FIRE PUMP CONTROLLERS

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ENERGY AND AUTOMATION

ELECTRIC FIRE PUMP CONTROLLERS

EN 12845

FFL...EP controllers integrate all the electric pump features required by EN12845 standard, with the **same look-and-feel** of the FFL...DP series.
Operation from the front panel is very intuitive and simple, thanks to the display screen, dedicated LEDs and pushbuttons.
The power line and the electric motor are completely monitored by the electronic board.
The controller offers a **comprehensive three-phase electric measurement** set providing voltages, currents, powers, PF and all the parameters that allow to have a clear indication of the pumping system status. All the settings for the voltage and current sensors are made via **parameter programming**.
Also the commissioning and the maintenance of the system is made easy by **dedicated display pages** that help the execution of periodic tests.
The main hardware features (expandability, alarm monitoring, communication, etc.) are common to the diesel pump controller, making possible the **perfect integration** of the two systems.
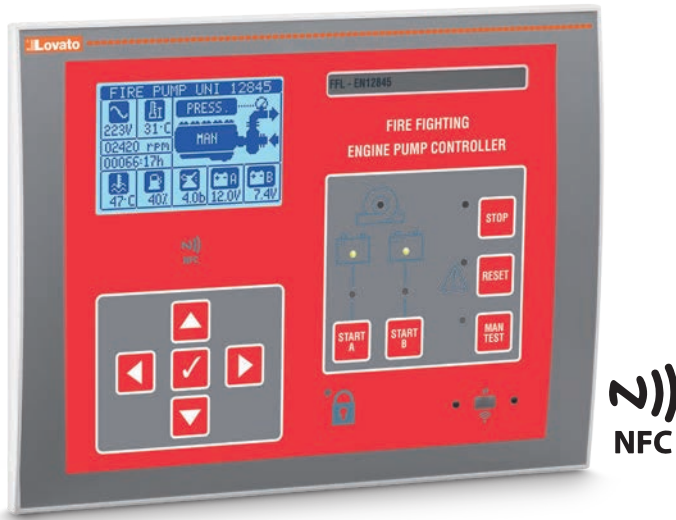
Features
- Electric motor control, monitoring and protection
- Backlit graphic LCD display with multilingual text and synoptic
- Texts in 5 languages (ENG, ITA, FRA, SPA, DEU)
- Dedicated page for lamp test and commisionning
- Dedicated page for jockey pump monitoring
- Three-phase line voltage and motor current inputs
- Possibility to control single-phase or three-phase elecrtopumps
- 7 LED indicators: electric pump running, main status, electric motor status, starting request, global alarm, failure to start, stop enabled, automatic start excluded
- 8 programmable digital inputs
- 10 programmable digital outputs
- 2 password levels
- Tropicalized PCB
- Operating temperature: -25...+70°C
- 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 APP
- Isolated RS485 serial port for supervision (compatibility with Synergy and Synergy Cloud software)
- Expandability with EXP... modules tropicalized (only FFL800EP).

Operational characteristics	FFL700EP	FFL800EP
Power supply voltage	24VAC	24VAC and 110...240VAC
Power line voltage inputs	Three-phase, 100...600VAC 50/60Hz	
Motor current inputs	Three-phase, CT /1A or /5A	
Starting methods	Star-delta, direct, soft starter, etc.	
Three-phase electric measures	Voltage, current, active/reactive/apparent power, P.F.	
NTC probe temperature input	Measuring range -40...+85°C	
Programmable digital inputs	8 - Negative	
Programmable relay outputs	9	
Programmable static outputs	1	
Expandability with EXP modules (2 available slots)	–	•
RS485 port	Built-in	
Real time clock	Built-in	
Compatible software	Sam1, Xpress, NFC, Synergy, Synergy Cloud	
Degree of protection	IP 20 at rear. IP65 on front	
Operating temperature	-25...+70°C	
Flush-mount housing	180x240mm	
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	

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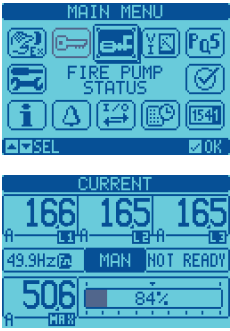# DIESEL ENGINE FIRE PUMP CONTROLLERS

EN 12845

FFL...DP series controllers integrate all the functions normally required 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 increase 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 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**. The **electronic boards** inside the controller and in the expansion modules are **tropicalized**. This solution ensures the safety and the integrity of the devices in the presence of humidity.

