# SCF830-D-AS

## DIESEL ENGINE DRIVEN
## CONFIGURABLE-PROGRAMMABLE
## FIRE PUMP CONTROL PANEL


## INSTALLATION AND OPERATION INSTRUCTIONS

IO-SCF830-D-AS 01-EN-Rev.0

02-2019

# 1. SCOPE OF THE DOCUMENT

The purpose of this technical document is to provide the necessary elements to facilitate the correct installation and basic operation of the SCF830-D-AS control panel. The user needs to obtain more information regarding the design, justification of components, operation etc. Please contact us at the following address svecorp@svecorp.com

# 2. MAIN FEATURES

| Nº | STANDARDS AND TECHNICAL REGULATIONS | | | | | |
|---|---|---|---|---|---|---|
| 01 | Compliance with standards and technical regulations | AS 2941 regulation 2013 | | | | |
| 02 | | AS/NZS 3000:2007 Standard | | | | |
| 03 | | EN 61439-1 Low-voltage switchgear | | | | |
| Nº | ELECTRICAL FEATURES AND BATTERIES | | | | | |
| 04 | Incoming line voltage and frequency | From 85V to 265 VAC 50-60Hz depending on model | | | | |
| 05 | Nominal battery voltage | 12 VDC or 24 VDC depending on model | | | | |
| 06 | Battery chargers | Models | | | | |
| 07 | | **SBA12030** | **SBB12070** | **SBB12100** | **SBB24035** | **SBB24050** |
| 08 | Nominal charging current | 3A | 7 A | 10 A | 3,5 A | 5 A |
| 09 | Supported battery capacity (C10) | 86 Ah | 200 Ah | 285 Ah | 100 Ah | 142 Ah |
| 10 | DIN power | 41,4 W | 96,6 W | 138,0 W | 96,6 W | 138,0 W |
| 11 | Performance | 85% nominal power | | | | |
| 12 | Float voltage drift | < 1% from 0% to 90% of nominal current load | | | | |
| 13 | Supported batteries (except SBA12030) | Lead-Acid open fluid | Lead-Acid VRLA (AGM or GEL) | | | |
| | | NiCd-(9-18 cells) | NiCd-(10-20 cells) | | | |
| 14 | Charge current drift | < 5% from 50% to 99% of the float voltage | | | | |
| Nº | DESIGN FEATURES | | | | | |
| 15 | Enclosure | IP65 Protected from total dust ingress (NEMA 4) | | | | |
| 16 | | Impact rating: IK10 (except for display) | | | | |
| 17 | | Fireproof grade: Fire extinguishes <30s | | | | |
| 18 | Display | Transflective: Visible under direct sunlight | | | | |
| 19 | Wiring | Halogen free | | | | |
| 20 | | Fire resistance: RZ1 according to EN50200 (830º during 90min) | | | | |
| 21 | Pressure sensor | 1 pressure measuring device using pressure transducers 0-100bar / 4-20mA<br>It can be used to monitor the system pressure of the pump<br>The demand pressure to start and stop the pump are configurable (probe not supplied) | | | | |
| 22 | Working temperatures | Recommended: -5ºC to 40ºC (tested up to 60ºC) | | | | |
| 23 | Electromagnetic environment | CEM-1 | | | | |
| Nº | PUMP AND SYSTEM PROTECTIONS | | | | | |
| 24 | Total system alarms | 28 | | | | |
| Nº | PUMP START METHODS | | | | | |
| 25 | Automatic Mode | Pressure switch line: Low system pressure | | | | |
| 26 | | Manometer: system pressure | | | | |
| 27 | | Water level contact: Low priming tank level | | | | |
| 28 | | Remote start contact | | | | |

| | | | |
|---|---|---|---|
| 29 | Emergency start | "Start Battery " and " Monitor Battery " press buttons in front panel | |
| Nº | **ENGINE STARTING SYSTEM** | | |
| 30 | 2 Starting solenoids | levers: 1.000 Amp independent / adjacent included | |
| Nº | **MEASURING INSTRUMENTS** | | |
| 31 | Batteries | 2 Voltmeters, battery voltage | |
| 32 | | 2 Battery charge current ammeters | |
| 33 | Engine | Engine cooling temperature (water) | |
| 34 | | Engine cooling oil temperature | |
| 35 | | Oil pressure | |
| 36 | | Fuel tank level | |
| 37 | | Engine speed in rpm | |
| 38 | General System | 1 Voltmeter: Supply voltage AC. Accuracy >1% | |
| 39 | | 1 Manometer: System pressure (4-20mA pressure sensor required) | |
| 40 | | 1 Flow Meter (manual flow input / pulse output / 4/ 20 mA sensor) | |
| Nº | **OTHER INFORMATION ON DISPLAY** | | |
| 41 | Current Date and TIME (RTC with independent battery) | Accumulated engine working hours | |
| 42 | 150 latest events (pump starts, alarms, ...). 500 recorded | Pump start demand type | |
| 43 | 150 latest records of system pressure variation. 16.000 recorded | Active Alarms | |
| Nº | **OTHER FEATURES** | | |
| 44 | Pressure switch lines' monitoring with short-circuit and open circuit alarm | Engine heating management through constant engine temperature monitoring | |
| 45 | Engine crank levers connection monitoring with open circuit and short circuit alarm | Cooling system operation management | |
| 46 | Breakable lid to block the selected operating mode: Auto / Crank isolate | | |
| Nº | **VISUAL AND AUDIBLE MONITORING SIGNALS IN FRONT PANEL** | | |
| 47 | Operating Modes | Auto | |
| 48 | | Crank Isolate | |
| 49 | Pump status | Pump on demand | |
| 50 | | Pump start with A battery/ Pump start with B battery | |
| 51 | | Pump running with discharge pressure | |
| 52 | Batteries | Battery A / Battery B correct | |
| 53 | | Chargers correct | |
| 54 | Alarms | Delayed alarms in service | |
| 55 | | General alarm | |
| 56 | Buzzer | 80dB | |
| 57 | Other | Mains voltage correct | |
| Nº | **COMMUNICATIONS** | | |
| 58 | USB connector B Device type | SAF830-D←→ PC Communication | |
| 59 | USB connector A Host type | SAF830-D←-> PENDRIVE Communication | |
| 60 | Ethernet Modbus Protocol/ TCP-IP | LAN (local area network) port included in all models | |
| 61 | | WAN (Ethernet) port included in all models | |
| 62 | | Point-to-point port included in all models | |
| 63 | RS485 Modbus Protocol/ RTU | Optional module SCOM901 not included | |
| 64 | Voltage free contacts | 7 Voltage-free switched contacts: 30Vdc – 0.3A | |

## 2.1. LIMITED WARRANTY

Seller (SVE S.L.) warrants to the original purchaser that for the period of 1 year the products sold shall be free from defects in material and workmanship. If buyer claims that a product violates this Limited Warranty, the seller, upon notice promptly given, will either examine the product at buyer's site, or issue shipping instructions for return to the seller at buyer's expense, transportation charges prepaid. The seller's sole obligation under this Limited Warranty shall be, at its option, to repair, replace or refund the price of any product thereof which is proved to violate this Limited Warranty. In no event, whether based on contract, indemnity, warranty, tort (including negligence), strict liability or otherwise, shall the seller be liable to the buyer for special, indirect, incidental or consequential damages whatsoever including, without limitation, loss of profit or revenue. THIS LIMITED WARRANTY IS THE BUYER'S EXCLUSIVE REMEDY AND THE SELLER HEREBY EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.
The foregoing shall constitute the sole remedy of the buyer and the sole liability of the seller. This Limited Warranty shall not apply to any product or component thereof which has been repaired or altered by anyone other than the seller's authorized personnel in any manner so as, in the seller's sole judgment, to affect its serviceability, or to any product that has been subject to alteration, accident, misuse, abuse, neglect or normal wear. This Limited Warranty shall not apply to products which have been assembled or installed or used in a manner contrary to the seller's printed instructions, or due to failure to follow the seller's printed instructions for operation and maintenance. Any technical assistance provided by the seller's personnel or representatives in system design is construed to be a proposal and not a recommendation. The responsibility for determining feasibility rests with the user-operatorand should be subject to test. Only the terms expressed in this Limited Warranty shall apply and no distributor, corporation or individual is authorized to amend, modify or extend this Limited Warranty in any way on resale.

## 2.2. CE DECLARATION OF CONFORMITY

This document refers to SCF830-D-AS diesel fire pump control panel models.
SCF830-D-AS fire pump control panels serve to automate the management of fire protection systems in accordance to the following standards and technical rules:

| | |
|---|---|
| Standard: | AS 2941 regulation 2013 |
| Standard: | AS/NZS 3000:2007 Standard |
| Standard: | EN 61439-1 Low-voltage switchgear |

The mounting instructions and the description of qualities and operation refer only to the standard SCF830-D-AS fire pump control panel models. the different variants that may be developed in response to a particular requirement for a specific installation or maintenance operation are not mentioned in this document.

This product must be installed and handled by personnel with adequate training (in accordance with EN-50-110-1)

**Declaration of CE Compliance**

SVE S.L. hereby declares that the SCF830-D-AS diesel fire pump control panels conform to the following directives:

- Electromagnetic compatibility, Directive CE: 2014/30/UE
- Low voltage, Directive 22014/35/UE
- Machinery Directive 2006/42/CEE
- AS/NZS 3000:2007 Standard Wiring rules

**Specific regulations applied: EN 61000-6-2, EN 61000-6-3, 61439-1, 61439-2, 60204-1.**

01/06/2018
Alvaro Cristóbal Otxandio
Gerente de SVE S.L.


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# 3. SCF830-D-AS CONTROL PANEL TERMINALS

All the electrical connections must comply with the local and national codes and regulations. The control wires should be 1.5 $mm^2$ cables. The wires used to connect to the mains or power lines should be 6 $mm^2$ cable.

