
- Start and End Ramp - settings for quicker accel/decel times when below minimum speeds
- Decel Valve Ramp - Separate decel ramp frequency and time settings when stopping
- Time Event Scheduling - Program run times for 7 days operation
- Flow Compensation - Compensate for losses in long pipe lengths
- Backspin Timer
- Pump Clean Operation
- Load Tuning
- Drive Output Level Detection - Set warning/trip limits (current, power, others) to detect drive operation beyond limits
- Energy Saving Operation
- Oil Pump Starter Control (compressor systems)

COMMUNICATIONS

Standard: RS-485 Modbus - RTU, BACnet, Metasys-N2

Options: Ethernet/IP, Modbus - TCP, Lonworks

WinDRIVE - PC Based Software for Commissioning and Monitoring

H2 SERIES - PRICING

230V

| Model Number | Normal Duty 120% OL/1 min. | | Heavy Duty 150% OL/1min. | | Dimensions (inches) | | | Degree of Protection* | Weight (lbs) | DC Link Reactor | Dynamic Braking | List Price |
|-------------------|----------------------------------|------|--------------------------------|------|---------------------|------|------|--------------------------|-----------------|--------------------|--------------------|------------|
| | HP | Amps | HP | Amps | H | W | D | | | | | |
| VFD-RSI-007-H2-2C | 7.5 | 22 | 5 | 17 | 9.13 | 6.30 | 7.13 | IP20 | 7.3 | No | Internal IGBT | \$1,200 |
| VFD-RSI-010-H2-2C | 10 | 30 | 7.5 | 24 | 9.13 | 6.30 | 7.13 | IP20 | 7.3 | No | Internal IGBT | \$1,400 |
| VFD-RSI-015-H2-2C | 15 | 42 | 10 | 32 | 9.13 | 6.30 | 7.13 | IP20 | 7.3 | No | Internal IGBT | \$1,500 |
| VFD-RSI-020-H2-2C | 20 | 56 | 15 | 46 | 11.42 | 7.09 | 8.08 | IP20 | 10.1 | No | Internal IGBT | \$2,100 |
| VFD-RSI-25-H2-2C | 25 | 69 | 20 | 60 | 13.78 | 8.66 | 8.79 | IP20 | 15.7 | No | Internal IGBT | \$2,600 |

* For UL type 1 add conduit box option.

460V

| Model Number | Normal Duty** 110/120% OL/1 min. | | Heavy Duty 150% OL/1min. | | Dimensions (inches) | | | Degree of Protection* | Weight (lbs) | DC Link Reactor | Dynamic Braking | List Price |
|-------------------|--|-------|--------------------------------|------|---------------------|-------|-------|--------------------------|-----------------|--------------------|--------------------|------------|
| | HP | Amps | HP | Amps | H | W | D | | | | | |
| VFD-RSI-007-H2-4C | 7.5 | 12 | 5 | 8 | 9.13 | 6.30 | 7.13 | IP20 | 7.3 | No | Internal IGBT | \$1,150 |
| VFD-RSI-010-H2-4C | 10 | 16 | 7.5 | 12 | 9.13 | 6.30 | 7.13 | IP20 | 7.3 | No | Internal IGBT | \$1,200 |
| VFD-RSI-015-H2-4C | 15 | 24 | 10 | 15 | 9.13 | 6.30 | 7.13 | IP20 | 7.4 | No | Internal IGBT | \$1,400 |
| VFD-RSI-020-H2-4C | 20 | 30 | 15 | 22 | 11.42 | 7.09 | 8.08 | IP20 | 10.1 | No | Internal IGBT | \$1,900 |
| VFD-RSI-025-H2-4C | 25 | 38 | 20 | 28 | 11.42 | 7.09 | 8.08 | IP20 | 10.6 | No | Internal IGBT | \$2,300 |
| VFD-RSI-030-H2-4C | 30 | 45 | 25 | 35 | 13.78 | 8.66 | 8.79 | IP20 | 16.5 | No | Internal IGBT | \$2,650 |
| VFD-RSI-040-H2-4C | 40 | 61 | 30 | 41 | 13.78 | 8.66 | 8.79 | IP20 | 16.5 | No | Internal IGBT | \$2,800 |
| VFD-RSI-050-H2-4C | 50 | 75 | 40 | 55 | 17.72 | 10.83 | 11.18 | IP20 | 57 | Yes | External*** | \$4,000 |
| VFD-RSI-060-H2-4C | 60 | 91 | 50 | 67 | 20.08 | 12.80 | 11.18 | IP20 | 77 | Yes | External*** | \$5,000 |
| VFD-RSI-075-H2-4C | 75 | 107 | 60 | 81 | 20.08 | 12.80 | 11.18 | IP20 | 77 | Yes | External*** | \$5,300 |
| VFD-RSI-100-H2-4C | 100 | 142 | 75 | 106 | 21.67 | 12.80 | 12.17 | IP20 | 95 | Yes | External*** | \$6,700 |
| VFD-RSI-125-H2-4C | 125 | 169 | 100 | 136 | 21.67 | 12.80 | 12.17 | IP20 | 95 | Yes | External*** | \$7,500 |
| VFD-RSI-150-H2-4C | 150 | 223** | 125 | 169 | 27.80 | 11.81 | 15.20 | IP20 | 123 | Yes | External*** | \$10,000 |
| VFD-RSI-200-H2-4C | 200 | 264** | 150 | 195 | 27.80 | 11.81 | 15.20 | IP20 | 123 | Yes | External*** | \$10,600 |
| VFD-RSI-250-H2-4C | 250 | 325** | 200 | 255 | 27.76 | 14.96 | 15.59 | IP20 | 165 | Yes | External*** | \$12,950 |
| VFD-RSI-300-H2-4C | 300 | 370** | 250 | 303 | 27.76 | 14.96 | 15.59 | IP20 | 165 | Yes | External*** | \$14,950 |
| VFD-RSI-400-H2-4C | 400 | 481** | 300 | 375 | 36.34 | 16.77 | 17.32 | IP20 | 265 | Yes | External*** | \$22,000 |
| VFD-RSI-500-H2-4C | 500 | 613** | 400 | 478 | 39.37 | 23.62 | 19.69 | IP20 | 409 | Yes | External*** | \$35,550 |
| VFD-RSI-650-H2-4C | 650 | 770** | 500 | 591 | 39.37 | 23.62 | 19.69 | IP20 | 409 | Yes | External*** | \$39,750 |
| VFD-RSI-800-H2-4C | 800 | 962** | 600 | 740 | 41.50 | 30.55 | 19.67 | IP20 | 584 | Yes | External*** | \$47,700 |

* For UL type 1 add conduit box option.