Features
- Engine control, monitoring and protection
- Backlit graphic LCD display with multilingual text and synoptic
- Texts in 5 languages (ENG, ITA, FRA, SPA, DEU)
- Dedicated page for lamp test and commisionning
- 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
- 10 programmable digital inputs
- 11 programmable digital outputs
- 3 programmable resistive sensors
- 2 password levels
- Tropicalized PCB
- Operating temperature: -25...+70°C
- 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 APP
- Isolated RS485 serial port for supervision (compatibility with Synergy and Synergy Cloud software)
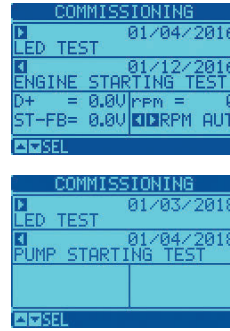- Expandability with EXP... modules tropicalized (only FFL800DP).

Operational characteristics	FFL700DP	FFL800DP
Battery power supply		
• Rated voltage Ue	12 or 24VDC	
• Operating range	7.5...33VDC	
• Minimum starting voltage	5.5VDC	
Auxiliary AC voltage measurement input	100...240VAC	
Engine speed from pick-up	40...20000Hz	
Engine running input (D+)	•	
Starting pinion input	•	
NTC probe temperature input	Measuring range -40...+85°C	
Programmable resistive input	Coolant temperature, oil pressure, fuel level	
Programmable digital inputs	10 - Negative	
Programmable relay outputs	10	
Programmable static outputs	1	
Expandability with EXP modules (2 available slots)	–	•
RS485 port	Built-in	
Real time clock	Built-in	
Compatible software	**Sam1**, **Xpress**, **NFC**, **Synergy**, **Synergy** Cloud	
Degree of protection	IP 20 at rear. IP65 on front	
Operating temperature	-25...+70°C	
Flush-mount housing	180x240mm	
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	

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FIRE PUMP CONTROLLERS

GRAPHIC LCD DISPLAY AND TEXT IN 5 LANGUAGES

The backlit graphic LCD display makes the user's interface easy to read and is particularly beneficial in poor light conditions. The FFLs have a 128x80 pixel resolution display. The texts are available in 5 different languages: English, Italian, French, Spanish and German. The new interface allows the user a clear and simple view of: **system status, system measurements, statistical data, pop-up windows for alarms.**

COMMISSIONING

For FFL...DP: on this page you can conduct the LEDs test, the engine test, and the automatic acquisition of the number of engine revolutions.

For FFL...EP: on this page you can conduct the LEDs test and the pump starting test.

JOCKEY PUMP MONITORING

On this page you can view the operational statistics **of the jockey pump**.
- total and **daily starts**;
- **maximum number of daily starts**;
- **total daily work hours**.

WATER TANK LEVEL

On this page it is possible see the real status of the water tank.
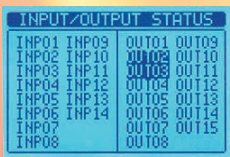
POP-UP WINDOWS

If an alarm occurs a popup window with the description of the alarm appears on the display.

MAINTENANCE COUNTERS

In the FFLs there is a counter used for maintenance purposes; when the counters reach the set limits, the relative alarms trip.

