

EXPRESS ELECTRONIC PUMP CONTROLLER



Installation & Operating Manual

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Contents herein are not warranted

Congratulations on selecting a Dayliff Express Panel. They are manufactured to the highest standards and if installed and operated correctly will give many years of efficient and trouble free service. Careful reading of this Installation Manual is therefore important, though should there be any queries they should be referred to the equipment supplier.

1. CONTROLLER SPECIFICATIONS



Dayliff EXPRESS is a high specification multi-function electronic controller suitable for all borehole, waste water, sewage and general water supply pump applications. Controllers are fitted with a digital display that indicates both operating and fault parameters and can be programmed using fascia mounted panel buttons. A range of specifications are available for single and three phase motors, configuration to a particular motor size being effected by adjustments of the maximum running current. Particular features include:

- Incoming mains isolator and door interlock
- Multifunction LCD display of voltage, current, power factor (cos), operating status and system faults
- In built protection for overcurrent, over or under voltage, phase sequence and phase failure.
- In built power factor dry run protection or connections for remote low level float switch/probes provided.
- Connections for various analogue (eg pressure and float switch) or digital (eg PLC's and transducers) signal inputs provided.
- Large enclosure with space for capacitors in single phase pump installations.
- Adjustable maximum operating current and voltage limit settings.
- Twin pump controllers provide for selection of duty/standby, alternate duty cycling with auto trip changeover and parallel operation configurations.

Single and twin pump EXPRESS controllers for DOL start are available as standard while panels for 3 and 4 pump operation and Star-Delta start can be suppled on request. Dayliff EXPRESS is a fully integrated controller that is adaptable to almost any pump control requirement as well as giving full motor protection and operating and fault status

indications. It is compact, simple to install and exceptional value for the functionality provided and the ultimate control solution for all booster pumping requirements.

CONTROLLER FUNCTIONS

DAYLIFF	express D1	230V 7.0At 1.0b PL (L) P2(L) P3 (0)	Display of Analogue Signals expressed as a percentage, in meters or Bar
DAYLIFF www.dayliff.com		230V 7.0At Ot PL (L) P2(L) P3 (0)	Display of Motor Operating Parameters
	NTROLLER	230V 0.0A 1.0 MAN () AUR(*) PL (L)	Display of Motor Operating Status

GENERAL DATA

Controllor Model	Start	Motor	Max	Dimensions (mm)			Wt
Controller Model	Method Size		(A)	Height	Width	Length	(kg)
EXPRESS D1-1ph	DOL	0.37-2.2kW	18				2
EXPRESS D1-3ph/7.5	DOL	0.55-7.5kW	16				2.5
EXPRESS D1-3ph/15	DOL	0.55-15kW	32	320	240	190	2.5
EXPRESS D2-1ph	DOL	0.37-2.2kW	18				2.5
EXPRESS D2-3ph/7.5	DOL	0.55-7.5kW	16				3.5
Express D1/D2 - 1ph	Express	D1 - 3ph Ex	press D2 -	H 3ph	×		

Enclosure Class: IP55 **Power Supply:** 110V-240V/+10% 1ph, 310∀ - 450V/+10%, 3ph

2. SYMBOLS AND WARNINGS

This operation and maintenance manual uses the symbols outlined below to indicate risks that may arise in the event of failure to observe the instructions supplied.



This symbol corresponds to an immediate risk of death or serious physical injury or material damage. When present, take great care to observe warnings and instructions.



This symbol corresponds to a possible risk of death or serious physical injury or material damage. Take care.



Failure to observe the instructions in the presence of this symbol may lead to malfunctions and damage to equipment, with possible consequent injuries to the operator.



Before performing any work on the electrical panel or system, shut off the electrical power supply.



The electrical panel must be connected by a qualified electrician in observance of the relevant electrical standards.



Before any other operation, ensure the installation is connected to an efficient earthing system.



After making the electrical connection, check that all electrical panel settings are correct to ensure automatic start-up of the electric pump.



Before performing any work on the electrical panel or system, shut off the electrical power supply.

On receipt of the goods, perform an inspection immediately to ensure that the equipment has not been damaged during transport. If defects or missing material are found, the client should promptly notify, and in any event within 5 days of receiving the goods, the nearest Davis & Shirtliff retailer.

The Dayliff EXPRESS electrical panel must be used exclusively for the purpose and function as specified in design. Any other application or use is to be considered improper and therefore hazardous.



All Dayliff EXPRESS panel installation and maintenance operations must be performed by a specialised technician who is fully aware of the relevant current safety standards.

No parts of the panel must be disassembled without prior formal authorisation from supplier: any tampering with or modifications to the unit will render all terms of the warranty null and void.