## 3.1. SCF830-D-AS CONTROL PANEL TERMINAL BLOCK

| | DENOMINATION | DESCRIPTION | | | |
|---|---|---|---|---|---|
| S1-T1 | POWER AC LINE (<270 V AC) | AC power input | | | |
| S1-T2 | POWER AC NEUTRAL (<270 V AC) | AC power input | | | |
| **Nº** | **DENOMINATION** | **TYPE** | **SIGNAL/CUR** | **VOLTAGE** | **LENGTH** |
| 1 | O-FUEL SOLENOID / VALVE | Output: Relay | < 25 A | 8-35Vcc | < 3m |
| 2 | I-COMMON BATTERIES (-) | Input: Supply | Power | (-)Vbat. | < 3m |
| 2 | I-COMMON BATTERIES (-) | Input: Supply | Power | (-)Vbat. | < 3m |
| 3 | O-CRANKING-START | Output; Relay | <10 A | 8-35Vcc | < 3m |
| 3 | O-CRANKING-START | Output; Relay | <10A | 8-35Vcc | < 3m |
| 4 | I-BATTERY-START (+) | Input: Supply | Power | 8-35Vcc | < 3m |
| 5 | I-BATTERY-MONITOR (+) | Input: Supply | Power | 8-35Vcc | < 3m |
| 6 | O-CRANKING-MONITOR | Output: Relay | <10A | 8-35Vcc | < 3m |
| 6 | O-CRANKING-MONITOR | Output: Relay | <10A | 8-35Vcc | < 3m |
| **Nº** | **DENOMINATION** | **TYPE** | **SIGNAL/CUR** | **VOLTAGE** | **LENGTH** |
| 7 | O-ENGINE ALTERNATOR EXCITER | Output: Transistor | Max. 1 A. | 8-35Vcc | < 3m |
| 8-10 | NO USE - DO NOT CONNECT | | | | |
| **Nº** | **DENOMINATION** | **TYPE** | **SIGNAL/POWER** | **VOLTAGE** | **LENGTH** |
| 11-12 | NO USE - DO NOT CONNECT | | | | |
| 13 | O-PICKUP (+) | Output | Signal <100mA | 8-35 V DC | < 3m |
| 14 | I-PICKUP/W (rpm) | Input | Signal | 8-35 V DC | < 3m |
| 15 | PICKUP SHIELD-GND | GND-Reference | | | |
| **Nº** | **DENOMINATION** | **TYPE** | **SIGNAL/CUR** | **VOLTAGE** | **LENGTH** |
| 16 | I- SYSTEM PRESSURE SWITCH | Input | Signal | (-)Vbat. | < 3m |
| 17 | **O-REF. COMMON (-)** | Output Reference | | | |
| 18 | I-REMOTE STOP | Input | Signal | (-)Vbat. | < 3m |
| 19 | **O-REF. COMMON (-)** | Output Reference | | | |
| 20 | I-REMOTE START | Input | Signal | (-)Vbat. | < 3m |
| 21 | **O-REF. COMMON (-)** | Output Reference | | | |
| 22 | I-PUMP DISCHARGE PRESSURE OK | Input | Signal | (-)Vbat. | < 3m |
| 23 | **O-REF. COMMON (-)** | Output Reference | | | |
| 24 | I HIGH ENGINE WATER TEMPERATURE CONTACT | Input | Signal | (-)Vbat. | < 3m |
| 25 | **O-REF. COMMON (-)** | Output Reference | | | |
| **Nº** | **DENOMINATION** | **TYPE** | **SIGNAL/CUR** | **VOLTAGE** | **LENGTH** |
| 26 | I-LOW OIL PRESSURE CONTACT | | Signal | (-)Vbat. | < 3m |
| 27 | **O-REF. COMMON (-)** | Output Reference | | | |
| 28 | I-LOW FUEL LEVEL CONTACT | | Signal | (-)Vbat. | < 3m |
| 29 | **O-REF. COMMON (-)** | Output Reference | | | |
| 30 | I-CRANK MOTOR VOLTAGE (+) | | Signal | 8-35Vcc | < 3m |

| Nº | DENOMINATION | | | | |
|---|---|---|---|---|---|
| 31-45 | NO USE - DO NOT CONNECT | | | | |
| **Nº** | **DENOMINATION** | **TYPE** | **VALUE** | | **LENGTH** |
| 46 | I-ENGINE WATER TEMPERATURE SENSOR | Analog input | Variable resistance | | < 3m |
| 47 | NO USE - DO NOT CONNECT | | | | |
| 48 | I- OIL PRESSURE SENSOR | Analog input | Variable resistance | | < 3m |
| 49 | NO USE - DO NOT CONNECT | | | | |
| 50 | I-FUEL TANK LEVEL SENSOR | Analog input | Variable resistance | | < 3m |
| 51 | NO USE - DO NOT CONNECT | | | | |
| 52 | I-ENGINE OIL TEMPERATURE SENSOR | Analog input | Variable resistance | | < 3m |
| 53 | NO USE - DO NOT CONNECT | | | | |
| 54 | I-SYSTEM PRESSURE SENSOR | Analog input | 4-20mA current | | < 3m |
| 55 | O- SYSTEM PRESSURE SENSOR SUPPLY | 4-20mA current | 12v | | < 3m |
| 56 | I-WATER FLOW SENSOR | Analog input | 4-20mA current | | < 3m |
| 57 | O-WATER FLOW SENSOR SUPPLY | 4-20mA current | 12v | | < 3m |
| **Nº** | **DENOMINATION** | **TYPE** | **CURRENT** | **VOLTAGE** | **LENGTH** |
| 58 | O-ENGINE HEATER LINE | Relay-Output | < 10 A | < 270 V AC | < 3m |
| 59 | NEUTRAL | Output | < 10 A | < 270 V AC | < 3m |
| 60 | NEUTRAL | Input | < 10 A | < 270 V AC | < 1m |
| 61 | O-ENGINE HEATER LINE | Relay-input | < 10 A | < 270 V AC | < 1m |

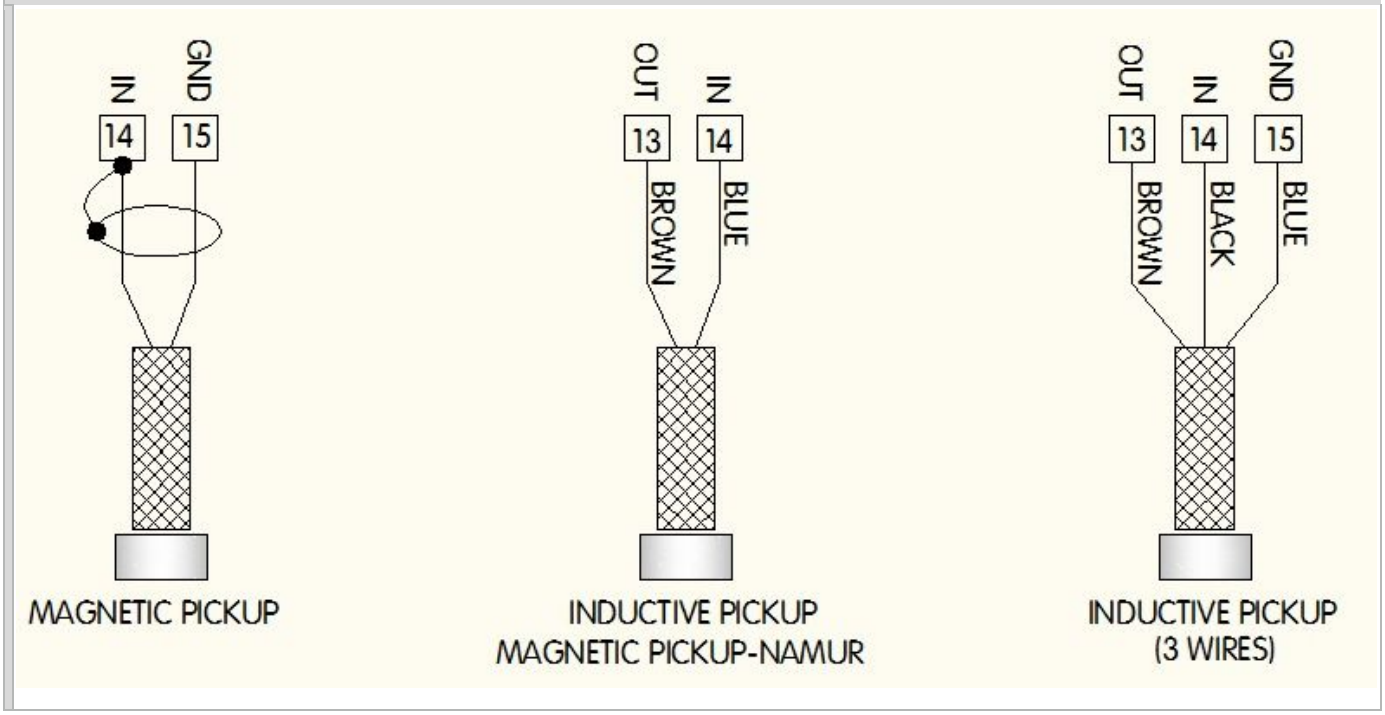
**VOLT FREE CONTACTS**

| Nº | DENOMINATION | | TYPE | CURRENT | VOLTAGE |
|---|---|---|---|---|---|
| 62 | NC | POWER FAIL | Output: Relay | < 0,5 A | < 30 VDC |
| 63 | COM | | | | |
| 64 | NO | | | | |
| 65 | NC | PUMP RUNNING WITH PRESSURE | Output: Relay | < 0,5 A | < 30 VDC |
| 66 | COM | | | | |
| 67 | NO | | | | |
| 68 | NC | PUMP RUNNING WITCH PRESSURE | Output: Relay | < 0,5 A | < 30 VDC |
| 69 | COM | | | | |
| 70 | NO | | | | |
| 71 | NC | FAILED TO START / DISCHARGE PRESSURE FAIL | Output: Relay | < 0,5 A | < 30 VDC |
| 72 | COM | | | | |
| 73 | NO | | | | |
| 74 | NC | NOT IN AUTO MODE | Output: Relay | < 0,5 A | < 30 VDC |
| 75 | COM | | | | |
| 76 | NO | | | | |
| 77 | NC | GROUPED ALARMS / CONTROL FAIL | Output: Relay | < 0,5 A | < 30 VDC |
| 78 | COM | | | | |
| 79 | NO | | | | |
| 80 | NC | GROUPED ALARMS / CONTROL FAIL | Output: Relay | < 0,5 A | < 30 VDC |
| 81 | COM | | | | |
| 82 | NO | | | | |

