Pipeline Counter

User Manual

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WARRANTY TERMS

VAKI Aquaculture Systems Ltd. offers warranty for defects that appear within two (2) years from the date of delivery by VAKI Iceland, on condition that the equipment has been assembled, used, and maintained in accordance with the instructions for assembly and use.

VAKI undertakes to repair all defects that are due to faults in the design, materials used, or manufacture of the equipment. These defects will be rectified by repairing the equipment, or replacing components. The complete unit or parts thereof may be required to return to the factory in Iceland for repair.

VAKI accepts corresponding warranty for original parts fitted by VAKI as replacements, for a period of one (1) year from the date supplied.

VAKI will ***not*** be liable for:

- *Incorrect assembly and use, or inadequate maintenance.*
- *Defects which result from the fitting of materials, components, or devices not supplied by VAKI, and which are purchased and fitted by the user.*
- *Defects due to changes made to the equipment by the user, without the written consent of VAKI.*
- *Faulty or inadequate repairs carried out by the user.*
- *Normal wear and tear of the equipment.*
- *Faulty connection of electrical equipment.*
- *Faults caused by excessive voltage.*
- *Damage or stoppage due to immersion of the computer or camera in water.*
- *Damage to electrical supply cables.*
- *Any economic loss that may arise from production stoppage.*

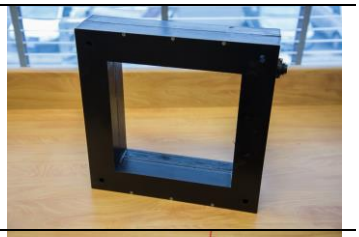
If faults or defects appear in the equipment, the user must report this in writing to VAKI or its appointed representative as soon as possible, and without unjustifiable delay. The report must be sent within two (2) weeks from the expiry of the deadline, which is two (2) year from the date of supply by VAKI Iceland.

<u>If the purchaser does not inform VAKI or its representative within the time limits stated above, the purchaser shall forfeit the rights of the warranty.</u>

LIST OF ITEMS

The main parts of the Pipeline counter are:

1) Plastic Scanner Unit.



2)

3) Control unit – single channel or multi – channel.

4) Flanges for mounting the counter to a pump or pipeline.

