

FI SERIES

USER GUIDE



SW : 5.01
ENGLISH

OPERATING INSTRUCTIONS

FI series control unit can be used to control one three-phase 400V_{AC} motor up to 4,0kW.

Instructions:

- Cable connections and the operating logic should be in compliance with regulations.
- The cables with different voltages should be kept detached or adequately insulated by an additional insulation of at least 1mm.
- Cables should be connected to terminals properly without exposed metal surface outside of terminals.
- Check all connections before powering the unit.
- **Normally Close (NC) inputs** which are not used should be short-circuited to **COM**.
- The power supply mains should be connected to an omni polar switch with contact opening distance minimum 3mm. Check that upstream electric system is provided with an adequate differential switch and overcurrent switch.
- Unless supervised or instructed, this device is not intended to be used by individuals with low physical, sensory or mental abilities (included children) or those lacking experience and knowledge.
- Children should be supervised to prevent them from playing with the device.
- Keep remote controls out of reach of children.
- Device is suitable for use at altitudes above 2000 meters.
- Inspect the installation for possible imbalance and signs of wear or damage in cables, springs and assembly. Do not use if repair or adjustment is necessary.
- Disconnect the power supply when cleaning or performing other maintenance.
- Installation instructions specify the type, size and mass of the driven part as well as locations where the controller unit can be mounted and whether the drive is suitable only for balanced vertically driven components.
- Before installing the controller unit, check that the driven part is properly balanced and suitable.
- After installation, make sure that the mechanism is properly adjusted.



WARNING:

Follow all instructions carefully as improper installation may result in serious injury.



WARNING:

Control unit must be disconnected from power supply during cleaning, maintenance and replacement of parts.

Can only be connected by qualified and trained electrical technicians.

Program the control unit and finish installation.

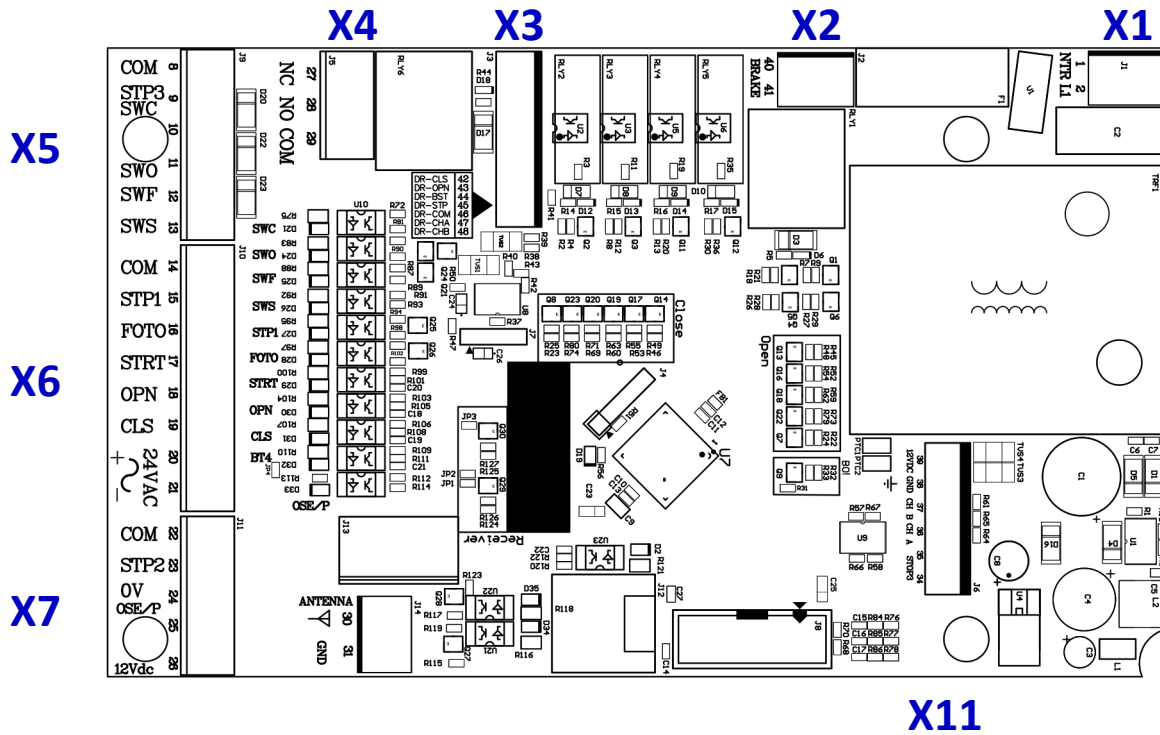
Qualified and trained electrical technicians are expected to meet the following requirements:

