

SWITCHGENIE PUMP CONTROLLER











Run dry protection



Instantaneous digital readout

DUAL - Owners Manual

MADE IN ITALY



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PRESENTATION

The purpose of this manual is to provide the necessary information for the proper installation, use and maintenance of SwitchGenie DUAL. The user should read this manual before operating the unit. Improper use may cause damage to the machine and lead to the forfeiture of the warranty coverage. Always specify the model identification code when requesting technical information. Our units must be installed in sheltered, well-ventilated, non-hazardous environments and must be used at a maximum temperature of $+40^{\circ}$ C and minimum of -5° C.

DESCRIPTION

These control panels are designed for controlling 2 motor or electric pump used in pressurization systems or in applications for emptying wells or water tanks..

Argon Distributors shall not be liable for any damage caused or suffered by the unit as a result of its unauthorised or improper use.

TECHNICAL FEATURES

Self learning of the motor data; min-max amperage protection (A); dry running protection using $\cos \varphi$ and min current; min and max voltage protection (V); phase failure protection; start and stop delay; delay network restore, protection delay, frequency 50-60Hz.

- Panel alarm LED
- 12V DC output for buzzer
- Alarm output relay 12VDC or NO contact
- Alarm output relay 230V or 400V
- Min/max voltage, current, frequency
- Phase failure
- Min COS FI
- Motor Klixon
- · Water in oil chamber

HANDLING

The control panel must be handled with care, as falls and knocks can cause damage without any visible external signs.

PRELIMINARY INSPECTION

After you have removed the external packaging, visually inspect the control panel to make sure it has suffered no damage during shipping. If any damage is visible, inform your supplier as soon as possible, no later then five days from the delivery date.

STORING

If for any reason the unit is not installed after it has reached its destination it must be stored properly.

The external packaging and the separately packed accessories must remain intact, and must be protected from the weather, especially from freezing temperatures, and from any knocks or falls.



2.1 WARNINGS



RISK OF ELECTRIC SHOCK

Failure to follow the instructions in this manual, carries a risk of electric shock.



RISK FOR PEOPLE AND PROPERTY

Failure to follow the prescriptions in this manual, carries a risk of damage to persons and/or property.



WARNING

Failure to observe the prescriptions in this manual, cause damage to the pump, the unit or the system.

2.2 CAUTION



ATTENTION: PUMPS

- Make sure the pumps are fully primed before you start it.
- Make sure the pumps are running with the correct rotation.
- The electric pumps or the motors can start up automatically.



ATTENTION: ELECTRICAL CONNECTION

- The control panel must be connected by a qualified electrician in compliance with the electrical regulations in force.
- The electric pumps or the motors and the panel must be connected to an efficient grounding system in compliance with the electrical regulations locally in force.
- Ground the unit before carrying out any other operation.



ATTENTION: SERVICE

As a general rule, always disconnect the power supply before proceeding to carry out any operation on the electrical or mechanical components of the unit or system.



KEYPAD AND LIGHTS INDICATIONS



CONTROL PANEL



PW

blue light indicates the panel is connected to power and is live.



ALARM

red light to indicates a general alarm and pump stop. (min/max Amp, min/max V, min/max level, motor klixon, water in oil chamber, phase failure).



START

green light to indicate pump start; fixed on to indicate pump running, flashing to indicate auto-setting mode.



0

AUT

the button activates the auto-setting mode and automatic pump operation (if the green light is on, the automatic mode is active).

0 DI

pump stop button and reset alarms, sound alarm output turn-off.



MAN

activation of pump manually; holding it down, the motor is operated in by-pass mode, with all protections bypassed.



ALARMS

The control panel signals a series of alarms that may occur during operation. Some of these stop the pumps, while others are only displayed. All alarms are displayed on the panel (red LED flashing), while the display shows the code/alarms occurred until the cancellation by the operator.

ALARM CODE	ALARM DESCRIPTION	PUMP STOP	RELAY ON	LED SIGNAL
AL1	MIN VOLTAGE	YES	YES	
AL 2	MAX VOLTAGE	YES	YES	
AL 3	LOW FREQUENCY	NO	YES	
AL 4	HIGH FREQUENCY	NO	YES	
AL 5	DRY RUNNING P1	YES	YES	
AL 6	MAX AMPERAGE P1	YES	YES	
AL 7	MAX STARTS PER HOUR/TIME ON	MAX NO	YES	
AL 8	WATER IN OIL CHAMBER P1	NO	YES	
AL 9	KLIXON P1	YES	YES	
AL 10	MIN LEVEL	YES	YES	
AL 11	MAX LEVEL	NO	YES	

* Phase failure will cause the pump and panel to shut down. Operation will be restored when power supply is correct.