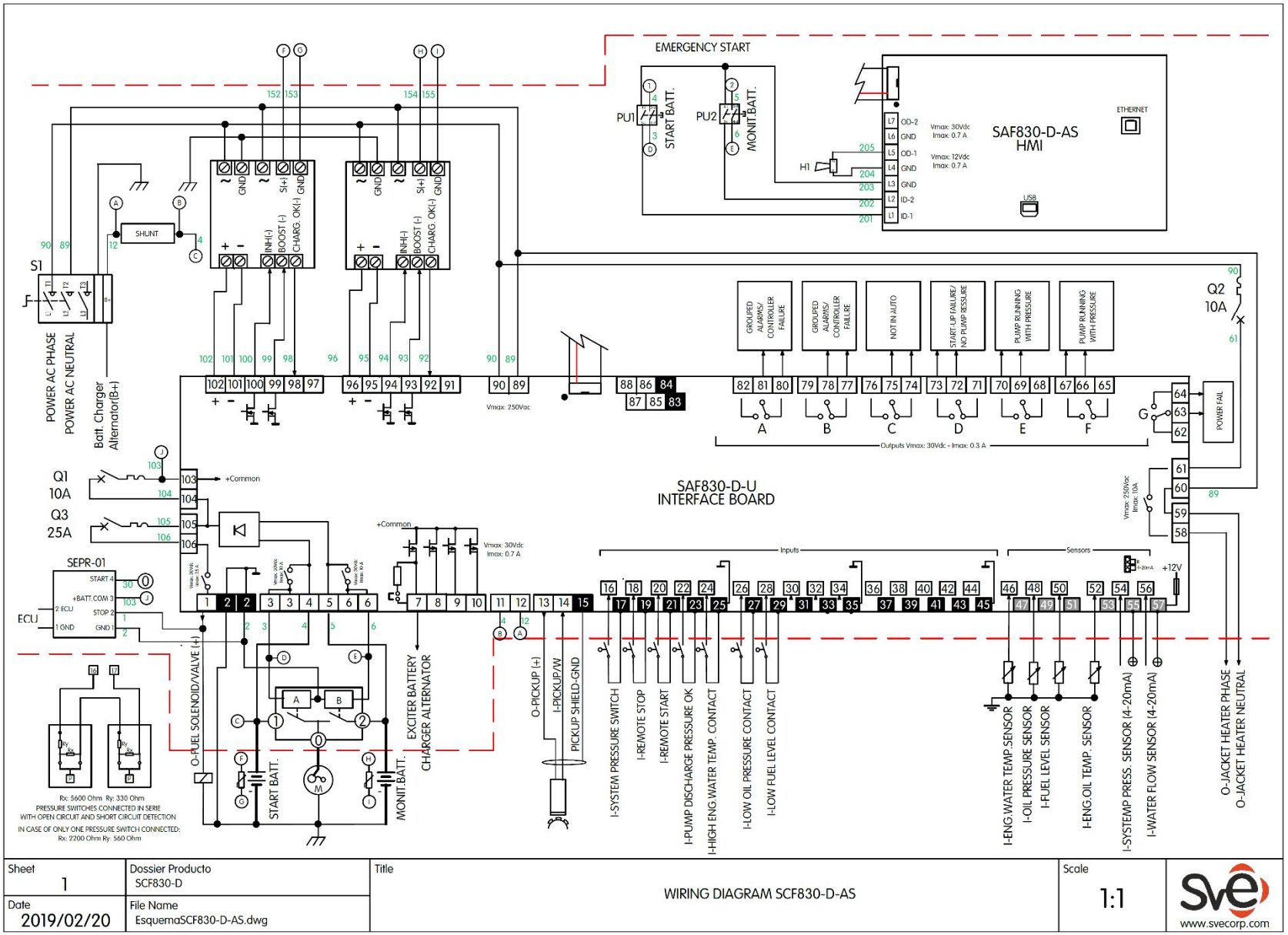
### 3.1.1. RPM SENSORS (PICK-UP)

SCF830-D-AS diesel control panels accepts three types of speed sensors. The necessary connections to use any of the pick-up sensors are shown below:

**SPEED SENSORS RPM**



## 3.1.2. INTERNAL AND EXTERNAL WIRING SCHEMATIC

| Nº | SCF830-D-AS SCHEMATIC |
|---|---|
| 01 |  |

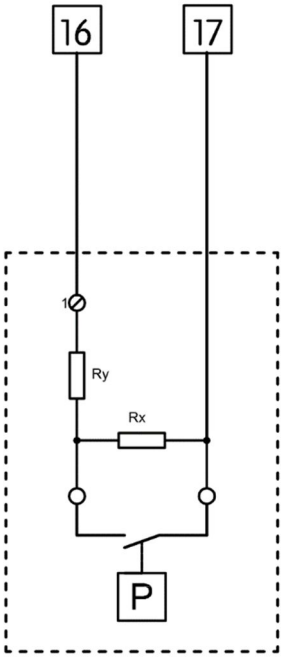
### 3.1.3. SHORT CIRCUIT AND OPEN CIRCUIT DETECTION IN PRESSURE SWITCHES

SCF830-D-AS control panel offers a valuable safety information on the status (correct / short circuit / open circuit) of the SYSTEM PRESSURE SWITCH (Contact), these pressure switches are key elements since they send the signal to start the pump whenever there is a demand in the system.

Two resistors need to be connected to the pressure switch or pressure switches according to the diagrams below:

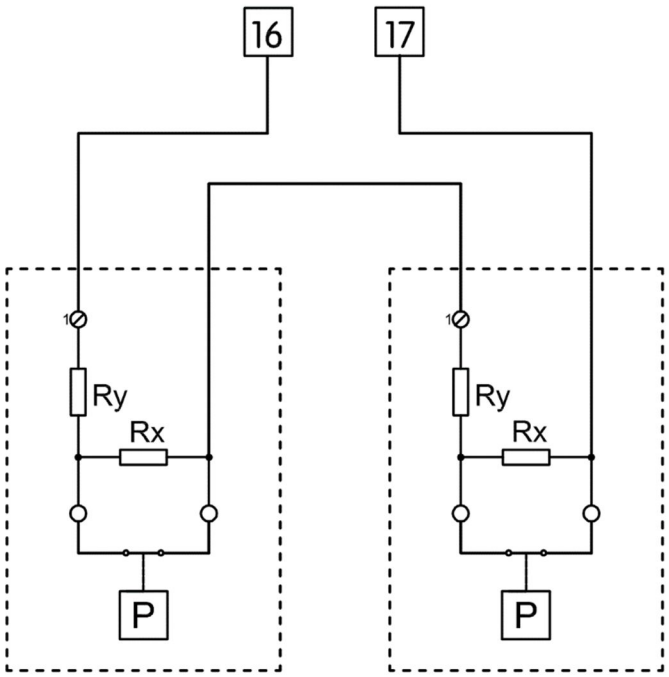
**1 PRESSURE SWITCH**

**Rx=2200 Ω / Ry=560 Ω**

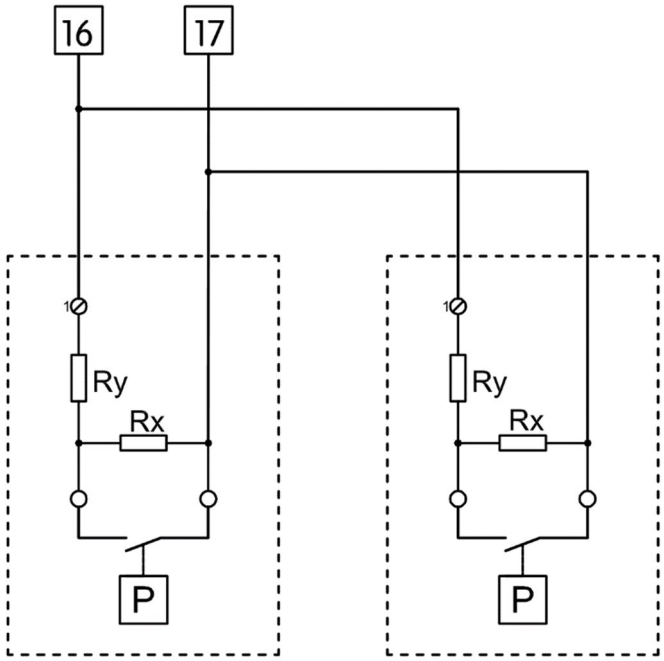



**2 PRESSURE SWITCHES IN SERIES**

**Rx=5600 Ω / Ry=330 Ω**



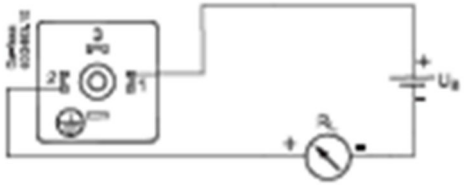

**2 PRESSURE SWITCHES IN PARALLEL Rx=5600Ω / Ry=330Ω**



The schematic is identical for one or two pressure switches, either in parallel (closed contact with low pressure) or series (open contact with low pressure).
If these resistors are connected to the pressure switches the SCF830-D-AS control panel will correctly detect the performance of the switches even though **C-1.15** parameter is configured as **C-1.15** SYSTEM PRESSURE SWITCH OPEN / SHORT CIRCUIT no detection of SC (short circuit) and OC (Open circuit).

## 3.1.4. PRESSURE SENSOR CONNECTION

SCF830-D-AS control panel can read the information provided by 4-20mA pressure sensors.
Below the wiring schematic for connecting the pressure sensors to the terminals of the SCF830-D-AS fire pump control panel.

| Nº | PRESSURE SENSOR WIRING | | |
|---|---|---|---|
| 01 |   | | |
| 02 | SYSTEM PRESSURE | Terminals | **54 I**-SYSTEM PRESSURE SENSOR<br>**55 O**-SYSTEM PRESSURE SENSOR SUPPLY |
| | | Configuration parameters | **C-2.5** ENABLE SYSTEM PRESSURE SENSOR<br>**C-2.6** END OF SCALE PRESSURE SENSOR |

## 3.1.5. FLOW METER CONNECTION

SCF830-D-AS control panel can read the information provided by a 4-20mA flow meter, or a water meter with pulse outputs, SCF830-D-AS control panel will convert the pulses into a fluid flow value.
Below the wiring schematic for connecting the flow meter to the terminals of the SCF830-D control panel.

| Nº | FLOW METER WIRING | | |
|---|---|---|---|
| 01 | WATER COUNTER/PULSE  | | |
| | | | |
| 02 | FLOW METER<br>4-20 mA  | Terminals | **56** I-WATER FLOW SENSOR<br>**57** O-WATER FLOW SENSOR SUPPLY |
| | | Configuration parameters | **C-2.7** ENABLE FLOW METER<br>**C-2.8** FLOW SENSOR SCALE |

# 4. PRE-START UP AND START UP OPERATION

## 4.1. SAFETY PRECAUTIONS

SCF830-D-AS control panel is designed to protect buildings, goods, and people but it could represent a risk to the person handling the CONTROL PANEL since it is connected to AC mains supply.

