



INSTALLATION, USE AND MAINTENANCE

LEGEND SYMBOLS



🖉 = Warning

This manual is an integral part of the equipment to which it refers and must accompany the equipment in case of sale or change of ownership. Keep it for future reference; ARAG reserves the right to modify the specifications and instructions regarding the product at any time and without prior notice.

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PRODUCT DESCRIPTION

DigiWolf is a battery powered paddle flowmeter capable of measuring the rate of a fluid in a hydraulic circuit, and it can display the results of these measurements.

1.1 Intended use

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This device is designed to work on agricultural machinery for crop spraying applications. The machine is designed and built in compliance with EN ISO 14982 standard (Electromagnetic compatibility - Forestry and farming machines), harmonized with 2004/108/EC Directive.

The flowmeter must not be used to measure the passage of hydrocarbons, flammable, explosive or toxic liquids. The flowmeter is not suitable for contact with liquids for human consumption.

2 FLOWMETER ASSEMBLY

Install the flowmeter **at least 20 cm** from the elements that could cause turbulence inside the tubes (valves, bends, constrictions, etc.). The flowmeter can be installed in a vertical or horizontal position.

CAUTION:

- Do not install the flowmeter with the connector facing downwards (Fig. 1).

- The system must have a filtering element with a filter of at least 50 mesh, together with a safety valve to limit use pressure at the specified max. valve (Tab. 2 - Par. 2.3.1).



Assemble the flowmeter using the suitable mounting parts (Fig. 2): fit the bolts (M8) in their seats, then make them slide to their stop position to prevent them from coming out.

The flowmeter body must be assembled with the arrow on the label facing the flow direction.



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2.1 Monitor rotation



INSTALLATION

2.2 Dimensions (mm)



2.3.1 Hydraulic connection for brass/fork connections

Avoid bends and constrictions before connections and on tubes.

Use ARAG connections with their suitable OR with MALE CONNECTIONS [T connections - General Catalogue (Tab. 2)].

The tubes must be able to stand a pressure of at least twice the max. operation pressure of the flowmeter (Tab. 2) CONSIDERING THE OPERATION PRESSURES WITHIN THE SYSTEM.

Hose tail tightening must be done using the suitable metal clamps to ensure perfect mechanical sealing, even at high pressures. The connection with threaded connectors must be done paying attention to operation pressure.

CAUTION: For the implementation on already operating systems it is necessary to follow all safety rules described herein. System assembly and start-up must be carried out by expert personnel according to the safety rules so as to ensure the same safety level of the system the flowmeter is going to be installed in.

After connection, check for the perfect sealing of the tubes and fork connections.



Fig. 9

	-	Ъ,			C)	
CODE	l/min.	US GPM	Connection	Ø equivalent (inch)	Max. p (bar)	Max. p (PSI)	
4628405	10-200	2.6-53	T5 F	1 1/4"	20	290]
4628506	20-400	5-106	T6 F	1 1/2"	12	174]
4628707	40-800	10-210	T7 F	2"	7	130] Tab. 2

The diameter in inches (Ø equivalent) is given only as an indication of the typical passage of the flowmeter body. Actually, it is $\frac{7}{2}$ possible to choose different sizes depending on the fork connection used.

2.4 Power supply

DigiWolf is powered by 2 AA batteries type LR6 (alkaline) or FR6 (Li-Fe S2).

2.4.1 Battery replacement



To insert or replace the batteries, proceed as follows:

1) Remove the lid of the battery compartment (A) loosening the 4 screws (B);

2) Remove the battery support (C) and replace the batteries, respecting their polarity (as indicated).

3) Fit the support back in its housing and refit the lid by tightening the 4 screws **without forcing them**, taking care not to crush or break the wires in the battery case and that the lid seal remains in its seat.



To avoid damaging the device, replace low batteries as soon as this symbol is displayed .
 Remember to remove the batteries when the device is not going to be in use for a long period.
 Use only the recommended type of batteries. Do not use combinations of different types of batteries (old and new, carbon and alkaline, etc.). Do not try to recharge the batteries.

ARAG is not liable for damage to the equipment, persons, animals or things caused by failure to observe the above instructions.

Do not dispose of exhausted batteries in the environment. Dispose of in a suitable container.