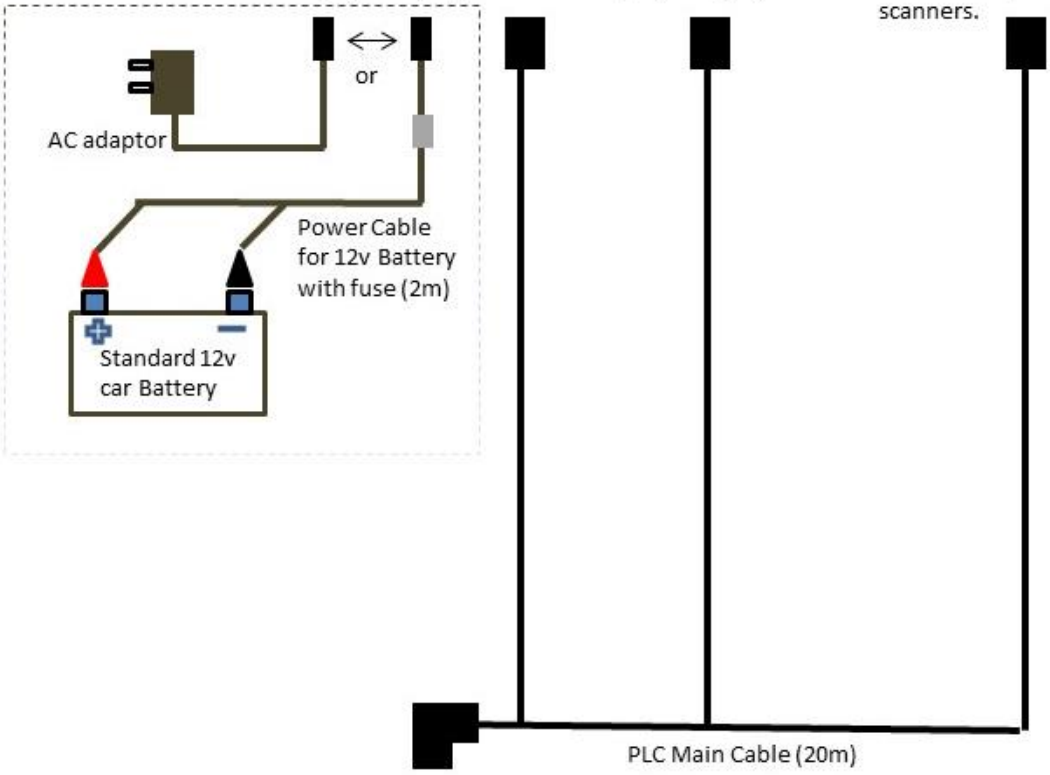
5) Fittings

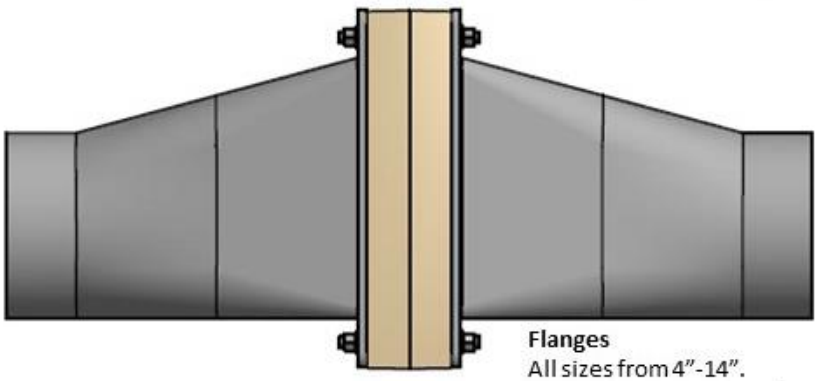
SET UP

1 Channel
Display unit (DU)

4 Channel
Display unit (DU)

An industial PC can be used to connect up to four PLC scanners.





Flanges
All sizes from 4"-14".
Various designs of hose/pipe connection available.

1. PREFACE

VAKI Aquaculture Systems Ltd thanks you for choosing the Pipeline Counter (PLC). More and more aquaculture enterprises are using equipment from VAKI in their day-to-day production and management. An accurate knowledge of the number of fish, and the average weight and size distribution in each pen is the basis for success in today's tough competition.

The Pipeline Counter (PLC) from VAKI has been developed in close collaboration with our customers. It is currently being used for counting fish when being pumped either from a pen to a wellboat when delivering fish for harvesting, or when fish are pumped from one pen to another under grading or splitting of the cages. The same counter can also be used at the outlet of a grading machine.

The system is based on the use of infrared light beams that form a grid inside the Scanner. Each time a fish is pumped through the Scanner, this grid is broken and an image of the fish is generated. The image is then used to count the fish.

This manual is a guide to the use of the Pipeline Counter.

Chapter 2: Describes the functions of the Control Unit.
Chapter 3: Contains tips on how to mount the Scanner Unit on different pump types or grading machines.
Chapter 4: Contains Troubleshooting tips and
Chapter 5: Technical Specifications.

2. CONTROL UNIT FUNCTIONS

The control unit is used to set up the counter according to the fish size and the way the counter is to be used. In the control unit, there are two menus; one available when the control unit is connected to the scanner, and the other when disconnected.

2.1. SINGLE CHANNEL CONTROL UNIT CONNECTED TO SCANNER

When the yellow control unit is turned on, the results from last count will be displayed on the screen:

The numbers are examples

In this case, the numbers mean the following:
0 = < 10g
1 = 10 - 30g
2 = 30 – 150g
3 = 150 – 1500g
4 = > 1500g

4 is the size group selected.

the flashing # symbol indicates that there is contact between the control unit and the scanner, and the amount of charge left in the battery

150 (in large digits) is the total count.

125 (small digits in the lower line) are the number of fish counted in the last 60 seconds. See chapter 2.1.4

To reset the total count number in the display to zero, press **RESET**. The following message will be displayed:

To reset all data from the Control Unit

Pressing **ENTER** to confirm that you want to ***erase all data from memory*** the total count number will be set to 0 (zero).

