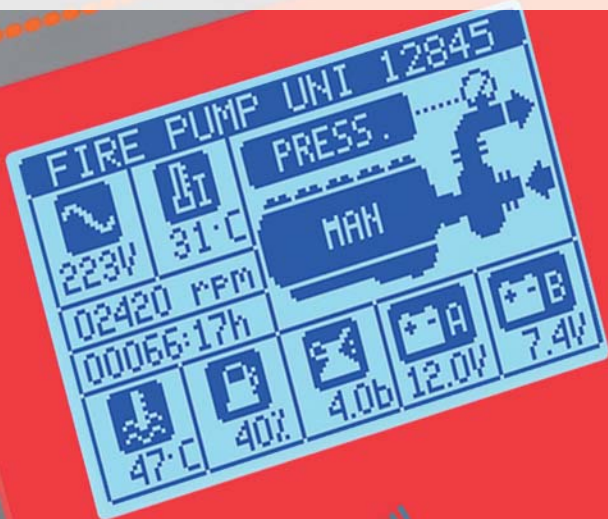


FFL - EN12845

FIRE FIGHTING  
ENGINE PUMP CONTROLLER

- Fire pump controllers according to EN 12845
- Remote alarm panels according to EN 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 ..... 28 - 2

Electric fire pump controllers ..... 28 - 3

**Remote alarm panels for fire pump applications** ..... 28 - 4**Communication devices, accessories and software** ..... 28 - 5**Dimensions** ..... 28 - 6**Technical characteristics** ..... 28 - 7**SEC. - PAGE**



NFC

Pag. 28-2

#### DIESEL ENGINE FIRE PUMP CONTROLLERS

- Crank cycle according to EN 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.



NFC

Pag. 28-3

#### ELECTRIC FIRE PUMP CONTROLLERS

- Designed in accordance to EN 12845
- 3 phase voltage measure inputs
- 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.



NFC



Pag. 28-4

#### REMOTE ALARM PANELS FOR FIRE PUMP APPLICATIONS

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



Pag. 28-5

#### COMMUNICATION DEVICES, ACCESSORIES AND SOFTWARE

- 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



NFC

FFL...DP



new

Order codes	Description	Qty per pkg	Wt
		n°	[kg]
FFL 700DP	Controller for diesel engine fire pumps in accordance with EN 12845, power supply 12/24VDC, built-in RS485	1	0.980
FFL 800DP	Controller for diesel engine fire pumps in accordance with EN 12845, power supply 12/24VDC, built-in RS485, expandable with EXP... expansion modules	1	0.980

Order code	Description
EXPANSION MODULES. Inputs and outputs.	
EXP10 08T	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VA, PCB tropicalized
EXP10 42T	6 digital inputs, PCB tropicalized
EXP10 43T	4 digital input and 2 static outputs, PCB tropicalized
EXP10 04T	2 opto-isolated analog inputs 0/4-20mA or PT100 or 0-10V or 0...±5V, PCB tropicalized
Communication ports.	
EXP10 12T	Opto-isolated RS485 interface, PCB tropicalized
EXP10 13T	Ethernet interface, PCB tropicalized
EXP10 15	GPRS/GSM modem



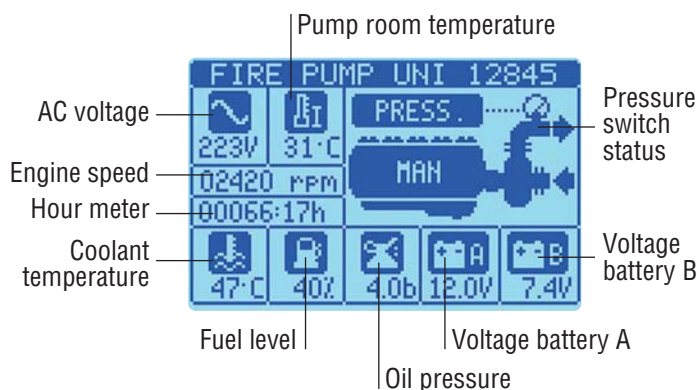
EXP 10...

new

new



Max 2



### General characteristics

FFL...DP controllers integrate all the functions required by the EN 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 LCD display 128x80 pixel 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 in the PLC logic integrated.