Always disconnect the unit from the power supply before maintenance or cleaning.

If Dayliff EXPRESS is not used for prolonged periods, store the product in a clean and safe location protected against atmospheric agents and the potential risk of dropping/falling.



In the event of a fire in the place of installation or the surrounding area, avoid the use of water jets and use the appropriate extinguishing equipment and means (powder, foam, carbon dioxide).

Install the equipment far from heat sources and in a dry and sheltered location in observance of the stated protection rating (IP).



The installation of a safety device is recommended to protect the panel power line in compliance with current electrical standards.

Davis & Shirtliff declines all liability in the event of the following:

- Incorrect installation;
- Use by personnel not adequately trained in the correct use of the panel;
- Serious failure to perform scheduled maintenance;
- Use of non-original spare parts or parts not specific to the model;
- Unauthorised modifications or interventions;
- Partial or total failure to observe instructions.

3. CONTROLS

The Dayliff EXPRESS electrical panel has been designed for settable protection of 1 to 4 motors with the option of selecting the operating mode according to the specific system used.

Among the various modes, the panel enable motor control by means of:

- Pressure switches.
- Floats
- Remote Contacts
- Start/Stop Floats
- Level Sensors
- 0-10V signals
- 4-20mA pressure transducers
- "COS-PHI" power factor (where "Phi" is the timing angle between current and voltage).

Display of values and programming. Red led: general alarm



SETUP (or multifunction) button

UP arrow button

DOWN arrow button

OK button

4. INDICATORS

4.1 Main display items

On activation of the panel, the display shows the following:



At the end of the start-up sequence, the main menu is displayed, as described below;

230v 7.0A tot P1 (1) P2 (1) P3 (0) This screen enables the display of active motors, voltage on input and total absorption of the panel:

- 230 V = Power supply voltage reading.
- 7.0 Atot = Total current absorbed by the panel.
- P1 (0) = Motor 1 deactivated
- P1 (1) = Motor 1 active.
- P2 (0) = Motor 2 deactivated
 P3 (0) = Motor 3 deactivated
- P2 (1) = Motor 2 active
 P3 (1) = Motor 3 active

230v 7.0At 1.0b P1 (1) P2 (1) P3 (0)

If operating modes are used with analogue signals, the main screen also displays the input signal expressed as a percentage, in metres or bar.

230v 0.0A 1.0@ Man () Aut (') P1<mark>1</mark>

By pressing OK the user can view the screen of each motor (P1, P2 and P3), where the following is displayed:

- 230 V = Power supply voltage reading.
- 0.0 A = Current absorbed by connected load.
- 1.0 (ϕ) = Power factor of connected load.
- MAN (*) = Panel set to manual mode.
- AUT (*) = Panel set to automatic mode.
- \bullet MAN () AUT () = Panel on standby.
- P1 = Motor 1 deactivated.
- P1 = Motor 1 active.

4.2 Activation of load in manual mode

On start-up, the panel starts in automatic mode, as confirmed by the asterisk (*) displayed alongside the text *AUT* on the display of each motor, or according to the previous status set before shutdown.

The operating mode can be changed by pressing the **UP** arrow to change to Manual mode, or the **DOWN** arrow to change to Automatic mode. Therefore, to enable operation in Manual mode, press the UP arrow (the asterisk (*) is displayed alongside the text *MAN*) and then press and hold **OK**.

The display then displays current absorption of the motor and the cos-phi power factor values in real time. On release of the **OK** button, the motor is shut down.



In manual mode, the load is activated and bypasses all alarms, but in the event of a fault the display flashes.

5. FUNCTIONS AND SETTINGS

The Dayliff EXPRESS panel features a host of internal functions.

There are basically 8 operating modes developed for various types of application as described below.

5.1 FUNCTION 1 - Draining with floats/pressure switches

This operating mode is used for drainage applications using floats or pressure switches, enabling the control of one or more pumps.

On selection of mode 1, all relative parameter fields for this function are enabled.