The alarm "AL 11" will attempt to start the pump without other signal inputs



ALARM WITH STOP PUMP



Following the detection of an alarm and the consequent blocking of the pump, the control panel provides the following operations:

- Attempt the first restart after 5 min.
- In case of a negative result, it will make another attempt after 30 min. and 3 other attempts with intervals of 60 min.
- After 5 attempts if the alarm persists, the control panel permanently blocks the pump and the alarm remains active until the user intervenes.





To delete an alarm (for example dry run), press the pump (P1 or P2) button "O" as follows:

the first press of the "0" button removes only the voltage from the buzzer terminals ("mute" function) the second press of the "0" button reset the alarm.

If the alarm is not reset (by pressing the "0" key twice), at the next alarm signal, the panel will remain in "mute" mode.



IMPORTANT!

If after having canceled an alarm, the same alarm occurs again, it is recommended to locate the cause of the failure before starting again.



TYPICAL INSTALLATIONS



4÷20

4÷20

Klixon

pressure transducer

Piezoresitive sensor

Pump

Pump

Waste water float

Level Probe



TYPICAL INSTALLATIONS





Picture 7



KEY



Water in Seal Chamber



ASSEMBLING

Fix the control panel to a stable support with screws and screw anchor using the holes arranged in the box (pic. 1).

To fix the cables in their terminals use a tool of the proper size to avoid damaging screws.



If use an electric screwdriver pay attention not to damage the thread or the screws.

After installing, remove all plastic or metallic surplus (ex. Pieces of copper of the cables or plastic shavings of the box) inside the box before suppling power.



fig.1

LINE OF SUPPLY CURRENT

Connect the unit at ground before carrying out any other operation.

The voltage input corresponds to the data written on the panel and on the pump:

- (400V ± 10% 50/60Hz x il SWITCHGENIE -400/...)
- (230V ± 10% 50/60Hz x il SWITCHGENIE -230)

LINE OF MOTOR POWER SUPPLY

Connect the unit at ground before carrying out any other operation.

The voltage input corresponds to the data written on the motor:

- (400V±10% 50/60Hz three-phase)
- (230V±10% 50/60Hz single-phase)

Make sure that the power-supply-cable can bear the nominal current and connect it to the terminals of the general switch of the control panel. If the cables are exposed, they must be appropriately protected. The line must be protected with an Earth

Leakage and magnetic switch measured in accordance with the regulations locally in force.

When starting, make sure that the motor respects the right direction of rotation for the pump usually indicated by an arrow printed on the motor.



OPERATION MENU

The Switchgenie Dual control panels have a simple configuration menu which allows a wide range of settings and options to be easily set up to control and protect a pump system.

The main LCD screen has three views which can be changed using the up/down arrows to view operating data. Main view shows current power supply voltage and Hz with operating mode and type, this will also display alarm code in case of a failure. Second screen shows live motor current and timer values if active. Third screen is active if using a 4-20mA sensor and shows current pressure value.

There is an initial quick start configuration and an advanced configuration menu which are set using the buttons and LCD screen to set.

Basic Quick Start Menu:

This menu is accessible when the panel is connected to the power supply for the first time and allows basic configuration and self learning of pump data (without accessing advanced menu) for quick set up and operation. All electrical and hydraulic connections must be complete and pump system primed for operation.

Advanced Menu:

The advanced menu can only be accessed when internal dip switch 2 is set to ON position. When settings are complete, return switch to OFF position to prevent unauthorised changes to parameters from the control panel external buttons.

The eight advanced levels can be viewed using the up/down arrows to scroll through the levels. Each level can be entered using the confirm button and then the up/down arrows to scroll through the parameters.

Each parameter can be altered by pressing the confirm button, then use the up/down arrows to select a value and press confirm to set.

Use the up/down arrows and confirm button to work back and exit the menu.