** Normal Duty 110%.

*** Requires External Braking (DBU and DBR), Consult Factory.

H2 SERIES - ACCESSORIES

H2 Series - Options and Accessories

Option Cards

| Model Number | Description | List Price |
|--------------|---|------------|
| PC-100096-00 | Lonworks Option Card | \$302 |
| PC-100097-00 | Extended I/O Card, H2 Series VFD | \$291 |
| PC-100098-00 | Ethernet/IP, Modbus-TCP Option, Dual Port | \$364 |

Fins Out Mounting

| Model Number | Description | List Price |
|----------------|--|------------|
| BRKT-100770-03 | Mounting Flange, 230V: 1~15HP/460V: 1 ~ 15HP | \$61 |
| BRKT-100794-00 | Mounting Flange, 230V : 20HP/480V : 20~25HP | \$75 |
| BRKT-100794-01 | Mounting Flange, 230V : 25HP/480V : 30~40HP | \$75 |
| BRKT-100794-02 | Mounting Flange, 480V : 50HP | \$46 |
| BRKT-100794-03 | Mounting Flange, 480V : 60~75HP | \$46 |
| BRKT-100794-04 | Mounting Flange, 480V : 100~125HP | \$46 |
| BRKT-100794-05 | Mounting Flange, 480V : 150~200HP | \$762 |
| BRKT-100794-06 | Mounting Flange, 480V : 250~300HP | \$770 |
| BRKT-100794-07 | Mounting Flange, 480V : 350~400HP | \$904 |
| BRKT-100794-08 | Mounting Flange, 480V : 500~650HP | \$981 |
| BRKT-100794-09 | Mounting Flange, 480V : 800HP | \$1,130 |

Conduit Box

| Model Number | Description | List Price |
|--------------|--|------------|
| EN-101040-00 | Conduit Box, 230V : 20HP/ 480V : 20~25HP | \$53 |
| EN-101040-01 | Conduit Box, 230V : 25HP/480V : 30~40HP | \$53 |
| EN-101040-02 | Conduit Box, 480V : 50HP | \$73 |
| EN-101040-03 | Conduit Box, 480V : 60~75HP | \$73 |
| EN-101040-04 | Conduit Box, 480V : 100~125HP | \$73 |
| EN-101040-05 | Conduit Box, 480V : 150~200HP | \$448 |
| EN-101040-06 | Conduit Box, 480V : 250~300HP | \$602 |
| EN-101040-07 | Conduit Box, 480V : 350~400HP | \$602 |
| EN-101040-08 | Conduit Box, 480V : 500~650HP | \$969 |
| EN-101040-09 | Conduit Box, 480V : 800HP | \$1,098 |
| EN-101040-10 | Conduit Box, 240V/480V: 1HP - 15HP | \$42 |

Keypad / LCD Display Items

| Model Number | Description | List Price |
|--------------------|--|------------|
| KP-100003-00 | Keypad Blank Insert (at VFD when Remote Mounting LCD) | CF |
| VFD-2M-RE-CABLE-H2 | Bezel & Cable, RJ45, 2M, S/SW/H2 Series VFD, for Remote Mounting | \$31 |
| VFD-3M-RE-CABLE-H2 | Bezel & Cable, RJ45, 3M, S/SW/H2 Series VFD, for Remote Mounting | \$43 |
| CV-100017-00 | LCD Cover, Remote Mounting, NEMA 4X, S, SW & H2 Series VFD | \$189 |
| LCD-100003-00 | LCD Keypad/Display, H2 Series VFD (Spare Part) | \$125 |

CF Consult Factory.

H2 SERIES - INPUT AND OUTPUT SPECIFICATIONS

240V, 7.5HP - 25HP (5.5 - 18.5 kW)

| RSI-XXX-H2-2C | | | 007 | 010 | 015 | 020 | 025 |
|---------------------------|------------------------|--------------|---|-------|-------|-------|------|
| 240V, 3Ø Input | Normal Duty 120% OL | HP | 7.5 | 10 | 15 | 20 | 25 |
| | | kW | 5.5 | 7.5 | 11 | 15 | 18.5 |
| | | Amps | 22 | 30 | 42 | 56 | 69 |
| | Heavy Duty 150% OL | HP | 5 | 7.5 | 10 | 15 | 20 |
| | | kW | 3.7 | 5.5 | 7.5 | 11 | 15 |
| | | Amps | 17 | 24 | 32 | 46 | 60 |
| 240V, 1Ø Input | Normal Duty 120% OL | HP | 3.0 | 5.0 | 7.5 | 10.0 | - |
| | | Amps | 11 | 16 | 23 | 30 | 37 |
| Rated Capacity (kVA) | | | 8.4 | 11.4 | 16.0 | 21.3 | 26.3 |
| Output frequency | | | 0-400Hz (V/Hz, Slip Compensation) 0-120Hz (IM Sensorless) 0-180Hz (PM Sensorless) | | | | |
| Output voltage (V) | | | 3-Phase 0-240 V | | | | |
| Rated Input | Voltage (V) | Three-Phase | 3-Phase 200-400 VAC (-15% -+10%) | | | | |
| | | Single-Phase | 1-Phase 240 VAC (-5% -+10%) | | | | |
| | Input frequency | Three-Phase | 50-60Hz (+/-5%) | | | | |
| | | Single-Phase | 60Hz (+/-5%) only | | | | |
| Rated Current (A) | | 23.7 | 32.7 | 46.4 | 62.3 | 77.2 | |
| Weight lbs (kg) | lbs | 7.3 | 7.3 | 7.3 | 10.1 | 15.6 | |
| | kg | (3.3) | (3.3) | (3.3) | (4.6) | (7.1) | |
| Heat Dissipation (W) | | | 180 | 248 | 330 | 451 | 600 |
| Degree of Protection | | | IP20, for UL type 1 add conduit box option. | | | | |

480V, 7.5HP - 30HP (5.5 - 22 kW)

| RSI-XXX-H2-2C | | | 007 | 010 | 015 | 020 | 025 | 030 |
|---------------------------|------------------------|--------------|---|-------|-------|-------|-------|------|
| 480V, 3Ø Input | Normal Duty 120% OL | HP | 7.5 | 10 | 15 | 20 | 25 | 30 |
| | | kW | 5.5 | 7.5 | 11 | 15 | 18.5 | 22 |
| | | Amps | 12 | 16 | 24 | 30 | 38 | 45 |
| | Heavy Duty 150% OL | HP | 5.0 | 7.5 | 10 | 15 | 20 | 25 |
| | | kW | 3.7 | 5.5 | 7.5 | 11 | 15 | 18.5 |
| | | Amps | 8 | 12 | 15 | 22 | 28 | 35 |
| 240V, 1Ø Input | Normal Duty 120% OL | HP | 3-5 | 5 | 10 | 10 | 15 | 20 |
| | | Amps | 6.8 | 9.2 | 14 | 17 | 22 | 26 |
| Rated Capacity (kVA) | | | 9.1 | 12.2 | 18.3 | 23.0 | 29.0 | 34.3 |
| Output frequency | | | 0-400Hz (V/Hz, Slip Compensation) 0-120Hz (IM Sensorless) 0-180Hz (PM Sensorless) | | | | | |
| Output voltage (V) | | | 3-Phase 0-480 V | | | | | |
| Rated Input | Voltage (V) | Three-Phase | 3-Phase 380-480 VAC (-15% -+10%) | | | | | |
| | | Single-Phase | 1-Phase 480 VAC (-5% -+10%) | | | | | |
| | Input frequency | Three-Phase | 50-60Hz (+/-5%) | | | | | |
| | | Single-Phase | 60Hz (+/-5%) only | | | | | |
| Rated Current (A) | | 12.2 | 17.5 | 26.5 | 33.4 | 42.5 | 50.7 | |
| Weight lbs (kg) | lbs | 7.3 | 7.3 | 7.5 | 10.1 | 10.6 | 16.5 | |
| | kg | (3.3) | (3.3) | (3.4) | (4.6) | (4.8) | (7.5) | |
| Heat Dissipation (W) | | | 172 | 237 | 322 | 451 | 615 | 740 |
| Degree of Protection | | | IP20, for UL type 1 add conduit box option. | | | | | |