- Knowing and applying general and special safety and accident prevention regulations
- Knowledge of relevant electrical regulations
- Trained in the use and maintenance of appropriate safety equipment
- Recognizing electrical hazards

NOTE:

FI series control unit does not contain substances such as Asbestos, PCB (Polychlorinated Biphenyl) and HG (Mercury) that are harmful to human health and is not used in its production.

OVERVIEW



X1 – MAINS SUPPLY TERMINAL		
Pin	Function	Description
1	N	230VAC grid connection
2	L1	

X2 – BRAKE CONNECTION TERMINAL		
Pin	Function	Description
40	BRAKE	230VAC motor brake connection
41	BRAKE	

X3 – FREQUENCY INVERTER CONNECTION TERMINAL		
Pin	Function	Description
42	CLS	Frequency inverter CLOSE command
43	OPN	Frequency inverter OPEN command
44	BST	Frequency inverter BOOST command
45	STP	Frequency inverter STOP command
46	COM	Common connection for Frequency inverter
47	CHA	Frequency inverter RS485A connection
48	CHB	Frequency inverter RS485B connection

X4 – PROGRAMMABLE RELAY OUTPUT TERMINAL		
Pin	Function	Description
27	NC	Programmable relay NC contact
28	NO	Programmable relay NO contact
29	COM	Programmable relay COM contact

X5 – LIMIT SWITCH TERMINAL		
Pin	Function	Description
8	COM	Common connection
9	STP3	Emergency stop 3 connection terminal (motor thermic and manual switch)
10	SWC	Close limit switch connection
11	SWO	Open limit switch connection
12	SWF	Closing slow down switch
13	SWS	Opening slow down switch

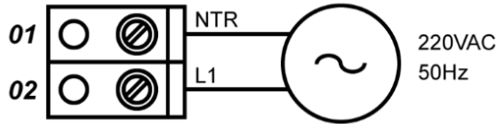
X6 – COMMAND AND SECURITY DEVICES CONNECTION TERMINAL		
Pin	Function	Description
14	COM	Common connection
15	STP1	Emergency Stop 1 connection (NC contact)
16	FOTO	Photocell connection (NC contact)
17	STRT	Start button connection (NO contact)
18	OPN	Open button connection (NO contact)
19	CLS	Close button connection (NO contact)
20	24VAC	24VAC output (max. 350mA)
21	24VAC	

X7 – OPTOELECTRICAL SAFETY EDGE TERMINAL		
Pin	Function	Description
22	COM	Common connection
23	STP2	Stop input for pedestrian door connection (NC contact)
24	GND	Power supply GND for optical sensor
25	OSE/P	Safety edge signal connection
26	12Vdc	Power supply 12Vdc for optical sensor

X11 – ELECTRONICAL LIMIT SWITCH TERMINAL		
Pin	Function	Description
34	COM	Common connection
35	STP3	Emergency Stop 3 connection (NC contact)
36	A	ENC RS485A connection
37	B	ENC RS485B connection
38	GND	Power supply for ENC
39	12V+	

