



www.motorcontrolwarehouse.co.uk

Document number	MCW-HVAC-002
Revision	0.0
Author	Gareth Lloyd
Product	Optidrive HVAC

Title	HVAC parameter P1-13 = 1 Set-up Guide
--------------	---------------------------------------

Summary	This document gives set-up information on the Optidrive HVAC parameter P1-13 = 1 (default setting)
----------------	--

NOTE: Please read in conjunction with the Optidrive HVAC User Guide.

This set-up guide gives information on the easiest way to set up the HVAC for basic fan and pump motor control. This set up is from default settings - as the drive comes out of the box from the factory. This set-up guide also assumes a standard 50Hz AC induction motor is being used.

Parameter settings

In most cases, the default maximum and minimum frequencies and motor rated voltage do not need adjusting because the default settings are OK for the majority of applications and motors.

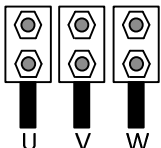
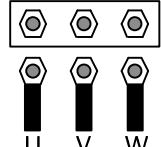
The acceleration and deceleration times may need some adjustment depending on the application and load type/inertia.

The motor rated current (P1-08) must be set to the motor nameplate current to provide motor protection in case of motor overload.

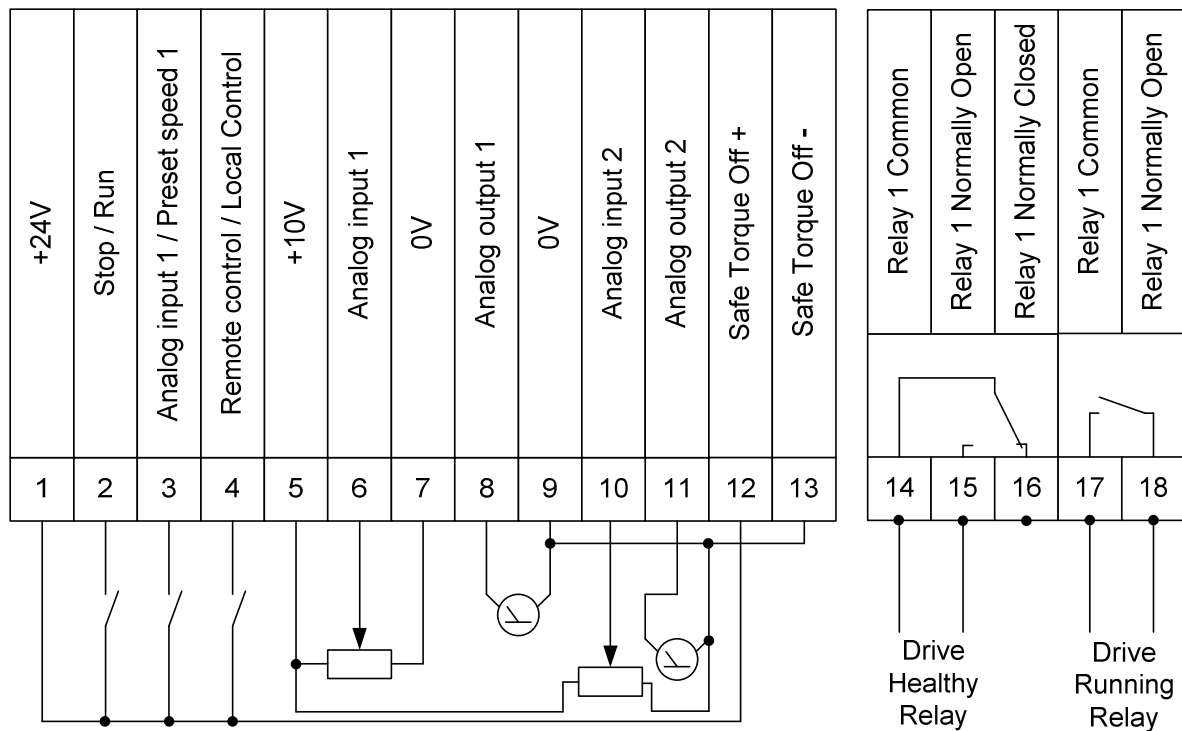
In the majority of applications, the motor rated speed (P1-10) does not need setting.

