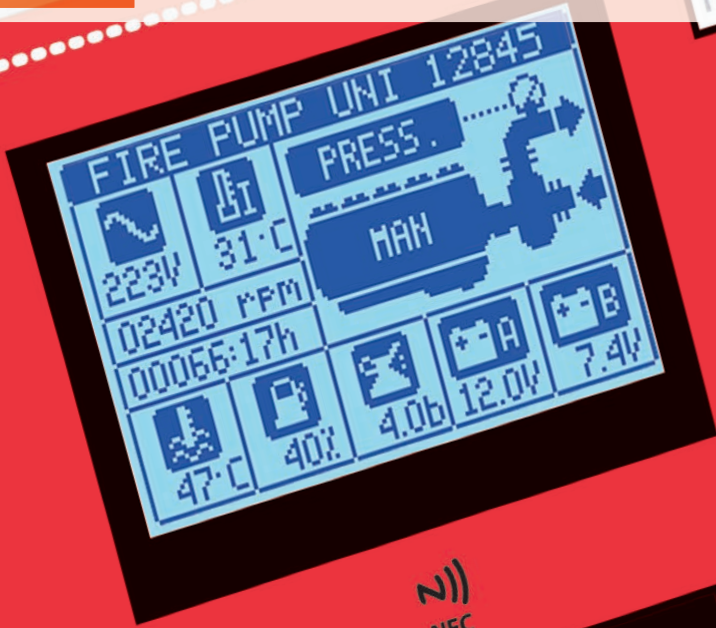
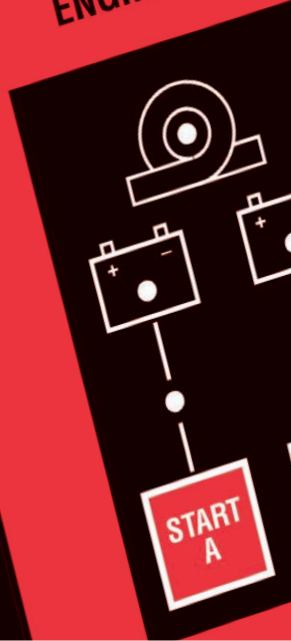


FFL - EN12845



**FIRE FIGHTING  
ENGINE PUMP CONTROLLER**



- Fire pump controllers according to EN/BS 12845
- Remote alarm panels according to EN/BS 12845
- Advanced programmable I/O functions to control the fire fighting system
- Expandable with EXP modules
- Controllers and expansion modules with tropicalized PCB
- Controllers with built-in NFC technology
- RS485 and Ethernet communication interfaces
- Setup and supervision software
- Modem control for sending alarm messages and emails.

**Fire pump controllers**

Diesel engine fire pump controllers ..... 29 - 2

Electric fire pump controllers ..... 29 - 3

**Remote alarm panels for fire pump applications** ..... 29 - 4

**Communication devices, software and accessories** ..... 29 - 5

**Dimensions** ..... 29 - 6

**Technical characteristics** ..... 29 - 7

**SEC. - PAGE**



Page 29-2

### DIESEL ENGINE FIRE PUMP CONTROLLERS

- Crank cycle according to EN/BS 12845
- Batteries monitoring
- Advanced programmable functions for fire fighting systems
- AC voltage monitoring
- Possibility of setup via NFC technology and APP
- Built-in RS485 communication
- PLC logic integrated.



Page 29-3

### ELECTRIC FIRE PUMP CONTROLLERS

- Designed in accordance to EN/BS 12845
- 1 phase or 3 phase voltage measure inputs
- 1 phase or 3 phase current measure inputs
- 24VAC or 230VAC power supply
- Advanced programmable functions for fire fighting systems
- Possibility of setup via NFC technology and APP
- Built-in RS485 communication
- PLC logic integrated.



