

VAKI

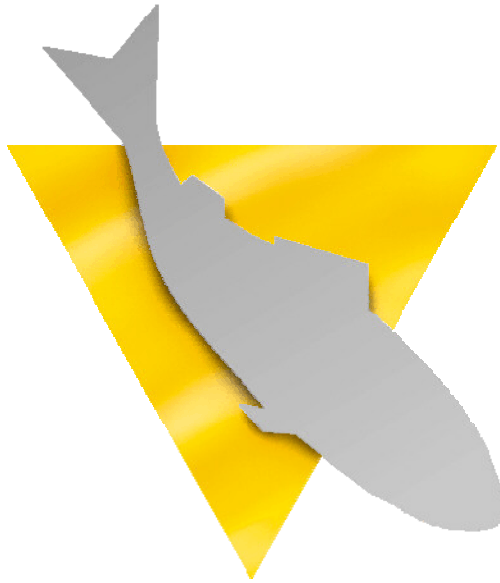
Biomass Counter

MANUAL



(ENGLISH)





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WARRANTY TERMS & CONDITIONS OF SUPPLY

Vaki Ltd. accepts liability for defects that appear within two (2) year from the date of delivery by Vaki, 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, material or manufacture of the equipment. Such defects will be rectified by repairing the equipment, or replacing components. Equipment must be returned to the factory.

Vaki accepts corresponding liability for original parts it has supplied 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 purchaser.*
- * *Defects due to changes made to the equipment by the purchaser, without the written consent of Vaki.*
- * *Faulty or inadequate repairs carried out by the purchaser.*
- * *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 display unit 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 buyer or user must report this in writing as soon as possible, and without unjustified delay, to Vaki or its appointed representative. Such report must be sent, at the latest, within two (2) weeks from the expiry of the deadline, one (1) year from date of supply.

If the purchaser does not inform Vaki or its representative within the time limits stated above, the purchaser shall forfeit the right to claim compensation for faults or defects. Repair of the equipment shall be under the terms indicated above.



LIST OF ITEMS

- 1) Scanner frame with hanger and main cable



- 2) Display Unit with power unit



- 3) Silicon compound for protecting connectors



- 4) Battery cable for connecting DU



- 5) Data cable (9 pin)



- 6) Software CD



- 7) Blue Tooth Palm Top (Valgfritt)



