DIESEL ENGINE FIRE PUMP CONTROLLERS

Lovato electric

ENERGY AND AUTOMATION

DIESEL ENGINE FIRE PUMP CONTROLLERS

EN 12845

FFL 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.

Operational characteristics	FFL 700DP	FFL 800DP
Power supply voltage	12 or 24VDC	
Voltage measurement inputs		
• Rated voltage Ue	100...240VAC	
• Measurement range	50...264VAC	
• Frequency range	45...65Hz	
Pinion input	•	
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	
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 62091, IEC/EN 60947-1	

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 FFL 800DP).

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REMOTE ALARM PANELS FOR FIRE PUMP APPLICATIONS

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 communication between the remote annunciator and the FFL controller is performed by means of a pulsed signal and **up to 2 FLL 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.

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 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 FFL RA 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 FFL RA 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.

Operational characteristics	FFL RA 200	FFL RA 400
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	-	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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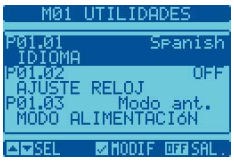
DIESEL ENGINE FIRE PUMP CONTROLLERS



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

On this page you can conduct the LEDs test, the engine test, and the automatic acquisition of the number of engine revolutions.

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

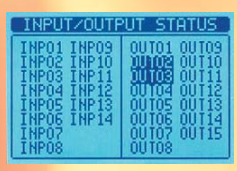
On this page it is possible see the real status of the water tank.

POP-UP WINDOWS

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

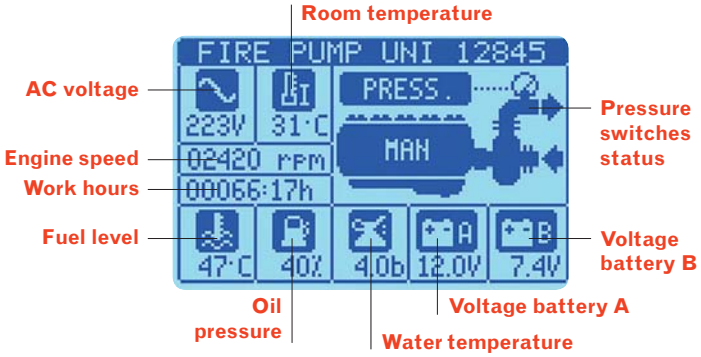
MAINTENANCE COUNTERS

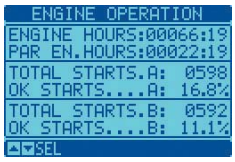
In the FFLs there is a counter used for maintenance purposes; when the counters reach the set limits, the relative alarms trip.



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.





ENGINE OPERATING STATISTICS

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

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).

Optical port

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.

REAL TIME CLOCK

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.

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.

NFC

NFC CONNECTIVITY

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

EXPANDABILITY FOR FFL 800DP (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.
FFL 800... 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 FFL 800DP when installed.

Sam1 APP

Sam1

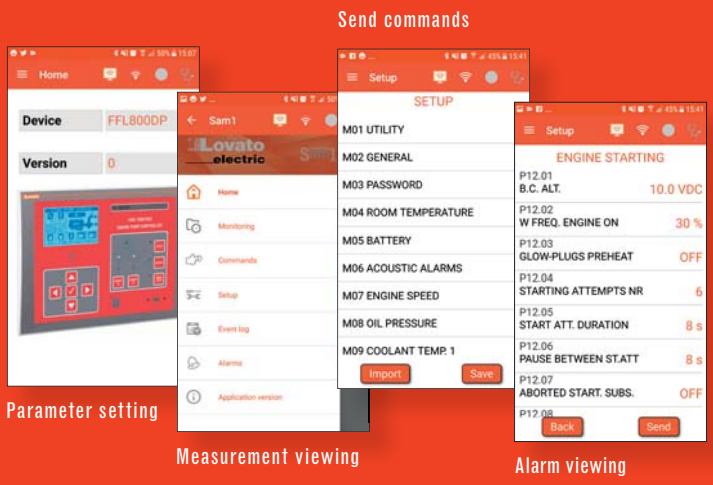
■ APP

CX 02 dongle is the access point to the FFL controllers and FFL RA 400 remote alarm panel through **SAM1**.

