Pipeline Counter

User Manual

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VAKI
Akralind 4, 201 Kópavogur
Iceland

Tel. 354 - 595 3000
Fax. 354 - 595 3001
e-mail: vaki@vaki.is
www.vaki.is

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.

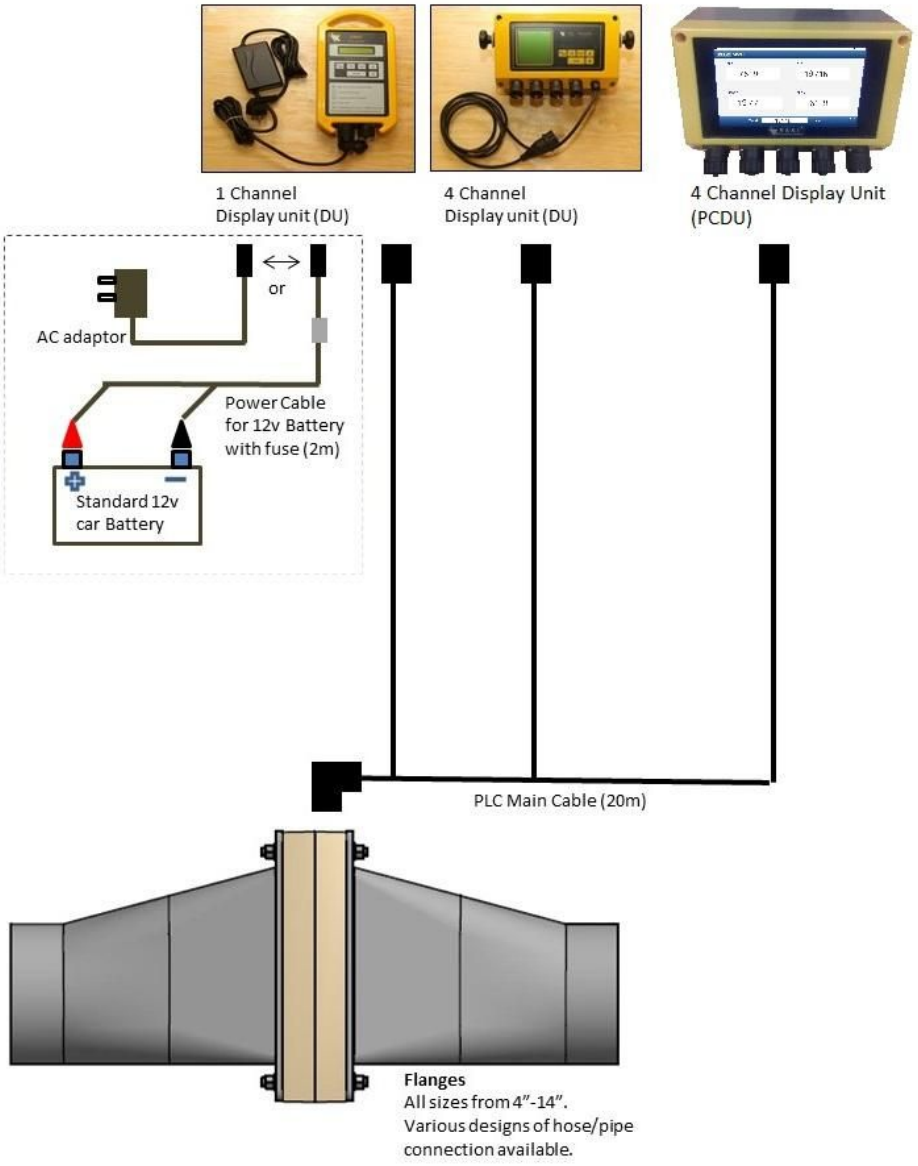
If the purchaser does not inform VAKI or its representative within the time limits stated above, the purchaser shall forfeit the rights of the warranty.

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 (*Not included*)	

SET UP


1 Channel
Display unit (DU)
4 Channel
Display unit (DU)
4 Channel Display Unit
(PCDU)
or
AC adaptor
Power Cable
for 12v Battery
with fuse (2m)
Standard 12v
car Battery
PLC Main Cable (20m)
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.