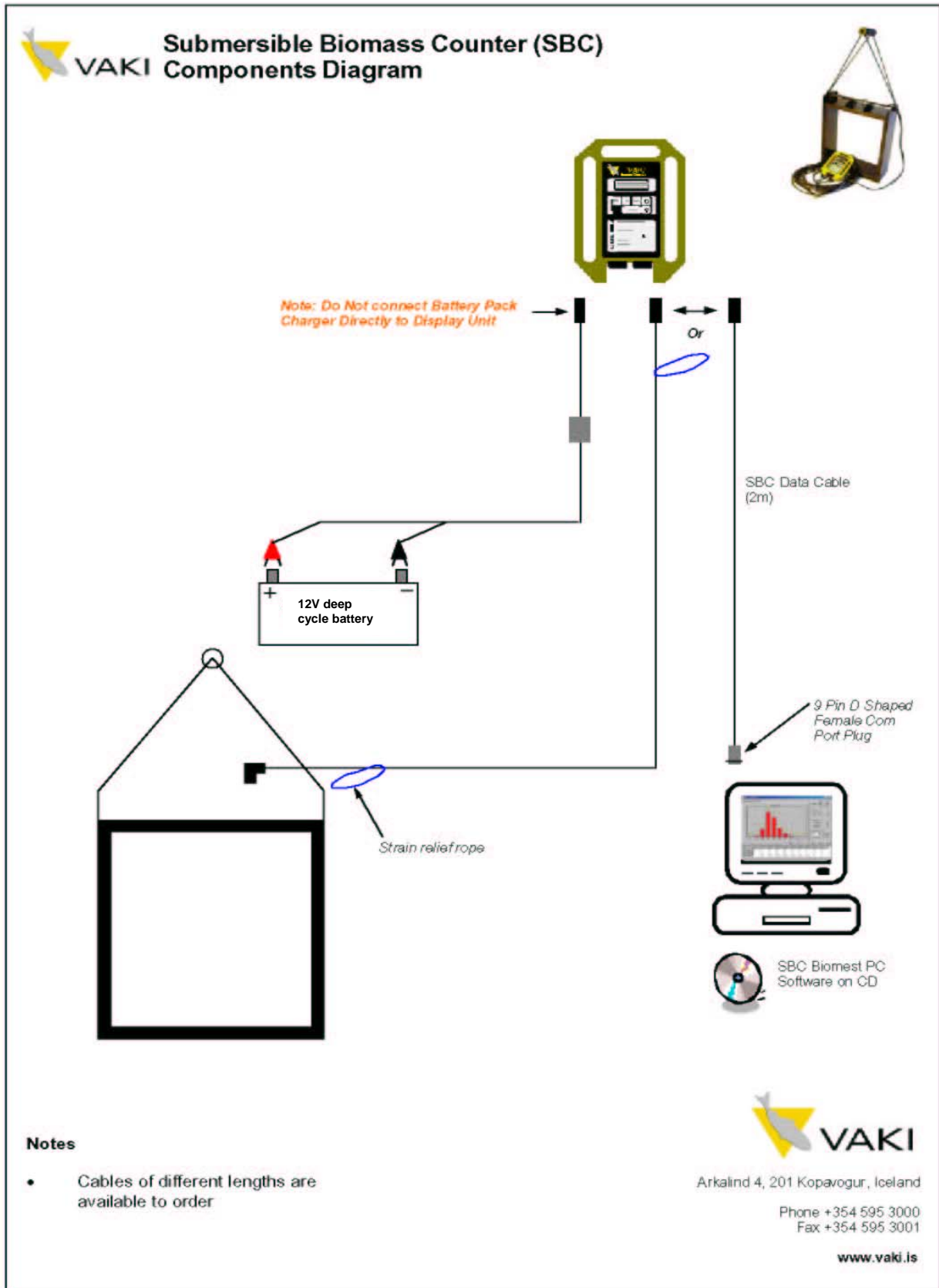
ADDITIONAL ITEMS REQUIRED

- 1) Securing rope
- 2) Deep cycle battery
- 3) Battery charger

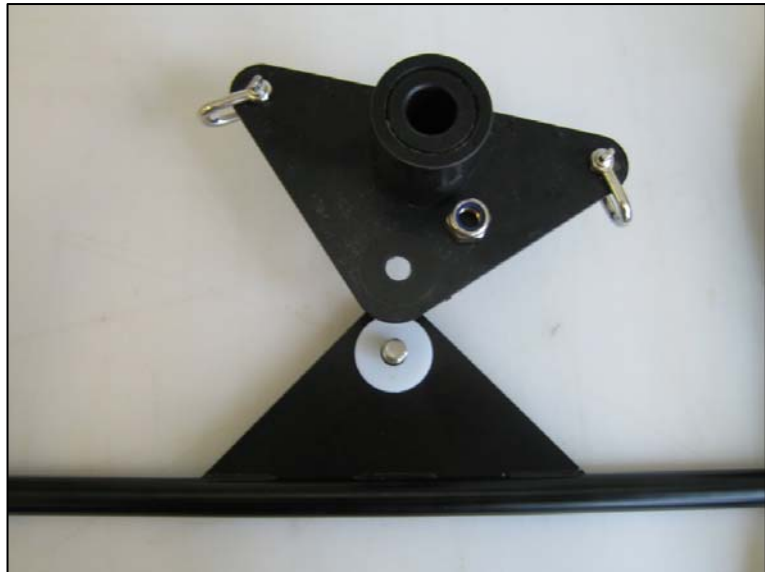


SET UP

To prevent corrosion of ensure the male connectors on the main and power cables are packed with silicon before connecting. It is good practise to leave the main cable connected to the frame. When not in use or submerged avoid leaving the frame in direct sunlight.



SET UP



Ensure that hanger unit is assembled with the nylon washer between the 2 triangular plates. As shown above.

The plates should be able to move freely when assembled to allow the frame to self-centre in the water.

1. PREFACE

Vaki Ltd thanks you for choosing the Vaki Submersible Biomass Counter (SBC). More and more aquaculture enterprises are using the Vaki SBC to assist with their day-to-day production and management. An accurate knowledge of the average weight and size distribution of the fish in each pen is the basis for success in today's industry.

Vaki's Biomass Counter has been developed in collaboration with some of the world's largest aquaculture enterprises. It is currently being used for size measurements and counting of, Salmon (Atlantic and Pacific), Trout, Cod, Char, Sea- Bass and Sea-Bream and Yellowtail. Vaki is constantly adapting the counter for use with more species and developing the system to cover more functions.

The SBC system is based on the use of infrared light beams that form a grid inside the Scanner Frame. Each time a fish swims through the frame, this grid is broken and an image of the fish is generated. The image is then used to measure the length and height of the fish, and the weight (W) is then calculated using the following formula:

$$W = c \frac{d * l^2}{1000} \quad (\text{Were } c \text{ is a constant, } d \text{ is the depth of the fish and } l \text{ is the length})$$

A similar formula can be used for calculating the condition factor (C_f):

$$C_f = a \frac{d}{l} \quad (\text{Were } a \text{ is a constant, } d \text{ is the depth and } l \text{ is the length})$$

The constants in this simplified formula depend on the fish type. For instance the constant in the weight formula for Salmon and Trout is generally 7.0 – 8.0 (default value for salmon 7.30) depending on the stock and the locality. For salmonid fish, the constant in the condition factor formula is 0.515 (see table below for other species)

Species:	Weight const. (c)	Cond. Const. (a)
<i>Salmon</i>	7.30	0.515
<i>Rainbow Trout</i>	7,60	0,515
<i>Arctic Char</i>	7,30	0,515
<i>Sea-Bass</i>	6.80	0,430
<i>Sea- Bream</i>	8,90	0,430
<i>Yellowtail</i>	9,30	0,430
<i>Tilapia</i>	<i>In trial phase</i>	<i>In trial phase</i>

This manual is a guide to the use of the Vaki Biomass Counter. Chapter 2 contains some hints on precautions and procedure; Chapter 3 describes the functions of the Control Unit when the Scanner Frame is connected and Chapter 4 covers the use of the Control Unit when it is disconnected from the Scanner Frame. Chapter 5 contains Technical Specifications and Chapter 6 Troubleshooting tips.



2. BEFORE YOU START

Attention should be given to the points in this Chapter when using the biomass counter

2.1. CURRENTS AND TIDES

It is important to realise that strong currents and tides may have an effect on the time it takes to get a good measurement. Position the frame so there is no danger that the net will be moved into the frame by the current, and also so that the frame is at right-angles to the direction of the fish.

2.2. COMPARISON OF MEASUREMENTS

Vaki's SBC calculates the weight of fish swimming in the water. Therefore, when comparing these figures with the harvesting results, it is important to know how much weight loss occurs after feeding is stopped and when harvesting takes place. The figures below apply to salmon other figures apply to other species.

Table: Relation between wet, round and gutted weight

Condition	% of wet weight	% of harvest weight	% of round weight
Fish wet weight	100%	125%	111%
Starving before harvesting (10 days at 7°C)	4%		
Weight after starving	96%	120%	107%
Losses due to bleeding	5%		
Typical overweight in box	1%		
Weight Round fish	90%	112%	100%
Gutting losses	10%		
Weight of gutted fish	80%	100%	90%

Source: Norsk fiskeoppdrett 7/95

Loss of weight after feeding is stopped

The higher the temperature, the quicker fish digest. For example, at 12°C they take about 24 hours to digest food, but at 2° it takes 10 days for the food to be completely broken down and absorbed. When fish are to be harvested, feeding is normally stopped 10–14 days beforehand, as a result of which their digestive tracts are emptied and their flesh acquires a firmer consistency. The content of the digestive tract normally accounts for 2% of the weight of a fish, while the weight loss due to energy consumption as a result of the lack of feed is 0.2% per day at a water temperature of 7°C. Thus, the overall weight loss for a period of 10 days without food comes to 4%.