Thanks to **SAM1**, one can:

- See all the measurements on smartphones or tablets.
- Send commands, such as counters reset or enabling and disabling of FFL controller outputs.
- Set parameters, save a copy in a file and retrieve it in case of need; the file can be sent via email as well.
- See active user alarms.
- See the event list and save a copy.

SAM1 APP is downloaded from Google Play Store or Apple iTunes.



NFC

■ APP

Programming the parameters via tablet and smartphone is now possible also through **NFC** wireless technology. Bringing a smartphone or tablet with **NFC** connection enabled close to the display of the FFLs controller activates the APP and the controller connected is recognised automatically.
It will then be possible to modify the parameters and program the FFL controllers.

Xpress

■ Configuration and remote control software

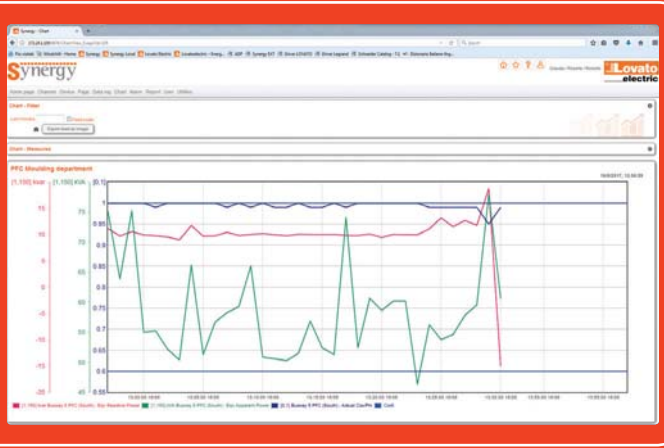
It is a software that permits to:

- Transfer setup parameters from FFL controllers and FFL RA 400 remote alarm panel to PC or vice versa
- Read measurements
- See events and alarms
- Send commands.

Synergy

■ Supervision and energy management software

FFL controllers and FFL RA 400 remote alarm panel are compatible with **Synergy and Synergy Cloud** software. Thanks to the communication expansion modules, they can be immediately added to an existing network without needing extra external accessories. Serial and Ethernet communications are supported. The Ethernet port is suitable to work with both static IP and dynamic IP address and the FFL controller network configuration is similar to what is normally done for PCs.



Diesel engine fire pump controllers

FFL...DP

Order codes	Description
EN 12845 versions	
FFL 700DP	Controller for diesel engine fire pumps in accordance with EN 12845, power supply 12/24VDC, built-in RS485
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

Remote alarm panels

FFL RA 200 FFL RA 400

Order codes	Description
FFL RA 200	Remote alarm panel with LED, buzzer, pushbutton to silence the siren and test the LEDs. It supports up two fire pump controllers
FFL RA 400	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 FFL 800DP

EXP ...T

Order codes	Description
Inputs and outputs	
EXP10 04T	2 opto-isolated analog inputs
EXP10 08T	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC
EXP10 42T	6 digital inputs
EXP10 43T	4 digital inputs and 2 digital outputs
Communication ports	
EXP10 12T	Opto-isolated RS485 interface
EXP10 13T	Opto-isolated Ethernet interface with web server function
EXP10 15	GPRS/GSM modem (antenna excluded; see CX 03)

Expansion modules for FFL RA 400

EXP...

Order codes	Description
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
EXP10 03	2 relay outputs rated 5A 250VAC
EXP10 08	2 opto-isolated digital inputs and 2 relay outputs rated 5A 250VAC
Communication ports	
EXP10 12	Opto-isolated RS485 interface
EXP10 13	Opto-isolated Ethernet interface with web server function
EXP10 15	GPRS/GSM modem (antenna excluded; see CX 03)

Communication devices and remote temperature sensor

CX 01

CX 02

CX 03

Order codes	Description
CX 01	USB dongle for PC – FFL connection, for programming, data download, diagnostics and firmware upgrade. Complete with cable, 1.8m long
CX 02	Wi-Fi dongle for PC – FFL programming, data download, diagnostics and cloning
CX 03	GSM quad-band antenna IP67 (800/ 900/1800/1900MHz) for EXP10 15 expansion module
NTC 01	Remote temperature sensor, length 3m/3.3yd

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