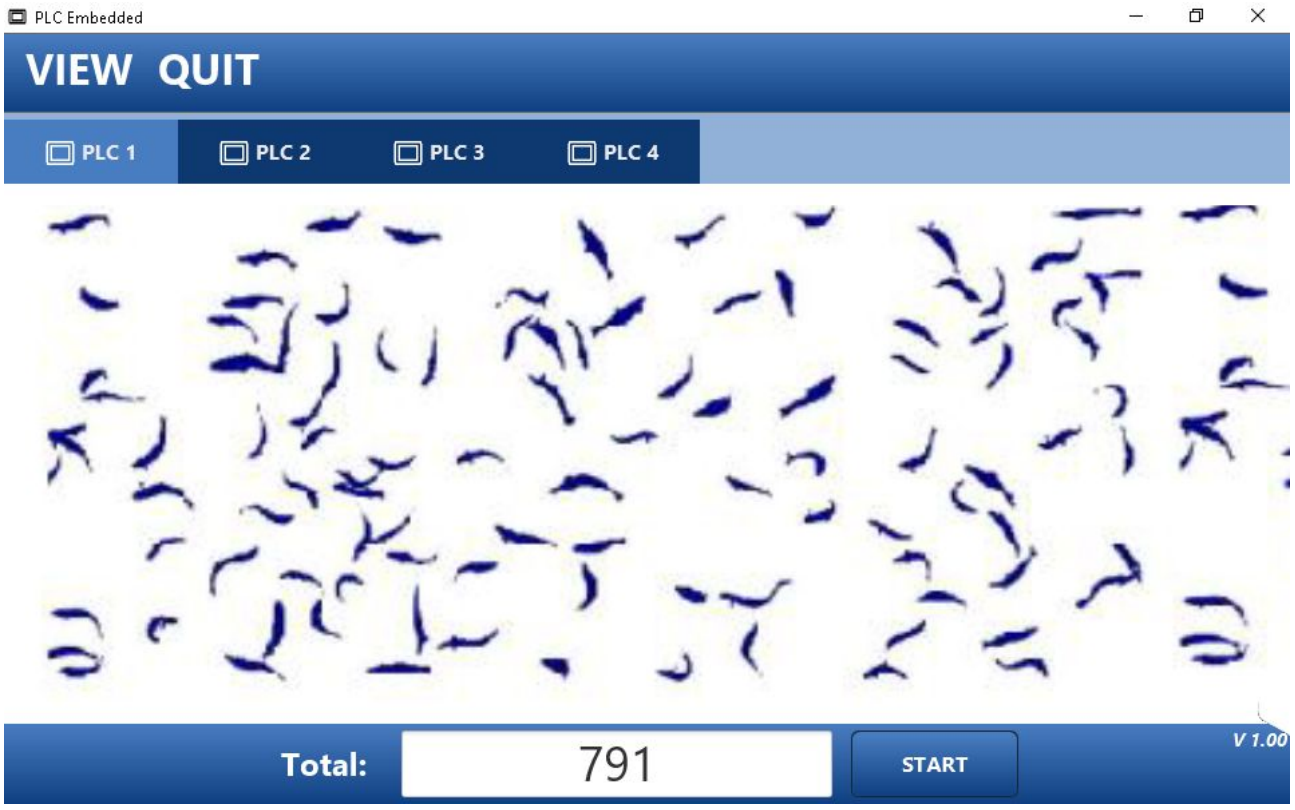
The system is based on the use of infrared light beams that form a grid inside the Scanner. Each time a fish is pumped through the Scanner, this grid is broken and an image of the fish is generated. The image is then used to count the fish.

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.