H2 SERIES - INPUT AND OUTPUT SPECIFICATIONS

480V, 40 HP -125 HP (30 - 90 kW)

| RSI-XXX-H2-2C | | | 040 | 050 | 060 | 075 | 100 | 125 |
|---------------------------|------------------------|---|----------------------------------|------|------|-------|-------|-------|
| 480V, 3Ø Input | Normal Duty 120% OL | HP | 40 | 50 | 60 | 75 | 100 | 125 |
| | | kW | 30 | 37 | 45 | 55 | 75 | 90 |
| | | Amps | 61 | 75 | 91 | 107 | 142 | 169 |
| | Heavy Duty 150% OL | HP | 30 | 40 | 50 | 60 | 75 | 100 |
| | | kW | 22 | 30 | 37 | 45 | 55 | 75 |
| | | Amps | 41 | 55 | 67 | 81 | 106 | 136 |
| 240V, 1Ø Input | Normal Duty 120% OL | HP | 25 | 30 | 30 | 40 | 50-60 | 60 |
| | | Amps | 36 | 39 | 47 | 55 | 73 | 86 |
| Rated Capacity (kVA) | | | 46.5 | 57.1 | 69.4 | 82.0 | 108.2 | 128.8 |
| Output frequency | | 0-400Hz (V/Hz, Slip Compensation) 0-120Hz (IM Sensorless) 0-180Hz (PM Sensorless) | | | | | | |
| Output voltage (V) | | 3-Phase 0-480V | | | | | | |
| Rated Input | Voltage (V) | Three-Phase | 3-Phase 380-480 VAC (-15% -+10%) | | | | | |
| | | Single-Phase | 1-Phase 480 VAC (-5% -+10%) | | | | | |
| | Input frequency | Three-Phase | 50-60Hz (+/-5%) | | | | | |
| | | Single-Phase | 60Hz (+/-5%) only | | | | | |
| Rated Current (A) | | | 69.1 | 69.3 | 84.6 | 100.1 | 133.6 | 160.0 |
| Weight lbs (kg) | lbs | | 16.5 | 57.3 | 77.2 | 77.2 | 94.8 | 94.8 |
| | kg | | (7.5) | (26) | (35) | (35) | (43) | (43) |
| Heat Dissipation (W) | | | 880 | 1170 | 1443 | 1710 | 2090 | 2775 |
| Degree of Protection | | IP20, UL Type 1 achieved with optional conduit box | | | | | | |

480V, 150 HP -800 HP (110 - 500 kW)

| RSI-XXX-H2-2C | | | 150 | 200 | 250 | 300 | 400 | 500 | 650 | 800 |
|---------------------------|------------------------|---|----------------------------------|--------|--------|--------|-------|---------|---------|-------|
| 480V, 3Ø Input | Normal Duty 110% OL | HP | 150 | 200 | 250 | 300 | 400 | 500 | 650 | 800 |
| | | kW | 110 | 132 | 160 | 185 | 250 | 315 | 400 | 500 |
| | | Amps | 223 | 264 | 325 | 370 | 481 | 613 | 770 | 962 |
| | Heavy Duty 150% OL | HP | 125 | 150 | 200 | 250 | 300 | 400 | 500 | 600 |
| | | kW | 90 | 110 | 132 | 160 | 185 | 250 | 315 | 375 |
| | | Amps | 169 | 195 | 255 | 303 | 375 | 478 | 591 | 740 |
| Rated Capacity (kVA) | | | 170 | 201 | 248 | 282 | 367 | 467 | 587 | 733 |
| Output frequency | | 0-400Hz (V/Hz, Slip Compensation) 0-120Hz (IM Sensorless) | | | | | | | | |
| Output voltage (V) | | 3-Phase 0-480V | | | | | | | | |
| Rated Input | Voltage (V) | Three-Phase | 3-Phase 380-480 VAC (-15% -+10%) | | | | | | | |
| | Input frequency | Three-Phase | 50-60Hz (+/-5%) | | | | | | | |
| | Rated Current (A) | | | 215.1 | 254.6 | 315.3 | 358.9 | 469.3 | 598.1 | 751.3 |
| Weight lbs (kg) | lbs | | 123 | 123 | 164.7 | 164.7 | 264.6 | 409 | 409 | 584 |
| | kg | | (55.8) | (55.8) | (74.7) | (74.7) | (120) | (185.5) | (185.5) | (265) |
| Heat Dissipation (W) | | | 3960 | 4752 | 5600 | 6475 | 8500 | 10.4k | 13.2k | 16k |
| Degree of Protection | | 1HP~300HP (0.75 kW~185 kW): UL Open (IP20), UL Type 1 achieved with optional conduit box 400HP~800HP (250 kW~500 kW): UL Open (IP00), UL Type 1 achieved with optional conduit box | | | | | | | | |



H2 SERIES - SPECIFICATION DETAILS

| Items | | Description | | |
|----------------|---|---|-------------------------------|--|
| Control | Control method | V/F control, Sensorless Vector, (IM and PM*) with Torque Limits, Slip Compensation, *PM maximum 125HP, 480V | | |
| | Frequency settings resolution | Digital command: 0.01Hz Analog command: 0.06Hz (60Hz standard) | | |
| | Frequency | 1% of maximum output frequency | | |
| | V/F pattern | Linear, Square Reduction, User V/F | | |
| | Overload capacity (Normal Duty) | 1HP~125HP (0.75~90 kW) | Rated current: 120% 1 min. | |
| | | 150HP~800HP (110~500kW) | Rated current: 110% 1 min. | |
| | Overload Capacity (Heavy Duty) | 0.5HP~600HP (0.4~375kW) | Rated current: 150% 1 min. | |
| Torque boost | Manual torque boost, automatic torque boost | | | |
| Operation | Operation Type | | | |
| | Start/Stop | Keypad, Terminal strip, Communications | | |
| | Frequency settings | Analog type: -10 - 10V, 0-10 V, 0-20 mA (Main and Auxiliary) | | |
| | | Digital type: keypad, pulse train input | | |
| | | Communication: RS-485 (Modbus), Fieldbus Options | | |
| | Functions | Basic | Advanced | |
| | | Quick Start | Auto Tuning | |
| | | Accel/Decel Times | Sensorless Vector Control | |
| | | Start/Stop Operation | Torque Limits | |
| | | Frequency Reference | Slip Compensation | |
| | | Sources | PID Control | |
| | | Jog and Jog Start | Event Timer (RTC) | |
| | | Torque Boost | Energy Save Mode | |
| | | 2nd Source (HOA) | Multi-Stage Accel/Decel Times | |
| | | Auxiliary Frequency | Dwell Frequency Operation | |
| | | Reference | Regen Avoidance | |
| | | V/Hz. Control | VFD Fan Control | |
| | | V/Hz. Pattern | Timer | |
| | | Step Frequencies/ Fixed Speed | Pre-Heat | |
| | | Accel/Decel Pattern | Loss of Power | |
| | | Start Modes | KEB (Ride Through) | |
| | | Stop Modes | Safe Stop | |
| | | FWD/REV Run Prevention | Speed Search | |
| | | Auto Start | Braking | |
| | | Auto Reset/Restart | Power Braking | |
| | | Frequency Limits | DC Injection Braking | |
| | | Jump Frequencies | Flux Braking | |
| 3-Wire Control | | Stall Prevention | | |
| Fire Mode | | External Brake Control | | |