COMPLETELY READ AND UNDERSTAND THE MATERIAL PRESENTED IN THIS DOCUMENT BEFORE ATTEMPTING INSTALLATION, OPERATION, OR APPLICATION OF THE EQUIPMENT. IN ADDITION, ONLY QUALIFIED PERSONS SHOULD BE PERMITTED TO PERFORM ANY WORK ASSOCIATED WITH THIS EQUIPMENT. ANY WIRING INSTRUCTIONS PRESENTED IN THIS DOCUMENT MUST BE FOLLOWED PRECISELY. FAILURE TO DO SO COULD CAUSE PERMANENT EQUIPMENT DAMAGE.

## 4.2. ELECTRICAL CONNECTIONS

All the electrical connections must follow the local and national electrical codes.
SCF830-D-AS control panel has an IP65 (NEMA-4) type enclosure but always has to be protected from any water source.
Before installing the control panel check the marking and verify that the characteristics, electrical rating, battery type, frequency, and so forth are appropriate for the system.
Inspect all the electrical connection and make sure there are no loose wires or any damaged components before energizing it.
All control panels come with an installation manual inside the enclosure. Check the wiring schematic section of the manual to properly connect the it to the AC power source and to the diesel pump motor.
Make sure to have the appropriate tools during the installation to make the necessary holes in the grand plate for the different connections.

## 4.3. SCF830-D-AS CONTROL PANEL START AND SHUT DOWN

### 4.3.1. SCF830-D-AS CONTROL PANEL START UP

SCF830-D-AS control panel is powered by the pump engine start batteries, that are connected to the SBA or SBB battery chargers, depending on the model, inside the SCF830-D-AS control panel. To turn the SCF830-D-AS control panel on the following steps must be followed:

| Nº | TURNING ON THE SCF830-D-AS CONTROL PANEL |
|---|---|
| 01 | Make sure S1 isolator located in the front panel is in OFF position |
| 02 | connect the control panel to the ac power line: 230 V AC |
| 03 | Activate Q1, Q2 y Q3 circuit breakers located in the interior of the control panel |
| 04 | Close the door and turn the S1 isolator to the ON position |

### 4.3.2. SCF830-D-AS CONTROL PANEL SHUT DOWN

Whenever the main power line is expected to be down for a large period of time it is recommended to disconnect SCF830-D-AS control panel using the Q1 isolator located in the interior of the control panel to avoid using any power from the batteries to energize the control panel.

## 4.4. CONFIGURABLE PARAMETERS VERIFICATION

SCF830-D-AS control panels are configured in our facilities considering the needs of the majority of the systems, but some parameters need to be configured for specific needs.
Make sure the control panel has been configured correctly for the system it is controlling. To know more about how to configure the control panel go to section 14 CONFIGURATION MENU.

## 4.5. PUMP INSPECTION INSTRUCTIONS

| Nº | PUMP INSPECTION INSTRUCTIONS | |
|---|---|---|
| 01 | Follow manufacturer's instructions for prior verification of the diesel pump | |
| 02 | Verify that pump suction and discharge valves are 100% opened | |
| 03 | Press and test that the diesel the engine starts with  START BATTERY and  MONITOR BATTERY push buttons | |
| 04 | Verify that the flow and discharge pressure of the pump follow the pump curve provided by the manufacturer | |
| 05 |  Press **STOP** to stop the pump | Keep the SCF830-D-AS in  making sure there are no active pump start demands. |

## 4.6. SIGNAL INSPECTION INSTRUCTIONS

Make sure the general elements of the installation are working properly as well as their connections to the SCF830-D-AS control panel. Verify also that the all communications are working properly as well as the informational management:

| Nº | SIGNAL INSPECTION INSTRUCTIONS | |
|---|---|---|
| 01 | Verify the mode selector is working properly  | |
| 02 | Press  | Verify system pressure sensors are working properly and make sure SCF830-D-AS acts accordingly whenever there is a system pressure variation. |
| 03 | Simulate different system alarms and make sure the SCF830-D-AS control panel acts accordingly. | |

# 5. OPERATION

## 5.1. AUTO MODE (Automatic)

| Nº | | | | | |
|---|---|---|---|---|---|
| 1 | Verify  mode has been selected | | | | |
| 2 | START | SCF830-D-AS receives a system demand to start the pump. | | | |
| 3 | STOP |  STOP | SCF830-D-AS control panel does not detect any demand to start the pump. It is necessary to press the button when the blue light is on. | | |
| | | Contact switch | 18 | I-REMOTE STOP | Activated when this contact is closed for a minimum time of 2s |
| | | | 19 | **O-REF. COMMON (-)** | |

## 5.2. CRANK ISOLATE

| Nº | | | | | |
|---|---|---|---|---|---|
| 1 | Verify that CRANK ISOLATE mode has been selected | | | | |
| 2 | START | Starting the pump is avoided in this mode. Prevents the starter from being energized during maintenance | | | |
| 3 | STOP | STOP | SCF830-D-AS does not detect any demand to start the pump. It is necessary to press the button when the blue light is on. | | |
| | | Contact switch | 18 | I-REMOTE STOP | Activated when this contact is closed for a minimum time of 2s |
| | | | 19 | **O-REF. COMMON (-)** | |

## 5.3. EMERGENCY START

| Nº | | |
|---|---|---|
| 1 | Totally independent of the electronic control and the selected operating mode | |
| 2 | **START BATTERY** | Activate the start solenoid (Lever) corresponding to the Start battery |
| 3 | **MONITOR BATTERY** | Activate the start solenoid (Lever) corresponding to the Monitor battery |

## 5.4. PUMP START DEMAND

SCF830-D-AS control panels will recognize the existence of a pump run system demand in the following scenarios:

| Nº | FIRE PUMP START DEMAND | | | | |
|---|---|---|---|---|---|
| 1 | System pressure switch | Terminals | | | ○ Configurable delayed start **C-1.10** PUMP START DELAY<br>○ Configurable pressure switch (NO/NC) **C-1.14** SYSTEM PRESSURE SWITCH |
| | | Pressure switch | 16 | I: SYSTEM PRESSURE SWITCH | |
| | | | 17 | **O-REF. COMMON (-)** | |
| 2 | Remote start | Contact switch | 20 | I-REMOTE START | Demand is activated when this contact is closed for a minimum time of 2s |
| | | | 21 | **O-REF. COMMON (-)** | |
| 3 | Remote stop | Contact switch | 18 | I-REMOTE STOP | Demand triggered by remote start is disabled when this contact is closed for a minimum time of 2s |
| | | | 19 | **O-REF. COMMON (-)** | |
| 4 | System pressure sensor | Terminals | | | Activated when the system pressure is below the configured pressure value **C-1.17** DEMAND PRESSURE and it deactivates whenever the system pressure reaches the configured value **C-1.18** END DEMAND PRESSURE |
| | | 55 | O- SYSTEM PRESSURE SENSOR SUPPLY | | |
| | | 54 | I-SYSTEM PRESSURE SENSOR | | |

# 6. ALARMS

One of the SCF830-D-AS control panel basic functions is to monitor and protect the diesel engine fire pump and its water supply. This task is achieved by permanently monitoring the electrical, mechanical and hydraulic variables, and by taking the necessary actions against any given alarm.

## 6.1. ALARM DETECTION

Any alarm detection will trigger the following:

| Nº | ACTIONS | | | |
|---|---|---|---|---|
| 1 | No alarm will stop the pump | | | |
| 2 | Description and display of the alarm in the screen | | | |
| 3 | **ALARM** lit up | | | |
| 4 | Alarm buzzer activation | | | |
| 5 | Voltage free contact output actuation: | Terminals | | |
| | | 80 | NC | GROUPED ALARMS / CONTROL FAIL (80-81 Connected) |
| | | 81 | COM | |
| | | 82 | NO | |
| | | 77 | NC | GROUPED ALARMS / CONTROL FAIL (77-78 Connected) |
| | | 78 | COM | |
| | | 79 | NO | |

## 6.2. ALARM RESET

To reset and remove from the screen all non-active alarms the following steps must be followed.

| Nº | ALARM RESET |
|---|---|
| 1 | Silence buzzer pressing  button |
| 2 | Check the cause for the alarm and solve the issue to deactivate the alarm |
| 3 | Delete non active alarms from the display by pressing  |

## 6.3. LIST OF ALARMS

| Nº | TEXT ON DISPLAY | DESCRIPTION | ACTION | RELATED CONFIG. |
|---|---|---|---|---|
| AL-01 | MAINS FAILURE | SCF830-D-AS detects that the AC mains supply is out of range on voltage or frequency.<br>Terminals: S1-T1 *POWER AC LIVE*; S1-T2 *POWER AC NEUTRAL* | Remote signal<br>Terminals: 65 NC, 66 COM, 67 NO (MAINS FAILURE (65-66 connected))<br>This alarm will auto-reset | **C-3.2**: MAINS MIN VOLT.<br>**C-3.3**: MAINS MAX VOLT.<br>**C-1.11**: MAINS VOLT ALARM DELAY |
| AL-02 | Engine OVER SPEED | SCF830-D-AS measures an engine rotational speed equal or larger than 120% of the RATED SPEED.<br>OVERSPEED ALARM TEST has been pressed | SCF830-D-AS orders the stop of the pump | |
| AL-03 | LOW OIL PRESSURE | Active whenever SCF830-D-AS receives signal through input:<br>Terminals: 26 I-LOW OIL PRESSURE CONTACT; 27 **O-REF. COMMON (-)**<br>. | | **C-1.12** DELAYED ALARMS SURVEYANCE |

