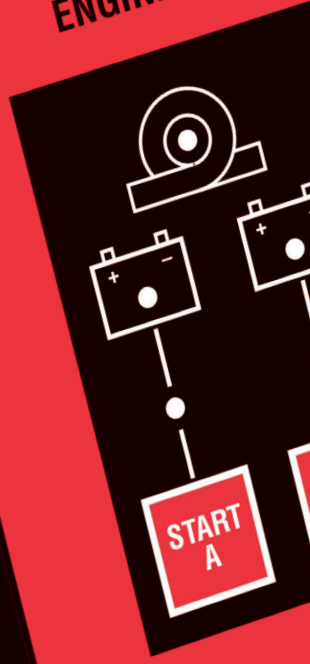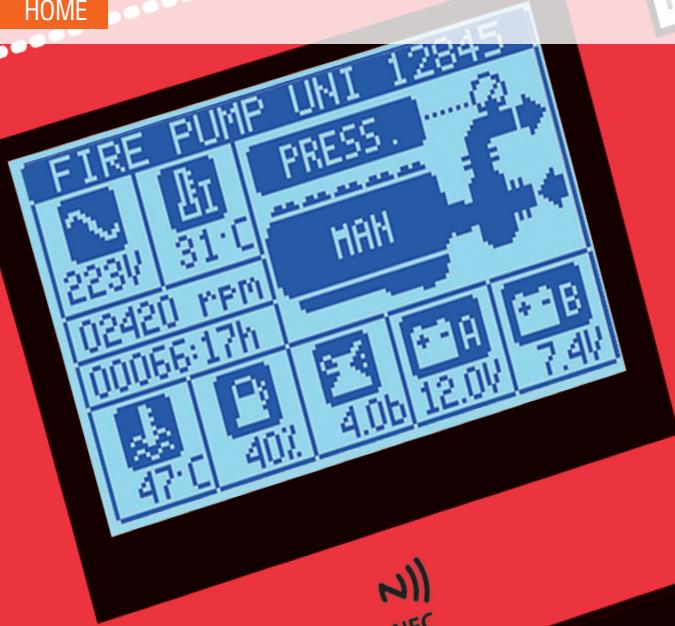FFL - EN12845

FIRE FIGHTING
ENGINE PUMP CONTROLLER

NFC

- 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.

NFC

Page 33-2

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.

NFC

Page 33-3

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.

NFC

Page 33-4

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.

®Lovato electric

Diesel engine fire pump controllers

FFL…DP

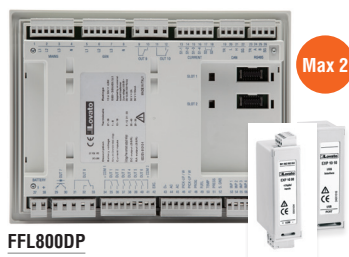| Order code	Description	Qty per pkg	Wt
		n°	[kg]
FFL700DP	Controller for diesel engine fire pumps in accordance with EN/BS 12845, power supply 12/24VDC, built-in RS485	1	0.980
FFL800DP	Controller for diesel engine fire pumps in accordance with EN/BS 12845, power supply 12/24VDC, built-in RS485, expandable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

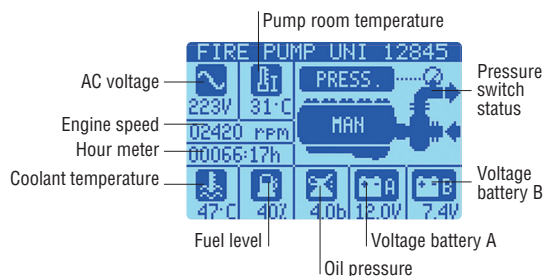The app can be downloaded from Google Play Store and App Store.