To select the panel operating logic, access the programming menu by pressing the buttons SETUP, UP and DOWN at the same time on the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Language 0 ITA / 1 ENG / 2 FRA	0	0
Operating Logic]	-
Number of Pumps This parameter enables selection of the number of pumps in the system (when 1 single pump is selected, the parameters pump rotation enabled and float star/stop function are disabled).	1-4	As per order
Pump rotation enabled This parameter enables activation of pump exchange on each demand from floats or pressure switches. Also, if the main pump thermal cutout (current overload) trips, the second pump is enabled (if set to N, parameter 5 is disabled).	Y or N	Y
Float start/stop function (self-holding) This parameter enables deactivation of active pumps only on opening of the contact MIN.F. (min./stop float).	Y or N	Ν
Minimum level alarm output This parameter enables removal of the minimum level alarm from the cumulative alarm output.	Y or N	Y

User Menu

On completion of panel operation programming, enter the setup menu to configure the various data for motor start-up. To access the user menu, press the button **SETUP** for 4 seconds in the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Minimum Voltage Set by default at -10%. Modifications to operating limits beyond the default parameters will immediately r _l ender the warranty null and void.	207 (230) 360 (400)	_
Maximum Voltage Set by default at + 10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	253 (230) 440 (400)	_
Maximum Current P1/P2/P3/P4 This parameter enables entry of the maximum current for each motor. Enter the maximum current value, increasing it by 10-15% with respect to the rated motor value. Modifications to operating limits beyond the parameters stated on the model data plate will immediately render the warranty null and void.	1 A	As per order
Display brightness on standby This parameter enables entry of the brightness setting applied when the display sets to standby (wait 9 seconds for a preview).	0-9	4
Time For Entry To Set-up This parameter enables entry of the time to keep the SETUP button pressed for access to the set-up menu.	2 - 30 Sec	3 Sec

5.2 FUNCTION 2 - Draining with level sensors and floats/pressure switches

This operating mode is used for drainage applications using level sensors and floats or pressure switches, enabling the control of one or more pumps.



To select the panel operating logic, access the programming menu by pressing the buttons **SETUP**, **UP** and **DOWN** at the same time on the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Language 0 ITA/1 ENG/2 FRA	0	0
Operating Logic	2	-
Number of Pumps This parameter enables selection of the number of pumps in the system (when 1 single pump is selected, the parameter PUMP ROTATION ENABLED is disabled).	1-4	As per order
Pump rotation enabled This parameter enables activation of pump exchange on each demand from floats or pressure switches. Also, if the main pump thermal cutout (current overload) trips, the second pump is enabled.	Y or N	Y
Sensor Sensitivity (Sa - Sb - Sc - Sd) This parameter enables display of sensor sensitivity. With the contacts open, if a value of 99 is displayed, and a value of 45 is displayed with water present, set sensitivity to an intermediate value, such as 75.	0-99	75
Minimum Level Alarm Output This parameter enables removal of the minimum level alarm from the cumulative alarm output.	Y or N	Y

User Menu

On completion of panel operation programming, enter the setup menu to configure the various data for motor start-up. To access the user menu, press the button **SETUP** for 4 seconds in the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Minimum Voltage Set by default at -10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	207 (230) 360 (400)	_
Maximum Voltage Set by default at +10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	253 (230) 400 (400)	_
Maximum Current P1 / P2 / P3 / P4 This parameter enables entry of the maximum current for each motor. Enter the maximum current value, increasing it by 10-15% with respect to the rated motor value. Modifications to operating limits beyond the parameters stated on the model data plate will immediately render the warranty null and void.	1 A	As per order
Display brightness on standby This parameter enables entry of the brightness setting applied when the display sets to standby (wait 9 seconds for a preview).	0-9	4
Time For Entry To Set-up This parameter enables entry of the time to keep the SETUP button pressed for access to the set-up menu.	2 - 30 Sec	3 Sec

5.3 FUNCTION 3 - Drainage with "COS-Phi" power factor control

This operating mode is used for drainage applications with dry running safety control, obtained from the power factor (where "Phi" is the timing angle between current and voltage), without the need for external commands (float or pressure switch), enabling the control of one or more pumps.

On selection of mode 3, all relative parameter fields for this function are enabled.



To select the panel operating logic, access the programming menu by pressing the buttons SETUP, UP and DOWN at the same time on the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Language 0 ITA/1 ENG/2 FRA/3 ESP	0	0
Operating Logic	3	-
Number of Pumps ThThis parameter enables selection of the number of pumps in the system (when 1 single pump is selected, the parameter PUMP ROTATION ENABLED is disabled).	1-4	As per order
Pump rotation enabled This parameter enables activation of pump exchange on each demand from floats or pressure switches. Also, if the main pump thermal cutout (current overload) trips, the second pump is enabled.	Y or N	Y
Minimum Level Alarm Output This parameter enables removal of the minimum level alarm from the cumulative alarm output.	Y or N	Y
COS-Phi Alarm Output This parameter enables removal of the dry running alarm from the cumulative alarm output.	Y or N	Y