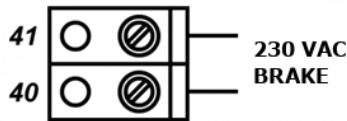
CONNECTIONS

X1 - Mains Supply Connection



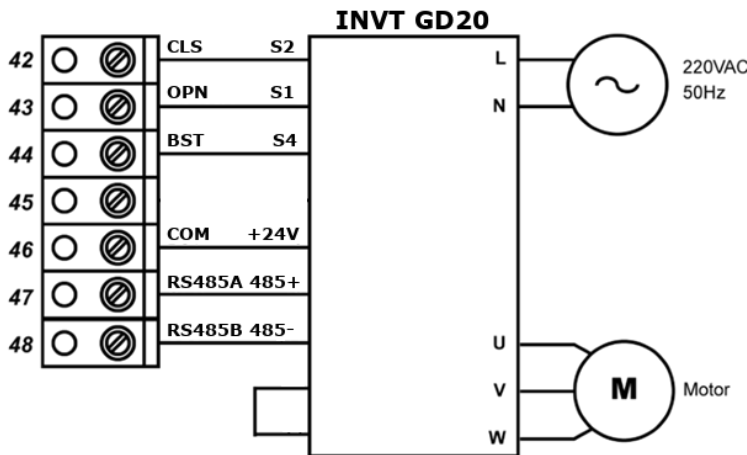
Make the power connection of the control unit from **L1 (02)** and **N(01)** terminals as shown in the figure. Input supply voltage is 230VAC-50Hz.

X2 - Brake Connection



Make the power connection of the control unit from **L1(02)** and **N (01)** terminals as shown in the figure. Input supply voltage is 230VAC-50Hz.

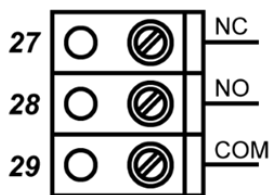
X3 - Frequency Inverter Connection



Outputs used to give commands to frequency inverter are listed below:

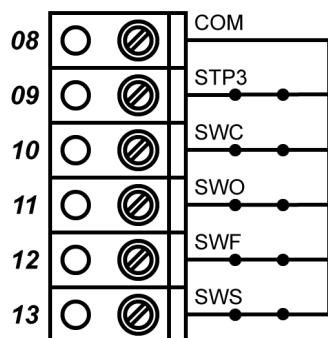
- 42-CLS** (CLOSE command connection)
- 43-OPN** (OPEN command connection)
- 44-BST** (BOOST command connection)
- 46-COM** (Common connection)
- 47-CHA** (Modbus communication conn.)
- 48-CHB** (Modbus communication conn.)

X4 - Programmable Relay Connection



Programmable relay output terminal is shown in the figure. Different options are offered for the use of this terminal. It can be programmed as flasher, traffic light, door opened, door closed, buzzer etc. output from menu number 504.

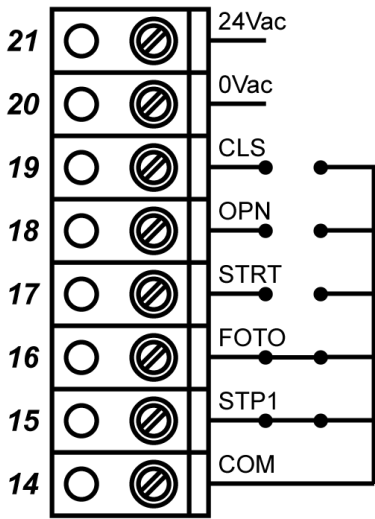
X5 - Limit Switch Connection



If a door drive with a mechanical limit switch is used, the stop cable coming from the motor must be connected to **STP3(9)** terminal. Similarly, the closing limit-switch cable must be connected to the **SWC (10)** and the opening limit-switch cable must be connected to **SWO (11)** terminals. Additionally, connect opening slow down switch to **SWF (12)** and connect closing slow down switch to **SWS(13)** terminals. Unused terminals must be connected to **COM(8)** terminal.