- MO1 Utility: Language/Start Delay/Manual Button /Max Level Alarm
- **M02** General: Start Delay/Stop Delay/Pump Alternation/Time On Max
- MO3 Net Control: Nom Voltage/Min Voltage/Max Voltage/Nom Frequency/Frequency Range
- MO4 Pump 1: Autotuning/Nom Current/Min Amperage/Max Amperage/Starts Per Hour/Min Cos.
- M05 Pump 2: Autotuning/Nom Current/Min Amperage/Max Amperage/Starts Per Hour/Min Cos.
- **M06** Program: Operation/Type/Self Holding/BMS/Multi Tank
- M07 Sensor: Parameters/Full Scale/Min Level/Max Level/Start P1-Stop P1/ Start P1-Stop P2
- MO8 Timer: Engage Timer 1/Timer T1 On/Timer T1 Off/ Engage Timer 2/Timer T2 On/Timer T2 Off
- Exit

See the following step by step instructions for details on how to complete quick start and advanced menu configurations.

Pressing and holding the up or down arrows allows the user to quickly change the required value.



ELECTRICAL CONNECTIONS

SwitchGenie 230V









BASIC QUICK START MENU



After making all the electrical connections, switch on the control panel and wait for the

initial message to appear on the display.



Select the display language by scrolling the menu with the appropriate arrows (step 1 and 2).

When completed, press the confirm button (step 3) to continue.



To proceed with self-learning, the pumps must first be activated.

Do not press Confirm: First manually start and run the pumps by pressing and holding the "MAN' button for each pump for 3 seconds.

Press confirm to go to auto tuning





To start the self-learning of the pump data, press confirm and pump 1 will run for 10 seconds to learn operating data. (step 5).



Before starting the self-learning procedure, it is necessary to check with a tester that the mains voltage corresponds to the nominal one or at least to the mains voltage.

For final confirmation of the data (step 7) enter

"Yes" or "No" to go back and repeat self learning. Once Pump1 is confirmed, process is repeated for pump 2.

IMPORTANT!

After pressing the final confirmation button, self-learning is no longer possible from basic menu.

To perform the self-learning again it is necessary to access the advanced menu M04/05



Once the self-learning phase is completed, the panel screen displays the data learned.

By pressing the "AUT" button P1 / P2 the panel becomes operational.

PRESET PARAMETERS		
LANGUAGE: selected	ALTERNATION P1/P2:on	
TURN ON DELAY: 2 sec.	OPERATION: emptying	
MANUAL KEY: unstable	TYPE: potable	
START DELAY: 4 sec.	SELF HOLDING: on	
STOP DELAY: 1 sec.		

To change any of these settings, acess the advanced menu.



ADJUSTMENTS AND SETTINGS (ADVANCED MENU)



CONFIRM MODIFICATIONS AND EXIT FROM ADVANCED MENU (EXAMPLE)





MO1 UTILITY

ACCESS TO FUNCTION MODIFIED PARAMETERS



LANGUAGE (default: as selected) Language selection START DELAY (0-999 Seconds) Default is 2s. Control panel switch-on delay after restart (in sec.) MANUAL KEYPAD (default: OFF) Possibility of operating the "MAN" button in stable or unstable mode (ON: stable / OFF: unstable) MAX LEVEL ALARM DELAY (default: OFF) Possibility to delay 15 minutes. (not modifiable) the maximum level alarm. The display will show the alarm and the pump will start (if available), only the alarm relay and the buzzer will be delayed.

CHANGE LANGUAGE





CHANGE "MAN" BUTTON (STABLE/UNSTABILE)







MO2 GENERAL

ACCESS TO FUNCTION MODIFIED PARAMETERS





CHANGE PUMPS ALTERNATION



"TIME ON MAX" PROCEDURE

For correct operation of this feature: Set pump alternation 'ON' Set a maximum 'Starts per Hour" value for each pump in M04/05 settings menu.

Example: when the 'Time On Max' feature is active: When the level signal activates, pump 1 will turn on and run for the number of minutes set. When this time limit is reached, Pump 1 will stop and pump 2 will start.

This will alternate pump operation until number of starts per hour is exceeded, pumps will stop and alarm will activate.

Refer to Alarms section to manage or reset.