User Menu

On completion of panel operation programming, enter the setup menu to configure the various data for motor start-up.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Minimum Voltage Set by default at -10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	207 (230) 360 (400)	_
Maximum Voltage Set by default at +10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	253 (230) 440 (400)	_
Maximum Current P1 / P2 / P3 / P4 This parameter enables entry of the maximum current for each motor. Enter the maximum current value, increasing it by 10-15% with respect to the rated motor value. Modifications to operating limits beyond the parameters stated on the model data plate will immediately render the warranty null and void.	1 A	As per order
Minimum COS-Phi P1 / P2 / P3 / P4 This parameter establishes the minimum Cos-Phi power factor value for each motor Enable operation in manual mode, activate in no-load conditions (dry running), check the power factor reading (e.g. 0.65) and enter the minimum power factor, increasing it by approx. 0.05.	0.15-1.00	0.8
Automatic Reset On Dry Running Alarm In the event of a dry running alarm (minimum power factor) the panel may attempt to reset automatically, which can be programmable in minutes. 4 reset times can be set, in which the system automatically restarts after being blocked; By default these values are set as shown below: The first reset attempt is performed 5 minutes after the dry running alarm. The second reset attempt is performed 10 minutes after the alarm. The third reset attempt is performed 15 minutes after the alarm. The fourth reset attempt is performed 20 minutes after the alarm.	1-240min	1° 5 Min 2° 10 Min 3° 20 Min 4° 30 Min
Sequential Reset On Dry Running Alarm If the value 0 (zero) is set, all automatic resets are blocked after the fourth attempt; if the value is set to 1 (one) at the end of the fourth attempt, the reset cycle is repeated continuously; The system protecting the panel against dry running conditions activates the reset cycle according to the time intervals set, and resumes the same reset cycle each time water is detected for more than 10 seconds.	0 or 1	0
Display Brightness On Standby This parameter enables entry of the brightness setting applied when the display sets to standby (wait 9 seconds for a preview).	0-9	4
Time For Entry To Set-up This parameter enables entry of the time to keep the SETUP button pressed for access to the set-up menu.	2-30 Sec	3 Sec

5.4 FUNCTION 4 - Pressurisation with analogue signal and floats/pressure switches

This operating mode is used for pressurisation applications managed via analogue signals and floats or pressure switches, enabling the control of one or more pumps.

On selection of mode 4, all relative parameter fields for this function are enabled.



To select the panel operating logic, access the programming menu by pressing the buttons SETUP, UP and DOWN at the same time on the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Language 0 ITA/1 ENG/2 FRA/3 ESP	0	0
Operating Logic	4	-
Number of Pumps This parameter enables selection of the number of pumps in the system (when 1 single pump is selected, the parameter PUMP ROTATION ENABLED is disabled).	1-4	As per order
Pump rotation enabled This parameter enables activation of pump exchange on each demand from floats or pressure switches. Also, if the main pump thermal cutout (current overload) trips, the second pump is enabled.	Y or N	Y
Minimum Level Alarm Output This parameter enables removal of the minimum level alarm from the cumulative alarm output.	Y or N	Y
Type Of Analogue Signal This parameter enables selection of the type of analogue signal on input to the panel: $0 = 0.10 \text{ V} 1 = 4.20 \text{ mA}$	0 or 1	As per order
Unit Of Measurement This parameter enables selection of the measurement unit of the analogue signal on input to the panel.	% + or % - m or bar	As per order
Full Scale Of Analogue Signal This parameter enables selection of the full scale of the analogue signal on input to the panel.	1.0 - 999.9	As per order

User Menu

On completion of panel operation programming, enter the setup menu to configure the various data for motor start-up. To access the user menu, press the button **SETUP** for 4 seconds in the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Minimum Voltage Set by default at -10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	207 (230) 360 (400)	_
Maximum Voltage Set by default at + 10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	253 (230) 440 (400)	_
Maximum Current P1 / P2 / P3 / P4 This parameter enables entry of the maximum current for each motor. Enter the maximum current value, increasing it by 10-15% with respect to the rated motor value. Modifications to operating limits beyond the parameters stated on the model data plate will immediately render the warranty null and void.	1 A	As per order
Set Point This parameter enables entry of the set point for pressure (bar), level (metres) or percentage to be maintained on the system. The maximum settable value depends on the "ANALOGUE SIGNAL FULL SCALE" set in the ASSISTANCE menu.	0.0 - 999.9	_
Threshold P1 / P2 / P3 / P4 In the case of pump P1, this indicates the restart value of the first pump (master) on decrease or increase of the previously entered set point. In the case of pumps P2, P3 and P4, this indicates the start and stop values of the pumps used as backup units. The maximum settable value depends on the "ANALOGUE SIGNAL FULL SCALE" set in the ASSISTANCE menu.	0.0 - 999.9	
Display Brightness On Standby This parameter enables entry of the brightness setting applied when the display sets to standby (wait 9 seconds for a preview).	0-9	4
Time For Entry To Set-up This parameter enables entry of the time to keep the SETUP button pressed for access to the set-up menu.	2-30 Sec	3 Sec

5.5 FUNCTION 5 - Pressurisation with analogue signal and level sensors

This operating mode is used for pressurisation applications managed via analogue signals and level sensors, enabling the control of one or more pumps.