Pressing **FN** on the Control Unit, you can scroll between the 4 different functions in the menu using the arrow keys. The menu is as follows:

PRESS ENTER TO: **CHECK SYSTEM**	*To check that all infra-red light diodes are functioning properly*
⇧⇩	
PRESS ENTER TO: **SET SIZE**	*To choose the size of fish that are being pumped*
⇧⇩	
PRESS ENTER TO: One minute counts	*To display the number of fish counted during the last minute.*

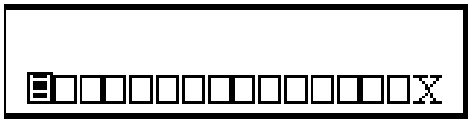
2.1.1.

PRESS ENTER TO:
SYSTEM CHECK

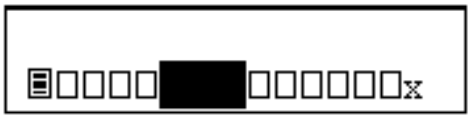
This function is used to check that all the light diodes in the scanner are functioning properly. With the Scanner disconnected from the pump, and with nothing inside it, press **FN**. The following will be displayed:

PRESS ENTER TO:
CHECK SYSTEM

Press **ENTER** and the following will be displayed:



The battery status indicator will blink in the lower left corner, the value shown here, as “x” is meaningless. If all the squares are empty, the scanners vision is clear. The bottom row in the display indicates the light rays going from top to bottom of the scanner transmitted by the diodes in the bottom and top of the scanner.



If, as shown, diodes are blocked and the windows are clean with nothing inside the scanner there may be a problem with the scanner. Please contact VAKI or your local distributor.

2.1.2.

PRESS ENTER TO:
SET SIZE

To set size group, press **FN** and the down arrow (⇩) twice and the display shows:

PRESS ENTER FOR:
SET SIZE

SET SIZE
30 – 150g

Use the arrows to choose the right size group and press **ENTER**.

2.1.3.

PRESS ENTER TO:
One minute counts

This function is to enable/disable the display of the number of fish counted during the last minute (60 seconds). The number is updated every 7,5 seconds and is useful to check if the counter is being overloaded and make adjustments to the pumping rate or flow of fish.
Press **FN**, then ⇩ three times and **ENTER.** The display will show:

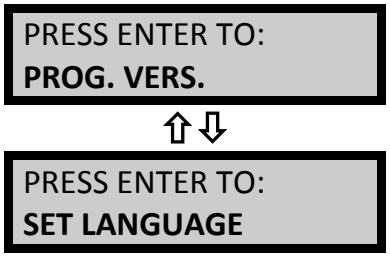
1 minute counts
NO

Use the arrows to select YES or NO and press **ENTER**

2.2. CONTROL UNIT DISCONNECTED

When the Control Unit is turned on when disconnected from the scanner, the connect frame message will be displayed, and the battery symbol will not flash:

Pressing **FN** on the Control Unit, you can scroll between the 2 functions in the menu using the arrow keys. The menu is as follows:



To see which program version is in the Display Unit. Button Test

To choose between English, Norwegian and Spanish

2.2.1. PRESS ENTER TO: **PROG. VERS.**

This function is used to see which program version is running in the Control Unit. To check the program version press **FN**. The following will be displayed on the screen:

PRESS ENTER TO: PROG. VERS.

Press **ENTER** and the following is displayed:

PRESS ENTER 11.2 A:1.13 B:0.7

The number in the top right is the voltage being received by the control unit and the program version shown in the bottom line.
There is also a button-test function; the letter "P" in PRESS on the display will change according to which buttons are pressed.

To get out of this function you must turn off the Control Unit.

