HydroController - Programmable inverters

Variable speed inverters to suit a wide variety of applications

- **Varies Pump Speed to Match Demand**
- **Controls Pumps up to 11kw**
- **Single Phase Only, Three Phase Only and Single Phase to Three Phase Models Available**
- **Programmable Operating Parameters**
- **Built In Pump Protection (Dry Run, over/under Voltage, Low System Pressure, Output over-voltage)**
- **Energy Saving**
- **Programmable Restart Pressure**
- **Water or Air Cooled**
- **In-line or Wall Mount Fitting**
- **Vertical or Horizontal Mounting**

HCW (VHDR)
Water cooled, in-line mounted mode

HCA (VHDA)
Air cooled, wall mounted model

MAC 3
WATER MEETS TECHNOLOGY

- **Can Be Linked with 7 Other Pumps with HydroController Units via Integrated CanBus Interface**
  (Adv version only)
- **Automatically Assigns Another "Master" Controller if Original Fails**
  (Adv version only)

How Does It Work?

Mac3 ***HydroController*** series are a family of inverters *(variable frequency drives)*, designed for controlling water pumps. Dependant on the requirements, a selection of models are available to meet a variety of needs.

HydroController is available in two physical configurations:

- **HCW**, is a water cooled unit, mounted onto the installation pipes through the use of the built in 1¼" female BSP mountings. This unit contains a built-in pressure sensor and flow meter.
- **HCA**, is a air cooled unit, wall mounted near the point of installation. A external pressure sensor is supplied and is connected to the water pipes. This allows for the HydroController to be installed away from the pump, for convenience.

All of the operating parameters are customisable through the onboard interface with LCD display.

HydroController is supplied with either *Standard* (*Std*) or *Advanced* (*Adv*) capabilities.

HydroController Std is designed to control a single pump and optionally an additional fixed speed pump.

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HydroController Adv can communicate with up to eight other Pumps with HydroControllers via a CANbus, a robust serial interface with high immunity to interference.

The *Multimaster* mode allows ***HydroController Adv*** units to self-appoint the role of *'Master'*. Should the current master unit develop a fault, the master role will be taken by another unit and the system can continue to function as intended. This greatly improves fault tolerance and reduces maintenance and costs.

HydroController Advanced (Adv) features 2 extra output relays and 2 auxiliary digital (switch) inputs which can be configured as needed.

HydroController *Advanced (Adv)* is designed to be compatible with *Mac3 Multipress,* allowing the system to function with a commercial irrigation controller.

Models are divided into 3 voltage types, indicated in the product name with the following letters.

MM - Single phase 230VAC supply controlling a single phase 230VAC pump.

MT - Single phase 230VAC supply controlling a three phase 230VAC pump

TT - Three phase 230/400VAC supply controlling a 3 phase 230/400VAC pump

If this unit is to be installed with a cable length of more than 20 meters between the **HydroController** and a pump, a *Mac3 ACL Filter* should be added to eliminate harmonics created by high frequency reflectance in long cable lengths. Please ask when ordering to discuss if this would be necessary for a particular project.

	HydroController Models									
Product Code	**Type**	**Line Voltage**	**Pump Voltage**	**Phase Current**	**Max Pump Power**	**Float Switch Inputs**	**Inputs**	**Irrigation Controller Inputs**	**Outputs**	**Multiple Inverter Operation**
VHDR113 VHDA113	HCW - Water Cooled HCA - Air Cooled	~1 230VAC	~1 230VAC	8A	1.1kw (1.5hp)	1			1	No
VHDR143 VHDA143	HCW - Water Cooled HCA - Air Cooled						2	4	3	Yes
VHDR114 VHDA114	HCW - Water Cooled HCA - Air Cooled			12A	1.6kw (2.2hp)				1	No
VHDR144 VHDA144	HCW - Water Cooled HCA - Air Cooled						2	4	3	Yes
VHDR212 VHDA212	HCW - Water Cooled HCA - Air Cooled		~3 230VAC	10A	2.2kw (3hp)				1	No
VHDR242 VHDA242	HCW - Water Cooled HCA - Air Cooled						2	4	3	Yes
VHDR311 VHDA311	HCW - Water Cooled HCA - Air Cooled	~3 230/400VAC		6A					1	No
VHDR341 VHDA341	HCW - Water Cooled HCA - Air Cooled						2	4	3	Yes
VHDR312 VHDA312	HCW - Water Cooled HCA - Air Cooled			11A	4kw (5.5hp)				1	No
VHDR342 VHDA342	HCW - Water Cooled HCA - Air Cooled						2	4	3	Yes
VHDA343	HCW - Water Cooled HCA - Air Cooled			15A	5.5kw (7.5hp)					
VHDA345	HCW - Water Cooled HCA - Air Cooled			18A	7.5kw (10hp)					
VHDA346	HCW - Water Cooled HCA - Air Cooled			25A	11kw (15hp)					