On selection of mode 5, all relative parameter fields for this function are enabled.



To select the panel operating logic, access the programming menu by pressing the buttons **SETUP**, **UP** and **DOWN** at the same time on the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Language 0 ITA/1 ENG/2 FRA/3 ESP	0	0
Operating Logic	5	-
Number of Pumps This parameter enables selection of the number of pumps in the system (when 1 single pump is selected, the parameter PUMP ROTATION ENABLED is disabled).	1-4	As per order
Pump rotation enabled This parameter enables activation of pump exchange on each demand from floats or pressure switches. Also, if the main pump thermal cutout (current overload) trips, the second pump is enabled.	Y or N	Y
Minimum Level Alarm Output This parameter enables removal of the minimum level alarm from the cumulative alarm output.	Y or N	Y
Sensor Sensitivity (Sa - Sb - Sc - Sd) This parameter enables display of sensor sensitivity. With the contacts open, if a value of 99 is displayed, and a value of 45 is displayed with water present, set sensitivity to an intermediate value, such as 75.	0 - 99	75
Type Of Analogue SignalThis parameter enables selection of the type of analogue signal on inputto the panel: $0 = 0.10$ V $1 = 4.20$ mA	0 or 1	As per order
Unit Of Measurement This parameter enables selection of the measurement unit of the analogue signal on input to the panel.	% + or % - m or bar	As per order

DESCRIPTION OF PARAMETER	VALUE	FAULT
Full Scale Of Analogue Signal This parameter enables selection of the full scale of the analogue signal on input to the panel.	1.0 - 999.9	As per order

User Menu

On completion of panel operation programming, enter the setup menu to configure the various data for motor start-up. To access the user menu, press the button **SETUP** for 4 seconds in the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Minimum Voltage Set by default at -10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	207 (230) 360 (400)	_
Maximum Voltage Set by default at +10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	253 (230) 440 (400)	_
Maximum Current P1/P2/P3/P4 This parameter enables entry of the maximum current for each motor. Enter the maximum current value, increasing it by 10-15% with respect to the rated motor value. Modifications to operating limits beyond the parameters stated on the model data plate will immediately render the warranty null and void.	1 A	As per order
Set Point This parameter enables entry of the set point for pressure (bar), level (metres) or percentage to be maintained on the system. The maximum settable value depends on the "ANALOGUE SIGNAL FULL SCALE" set in the ASSISTANCE menu.	0.0 - 999.9	
Threshold P1 / P2 / P3 / P4 In the case of pump P1, this indicates the restart value of the first pump (master) on decrease or increase of the previously entered set point. In the case of pumps P2, P3 and P4, this indicates the start and stop values of the pumps used as backup units. The maximum settable value depends on the "ANALOGUE SIGNAL FULL SCALE" set in the ASSISTANCE menu.	0.0 - 999.9	
Display Brightness On Standby This parameter enables entry of the brightness setting applied when the display sets to standby (wait 9 seconds for a preview).	0-9	4
Time For Entry To Set-up This parameter enables entry of the time to keep the SETUP button pressed for access to the set-up menu.	2-30 Sec	3 Sec

5.6 FUNCTION 6 - Pressurisation with analogue signal and COS-PHI power factor control

This operating mode is used for pressurisation applications managed via analogue signals with dry running safety control, obtained from the Cos-Phi power factor (where "Phi" is the timing angle between current and voltage), without the need for external commands (float or pressure switch), enabling the control of one or more pumps.

On selection of mode 6, all relative parameter fields for this function are enabled.