This all means an integrated 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 with 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 29)
- 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 network monitoring
- 9 LED indicators: mode selection, batteries selection, battery status, pump activated, warning
- 2 password levels
- Built-in RS485 port
- Built-in real time clock
- Built-in NTC temperature sensor
- Storage of last 64 events
- Automatic starting sequence in accordance to EN 12845
- Communication interface by front optical port with CX 01 and CX 02 dongle using USB or Wi-Fi connections
- NFC contactless interface for programming via NFC app
- Isolated RS485 serial port for supervision (compatibility with Synergy and Synergy software)
- Expandability with EXP... modules tropicalized (only FFL 800DP)
- Compatibility with FFL RA... 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: Sani1, Xpress, NFC, Synergy and Synergy software (see section 29)
- Degree of protection: IP 20 at rear. IP65 on front
- PCB tropicalized
- Operating temperature: -25...+70°C.

Synergy and Xpress software, NFC app  
See Section 29.

EXP series expansion modules  
See Section 30, page 2.

### Compliance

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

## Electric fire pump controllers



FFL...EP



**new**



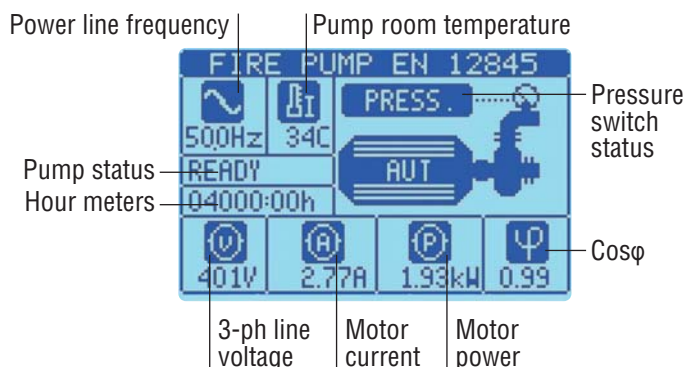
EXP 10...

**new**

**new**

Order codes	Description	Qty per pkg	Wt
		n°	[kg]
FFL 700EP	Controller for electric fire pumps in accordance with EN 12845, power supply 24VAC, built-in RS485	1	0.980
FFL 800EP	Controller for electric fire pumps in accordance with EN 12845, power supply 24VAC or 110...240VAC, built-in RS485, expandable with EXP... expansion modules	1	0.980

Order code	Description
EXPANSION MODULES. Inputs and outputs.	
EXP10 08T	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VA, PCB tropicalized
EXP10 42T	6 digital inputs, PCB tropicalized
EXP10 43T	4 digital input and 2 static outputs, PCB tropicalized
EXP10 04T	2 opto-isolated analog inputs 0/4-20mA or PT100 or 0-10V or 0...±5V, PCB tropicalized
Communication ports.	
EXP10 12T	Opto-isolated RS485 interface, PCB tropicalized
EXP10 13T	Ethernet interface, PCB tropicalized
EXP10 15	GPRS/GSM modem



### General characteristics

FFL...EP controllers integrate all the functions required by the EN 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 LCD display 128x80 pixel 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 in the PLC logic integrated.

This all means an integrated 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 with 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

- 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 29)
- 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 level
- Built-in RS485 port
- Built-in real time clock
- Built-in NTC temperature sensor
- Storage of last 64 events
- Communication interface by front optical port with CX 01 and CX 02 dongle using USB or Wi-Fi connections
- NFC contactless interface for programming via NFC app
- Isolated RS485 serial port for supervision (compatibility with Synergy and Synergy software)
- Expandability with EXP... modules tropicalized (only FFL 800EP)
- Compatibility with FFL RA... remote alarm panels.

### Operational characteristics

- Power supply voltage: 24VAC (FFL 700EP), 24 and 110...240VAC (FFL 800EP)
- Voltage measurement inputs:
  - 3 phases
  - Rated voltage Ue: 100...600VAC
  - Measurement range: 80...720VAC
  - Frequency range: 45...65Hz
- 3 phases current measurements inputs: 1/5A
- NTC probe input:
  - measuring range: -40...+85°C
- Programmable digital inputs: 8 - Negative
- Programmable relay outputs: 9
- Programmable static outputs: 1
- Compatible software: Sami, Xpress, NFC, Synergy and Synergy software (see section 29)
- Degree of protection: IP 20 at rear. IP65 on front
- Tropicalized PCB
- Operating temperature: -25...+70°C.