Page 29-4

### REMOTE ALARM PANELS FOR FIRE PUMP APPLICATIONS

- Remote panels according to EN/BS 12845
- LED or LCD display versions
- Pushbutton to silence the siren and test the LEDs
- Built-in buzzer.



Page 29-5

### COMMUNICATION DEVICES, SOFTWARE AND ACCESSORIES

- Communication interfaces
- Additional digital and analog inputs and outputs
- GPRS-GSM module
- Gateway
- Supervision, setup and remote control software
- APP.

### Diesel engine fire pump controllers



FFL...DP



Order codes	Description	Qty per pkg	Wt
		n°	[kg]
<b>FFL700DP</b>	Controller for diesel engine fire pumps in accordance with EN/BS 12845, power supply 12/24VDC, built-in RS485	1	0.980
<b>FFL800DP</b>	Controller for diesel engine fire pumps in accordance with EN/BS 12845, power supply 12/24VDC, built-in RS485, expandable with EXP... expansion modules	1	0.980



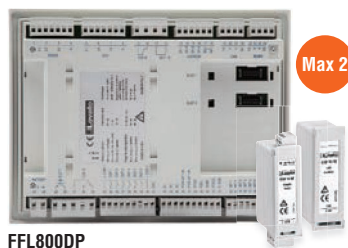
The app can be downloaded from Google Play Store and App Store.



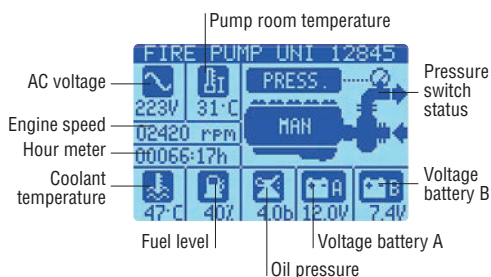
Order code	Description
<b>EXPANSION MODULES.</b> Inputs and outputs.	
<b>EXP1008T</b>	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VA, tropicalized PCB
<b>EXP1042T</b>	6 digital inputs, tropicalized PCB
<b>EXP1043T</b>	4 digital inputs and 2 static outputs, tropicalized PCB
<b>EXP1004T</b>	2 opto-isolated analog inputs 0/4-20mA or PT100 or 0-10V or 0...±5V, tropicalized PCB
Communication ports.	
<b>EXP1012T</b>	Opto-isolated RS485 interface, tropicalized PCB
<b>EXP1013T</b>	Ethernet interface, tropicalized PCB
<b>EXP1015</b>	GPRS/GSM modem



EXP10...



FFL800DP



### General characteristics

FFL...DP controllers integrate all the functions required by the EN/BS 12845 standard regarding the diesel engine fire pump management and help the user to monitor and maintain the performance of the entire firefighting system.

The backlit graphic 128x80 pixel LDC display ensures high visibility in low light conditions.

Inputs and outputs are programmable and the number can be increased with the I/O expansion modules, moreover they can be managed by the integrated PLC logic.

This all means a complete solution with less wiring, less components and less programming to set up the firefighting system. Within the main page, it is possible to see all the information about the engine fire pump.

Functions for the maintenance and the test of the firefighting system are available directly on the display. Furthermore there is the possibility to receive remotely this information by the digital outputs or the Modbus communication through the built-in RS485.

The controller monitors constantly the temperature inside the pump room using the integrated or an external temperature sensor and the status of the auxiliary voltage with the single-phase AC voltage measurement input.

