

SD1, HD2, HD2-UL, HD2IP Inverter Drives Application Guide - Fire Mode



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Introduction

Fire alarm systems are essential for the adequate detection and warning of a fire situation within commercial and residential premises. The IMO inverters are well designed to deal with any fire alarm conditions. The fire mode in IMO inverters allows the motor to run at a fixed or variable speed in forward or reverse direction to assist the fire & safety control system during a fire alarm scenario.

The fire mode can be triggered using a digital input configured in the inverter. Once the configured fire mode signal arrives, the inverter will switch to fire mode from the standard operational mode. As long as the fire mode signal is high, the inverter will ignore all the irrelevant commands, inputs and alarms in the inverter. After resetting the fire mode signal, the inverter will come back to standard operational mode.

There will be differences between each fire safety system. Each safety system has a unique design and mode of operation. The fire mode in IMO inverters is designed to work with all of these various control actions. Although users may customize the firing mode to meet their needs, optimum safety is always guaranteed.

Inverter Series	Inverter Firmware version	Keypad Firmware version
HD2	3.03.29	1.05.40
HD2-UL	3.02.60	1.05.39
HD2IP	3.03.45	1.05.44
SD1	1.03.18	-

Method of Operation

1.1 Activating the fire mode

The fire mode in IMO inverters can be triggered using a digital input connected to S1 to S4 terminals. The inverter will remain in this mode until the fire mode signal is reset. Once the fire mode signal is reset, the inverter will resume the normal mode of operation.

1.2 Operating modes

The following operating modes are possible to address various applications.

1.2.1 Fixed speed

The inverter will run at a single, predefined fixed speed during the fire mode. This fire mode frequency can be set using the keypad.

1.2.2 Analog speed

An analogue signal can be configured to define the fire mode frequency. The frequency can be adjusted during the fire mode operation via the analogue signal.

1.2.3 Pre-set, multiple fixed speeds

It is possible to set up 16 different speeds using the 4 digital inputs. Unlike the fixed speed mode, the selected speed can be changed while the inverter is running under the fire mode.

1.2.4 Communication channel (Modbus/Profinet/CANOpen/EtherCAT/Profibus)

Like in the normal mode, it is possible to set the frequency during the fire mode via any of these communication protocols.

1.3 Feedback signal

The fire mode active signal is available in the inverter and can also give output via a digital output for indication or to a PLC control system.

1.4 Parameters

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1.4.1 Fire mode function parameters

Inverter Series	Function Code	Name	Description	Modify	Default Value
SD1	P20.00	Fire Mode Function	0: Invalid 1: Fire mode 1 2: Fire mode 2 When P20.00=0, fire mode is invalid, the inverter operates in normal mode. When P20.00 is non-zero value and the fire signal is activated. In the meantime, fire mode becomes valid, and the inverter will run at the speed set by P20.01. Fire mode 1, the inverter will operate continuously until it is damaged. Fire mode 2, the inverter will operate continuously until it stops due to OUT1, OUT2, OUT3, OC1, OC2, OC3, OV1, OV2, OV3 and SPO fault	0~2	0
HD2	P11.53				
HD2-UL	P11.53				
HD2IP	P11.53				
SD1	P20.01	Running Frequency of Fire Mode	0.00Hz~P00.03 (max. frequency)	0.00~P00.03	50.00Hz
HD2	P11.54				
HD2-UL	P11.54				
HD2IP	P11.54				
SD1	P20.02	Mark Bit of Fire Mode	0~1 When the VFD is running in fire mode, and it reaches the alarm condition, this flag is set and the VFD is out of warranty.	0~1	0
HD2	P11.55				
HD2-UL	P11.55				
HD2IP	P11.55				
SD1	P20.03	Fire Mode Running Frequency Channel	0: Fire mode running frequency set in P20.01 1: Fire mode running frequency same to setting in P00.06~P00.09	0~1	1
HD2	P11.62				
HD2-UL	P11.59				
HD2IP	P11.59				

1.4.2 P05 Group: Input terminal function

Inverter Series	Function Code	Name	Description	Modify	Default Value
SD1	P05.01 – P05.04	S1 – S4 Terminal Function Selection	42 : Fire mode trigger	0~63	-
HD2			82 : Fire mode trigger	0~83	-
HD2-UL			82 : Fire mode trigger	0~83	-
HD2IP			82 : Fire mode trigger	0~83	-

1.4.3 P06 Group: Output terminal function

Inverter Series	Function Code	Name	Description	Modify	Default Value
SD1	P06.01 - P06.04	Y1, R01, R02 Output Selection	29 : Fire mode active	0~30	-
HD2			56 : Fire mode active	0~56	-
HD2-UL			56 : Fire mode active	0~56	-
HD2IP			56 : Fire mode active	0~56	-

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1.4.4 P17 Group Monitoring status

Inverter Series	Function Code	Name	Description	Modify	Default Value
SD1	P17.40	Fire Mode Status	0~1	0~1	0
HD2	P17.17				
HD2-UL	P17.17				
HD2IP	P17.17				

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