Synergy and Xpress software, NFC app  
See Section 29.

EXP series expansion modules  
See Section 30, page 2.

### Compliance

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

## Remote alarm panels for fire pump applications



FFL RA 200






FFL RA 400



EXP 10...



Order codes	Description	Qty per pkg	Wt
		n°	[kg]
FFL RA 200	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
FFL RA 400	Remote alarm panel with LCD graphic display (128x80pxls), buzzer, expandable with EXP... expansion modules. It supports up to 3 fire pump controllers	1	2.670

Order code	Description
EXPANSION MODULES FOR FFL RA 400 (2 AVAILABLE SLOTS) Inputs and outputs.	
EXP10 00	4 opto-isolated digital inputs
EXP10 01	4 opto-isolated static outputs
EXP10 02	2 digital inputs and 2 static outputs, opto-isolated
EXP10 03	2 relay outputs 5A 250VAC
EXP10 08	2 opto-isolated digital inputs and 2 5A relay outputs 250VAC
EXP10 42T	6 digital inputs, PCB tropicalized
EXP10 43T	4 digital input and 2 static outputs, PCB tropicalized
Communication ports.	
EXP10 11	Opto-isolated RS232 interface
EXP10 12	Opto-isolated RS485 interface
EXP10 13	Opto-isolated Ethernet interface
EXP10 15	GPRS/GSM modem

### General characteristics FFL RA 200

FFL RA 200 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) to let the user enter the proper alarm descriptions. 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. Two 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 (battery not included) is built-in
- Compatible software: **NFC** app
- Degree of protection: IP40
- Operating temperature: -20...+60°C.

### Compliance

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

### General characteristics FFL RA 400

FFL RA 400 is an advanced remote annunciator with backlit graphic LCD display. It is expandable with the 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 EXP10 12 expansion module is added. With RS485 connection, the FFL RA 400 can read more data from the FFL controller, for example the start statistics, the jockey pump statistics, the battery status and battery charger status.

Up to 3 FFL controllers can be connected to one FFL RA 400 with RS485 communication. On the front of the remote alarm panel, LEDs and 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 EXP10 15 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 CX 01 and CX 02 dongle
- Compatible software: **S<sub>am</sub>1**, **X<sub>press</sub>**, **NFC**, **S<sub>synergy</sub>** and **S<sub>synergy</sub>** software (see section 29)
- Degree of protection: IP40
- Operating temperature: -30...+51°C.

### S<sub>synergy</sub> and X<sub>press</sub> software, NFC app

See Section 29.

### EXP series expansion modules

See Section 30, page 2.

### Compliance

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

### Communication devices



CX 01



CX 02



CX 03

Order code	Description	Qty	Wt
		per pkg	
		n°	[kg]
<b>CX 01</b>	USB connection dongle PC↔FFL... with optical connector for programming, data download, diagnostics and firmware upgrade	1	0.090
<b>CX 02</b>	Wi-Fi connection dongle PC↔FFL... for data download, diagnostics and firmware upgrade, project upload/download and controller cloning	1	0.090
<b>CX 03</b>	GSM/GPRS penta-band antenna (850/900/1800/1900/2100MHz) for EXP10 15 expansion module	1	0.090

#### General characteristics

Communication and connection devices for fire pump controllers FFL 700... - FFL 800... - FFL RA 400 for personal computers, smartphones, tablets, modems, bus drives.

#### CX 01

The USB/optical connector, 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.

#### CX 02

By Wi-Fi connection, FFL 700... - FFL 800... controllers and FFL RA 400 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.

#### CX 03

Antenna compatible with the major part 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/7.23yd.