Weight loss due to bleeding

When a fish is harvested, the jugular is cut and the blood is allowed to drain out. In the case of salmon, 5% of the total weight is blood; hence the weight loss is 5%.

Weight loss due to gutting (gutting drop)

The entrails are removed and traces of blood are washed away. In the case of salmon, the entrails account for 10% of the total weight.

Reject, Superior, Ordinary, Production, Sexual Maturity

When comparing harvesting results with measurements from Vaki's Submersible Biomass Counter, it is important to note that the counter records fish in the following categories: Production, Ordinary and Superior. Similarly, it is also possible to have sexually mature fish recorded specially. Thus it is important to include reject fish in the comparison.

When only some of the fish in a pen are harvested

The Submersible Biomass Counter makes its measurements on the basis of all the fish in the pen. If not all the fish in the pen are harvested, there is a danger that the basis for the comparison will no longer be the same, and so the harvest results and the measurements from the counter will not correspond.

2.3. EFFECT OF SAMPLE SIZE AND DISTRIBUTION

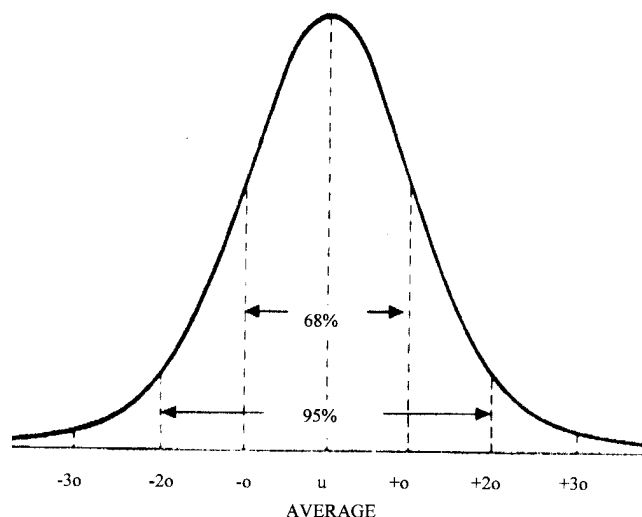
For accurate measurements, it is necessary to use a large enough sample. According to statistical theory, the size of the sample depends on the standard deviation in the population, i.e. how great the variation is within each size range. By using statistical methods to calculate how big the sample needs to be, we used power analysis on a population with normal distribution, 0,05 confidence level and 90% probability. In other words, in nine out of ten samples (90% probability) we wish to tell with 95% certainty (0,05 confidence level) that the difference between the sample and the total population is less than x%. It is important to bear in mind that these calculations are valid for all methods used to sample data, whether they are based on manual sampling, the use of biomass counters or other methods.

Large samples are needed for high accuracy

According to statistical theory, for a population (all the fish in a cage) with an average weight of 3.0 kg and a standard deviation of 1.2, a sample of at least 9,600 fish will be needed to be able to say that, given these premises, the difference is not more than 1%, i.e. that the measurement is 99% accurate.

If 97% accuracy is required; a sample of 1,100 fish will be needed. For 95% accuracy, 400 fish are needed, and if the sample consists of only 100 fish, then only 90% accuracy can be expected.

Normal probability curve and Standard deviations



Rule of thumb (if $w = 3$ kg and $sd = 1.2$)

For 99% accuracy you need 9600 fish in a sample
For 97% accuracy you need 1100 fish in a sample
For 95% accuracy you need 400 fish in a sample
For 90% accuracy you need 100 fish in a sample

Effects of fish behaviour on the weight results

It is well known that salmon (and other species) have tendencies to gather in groups, which can be unevenly located in the pen, especially if the pen is large. If such situation occur it's recommend that measurements should be taken from two or more location in the pen and that a larger sample should be taken, in order to get a sample that represents the population. Sometimes fish stratifies into layers depending on size, it therefore necessary to observe fish behaviour carefully in order to get the more accurate weighing samples. NB, in the autumn when light and temperature begins to change, salmon has grater tendency to stratify.

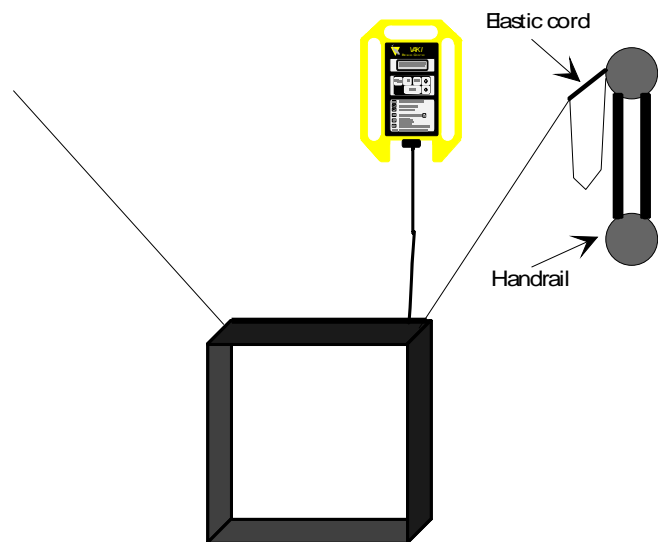
2.4. PRACTICAL TIPS

To speed up measurements (measure more fish in a shorter time):

- * Raise the net
- * Feed the fish near the Scanner Frame
- * Move the frame to where the fish are grouped closer together or are moving around more
- * Place the frame at right-angles to the direction of the tide.

We do not recommend using the Biomass Counter in really bad weather when there is a heavy sea and the pen is moving around a lot, as it may result in unreliable measuring data.

If however it is necessary to make measurements in marginal conditions, there are ways of reducing the movements of the frame. For example, use an elastic cord to fasten the cord from the frame to the handrail, making sure that it is sufficiently elastic to offset the movement of the frame. (See the figure below.) Another method is to have an elastic cord about 10 cm long connecting the two top corners of the frame to the supporting ropes.