3

CONTROLS IN THE MENU

	SWITCH ON
	The display turns on automatically at liquid passage. If you need to switch on the device to check or modify data, press □ κ. DigiWolf switches on and displays the figure shown.
	Press the key to see the succession of different values written in full (central part of the display)
Fig. 12	At first device switch on, or after battery replacement, the device will briefly display its name and software version.
Image: Constraint of the sector of the s	ACCESS TO SETUP MENU Press the keys for 2 seconds at the same time to access setup menu.
ARAG	SELECTION AND ACCESS TO MENU ITEMS
B Esc Fig. 14 Setup menu Calibration UCalibration Display DIGIWOLF	A Press in succession to move through items (the selected item is highlighted with a black band) B Press to access the selected item Three dots under an item show the presence of another setup menu.
ARAG	MODIFYING DATA
Flowrate constant	 A Press to toggle from one digit to another B Press in succession to modify the value of the digit highlighted by the cursor C Press to confirm the change. The display goes back to the previous screen. D Press to exit current page without confirming changes.
Fig. 15	D Press to exit current page without confirming changes.

MENU STRUCTURE



PRELIMINARY SETUP FOR USE

For a correct display of data regarding treatment, some preliminary set ups are necessary when installing DigiWolf on farming machines.

4.1 Calibration

Rate reading may not be correct due to different system configurations (tubes, valve, etc.). Therefore, we recommend to make a spray test; in case the measured value is different from the real one, perform an automatic calibration procedure or manually calculate flowrate constant.

4.1.1 Automatic calibration

Make a quantity of liquid previously measured or that can be measured with another system go through the flowmeter. The greater the amount of liquid used to perform the calibration procedure, the more accurate the calibration.



4) Using the keys, enter the values of the liquid quantity previously measured:

- A) Press to toggle from one digit to another
- B) Press in succession to modify the value of the digit highlighted by the cursor
- C) Press to complete calibration procedure, or D) Press for 1 sec. to cancel calibration procedure.

If, after starting calibration, the device does not sense any flow passage (and the display remains in 0), press $\Box \kappa$ to exit the calibration procedure without saving.

If the device continues to sense the liquid flow after pressing $\Box \kappa$, after a few seconds the error message $\operatorname{Stop} f \operatorname{Iow!}$ will be displayed.

Once the flow has been interrupted, the reading will stabilize as by standard procedure.



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4.1.2 Manual calibration

To set the flowrate constant manually, calculate and set the correct constant using the following formula:



4.2 Flowrate alarms

ARAG 🍌 1) Access Flowrate alarms menu (Setup menu > Flowrate alarms). Min Min. and max. flowrate alarms setting is done in the same way. Flowrate alarms Пκ Under the selected item, the currently set value will be displayed. Esc Press $\Box \kappa$ to access modification of the selected item. DIGIWOLF Fig. 22 ARAG ロк 2) To activate the alarm, press at the same time until the message Ð and OF OFF disappears and flowrate alarm value is displayed. Esc Carry out the same procedure to deactivate flowrate alarm again. DIGIWOLF Fig. 23 ARAG 3) Set flowrate alarm value: A) Press to toggle from one digit to another 0040.0 B) Press in succession to modify the value of the digit highlighted by the cursor C) Press to save changes or D) Press to exit current page without confirming changes. oigiWOLF Fig. 24

Set the minimum and maximum values beyond which the display must show an alarm message.

4.3 Display

Adjust display brightness and contrast.



4.4 Energy saving

DigiWolf allows the setting of some parameters in order to prolong battery life:

- Backlight shut-off:
- it is possible to set a time in seconds after which the backlight will turn off automatically if no key is pressed.
- Display shut-off:
- it is possible to set a time in minutes after which the display will turn off automatically if no key is pressed and there is no liquid flow.
- $\mathbb{W}_{\mathcal{F}}$ After switch off, the display will automatically turn on by pressing any key or when the device detects liquid flow.



4.5 Options

4.5.1 Language

Set desired language and units of measurement.



4.5.2 Units of measurement

Set units of measurement for flowrate values and volume read by the device.

4.5.2.1 Rate units of measurement



4.5.2.2 Volume units of measurement



4.6 Test

In this menu is it possible to see some information and run a device operation test:

- Firmware version:

the display shows the firmware version installed on the device.