### Features

- Engine control, monitoring and protection
- Backlit graphic LCD display with multilingual text and synoptic
- Texts in 5 languages (ENG, ITA, FRA, SPA, DEU)
- Customizable texts via **Xpress** software (see section 30)
- Dedicated page for LED test and commissioning
- Dedicated page for jockey pump monitoring
- Dual DC power from two separate batteries 12/24VDC
- Input of single-phase AC voltage measurement for charger power supply monitoring
- 9 LED indicators: mode selection, batteries selection, battery status, pump activated, warning indication
- 2 password levels
- Built-in RS485 port
- Built-in real time clock
- Built-in NTC temperature sensor
- Storage of last 128 events
- Automatic starting sequence according to EN/BS 12845
- Communication interface by front optical port with CX01 and CX02 device using USB or Wi-Fi connections
- NFC contactless interface for programming via **NFC** App freely downloadable from Google Play Store and App Store
- Isolated RS485 serial port for supervision (compatibility with **Synergy** and **Synergy<sub>com</sub>** software)
- Expandability with EXP... modules tropicalized PCB (only FFL800DP)
- Compatibility with FFLRA... remote alarm panels.

### Operational characteristics

- Power supply voltage: 12 or 24VDC
- Voltage measurement inputs:
  - Rated voltage Ue: 100...240VAC
  - Measurement range: 50...264VAC
  - Frequency range: 45...65Hz
- Input to monitor the starter pinion
- NTC probe input:
  - measuring range: -40...+85°C
- Engine running input (D+)
- Programmable digital inputs: 10 - Negative
- Programmable relay outputs: 10
- Programmable static outputs: 1
- 3 programmable resistive sensors
- Compatible software: **Sam1**, **Xpress**, **NFC**, **Synergy** and **Synergy<sub>com</sub>** software (see section 30)
- Degree of protection: IP65 on front. IP20 at rear
- PCB tropicalized
- Operating temperature: -25...+70°C.

**Synergy**, **Xpress** and **Sam1** software, **NFC** App  
See Section 30.

**EXP... series expansion modules**  
See Section 31, page 2.

### Compliance

Compliant with standards: UNI EN/BS 12845, IEC/EN/BS 61010-1, IEC/EN/BS 61010-2-030, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3.

### Electric fire pump controllers



FFL...EP



Order codes	Description	Qty per pkg	Wt
		n°	[kg]
<b>FFL700EP</b>	Controller for electric fire pumps in accordance with EN/BS 12845, power supply 24VAC, built-in RS485	1	0.980
<b>FFL800EP</b>	Controller for electric fire pumps in accordance with EN/BS 12845, power supply 24VAC or 110...240VAC, built-in RS485, expandable with EXP... expansion modules	1	0.980



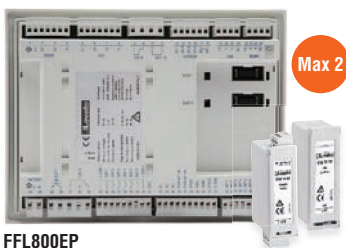
The app can be downloaded from Google Play Store and App Store.



Order code	Description
<b>EXPANSION MODULES.</b> Inputs and outputs.	
<b>EXP1008T</b>	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VA, tropicalized PCB
<b>EXP1042T</b>	6 digital inputs, tropicalized PCB
<b>EXP1043T</b>	4 digital inputs and 2 static outputs, tropicalized PCB
<b>EXP1004T</b>	2 opto-isolated analog inputs 0/4-20mA or PT100 or 0-10V or 0...±5V, tropicalized PCB
<b>Communication ports.</b>	
<b>EXP1012T</b>	Opto-isolated RS485 interface, tropicalized PCB
<b>EXP1013T</b>	Ethernet interface, tropicalized PCB
<b>EXP1015</b>	GPRS/GSM modem

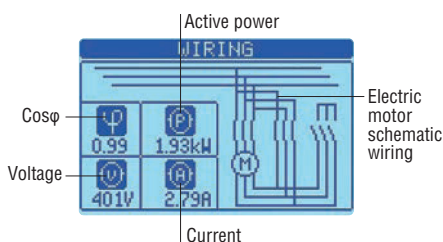


EXP10...



FFL800EP

Max 2



#### Single phase pump applications:

- Skyscrapers
- Residences
- Civil Buildings.