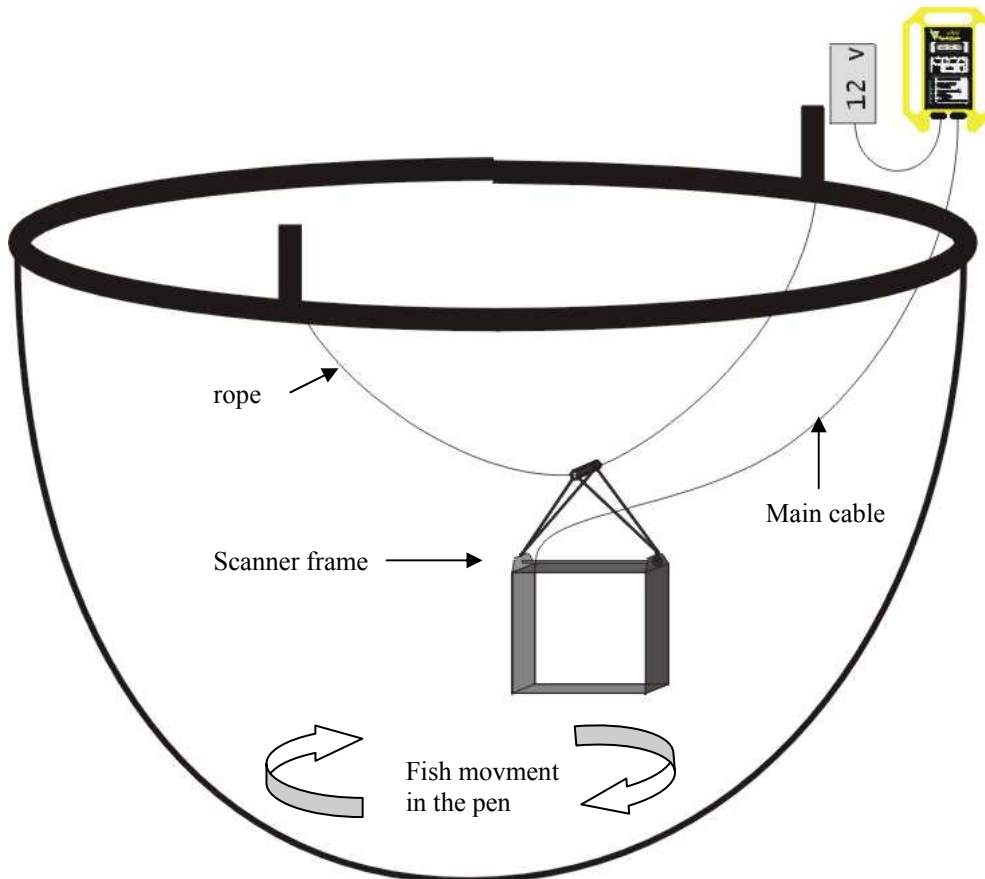


3. USING THE SBC

Note!! Check battery charge before leaving shore.

Before submersing the Scanner Frame, fasten the cable protection cord on the unconnected end of the cable to the handrail of the cage to prevent the connector plug on the cable from falling into the sea.

The Scanner Frame should be positioned in the "normal" swimming pattern of the fish in the cage, with the frame opening into the tide current. For a 12m x 12m square cage, the Scanner Frame should be positioned about 5-8 metres deep, 2-3 meters from the side, in the middle of one of the sides of the cage. (See picture below).



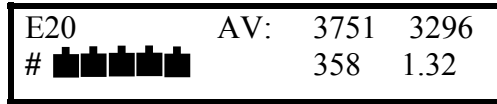
Use knots, or other marks, on the supporting ropes to measure the depth of the Scanner Frame. It is also possible to put a float on top of the frame to make it easier to check the depth.



3.1. WEIGHING PROGRAM





When the yellow Display Unit is turned on and connected to the frame, the last measurement will be shown:



The numbers are an example

In this case the numbers indicate the following:

E20	The Pen ID
AV: 3751	Average weight of the sample (only displayed after 100 fish weighed)
3296	Weight of the last fish measured
358	Number of fish in the current sample
1.32	Condition factor (Cf) of last fish measured
	The  pattern changes, indicating a fish has swam through the frame also indication of battery level.
#	Flashing # indicates signal is transmitting from the frame

The DU will display individual measurements for the first 100 fish accepted through the scanner. Average weight and number of fish is not displayed until 100 fish or more have been accepted.

With the Display Unit **connected to the frame**, it is possible to choose between 5 functions. This is done by pressing **FN** on the Display Unit, after which you can scroll through the menu by using the arrows. The menu consists of:

SELF TEST . . .
ATL. SALMON.

- 1) **PRESS ENTER TO:**
CHECK SYSTEM
↑↓
- 2) **PRESS ENTER TO:**
MARK NEW PEN

To check that all infra-red light diodes are functioning properly

To separate two measurements done after each other



3.1.1.

PRESS ENTER TO:
CHECK SYSTEM

This function is used to check whether all light diodes in the frame are functioning properly. With the frame on land and no obstructions in front of the diodes inside the frame, press **FN**. The following will be displayed:

□□□□□□□□□□□□□□□□
□□□□□□□□□□□□□□□□

If some of the boxes shown are black ■, there may be something blocking the diodes or possibly a frame fault. Make sure the windows are clean and nothing is blocking the diodes inside the frame. If problem persists then please contact Vaki or your local distributor.

3.1.2.

PRESS ENTER TO:
MARK NEW PEN

When sample weighing in one cage is finished and you wish to sample from another cage without downloading current data to a PC, press the **FN** button and ↓ once, and the following message will appear:

PRESS ENTER TO:
MARK NEW PEN

When **ENTER** is pressed, your previous measurements disappear from the display and you can start sample weighing in a new pen. The old measurements are stored in the memory.