H2 SERIES - SPECIFICATION DETAILS

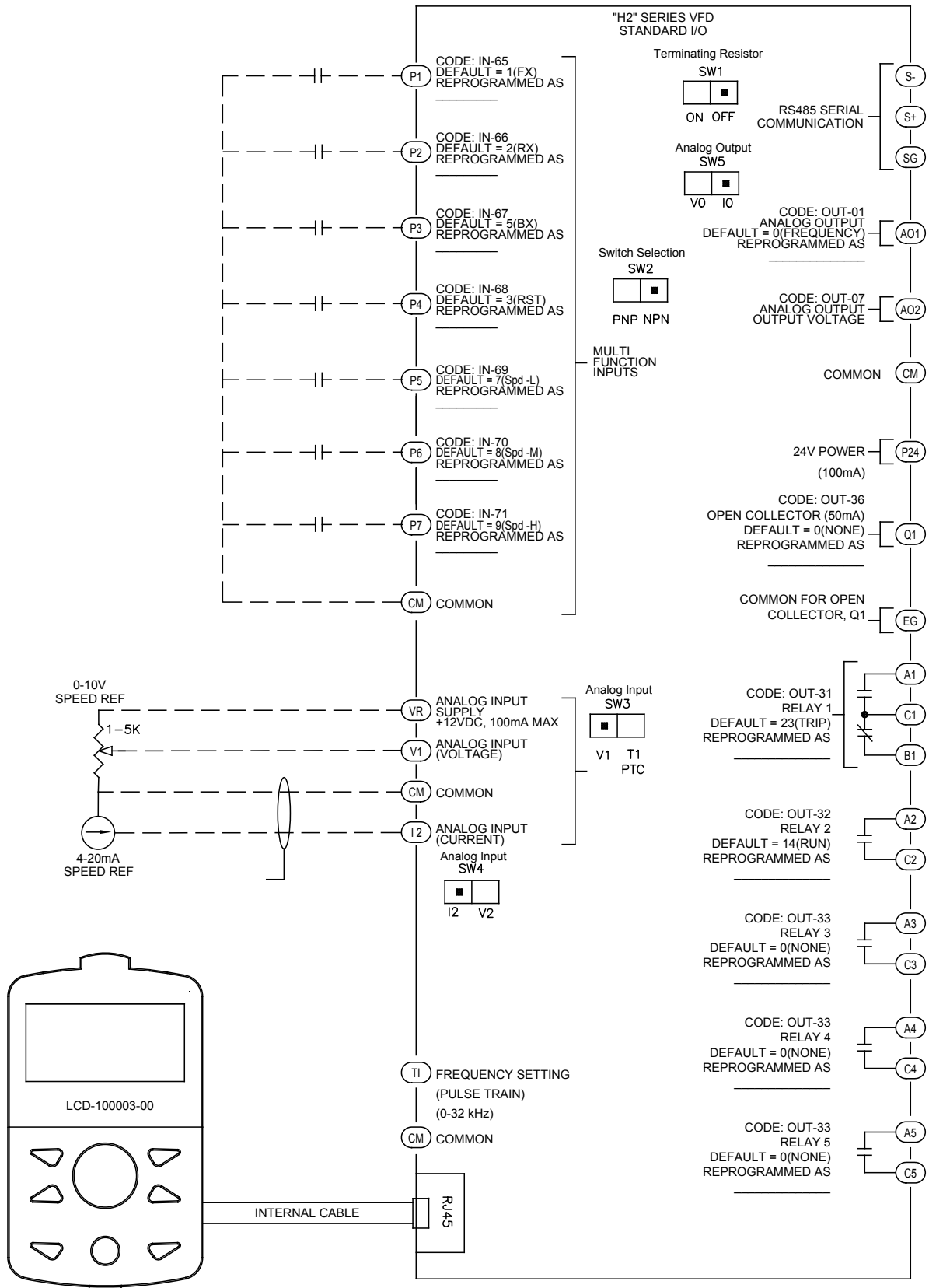
| Items | | Description | | |
|---------------------|---------------------|--|---|---|
| Operation | | H2 Pump Software | BACnet and Metasys-N2 | |
| | | MMC - Multi-Motor Control | Load Tuning Decel Valve Ramp | |
| | | Lead/Lag and Alternating | Time Event Scheduling | |
| | | Pre-Fill, Soft Fill | Flow Compensation | |
| | | Start and End Ramp | Energy Saving Operation | |
| | | Backspin Timer | | |
| | | Flow Compensation | | |
| | | Pump Clean Operation | | |
| | Input | Digital input terminals P1-P7 | Select PNP (Source) or NPN (Sink) mode. Functions of the digital inputs are set with parameters IN-65 through IN-71 | |
| | | Functions | Forward/Reverse Operation | 2nd Source - HOA/LOR Up/Down Operation |
| | | | Reset | Analog Hold |
| | | | External Trip | PID Disable |
| | | | Emergency Stop | Jog Start FWD/REV |
| | | | Output Disable (Bx) | Pre-Excite |
| | | | Jog | Timer Input |
| | | | Fixed Speed - Step | Fire Mode |
| | | | Frequency | Event Timer |
| | | | Run Enable/Disable (Safety) | Pre-Heat |
| | Pulse train | 0-30 kHz, Low Level: 0-0.8 V, High Level: 3.5-12 V | | |
| | Output | (1) Fault relay (Form C) | N.O. : Less than AC 250V 2A, DC 30V 3A N.O.: Less than AC 250V 1A, DC 30V 1A | |
| | | (4) Programmable relays (Form A) | N.O. (A-C): Less than 250V, 5A Less than DC 30V, 5A | |
| | | (1) Open collector terminal | Less than DC 26V, 50 mA | |
| | | Analog output | 0-12 Vdc (0-20 mA): Selectable Frequency, output current, output voltage, DC bus voltage, others | |
| | | Pulse train | Maximum 32 kHz | |
| | Protection Function | Trip | Motor Over Load | Fan Trip |
| Under Load | | | Internal Fan Trip | |
| Over Current 1 | | | Motor Over Heat | |
| Over Voltage | | | Lost Keypad | |
| Low Voltage | | | Fuse Open | |
| Low Voltage 2 | | | Pipe Broken | |
| Ground Fault | | | Broken Belt | |
| E-Thermal | | | Lost Command (Speed Ref) | |
| Out Phase Open | | | I/O Board Trip | |
| In Phase Open | | | | |
| Inverter Over Load | | | Fan/Pump related trips | |
| No Motor Trip | | | Damper Trip | |
| Inverter over Heat | | | Level Detected Trip | |
| Over Current 2 | | | MMC Interlock Trip | |
| External Trip | | | Pump Cleaning Trip | |
| Hardware Diagnostic | | | | |