For 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



EXC CON 01



EXC M3G 01



EXC GL A01



EXC GL AX1

**new**

Order code	Description	Qty	Wt
		per pkg	
		n°	[kg]
Connecting cables.			
<b>51 C2</b>	PC↔FFL... connecting cable, 1,8m/6ft long	1	0.090
Converters.			
<b>EXC CON 01</b>	RS485/ Ethernet converter, 12...48VDC, including DIN rail fixing kit	1	0.400
Gateway.			
<b>EXC M3G 01</b>	RS485 Gateway/3G modem, 9.5...27VAC/9.5...35VDC, including antenna and programming cable	1	0.340
<b>EXC GL A01</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>EXC GL AX1</b>	2G/3G modem communication module for EXC GL A01	1	0.160

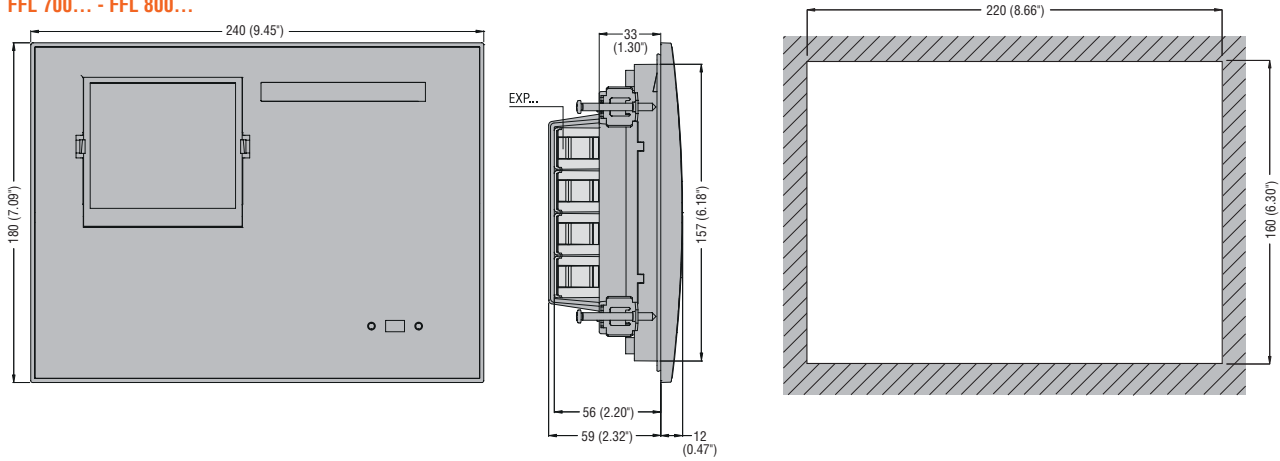
#### General characteristics

For general characteristics of these accessories see section 30.