INPUTS, OUTPUTS, INTERNAL VARIABLES, COUNTERS

The input and output functions are preconfigured with the most common settings but the user can easily change the default configuration to adapt the controller to the application needs. All inputs and outputs are configurable. There are four types of programmable internal variables: **limit thresholds, remote-controlled variables, user alarms, programmable counters.** In the case of limits and counters, the user can find the relative pages, scrolling them on the display.
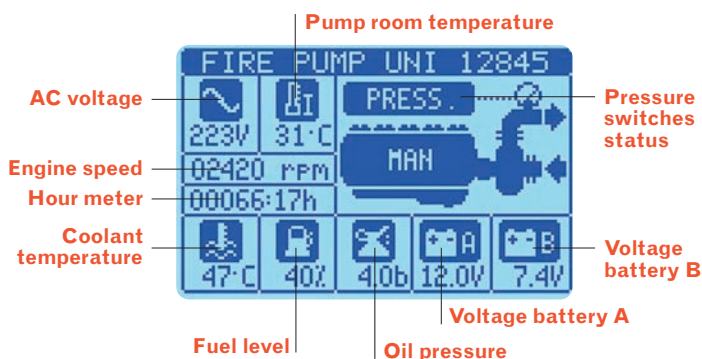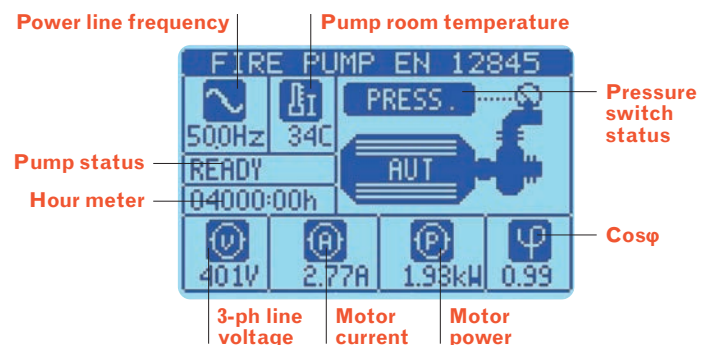
NFC CONNECTIVITY

Parameter programming by smart devices (e.g. tablets and mobile phones) is now possible using NFC wireless technology.

■ Diesel engine fire pump controller display

- Pump room temperature
- AC voltage
- Engine speed
- Hour meter
- Coolant temperature
- Fuel level
- Oil pressure
- Voltage battery A
- Voltage battery B
- Pressure switches status

■ Electric fire pump controller display

- Power line frequency
- Pump room temperature
- Pump status
- Hour meter
- 3-ph line voltage
- Motor current
- Motor power
- Cosφ
- Pressure switch status

```
ENGINE OPERATION
ENGINE HOURS..:00066:19
PAR EN.HOURS:00022:19
TOTAL STARTS.A:  0598
OK STARTS....A: 16.8%
TOTAL STARTS.B:  0592
OK STARTS....B: 11.1%
▲▼SEL
```

```
PUMP OPERATION
PUMP HOURS..:04000:00
PAR.PUM.H...:00000:00
TOTAL STARTS..:   0009
OK STARTS.....: 33.3%
▲▼SEL
```

■ ENGINE OPERATING STATISTICS

On this page you can view the operational statistics:
- total and partial hours of operation.
For FFL...DP:
- starts performed by battery A or B;
- success rate of starts from the battery A or B.
For FFL...EP:
- total starts performed;
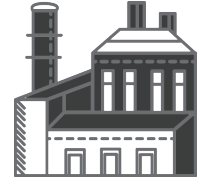- success rate of starts.

■ APPLICATIONS

with single-phase pump:
- skyscrapers
- residences
- civil buildings.

with 3-phase pump:
- industry
- shopping malls
- hospitals
- warehouses
- etc.

■ PROGRAMMABLE PLC LOGIC BUILT-IN

With PLC logic capability, programs can be made to combine internal status of the controller variables with signals incoming from the field to activate outputs, define new changeover actions and/or generate alarms.

Optical port

FFL - EN12845

FIRE FIGHTING
ENGINE PUMP CONTROLLER

STOP
RESET
MAN TEST
START A
START B

Wi-Fi dongle

■ OPTICAL PORT

All the controllers are equipped with a front optical port to support programming through CX 01 dongle and to use the functionality of CX 02 Wi-Fi dongle. Advantages:
• no need to remove power from the panel to connect to the controller
• electrical safety (no electrical connection)
• IP65 guaranteed
• convenience of working on the front.