ANDROID APP ON Google play

Available on the App Store

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

EXP…

Max 2

FFL800DP

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

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 LCD 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 (FFL800DP), 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
– Automatic diesel engine fire pump control
– Backlit graphic LCD display with 5 languages (ENG, ITA, FRA, SPA, DEU)
– Synoptic with 9 LEDs to display operating modes and status
– Dual DC power supply from two separate batteries 12/24VDC
– Dedicated page for LED test and commissioning
– Dedicated page for jockey pump monitoring
– Automatic starting sequence according to EN/BS 12845
– Input of single-phase AC voltage measurement for charger power supply monitoring
– 10 programmable digital inputs
– Input to monitor the starter pinion
– Input for engine speed reading W and pick-up
– Input for monitor the D + voltage from alternator battery charger
– 10 programmable relay outputs
– 1 programmable static output
– 3 analog inputs for resistive sensors programmable usable for the monitoring of oil pressure, coolant temperature, oil temperature and fuel level
– Built-in NTC temperature sensor
– Input for remotable NTC temperature sensor (measuring range: -40...+85°C)
– 2 password levels
– Advanced I/O functions
– Built-in isolated RS485 communication port
– Integrated PLC logic with thresholds, counters, alarms, status
– Built-in real time clock
– Storage of last 128 events
– Communication interface with front optical port, compatible with USB (CX01) and Wi-Fi (CX02) devices
– NFC connectivity for programming via LOVATO NFC App, freely downloadable from Google Play Store and App Store
– Expandability with 2 EXP... modules with tropicalized PCB (only FFL800DP)
– Compatible with FFLRA... remote alarm panels
– Compatible with software Xpress, Synergy, Synergy cloud and App NFC and Sam1.

Operational characteristics
– Power supply voltage: 12 or 24VDC
– Voltage measurement inputs:
  • Rated voltage Ue: 100...240VAC
  • Measurement range: 50...264VAC
  • Frequency range: 45...65Hz
– Operating temperature: -25...+70°C
– PCB tropicalized
– Degree of protection: IP65 on front. IP20 on terminals.

Synergy, Xpress and Sam1 software, NFC App
See Section 36.

EXP… series expansion modules
See Section 35, 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

NFC

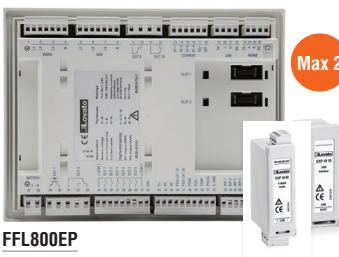| Order code	Description	Qty per pkg	Wt
		n°	[kg]
FFL700EP	Controller for electric fire pumps in accordance with EN/BS 12845, power supply 24VAC, built-in RS485	1	0.980
FFL800EP	Controller for electric fire pumps in accordance with EN/BS 12845, power supply 24VAC or 110...240VAC, built-in RS485, expandable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

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

ANDROID APP ON Google play

Available on the App Store

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

EXP…

Max 2

FFL800EP
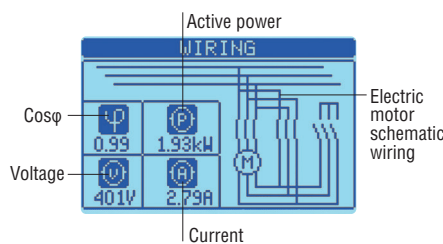

Active power
Cosφ
Voltage
Current
Electric motor schematic wiring

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 LCD 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 (FFL800EP), 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 to control single phase or three phase electric fire pump
– Backlit graphic LCD display with 5 languages (ENG, ITA, FRA, SPA, DEU)
– Synoptic with 8 LEDs: electric pump running, main status, electric motor status, starting request, global alarm, failure to start, stop enabled, automatic start excluded
– Dedicated page for LED test and commissioning
– Dedicated page for jockey pump monitoring
– single phase or three phase current measurements inputs: 1/5A
– 8 programmable digital inputs
– 7 (FFL700EP) or 9 (FFL800EP) programmable relay outputs
– 1 programmable static output
– Built-in NTC temperature sensor
– Input for remotable NTC temperature sensor (measuring range: -40...+85°C)
– 2 password levels
– Advanced I/O functions
– Built-in isolated RS485 communication port
– Integrated PLC logic with thresholds, counters, alarms, status
– Built-in real time clock
– Storage of last 128 events
– Communication interface with front optical port, compatible with USB (CX01) and Wi-Fi (CX02) devices
– NFC connectivity for programming via LOVATO NFC App, freely downloadable from Google Play Store and App Store
– Expandability with 2 EXP... modules with tropicalized PCB (only FFL800EP)
– Compatible with FFLRA... remote alarm panels
– Compatible with software Xpress, Synergy, synergycloud and App NFC and Sam1.