PEN ID: A00

To change the pen id, press the arrows to change the first digit then press **ENTER**. Continue to the next until the right id is displayed. The new pen id is displayed on the screen

A03
□□□□□

3.1.3.

RESET

To reset all data in the DU and Frame memory: Press **RESET** and the display will show:

PRESS ENTER TO:
! CONFIRM RESET

Press **ENTER** to confirm that you want to reset all data in the memory; if not, press any other button.



3.2. STORAGE

Always store the Display Unit in a clean, dry place, where temperature fluctuations are not great.

- * Keep the cable connected to the frame at all times.
- * Keep the protective connector cap on the other end of the cable.
- * Clean the windows, inside the frame, with a soft cloth and some warm soapy water. If the windows are very dirty you can clean them with ethanol or some disinfectant. You must bear in mind that the seawater scatters and absorbs a part of the scanning beam in the Scanner Frame and therefore it is necessary to keep the frame windows clean.

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



4. PROCESSING SAMPLED DATA

When the Display Unit is **disconnected** from the frame and turned on, the following message will appear:

CONNECT FRAME

Or

CONNECT EXT BAT
05 01 29 12 :13

The following menu is available on the Display Unit by pressing **FN**.
Scroll through the menu by using the arrows and select by pressing **ENTER**

PRESS ENTER TO:
EVALUATE DATA

↑↓

PRESS ENTER TO:
PROG. VERS.

↑↓

PRESS ENTER TO:
VIEW REJECTS

↑↓

PRESS ENTER TO
SET LANGUAGE

↑↓

PRESS ENTER TO
SET PARAM.

↑↓

PRESS ENTER TO
PRGRM BLTH

To view the number of fish and the av. weight of the sample.

View program version and voltage to the DU. Button test

Number of fish rejected by the frame, and the reason.

To change display into Norwegian, Spanish or English text

To change the parameters from default to user defined.

To set up blue tooth connection to be used by authorised service engineer



4.1.

PRESS ENTER TO:
EVALUATE DATA

To view the average weight, press **FN** on the Display Unit and then **ENTER**. The Display Unit will show the averages of weight and Cf. only if over 100 fish have been measured. If more than one pen has been marked, the number of the measurement (PEN#1, PEN#2...) is shown. By using the arrows you can scroll through the measured pens on the Display Unit.

PEN# 1	A01	683
Wgt:	4471	Cf: 1.21

PEN#1 indicates that it is the first measured pen that is being viewed on the Display Unit
 A01: indicates the pen identification given when marking new pen
 683: indicates the numbers of fish in the sample
 4471: indicates the average weight in the sample
 1.21: indicates the average condition factor in the sample

4.2.

PRESS ENTER TO:
PROG. VERS.

To check program version running in the Display Unit and display the voltage, press **FN** and **↓** until you see the prog. vers. screen then press **ENTER**. The following will be displayed on the screen:

Program Version	→	A: 8.05	B:1.04	8.9	←	Voltage
					←	Frame Program Version

To check that all the buttons are operating on the DU by press any key to change a digit which appears in the top left hand corner of screen. **To exit this function you must turn the Display Unit off.**



4.3.

PRESS ENTER TO:
VIEW REJECTS

To look at the reasons why fish are rejected from the measurements, press **FN**, then press \downarrow until you see the view rejects screen then press **ENTER**. The following will appear on the display:

PEN#	1	683	68	1
	12	15	22	9
			4	

683: The number of accepted fish = 683

68: The % of accepted fish against the total number of fish accepted and rejected. Therefore 68% = 683 fish, Total number of fish = 1000, Total number of rejects = 317 fish

1: Indicates screen 1 reject reasons 1-5

12: 12% of rejects for reason 1

15: 15% of rejects for reason 2

22: 22% rejects for reason 3

9: 9% rejects for reason 4

4: 4% rejects for reason 5

Press ENTER to select screen 2 for reject reasons 6-10.

PEN#	1	683	68	2
	8	15	22	9
			4	

Reasons for Rejects

1 = The fish stays too long inside the frame

2 = Uneven speed

3 = Two fish or more side by side

4 = The fish turns round in the frame

5 = Image of fish distorted

6 = Rejected because of too high / low condition factor, i.e. two fish together or the fish do not swim straight through the frame

7 = Two fish together, top view

8 = Two fish together, side view

9 = Fish too low inside the frame, not a complete image

10 = Uneven speed

The reject rate is usually 50 - 60%.



4.4.

PRESS ENTER TO:
SET LANGUAGE

To change the language on the display, press **FN**, then press \downarrow until you see the set language screen then press **ENTER**. The following will appear on the display.

PRESS ENTER TO
ENGLISH

Scroll through using the \downarrow key and press **ENTER** on the language you wish to appear on the display unit.

4.5.

PRESS ENTER TO:
SET PARAM.

The Biomest weighing program is set for Atlantic Salmon as default. The values of the constants used in the formulas for calculating weight and condition factor are as described in Section 1. Preface.

To change the constants or the minimum and maximum condition factor accepted by the frame press **FN**, then press \downarrow until you see the set parameters screen.

Use the \downarrow to toggle between Atlantic Salmon settings (default) and user defined settings:

PRESS ENTER TO:
ATL SALMON

$\uparrow\downarrow$

Press enter to select the default values for Atlantic Salmon.

PRESS ENTER TO:
USER DEFINED

ENTER

Press enter to define constants or max/min condition factor settings.

Const 1:
7.30

ENTER

Use $\downarrow\uparrow$ to change the value of the constant used in the weight formula.

Const 2:
0.515

ENTER

Use $\downarrow\uparrow$ to change the value of the constant used in the condition factor formula.

Cf. min:
0.85

ENTER

*Use $\downarrow\uparrow$ to change the **Minimum** condition factor accepted into the frame.*

Cf. max
1.65

*Use $\downarrow\uparrow$ to change the **Maximum** condition factor accepted into the frame.*



5. USING THE COLOUR SCREEN DISPLAY

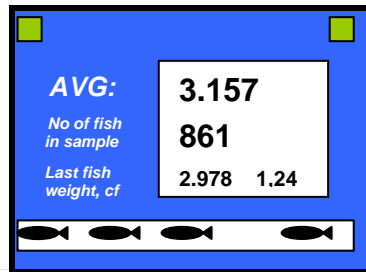
5.1.