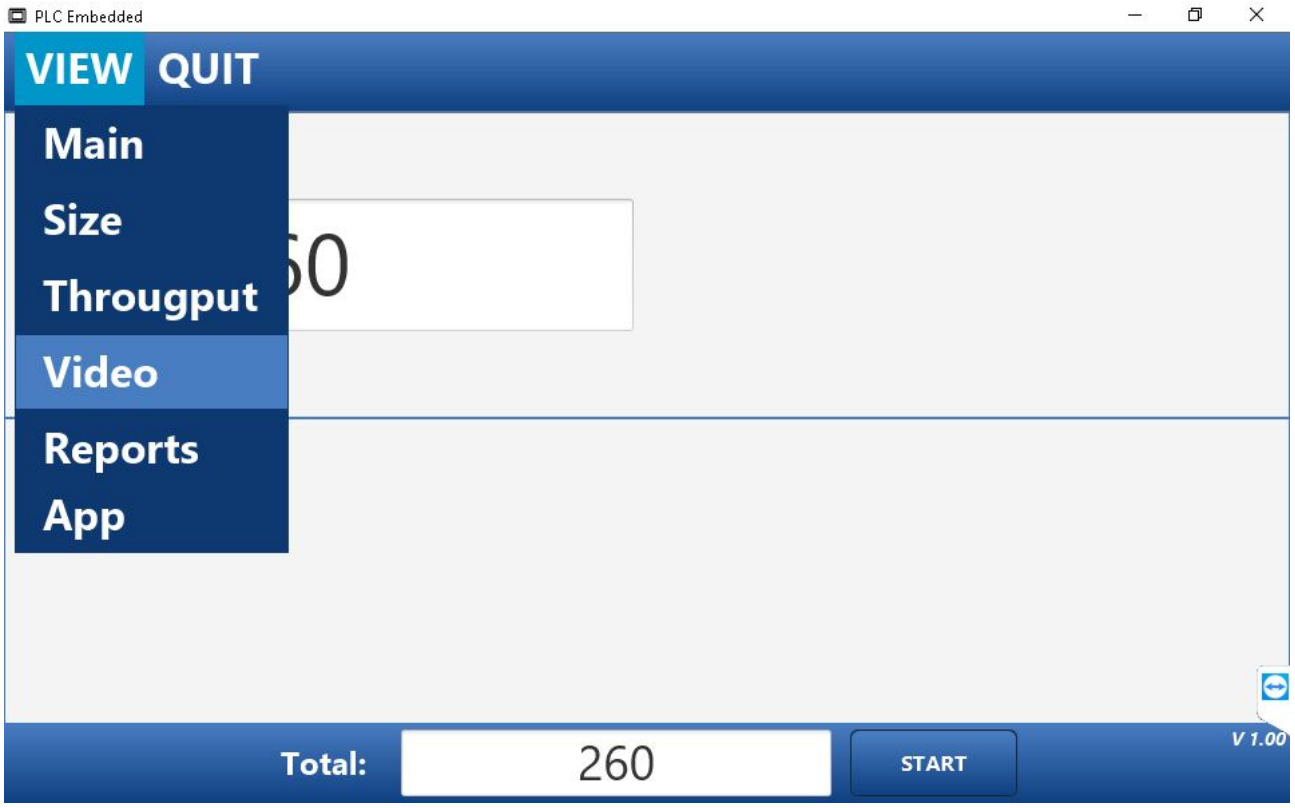
2. APPLICATION

IoT application has a lot of new features. You can monitor silhouette video of the fish going through the counter. You can view the last hour throughput and generate reports to validate the count. The application store all data so the you can do recount for reassurance purposes. All data and reports will be sent to VAKI cloud where you can view your counting sessions. You can also connect to your counter vie smartphone or pc and monitor the counting process on the go.



2.1. Overview

By pressing View you can select the view you want to have on the screen. The views are as follows.



1) **Main** shows the count in each channel.
2) **Size** allows you to set the size group for the counter.

The size groups are: < 10 g, 10 – 30g, 30 – 150g, 150 – 1500g, 1.5 - 4 kg and > 4kg.

