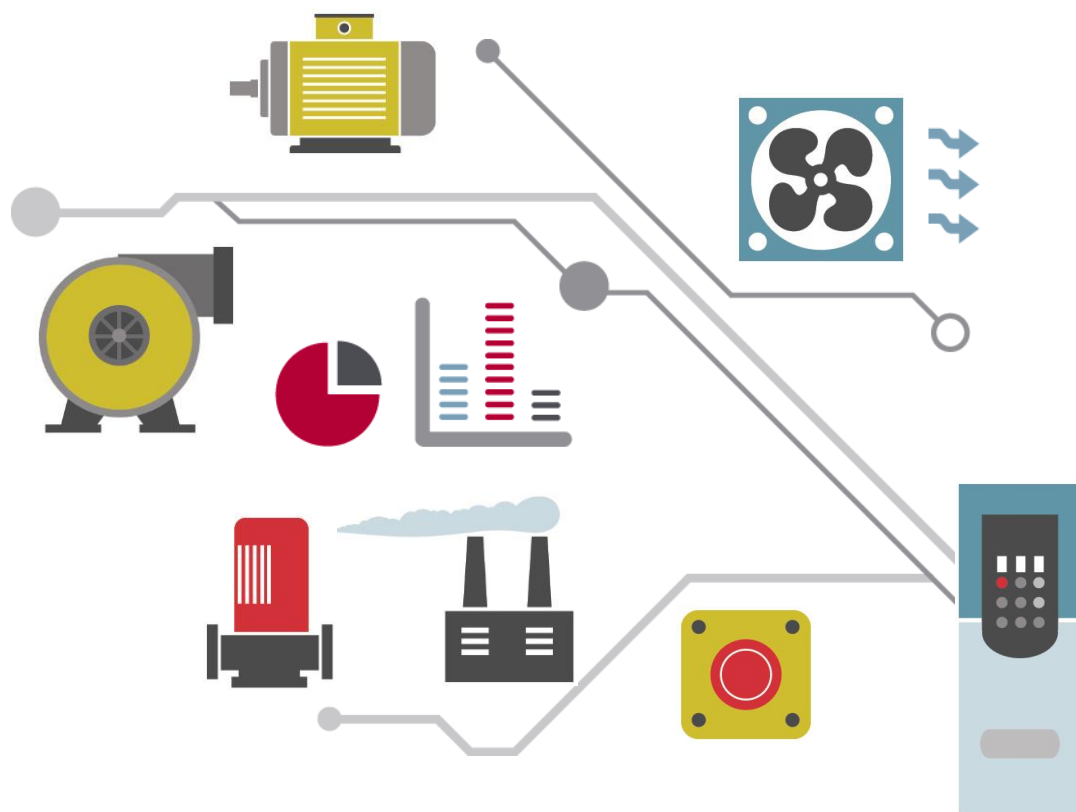


# FIRE MODE IN VARIABLE SPEED DRIVES

A GAMBICA Technical Guide



*This guide represents the views of the GAMBICA Variable Speed Drives Group on Fire Mode. However, it has no legal force, and readers are advised to consult relevant legislation and standards as well as any manufacturer product manuals and support material.*

## 1. The aim of this Guide

This Guide is to provide a reference for Variable Speed Drive (VSD) manufacturers and users to establish criteria by which Fire Mode in VSD should be defined. This is to enable a common understanding of what Fire Mode is and clear communication of how any specific product operates.

## 2. Purpose of Fire Mode

The aim of Fire Mode in a VSD is to maximise availability of the smoke control system used in a building for smoke ventilation in the event of a fire. This extends continuity of service and recovery through intelligent control during transient conditions. As well as energy saving in normal operation, the VSD can make the control system more flexible and more robust during adverse conditions. Fire Mode further enhances this robustness.

## 3. Definition of Fire Mode

Fire Mode is a special operating mode of the VSD that is activated by a signal from the building's fire alarm system that specifically indicates a fire condition. Once operating in Fire Mode, the VSD will ignore or reset faults in order to maintain availability.

Fire Mode cannot be triggered by any other signal or manual option. Once the VSD enters Fire Mode, it cannot exit this mode until the fire condition signal is reset.

## 4. Continuous Operation Conditions

Once operating in Fire Mode the VSD will ignore all programmable trip or fault conditions normally incorporated into the VSD for its protection and that of the motor driven equipment. However there are several conditions under which it cannot maintain operation, and in these conditions the VSD will continuously and indefinitely perform a reset and re-start within a manufacturer defined reset time from a fault condition.

Condition	Definition	Action
<b>Under-voltage</b>	When the input power (single or three phase) supply is removed or voltage falls below operating range.	VSD is ready to re-start if input voltage recovers to within operating range.
<b>Over-Current</b>	Where the current (amps) drawn by the driven equipment is greater than the maximum continuous rating of the VSD.	VSD resets and attempts to re-start indefinitely.

## 5. Information

Fire Mode (as all operational modes) in VSD is only designed to function on motors that are correctly rated to operate under VSD control.

The VSD manufacturer should declare how warranties are affected should the VSD operate in Fire Mode.

System designers should consider how Fire Mode impacts or is impacted by any other safety systems (such as the STO function in the VSD).

## 6. About GAMBICA

GAMBICA is the Trade Association for Instrumentation, Control, Automation and Laboratory Technology in the UK. It has membership of over 200 companies including the major multinationals in the sector as well as smaller and medium sized companies. You can find further information on our website: [www.gambica.org.uk](http://www.gambica.org.uk)

This Guide was written by the GAMBICA Variable Speed Drive Group, whose members include;

- ABB Ltd (Drives and Motors)
- Control Techniques Ltd
- Danfoss Ltd
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<http://www.feta.co.uk/smokecontrol>



The GAMBICA Association Ltd

Westminster Tower  
3 Albert Embankment  
London SE1 7SL

T +44 (0) 20 7642 8080

E [info@gambica.org.uk](mailto:info@gambica.org.uk)

W [gambica.org.uk](http://gambica.org.uk)

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