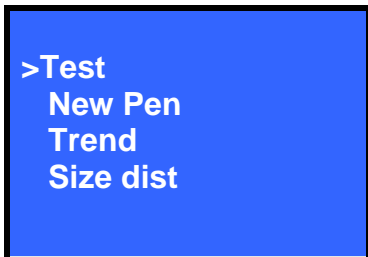
With the Colour Display control unit connected to the frame there are 4 functions available. Enter the functions menu by pressing the **FN** scroll thru the funtion using the arrow keys $\uparrow\downarrow$ press the **ENTER** key open the funtion .



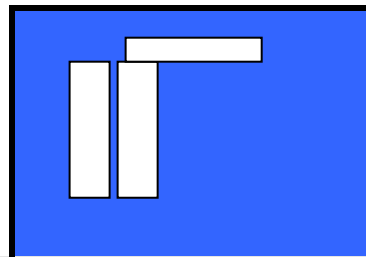
Press **FN** for Menu selection



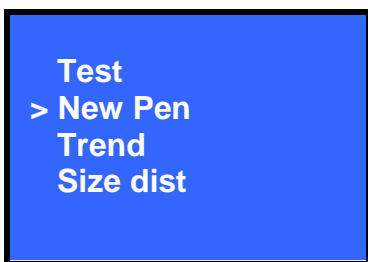
After a minimum of 100 fish average weight , total number of fish in sample, weight and condition factor of last fish is shown on display.



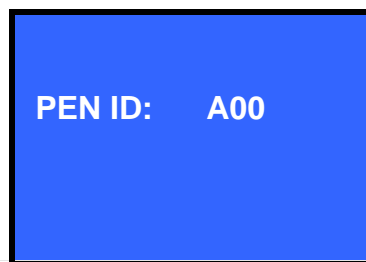
Press **ENTER** for System check



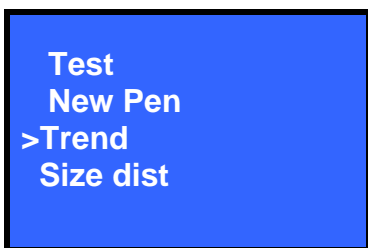
The 3 rectangles represent the 3 sets of diodes in the frame. If something is blocking the diodes or there is a diode failure black squares will be displayed.



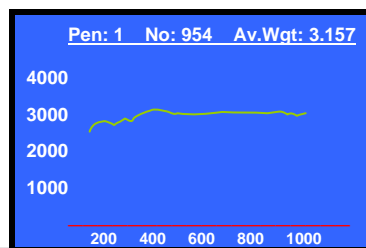
Press **ENTER** to start a new measurement



To start a new measurement use arrows to give the ID name and press **ENTER** to confirm.



Press **ENTER** to look at trend graph

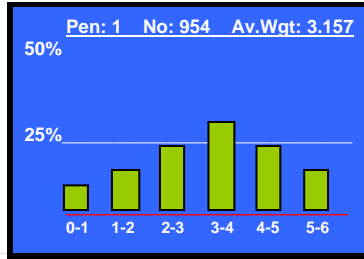


Shows the trend in the average weight. The number of fish shown on the x-axis and weight on the y-axis. When the line flattens out, the sample is large enough.



Test
New Pen
Trend
>Size dist

Press **ENTER** to
view size
distribution



To view the size
distribution of the
sample of fish
measured.

5.2



When the Display Unit is **disconnected** from the frame and turned on, the following menu is available on the Display Unit by pressing **FN**.

Scroll through the menu by using the arrow keys $\uparrow\downarrow$ and select by pressing **ENTER**



Press **FN** for
Menu selection



>AVERAGE
SIZE DISTR.
VIEW REJECTS
SETTINGS
PRGRM BLTH

Five options when
the display unit is
disconnected from
the frame. .

> AVERAGE
SIZE DISTR.
VIEW REJECTS
SETTINGS
PRGRM BLTH

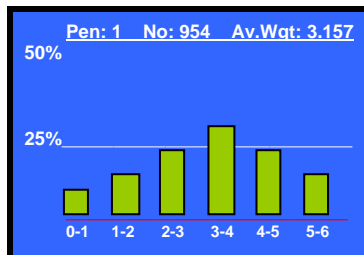
Press **ENTER**
for average
weight

PEN# 1 A04
Wgt: 3.251
Cf: 1,23

Display will show the
sample measurement
number and ID, the
average weight and
condition factor for
that sample.

AVERAGE
>SIZE DISTR.
VIEW REJECTS
SETTINGS
PRGRM BLTH

Press **ENTER**
for size
distribution



Displays the size
distribution for each
sample in the
memory

AVERAGE
SIZE DISTR.
>VIEW REJECTS
SETTINGS
PRGRM BLTH

Press **ENTER**
for rejects

PEN# 1 A04
Meas.: 954 90%

1	2	3	4	5	6	7	8	9	10
21	7	14	25	11	18	2	8		

Displays the number
of fish and % of fish
passing through the
frame that were
accepted. Also the
% of fish rejected for
specific reasons
refer to section 4.3
in this manual.



AVERAGE
SIZE DISTR.
VIEW REJECTS
>SETTINGS
PRGRM BLTH

Press **ENTER**
for System
settings

Press FN and
arrows to select
settings, confirm
pressing
ENTER

```

LANGUAGE: FISH TYPE      EXIT
ENGLISH      ATL.SALMON
ESPANOL      USER DEFINED
NORSK

Cf max  1,65
Cf min  0,85
C1      7,3 e-03
C2      0,51
    
```

To select the language and to choose between the standard salmon program or custom measurement program.