NOTE: Cables which are suitable for door drive comes pre connected in the door drive box. Unplug appropriate terminal from control unit and plug relevant end of the cable to appropriate terminal. Use terminal **X11** for **ENC** or **X5** for **MEC**.

X6 - Command and Security Devices Connection



Connections of command and safety devices are shown on the left.

You can give a STOP command to the door by connecting a NC contact button to the **STP1(15)** terminal. If this input will not be used, it must be connected to **COM(14)**.

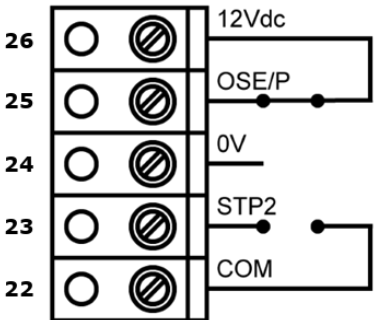
You can connect your photocell output to the **FOTO(16)** terminal. Photocell can be powered with using **24VAC** power supply output (terminals **20** and **21**). If a photocell is not used, this input should be connected to **COM(14)**.

You can command the door to START by connecting a button to **STRT(17)** terminal. By default, it operates in the OPEN-STOP-CLOSE-STOP sequence. If this input will not be used, it should be left blank.

You can command the door to OPEN by connecting a button to **OPN (18)** terminal. If this input will not be used, it should be left blank.

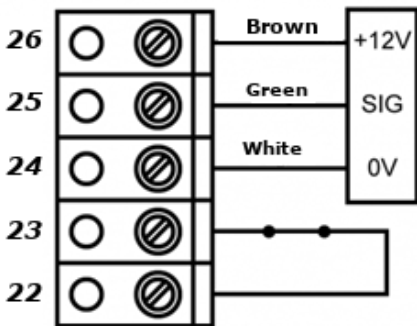
You can command the door to CLOSE by connecting a button to **CLS(19)** terminal. If this input will not be used, it should be left blank.

X7 - Optoelectronic Safety Edge Connection



STP2(23) can be programmed as either HALF-OPEN or PEDESTRIAN door switch (default). If this input will not be used, it should be connected to **COM(22)**.

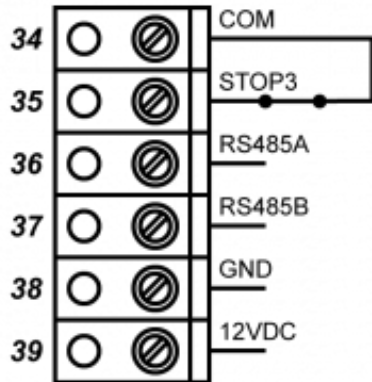
If pneumatic is to be connected to the door, it must be connected to the **OSE/P(25)** terminal. This input can be used as NO or NC. If not used, it must be connected to **+12V(26)** terminal.



If an optosensor will be connected to the door, **+12V(26)** and **GND (24)** terminals should be used for the supply voltage of the sensor. The sensor output must be connected **OSE/P (25)** terminal. This input programmed to respond to signals at a frequency of 100kHz.

**To program the entry, see menu 503.*

X11 - Electronical Limit Switch Connection



EP500 control unit is compatible with ENC (electronic limit switch). Use **12V+(39)** and **GND(38)** terminals for ENC supply voltage. Also use RS485 **B(37)** and **A(36)** terminals for communication. Finally, you need to connect the ENC safety input and output to **STP3(35)** and **COM(34)** terminals. Inf ENC will not be used, **STP3(35)** must be connected to **COM(34)**.

NOTE: Cables which are suitable for door drive comes pre connected in the door drive box. Unplug appropriate terminal from control unit and plug relevant end of the cable to appropriate terminal. Use terminal **X11** for **ENC** or **X5** for **MEC**.