#### 3-phase pump applications:

- Industry
- Shopping malls
- Hospitals
- Warehouses.
- Etc.



#### General characteristics

FFL...EP controllers integrate all the functions required by the EN/BS 12845 standard regarding the electric fire pump management and help the user to monitor and maintain the performance of the entire firefighting system. The backlit graphic 128x80 pixel LDC display ensures high visibility in low light conditions. Inputs and outputs are programmable and the number can be increased with the I/O expansion modules, moreover they can be managed by the integrated PLC logic. This all means a complete solution with less wiring, less components and less programming to set up the firefighting system. Within the main page, it is possible to see all the information about fire pump and the electrical engine. Functions for the maintenance and the test of the firefighting system are available directly on the display. Furthermore there is the possibility to receive remotely this information by the digital outputs or the Modbus communication through the built-in RS485. The controller monitors constantly the temperature inside the pump room using the integrated or an external temperature sensor.

#### Features

- Possibility of single phase or 3-phase connection of the electric fire pump controller.
- Electric motor control, monitoring and protection
- Backlit graphic LCD display with multilingual text and synoptic
- Texts in 5 languages (ENG, ITA, FRA, SPA, DEU)
- Customizable texts via Xpress software (see section 30)
- Dedicated page for LED test and commissioning
- Dedicated page for jockey pump monitoring
- 8 LED indicators: electric pump running, main status, electric motor status, starting request, global alarm, failure to start, stop enabled, automatic start excluded
- 2 password levels
- Built-in RS485 port
- Built-in real time clock
- Built-in NTC temperature sensor
- Storage of last 128 events
- Communication interface by front optical port with CX01 and CX02 device using USB or Wi-Fi connections
- NFC contactless interface for programming via NFC App freely downloadable from Google Play Store and App Store
- Isolated RS485 serial port for supervision (compatibility with Synergy and Synergy<sub>max</sub> software)
- Expandability with EXP... modules tropicalized PCB (only FFL800EP)
- Compatibility with FFLRA... remote alarm panels.

#### Operational characteristics

- Power supply voltage: 24VAC (FFL700EP), 24VAC and 110...240VAC (FFL800EP)
- Voltage measurement inputs:
  - 1 phase or 3 phases
  - Rated voltage U<sub>e</sub>: 100...600VAC
  - Measurement range: 80...720VAC
  - Frequency range: 45...65Hz
- 1 phase or 3 phases current measurements inputs: 1/5A
- NTC probe input:
  - measuring range: -40...+85°C
- Programmable digital inputs: 8 - Negative
- Programmable relay outputs: 7 (FFL700EP), 9 (FFL800EP)
- Programmable static outputs: 1
- Compatible software: Sam1, Xpress, NFC, Synergy and Synergy<sub>max</sub> software (see section 30)
- Degree of protection: IP65 on front. IP20 at rear
- Tropicalized PCB
- Operating temperature: -25...+70°C.

Synergy, Xpress and Sam1 software, NFC App  
See Section 30.

EXP... series expansion modules  
See Section 31, page 2.

#### Compliance

Compliant with standards: UNI EN/BS 12845, IEC/EN/BS 61010-1, IEC/EN/BS 61010-2-030, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3.

## Remote alarm panels for fire pump applications



FFLRA200



FFLRA400

Order codes	Description	Qty per pkg	Wt
		n°	[kg]
<b>FFLRA200</b>	Remote alarm panel with LED, buzzer, pushbutton to silence the siren and test the LEDs. It supports up to 2 fire pump controllers	1	1.120
<b>FFLRA400</b>	Remote alarm panel with LCD graphic display (128x80pxls), buzzer, expandable with 2 EXP... expansion modules. It supports up to 3 fire pump controllers	1	2.670



The app can be downloaded from Google Play Store and App Store.



EXP10...