AVERAGE
SIZE DISTR.
VIEW REJECTS
SETTINGS
>PRGRM BLTH

Press **ENTER**
for Blue Tooth
settings

AVERAGE
SIZE DISTR.
VIEW REJECTS
SETTINGS
>PRGRM BLTH

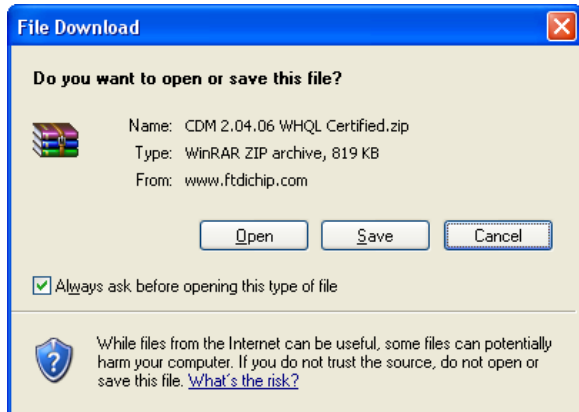
For Vaki service engineers to input Bluetooth settings.

USB connection to Biomesst colour display unit.

To install the driver for the Biomesst USB connection log on to web page

<http://www.ftdichip.com/Drivers/CDM/CDM%202.04.06%20WHQL%20Certified.zip>

The following screen will appear:

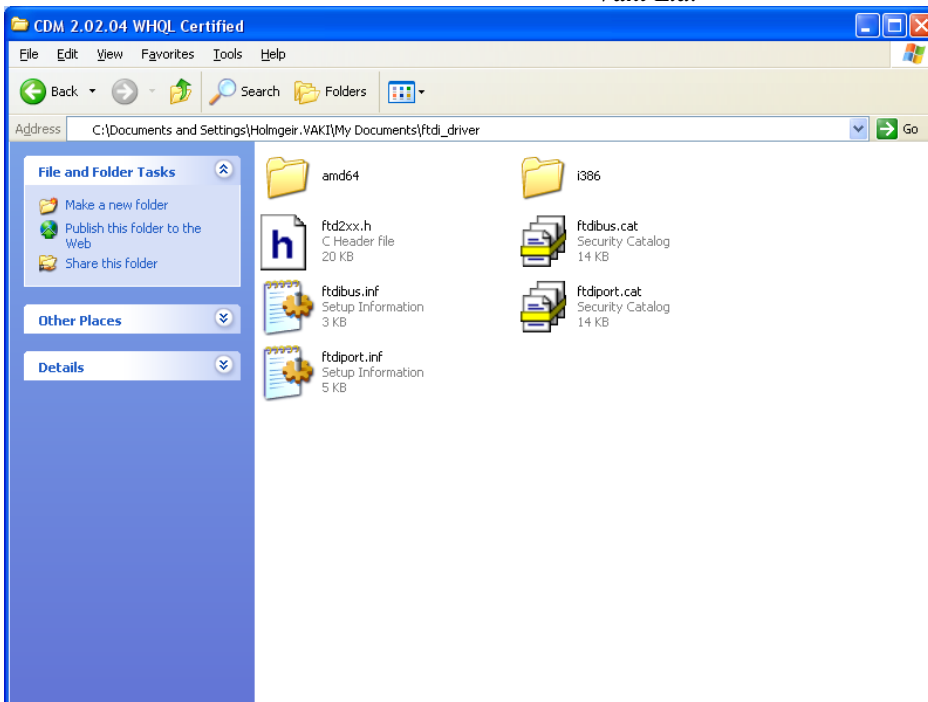


Select “Save” and you will be prompted for a location to save the file. You can select for instance “My documents\ftdi_driver”. After the file downloads, open the folder and unzip the file.

Alternatively load the files from the CD-rom supplied with your system.

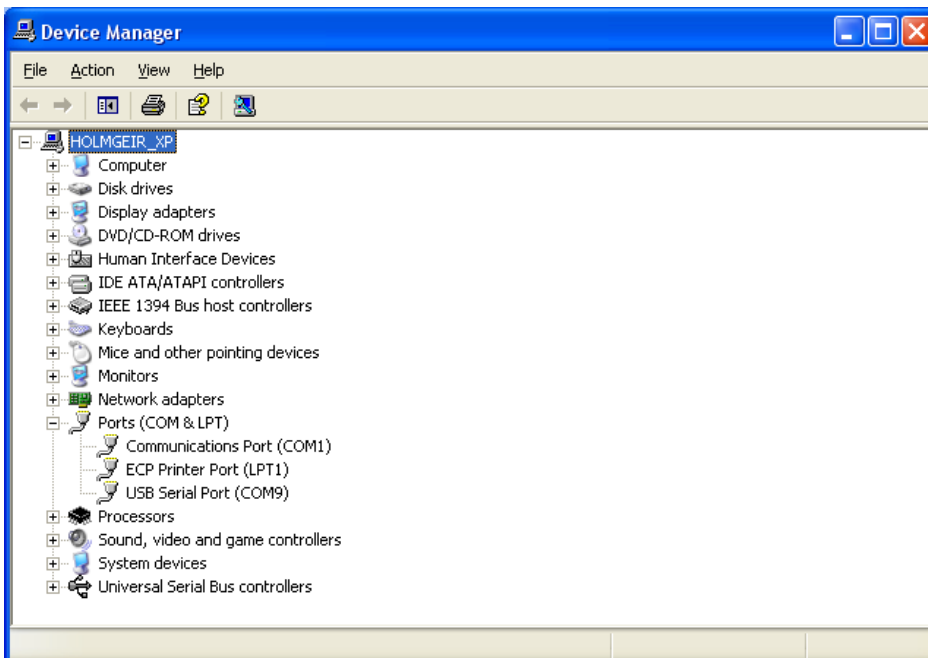
The directory now should contain





Now connect the display unit to your PC using the special USB-to-DU cable supplied, the PC should detect the new hardware and open the “Found New Hardware Wizard”. Instruct the wizard to look for the driver at the specific location “My documents\ ftdi_driver” and the wizard should finish installing the necessary drivers .