2.2.2. PRESS ENTER TO: **SET LANGUAGE**

You can choose between English, Norwegian, and Spanish. Press **FN**, then ⇩ once and **ENTER**. The following will be displayed:

PRESS ENTER TO: **SET LANGUAGE**

Press **ENTER** and the following will be displayed:

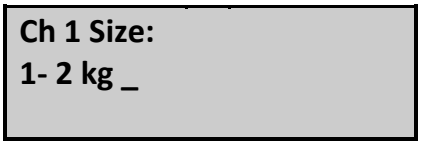
TRYKK ENTER FOR NORSK

Use the arrows to choose language, and press **ENTER** to confirm.

2.3. MULTI CHANNEL CONTROL UNIT

When the yellow control unit is turned on (with up to 4 scanners connected to the 4 inputs) the set size function is displayed on the screen.

The size group for each channel can be selected using the arrow keys ⇧⇩ and press **ENTER** to confirm.

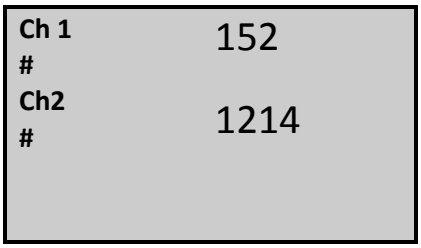


0 = < 10g
1 = 10 - 30g
2 = 30 – 150g
3 = 150 – 1500g
4 = > 1500g

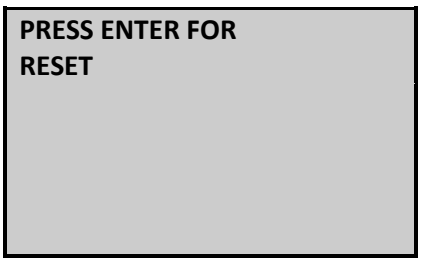
After all the size groups have been confirmed, the results from the last count will be displayed on the count display screen:

2.3.1. Count Display Screen

Ch 1 is the channel number
152 is the total count for that channel
the flashing # symbol indicates the control unit and scanner are connected.



To reset the total count number in the display to zero, press **RESET**. The following message will be displayed:

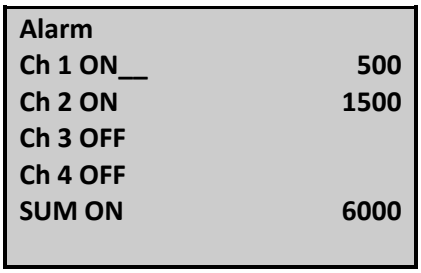


Pressing **ENTER** to confirm that you want to ***erase all data from memory*** the count numbers will be set to 0 (zero).

2.3.2. Function Menu

Pressing the **FNC** key on the Control Unit, you can scroll between the 4 different functions in the main menu.
Each function can be selected using the arrow keys ⇧⇩ to move the flashing cursor to the function you require and pressing **ENTER** to confirm.

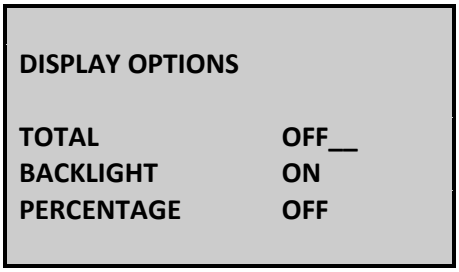
2.3.3.



This function is used to set the audible alarm. When in this function, pressing the **FNC** key will move the flashing cursor between the channels and the number settings. Use the arrow keys ⇧⇩ to switch the alarm ON and OFF for each channel and to set the number of fish which will sound the alarm. Press **ENTER** after completing all the settings and to return to the count display screen.
When the alarm sounds press **RESET** key once to turn off the alarm. To reset the alarm you must re-enter the Alarm Settings function and switch the Alarm setting back to ON.

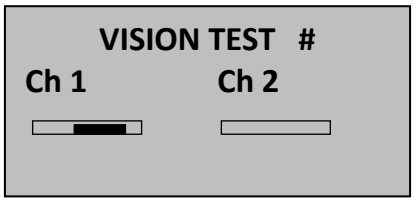
2.3.4.

Using the **FNC** key scroll between the 2 display options. Set the TOTAL to ON to show the total sum of all the channels in the count display screen. The display back light can also be turned ON or OFF in this function.



