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Title	Imoticon ID700 Fault codes and alarm codes, possible faults and corrective actions

Summary	This document gives information on the Imoticon ID700 Fault codes and alarm codes, possible faults and corrective actions

NOTE: Please read this document in conjunction with the Imoticon ID700 Easy Start Guide and ID700 Advanced User Manual.

Overview

The Imoticon ID700 has a number of fault codes (trip codes) and alarm codes which indicate the reason for a drive trip or alarm.

Trip Code	F001
Trip Description	**Inverter output over current trip** (NOTE: This trip cannot be reset for at least 10s after a F001 trip has occurred)
Possible reason for trip	Short circuit on inverter output. • Wiring/cable issue between inverter and motor. • Phase to phase or phase to earth short circuit on motor. • Acceleration and/or deceleration ramps times too short for driven load. • The motor was still spinning when the inverter was given a run command.
Corrective actions	• Check cabling between inverter and motor. • Check motor for a phase to phase or phase to earth fault. • Increase acceleration and/or deceleration ramp times (P00.08 & P00.09). • See P03.05 in the Advanced User Manual. The start mode needs to be set for flying start (P03.05 = 2) if the motor is spinning when the run command is given.

NOTE: Please make sure there are no phase to earth short circuits on the motor/motor cable before powering up the drive. A phase to earth short circuit at power up may cause drive failure on some models of ID700.

Trip Code	F002
Trip Description	**Over voltage trip**
Possible reason for trip	Inverters internal DC bus voltage has increased over the trip threshold. • Inverter mains supply voltage too high. • Acceleration and/or deceleration ramps times too short for driven load. • The motor was still spinning when the inverter was given a run command.
Corrective actions	• Check cabling between inverter and motor. • Check motor for a phase to phase or phase to earth fault. • Increase acceleration and/or deceleration ramp times (P00.08 & P00.09). • See P03.05 in the Advanced User Manual. The start mode needs to be set for flying start (P03.05 = 2) if the motor is spinning when the run command is given.

Trip Code	F003 (OFF)
Trip Description	**Under voltage trip**
Possible reason for trip	Inverters internal DC bus voltage has decreased below the trip threshold. • Inverter mains supply voltage too low. • Mains dip/brown out while inverter running. • Blown input fuse/faulty circuit breaker. • Normal trip during power off.
Corrective actions	• Check mains supply is within specification • Check input fuses/circuit breaker

Trip Code	F004
Trip Description	**Mains supply phase loss**
Possible reason for trip	Supply phase missing • Blown input fuse/faulty circuit breaker.
Corrective actions	• Check all supply phases • Check input fuses/circuit breaker

Trip Code	F005
Trip Description	**Output phase loss**
Possible reason for trip	Output phase missing • Bad connection between inverter and motor
Corrective actions	• Check all motor cable connections between inverter and motor

Trip Code	F006
Trip Description	**Dynamic braking circuit over current trip** (NOTE: This trip cannot be reset for at least 10s after a F001 trip has occurred)
Possible reason for trip	• Braking resistor faulty, faulty braking resistor cabling or incorrect resistor value (too low a value)
Corrective actions	• Check braking resistor, braking resistor cabling and braking resistor value

Trip Code	F007
Trip Description	**Heatsink 1 over temperature**
Possible reason for trip	• Heatink temperature has increased above trip threshold • Switching frequency too high • Ambient air temperature around inverter too high • Heatsink / fan blocked • Cooling fan faulty
Corrective actions	• Reduce ambient temperature around drive • Decrease switching frequency • Check heatsink and fan for blockage • Replace cooling fan if faulty (set parameter P10.09 = 1 to run fan continuously. If fan doesn't run, change fan)

NOTES:

Fan Control – Parameter P10.09

This parameter controls the heatsink cooling fan:

0 (Default): Cooling fan controlled by heatsink temperature

1: Cooling fan runs continuously

Switching frequency – Parameter P10.10:

The switching frequency is how many times per cycle of the output frequency, the IGBT output power device switches. The higher the switching frequency, the higher the losses and therefore the hotter the heatsink for a given output power.

- The lower the switching frequency, the high the audible noise in the motor.
- The higher the switching frequency, the lower the audible noise in the motor.

Switching frequency automatic adjustment – Parameter P10.11

0: Disabled – Switching frequency remains constant at value set in P10.10

1 (Default): The drive will automatically reduce the drives switching frequency to try to prevent the drive tripping on F007 - heatsink over temperature trip.

