



Emotron Fire Mode

Software configuration for Emotron FDU2.0/2.1 and VFX2.0/2.1
Software versions 4.4x-015 and 5.xx

Addendum to Instruction manual
English

Emotron Fire Mode

Software option for Emotron FDU2.0/2.1 and VFX2.0/2.1
Software versions 4.4x-015 and 5.xx

Addendum to main Instruction manual

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Safety

This is an addendum to the main instruction manual for the product. The user must be acquainted with the original instruction manual of the main product. All safety instructions, warnings, etc. as mentioned in the main instruction manual must be known to the user.

Handling the AC drive

Installation, commissioning, demounting, taking measurements, etc. of or on the AC drive may only be carried out by personnel technically qualified for the task.

A number of national, regional and local regulations govern handling, storage and installation of the equipment. Always observe current rules and legislation.

Opening the AC drive



WARNING!

If you need to open the product, always switch off the mains supply before opening the main product. For AC drives, wait at least 7 minutes to allow the buffer capacitors to discharge.

Always take adequate precautions before opening the AC drive. Although the connections for the control signals and the switches are isolated from the main voltage, do not touch the control board when the AC drive is switched on.

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1. Description

1.1 Fire Mode

Fire Mode is a special software function allowing the AC drive to work outside its normal limits in case of emergency in order to continue drive operation as long as possible.

1.2 General

This document describes the software implementation for Fire Mode. The main ideas of Fire Mode, when active, are as follows:

- Protective trips should be disabled to allow the drive to operate as long as possible.
- Torque limiting protection should be disabled for the same reason.
- Protection against capacitor over voltage should be active to avoid explosion.
- The drive should restart automatically after a trip independent of reset signals.



Warning!

A drive in Fire Mode may behave differently, compared to normal operation, due to higher available torque and disabled trips.

The settings of some user parameters are important for the Fire Mode functionality. It could for example be wise to activate spin start as it makes it possible to regain control of a rotating motor after a trip auto reset. The activation/deactivation of over voltage control and low voltage override are also important.

1.2.1 Warranty

Warranty will be limited after the drive has been operating outside the allowed operating range as allowed in Fire Mode.

1.3 Menus

Following menus and settings are used in Fire Mode.

Table 1 Valid for software versions 4.4x-015

Menu	Name	Selections	Modbus address	Description
O11	Fire Mode	Off, On, DigIn	48001	Fire Mode enable/activation. Changeable while running. Default = Off
520	Digital inputs	Fire Mode	43241- 43248	Fire Mode activation. Only active if Menu O11 is set to DigIn
540 & 550	Digital outputs & Relay outputs	Fire Mode	43271, 43272 & 43273, 43274, 43275	Fire Mode is active

Table 2 Valid for software versions 5.xx

Menu	Name	Selections	Modbus address	Description
21D	Fire Mode	Off, On, DigIn	49333	Fire Mode enable/activation. Changeable while running. Default = Off
520	Digital inputs	Fire Mode	43241- 43248	Fire Mode activation. Only active if Menu 21D is set to DigIn
540 & 550	Digital outputs & Relay outputs	Fire Mode	43271, 43272 & 43273, 43274, 43275	Fire Mode is active

1.4 Configuration

Fire mode is activated either

1. directly from the Control panel or fieldbus by setting the parameter [O11] / [21D] to “On” or
2. by activating a digital input “Fire Mode” when the parameter [O11] / [21D] is set to “DigIn”. Digital inputs are configured in menu [521] through [528].

A new status signal “Fire Mode” indicates if Fire Mode is active. This flag is available as a digital output and relay output. Digital/Relay outputs are configured in menu groups [540] and [550].

Table 3

[O11] / [21D] “Fire Mode”	Digital Input “Fire Mode”	Digital/Relay Output “Fire Mode”	Fire Mode status
Off (0)	-	0	OFF
On (1)	-	1	ACTIVE
DigIn (2)	0	0	OFF
DigIn (2)	1	1	ACTIVE

The Fire Mode status is updated every 64 ms.

The user may include the “Fire Mode” parameter in the fieldbus cyclic updates by adding it in menu [266] “Fieldbus Signals”.