Order code	Description
EXPANSION MODULES FOR FFLRA400 (2 AVAILABLE SLOTS) Inputs and outputs.	
<b>EXP1000</b>	4 opto-isolated digital inputs
<b>EXP1001</b>	4 opto-isolated static outputs
<b>EXP1002</b>	2 digital inputs and 2 static outputs, opto-isolated
<b>EXP1003</b>	2 relay outputs 5A 250VAC
<b>EXP1008</b>	2 opto-isolated digital inputs and 2 5A relay outputs 250VAC
<b>EXP1042T</b>	6 digital inputs, tropicalized PCB
<b>EXP1043T</b>	4 digital inputs and 2 static outputs, tropicalized PCB
Communication ports.	
<b>EXP1010</b>	Opto-isolated USB interface
<b>EXP1011</b>	Opto-isolated RS232 interface
<b>EXP1012</b>	Opto-isolated RS485 interface
<b>EXP1013</b>	Opto-isolated Ethernet interface
<b>EXP1015</b>	GPRS/GSM modem

### General characteristics FFLRA200

FFLRA200 is a simple remote annunciator: the buzzer will sound in case of alarm and the LEDs will indicate the presence of the relative alarms. The labels for LEDs descriptions are included in the package. A template can be downloaded from [www.LovatoElectric.com](http://www.LovatoElectric.com), products section for alarms labels model. The communication between the remote annunciator and the FFL controller is performed by means of a pulsed signal and up to 2 FFL controllers can be connected. Using the front buttons, it is possible to silence the alarm occurred and test the LEDs. The alarms notified on the remote panel are configurable directly on FFL controllers. No setup on the remote panel is required. 2 LEDs display the status of the communication and the remote panel power supply.

### Operational characteristics

- Power supply voltage: 100...240VAC
- AC voltage range: 90...264VAC
- Frequency range: 45...66Hz
- Arrangement for internal battery support is built-in (battery is not included)
- Compatible software: **NFC** App freely downloadable from Google Play Store and App Store
- Degree of protection: IP40
- Operating temperature: -25...+50°C.

### Compliance

Compliant with standards: UNI EN/BS 12845, IEC/EN/BS 61010-1, IEC/EN/BS 61010-2-030, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3.

### General characteristics FFLRA400

FFLRA400 is an advanced remote annunciator with backlit graphic LCD display. It is expandable with 2 EXP modules to increase its features in terms of communication, digital inputs and digital outputs. The communication between the remote panel and the FFL controller is performed by means of a pulsed signal or through RS485 if the EXP1012 expansion module is added. Up to 3 FFL controllers can be connected to one FFLRA400 with RS485 communication. On the front of the remote alarm panel, LEDs and a buzzer are present to display and notify the alarms and to see them from a distance; at the same time a complete description of the alarms is available on the graphic LCD display. The texts are available in 10 different languages: English, Italian, French, Spanish, German, Portuguese, Russian, Polish, Czech and Turkish. By fitting the EXP1015 expansion module, the remote annunciator is automatically equipped and configured with a GSM/GPRS modem. Once a data-enabled SIM card is inserted, SMS with alarms or events and email messages can be transmitted by the remote annunciator.

### Operational characteristics

- Power supply voltage: 100...240VAC
- AC voltage range: 90...264VAC
- Frequency range: 47...63Hz
- Arrangement for internal battery support (battery not included) is built-in
- 5 digital inputs
- 2 digital outputs
- Expandability with EXP... modules (2 available slots)
- Optical port on front for CX01 and CX02 device
- Compatible software: **S<sub>am</sub>1**, **X<sub>press</sub>**, **NFC**, **Synergy** and **Synergy** software (see section 30)
- Degree of protection: IP40
- Operating temperature: -25...+50°C.

**Synergy**, **X<sub>press</sub>** and **S<sub>am</sub>1** software, **NFC** App  
See Section 30.

**EXP... series expansion modules**  
See Section 31, page 2.

### Compliance

Compliant with standards: UNI EN/BS 12845, IEC/EN/BS 61010-1, IEC/EN/BS 61010-2-030, IEC/EN/BS 61000-6-2, IEC/EN/BS 61000-6-3.

