

Eaton Adjustable Frequency Drives Cold Weather Applications

The Eaton adjustable frequency product line has implemented a cold weather functionality that will give the ability of the drive to function down below the initial rated temperature with a safe cost effective way to perform warming of both the motor and the drive cabinet. There are two different ways that the Eaton products perform the warm up features which is explained below.

SVX/SPX/HVX

The Eaton SVX/SPX adjustable frequency drive has a parameter group in the Standard, PID, and Multipurpose applications along with the HVX application that supplies a selectable AC voltage out to the motor at a very low frequency for a desired period of time along with dropping the temperature fault level. This design uses the current draw through the IGBT modules to warm up the unit temperature. Out of the box, the drive has a low temperature fault point of -10°C which is sufficient in most applications. In extreme temperature regions, this can cause a fault and prevent operation of the drive. The Cold Weather Parameter can be enabled which lowers the fault level from -10°C to -30°C and sets an Alarm at -20°C. The adjustable frequency drive will start the motor up in its normal operation when the unit temperature is above the -20°C level. If the drives unit temp is between -20°C and -30°C and the drive is stopped, the drive will go into the cold weather warm up feature when a run command is given. The cold weather warm up feature runs the motor at 0.5Hz with a percentage of the motor nameplate voltage (P1.11.2 Cold Weather Voltage Percentage, 0 to 20%) for the desired time (P1.11.3 Cold Weather Time Out, 0 to 10 min) with an A85 alarm (??) displayed on the keypad.

If the drive does not warm up above -20°C in the specified time, the drive will go into the F13 Under Temperature Fault. If the temperature does go above -20°C, the drive will ramp up to the supplied reference signal. If the drive does not start, the fault can be reset and the sequence can be started again to get the motor running. If the unit temperature is below -30°C, the drive will fault on the F13 Under Temperature Fault. If operation is required below -30°C, contact the Eaton Technical Resource Center (TRC) for support.

Code	Parameter	Min.	Max.	Unit	Default	ID	Note
P1.11.1	Cold Weather	0	1		0	1490	0 = Disable 1 = Enable
P1.11.2	ColdWVtoltage	0.00	20.00	%	0.00	1491	
P1.11.3	ColdWTimeOut	0	10	min	0	1492	

Version Compatibility

SVX – SVX00031V025.vcn and newer releases
 SPX – SPX00032V019.vcn and newer releases
 HVX – HVCHST02V1525.vcn and newer releases



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HMX

The Eaton H-Max adjustable frequency drive designed for the HVAC industry uses a preheat feature to warm the drive and motor up when in low temperatures. The mode is triggered off a digital input closure setup at value "17 Preheat" which can be triggered based off the run relay or temperature supervision. Normal drive control is removed when this digital input is enabled. When in this mode, the drive will output an AC voltage to maintain a percentage of current at 0.5 Hz and the drive will indicate a run command is given. The percentage is selectable by P2.13.6 Preheat Current and can be set from 0 to 20% of the motor rated current.

Code	Parameter	Min.	Max.	Unit	Default	ID	Note
P2.13.6	Preheat Current	0	20%*Nom Motor	A	0	1335	
P2.3.X.2	DINX Function	1	33		Y	1320-1324	0 = Not Used 1 = 3-wire Off 2 = External Fault 3 = Fault Reset 4 = Run Enable 5 = Force Hand 6 = Force Auto 7 = Reverse 8 = Preset Freq Sel0 9 = Preset Freq Sel1 10 = Preset Freq Sel2 11 = Fire Mode 12 = Interlock 1 13 = Interlock 2 14 = Interlock 3 15 = Reserved 16 = Reserved 17 = Preheat Function 18 = Accel/Decel Sel 19 = Parameter Lock 20 = Unattended Start Protection 21 = Second Param Set 22 = Timer 1 23 = Timer 2 24 = Timer 3 25 = Enable PID 26 = PID1 Select SetPt 27 = PID2 Select SetPt 28 = Motor 1 Interlock 29 = Motor 2 Interlock 30 = Motor 3 Interlock 31 = Motor 4 Interlock 32 = Motor 5 Interlock 33 = Force Bypass

Note: X = indicates the Digital Input being used 2 through 6. Y = indicates the default values

Additional Help

In the US or Canada: please contact the Technical Resource Center at 1-877-ETN-CARE or 1-877-386-2273 option 2, option 6.

All other supporting documentation is located on the Eaton web site at www.eaton.com/Drives