| | | | |
|---|---|---|---|
| **AL-04** | Engine HIGH WATER TEMPERATURE | Active whenever SCF830-D-AS receives signal through input:<br>Terminals **24** I HIGH WATER TEMPERATURE CONTACT<br>**25** **O-REF. COMMON (-)**<br>This alarm is only active whenever the engine starts, when the led light " Delayed alarms in service" is lit | **C-1.12** DELAYED ALARMS SURVEYANCE |
| **AL-05** | LOW FUEL LEVEL | Active whenever SCF830-D-AS receives signal through input:<br>Terminals **28** I-LOW FUEL LEVEL CONTACT<br>**29** **O-REF. COMMON (-)**<br>Or if the fuel level is being monitored by the SCF830-D-AS CONTROL PANEL through input:<br>Terminal **50** I-FUEL TANK LEVEL SENSOR<br>And the measured value drops below the configured value.<br>This alarm will auto-reset whenever the fuel level is back to normal. | **C-1.21**: MINIMUM FUEL LEVEL ALARM |
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | |
| **AL-06** | LOW BATTERY START VOLTAGE | SCF830-D-AS measures battery voltage every 5 min. Alarm is triggered if SCF830-D-AS measures that battery START voltage is below 12V o 24V (depending on the battery nominal voltage) for three consecutive measurements. This alarm will auto-reset whenever the battery voltage value is back to normal. | |
| **AL-07** | LOW BATTERY MONITOR VOLTAGE | SCF830-D-AS measures battery voltage every 5 min. Alarm is triggered if SCF830-D-AS measures that battery START voltage is below 12V o 24V (depending on the battery nominal voltage) for three consecutive measurements. This alarm will auto-reset whenever the battery voltage value is back to normal. | |
| **AL-08** | START BATTERY CHARGER FAULT | SCF830-D-AS does not receive the correct status for START battery charger signal (negative)<br>This alarm will auto-reset whenever the conditions are back to normal. | |
| **AL-09** | MONITOR BATTERY CHARGER FAULT | SCF830-D-AS does not receive the correct status for MONITOR battery charger signal (negative)<br>This alarm will auto-reset whenever the conditions are back to normal. | |
| **AL-10** | HEATER PROTECTION TRIPPED | SCF830-D-AS detects that the circuit breaker Q2 that protects the engine heating resistor is open. | |
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | **RELATED CONFIG** |
| **AL-11** | CRANK ENGINE VOLTAGE FAIL | SCF830-D-AS does not receive any signal from the engine cranking motor (Bendix) the moment the SCF830-D-AS sends the engine start signal.<br>Terminal **30** I-BENDIX VOLTAGE (+) | **C-1.26** BENDIX MONITORING |

| | | | | |
|---|---|---|---|---|
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | **ACTION** | **RELATED CONFIG.** |
| **AL-12** | FAILED TO START | In AUTO mode the SCF830-D-AS has gone through all the engine CRANK ATTEMPTS without successfully starting the engine. | Remote signal:<br>Terminals **71** NC, **72** COM, **73** NO — FAIL TO START 72-73 connected | **C-1.4**: NUMBER OF CRANK ATTEMPS<br>**C-1.6** CRANKING TIME<br>**C-1.7** START REST TIME |
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | | **RELATED CONFIG.** |
| **AL-13** | LOW DISCHARGE PRESSURE | SCF830-D-AS does not measure a major pump discharge pressure even though the engine is running.<br>Terminals **22** I-PUMP DISCHARGE PRESSURE OK<br>**23** **O-REF. COMMON (-)** | | **C-1.12** DELAYED ALARMS SURVEYANCE |
| **AL-14 / AL-15** | | | | NO USED |
| **AL-16** | SPEED SIGNAL FAULT | SCF830-D-AS does not detect any Pick-Up signal or the engine rotational speed is less than 25% of the engine RATED SPEED.<br>There is 10 second time lapse from the moment the engine starts to the moment the SCF830-D-AS triggers the alarm. | | **C-1.2** NUMBER OF TEETH<br>**C-1.3** RATED SPEED |

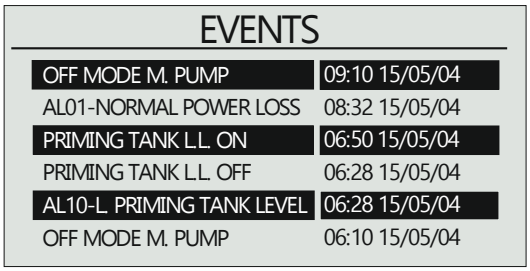
| | | | | |
|---|---|---|---|---|
| **AL-17** | PRESSURE SWITCH SHORT-CIRCUIT | SCF830-D-AS detects that the pressure switch line is in short-circuit<br>Terminals **16** I: SYSTEM PRESSURE SWITCH<br>**17** **O-REF. COMMON (-)**<br>Active only when **C-1.15** is configured | | **C-1.15** OPEN-SHORT CIRCUIT PRESSURE SWITCH |
| **AL-18** | PRESSURE SWITCH OPEN-CIRCUIT | SCF830-D-AS detects that the pressure switch line is in open-circuit<br>Terminals **16** I: SYSTEM PRESSURE SWITCH<br>**17** **O-REF. COMMON (-)**<br>Active only when **C-1.15** is configure | | **C-1.15** OPEN-SHORT CIRCUIT PRESSURE SWITCH |
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | **ACTION** | **RELATED CONFIG.** |
| **AL-19** | MAINS FREQUENCY FAIL | SCF830-D-AS detects that mains frequency value is more than 10% over or under the alarm set point | Remote signal:<br>Terminals **65** NC / **66** COM / **67** NO — MAINS FAILURE (65-66 connected) | **C-3.1**: NOMINAL MAINS FREQUENCY |
| Nº | **TEXT ON DISPLAY** | **DESCRIPTION** | | **RELATED CONFIG.** |
| **AL-20** | COMMUNICATION | SCF830-D-AS detects that there is no communication between front panel electronic baseplate and the baseplate located in the interior of the SCF830-D-AS. | | |
| **AL-21 / AL-22 / AL-23 / AL-24 / AL-25 / AL-26 / AL-27 / AL-28 / AL-29** | | | | NO USED |
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | | |
| **AL-30** | CRANKING COILS (LEVERS) FAULT | SCF830-D-AS detects an issue in the wire connecting the SCF830-D-AS to the engine cranking coils (levers). Open circuit or short circuit | | |
| **AL-31** | LOW COOLANT TEMPERATURE | Active whenever SCF830-D-AS receives signal through input:<br>Terminals **32** I LOW WATER TEMPERATURE CONTACT<br>**33** **O-REF. COMMON (-)** | | |
| **AL-32** | DC VOLTAGE FAIL | SCF830-D-AS detects a voltage for START and MONITOR batteries lower than 5 V DC for at least 3 consecutive readouts, with 5 minutes time lapse between readouts. | | |
| **AL-33** | HIGH VOLTAGE START BATTERY | SCF830-D-AS detects a voltage for START Battery to be 25% higher than its nominal voltage for three consecutive readouts. (i.e. 15V for 12V batteries) | | |
| **AL-34** | HIGH VOLTAGE MONITOR BATTERY | SCF830-D-AS detects a voltage for MONITOR Battery B to be 25% higher than its nominal voltage for three consecutive readouts. (i.e. 15V for 12V batteries) | | |
| **AL-35** | START BATTERY DEFECTIVE | SCF830-D-AS detects battery A voltage to be below 8V or 16V (12/24V nominal) for 0.5 seconds. | | |
| **AL-36** | MONITOR BATTERY DEFECTIVE | SCF830-D-AS detects battery A voltage to be below 8V or 16V (12/24V nominal) for 0.5 seconds. | | |
| **AL-37** | WATER PRESSURE SENSOR FAULT | The pressure sensor offers an output beyond its nominal range of 4-20mA | | |

# 7. EVENTS LOG

SCF830-D-AS control panels store the most relevant information related to the fire pump system. This event log capability is a very important tool for the authorized people involved in the maintenance of the pump and troubleshooting the root cause for the events. The event log is displayed in two different ways or places:

- SCF830-D-AS control panel: Up to 150 events
- SSW1005 Software: Up to 500 events

## 7.1. MONITORING EVENTS ON DISPLAY




Use the press buttons  and  to scroll through the different screen and access the EVENT screen where 150 of the latest events can be found.

- Event description
- Date-time.

To scroll down and view more events push 

To exit events screen press 

## 7.2. LIST OF EVENTS

Below a list of all the events that can be registered:

| Nº | NAME ON DISPLAY | DESCRIPTION |
|---|---|---|
| **E-1** | AL-12 FAIL TO STAR | Engine start failure alarm |
| **E-2** | AL-07 LOW MONITOR BATTERY VOLTAGE | Battery B low voltage alarm |
| **E-3** | AL-13 LOW DISCHARGE PRESSURE | Pump discharge pressure failure alarm |
| **E-4** | AL-02 OVERSPEED | Engine over speed alarm |
| **E-5** | AL-05 LOW FUEL LEVEL | Low fuel level alarm |
| **E-6** | AL-03 LOW OIL PRESSURE | Low oil pressure alarm |
| **E-9** | AL-08 START CHARGER FAULT | Start battery charger alarm |
| **E-10** | A-L09 MONITOR CHARGER FAULT | Monitor battery charger alarm |
| **E-11** | AL-10 HEATER PROTECTION TRIPPED | Open heater resistor circuit breaker alarm |
| **E-12** | AL-04 HIGH ENGINE WATER TEMPERATURE | Coolant high temperature alarm |
| **E-13** | AL-01 MAINS FAILURE | Mains power supply failure alarm |
| **E-16** | AL-16 SPEED SIGNAL FAULT | Pickup signal failure alarm |
| **E-17** | AL-06 LOW START BATTERY VOLTAGE | Low start battery voltage alarm |
| **E-19** | AUTO MODE | CONTROL PANEL is in AUTO MODE |
| **E-20** | CRANK ISOLATE MODE | CONTROL PANEL is in MAN MODE |
| **E-21** | PUMP START | Pump start/crank order |
| **E-22** | PUMP STOP | Pump stop order |
| **E-23** | REMOTE START CONTACT: ON | Remote start contact activated |
| **E-24** | REMOTE START CONTACT: OFF | Remote start contact disabled |
| **E-25** | AL-11- CRANK ENGINE VOLTAGE FAILURE | Engine cranking motor voltage failure alarm |
| **E-40** | DEMAND PRESSURE SWITCH: ON | Low system pressure read by pressure switch |
| **E-54** | DEMAND PRESSURE SWITCH:  OFF | System pressure read by pressure switch back to normal |
| **E-56** | MAINS VOLTAGE OK | Mains power supply back to normal conditions |
| **E-63** | AL-33 HIGH VOLTAGE START BATTERY | Start battery high voltage alarm |
| **E-69** | START PRESS BUTTON | START button pressed in SCF830-D-AS |
| **E-69** | STOP PRESS BUTTON | STOP button pressed in SCF830-D-AS |
| **E-80** | CONFIGURED BY USB | SCF830-D-AS has been configured via USB port |
| **E-92** | AL-19 MAINS FREQUENCY FAIL | Mains frequency failure alarm |
| **E-100** | AL-17 PRESSURE SWITCH SHORT CICUIT | SYSTEM PRESSURE SWITCH in short circuit alarm |
| **E-101** | AL-18 PRESSURE SWITCH OPEN CIRCUIT | SYSTEM PRESSURE SWITCH in open circuit alarm |