Trip Code	F008
Trip Description	**Heatsink 2 over temperature (Only on 45kW and above units)**
Possible reason for trip	• Heatink temperature has increased above trip threshold • Switching frequency too high • Ambient air temperature around inverter too high • Heatsink / fan blocked • Cooling fan faulty
Corrective actions	• Reduce ambient temperature around drive • Decrease switching frequency • Check heatsink and fan for blockage • Replace cooling fan if faulty (set parameter P10.09 = 1 to run fan continuously. If fan doesn't run, change fan)

See notes for F007 trip

Trip Code	F009
Trip Description	**IGBT junction over temperature (output power device)**
Possible reason for trip	• Switching frequency too high • Frequent accelerating or decelerating with heavy load
Corrective actions	• Reduce switching frequency (P10.10) • Increase acceleration and deceleration ramps

NOTES:

The ID700 has a thermal model which calculates the IGBT output power device junction temperature. The model uses drive heatsink temperature, drive output frequency, drive output current and switching frequency in its calculation. If the drive deems that the IGBT junction is getting too hot, the drive will trip on F009.

Trip Code	F010
Trip Description	**Motor overload**
Possible reason for trip	• Faulty motor • Motor wired incorrectly for input voltage • V/f (voltage /frequency) not set correctly for motor • Excessive boost voltage (P00.12) in V/f mode (P13.01 = 0) • Mains supply voltage is too low • Motor load current greater than motor rated current (P00.02) • Motor/load seized/jammed • Parameter P12.12 set incorrectly
Corrective actions	• Check motor for fault • Check correct motor star or delta connection for input voltage • Check V/f (P00.01 and P00.03) is set correctly for motor • Check setting of P00.12 • Check current being drawn by load • Check motor/load are not seized/jammed • Check parameter P12.12

From default settings, the drive is capable of 150% overload for 60s. Therefore after 60s of 150% overload, the drive will trip on F010.

Trip Code	F011
Trip Description	**Motor over temperature** (If motor thermistor is set up on terminal DI 7)
Possible reason for trip	• Excessive motor load • Motor running to slowly for load so ineffective cooling from motor fan • Motor fan blocked or not working correctly • Faulty motor thermistor or not wired correctly
Corrective actions	• Check and reduce motor load • Increase speed of motor or fit force vent fan to motor • Check motor fan • Check motor thermistor and thermistor wiring

The motor thermistor connects between 24V and DI 7. Set P09.24 = 1 : Motor thermistor input

Trip Code	F012
Trip Description	**AI 1 (analogue input 1) Over current**
Possible reason for trip	• When analogue input 1 is set up as a mA current input, input is over 26mA (see P08.02)
Corrective actions	• Check analogue input 1 • Check external equipment supplying analogue input 1

Trip Code	F013
Trip Description	**AI 1 (analogue input 1) current loss**
Possible reason for trip	• Analogue input 1 mA input current is less than 3mA (see P08.02)
Corrective actions	• Check analogue input 1 • Check external equipment supplying analogue input 1 • Set P08.02 to modes 4 or 5 (no current loss trip)

Trip Code	F014
Trip Description	**User +24VDC power supply overload**
Possible reason for trip	• Output current of +24V, Digital Output 1 (DO 1) and Digital Output 2 (DO 2) has exceeded 100mA
Corrective actions	• Check for short circuit on +24V, DO 1 and DO 2 terminals • Check loading on +24V, DO 1 and DO 2 terminals

Trip Code	F015
Trip Description	**Parameter cloning/copying incorrect** (See parameter P05.04)
Possible reason for trip	• Keypad is faulty • Keypad doesn't have a parameter set in it to be downloaded to the drive
Corrective actions	• Try different keypad • Upload a parameter set to the keypad and download to drive

Trip Code	F016
Trip Description	**Autotune incorrect (P13.02)** (Only applicable in vector mode P13.01 = 1)
Possible reason for trip	• Drive size and motor size difference to large • Motor nameplate data set incorrectly (check P13.05, P13.06, P13.07, P13.08, P13.09, P13.10) • Before the Autotune was completed, the user attempted to disable/stop drive • Check motor cabling and motor connections • Faulty motor
Corrective actions	• Change drive to correct rating to match motor • Check and correct motor nameplate data • Allow autotune to complete • Check motor cables and motor connects – correct star/delta connection • Check motor for fault

Trip Code	F017
Trip Description	**Motor output terminal short circuit at power up** (Size C, D & E drives only)
Possible reason for trip	• Motor output terminal short circuit
Corrective actions	• Check motor wiring and connections • Check motor insulation

Trip Code	F017
Trip Description	**Input thyristor circuit issue** (Size F & G drives only)
Possible reason for trip	• Input thyristor circuit fault • Possible issue with input mains supply
Corrective actions	• Check input circuit cable, supply connections, fuses & circuit breaker

Trip Code	F018
Trip Description	**External Trip** (A digital input has been programmed as an External Trip input – See menu 9)
Possible reason for trip	• The Digital Input programmed as an External Trip input has been activated
Corrective actions	• Check external trip circuitry and connection