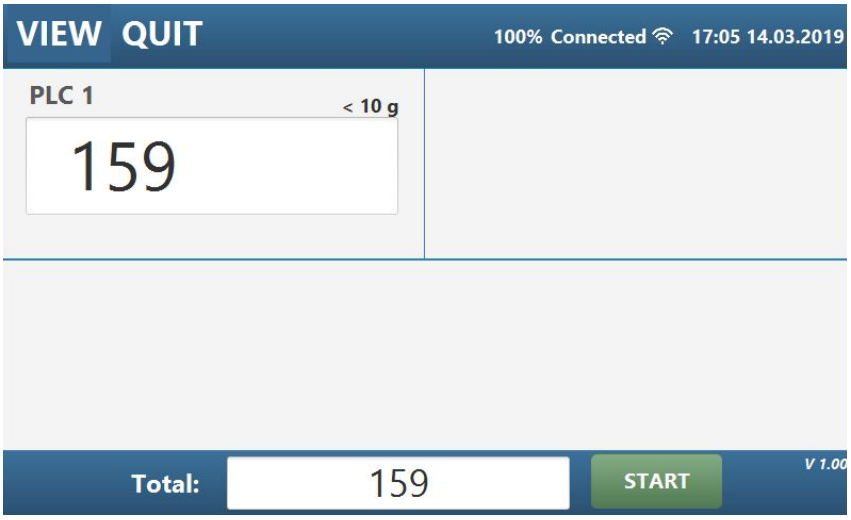
3) **Throughput** shows the throughput for the last hour.
4) **Video** allows you to monitor the silhouettes of the fish that are going through the counter.
5) **Reports** allows you to view counting reports & recount.
6) **App**, starts a new counting session, once activated this button will change to **Stop**

At the bottom of all screens is the total count and a start button. To start a counting session press the "**Start**" button. Once activated this button will change to **Stop.** To stop the counting session press "**Stop**". When the counting session

ends all reports and records will be generated and ready to be uploaded to VAKI cloud.

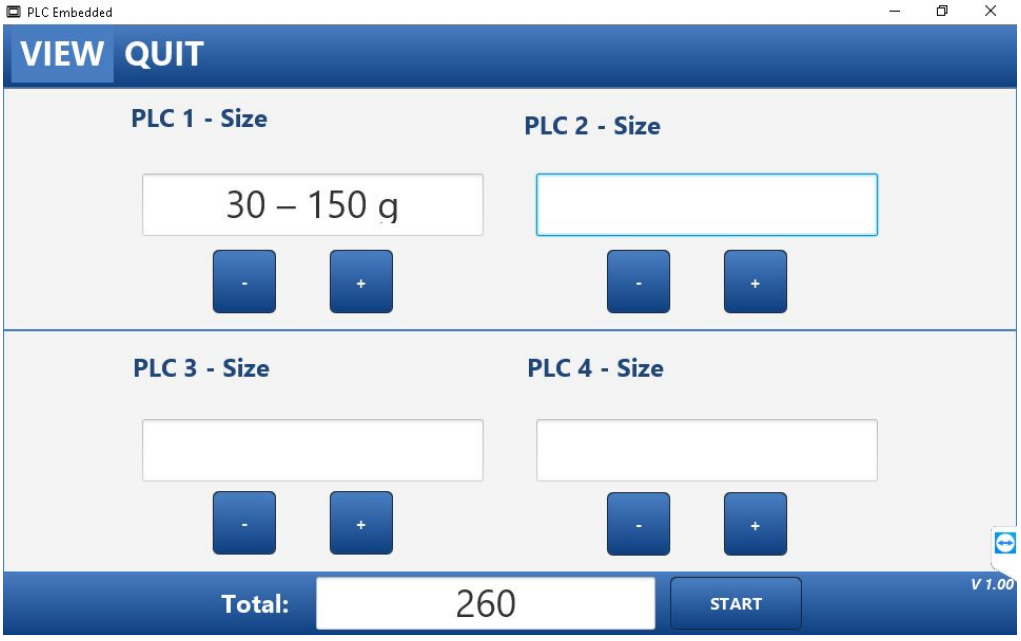
2.2. Main view

Up to four counters can be connected at the same time. The main view shows the count for each counter. By double pressing the count you can resent the count without stopping the counting session. The total count is not affected by the reset.