1.5 Fire Mode functionality

1.5.1 Control panel

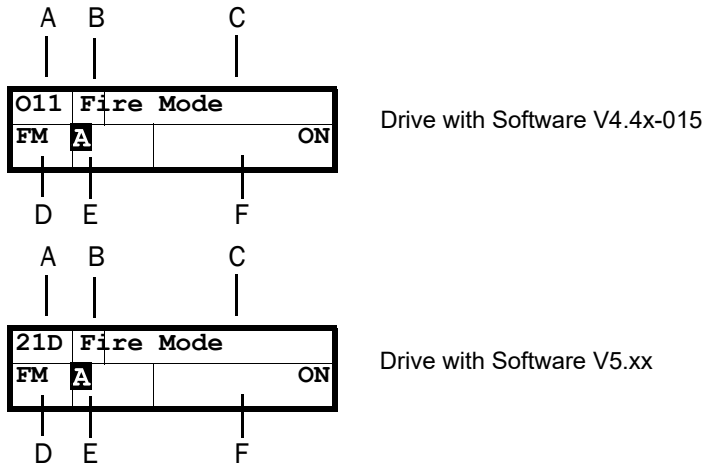
Lock code

The Control panel lock code for standard software is 291.

There is an additional lock code for the Fire Mode option, contact CG to receive this lock code.

Control panel status

The Control panel status text, in area D (see below) toggles when active, every second between showing the standard status text and showing fire mode status text “FM”. The area D status flags reported via communication is the standard status.



1.5.2 Status signals

Digital outputs and relays are set as usual in accordance with the active warnings and other signal conditions. A digital output “Fire Mode” is set if Fire Mode is activated.

1.5.3 Warning handling

All warnings are ignored and not shown when Fire Mode is activated.

1.5.4 Trip handling

Table 4 shows a list with all trips and their handling in Fire Mode. All trips, except desaturation and over voltage related trips, are disabled.

1.5.5 Auto reset

Trips, in Fire Mode, are auto reset after 3 seconds. The maximum number of auto resets is 10.



Warning!

The drive will auto reset existing trips if Fire Mode is enabled.

NOTE! It is recommended that spin start is enabled as it may be needed to regain control of a rotating motor.

Table 4

Trip	Trip type	Trip ignore	Trip reset	Warranty limiting
0	No trip			
1	i ² T	1	1	
2	PTC	1	1	
3	MOTOR_LOST	1	1	
4	LOCKED_ROTOR	1	1	
5	EXT_TRIP	1	1	
6	MON_MAX_ALARM	1	1	
7	MON_MIN_ALARM	1	1	
8	COMM	1	1	
9	PT100	1	1	
10	CRIO_DEV	1	1	
11	PUMP	1	1	
12	USER_TRIP (Ext mot temp)	1	1	
13	LC_LEVEL (Liquid cooling low level)	1	1	
14	BRAKE	1	1	
15	OPTION_TRIP	1	1	
16	OVER_TEMP	1	1	1
17	OVER_CURRENT	1	1	1
18	OVER_VOLT_DEC		1	
19	OVER_VOLT_GEN		1	
20	OVER_VOLT_MAINS		1	
21	OVER_SPEED	1	1	
22	UNDERVOLTAGE	1	1	
23	POWER_ERROR	1	1	1
24	DESATURATION		1	
25	DCLINK_ERROR	1	1	1
26	INTERNAL_ERROR	1	1	1
27	OVER_VOLT_MAINS_CUT		1	
28	OVER_VOLT		1	
30	CRIO_COMM	1	1	
31	ENC_FAULT	1	1	

1.6 Torque limiting protection functions

The torque limiting functions are only disabled in V/Hz and Speed mode. The torque limit is still used as a reference in Torque mode.

Table 5

Function	Menu	V/Hz mode	Speed mode	Comment
I^2t -limitation	[231]	Disabled	Disabled	The I^2t -trip and the I^2t -limitation are disabled. The digital output "I>Inom" is always false.
Torque limitation	[S211], [351]	Disabled	Inverter and motor dependent.	The maximum torque in speed mode is raised but set low enough to keep the current within the measurement range.
Current limitation	[S221], [S26]	Disabled	Disabled	
Power limit	[355]	OFF	OFF	
Low voltage override	[421]			Existing setting used as it is application dependent which setting is preferred in Fire Mode. The drive will stay alive longer but with less torque, if enabled.
Over voltage control	[424]			Existing setting is used as it is related to if there is a brake chopper + resistor or not and thus application dependent. The drive will avoid an auto reset by reducing the torque, if enabled.

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