Operational characteristics
– Power supply voltage: 24VAC (FFL700EP), 24VAC and 110...240VAC (FFL800EP)
– Voltage measurement inputs:
  • single phase or three phase
  • Rated voltage Ue: 100...600VAC
  • Measurement range: 80...720VAC
  • Frequency range: 45...65Hz
– Operating temperature: -25...+70°C
– PCB tropicalized
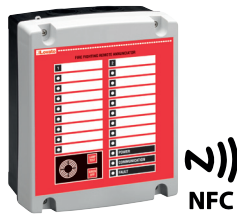– Degree of protection: IP65 on front. IP20 on terminals.

Synergy, Xpress and Sam1 software, NFC App
See Section 36.

EXP… series expansion modules
See Section 35, 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.

33

Remote alarm panels for fire pump applications

FFLRA200

NFC

FFLRA400

EXP…

Order code	Description	Qty per pkg	Wt
		n°	[kg]
FFLRA200	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
FFLRA400	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
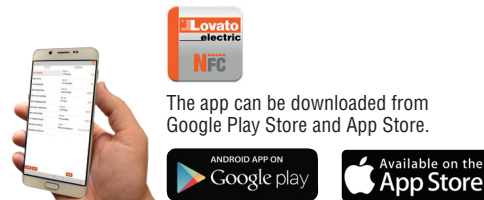
The app can be downloaded from Google Play Store and App Store.

ANDROID APP ON Google play

Available on the App Store

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

General characteristics FFLRA200
FFLRA200 is a simple remote annunciator for the displaying via LEDs of the alarm status of two motor pump or electric pump controllers FFL... series.
The communication between the remote indicator and the FFL... controllers takes place via a pulsed digital signal. On the front of the panel there are two columns of LEDs referring to each of the fire pump controllers. The LEDs are equipped with user-customizable labels to identify alarms, that are included in the package. A template of alarm labels model can be downloaded from www.LovatoElectric.com. FFLRA200 is also equipped with a buzzer with sound level in compliance with the EN12845 standard, as well as buttons for silencing the alarms and for the LED test. The alarms notified on the remote panel are configurable directly on the FFL controllers. No setup on the FFLRA200 remote panel is required.
3 status LEDs indicate the presence of the power supply, the status of the communication and general failure.
FFLRA200 is supplied with voltage 100...240VAC and it supports a backup battery 12VDC (not included) whose buffer charge is maintained automatically.

Operational characteristics
– Power supply rated voltage: 100...240VAC
– Voltage operating range: 90...264VAC
– Frequency range: 45...66Hz
– Arrangement for internal battery 12VDC support is built-in (battery is not included)
– Compatible software: NFC App freely downloadable from Google Play Store and App Store
– Operating temperature: -25...+50°C
– Degree of protection: IP40.

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 rated voltage: 100...240VAC
– Voltage operating range: 90...264VAC
– Frequency range: 47...63Hz
– Arrangement for internal battery 12VDC support (battery not included) is built-in
– 6 digital inputs, 5 of which are programmable
– 3 programmable relay outputs
– Expandibility with EXP... modules (2 available slots)
– Optical port on front for CX01 and CX02 device
– Compatible software: Sam1, Xpress, NFC, Synergy and Synergy cloud software (see section 36)
– Degree of protection: IP40
– Operating temperature: -25...+50°C.

Synergy, Xpress and Sam1 software, NFC App
See Section 36.

EXP... series expansion modules
See Section 35, 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]
CX01	USB connection device PC↔FFL... with optical connector for programming, data download, diagnostics and firmware upgrade	1	0.090
CX02	Wi-Fi connection dongle PC↔FFL... for data download, diagnostics and firmware upgrade, project upload/download and cloning	1	0.090
CX03	GSM penta-band antenna (850/900/1800/1900/2100MHz)	1	0.090

General characteristics
For general characteristics of these accessories see section 35.

Gateway data loggers

EXCGLB…

new

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXCGLB01	Gateway data logger, 1 RS485 port, 1 Ethernet port, Wi-Fi connection	1	0.190
EXCGLB02	Gateway data logger, 1 RS485 port, 1 Ethernet port, LTE connection, GNSS (GPS)	1	0.190
EXCGLB03	Gateway data logger, 1 RS485 port, 2 Ethernet ports, 4G (LTE) connection	1	0.190

General characteristics
For general characteristics of these accessories see section 34.

Gateway

EXCM4G01

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXCM4G01	4G Gateway with RS485 and Ethernet port, Modbus RTU/TCP protocol	1	0.300

General characteristics
For general characteristics of these accessories see section 34.