2.3. Size view

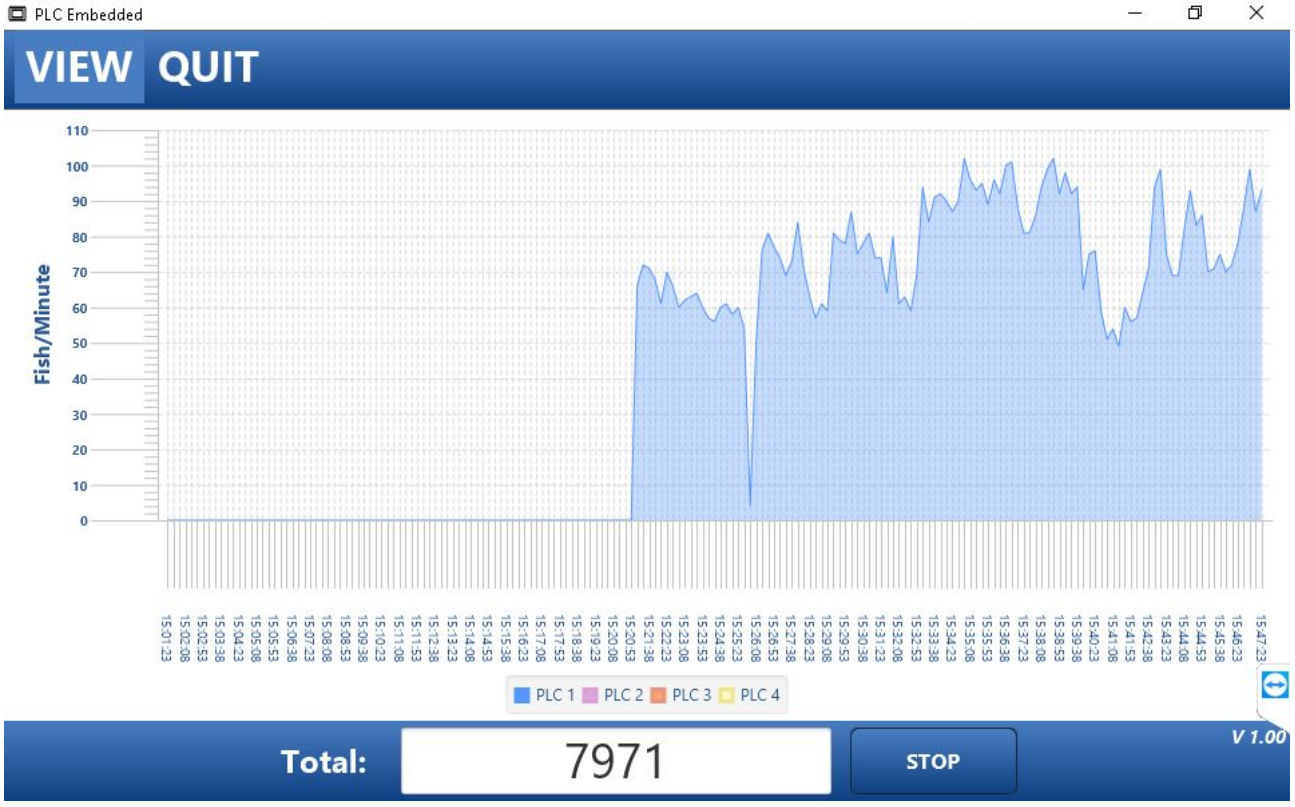
Here you can set the size group for each counter. **The size groups are : < 10 g, 10 – 30 g, 30 – 150 g, 150 – 1500 g, 1.5 – 4.0 kg and > 4kg. Make sure to select a size group that suites best the fish that is being counted.**