| | | |
|---|---|---|
| **E-114** | REMOTE START | A remote start process is initiated due to remote start |
| **E-115** | REMOTE STOP | A remote stop process is initiated due to remote stop |
| **E-116** | AL-37 WATER PRESSURE SENSOR FAULT | Water pressure sensor fault alarm |
| **E-119** | MANUALLY CONFIGURED | SCF830-D-AS has been configured manually |
| **E-122** | EVENTS ERASED | Event log has been deleted |
| **E-124** | AL-20 COMMUNICATION | Base – Control configuration failure alarm |
| **E-134** | AL-30 CRANKING LEVERS FAULT | Engine Ignition coil failure alarm |
| **E-135** | AL-34 HIGH VOLTAGE MONITOR BATTERY | Battery B high voltage alarm |
| **E-137** | AL-32 DC VOLTAGE FAIL | Battery power supply failure alarm |
| **E-138** | AL-35 BATTERY A DEFFECTIVE | Battery A defective or non-existent alarm |
| **E-139** | AL-36 BATTERY B DEFFECTIVE | Battery A defective or non-existent alarm |
| **E-140** | DEMAND SENSOR: ON | Low system pressure read by sensor |
| **E-141** | DEMAND SENSOR: OFF | Low system pressure read by sensor back to normal |
| **E-151** | PUMP RUNNING | Pump running |
| **E-152** | PUMP STOPPED | Pump stopped |
| **E-153** | CONFIGURED BY MODBUS | Configured by modbus |

# 8. SYSTEM PRESSURE LOG

SCF830-D-AS control panel stores up to 16.000 pressure value data captured by the system pressure sensor **54** I-SYSTEM PRESSURE SENSOR.

The SCF830-D-AS control panel will store a new pressure data value whenever any of the following happens:

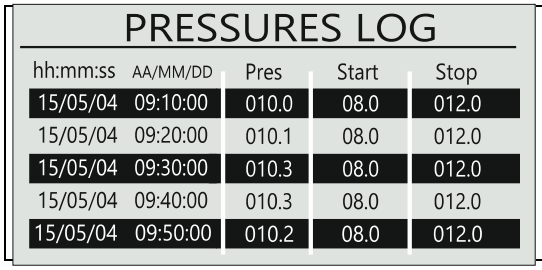
| Nº | PRESSURE VALUE CAPTURE |
|---|---|
| **01** | Engine start demand activation |
| **02** | Engine start demand deactivation |
| **03** | Change in pump status from stop to running or vice versa |
| **05** | Pressure change: the SCF830-D-AS will capture a new pressure data point if there is a big enough difference between two consecutive captured values, see **C-2.14** PRESSURE VARIATION REGISTRY |
| **06** | Every 30 min even there is no event or pressure variation |

Whenever a new pressure data is registered the SCF830-D-AS control panel shows the following information:

| Nº | PRESSURE LOG DATA | |
|---|---|---|
| **01** | Date y time: YY/MM/DD hh: mm: ss | |
| **02** | Captured system pressure: XX.X bar | |
| **03** | Configured pump start demand pressure at that moment: **C-1.17** DEMAND PRESSURE | |
| **04** | Configured end of demand at that moment: **C-1.18** STOP PRESSURE | |
| **05** | Status registers: Visible only using the SSW1005 software and downloading the information via USB. | Status 0: Demand status: 1: Existing pump start demand / 0: Non existing pump start demand |
| **06** | | Status 1: Pump status: 1: Pump running / 0: Pump not running |

## 8.1. MONITORING SYSTEM PRESSURE LOG ON DISPLAY

Using the press button to switch between display screens  and  the PRESSURES screen can be selected to see the latest 150 pressure logged events




Latest 150 logged pressure:
- Date-hour-minute-second
- Pressure value
- Demand activation-deactivation order.

To Access more events press

To exit the pressure event list press

## 8.2. PUMP TEST

SCF830-D-AS control panel allows to register and store on its internal memory the results of the periodical fire pump tests that are obligatory by most international fire pump installation standards and technical rules.
Up to 50 fire pump tests can be stored and for every test the SCF830-D-AS control panel can save the test results for up to 5 test points. Each of the stored fire pump tests are identified using four characters, the maintenance user-operator in charge of the fire pump test will be the one selecting these four characters as well as introducing the date and time when the test has been performed.
For every test point saved during the fire pump test the following information will be registered in the SCF830-D-AS control panel (as long as the required sensors are connected):

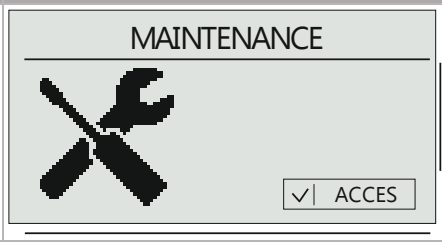
| Nº | FIRE PUMP TEST INFORMATION | | |
|---|---|---|---|
| P1: | Pump discharge pressure or system pressure | T2: | Oil temperature |
| Q: | Flow | P: | Oil pressure |
| V: | Engine rotational speed | | |

## 8.3. PRECONDITIONS

| Nº | THINGS TO BE CHECKED BEFORE PERFORMING THE FIRE PUMP TEST | |
|---|---|---|
| 01 | Pump discharge pressure or system pressure | **54** I-SYSTEM PRESSURE SENSOR<br>Parameters: **C-2.5** ENABLE SYSTEM PRESSURE SENSOR and **C-2.6** SYSTEM PRESSURE SENSOR SCALE |
| 03 | Flow | **56** I-WATER FLOW SENSOR<br>Parameters: **C-2.7** ENABLE FLOW SENSOR y **C-2.8** FLOW SENSOR SCALE |
| | | Without a flow sensor. Manual entry<br>Parameter: **C-2.7** ENABLE FLOW SENSOR : No |

## 8.4. ACCESS AND EXIT FIRE PUMP TEST MENU

To access the fire pump test screen scroll to the maintenance screen:

| Nº | | |
|---|---|---|
| 1 | Access |  |
| 3 | Exit without saving | Press button |

## 8.5. FIRE PUMP TEST REGISTRY

Below a description on how to create new fire pump test and viewing recorded tests:

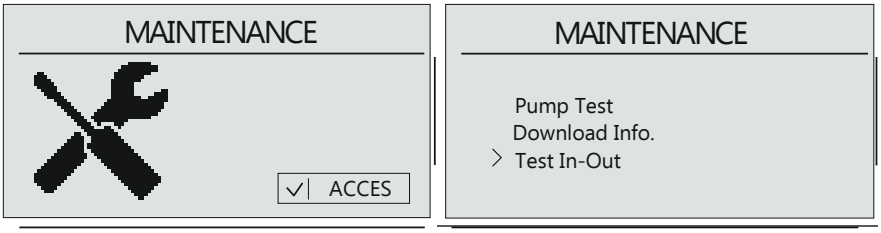
| Nº | | | |
|---|---|---|---|
| 1 | Select MAN mode and to enable START A, START B and STOP push buttons | | |
| 2 | PUMP TEST<br>> New Test<br>07/03/2016 09:55 S-01<br>02/03/2016 12:32 S-05<br>25/02/2016 15:10 S-01<br>15/01/2016 08:26 S-02 | | Test start and registered tests visualization |
| | New Test...<br>Insert Name/ID:<br>AAA —> | | To register a new fire pump test:<br>Introduce the user-operatorname in charge for the new pump test |
| | Register the different points (up to 5) that are part of the fire pump test: | | |
| | Using a flowmeter | New Test...<br>Point #1:<br>p:5.3bar V:2950 rpm<br>Q:20.0m3/s T2:72ºC<br>✓\|SAVE POINT P: 7,2 bar<br>⮌\|FINISH | ○ Open or close the necessary valves<br>○ Start the fire pump<br>○ Monitor the flow values in SCF830-D-AS display<br>○ Press to save the test value |
| | Inputing flow values manually ussing press buttons | New Test...<br>Point #1:<br>p:5.3bar V:2950 rpm<br>Q:20.0m3/s T2:72ºC<br>△\|INCREASE FLOW P: 7,2 bar<br>▽\|DECREASE FLOW | ○ Press to end the test and exit the screen |

# 9. INPUTS AND OUTPUTS TEST

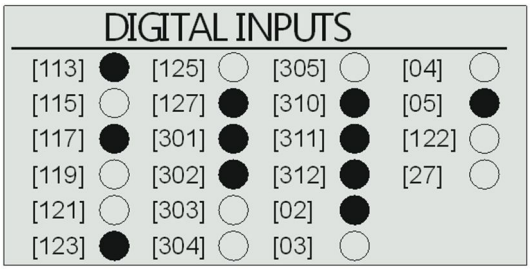
SCF830-D-AS control panel has the capability to monitor and evaluate all the information sent and received.
This is a very useful tool not only during the installation of a new fire pump system but also for the periodic maintenance operation to make sure that all the mechanical and electrical signals going from and to the SCF830-D-AS control panel are working properly, and the SCF830-D-AS control panel is detecting and processing them correctly.