### Communication devices



CX01



CX02



CX03

Order code	Description	Qty per pkg	Wt
		n°	[kg]
<b>CX01</b>	USB connection device PC↔FFL... with optical connector for programming, data download, diagnostics and firmware upgrade	1	0.090
<b>CX02</b>	Wi-Fi connection dongle PC↔FFL... for data download, diagnostics and firmware upgrade, project upload/download and controller cloning	1	0.090
<b>CX03</b>	GSM/GPRS penta-band antenna (850/900/1800/1900/2100MHz)	1	0.090

#### General characteristics

Communication and connection devices for fire pump controllers FFL700... - FFL800... - FFLRA400 for personal computers, smartphones, tablets, modems, bus drives.

#### CX01

The USB/optical device, complete with cable, allows to connect fire pump controllers to a PC without having to disconnect the power supply from the electric panel and to carry out:

- Parameter programming
- Settings copy to external units
- Data and event download
- Carry out the diagnostics
- Firmware upgrade.

The PC identifies the connection as a standard USB.

#### CX02

By Wi-Fi connection, FFL700..., FFL800... controllers and FFLRA400 remote alarm panel can be viewed by PC, smartphone and tablet with no need for cabling and to carry out:

- Parameter programming
- Data and event download
- Diagnostics project upload/download and controller cloning.

#### CX03

Antenna compatible with the majority of worldwide mobile networks thanks to the available frequencies at 850/900/1800/1900/2100MHz.

- IP67 IEC protection degree.
- Fixing by Ø10mm/0.39" drilling.
- Cable length 2.5m/2.73yd.

For dimensions, wiring schemes and technical characteristics, refer to technical instructions in downloads of local or global website or consult Technical support; see contact details on inside front cover.

### Accessories



EXCCON01



EXCM4G01



EXCGLA01



EXCGLAX1



EXCGSM01

Order code	Description	Qty per pkg	Wt
		n°	[kg]
Connecting cable.			
<b>51C2</b>	PC↔FFL... connecting cable, 1.8m/6ft long	1	0.090
Converters.			
<b>EXCCON01</b>	RS485/ Ethernet converter, 12...48VDC, including DIN rail fixing kit	1	0.400
Gateway.			
<b>EXCM4G01</b>	4G Gateway with RS485 and Ethernet port, Modbus RTU/TCP protocol	1	0.300
<b>EXCGLA01</b>	Gateway data logger for data collecting via Modbus from the device in the field. Publishing of the data to supervision software, also in Cloud	1	0.600
<b>EXCGLAX1</b>	2G/4G modem communication module for EXCGLA01	1	0.160
GSM Modem (modular - 4U). IP69K outside aerial with 2.5m cable. RJ45-USB programming cable (included).			
<b>EXCGSM01</b>	100...240VAC, 1 digital input, 1 analog input (0...10V, 0...20mA, NTC), 1 relay output, receiving and sending SMS messages for remote controls and alarm signals	1	0.340

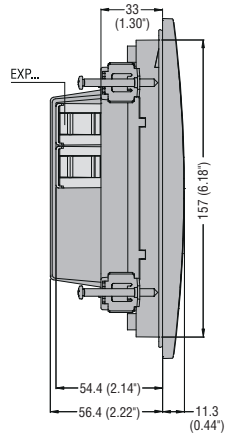
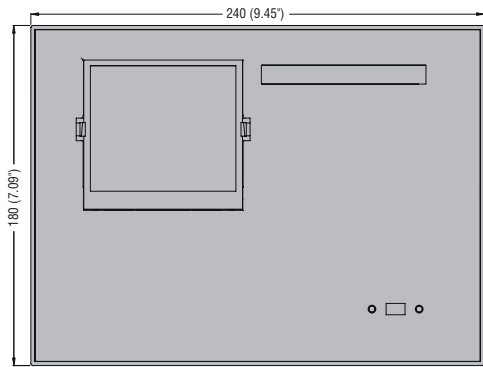
#### General characteristics

For general characteristics of these accessories see section 31.