Trip Code	F019 - Reserved

Trip Code	F020
Trip Description	**EEPROM read / Write failure**
Possible reason for trip	• Error occurred when reading or writing the control word • Drive fault
Corrective actions	• Press the STOP/RESET key to reset the drive and try again • Power off the drive and back on again and try again • Contact MCW

Trip Code	F021
Trip Description	**Destination fault** (Function destination parameter has been set twice)
Possible reason for trip	• Example: Digital input 1 and digital input 2 have been programmed to the same destination parameter function
Corrective actions	• Check digital input/analogue input destination parameters • Load default parameters and try again

Trip Code	F022
Trip Description	**Option module fault**
Possible reason for trip	• Option module has been fitted incorrectly • Faulty option module
Corrective actions	• Refit option module and try again • Replace option module with new module

Trip Code	F023 – F029
Trip Description	**Reserved**

Trip Code	F030
Trip Description	**Soft start circuit fault**
Possible reason for trip	• The input soft start circuit faulty
Corrective actions	• Power down and back up again • Replace drive with new drive

Trip Code	F031
Trip Description	**Main cooling fan fault**
Possible reason for trip	• Fan not rotating correctly • Fan blocked or faulty • Damaged fan blades
Corrective actions	• Power down and back up again and try again • Check fan blades for damage

Trip Code	F032
Trip Description	**Control cooling fan fault** (30kW and above)
Possible reason for trip	• Fan not rotating correctly • Fan blocked or faulty • Damaged fan blades
Corrective actions	• Power down and back up again and try again • Check fan blades for damage

Trip Code	F033
Trip Description	**Current sense/measurement fault**
Possible reason for trip	• Internal drive fault
Corrective actions	• Power down and back up again and try again • Replace drive

Trip Code	F034
Trip Description	**Power PCB microprocessor (DSP) fault**
Possible reason for trip	• Software overflow/corruption error • Internal drive fault
Corrective actions	• Power down and back up again and try again • Replace drive

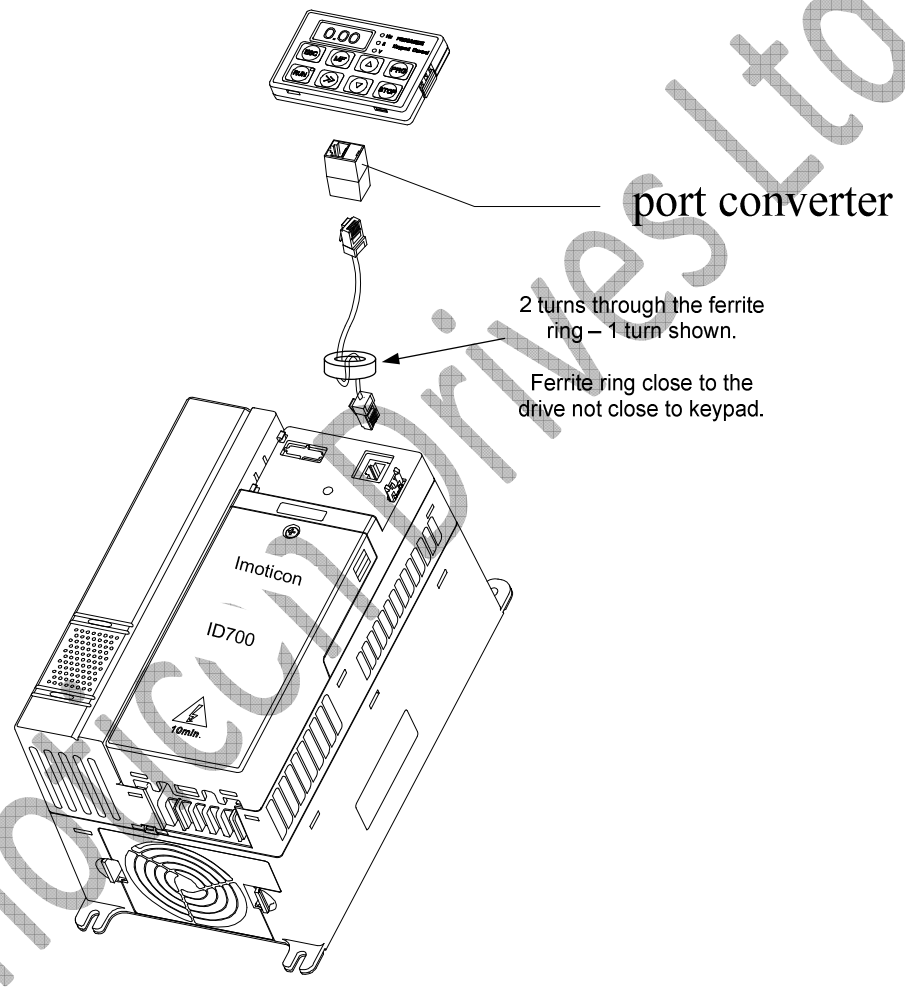
Trip Code	F035
Trip Description	**Internal communications issue between control and power PCB**
Possible reason for trip	• Internal drive fault
Corrective actions	• Power down and back up again and try again • Replace drive