Programming with LCD Information Display

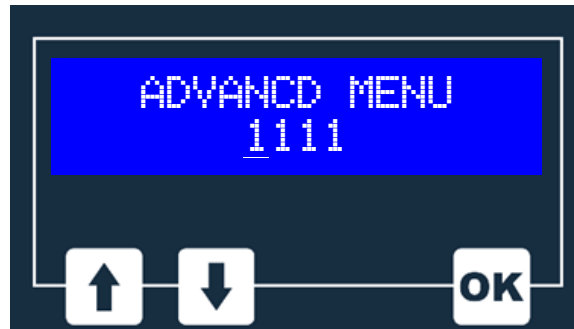
Various functions of the control unit can be programmed using LCD information screen located on the front of the unit and setting the necessary parameters in the programming menu as described below.

PARAMETERS ADJUSTMENT MENU, allows editing values of relevant functions.

LOGIC ADJUSTMENT MENU, allows to turn on-off relevant functions.

Special functions follow *PARAMETERS ADJUSTMENT MENU* or *LOGIC ADJUSTMENT MENU* and may vary depending on the type of controller or software version.

Access to the Programming Menu:



1. Press and hold **UP** and **DOWN** buttons at the same time, password screen will appear on the screen.
2. To enter the password, use **UP** and **DOWN** buttons. For changing position of cursor, use **OK** button. (Default password is 1453)
3. Navigate to desired menu using **UP**, **DOWN** and **OK** buttons.

1-PARAMETERS ADJUSTMENT	2-LOGIC ADJUSTMENT
3- END POSITION ADJUSTMENT	4-DOOR WORKING INFORMATION
5-INPUT-OUTPUT SETTINGS	6-LCD ADJUSTMENTS

Note: After a 60-second waiting period, control unit exits programming mode and programming menu will disappear.

1-PARAMETERS
ADJUSTMENT

100.AUTO. CLOSING TIME: 40 SEC	Automatic close time. After countdown, control unit closes door.
101.MAX. OPEN TIME: 30 SEC	Maximum opening time. This parameter restricts maximum elapsed time on opening direction.
102.MAX. CLOSE TIME: 30 SEC	Maximum closing time. This parameter limits maximum elapsed time on closing direction.
103.FOREWARN. OPN TIME: 2 SEC	Before the door starts to move upwards, if the pre-warning mode is activated flasher will be on for pre-warning period.
104.FOREWARN. CLS TIME: 5 SEC	Before the door starts to move downwards, if the pre-warning mode is activated flasher will be on for pre-warning period.
105.FAST CLOSE TIME: 5 SEC	Fast close time. After the door opened, photocell detects passage and changes automatic closing time to set value. It must be activated from logic menu.
106.TURNAROUND TIME: 200MS	Waiting time at the change of direction.
107.PART. OPENING TIME: 5 SEC	Partial open time.
108.DOOR OPENING SPEED: 60 %	Door opening speed (%).
109.DOOR CLOSING SPEED: 50 %	Door closing speed (%).
110.SLOWDOWN POS: 20 %	Slowdown position for both directions (%).

2-LOGIC
ADJUSTMENT

<p>200. AUTO. CLOSING OFF</p>	<p>Parameter to set automatic shutdown mode enable/disable</p>
<p>201. BLOCK PULSES OFF</p>	<p>Sets whether the START (Step-by-Step) signal or CLOSE button signal will be effective or not during opening phase.</p>
<p>202. FAST CLOSE OFF</p>	<p>Enable/disable status setting for quick shutdown mode.</p>
<p>203. WORKING MODE OP. AUTO/CLS. AUTO</p>	<p>1. Open Auto/Close Auto 2. Open Auto/Close Manual 3. Open Manual/Close Manual</p>
<p>204. 3 / 4 STEP OP/STOP/CLS/STOP</p>	<p>1. Open/Stop/Close/Stop 2. Open/Stop/Close/Open</p>
<p>205. PRE-ALARM OFF</p>	<p>Enable/disable status setting for pre-warning mode.</p>
<p>206. GATE-CYCLE OFF</p>	<p>Service warning counter enable/disable setting.</p>
<p>207. SERVICE MODE OFF</p>	<p>Service mode enable/disable setting.</p>
<p>208. MENU PASSWRD ON</p>	<p>Menu password enable/disable setting.</p>

3- END POSITION ADJUSTMENT

300.OPEN ENDPOS.
5000

Click **OK** button to set open limit position.