2.4. Throughput and silhouette video

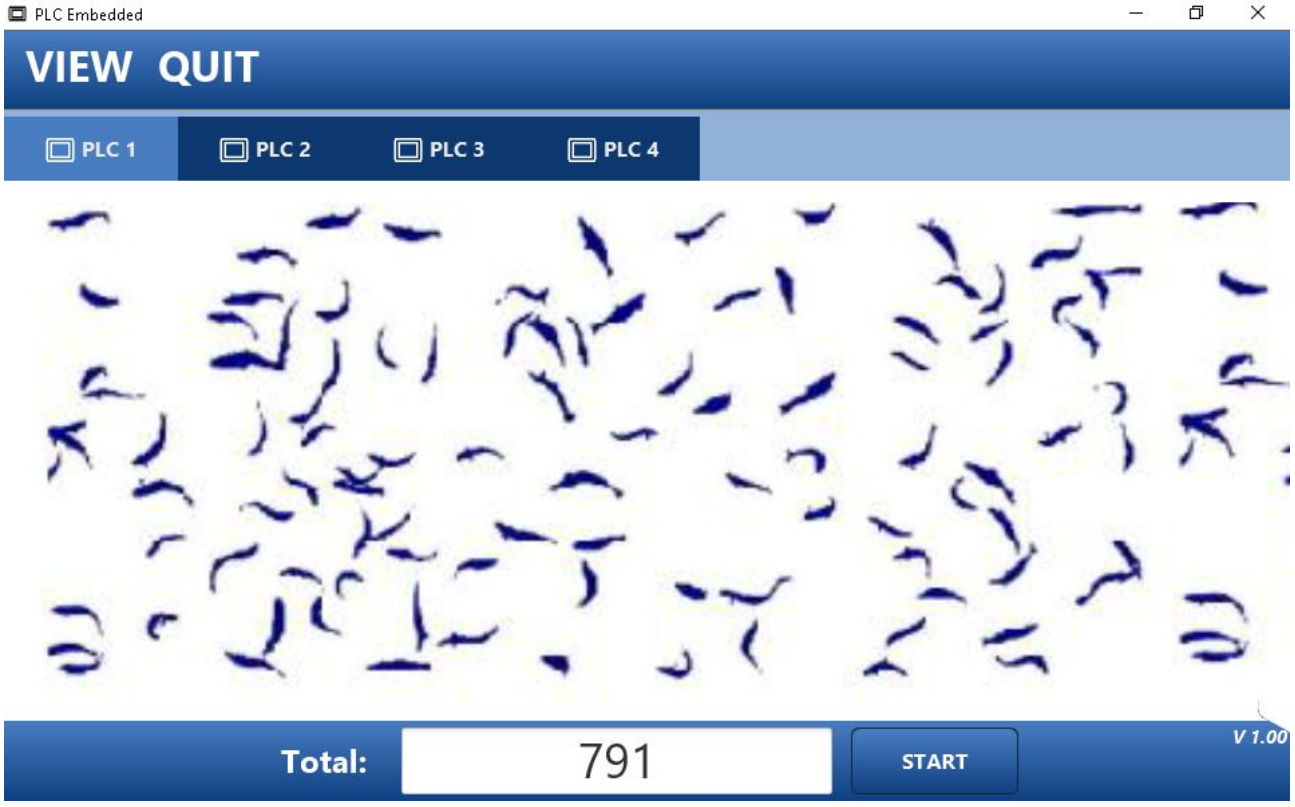
The Throughput view shows a graph of rate of fish passing through the counter the last hour. The Video tab shows the real time silhouette image of the scanning area. The graph updates every 15 seconds it shows how many went through since last.

Throughput View



Video View

In the view view you can monitor live silhouette view of the fish. The video will show a collected scans from the counter and display them ass silhouettes images. The frame will update every 3 seconds.



2.5. Reports View

Here you can see all the information to connect to the counter and monitor the counting session on the go. There are two ways of monitoring the counting session. On one hand you can do it via app on an Android or iOS device or via internet browser.

PLC Counting Report

Farm	**Stofn Fiskur**
Counted by:	**Solvi Sturluson**

PLC Name:	1001	**Date:**	**Thu Feb 22 15:21:07 GMT 2018**
		Total Count:	**51827**
Frames:	**1**	**Counting Time:**	**02:17**

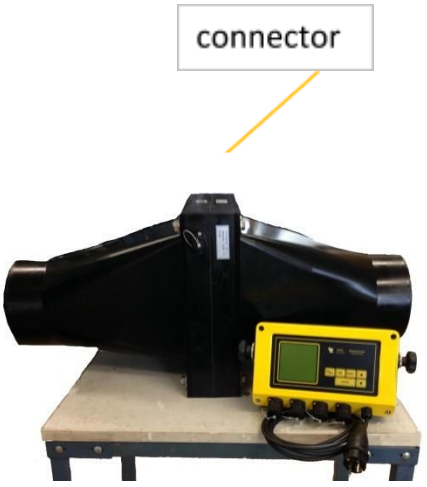
Frames Name	Weight sensitivity	Avg per/min	Total Count
PLC 1	< 10 g	378	51827