Trip Code	F036
Trip Description	**Internal communications issue between control and power PCB**
Possible reason for trip	• Electrical noise disturbance • Internal drive fault
Corrective actions	• Power down and back up again and try again • Check wiring layout of system • Replace drive

Trip Code	F037
Trip Description	**Over current trip during power up**
Possible reason for trip	• Phase to earth fault • Internal current sense circuit failure
Corrective actions	• Check motor and motor cable for fault • Replace drive

Trip Code	F039
Trip Description	**Internal thermistor failure**
Possible reason for trip	• Internal drive fault
Corrective actions	• Power down and back up again and try again • Replace drive

Trip Code	F040
Trip Description	**Software corruption**
Possible reason for trip	• Internal drive software corruption • Electrical noise disturbance
Corrective actions	• Power down and back up again and try again • Check wiring layout of system • If drive keypad has been removed and fitted remotely from drive, make sure ferrite core supplied with keypad mounting pallet is fitted on the RJ45 cable close to the drive. Put two turns of the RJ45 cable around the ferrite core



Trip Code	F041 & F043
Trip Description	**Power or control microprocessor fault**
Possible reason for trip	• Internal drive fault
Corrective actions	• Power down and back up again and try again • Replace drive

NOTES:

Type	Trips	Description
Auto reset	F003 (OFF)	F003 (OFF) under voltage – can automatically reset the drive depending on actual DC bus voltage
Cannot reset	≥F030	Internal drive fault (possible electrical noise disturbance)
EEPROM Memory read & write	F020	When an F020 trip occurs, set default parameters and reset the drive
Ordinary trip	F001, F006	Can only reset the drive 10s after trip has occurred
	Other trips	Can reset the drive 1s after the trip has occurred

- When the F003 trip occurs, the drive starts to save parameters such as run time clock and power meters etc.

- The F003 trip is only stored in the trip log if an under voltage trip occurs while the drive is running.

Drive Alarms

When the drive is in an alarm condition, the drive will continue running and the keypad display with display the relative alarm code (HXXX).

The alarm code and normal display will alternatively flash for 3 seconds while the drive is in an alarm condition.

Parameter P12.13 can be set to decide if the drive alarm warning is displayed or not.

Alarm Code	H001
Alarm Description	**Current limit is active**
Possible reason for alarm	• The output current has reached the value set in P07.03 (current limit). This may because the drive is trying to accelerate the load faster than it is able to with the value set in P07.03. • The motor load is too high • The motor is already spinning when start command given
Corrective actions	• If the actual acceleration rate achieved in the application is acceptable then there is no need to adjust parameters. The current limit is an indication and not a fault. If a faster acceleration is required with the maximum value set in P07.03 then a larger motor and drive maybe required • Check the load and reduce load if possible • Check P03.05 (Start mode) is set correctly

Alarm Code	H002
Alarm Description	**Motor overload is integrating**
Possible reason for alarm	• The output current is higher than the value of P00.02 (motor rated current). If the H002 continues, the drive will trip on an F010 trip.
Corrective actions	• This can be a normal occurrence if only for short periods of time during accelerating a heavy load. • Check the value of P00.02 is set correctly • Check that during normal running, the output current is below the value set in P00.02

Alarm Code	H003
Alarm Description	**Heatsink is hot**
Possible reason for alarm	• High ambient temperature • Heatsink air flow channel blocked / fan blocked • Heatsink cooling fan faulty
Corrective actions	• Reduce ambient temperature • Unblock heatsink air flow channel and/or fan • Replace cooling fan

Alarm Code	H004
Alarm Description	**IGBT output power device junction temperature is too hot**
Possible reason for alarm	• Frequent acceleration and decelerations with a heavy load
Corrective actions	• Modify parameter set up • A larger drive maybe required

Alarm Code	H005
Alarm Description	**Low DC bus operation** (only on 400V models – see parameter P10.12)
Possible reason for alarm	• Power supply voltage is low
Corrective actions	• Check power supply voltage

Alarm Code	H007
Alarm Description	**Sleep mode** (See menu 15 – PID and parameter P15.23)
Possible reason for alarm	• The drive is in 'Sleep Mode'
Corrective actions	• Normal operation if sleep mode is set • After the drive quits sleep mode, the alarm is removed