If percentage is selected, the display will alternate (10 seconds) between the numbers of counted and the percentage of the total for each channel (6 seconds). The arrow keys ⇧⇩ switch both the functions between ON and OFF. Press **ENTER** to exit the function menu and return to the count display screen.

2.3.5.



This function is used to check that all the light diodes in the scanner are functioning properly. With the Scanner disconnected from the pump, and with nothing inside it, all the squares should be empty, showing that the scanners vision is clear. If, as shown in Ch 1, diodes are blocked and the windows are clean with nothing inside the scanner there may be a problem with the scanner. Please contact Vaki or your local distributor. Press **ENTER** to exit this function and return to the count display screen.

2.3.6.

Press ENTER to exit the function menu and return to the count display screen.

3. Set up and Installation

The scanner must always be mounted so that the connector is on the side.

3.1. Counting from a pump

The counter should preferably be mounted at the end of the pipe transporting the fish into a tank or a cage.
If this is not possible, then it is important that the counter is vented to the atmosphere, otherwise the the counter will form a „resting pool“ where the water velocity is lower than in the pipes connected to it and fish may crowd in the counter opening, making accurate counting impossible. This venting can be accomplished by making 30 – 40 mm holes in the top of the plastic flanges. It is necessary that the pipe downstream from the counter is downward sloping all the way.

Usually, it is not necessary to dewater the fish when using a centrifugal pump, except for the smallest sizes. When using a vacuum pump, dewatering may be necessary because the water output from a vacuum pump may be saturated with air bubbles and non-transparent.

3.2. Counting and grading

The Pipeline Counter can be mounted on the end of a pipeline or the outlet of a grading machine. Dewatering is generally not necessary. We recommend that the scanner unit be mounted at the end of the pipeline, and with a slope of between 20-40º.

3.4. End of operation

When all fish have been counted:

- Turn the Control Unit off by pressing the **ON/OFF** key.
- Disconnect the cable from the Control Unit and the Scanner Unit.
- Screw the protective caps onto the connectors on the Scanner Unit, Control Unit, and the cable, and put the Control Unit away in a safe place. It is very important to replace the protective cap on the cable connector of the Scanner Unit if it is left outside, otherwise the contacts will soon be damaged by corrosion. If the scanner is to be used again soon, it can be left on the pump, but over a longer period, we recommend that the Scanner Unit is stored in a dry place.

3.5. Storage

- Store the equipment in a safe, dry place when not in use.

- Keep the protective connector cap on the Scanner Unit, Control Unit and at the ends of the cable.

- Clean the windows, inside the Scanner Unit, with a soft cloth and some detergent. Dirt and debris can absorb part of the infrared beam. It is necessary to keep the windows and if they are very dirty, you can clean them with ethanol or some disinfectant.

NEVER CLEAN THE WINDOWS WITH ACETONE, AS IT WILL RUIN THEM COMPLETELY.

4. TROUBLESHOOTING

4.1. Over counting

If the water flow in the pipeline is uneven and the water is splashing inside the scanner, try to reduce the water or adjust the water flow. Check and ensure that the fish not going backwards through the counter again. Check if the fish size is correctly set on the Control Unit.

4.2. Undercounting

Check if the fish size is correctly set on the Control Unit. When too many fish are pumped through the Scanner Unit, the counter is not able to count all the fish because the images are overlaying each other. Check the rate of fish (see chapter 2.2.4 minute counting) to ensure the counter is not overloaded. Try to reduce the amount of fish, and make sure the fish are not blocking up in the pipeline but gliding smoothly through the pipe. If there is not enough water for the fish to slide smoothly down the pipe, this can also cause a blockage.

4.3. System check

See chapter 2.1.1.

5. TECHNICAL SPECIFICATIONS

Control Unit:		**Single Channel**	**Multi Channel**
Dimensions	:	240 x 160 x 70 mm	300 x 180 x 70 mm
Weight	:	2,0 kg	3 kg
Power	:	12 V DC or 110/220V AC with adaptor	

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Operating environment:

Air temperature: 0° - 40° C

Sea temperature: 2° - 30° C

Specifications: