

Profiler Series AC Drive Installation Manual

Please read and understand this information fully before installing or operating the drive. Retain these instructions for future reference. Do not proceed with the installation unless you are professionally qualified to do so.

SAFETY & ENVIRONMENT

This product operates with high voltages, it incorporates high temperature components, and it causes rapid movement of powerful machinery. It is essential that equipment that incorporates this product is designed, constructed, tested and maintained by qualified personnel to ensure safe reliable operation.

This product is designed as a component to be used in a variable speed AC induction motor control scheme and it must be installed in a suitable electrical protective enclosure together with additional safety and control components. It is suitable only for installation in a safe, clean, non-hazardous environment. It is assumed that the installer will take full responsibility for ensuring that this product and the installation meet all of the applicable codes and safety standards. Failure to follow these directions along with standard safety procedures may lead to injury or death.

WARNING - DO NOT REMOVE THE DRIVE COVER OR TOUCH EXPOSED COMPONENTS

Risk of electrical shock - dangerous voltages are present inside the drive during operation and for at least 10 minutes after power is removed. Do not touch the terminal blocks or wire the drive unless power is disconnected. Mount the

drive properly so as to prevent electrical shock.

Risk of burns - high temperatures exist within the drive during operation and for at least 10 minutes after power is removed. Do not touch the exposed heat sink which can operate at temperatures in excess of 90°C (200°F).

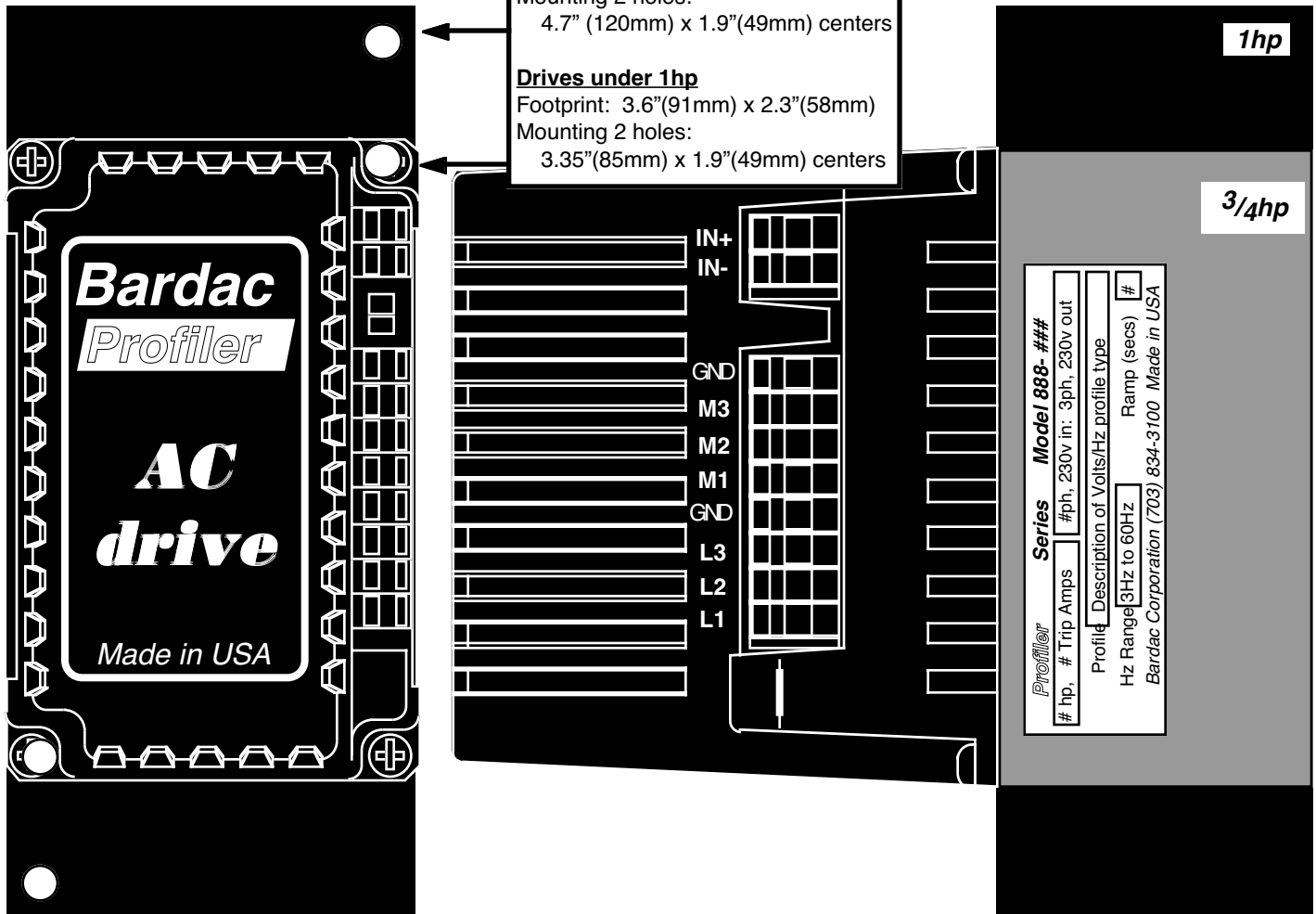
RATING & CONFIGURATION

Important

This product can only be factory configured. Please check the specification before operation to ensure that it is suitable for the application. The complete specification is uniquely identified by the model number.

The drive configuration can incorporate a very large number of parameter variations and optional features to ensure optimum performance in a wide variety of applications. If you think the specification will not be suitable for your application, please call the factory immediately for assistance before proceeding ... (703) 834-3100.

The specification is identified by the Model number on the terminal block side of the drive as shown on page 1. (see standard specifications on back page)



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RECEIVING

Unpack the drive and verify that the part number on the label matches the purchase order and/or packing slip. Check the drive for physical damage caused by shipping.

Contents:

1. Profiler AC drive unit
2. Mounting screws (qty. 2)
3. Manual (HG500547)

INSTALLATION

Mounting

The drive should be mounted to a vertical steel or aluminum panel in an electrical enclosure using the two screws provided (#6-32 x 2.5" long). The hole center dimensions are shown on page 1 and the drawing is suitable for use as a template when center punching the mounting hole positions. Note that the mounting holes are in different locations for 1hp and all others.

To mount the drive, hold it by the cooling fin. Ensure that the cooling fins are oriented vertically and that air can flow freely over them. Allow at least 3" clear space at the sides of the drive and at least 4" above and below. To maintain the full rating of the drive it must be mounted on a 1/8" thick steel or aluminum panel at least 8" square using the mounting screws provided.

Enclosures must have adequate volume or airflow to maintain the air entering the drive at between 0°C (32°F) and 50°C (122°F). In many cases, an enclosure fan or other cooling device will be required.

Do not mount the drive on or near combustible materials. Ensure that the drive is installed and oriented properly prior to wiring and operation. Prevent dust, wires, metal chips or other foreign bodies from dropping into the drive during installation and wiring.

Do not operate or store the drive in a hostile environment. Refer to the specifications section for environmental limits.

Do not stand or rest objects on the drive. Do not drop the drive or subject it to impacts.

Motor

It is most important that the motor is properly rated for the drive and the application. To ensure reliable operation, the motor should be rated for inverter duty and be capable of running continuously over the required speed and torque range.

Wiring

Use copper wire size 14AWG rated for a minimum of 75°C, 600volts. The drive must be properly grounded (earthed) during operation. Ground (earth) the drive prior to making any other connections.

The L1, L2 and L3 terminals should be connected to the incoming three phase line via a circuit breaker or fuses. The M1, M2 and M3 terminals should be connected to the motor. A ground terminal is provided for both the incoming line and the outgoing motor wires and these grounds should both be connected. Be careful not to interchange or intermix the line and motor wires as this can damage the drive.

Motor rotation direction is determined by the M1, M2 and M3 connections; swapping any two connections will reverse the direction of rotation. Swapping the line connections (L1, L2 and L3) has no effect on motor rotation direction. Do not use a contactor or switch to swap connections while the drive is operating as this can cause the drive to trip.

Speed Setpoint

The IN+ and IN- terminals should be connected to the controlling 4–20mA current signal. Ensure that the polarity is correct. Use twisted pair wire for the control

signal and separate it from the power wiring to reduce electrical noise pickup. Be careful not to connect a voltage signal directly to the current input. This is a low-impedance input and if the input current exceeds 35mA, the drive will be damaged.

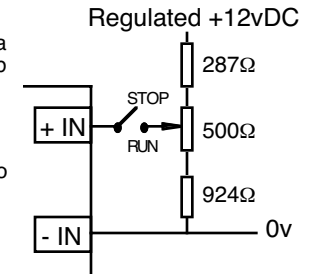
Alternative Speed Setpoint Configurations

Speed Setpoint From Pot.

This configuration is available as a panel mounting assembly with knob and dial

(Model Number POTKIT4-20)

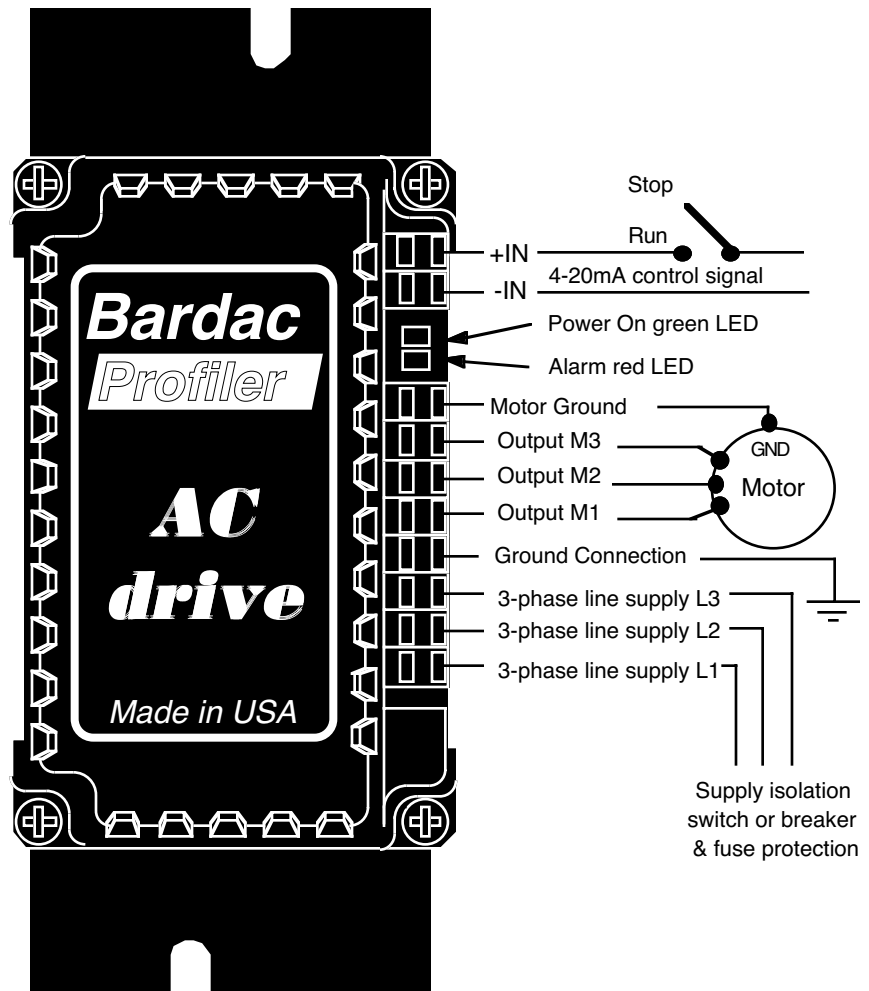
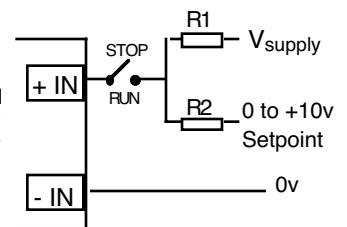
Note: 12v supply must be able to source 23mA.



Speed Setpoint From 0-10v Signal.

V _{supply}	10v	12v	15v
R1	432Ω	604Ω	866Ω
R2	464Ω	487Ω	499Ω

Note: 0 to 10v setpoint signal must be able to both source and sink 10mA. V_{supply} must be able to source 14mA.



Protection and Testing

Do not perform high voltage testing (e.g. using a megger) while the drive is connected. The drive contains semiconductors that will be damaged by high voltages.

Use a branch circuit protection circuit breaker or fuses as required by local codes to protect in the case of a fault.

Ensure that the voltage supplied to the drive is within the range indicated on the label. Application of too low a voltage will prevent correct operation; application of too high a voltage may damage or destroy the drive.

OPERATION

The drive is controlled by the isolated 4-20 mA control signal. When the control signal is below approximately 4 mA, the drive is stopped. As the control signal varies from approximately 4 mA to 20 mA, the output frequency and voltage vary over the output range specified on the label.

There are no other user adjustments on the drive.

WARNINGS



Read and understand these instructions completely before attempting to install or operate the drive.



Use only qualified personnel to install and maintain this product to ensure safe, reliable operation.



Do not attempt to remove the unit cover or to otherwise access or contact the internal parts of the drive.



Wait for 10 minutes after removing power from the unit before changing external wiring connections.



Always ground motor and drive properly.



Do not connect power if there is any sign of damage to the unit.



Do not connect power factor correction capacitors or RFI filters to the output of the drive.



Always check the installation design and wiring before connecting power.



Always ensure that power is removed from the unit if there are any circumstances where injury or damage could arise from unexpected operation of the equipment.



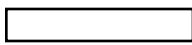
Always determine that operation of the drive at its maximum speed will not exceed the safe limits of the motor and driven equipment.



Always disconnect the drive before using a megger to test the motor. The megger voltage will damage the drive.

INDICATORS & ALARMS

The drive has two LED's housed in a small package between the power terminal blocks and the control signal terminal blocks. The green LED indicates that power is applied to the drive and the red LED indicates fault conditions as follows:



OFF

Drive OK



ON

Severe Under Voltage. The DC link voltage is below the level at which drive operation can be guaranteed. The outputs are shutdown and the microprocessor is reset.



CONTINUOUS FLASH

Under Voltage. The drive has detected a low voltage condition on the DC Link and has shut down its output. This is a temporary condition and the drive will restart as soon as the DC Link voltage rises to an acceptable level.



ON/OFF

Motor Protection. The drive has detected a persistent overload condition and has shut down to protect the motor. This fault is latched and can be cleared by reducing the

setpoint input to below 4 mA.



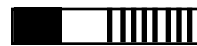
OFF/ON/FLASH

Over Temperature. The drive has detected an internal over temperature condition and has shutdown to protect itself. This fault is latched and can be cleared by reducing the setpoint input to below 4 mA.



ON/FLASH

Over Voltage. The drive has detected a high voltage on the DC Link and has shutdown to protect itself. This fault is latched and can be cleared by reducing the setpoint input to below 4 mA.



ON/OFF/FLASH

Over Current. The drive has detected a severe over current or short circuit and has shutdown to protect itself. This fault is latched and can be cleared by reducing the setpoint input to below 4 mA.