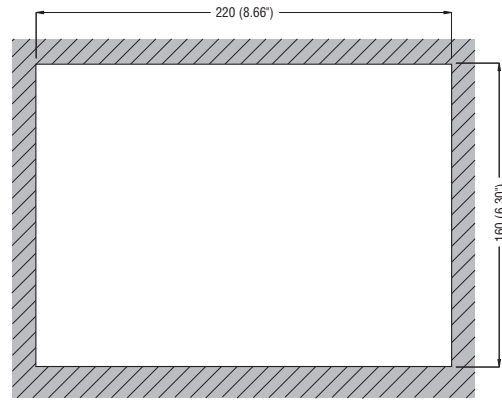
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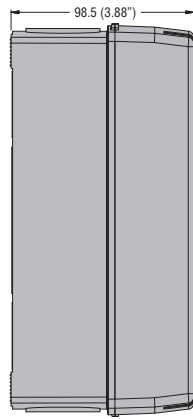
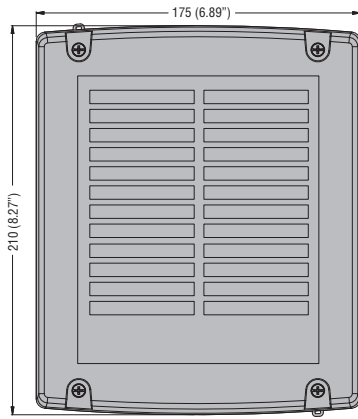
**FFL700... - FFL800...**



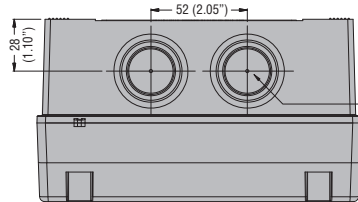
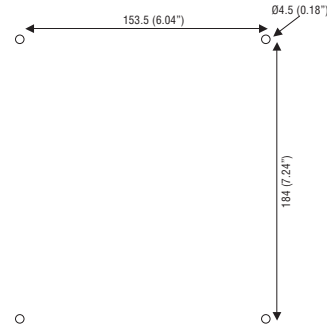
Drilling for surface fixing



**FFLRA200**

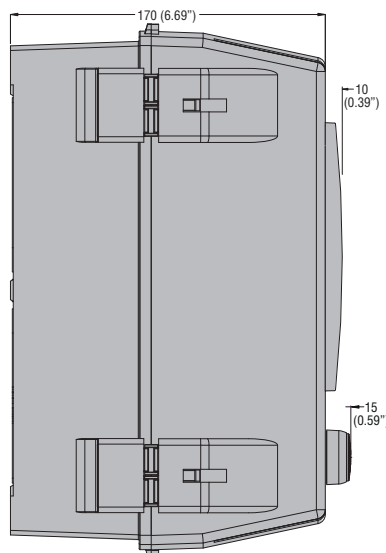
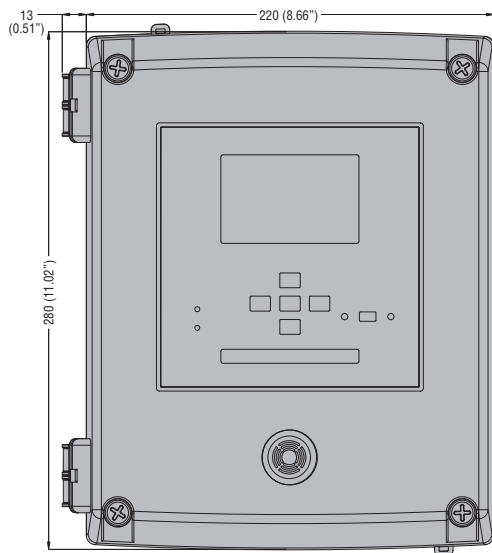