H2 SERIES - SPECIFICATION DETAILS

| Items | | Description |
|---------------------------------|--------------------------|--|
| Protection Function | Alarm | Command loss, Motor overload/under load, Broken Belt, Inverter overload, DB (braking) rate alarm, Pump Clean, Pipe Broken, Fire Mode, Level Detection (LDT) |
| | Instantaneous Power Loss | Less than 8 ms: Continue Operation More than 8 ms: KEB and/or Auto restart operation |
| Structure / working environment | Cooling type | Forced fan cooling structure |
| | Protection structure | UL Open, IP20: 1HP~300HP (0.75kW~185kW) UL Open, IP00: 400HP~800HP (250kW~500kW) UL Type 1 with conduit box (option) installation (up to 800 HP) |
| | Ambient temperature | 14°F~104°F (-10°C~40°C) 2.5% Current derating up to 122°F (50°C) max. No ice or frost should be present |
| | Ambient humidity | Relative humidity less than 95% RH (to avoid condensation) |
| | Storage temperature | -4°F~149°F (-20°C~65°C) |
| | Surrounding environment | Prevent contact with corrosive gases, inflammable gases, oil stains, dust and other pollutants. 1HP~800HP (0.75 kW ~ 500 kW) Pollution Degree 2 |
| | Operation altitude | Maximum 3,280 ft (1,000m) above sea level for standard operation. Above derate the drive rated voltage and the rated output current by 1% for every 328 ft (100m) up to 13,123 ft (4,000m) max. |
| | Operation oscillation | Less than 1.0 G (9.8 m/sec ²) |
| Pressure | 10~15 PSI (70-106 kPa) | |