- Sensor frequency:

in the presence of flow passage, the display shows in real time the frequency of the signal from the sensor reading the flowrate.

- Battery voltage:

the display shows the voltage level of the batteries in the device.

4.6.1 Display test

Display test checks the correct operation of the display on the device.



4.6.2 Keys test

Keys test checks the correct operation of the keys on the device.



SETUP

USE

Once the setup is finished, Digiwolf is ready for use. The main screen shows the display divided into three horizontal sectors. The sectors showing the symbols 1 and 2 represent the partial totalizers, individually resettable. The third data represents instant rate value.



5.1 Partial totalizer reset



- Do not place DigiWolf under pressurized water.

- Use the flowmeter only within recommended rate range (Tab. 2 - Par. 2.3.1). Beyond these limits, the flow-meter may give out incorrect data. - To avoid damaging the flowmeter, do not exceed the maximum rate except for short periods.

ARAG can not be held responsible for damage caused to persons, animals or things from the incorrect or unintended use of Digiwolf or its parts.

- Do not exceed the max. operation pressure (Tab. 2 - Par. 2.3.1).

Display of the symbol ------ shows that the rate or the totalizer are over the max. displayable value.

Totalizers have floating points and display a max. of 5 figures. Up to 999.99 two decimals are shown, it then drops to 1 and 0 with the transition to thousands and tens of thousands (Fig. 43).



6 CLEANING AND REPAIR

- At the end of each treatment, run clean water through the tubes.
- If necessary, periodically clean or replace the flowmeter paddle (Par. 6.2). Periodically clean the paddle anyway.
- $M_{\rm e}$ Do not use metal or abrasive objects to clean the paddle.
 - $^{\prime\prime}$ Do not use solvents or fuel to clean the case outer surface.
- ∧ CAUTION:

Before each of the following operations, use the following precautions:

- 1) Wear gloves, goggles and protective clothing.
- 2) Stop the machine and disconnect the power of the system.
- 3) Make sure that the system is no longer under pressure.

When replacing the sensor or the paddle, check for the correct reading of the flowmeter. Proceed to a new calibration if necessary.

6.1 Troubleshooting

FAULT	CAUSE	REMEDY
The display is off	No power supply	Check for the batteries and their correct positioning. Replace them when necessary.
Totalizers do not progress	Rate is beyond operation limits of the flowmeter	• The model of the flowmeter is not adequate for the flowrate to be measured. Replace the flowmeter.
during the passage of liquid.	The sensor is not connected correctly	Check the sensor connection.
	The paddle-wheel is locked	Clean or replace the paddle- wheel group if necessary.
Displayed flowrate is not	Presence of turbulence or air in the circuit	Check the circuit.
Slable	Worn paddle	Replace the paddle.

MAINTENANCE

6.2 Paddle cleaning and replacement



1) Remove the fork from the monitor using a screwdriver.

- 2) Remove the monitor from the flowmeter body.
- 3) Unscrew the ring nut in a counter clockwise direction and remove the sensor housing block from the flowmeter body.
- 4) With half a rotation, remove the paddle group from the sensor housing block in a counter clockwise direction.
- 5) Immerse the paddle group in detergent liquid for several hours.

6) Wash the paddle group thoroughly with running water and check its correct operation. If necessary, replace the complete paddle group with its suitable spare part (code 4626000.500).

7) Refit the paddle group on the electronic sensor with a clockwise rotation until it clicks in place.



8) Refit the sensor housing block on the flowmeter body tightening the ring nut in a clockwise direction until it stops paying attention to keep the arrow on the coupling facing the flow direction.

6.3 OR replacement

With the removed sensor housing block (see Par. 6.2) proceed as follows:



TECHNICAL DATA

	Data	Min.	Max.	Default	UoM	Notes
Calibration	Manual calibration	1	50,000	600		
	Min. flowrate alarm	0.1	99999.9	OFF	l/min.	The alarm can be deactivated setting the value "OFF"
	Max. flowrate alarm	0.1	999999.9	OFF	l/min.	The alarm can be deactivated setting the value "OFF"
Diamlaw	Brightness	0%	100%	50%	%	
Display	Contrast	0%	100%	50%	%	
Energy	Backlight shut-off	1 sec.	300 sec.	30 sec.	sec.	
saving	Display shut-off	1 min.	120 min.	15 min.	min.	
	Language	-	-	English	-	Language settings: Italiano, English, Español, Português, Français, Deutsch, Cesky, Polski, ⊐ћ⁄), Русский, Magyar.
Options	Rate units of measurement	-	-	l/min.	-	Units of measurement settings: I/min, GPM, m ³ /h
	Volume units of measurement	-	-	litres	-	Units of measurement settings: I, gal, m ³