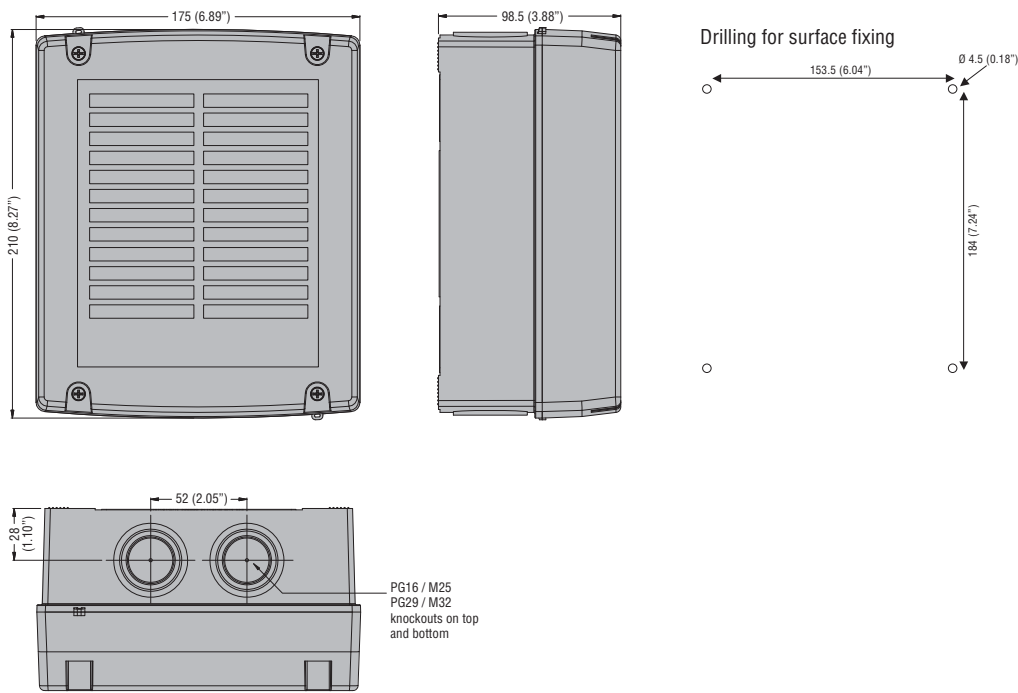
# 28 Fire pump controllers

Dimensions [mm(in)]

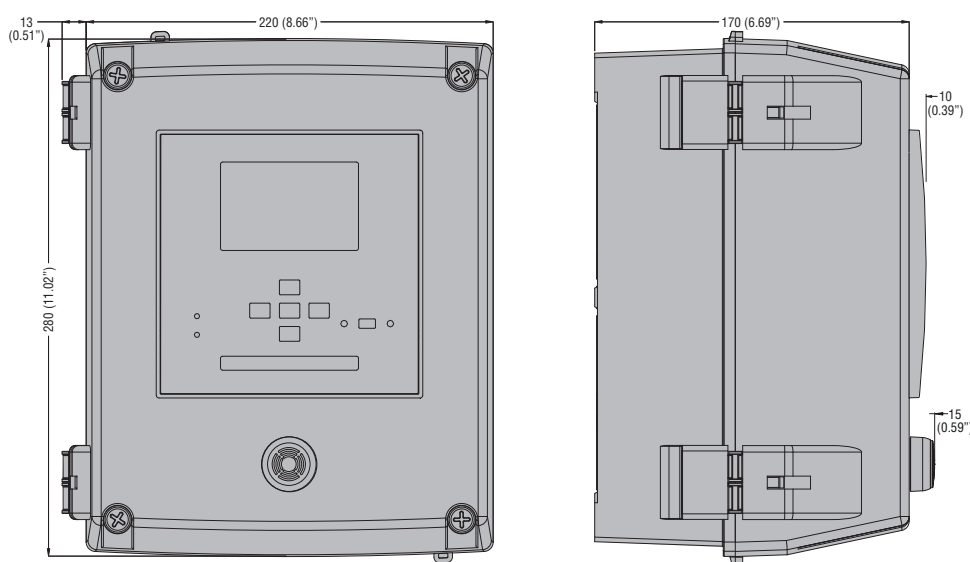
## FFL 700... - FFL 800...



## FFL RA 200



## FFL RA 400



TYPE	FFL...DP	FFL...EP
<b>SUPPLY</b>		
Rated voltage	12...24VDC	24VAC (FFL 700EP); 24VAC/110...240VAC (FFL 800EP)
<b>MAIN VOLTAGE INPUT</b>		
Rated voltage $U_s$	100...250VAC	
Measuring range	90...264VAC	
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	$\geq 2.8V_{pp}$ (1Vrms) at 40Hz $\geq 10V_{pp}$ (3.5Vrms) at 20000Hz	—
Minimum reading frequency voltage: low sensitivity	$\geq 3.7V_{pp}$ (1.3Vrms) at 40Hz $\geq 7V_{pp}$ (2.5Vrms) at 2000Hz	—
Measurement input impedance	$> 100k\Omega$	—
Maximum voltage	84Vpp (30Vrms)	—
<b>PINION INPUT</b>		
Voltage range	0...33VDC	—
Current input	$\leq 8mA$	—
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	$\leq 6mA$	
Low input signal	$\leq 1.25V$ (typical 1.9V)	
High input signal	$\geq 4.9V$ (typical 3.8V)	
Input signal delay	$\geq 50ms$	
<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	—	6 x C/O - 5A 250VAC
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 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÷12 AWG)	
Tightening torque	0.56Nm (5Lbin)	
<b>HOUSING</b>		
Installation	Flush-mount	
Material	Polycarbonate	
Degree of protection	IP65 Frontal; IP20 on terminals	