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SPECIFICATIONS

RATING: 3-PHASE INPUT DRIVES

Input power supply,	3-Phase, 200-250 Volts, 50/60Hz				
Max. Output Voltage,	3-Phase, 230 Volts				
Rated Horsepower	1.0hp (0.75KW)	0.75hp (0.5KW)	0.5hp (0.4KW)	0.33hp (0.25KW)	0.25hp (0.2KW)
Full Load Current Rating	4.2 amps	3.2 amps	2.2 amps	1.6 amps	1.4 amps
Input Line Current At Full Load	6.3 amps	4.8 amps	3.3 amps	2.4 amps	2.1 amps
Volts/Hertz Profile:					
Variable Torque Model #	888-V51	888-V41	888-V31	888-V21	888-V11
Constant Torque Model #	888-C51	888-C41	888-C31	888-C21	888-C11
CUSTOM	if the profile is "CUSTOM", the full specification will be given on a separate specification sheet				
Dimensions, inches (mm):					
Height	5.1" (130mm)	3.6" (91mm)	3.6" (91mm)	3.6" (91mm)	3.6" (91mm)
Width	2.3" (58mm)	2.3" (58mm)	2.3" (58mm)	2.3" (58mm)	2.3" (58mm)
Depth	4.8" (122mm)	4.8" (122mm)	4.8" (122mm)	4.8" (122mm)	4.8" (122mm)
Weight, lbs (Kg)	1.2 lbs (0.55Kg)	1.0 lbs (0.45Kg)	1.0 lbs (0.45Kg)	1.0 lbs (0.45Kg)	1.0 lbs (0.45Kg)

RATING: SINGLE PHASE INPUT DRIVES

Input power supply,	Single Phase, 200-250 Volts, 50/60Hz				
Max. Output Voltage,	3-Phase, 230 Volts				
Rated Horsepower	1.0hp (0.75KW)	0.75hp (0.5KW)	0.5hp (0.4KW)	0.33hp (0.25KW)	0.25hp (0.2KW)
Full Load Current Rating	4.2 amps	3.2 amps	2.2 amps	1.6 amps	1.4 amps
Input Line Current At Full Load	8.4 amps	6.4 amps	4.4 amps	3.2 amps	2.8 amps
Volts/Hertz Profile:					
Variable Torque Model #	888-V512	888-V412	888-V312	888-V212	888-V112
Constant Torque Model #	888-C512	888-C412	888-C312	888-C212	888-C112
CUSTOM	if the profile is "CUSTOM", the full specification will be given on a separate specification sheet				
Dimensions, inches (mm):					
Height	5.1" (130mm)	3.6" (91mm)	3.6" (91mm)	3.6" (91mm)	3.6" (91mm)
Width	2.3" (58mm)	2.3" (58mm)	2.3" (58mm)	2.3" (58mm)	2.3" (58mm)
Depth	5.8" (148mm)	5.2" (131mm)	5.2" (131mm)	4.8" (122mm)	4.8" (122mm)
Weight, lbs (Kg)	1.3 lbs (0.60Kg)	1.1 lbs (0.50Kg)	1.1 lbs (0.45Kg)	1.0 lbs (0.45Kg)	1.0 lbs (0.45Kg)

FEATURES

Over load trip level	100% to 150% Full Load Over 150% Full Load Motor short circuit	Drive trips within 60 seconds or at thermal limit of the drive. Drive trips within 6 seconds or at thermal limit of the drive. Drive trips instantly
Output Frequency Range	3Hz to 60Hz Standard	(Specials up to 180Hz)
Accel/Decel Ramp Time (secs)	5 seconds	(Specials 0.1 to 1000 seconds)
Ambient temperature	Operation: 0°C to 50°C	Short term storage: -20°C to 60°C
Environment	Protected, clean, dry, non-hazardous, pollution degree 2 environment	
Humidity	Max. 90% RH non-condensing	
Altitude	Max. 3300 feet (1000M) above sea level, derate 1% per 330 feet (100M) above 3300 feet (1000M)	
Control Input	Isolated 4 to 20mA signal for 5% to 100% output frequency. Below 4 mA drive turns off.	
Protection	Drive trips and shows alarm indication for DC link under & over voltage, drive over temperature, motor overload, output short circuit. (see Alarm Indications, page 3)	

For worldwide sales and service ...

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