Converter

EXCCON02

new

Order code	Description	Qty per pkg	Wt
		n°	[kg]
EXCCON02	RS485/Ethernet converter, 9...48VDC, with Modbus RTU/TCP protocol conversion functionality	1	0.400

General characteristics
For general characteristics of these accessories see section 34.

Remote control and monitoring GSM modem via SMS

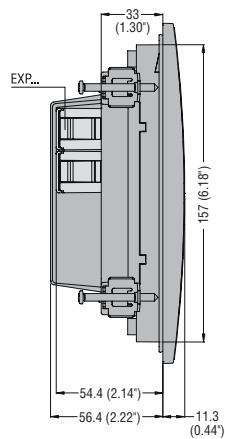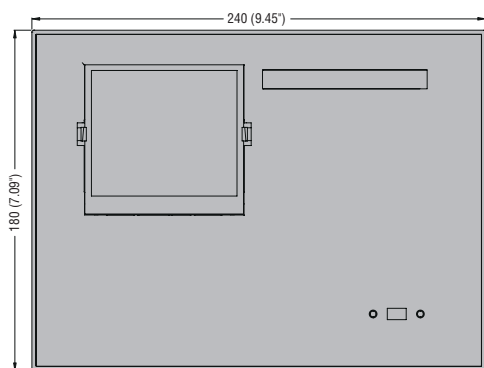Compliant with Italian CEI 0-16 Standard, paragraph 8.8.6.5 and annex M, resolution 421/2014 of the ARERA

EXCGSM01

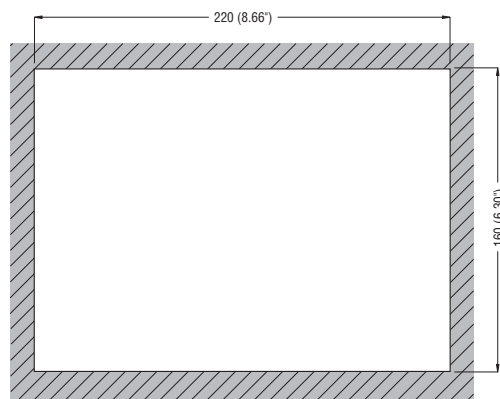| Order code	Description	Qty per pkg	Wt
		n°	[kg]
GSM Modem (modular - 4U). IP69K outside aerial with 2.5 m cable. RJ45-USB programming cable (included).			
EXCGSM01	100...240VAC, 1 digital input, 1 analog input (0...10V, 0...20mA, NTC), 1 relay output, receiving and sending SMS messages for remote controls and alarm signals	1	0.340

General characteristics
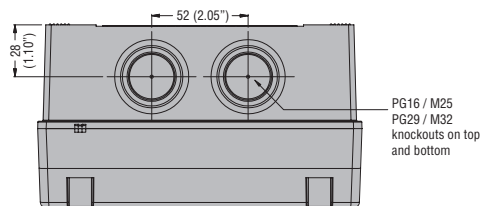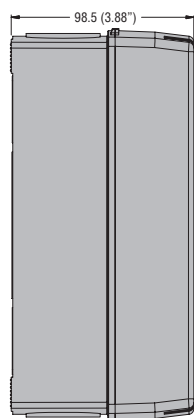For general characteristics of these accessories see section 34.

FFL700… - FFL800…

Drilling for surface fixing

240 (9.45")
180 (7.09")
33 (1.30")
EXP...
157 (6.18")
54.4 (2.14")
56.4 (2.22")
11.3 (0.44")

220 (8.66")
160 (6.30")

FFLRA200

175 (6.89")
210 (8.27")
98.5 (3.88")

52 (2.05")
28 (1.10")

PG16 / M25
PG29 / M32
knockouts on top
and bottom

FFLRA400

13 (0.51")
220 (8.66")
280 (11.02")