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Technical Specifications HydroController TT Std / Adv		
Physical		
Dimensions	HCW 3 – 2.2Kw (3hp) Model	170x190x360 mm
	HCW 3 – 4Kw (5.5hp) Model	170x190x360 mm
	HCA 3 – 4Kw (5.5 hp) Model	170x243x350 mm
	HCA 5.5Kw (7.5 hp) Model	185x243x390 mm
Weight	HCW 3 – 2.2Kw (3hp) Model	4 Kg
	HCW 3 – 4Kw (5.5hp) Model	4 Kg
	HCA 3 – 4Kw (5.5hp) Model	5.6 Kg
	HCA 5.5Kw (7.5hp) Model	8 Kg
Mounting	HCA Model	Wall Mounted Vertical, In Free Air
	HCW Model	Any Position, In-Line 1¼" Female
Cooling	HCA Model	Air
	HCW Model	Water
Ambient Temperature		5°C – 40°C
Display		2x16 LCD
Ingress Protection		IP65
Electrical		
Power Supply		400Vac 50 / 60Hz Three Phase
Absorbed Power (P1)	2.2Kw (3 hp) Model	3.3kW Max.
	4Kw (5.5 hp) Model	6kW Max.
	5.5Kw (7.5 hp) Model	8.2kW Max.
Maximum Pump Power (400Vac Three Phase) (P2)	2.2Kw (3 hp) Model	2.2kW
	4Kw (5.5 hp) Model	4kW
	5.5Kw (7.5 hp) Model	5.5kW
Output Frequency		10 - 60 Hz (Resolution 0.01Hz)
Maximum Phase Current	HCW 2.2 - 4Kw (3 – 5.5hp) Model	6A
	HCA 2.2 - 4Kw (3 – 5.5 hp) Model	11A
	HCA 5.5Kw (7.5 hp) Model	15A
Acceleration Time		0.7 – 5 Seconds
Deceleration Time		0.7 – 5 Seconds
Programmable Pressure Range		0.3 – 7.5 Bar (±0.2 Bar)
Maximum Overpressure For HCW Models		12 Bar
Electrical Safety		EN60730
Electromagnetic Compatibility		EN61000-6-3 EN61000-6-4
Pump Protections		Dry run, Over/Under-voltage, Short Circuit, Over-current, Over Temperature, Pressure Failure, Sensor Failure, Water Hammer

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Technical Specifications HydroController MT Std / Adv		
Physical		
Dimensions	HCW Model	170x190x360 mm
	HCA Model	180x245x390 mm
Weight	HCW Model	2500g
	HCA Model	5600g
Mounting	HCA Model	Vertical, On Wall In Free Air
	HCW Model	Any Position, In-Line 1¼" Female
Cooling	HCA Model	Air
	HCW Model	Water
Ambient Temperature		5°C – 40°C
Display		2x16 LCD
Ingress Protection		IP65
Electrical		
Power Supply		230Vac 50 / 60Hz Single Phase (From 170 – 270Vac)
Maximum Pump Power (230Vac Three Phase) (P2)		3.3kW Max.
		1.5kW
		2.2kW
Output Frequency		10 - 60 Hz (Resolution 0.01Hz)
Maximum Phase Current		8A
		10A
Acceleration Time		0.7 – 5 Seconds
Deceleration Time		
Programmable Pressure Range		0.3 – 7.5 Bar (±0.2 Bar)
Maximum Overpressure For HCW Models		12 Bar
Electrical Safety		EN60730
Electromagnetic Compatibility		EN61000-6-3 EN61000-6-4
Pump Protections		Dry run, Over/Under-voltage, Short Circuit, Over-current, Over Temperature, Pressure Failure, Sensor Failure, Water Hammer

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HydroController - Programmable inverters

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Technical Specifications HydroController MM Std / Adv		
Physical		
Dimensions	HCW Model	170x190x360 mm
	HCA Model	180x245x390 mm
Weight	HCW Model	2500g
	HCA Model	5600g
Mounting	HCA Model	Vertical, On Wall In Free Air
	HCW Model	Any Position, In-Line 1¼" Female
Cooling	HCA Model	Air
	HCW Model	Water
Ambient Temperature		5°C – 40°C
Display		2x16 LCD
Ingress Protection		IP65
Electrical		
Power Supply		230Vac 50 / 60Hz Single Phase (From 170 – 270Vac)
Absorbed Power (P1	1.1Kw (1.5hp) Model	1.6kW Max.
	1.6Kw (2.2 hp) Model	2.3kW Max.
Maximum Pump Power (230Vac Single Phase) (P2)	1.1Kw (1.5hp) Model	1.1kW
	1.6Kw (2.2 hp) Model	1.6kW
Output Frequency		10 - 60 Hz (Resolution 0.01Hz)
Maximum Phase Current	1.1Kw (1.5hp) Model	8A
	1.6Kw (2.2hp) Model	12A
Acceleration Time		0.7 – 5 Seconds
Deceleration Time		
Programmable Pressure Range		0.3 – 7.5 Bar (±0.2 Bar)
Maximum Overpressure For HCW Models		12 Bar
Electrical Safety		EN60730
Electromagnetic Compatibility		EN61000-6-3 EN61000-6-4
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