H2 SERIES - WIRING

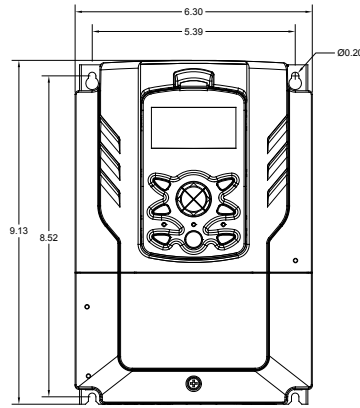




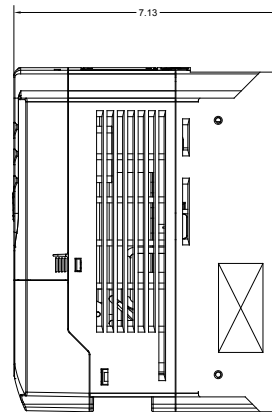
H2 SERIES - DRAWINGS

240V, 7.5 HP - 15 HP

480V, 7.5 HP - 15 HP



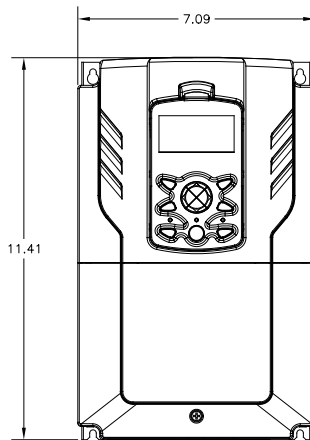
FRONT VIEW



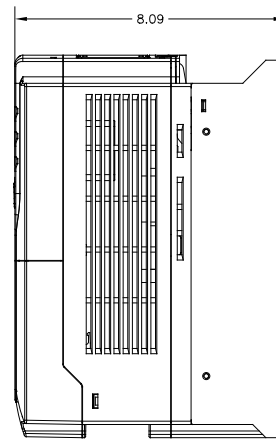
RIGHT SIDE VIEW

240V, 20 HP

480V, 20 HP - 25 HP



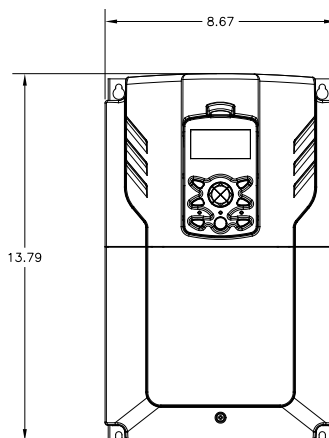
FRONT VIEW



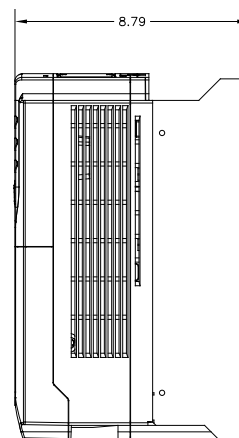
RIGHT SIDE VIEW

240V, 25 HP

480V, 30 HP - 40 HP



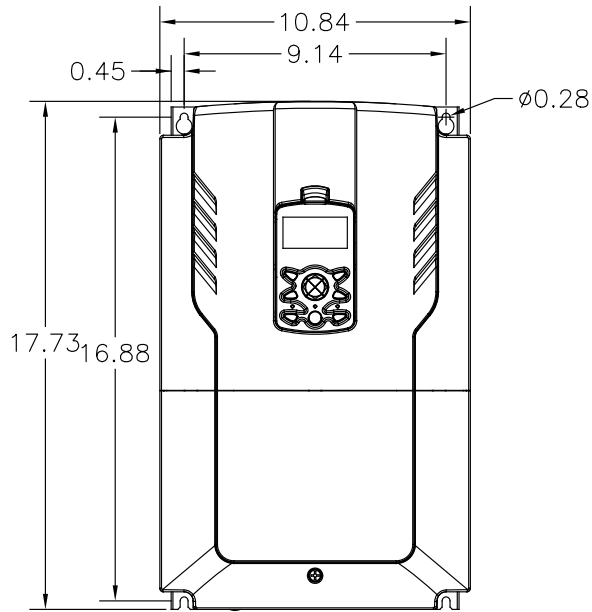
FRONT VIEW



RIGHT SIDE VIEW

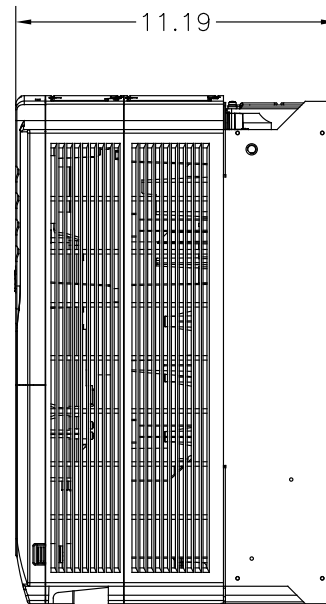
H2 SERIES - DRAWINGS

480V, 50 HP



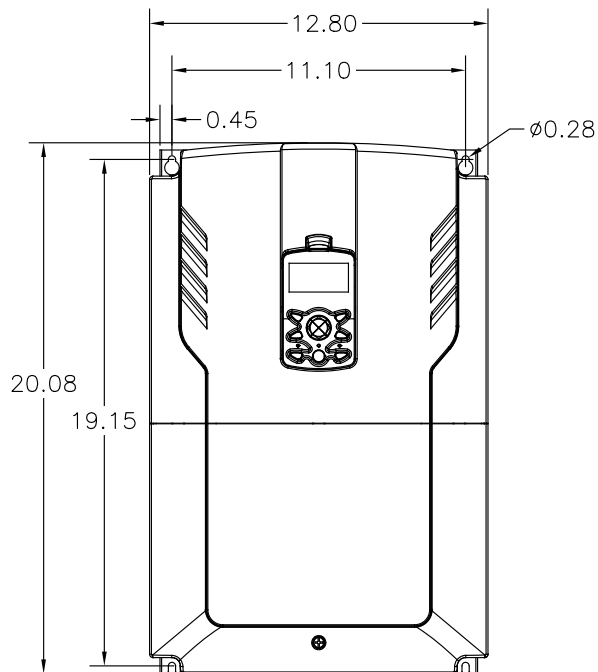
CONDUIT OPTION

FRONT VIEW

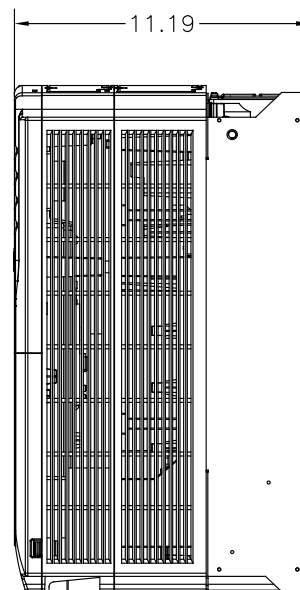


RIGHT SIDE VIEW

480V, 60 HP - 75 HP



FRONT VIEW

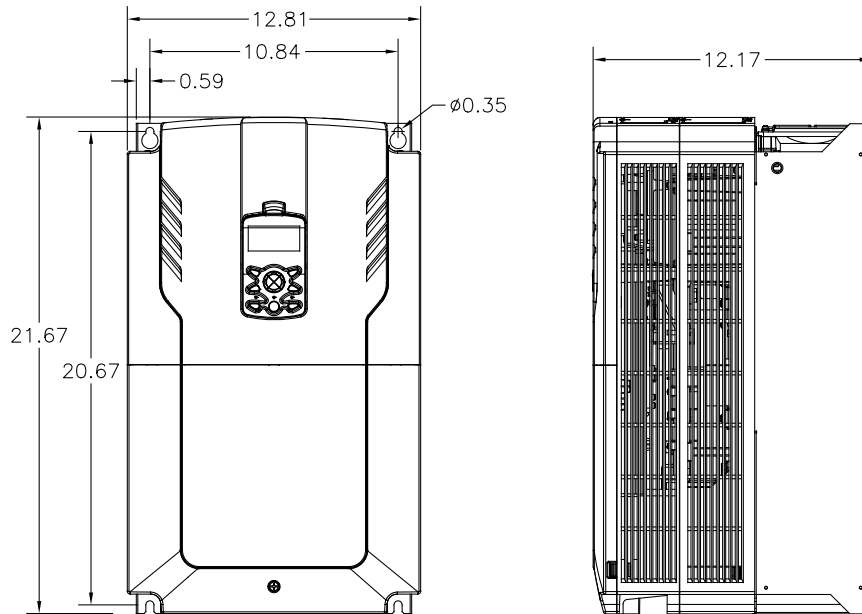


RIGHT SIDE VIEW



H2 SERIES - DRAWINGS

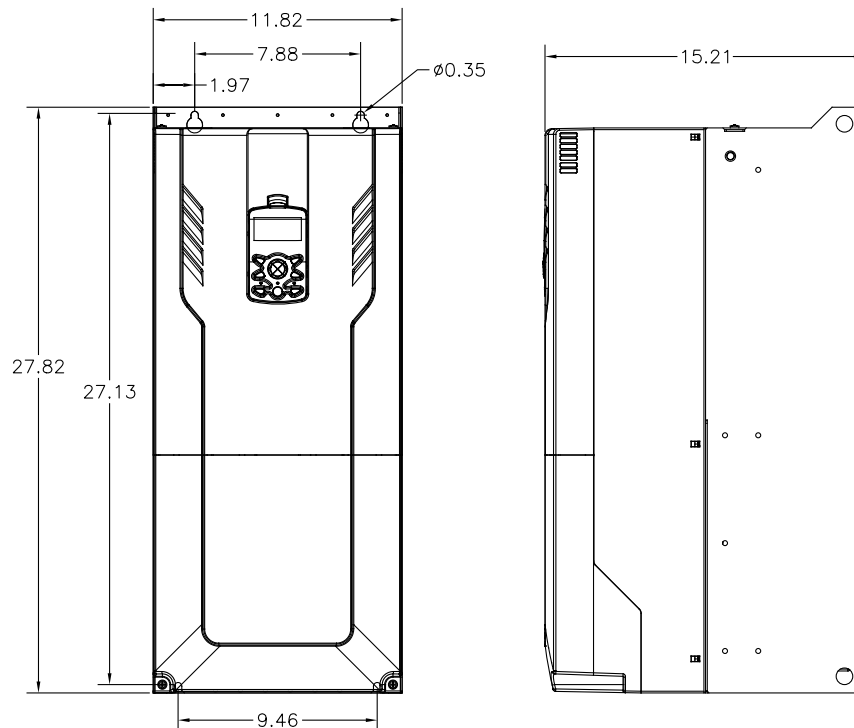
480V, 100 HP - 125 HP



FRONT VIEW

RIGHT SIDE VIEW

480V, 150 HP - 200 HP

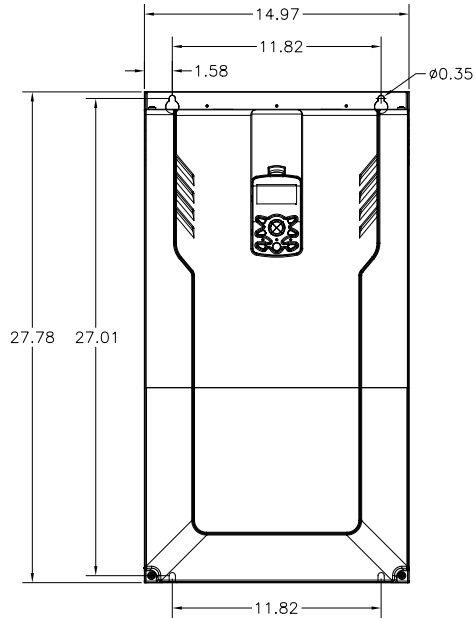


FRONT VIEW

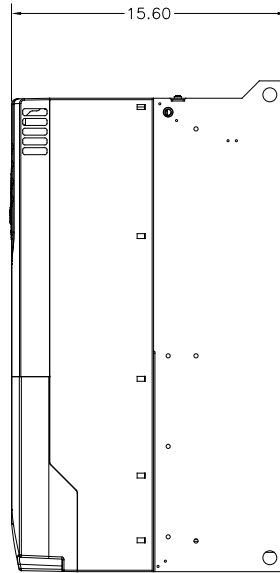
RIGHT SIDE VIEW

H2 SERIES - DRAWINGS

480V, 250 HP - 300 HP

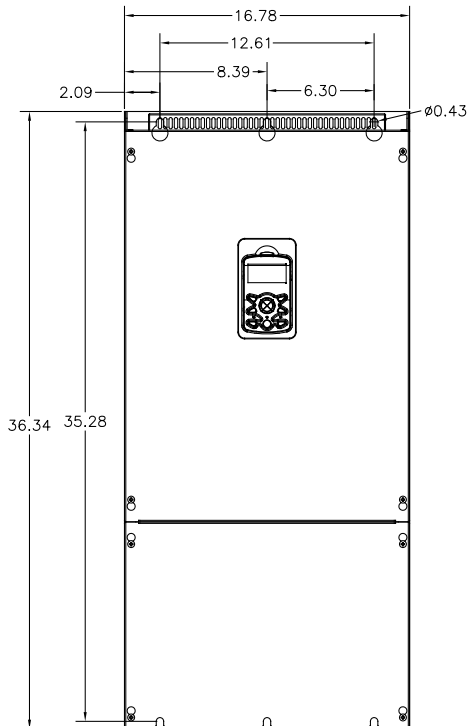


FRONT VIEW

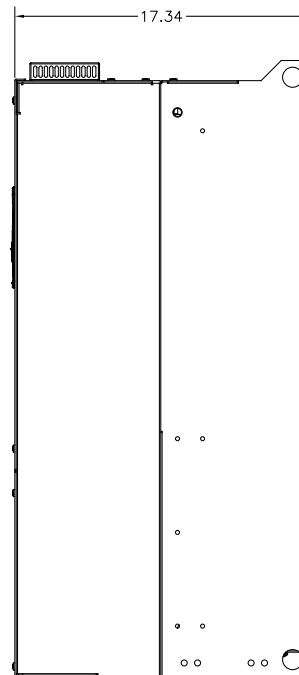


RIGHT SIDE VIEW

480V, 400 HP



FRONT VIEW

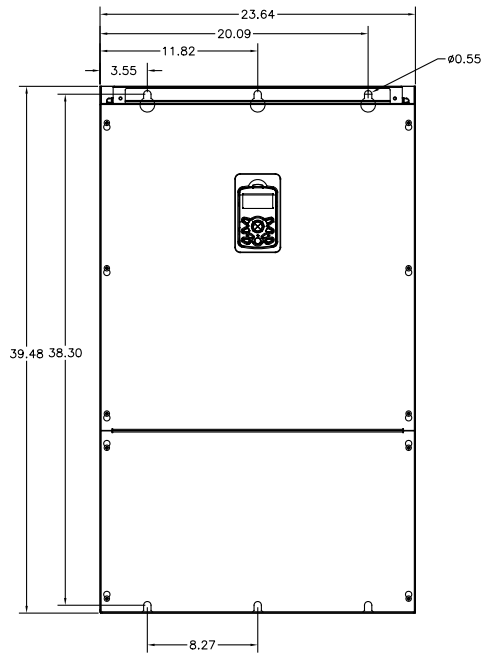


RIGHT SIDE VIEW

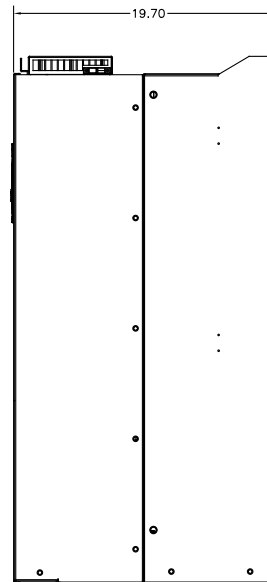


H2 SERIES - DRAWINGS

480V, 500 HP - 650 HP

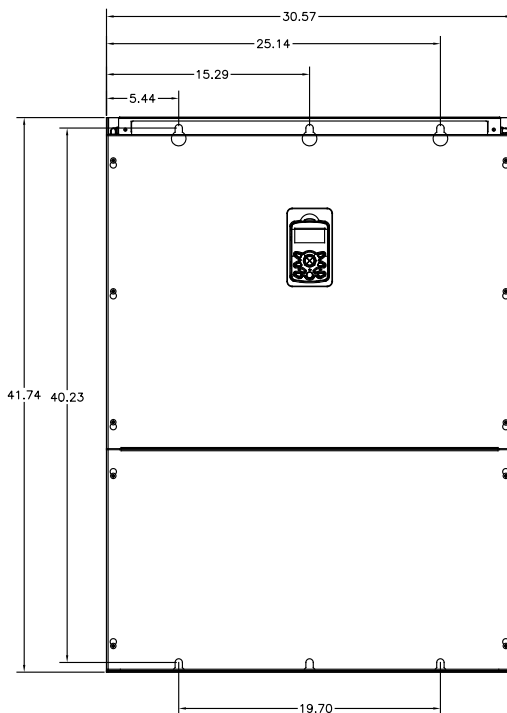


FRONT VIEW

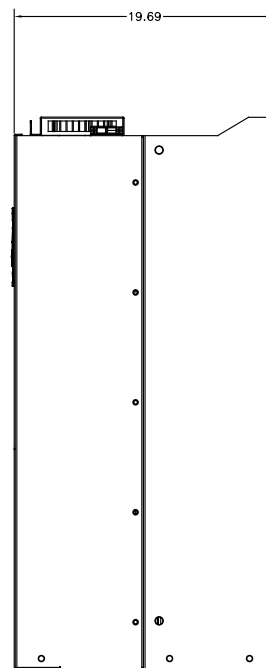


RIGHT SIDE VIEW

480V, 800 HP



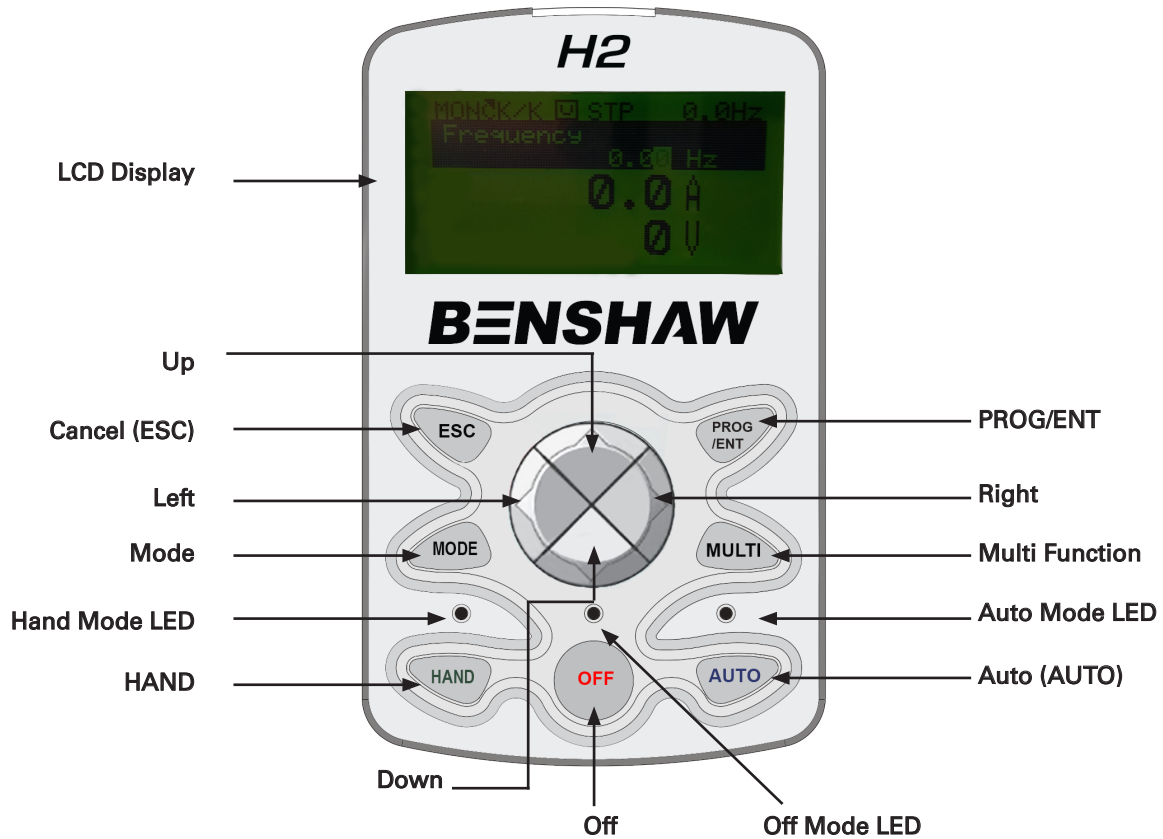
FRONT VIEW



RIGHT SIDE VIEW

H2 SERIES - PROGRAMMING

H2 Series - LCD Display/Keypad



| Key | Description |
|------------------------------|--|
| LCD Display | <ul style="list-style-type: none"> Displays Operating Mode Command Source Operating Status and four (4) monitor items |
| Cancel (ESC) | <ul style="list-style-type: none"> While in the Edit state, previously saved data are used When pressed while switching codes within the group, it is switched to the very first mode of group |
| Program (PROG/ENT) | <ul style="list-style-type: none"> When pressed once, it is changed to Parameter Edit state When pressed after changes, the changed data are saved |
| Left/Right | <ul style="list-style-type: none"> It is used to switch between groups (Cursor is used under the Edit state) |
| Up/Down | <ul style="list-style-type: none"> It is used to switch between codes and edit data values |