187 7.36")
170 (6.69")
287.2 (11.31")
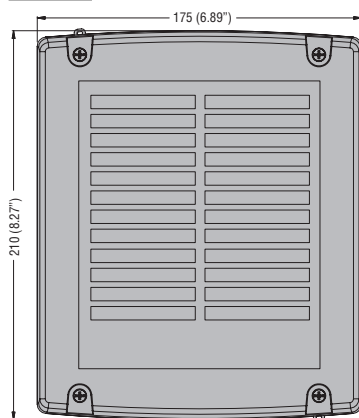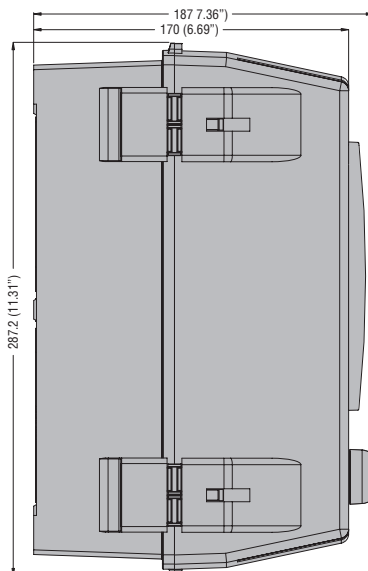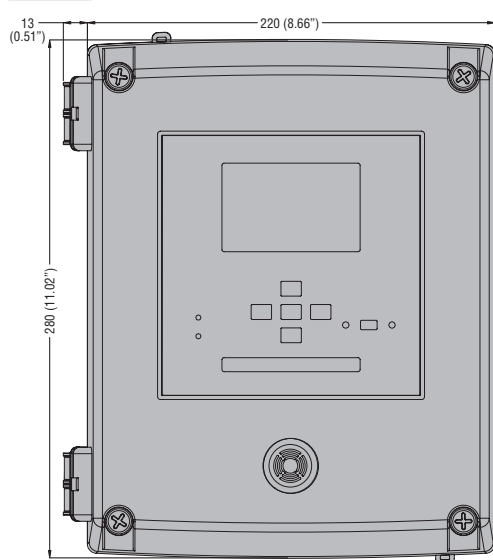
TYPE	FFL…DP	FFL…EP
SUPPLY		
Rated voltage	12...24VDC	24VAC (FFL700EP); 24VAC/110...240VAC (FFL800EP)
MAIN VOLTAGE INPUT		
Rated voltage Ue	100...250VAC	100...600VAC
Measuring range	50...264VAC	80...720VAC
Frequency range	45...66Hz	
ENGINE RUNNING INPUT (D+) FOR PRE-EXCITED ALTERNATOR		
Voltage range	0...36VDC	—
Maximum input current	0.5mA	—
Maximum voltage at D+ terminal	12 or 24VDC (battery voltage)	—
Excitation current	210mA 12VDC / 130mA 24VDC	—
ENGINE SPEED INPUT (PICK-UP/W)		
Input type	AC	—
Minimum reading frequency voltage: high sensitivity	≥2.8Vpp (1Vrms) at 40Hz ≥10Vpp (3.5Vrms) at 20000Hz	—
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)	—
PINION INPUT		
Voltage range	0...33VDC	—
Current input	≤8mA	—
Threshold	Adjustable	—
Input delay	Adjustable	—
NTC PROBE INPUT		
Type of sensor	NTC (LOVATO code NTC01)	
Measuring range	-40...+85°C	
Maximum connection length	3m	
DIGITAL INPUTS		
Input type	Negative	
Input current	≤6mA	
Low input signal	≤1.25V (tipical 1.9V)	
High input signal	≥4.9V (tipical 3.8V)	
Input signal delay	≥50ms	
RELAY OUTPUTS		
Outputs 1-2	2 x 1NO - 12A 30VAC/DC	—
Output 3	1NO 8A 30VDC (DC1); 30VDC 1A pilot duty	—
Output 4	1NO 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	—	3NA - 16A 250VAC (AC1)
STATIC OUTPUT		
Output type	NO	
Rated voltage	10...30VDC	
Maximum current	50mA	
RS485 SERIAL INTERFACE		
Interface type	Isolated	
Baud-rate	Programmable 1200...115200bps	
Insulation voltage (RS485 – V Batt.)	1kV=	
AMBIENT CONDITIONS		
Operating temperature	-25...+70°C	
Storage temperature	-30...+80°C	
Relative humidity	<80% (IEC/EN/BS 60068-2-78)	
CONNECTIONS		
Terminals type	Removable screw-type	
Wire cross-section (min. and max.)	0.2...2.5mm² (24...12AWG)	
Tightening torque	0.56Nm (5lb.in)	
HOUSING		
Installation	Flush-mount	
Material	Polycarbonate	
Degree of protection	IP65 Frontal; IP20 on terminals	

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