Programming Menu

To select the panel operating logic, access the programming menu by pressing the buttons SETUP, UP and DOWN at the same time on the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Language 0 ITA/1 ENG/2 FRA/3 ESP	0	0
Operating Logic	6	-
Number of Pumps This parameter enables selection of the number of pumps in the system (when 1 single pump is selected, the parameter PUMP ROTATION ENABLED is disabled).	1-4	As per order
Pump rotation enabled This parameter enables activation of pump exchange on each demand from floats or pressure switches. Also, if the main pump thermal cutout (current overload) trips, the second pump is enabled.	Y or N	Y
Minimum Level Alarm Output This parameter enables removal of the minimum level alarm from the cumulative alarm output.	Y or N	Y

DESCRIPTION OF PARAMETER	VALUE	FAULT
COS-PHI Alarm Output This parameter enables removal of the dry running alarm from the cumulative alarm output.	Y or N	Y
Type Of Analogue SignalThis parameter enables selection of the type of analogue signal on inputto the panel: $0 = 0-10 \text{ V}$ $1 = 4-20 \text{ mA}$	0 or 1	As per order
Unit Of Measurement This parameter enables selection of the measurement unit of the analogue signal on input to the panel.	% + or % - m or bar	As per order
Full Scale Of Analogue Signal This parameter enables selection of the full scale of the analogue signal on input to the panel.	1.0 - 999.9	As per order

User Menu

On completion of panel operation programming, enter the setup menu to configure the various data for motor start-up. To access the user menu, press the button **SETUP** for 4 seconds in the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Minimum Voltage Set by default at -10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	207 (230) 360 (400)	_
Maximum Voltage Set by default at +10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	253 (230) 440 (400)	_
Maximum Current P1/P2/P3/P4 This parameter enables entry of the maximum current for each motor. Enter the maximum current value, increasing it by 10-15% with respect to the rated motor value. Modifications to operating limits beyond the parameters stated on the model data plate will immediately render the warranty null and void.	1 A	As per order
Minimum COS-Phi P1 / P2 / P3 / P4 This parameter sets the minimum Cos-Phi power factor value for each motor Enable operation in manual mode, activate in no-load conditions (dry running), check the power factor reading (e.g. 0.65) and enter the minimum power factor, increasing it by approx. 0.05.	0.15-1.00	0.80
Automatic Reset On Dry Running Alarm In the event of a dry running alarm (minimum power factor) the panel may attempt to reset automatically, which can be programmable in minutes. 4 reset times can be set, in which the system automatically restarts after being blocked; By default these values are set as shown below: The first reset attempt is performed 5 minutes after the dry running alarm. The second reset attempt is performed 10 minutes after the alarm. The third reset attempt is performed 15 minutes after the alarm. The fourth reset attempt is performed 20 minutes after the alarm.	1-240min	1° 5 Min 2° 10 Min 3° 20 Min 4° 30 Min

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DESCRIPTION OF PARAMETER	VALUE	FAULT
Sequential Reset On Dry Running Alarm If the value 0 (zero) is set, all automatic resets are blocked after the fourth attempt; if the value is set to 1 (one) at the end of the fourth attempt, the reset cycle is repeated continuously; The system protecting the panel against dry running conditions activates the reset cycle according to the time intervals set, and resumes the same reset cycle each time water is detected for more than 10 seconds.	0 or 1	0
Set Point This parameter enables entry of the set point for pressure (bar), level (metres) or percentage to be maintained on the system. The maximum settable value depends on the "ANALOGUE SIGNAL FULL SCALE" set in the ASSISTANCE menu.	0.0 - 999.9	-
Threshold P1 / P2 / P3 / P4 In the case of pump P1, this indicates the restart value of the first pump (master) on decrease or increase of the previously entered set point. In the case of pumps P2, P3 and P4, this indicates the start and stop values of the pumps used as backup units. The maximum settable value depends on the "ANALOGUE SIGNAL FULL SCALE" set in the ASSISTANCE menu.	0.0 - 999.9	As per order
Display Brightness On Standby This parameter enables entry of the brightness setting applied when the display sets to standby (wait 9 seconds for a preview).	0-9	4
Time For Entry To Set-up This parameter enables entry of the time to keep the SETUP button pressed for access to the set-up menu.	2 - 30 Sec	3 Sec

5.7 FUNCTION 7 - Filling with level sensors and floats/pressure switches

This operating mode is used for filling applications using level sensors and floats or pressure switches, enabling the control of one pump. On selection of mode 7, all relative parameter fields for this function are enabled.