| Hand (HAND) | <ul style="list-style-type: none"> It is used to select Keypad (HAND) operation Speed control (HAND key UP/DOWN) |
| OFF | <ul style="list-style-type: none"> Off and Fault Reset |
| Multifunction (MULTI) | <ul style="list-style-type: none"> It is used to register user codes |
| Auto (AUTO) | <ul style="list-style-type: none"> It is used to select AUTO operation |
| MODE | <ul style="list-style-type: none"> Monitor Mode -> Parameter Mode -> Configure Mode |

BENSHAW H SERIES

The following comparison chart details the differences between H2 and H2P Series:

| Series | H2 | H2P |
|---|----|-----|
| Features | | |
| LCD Keypad with Hand/Auto/Off modes and Read/Write/Save | • | • |
| Quick Start Menu for easy basic commissioning | • | • |
| Constant Torque Macro for Quick Setup | • | |
| Pump and Fan Macros for Quick Setup | • | • |
| Multi-Pump/Multi-Motor Control Macro for Quick Setup | | • |
| User Defined Parameter Lists for custom applications | • | • |
| PID Control | • | • |
| V/Hz control: Linear, Squared, or User Defined | • | • |
| Sensorless Vector for Induction or PM motors | • | |
| Auto-Tuning: Stationary and Rotating | • | |
| Slip Compensation | • | |
| Auto and Manual Torque Boost | • | • |
| Dwell Operation | • | • |
| Torque Limiting Functions | • | • |
| Motor Brake Control | • | • |
| On/Off Delay Timers for Digital Inputs | • | • |
| Regen Prevention for cyclical regenerative loads | • | • |
| Flow Compensation | • | • |
| Lube Pump Operation | • | • |
| Pump Clean Operation | • | • |
| Start and End Ramp Optimization | • | • |
| Load Tuning | • | • |
| Level Detection | • | • |
| Pipe Break Detection | • | • |
| Pre-Heating Function | • | • |
| Timed Event Scheduling | • | • |
| Kinetic Energy Buffering/Power Loss Ride Through | • | • |
| Anti-Resonance/Skip Frequency | • | • |
| Fire Mode | • | • |
| Energy Saving | • | • |
| Speed Search/Flying Start | • | • |
| Auto-Restart/Auto-Fault Reset | • | • |
| Supply Power Transition | • | • |
| Backspin Delay Start | • | • |
| Multi-VFD Multi-Pump Control (lead, lag, standby, jockey) | | • |
| Single-VFD Multi-Pump Control | | • |



Benshaw's standard products are stocked in warehouses in the USA and Canada. . . ready for shipment to support your critical needs:

Benshaw.com

In the USA, call or fax

Phone: 412.968.0100

Fax: 412.968.5415

In Canada, call or fax

Phone: 519.291.5112