Parameter	Description	Default setting	Description
P1-01	Maximum frequency	50Hz	Maximum frequency/speed the motor will run at: 2 pole motor: 3000rpm 4 pole motor: 1500rpm 6 pole motor: 1000rpm 8 pole motor 750rpm
P1-02	Minimum frequency	0Hz	Minimum frequency/speed the motor will run at (0 rpm)
P1-03	Acceleration time	30 seconds	Acceleration time from 0Hz to 50Hz
P1-04	Deceleration time	30 seconds	Deceleration time from 50Hz to 0Hz
P1-07	Motor rated voltage	230V/400V	Set to the motor nameplate voltage
P1-08	Motor rated current	Drive dependant	Set to the motor nameplate current
P1-14	Advanced parameter access	0	Set to 101
P2-01	Preset speed 1	50.0	Set to the desired frequency/speed

NOTE: Please check that the motor terminal box connections are correct for the voltage you are applying to the motor:

Incoming Supply Voltage	Motor Nameplate Voltages	Connections	
230V	230V / 400V	Delta Δ	
400V	400V / 690V		
400V	230V / 400V	Star \star	

Control terminal connections



Terminal 1

+24VDC User supply

Terminal 2: Run (Enable)

Switch Open: Drive stopped

Switch Closed: Drive running / enabled

Terminal 3: Analog input 1 / Preset speed 1

Switch Open: Motor speed controlled by analog input 1

Switch Closed: Motor speed controlled by the setting of preset speed 1 (P2-01)

Terminal 4: Remote control / Local control

Switch Open: Analog input 1 speed reference selected

Switch Closed: Analog input 2 speed reference selected

Terminal 5: +10V

Speed potentiometer +10V reference

Terminal 6: Analog input 1

Speed potentiometer wiper: 0 to +10V

Terminal 7: 0V

Speed potentiometer 0V reference

Terminal 8: Analog output 1 - speed

0 to +10VDC output proportional to motor speed (0 to 50Hz = 0 to +10V)

Terminal 9: 0V

0V reference

Terminal 10: Analog input 2

Speed potentiometer wiper: 0 to +10V

Terminal 11: Analog output 2 – Motor current

0 to +10VDC output proportional to motor current (0 to 200% of P1-08 = 0 to +10V)

Terminal 12: Safe Torque Off +

Connect to terminal 1 (+24V)

Note: Normally closed contacts can be placed in series between the +24V and STO+ in order to inhibit the drive when the contacts open.

Terminal 13: Safe Torque Off -

Connect to terminal 7 or 9 (0V)

Terminals 14, 15 & 16: Drive Healthy relay

Terminals 14 & 15 Open: Drive Fault

Terminals 14 & 15 Closed: Drive Healthy

Terminals 17 & 18: Drive Running Relay

Terminals 17 & 18 Open: Drive Not Running

Terminals 17 & 18 Closed: Drive Running

Analog input 1 & 2 reference

In many HVAC applications, the analog reference is a mA reference rather than a voltage reference.

The reference type for analog input 1 (terminal 6) can be selected by changing parameter P2-30 as follows:

Parameter value	Decription
U 0 - 10	0 to +10V signal (unipolar) (Default setting)
U 10 - 0	+10 to 0V signal (unipolar)
-10 - 10	-10V to +10V signal (bi-polar)
A 0 - 20	0 to 20mA signal
t4 - 20	4 to 20mA signal. The drive will trip on 4-20F if signal level falls below 3mA
r4 - 20	4 to 20mA signal. The drive will ramp to preset speed 4 if signal level falls below 3mA
t20 - 4	20 to 4mA signal. The drive will trip on 4-20F if signal level falls below 3mA
r20 - 4	20 to 4mA signal. The drive will ramp to preset speed 4 if signal level falls below 3mA

Note: For P2-30 = -10 – 10 (-10V to +10V bi-polar signal), an external -10Vdc power supply is required.

The reference type for analog input 2 (terminal 10) can be selected by changing parameter P2-33 as follows:

Parameter value	Decription
U 0 - 10	0 to +10V signal (unipolar) (Default setting)
U 10 - 0	+10 to 0V signal (unipolar)
Ptc-th	PTC motor thermistor
A 0 - 20	0 to 20mA signal
t4 - 20	4 to 20mA signal. The drive will trip on 4-20F if signal level falls below 3mA
r4 - 20	4 to 20mA signal. The drive will ramp to preset speed 4 if signal level falls below 3mA
t20 - 4	20 to 4mA signal. The drive will trip on 4-20F if signal level falls below 3mA
r20 - 4	20 to 4mA signal. The drive will ramp to preset speed 4 if signal level falls below 3mA