Drilling for surface fixing



PG16 / M25  
PG29 / M32  
knockouts on top  
and bottom

**FFLRA400**



TYPE	FFL...DP	FFL...EP
<b>SUPPLY</b>		
Rated voltage	12...24VDC	24VAC (FFL700EP); 24VAC/110...240VAC (FFL800EP)
<b>MAIN VOLTAGE INPUT</b>		
Rated voltage Us	100...250VAC	100...600VAC
Measuring range	90...264VAC	80...720VAC
Frequency range	45...66Hz	
<b>ENGINE RUNNING INPUT (D+) FOR PRE-EXCITED ALTERNATOR</b>		
Voltage range	0...36VDC	—
Maximum input current	0.5mA	—
Maximum voltage at D+ terminal	12 or 24VDC (battery voltage)	—
Excitation current	210mA 12VDC / 130mA 24VDC	—
<b>ENGINE SPEED INPUT: "PICK-UP/W" INPUT</b>		
Input type	AC	—
Minimum reading frequency voltage: high sensitivity	≥2.8Vpp (1Vrms) at 40Hz ≥10Vpp (3.5Vrms) at 2000Hz	—
Minimum reading frequency voltage: low sensitivity	≥3.7Vpp (1.3Vrms) at 40Hz ≥7Vpp (2.5Vrms) at 2000Hz	—
Measurement input impedance	> 100kΩ	—
Maximum voltage	84Vpp (30Vrms)	—
<b>PINION INPUT</b>		
Voltage range	0...33VDC	—
Current input	≤8mA	—
Threshold	Adjustable	—
Input delay	Adjustable	—
<b>NTC PROBE INPUT</b>		
Type of sensor	NTC (LOVATO code NTC01)	
Measuring range	-40...+85°C	
Maximum connection length	3m	
<b>DIGITAL INPUTS</b>		
Input type	Negative	
Input current	≤6mA	
Low input signal	≤1.25V (typical 1.9V)	
High input signal	≥4.9V (typical 3.8V)	
Input signal delay	≥50ms	
<b>OUTPUTS</b>		
Outputs 1-2	2 x 1NO - 12A 30VAC/DC	—
Battery voltage output	2NO + 1 common terminal	—
Output 3	8A 30VDC (DC1); 30VDC 1A pilot duty	—
Output 4	4A 30VDC (DC1)	—
Outputs 5-10	6 x 1C/O - 8A 250VAC (AC1); 1.5A 250VAC (AC15)	—
Alarm outputs	—	4 x C/O - 8A 250VAC (FFL700EP) 6 x C/O - 8A 250VAC (FFL800EP)
Motor command output	—	3NO - 16A 250VAC
<b>STATIC OUTPUT</b>		
Output type	NO	
Rated voltage	10...30VDC	
Maximum current	50mA	
<b>RS485 SERIAL INTERFACE</b>		
Interface type	Isolated	
Baud-rate	Programmable 1200...115200bps	
Insulation voltage (RS485 – V Batt.)	1kV=	
<b>AMBIENT CONDITIONS</b>		
Operating temperature	-25...+70°C	
Storage temperature	-30...+80°C	
Relative humidity	<80% (IEC/EN/BS 60068-2-78)	
<b>CONNECTIONS</b>		
Terminals type	Removable screw-type	
Wire cross-section (min. and max.)	0.2...2.5mm <sup>2</sup> (24...12AWG)	
Tightening torque	0.56Nm (5lb.in)	
<b>HOUSING</b>		
Installation	Flush-mount	
Material	Polycarbonate	
Degree of protection	IP65 Frontal; IP20 on terminals	