Fax: 519.291.2595

BenshawExpress.com

If you prefer to order online, BenshawExpress.com provides direct digital access to our complete inventory of standard controls, drives and spare parts - 24 hours a day, seven days a week, 365 days a year.

Save time with 24/7 online access at benshawexpress.com

Benshaw Express is a convenient, time-saving tool for Benshaw authorized distributors.

The Benshaw web store enables users 24/7 access to:

- Check price and availability
- Place orders
- Track open orders
- Obtain tracking for shipped orders
- View freight charges for recent shipments
- View invoices
- Customized levels of access

Access Benshaw Express by following the link on Benshaw.com or directly at BenshawExpress.com.

24/7 Technical Support

Benshaw is dedicated to providing comprehensive 24-hour-a-day, 7-day-a-week phone support. Benshaw provides repair, spare parts, field engineering, retrofit and training services, when and where you need us. You can count on our experienced team, backed by the latest diagnostics and repair tools and an extensive part inventory to support your operations.

Call 1.800.203.2416

24/7 Hotline Support from our operations in Pittsburgh and Listowel (Canada):

- Technical phone support
- Overnight parts shipment
- 24-hour service dispatch
- Coordination of all service capabilities

Repairs

Repairs are made on Benshaw equipment by trained, experienced personnel, using the latest diagnostic and test equipment.

Field Services are performed on-site by skilled technicians, engineers or complete team if needed, including:

- Start-up commissioning
- Field repairs
- Field analysis/data collection
- Preventative maintenance
- Retrofits

The Benshaw Product Line

A wide range of motor controls and drives is available.

- Solid-state starters fractional up to 30,000HP at 15kV
- LV AC drives to 800HP, MV AC drives to 10,000HP
- Electromechanical controls to 800A

Benshaw express is a 24/7 online inventory and order entry system for authorized Benshaw distributors:

- 24/7 shipment
- Air or truck delivery

Visit us online at
Benshaw.com and
benshawexpress.com,
or contact:

BENSHAW, Inc.

615 Alpha Drive
Pittsburgh, PA 15238
Phone: 412.968.0100
Fax: 412.968.5415

BENSHAW Canada

550 Bright Street East
Listowel, Ontario N4W 3W3
Phone: 519.291.5112
Fax: 519.291.2595

Specifications are subject to change without notice.

©2021 Benshaw, Inc. CAT-19000-04 printed in the USA



BENSHAW
Applied Motor Controls