M03 NET CONTROL





CHANGE MAXIMUM VOLTAGE





MO4 PUMP 1/MO5 PUMP 2

ACCESS TO FUNCTION



MODIFIED PARAMETERS

AUTOTUNING

It allows the self-learning of the data to be carried out again NOMINAL CURRENT (0-999A) Default set by Auto-tuning. Set nominal/operating current of the pump MINIMUM AMPERAGE (1-140%) Default 85% Current setting min. for dry running protection MAXIMUM AMPERAGE (1-140%) Default 130% Max current setting for overcurrent protection START PER HOUR (1-99) Default 30.

The amperage and Cos values value shown on the display may differ

display may differ $\pm 5\%$ from the nominal value of the pump (nameplate data) since the control panel is not a measuring **MIN COS** ϕ (default: 75% of value read in autotuning) instrument. The same value may differ depending on Set min. $\cos\phi$ for dry running protection the operating conditions of the installation.

AUTOTUNING





CHANGE MINIMUM AMPERAGE



CHANGE MIN COSΦ





MO6 PROGRAM

ACCESS TO FUNCTION



SELF HOLDING OPERATION

If the self holding is ON and the water level is going up, G1 is up, G2 goes up and starts pump 1, G3 goes up and starts pump 2. If the water level is going down, G3 goes dow(contact closed: pump enabled. Open contact: pump disabled) but does not stop pump 2, G2 goes down but it does not stop pump 1, G1 goes down and stops both pumps.

MODIFIED PARAMETERS

OPERATION CONTROL Default 'Empty"

For tank emptying select "EMPTY" or filling select "FILL" to set float swtch operation

TYPE

Selection of clear or dirty water types for level float switch configuration. For 'Waste Water' type, only empty function is available. SELF HOLDING

Mostly used for waste water applications: 4 Float switches used

(G1 Stops the pumps, G2/3 start pumps, G4 max level alarm and start pumps)

BMS (remote emergency Start/stop)

To start/stop the control panel by remote button, the use of the 'BMS' function takes place through the G4 input.

MULTI TANK Default Off. (Auto alternation not possible) Possibility of use with 2 pumps in separate tanks

MOG PROGRAM >OPERATION OPERATION >OPERATION FMPT4 >FMPT4 W -OPERATION MOS PROGRAM >EXIT >OPERATION >FILL W W $\mathbf{\nabla}$ **TYPE (POTABLE/WASTE WATER)** MOG PROGRAM >THPF THPF >TYPE POTABLE >POTRBLE V TYPE MOG PROGRAM >EXIT >WRSTE >TYPE V T V

OPERATION (EMPTY/FILL)



SELF HOLDING





M07 SENSOR (sensor/transducer 4÷20 mA)

ACCESS TO FUNCTION



MODIFIED PARAMETERS

PARAMETERS (default: OFF) Setting unit of measure (mt/bar/celsius) FULL SCALE (default: 160.0) Set the full scale value specified by the manufacturer of the sensor used (default value 160.0) 0-10 bar transducer = 010.0 MINIMUM LEVEL (default: 5.0) Parameter active only with unit of measure in mt MAXIMUM LEVEL (default: 100.0) Parameter active only with unit of measure in mt START P1 and STOP P1 (default: 10.0-20.0) START P2 and STOP P2 (default: 10.0-20.0) ATTENTION: Switch off the control panel before connecting the sensor.

The "SENSOR" function allows to use the control panel with piezoresistive, piezocapacitive level sensors or pressure transducers (logic 4÷20 mA).

Only for level sensor (mt): to have the level or mt perform the self-calibration of the pump 1 (see page 16) with the sensor out of the water.

SET PARAMETERS











IMPORTANT!

For the mt and celsius parameters you can select the "FILL" and "EMPTY" programs (see page 19)

- FILL: START value < STOP value
- EMPTY: START value > STOP value For the bar parameter can be selected only the "EMPTY" program
- EMPTY: START value < STOP value

PUMP START / STOP SETTING 2 It is necessary to carry out the same procedure to set the values the "START PUMP 2" and "STOP PUMP 2" parameters.



MO8 TIMER





TIMER T1 OFF



0

TIMER SETTING T2 ON / TIMER T2 ON

The same procedure must be followed to set the values of the "TIMER T2 ON" and "TIMER T2 OFF" parameters.



TRIMMER SETTINGS

To change manually the threshold for protection, interrupt the power supply to the control panel working on the trimmers. Please follow before the below instructions:

PROTECTION DELAY

The pump protection switching delay has been set at**5 sec**.