■ USB AND WI-FI DONGLES

The optical port allows two types of connection.
CX01 dongle enables a direct connection to a PC USB port.
By using CX02 dongle a Wi-Fi connection is made and furthermore it is possible to save all parameters, statistical data, counters and events in the CX 02 dongle memory. If required such data can loaded them on the same controller again (backup function) or to a different one of the same type (replication of the configuration).

■ REAL TIME CLOCK

```
DATE / TIME
11:56:56
       hh:mm:ss
04/17/2017
Mon    mm:dd/yyyy
▲▼SEL    ◄+ ►=SET
```

The FFLs have a real time clock with integrated backup reserve energy so all events are identified by the time stamp at which they occurred.

■ EXPANDABILITY FOR FFL800... (2 SLOTS)

The configuration of the FFL in different installations can have many variants, for example the types of communication (RS485, Ethernet) or the number of inputs and outputs required.
FFL800... supports expandability by EXP... plug-in modules.
The following EXP... modules are available:
• digital inputs and outputs
• analog inputs
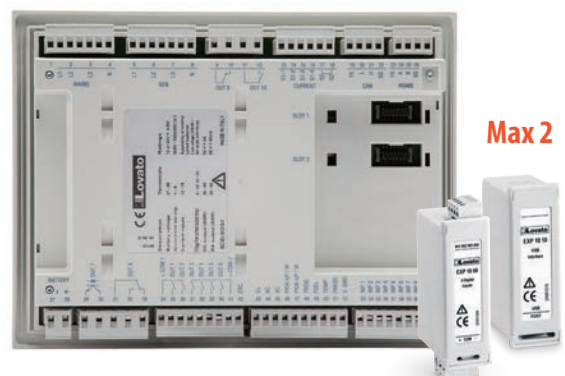• RS485 and Ethernet communication
• GPRS/GSM modem.
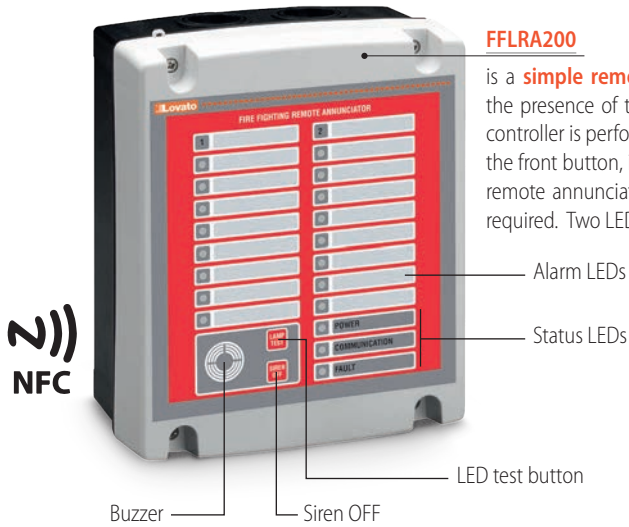The module is automatically recognised by the FFL800... when installed.

sam1
APP

Max 2

REMOTE ALARM PANELS FOR FIRE PUMP APPLICATIONS

NFC

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 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 button, it is possible to silence the alarm occurred and test the LEDs. The alarms notified on the remote annunciator are configurable directly on FFL controller. No setup on the remote annunciator is required. Two LEDs display the status of the communication and the remote annunciator power supply.

Alarm LEDs

Status LEDs

LED test button

Buzzer

Siren OFF

GSM quad-band antenna

FFLRA400

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 annunciator and the FFL is performed by means of a pulsed signal or trough RS485 if the EXP10 12 expansion module is added. With RS485 connection, the FFLRA 400 can read more data from the FFL, 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 FFLRA 400 with RS485 communication. On the front of the remote annunciator, **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.