## 9.1. ACCESSING AND EXITING INPUT AND OUTPUT TEST SCREEN

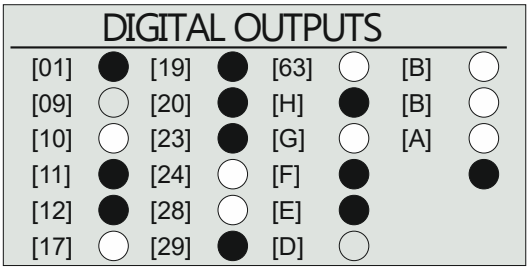
To access the fire pump test using the maintenance screen on the display:

| N° | | |
|---|---|---|
| 1 | Access |  |
| 3 | Exit | Press  button |

### 9.1.1. DIGITAL INPUTS STATUS

| | |
|---|---|
|  | Correct status (filled circle) / Disconnected (empty circle) |

### 9.1.2. DIGITAL OUTPUTS STATUS

| | |
|---|---|
|  | Correct status (filled circle) / Disconnected (empty circle) |

# 10. COMMUNICATIONS

SCF830-D-AS control panel offers the following communication options:

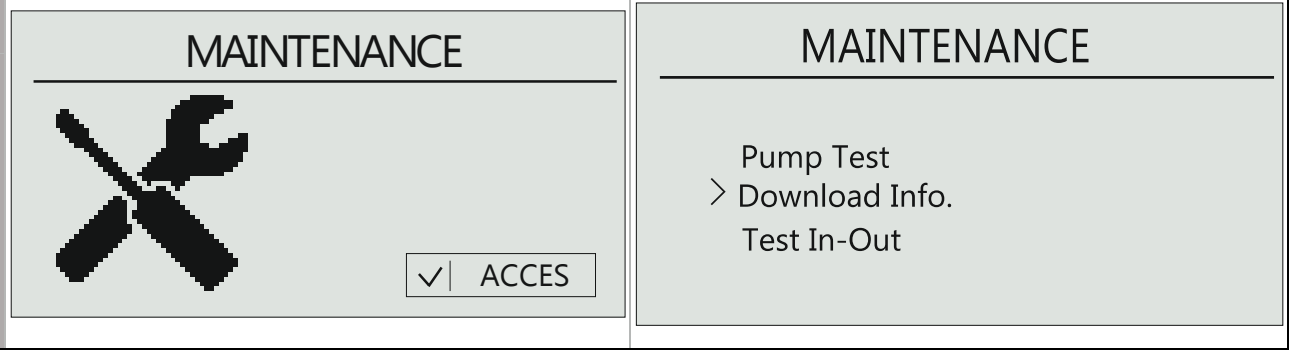
| N° | COMMUNICATIONS | | |
|---|---|---|---|
| 01 | USB | SCF830-D-AS ←------→ PC | Monitoring / Configuration via SSW1005 software |
| 02 | | | Bootloader: SCF830-D-AS firmware update |
| 03 | | SCF830-D-AS ←------→ PENDRIVE | Information download from SCF830-D-AS to PENDRIVE |
| 04 | | PENDRIVE ←------→ PC | Information transfer from PENDRIVE to PC |
| 05 | Ethernet MODBUS TCP/IP | SCF830-D-AS ←------→ PC | Monitoring / Configuration via SSW1005 software<br>Data can be monitored using customer's SCADA system |

| | | | |
|---|---|---|---|
| 06 | RS485<br>MODBUS / RTU | SCF830-D-AS ←------→ PC | Monitoring / Configuration via SSW1005 software<br>Data can be monitored using customer's SCADA system |

Below a more detailed description of the communication options described in the table above:

## 10.1. USB COMMUNICATION: SCF830-D-AS (HOST) – PENDRIVE / SMARTPHONE

SCF830-D-AS control panel has a Type A USB located in the front part of its PLC that allows the user-operatorto download the data into a PENDRIVE. To download the data the user-operator needs to access the MAINTENANCE screen on the SCF830-D-AS control panel display.




Connect a Pendrive or Smartphone to the front USB port of the PLC SAF830-D-AS

CONEXIÓN DE PENDRIVE O SMARTPHONE


The files that can be downloaded into a Pendrive are the following ones:

| Nº | INFORMATION THAT CAN BE DOWNLOAD INTO THE PENDRIVE | | |
|---|---|---|---|
| | File name | Description | Extension |
| 01 | Monitoring | Status of all the system variables at the moment the information is downloaded into the PENDRIVE | .txt |
| 02 | Configuration parameters | Configured parameter values | .txt |
| 03 | OEM configuration parameters | OEM configured parameter values | .txt |
| 04 | Events log | Up to 500 logged events | .csv |

| | | | |
|---|---|---|---|
| 05 | Fire pump test | Up to 50 fire pump tests with 5 tests for each test | .csv |
| 06 | Pressures log | Latest 16.000 pressure values logged | .csv |

# 11. CONFIGURATION MENU

SCF830-D-AS control panel can be adapted to the specific needs of fire pump systems, engineering criteria, diesel fire pump manufacturer, etc....

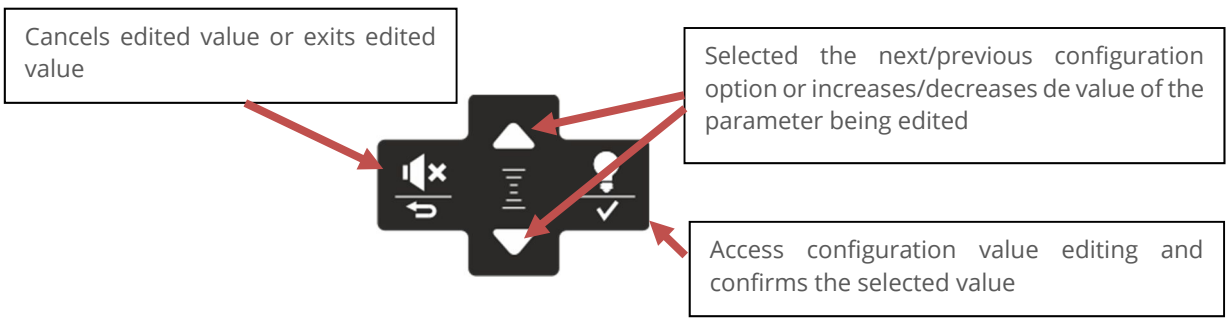
## 11.1. FUNCTIONS

### 11.1.1. PRECONDITIONS

Below the necessary preconditions to be able to access the configuration menu:

| Nº | |
|---|---|
| 1 | SCF830-D-AS connected to a mains power supply or a battery power supply |
| 2 | SCF830-D-A in OFF mode |
| 3 | Engine not running |

### 11.1.2. PUSH BUTTON FUNCTIONS




### 11.1.3. ACCESSING AND EXISTING CONFIGURATION MENU

| Nº | | |
|---|---|---|
| 1 | Access | Press and buttons at the same time for 3 seconds |
| 2 | Exit | Press button |

## 11.2. CONFIGURATION OPTIONS

The CONFIGURATION MENU screen displays the following options:

| Nº | TEXT ON DISPLAY | CONFIGURABLE OPTIONS |
|---|---|---|
| 1 | DATE / TIME | DAY/MONTH/YEAR HOUR: MINUTES |

| | | |
|---|---|---|
| 2 | LANGUAGE | ENGLISH /ESPAÑOL / ITALIANO/ FRANÇAIS / PORTUGUES |
| 3 | PARAMETERS | Access to configurable parameters |
| 4 | CALIBRATION | Access to calibration of measurements |
| 5 | DOWNLOAD INFORMATION | Access to download the data to a data storing device |
| 6 | TEST IN-OUT | Access to the screen representing the status of the input and output signals |

### 11.2.1. PARAMETERS

To modify any of the parameters the user-operator will have to enter the password in the SCF830-D-AS control panel. All control panels have the same factory setting password 0000 that can be modified by the end Á, see configurable parameters **C-5.1** ACCESS PASSWORD.

The parameters that can be modified are separated in the following groups:

| Nº | INDEX | | |
|---|---|---|---|
| 1 | C-1 Pump | 5 | C-5 Password |
| 2 | C-2 Sensors | 6 | C-6 OEM parameters (accessed only by manufacturer) |
| 3 | C-3 Power source | 7 | C-7 Communications |
| 4 | C-4 Batteries | 8 | C-8 Test |

**C-1 PUMP**

| Nº | TEXT ON DISPLAY | DESCRIPTION | OPTIONS | |
|---|---|---|---|---|
| C-1.2 | NUMBER OF TEETH | Number of teeth on the engine flywheel | **1** | From 1 to 250 |
| C-1.3 | RATED SPEED | Nominal engine RPM | **1500** | From 1000 to 5100 |
| C-1.4 | NUMBER OF CRANK ATTEMPS | Maximum number of automatic CRANK ATTEMPTS with both batteries | **6** | From 1 to 99 |
| C-1.5 | CRANK WITHDRAW WITH OIL PRESSURE | Engine running detection through oil pressure | **No** | Yes / No |
| C-1.6 | CRANKING TIME | CRANKING TIME in seconds for each of the attempts | **10** | From 1 to 99 |
| C-1.7 | START REST TIME | START REST TIME between CRANK ATTEMPS in seconds | **10** | From 1 to 99 |
| C-1.8 | STOP TIME | Fuel supply cut off duration to achieve a complete engine stop | **15** | From 2 to 99 |
| C-1.9 | AUXILIARY ALTERNATOR PRIMIMG | Main engine alternator auxiliary primming | **No** | Yes |
| C-1.10 | PUMP START DELAY | Delay in seconds between the demand order and the diesel pump start order | **5** | From 0 to 240 |
| C-1.11 | MAINS VOLT ALARM DELAY | Delay in seconds between the mains power supply failure detection and the activation of the alarm **AL-01** MAINS FAILURE | **5** | From 0 to 99 |
| C-1.12 | DELAYED ALARMS SURVEYANCE | Delay in seconds from the time the engine running is detected to the time the SCF830-D-AS starts monitoring **AL-03** LOW OIL PRESSURE and **AL-13** DISCHARGE PRESSURE FAILURE | **10** | From 0 to 99 |
| C-1.13 | DISCHARGE PRESSURE CONTACT | Pressure switch type for monitoring discharge pressure **22** I-PUMP PRESSURE OK | **Closed with pressure OK** | Closed / Opened with pressure OK |
| C-1.14 | SYSTEM PRESSURE SWITCH | Pressure switch type for monitoring system pressure **16** I: SYSTEM PRESSURE SWITCH | **Closed with pressure OK** | Closed / Opened with pressure OK |