TRIMMER SETTING

TRIMMER 1: PROBE SENSITIVITY CHANGE

Probe sensivity (CLC) and water in oil chamber sensor trimmer regulation.

It is possible to change the sensitivity of the CLC probes and the water sensor in the oil chambet**interrupting the power supply** to the control panel and acting on trimmer 1 (clockwise to increase and counterclockwise to decrease sensitivity).

ALARM CONTACT OUTPUTS

SINGLE PHASE VERSION	THREE PHASE VERSION
Alarm outputs: • L-OUT / N = 230 VAC • + -12 / NO = 12V d.c. or contact NO	Alarm outputs: • L-OUT / N = 400 VAC • + -12 / NO = 12V d.c. or contact NO





12 V d.c. output



free contact NO



PUMPS STOP

MODE	BUTTON	STOP
MANUAL	MAN	The motor stops when the "MANUAL" button is released or once you press the 0 button.
AUTOMATIC	0	When the input commands are disable/non active once you digit the 0 button.
OFF		Turn the main switch in the interlocking door to "OFF" position.

SERVICE

SwitchGenie does not require any routine maintenance provided that its working limits are observed. Any maintenance operations must be performed by qualified and experienced personnel, in compliance withthe safety regulations in force.



DANGER!

Make sure that SwitchGenie is disconnected from the power supply before performing any maintenance operations.

SPARE PARTS

Always state the exact model identification number when requesting technical information or spare parts from our sales and service centre.

Use only original spare parts when replacing any faulty components. The use of unsuitable spare parts can cause malfunctions, personal injury and damage to property.

WASTE DISPOSAL

After the control panel has been installed and started, the customer must provide for the appropriate elimination/disposal of the waste materials according to the legislation locally in force. If the control panel or parts of it must be taken out of service and dismantled, follow local regulations regarding sorted waste disposal. Refer to the appropriate recycling centres.



CAUTION!

Contamination of the environment with hazardous substances such as battery acid, fuel, oil, plastic, copper, etc., may cause serious damage to the environment and endanger people's health.



CERTIFICATE OF CONFORMITY

SWITCHGENIE SINGLE and DUAL models

ARE IN CONFORMITY WITH COMMUNITY DIRECTIVES REGARDING:

- European directive 2006/95/CE
- Electromagnetic compatibility directive 2004/108/CE

CE

AND AS APPLICABLE TO HARMONIZED STANDARDS:

- EN 61439-1
- EN 61439-2
- EN 60204-1
- EN 55014-1
- EN 55014-2
 - EN 61000-3-2
 - EN 61000-3-3









Warranty Policy for Davies Pump Controllers

Your Davies Pump Controller, when used for its designed purpose should give you years of trouble free service. Please take the time to read and understand the operator's manual for this product before installing and operating. Failure to install and operate as per the operation instructions will render warranty on this unit void. Davies Pump Controllers are warranted to be free of material and manufacturing defects at the time of purchase. Warranty Period: 2 Years from date of purchase. This warranty is limited to the cost of the product and does not cover travel charges, removal and re-installation charges, consumables, Electrician or Plumbers charges or any other third party costs unless authorized by Argon Distributors prior to being carried out.

Argon distributors will repair or replace for the consumer any portion of the failed item which has proved to be defective within the warranty period. Replacement product or parts may include refurbished parts or components.

The warranty does not cover Damage or malfunction resulting from:

- A. Misuse, accident, fire, water, lightning, negligence, abuse, product modifications.
- B. Repairs or attempted repairs by unauthorized persons
- C. Damages to product caused by transit
- D. Removal or installation of the product
- E. Normal wear and tear.
- F. Water and Insect ingression
- G. Exposure to corrosive conditions
- H. Foreign objects in the liquid being pumped
- I. Electrical power fluctuations
- J. Freight

Argon Distributors liability is limited to the cost of the product and shall not be liable for:

- A. Damage to other property caused by defects in the product.
- B. Loss of use of the product.
- C. Loss of time, loss of profits, loss of business opportunity, loss of goodwill
- D. Any other damages incidental, consequential or otherwise.
- E. Claims under this warranty must give evidence of the Date of purchase, Invoice Copy, Model, Serial Number, photos and information of the installation as soon as the failure has occurred.

Owner's detail must be noted.

If any of the above is unclear please contact your supplier or warranty manager at ARGON DISTRIBUTORS.

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