7 TECHNICAL DATA

Description	DigiWolf			
Power supply	2 AA batteries type LR6 (alkaline) or FR6 (Li-Fe S2)			
Max. absorption	40 mA (100% backlight) 4.7uA (standby)			
Working temperature	0 °C ÷ 50 °C +32 °F ÷ +122 °F			
Storage temperature	0 °C ÷ 50 °C / +32 °F ÷ +122 °F (inserted batteries) -30 °C ÷ 80 °C / -22 °F ÷ +176 °F (without batteries)			
Weight (without batteries)	680 ÷ 750 g (depending on the type)			
	Tab. (

8 DISPOSAL AT THE END OF SERVICE

Dispose of the system in compliance with the established legislation in the country of use.



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1. ARAG s.r.l. guarantees this apparatus for a period of 360 day (1 year) from the date of sale to the client user (date of the goods delivery note).

The components of the apparatus, that in the unappealable opinion of ARAG are faulty due to an original defect in the material or production process, will be repaired or replaced free of charge at the nearest Assistance Centre operating at the moment the request for intervention is made. The following costs are excluded:

- disassembly and reassembly of the apparatus from the original system;
- transport of the apparatus to the Assistance Centre.
- 2. The following are not covered by the guarantee:
- damage caused by transport (scratches, dints and similar);
- damage due to incorrect installation or to faults originating from insufficient or inadequate characteristics of the electrical system, or to alterations resulting from environmental, climatic or other conditions;
- damage due to the use of unsuitable chemical products, for spraying, watering, weedkilling or any other crop treatment, that may damage the apparatus;
- malfunctioning caused by negligence, mishandling, lack of know how, repairs or modifications carried out by unauthorised personnel;
- incorrect installation and regulation;
- damage or malfunction caused by the lack of ordinary maintenance, such as cleaning of filters, nozzles, etc.;
- anything that can be considered to be normal wear and tear.
- 3. Repairing the apparatus will be carried out within time limits compatible with the organisational needs of the Assistance Centre.

No guarantee conditions will be recognised for those units or components that have not been previously washed and cleaned to remove residue of the products used.

- 4. Repairs carried out under guarantee are guaranteed for one year (360 days) from the replacement or repair date.
- 5. ARAG will not recognise any further expressed or intended guarantees, apart from those listed here. No representative or retailer is authorised to take on any other responsibility relative to ARAG products. The period of the guarantees recognised by law, including the commercial guarantees and allowances for special purposes are limited, in length of time, to the validities given here. In no case will ARAG recognise loss of profits, either direct, indirect, special or subsequent to any damage.
- 6. The parts replaced under guarantee remain the property of ARAG.
- 7. All safety information present in the sales documents regarding limits in use, performance and product characteristics must be transferred to the end user as a responsibility of the purchaser.
- 8. Any controversy must be presented to the Reggio Emilia Law Court.

Conformity Declaration $\mathbf{C}\mathbf{\epsilon}$



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che il prodotto descrizione: **Flussometro a palette** modello: **DigiWolf** serie: **4627xxx, 4628xxx** risponde ai requisiti di conformità contemplati nella seguente Direttiva Europea: **2004/108/CE** e successive modificazioni (Compatibilità Elettromagnetica)

Riferimenti alle Norme Applicate:

EN ISO 14982

(Macchine agricole e forestali - Compatibilità elettromagnetica Metodi di prova e criteri di accettazione)

CEI EN 61326-1:2007

(Apparecchi elettrici di misura, controllo e laboratorio, Prescrizioni di compatibilità elettromagnetica - Parte 1 : Prescrizioni generali)

Rubiera, 08 Marzo 2011

Giovanni Montorsi

(Presidente)

Only use original ARAG accessories and spare parts, to maintain safety conditions foreseen by the constructor. Always refer to the ARAG spare parts catalogue.

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