300.OPEN ENDPOS.
5000 4000

Press **OPEN** button to set opened position and press **OK** button to save.

Set Value

Actual Value

301.CLOSE ENDPOS
3000

Click **OK** button to set close limit position.

301.CLOSE ENDPOS
3000 4000

Press **CLOSE** button to set closed position and press **OK** button to save.

Set Value

Actual Value

302.FINE ADJ.OPEN

Calibration value for open limit.

303.FINE ADJ.CLOS

Calibration value for close limit.

304.ABSL.ENCODER
OFF

Absolute encoder ON/OFF setting.

305.REVERSE OFF
VALUE: 150

Cancellation position of safety edge systems for closing direction (distance value from close limit value).

306.ROTATINGFIELD
MOD 1: STRAIGHT

Mod 1: Straight
Mod 2: Reverse

4-DOOR WORKING
INFORMATION

<p>400.TOTAL CYCLE COUNT: 0</p>	<p>Total cycle counter.</p>
<p>401.SERVICE WARN COUNT: 20000</p>	<p>Service warning value for cycle counter.</p>
<p>402.PRODUC. DATE 21.11.2018</p>	<p>Production date.</p>
<p>403.MOUNT. DATE 09.01.2019</p>	<p>Installation date.</p>
<p>404.SERIAL NUMB. SR221105 V5.01</p>	<p>Product serial number.</p>
<p>405.MODEL</p>	<p>Product model information.</p>

5-INPUT-OUTPUT
SETTINGS

500.INPUT10 SWC ON	Menu for setting closed limit switch input ON/OFF.
501.INPUT11 SWO ON	Menu for setting opened limit switch input ON/OFF
502.INPUT 23 OSE 2.PNEUMATIC NC	1.Optosensor 2.Pneumatic NC 3.Pneumatic NO
503.RELAY25-26-27 MOD1.FLASOR	1.Flasher 4.Door Opening 7.Door Closed 10.Closing+Closed 13.Input SWF 2.Buzzer 5.Door Closing 8.Opened+Closed 11.Opening+Closed 14.Input SWS 3.Error 6.Door Opened 9.Opening+Opened 12.Closing+Opened
504.FACTORY DEF. 2.ENCODER	1.Limit Switch 2.Encoder 3.Fast PVC Mech. 4.Fast PVC Enc. 5.Factory Reset
PC COMMUNICATION WAITING	Communication menu between control unit and computer

6-LCD ADJUSTMENTS

600-LANGUAGE
1. TURKISH

Language selection menu.
1.Turkish 2.English

601MENU PASSWORD
CHANGE

Password change menu.

602ERROR HISTORY

Error history menu.

FAULT MESSAGES

<p>FU600 E1 POWER ERROR</p>	<p>Phase sequence is incorrect. Check phase sequence or fuses.</p>
<p>FU600 MOT. POWER ERROR</p>	<p>Check motor connection cables or motor.</p>
<p>FU600 EMERGENCY STOP1</p>	<p>Check emergency stop button or emergency button cables.</p>
<p>FU600 EMERGENCY STOP3</p>	<p>Check motor temperature, it I caused due to thermic switch or manual emergency operator.</p>
<p>FU600 ENCODER COM. ERR</p>	<p>Electronic limit switch communication error. Check ENC connection.</p>
<p>FU600 F04 PED.DOOR OPEN</p>	<p>Check connection of STOP2 input.</p>
<p>FU600 MOTOR DIR.ERROR</p>	<p>Motor direction error. Change two cables of motor.</p>



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