PLCs Fish/minute

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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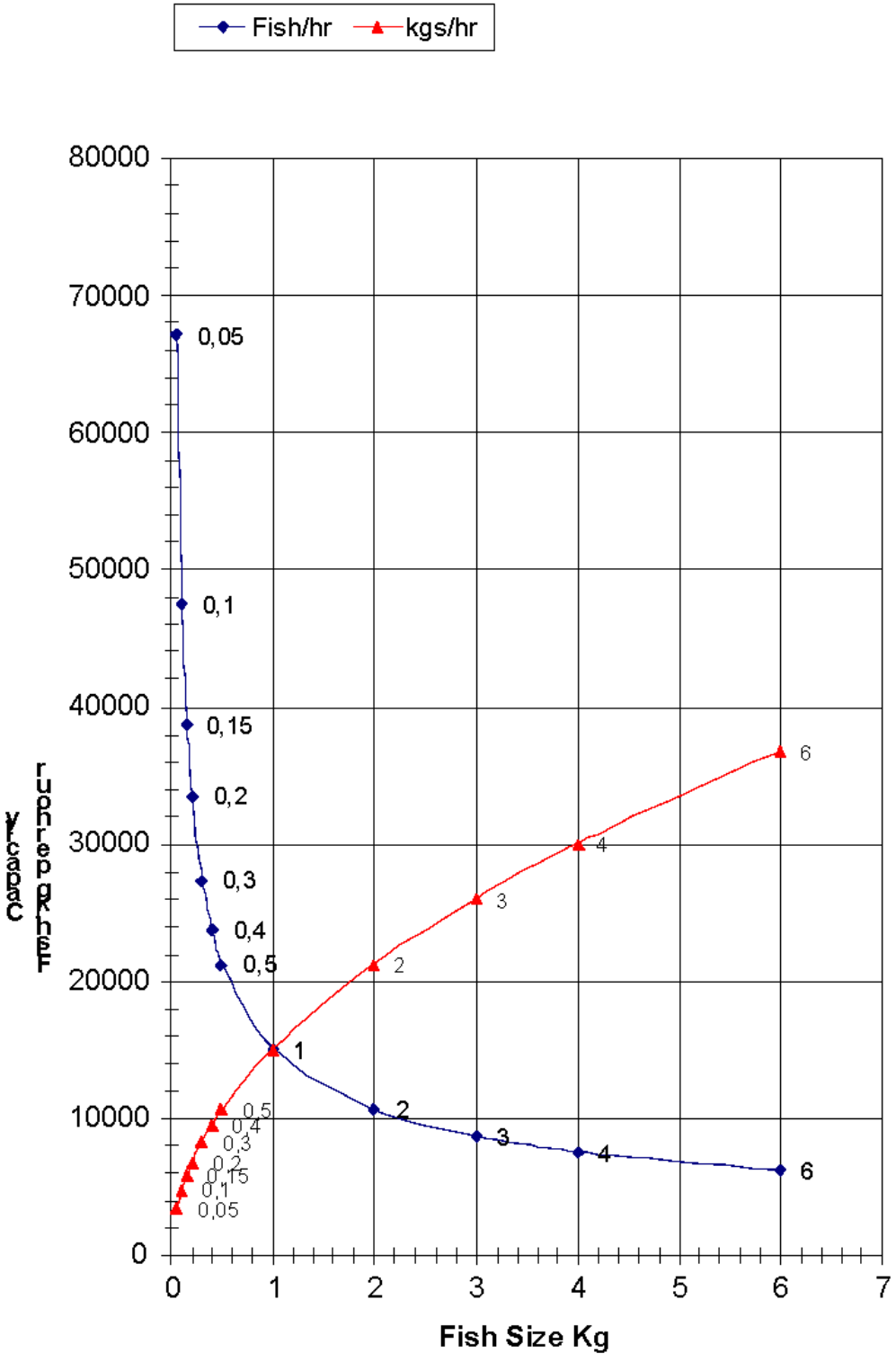
Operating environment:

Air temperature: 0° - 40° C
Sea temperature: 2° - 30° C


Fish/hr
kgs/hr
80000
70000
60000
50000
40000
30000
20000
10000
0
0,05
0,1
0,15
0,2
0,3
0,4
0,5
1
2
3
4
6
0
1
2
3
4
5
6
7
Fish Size Kg