| | | | | |
|---|---|---|---|---|
| C-1.15 | SYSTEM PRESSURE SWITCH OPEN / SHORT CIRCUIT | SYSTEM PRESSURE SWITCH short-circuit or open-circuit failure monitoring<br>16 I: SYSTEM PRESSURE SWITCH | **No** | Yes / No |
| C-1.16 | ENABLE DEMAND SENSOR | Allow the SCF830-D-AS to generate a pump start demand using a pressure sensor | **No** | Yes / No |
| C-1.17 | DEMAND PRESSURE | When the system pressure value, using a pressure sensor, goes below this value the SCF830-D-AS will create a pump start demand. | **5,0 bar** | From 0 up to **C-1.18** value |
| C-1.18 | STOP PRESSURE | When the system pressure value, using a pressure sensor, goes over this value the SCF830-D-AS will deactivate the pump start demand. | **8,0 bar** | From **C-1.17** up to the nominal value of the pressure sensor in place **C-2.6** SYSTEM PRESSURE SENSOR SCALE |
| C-1.21 | MINIMUM FUEL LEVEL ALARM | When diesel tank level measured with a sensor in % goes below **50** I-FUEL TANK LEVEL SENSOR the SCF830-D-AS will activate **AL-05** LOW FUEL LEVEL | **10** | From 5 to 100 |
| C-1.22 | MINIMUM HEATER TEMPERATURE | When coolant temperature measured with a sensor in °C goes below **46** I-WATER TEMPERATURE SENSOR the SCF830-D-AS will activate the engine heating resistor or glow plug | **40** | From 20 to **C-1.23** |
| C-1.23 | MAXIMUM HEATER TEMPERATURE | When coolant temperature measured with a sensor in °C goes over **46** I-WATER TEMPERATURE SENSOR the SCF830-D-AS will deactivate the engine heating resistor or glow plug | **80** | From **C-1.22** to 100 |
| C-1.25 | HEATER OUTPUT | Engine heating resistor output management | **Temperature control** | Temperature control/ Always active |
| C-1.26 | AUXILIARI CRANKING ENGINE MONITORING | Monitor input **30**- I-BENDIX VOLTAGE to activate alarm **AL-11**-STARTER VOLTAGE FAILURE | **Yes** | Yes/No |

| C-2 | SENSORS | | | |
|---|---|---|---|---|
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | **OPTIONS** | |
| C-2.1 | OIL PRESSURE SENSOR | Oil Pressure Sensor<br>Borne: **48** I-OIL PRESSURE SENSOR | None | None<br>VDO360-081-030-009/FAE14980<br>FAE14630<br>WEMA SRP10<br>DATCON 0250x-00<br>Configurable |
| C-2.2 | COOLANT TEMPERATURE SENSOR | Coolant sensor temperature<br>Borne: **46** I-WATER TEMPERATURE SENSOR | None | None<br>VDO 801-004/803-004<br>VDO 801-001/803-001<br>FAE 31020 34080<br>WEMA SP3<br>DATCON<br>VEGLIA<br>ELCOS TTAO/402<br>IVECO<br>Configurable |
| C-2.3 | FUEL TANK LEVEL SENSOR | Diesel tank level sensor<br>Borne **50:** I-FUEL TANK LEVEL SENSOR | None | None<br>VDO 221-825-011<br>VDO 226-801-015-001<br>AST<br>BIGES 310 861-T<br>WEMA 323234<br>VDO 221-825-025-002<br>VEGLIA<br>DATCON 0230x_xx<br>Configurable |

| | | | | |
|---|---|---|---|---|
| C-2.4 | OIL TEMPERATURE SENSOR | Oil temperature sensor<br>Borne: **52** I-OIL TEMPERATURE SENSOR | None | None<br>VDO 801-004/803-004<br>VDO 801-001/803-001<br>FAE 31020 34080<br>WEMA SP3<br>DATCON<br>VEGLIA<br>ELCOS TTAO/402<br>IVECO<br>Configurable |
| C-2.5 | ENABLE SYSTEM PRESSURE SENSOR | Oil pressure sensor connected (4-20 mA) | **No** | Yes / No |
| C-2.6 | SYSTEM PRESSURE SENSOR SCALE | Maximum reading for the pressure sensor in use (4-20 mA) | **16.0** | 0 - 100 bar<br>0 - 1500PSI<br>0 - 100.0 Kgf/cm2<br>0 - 1020 mH2O<br>0 - 10000kPa |
| C-2.7 | ENABLE FLOW SENSOR | Flow meter connected (4-20mA) | **No** | Yes / No |
| C-2.8 | FLOW SENSOR SCALE | Maximum reading value ($m^3/h$) for the flow meter in use (4-20 mA) | **100** | 1-10000 m3/h |
| C-2.14 | PRESSURE VARIATION REGISTRY | System pressure variation in bar that triggers a new pressure registry | **0.1** | 0.1-10 bar<br>1-150 PSI<br>0.1-10 Kgf/cm2<br>1-150mH2O<br>1-250KPa |
| **C-3** | **MAINS POWER SUPPLY** | | | |
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | **OPTIONS** | |
| C-3.1 | NOMINAL FREQUENCY | Mains power supply frequency | **50HZ** | 50 / 60HZ |
| C-3.2 | MINIMUM MAINS VOLTAGE | Whenever the voltage between phases drops below this value the SCF830-D-AS generates **AL-01** MAINS VOLTAGE FAILURE | **180V** | From 110 V AC to **C-3.3** |
| C-3.3 | MAXIMUM MAINS VOLTAGE | Whenever the voltage between phases goes above this value the SCF830-D-AS generates **AL-01** MAINS VOLTAGE FAILURE | **250V** | From **C-3.2** to 300 V AC |
| **C-4** | **BATTERIES** | | | |
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | **OPTIONS** | |
| C-4.1 | HOURS TO NEXT EQUALIZATION | Time between battery equalization in hours performed by the battery chargers | **600** | NO / From 10 to 990 |
| C-4.2 | BATTERY EQUALIZATION TIME | BATTERY EQUALIZATION TIME in minutes | **15** | From 15 to 50 |
| **C-5** | **PASSWORD** | | | |
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | **OPTIONS** | |
| C-5.1 | NEW PASSWORD | Required passcode to modify existing system parameters | **0000** | From 0 to 9999 |

| | | | |
|---|---|---|---|
| **C-6** | **OEM PARAMETERS (MANUFACTURER)** | | |
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | **OPTIONS** |
| C-6.1 | **BATTERIES** | | |

| | | | | |
|---|---|---|---|---|
| **C-6.1.1** | NUMBER OF BATTERIES | Number of engine start batteries | **2** | 1 |
| **C-6.1.2** | INTELLIGENT CHARGER | Enable intelligent charger | **Yes** | No |
| **C-6.3** | **OUTPUTS** | | | |
| **C-6.3.1** | CONFIGURABLE OUTPUT 1 | Configurable 1 for terminal **01** O-FUEL SOLENOID / VALVE | **FUEL EXCITED RUNNING** | FUEL EXCITED STOP |

| **C-7** | **COMMUNICATIONS** | | | |
|---|---|---|---|---|
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | **OPTIONS** | |
| **C-7.1** | MODBUS CONFIGURATION | Configuration type | **ETHERNET(HMI)** | ETHERNET (HMI )<br>RS485 (SCOM) |
| **C-7.2** | RS485 ADDRESS | Address for the RS485 commucation | **1** | 1 to 247 |
| **C-7.3** | RS485 CONFIGURATION | Configuraction for RS485 communication. | **9600 8N2** | 9600 8N2<br>9600 8E1<br>19200 8N2<br>19200 8E1 |
| **C-7.4** | ASSIGNED IP | ASSIGNED IP | **DHCP** | Static IP |

| **C-9** | **SYSTEM PARAMETERS** | | | |
|---|---|---|---|---|
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** | **OPTIONS** | |
| **C-9.1** | PRESSURE MAGNITUDE | pressure magnitude | **Bar** | Bar<br>PSI<br>kgf/cm2<br>mH2O<br>kPa |

## 11.2.2. CALIBRATION OF MEASUREMENTS

SCF830-D-AS control panel allows to calibrate the electric analog measurements so the values displayed by the SCF830-D-AS control panel match those measured by an external measuring device that the user-operator wants to use as the standard. The user-operator will need to input in the parameter list the values measured by the external device and the SCF830-D-AS control panel will automatically adjust the measurements to the given standard.

| | **MEASUREMENT CALIBRATION** | |
|---|---|---|
| **Nº** | **TEXT ON DISPLAY** | **DESCRIPTION** |
| **01** | BATTERY START VOLTAGE | Battery START voltage |
| **02** | BATTERY MONITOR VOLTAGE | Battery MONITOR voltage |
| **03** | MAINS VOLTAGE | Mains power supply voltage |
| **04** | BATTERY CHARGER START CURRENT | Battery charger A current value to charge battery A |
| **05** | BATTERY CHARGER MONITOR CURRENT | Battery charger B current value to charge battery B |
| **06** | AUXILIARY ALTERNATOR AMPS | Engine auxiliary alternator amps |
| **07** | PRESSURE TRANSDUCER P.4 mA | System pressure value at 4mA |
| **08** | PRESSURE TRANSDUCER P.20 mA | System pressure value at 20mA |
| **09** | FLOW TRANSDUCER P.4 mA | Pump flow value at 4mA |
| **10** | FLOW TRANSDUCER P.20 mA | Pump flow value at 20mA |

# REGISTER OF UNITARY TESTS

| WIRING AND ELECTRICAL OPERATION | |
|---|---|
| | Functional revision of control elements (locks, interlocks, ..) |
| | Correct positioning of components (tightening torque of the fixation) |
| | Visual: Insulation distances and wiring leaks (> 3 mm in air and 6.5 mm leaks) |
| | Contact check (tightening torque, 10% random inspection) |
| | Check wiring gauge (see Components list / product dossier): |
| | Marking revision according to Marking / product dossier: |
| | Ref and manufacturer, serial number |
| | Supply voltage |
| | Power |
| | Standards: AS 2941: regulation 2013 AS/NZS 3000:2007 Standard |
| **INSULATION (DIELECTRIC TEST)** | |
| - Keep the isolator switch connected (closed).<br>- Stiffness test by disconnecting the 220Vac input from one of the chargers.<br>- Dielectric test voltage: 1000 V AC for 1 sec Use instrumentl: Isolations Prütgerät (Guth S.A.)<br>- Repeat the process leaving only the other charger connected | |
| | Between active parts (phases, neutral) and chassis (GND). There are no perforations or contours |
| **VERIFICATION OF GROUND CONNECTION (PROTECTION CIRCUIT):** | |
| - Electrical continuity of the ground connection (0.1 Ω max) | |
| | Resistance measurement from the points furthest from the ground connection to the ground connection terminal (test: 10 A, Vmax: 1 V) |

| **REFERENCE** | **SCF830-D-AS** | | | | |
|---|---|---|---|---|---|
| | **12030** | **12070** | **12100** | **24035** | **24050** |
| **MODEL:** | | **DATE** | | | |
| **SERIAL NO.** | | | | | |
| **RESPONSIBLE TECHNICIAN** | | | | | |

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