To select the panel operating logic, access the programming menu by pressing the buttons **SETUP**, **UP** and **DOWN** at the same time on the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Language 0 ITA/1 ENG/2 FRA/3 ESP	0	0
Operating Logic	7	-
Sensor Sensitivity (Sa - Sb - Sc - Sd) This parameter enables display of sensor sensitivity. With the contacts open, if a value of 99 is displayed, and a value of 45 is displayed with water present, set sensitivity to an intermediate value, such as 75.	0-99	75

User Menu

On completion of panel operation programming, enter the setup menu to configure the various data for motor start-up. To access the user menu, press the button **SETUP** for 4 seconds in the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Minimum Voltage Set by default at -10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	207 (230) 360 (400)	_
Maximum Voltage Set by default at +10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	253 (230) 440 (400)	_
Maximum Current P1 / P2 / P3 / P4 This parameter enables entry of the maximum current for each motor. Enter the maximum current value, increasing it by 10-15% with respect to the rated motor value. Modifications to operating limits beyond the parameters stated on the model data plate will immediately render the warranty null and void.	1 A	As per order
Display Brightness On Standby This parameter enables entry of the brightness setting applied when the display sets to standby (wait 9 seconds for a preview).	0 - 9	4
Time For Entry To Set-up This parameter enables entry of the time to keep the SETUP button pressed for access to the set-up menu.	2 - 30 Sec	3 Sec

5.8 FUNCTION 8 - Filling with level sensors and "COS-Phi" power factor control

This operating mode is used for filling applications with levels sensors, standard floats or pressure switches and dry running safety control, obtained from the power factor (where "Phi" is the timing angle between current and voltage), without the need for external commands (float or pressure switch), enabling the control of one pump. On selection of mode 8, all relative parameter fields for this function are enabled.



To select the panel operating logic, access the programming menu by pressing the buttons **SETUP**, **UP** and **DOWN** at the same time on the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Language 0 ITA/1 ENG/2 FRA/3 ESP	0	0
Operating Logic	8	-
COS-PHI Alarm Output This parameter enables removal of the dry running alarm from the cumulative alarm output.	Y or N	Y
Sensor Sensitivity (Sa - Sb - Sc - Sd) This parameter enables display of sensor sensitivity. With the contacts open, if a value of 99 is displayed, and a value of 45 is displayed with water present, set sensitivity to an intermediate value, such as 75.	0-99	75

User Menu

On completion of panel operation programming, enter the setup menu to configure the various data for motor start-up. To access the user menu, press the button **SETUP** for 4 seconds in the main screen of the panel.

DESCRIPTION OF PARAMETER	VALUE	FAULT
Minimum Voltage Set by default at -10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	207 (230) 360 (400)	_
Maximum Voltage Set by default at +10%. Modifications to operating limits beyond the default parameters will immediately render the warranty null and void.	253 (230) 440 (400)	_

DESCRIPTION OF PARAMETER	VALUE	FAULT
Maximum Current P1 / P2 / P3 / P4 This parameter enables entry of the maximum current for each motor. Enter the maximum current value, increasing it by 10-15% with respect to the rated motor value. Modifications to operating limits beyond the parameters stated on the model data plate will immediately render the warranty null and void.	1 A	As per order
Minimum COS-Phi P1 / P2 / P3 / P4 This parameter sets the minimum Cos-Phi power factor value for each motor Enable operation in manual mode, activate in no-load conditions (dry running), check the power factor reading (e.g. 0.65) and enter the minimum power factor, increasing it by approx. 0.05.	0.15 - 1.00	0.80
Automatic Reset On Dry Running Alarm In the event of a dry running alarm (minimum power factor) the panel may attempt to reset automatically, which can be programmable in minutes. 4 reset times can be set, in which the system automatically restarts after being blocked; By default these values are set as shown below: The first reset attempt is performed 5 minutes after the dry running alarm. The second reset attempt is performed 10 minutes after the alarm. The third reset attempt is performed 15 minutes after the alarm. The fourth reset attempt is performed 20 minutes after the alarm.	1 - 240 Min	1st 5 Min 2nd 10 Min 3rd 20 Min 4th 30 Min
Sequential Reset On Dry Running Alarm If the value 0 (zero) is set, all automatic resets are blocked after the fourth attempt; if the value is set to 1 (one) at the end of the fourth attempt, the reset cycle is repeated continuously; The system protecting the panel against dry running conditions activates the reset cycle according to the time intervals set, and resumes the same reset cycle each time water is detected for more than 10 seconds.	0 or 1	0
Display Brightness On Standby This parameter enables entry of the brightness setting applied when the display sets to standby (wait 9 seconds for a preview).	0-9	4
Time For Entry To Set-up This parameter enables entry of the time to keep the SETUP button pressed for access to the set-up menu.	2 - 30 Sec	3 Sec

6. ALARMS

ALARM MOTION DRY RUNNING The measured power factor value is the set value and the panel shuts down the relative pump.

The display and red led flash and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

The system resets automatically on the basis of the times set during programming, or manually by pressing the button **SETUP** until the screen is displayed without flashing, after which the button **OK** can be pressed to reset.

ALARM MOTOR IN PROTECTION

The load current absorption is higher than the set value and the panel shuts down the relative pump.