Finally, open the device manager (under *settings, control panel, system and hardware*) and check the Ports (COM & LPT). You should see among the ports a USB Serial Port as in the picture below:



Windows may have assigned the USB serial port to some inconvenient port number, like no. 15. Click on the “USB Serial port” select *Port settings* and *advanced* and change the port number to something the Biomes program can use (1-8)

Finally, open the Biomes program, and in *settings*, select the com port used used for the USB serial port.



6. TROUBLE SHOOTING

If the SBC seems to be out of order, please our local agent or Vaki direct.

1. With the fame connected to the display select the Check system function and ensure all boxes are clear and that the # icon is flashing.
2. If one or more boxes are black then there may be blocked or broken diodes. Check the frame is clear and make sure the inner surfaces of the frame are clean. (Use a soft brush or a cloth and water to clean). If problem persists then contact the local service agent or Vaki directly.
3. If the # icon is not flashing this suggests there is no signal between frame and DU. Check or replace main cable if problem persists contact Service agent or Vaki.



4. If no fish are registered after a long sample time, take the frame out of the water and put some fish-like objects through the frame and check to see if the pattern on the display changes. If it changes, the frame is operative. You may have to try this a few times to evaluate the operation
5. **Note that the re-chargeable internal battery will only power the DU and NOT the frame.** If the DU continues to switch off this small internal battery may require recharging or replacement.

DOWNLOAD UPGRADES INTO VAKI BIOMEST DU + FRAME

Both the display unit (DU) and frame have a software program. The software may be upgraded to incorporate changes, modifications and improvements. The DU + Frame software normally come bundled together and can be downloaded via the vaki website www.vaki.is.

Download the upgrade into the DU using the data cable to connect the DU and a PC:

In Windows XP...

Double click the download and select SAVE and chose a location to save it.

Then go to the folder/location where the ZIP file is saved.

Right click it then select EXTRACT ALL

Click NEXT twice and it will create a subdirectory with the extracted folders.

Open this folder so you can view the files.

With the DU switched on double click on DUUPGRADE (the one with a VAKI Logo) to run the upgrade Software.



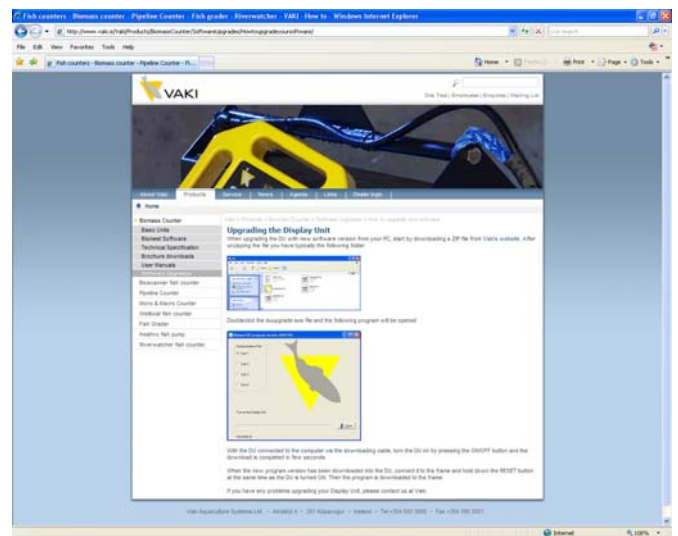
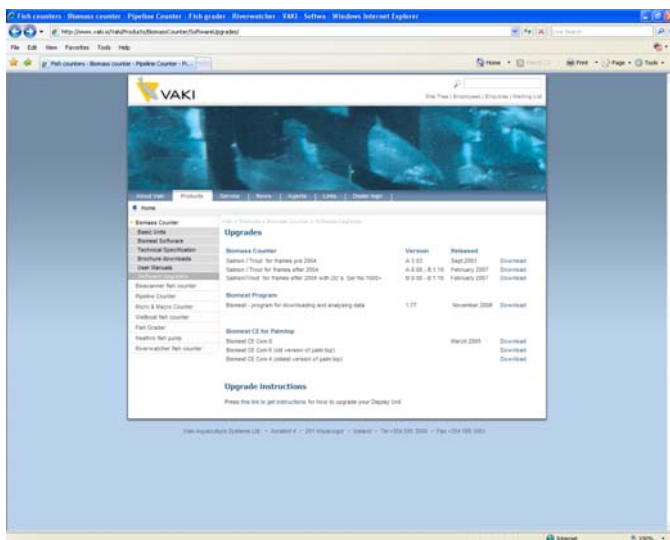
Upgrades for Vaki Biomass Frame and Display Unit

Both the display and frame have a program. The software can be upgraded with latest version of the program for both the frame and display downloaded from the Vaki website www.vaki.is

<http://www.vaki.is/Vaki/Products/BiomassCounter/SoftwareUpgrades/> the bottom of this page is a link with instructions for upgrading the latest software.

See instructions for upgrading the software on the Web.

<http://www.vaki.is/Vaki/Products/BiomassCounter/SoftwareUpgrades/Howtoupgradeyoursoftware/>



Download the Upgrade in to the frame:

Connect the Frame + DU with DU switched off. (DU must also be connected to the mains or a 12V battery)

Press+ Hold the RESET button on DU and switch DU on.

The frame software will be loaded and you will see a countdown from 100 to 0 on the display this takes around 4-5 minutes.



7. TECHNICAL SPECIFICATIONS

Display Unit:

12 V DC internal battery.

- The fully charged battery suffices for 16-hours' operation.

Weight: 4,5 kg.

Index of protection. IP 65.

Scanner frame:

Dimensions: 595 x 655 x 215 mm.

Weight: 17 kg.

Power supply from the Display Unit.

Water resistant to a depth of 30 metres.

Specifications:

Weighing mode: (Sample weighing)

Sample time: 4-24 hours.

Sample size: 300 fish or more are recommended

Average weight with less than 2% error.

Minimum fish size for accurate operating results: 100 gr.

Sample capacity: ~ 5.000 fish

Operating environment:

Outside (air-) temperature: 0° - 40 °C

Sea temperature: 2° - 30 °C