Optical port for USB or Wi-Fi connections

Buzzer

Operational characteristics	FFLRA200	FFLRA400
Power supply voltage	100...240VAC	
AC voltage range	90...264VAC	
DC voltage range	120...375VDC	
Frequency range	47...63Hz	
Arrangement for internal battery support (battery not included)	12VDC 2.5A battery charger	
Default alarms and status managed	Automatic mode excluded, starting inquiry, failure to start, pump running, electrical cabin failure, no power supply, suction valve partially open, delivery valve partially open, low fuel level, water reserve, local pumps sprinkler alarm, drain pump alarm, local pump, low temperature alarm, jockey pump alarm.	
Expandibility with EXP... modules (2 available slots)	-	•
Optical port on front for CX 01 and CX 02 dongle	-	•
Compatible software	NFC	Sam1, Xpress, Synergy, Synergy Cloud
Degree of protection	IP40	
Operating temperature	-40...51°C	-30...51°C
Dimensions	210x175x98.5mm	280x220x170mm

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Diesel engine fire pump controllers

FFL...DP

Order codes	Description
FFL700DP	Controller for diesel engine fire pumps in accordance with EN 12845, power supply 12/24VDC, built-in RS485
FFL800DP	Controller for diesel engine fire pumps in accordance with EN 12845, power supply 12/24VDC, built-in RS485, expandable with EXP... expansion modules

Electric fire pump controllers

FFL...EP

Order codes	Description
FFL700EP	Controller for electric fire pumps in accordance with EN 12845, power supply 24VAC, built-in RS485
FFL800EP	Controller for electric fire pumps in accordance with EN 12845, power supply 24VAC/230VAC, built-in RS485, expandable with EXP... expansion modules

Expansion modules for FFL800DP and FFL800EP

EXP ...T

Order codes	Description
Inputs and outputs	
EXP1004T	2 opto-isolated analog inputs
EXP1008T	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC
EXP1042T	6 digital inputs
EXP1043T	4 digital inputs and 2 digital outputs
Communication ports	
EXP1012T	Opto-isolated RS485 interface
EXP1013T	Opto-isolated Ethernet interface
EXP1015	GPRS/GSM modem (antenna excluded; see CX 03)

Communication devices and remote temperature sensor

Order codes	Description
CX01	USB dongle for PC — FFL connection, for programming, data download, diagnostics and firmware upgrade. Complete with cable, 1.8m long
CX02	Wi-Fi dongle for PC — FFL programming, data download, diagnostics and cloning
CX03	GSM quad-band antenna IP67 (800/ 900/1800/1900MHz) for EXP10 15 expansion module
NTC01	Remote temperature sensor, length 3m/3.3yd

Remote alarm panels

FFLRA 200   FFLRA 400

Order codes	Description
FFLRA200	Remote alarm panel with LED, buzzer, pushbutton to silence the siren and test the LEDs. It supports up two fire pump controllers
FFLRA400	Remote alarm panel with LCD graphic display (128x80 pxls), buzzer, expandable with EXP... expansion modules. It supports up to 3 fire pump controllers

Expansion modules for FFLRA400

EXP...

Order codes	Description
Inputs and outputs	
EXP1000	4 opto-isolated digital inputs
EXP1001	4 opto-isolated static outputs
EXP1002	2 digital inputs and 2 static outputs
EXP1003	2 relay outputs rated 5A 250VAC
EXP1008	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC
Communication ports	
EXP1012	Opto-isolated RS485 interface
EXP1013	Opto-isolated Ethernet interface
EXP1015	GPRS/GSM modem (antenna excluded; see CX 03)

Software

Sam1	APP for configuration and maintenance
NFC	APP for program the parameters trough NFC technology
Xpress	Configuration and remote control software
Synergy	Supervision and energy management software

Automatic battery chargers

BCF...   BCG...

Order codes	Description
For lead-acid batteries. Modular version	
BCF025012	2.5A rated output current, 12VDC rated output voltage
BCF045012	4.5A rated output current, 12VDC rated output voltage
BCF012524	1.25A rated output current, 24VDC rated output voltage
BCF025024	2.5A rated output current, 24VDC rated output voltage
For non-sealed and sealed lead-acid batteries	
BCG0612	6A rated output current, 12VDC rated output voltage
BCG1212	12A rated output current, 12VDC rated output voltage
BCG0524	5A rated output current, 24VDC rated output voltage
BCG1024	10A rated output current, 24VDC rated output voltage

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