The display and red led flash and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

The system is reset manually by pressing the button SETUP until the screen is displayed without flashing, after which the button OK can be pressed to reset.

ALARM MOTOR OVER TEMPERATURE

The thermal cutout of the motor (clicson) has tripped on temperature overload.

The display and red led flash and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

If not used, close the motor clicson input. (the pumps are not shut down).

The system is reset manually by pressing the button SETUP until the screen is displayed without flashing, after which the button OK can be pressed to reset.

ALARM VOLTAGE TOO LOW

The measured mains voltage is too low (the pumps are shut down).

The display and red led flash and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

The system is reset manually by pressing the button SETUP until the screen is displayed without flashing, after which the button OK can be pressed to reset.

ALARM VOLTAGE TOO HIGH

The measured mains voltage is too high (the pumps are shut down).

The display and red led flash and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

The system is reset manually by pressing the button SETUP until the screen is displayed without flashing, after which the button OK can be pressed to reset.



The phase sequence is incorrect or one or more phases is missing (the pumps are shut down).

The display and red led flash and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

The system is reset automatically by turning the panel off and on again.



The alarm float detects maximum level reached (the pumps are not shut down).

The display and red led flash and the cumulative alarm output is activated (voltage-free contacts $\ensuremath{\mathsf{NCC}}\xspace$

NO).

The system is reset manually by pressing the button SETUP until the screen is displayed without

flashing, after which the button OK can be pressed to reset.

The alarm is repeated if the level does not fall.

ALARM MOTOR NO Communication Connection problems between motherboard and expansion modules.

The display and red led flash and the cumulative alarm output is activated

(voltage-free contacts NC-C-NO).

The system is reset manually by pressing the button SETUP until the screen is displayed without

flashing, after which the button OK can be pressed to reset.

ALARM MIN LEVEL

The minimum level float, or minimum level sensors detect minimum level reached (the pumps are shut down).

The display and red led flash and the cumulative alarm output is activated (voltage-free contacts NC-C-NO).

The system is reset manually by pressing the button SETUP until the screen is displayed without flashing, after which the button OK can be pressed to reset.

This alarm can be disabled in the ASSISTANCE menu.

i) General Liability

- In lieu of any warranty, condition or liability implied by law, the liability of Davis & Shirtliff (hereafter called the Company) in respect of any defect or failure of equipment supplied is limited to making good by replacement or repair (at the Company's discretion) defects which under proper use appear therein and arise solely from faulty design, materials or workmanship within a specified period. This period commences immediately after the equipment has been delivered to the customer and at its termination all liability ceases. Also the warranty period will be assessed on the basis of the date that the Company is informed of the failure.
- The warranty applies solely to equipment supplied and no claim for consequential damages, however arising, will be entertained. Also the warranty specifically excluded defects caused by fair wear and tear, the effects of careless handling, lack of maintenance, faulty installation, incompetence on part of the equipment user, Acts of God or any other cause beyond the Company's reasonable control. Also, any repair or attempt at repair carried out by any other party invalidates all warranties.

ii) Standard Warranty

If equipment failure occurs in the normal course of service having been competently installed and when operating within its specified duty limits warranty will be provided as follows:-

• Up to one year - The item will be replaced or repaired at no charge.

The warranty on equipment supplied or installed by others is conditional upon the defective unit **being promptly returned free to a Davis & Shirtliff office** and collected thereafter when repaired. No element of site repair is included in the warranty and any site attendance costs will be payable in full at standard charegeout rates. Also proof of purchase including the purchase invoice must be provided for a warranty claim to be considered. Also proof of purchase including the purchase including the purchase invoice must be provided for warranty claim to be considered.

Maintenance

Dayliff EXPRESS does not require routine maintenance provided that it is used within the operating limits and in observance of the instructions in this manual.

8. DECLARATION OF CONFORMITY

Dayliff Express Pump Controllers comply with the following EU directives.



ELENTEK Srl with registered offices in via A. Meucci, 5/11-35028 Piove di Sacco (PD) ITALIA, declares under its sole responsibility that the machine:

Express Series

Installed and used in the ways and for the purposes described in the operation and instruction manual complies with the provisions of the EU directives and relative amendments:

- Machinery 2006/42/EC
- European Directive 2006/95/EC
- Electromagnetic Compatibility 2004/108/EC and subsequent amendments, in compliance with the following technical standards:
 - EN 61439
 EN 61000-3-2
 EN 550141
 EN 61000-3-3

Piove di Sacco 01.02.2016

LEGAL REPRESENTATIVE

DAYLIFF is a brand of Davis & Shirtliff

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or visit

www.davisandshirtliff.com

for details of the nearest branch or stockist