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Final Document

完 工 资 料

Oil Discharge Monitoring and Control System

排油监控

Model: CLEANTRACK 1000B

FOR

浙江振兴船舶修造有限公司

6300DWT 沥青船

Hull No.:ZX2306

M23192

Version(A.0)

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Chapter 1 Introduction 简介

The Oil Discharge Monitoring System, Cleantrack 1000 B, has been designed to provide means of monitoring, recording and controlling the ballast discharge in accordance with the requirements in Resolution MEPC.108(49) as amended by Resolution MEPC.240(65) and is also approved for Bio-fuel blends in accordance with MEPC.1/Circ.761 as revised.

CT1000 排油监控系统根据 MEPC.108（49）和 MEPC.240(65)决议规范设计，用于检测和记录控制洗舱水的排放，同时满足 MEPC.1/Circ.761 决议，适用于生物混合燃料。

The requirements of the MARPOL Convention are that all oil tankers with a gross tonnage of 150 GRT and above must have an oil discharge monitoring and control system installed with an automatic overboard valve control system.

按照 MAPPOL 公约要求，所有总吨位超过 150 吨的油船都必须配备一个带自动排舷外阀控制的排油监控系统。

The requirements in Resolution MEPC.108(49) as amended apply to tankers with a date of keel laying or equivalent stage of construction of 1st of January 2005 or later. Tankers with a keel laid before 1st of January 2005 should comply either with these new or the older Guidelines and Specifications.

MEPC.108(49)决议的要求适用于在 2005 年 1 月 1 号以后进行铺设龙骨或者处于类似施工阶段的船舶，龙骨铺设在 2005 年 1 月 1 号以前的船舶可遵守新的或者旧的规范。

Discharge limits are set at 30 liters per nautical mile and a total discharge expressed as a proportion of the previous cargo for dirty ballast. The unit has also a 15 ppm mode intended for clean ballast.

排放限值是 30 升/海里，且排放总量参照之前货油量的载重比例。系统还配置有 15ppm 清洁压载模式。

The recording device is formatted electronically as mentioned in MEPC.108(49) chapter 6.9.1. Recorded data is stored in a non-volatile memory and can hold approximately 4.000.000 printouts. Optionally a paper printer can also be installed in the computer unit.

记录装置如 MEPC.108(49) 6.9.1 章以电子格式化，记录数据存储在不易丢失可容纳四百万打印输出，也可选择安装在计算机单元的纸质打印机。

Chapter 2 Important Notes 注意事项

2.1 Component Replacement/Repair 部件更换/维修

Placement of security seals on critical components is to prevent tampering by unauthorized personnel. Replacement or repair of this equipment should only be carried out under guidance of Brannstrom Sweden AB.

为了防止被未经授权的人员误操作，在关键部件上放置安全密封。更换或者维修此部件应在 Brannstrom Sweden AB 的授权和指导下进行。

2.2 Disclaimer and Conditions 免责申明及条件

All information provided by Brannstrom Sweden AB about this equipment is given in good faith and is based on the best knowledge available at the particular time. No responsibility is, however, assumed for possible inaccuracies or omissions.

Brannstrom Sweden AB 确认此手册的完整和准确性，如有可能存在的内容遗漏，或者确实的内容，不另行通知。

The content of this manual may be copied as required for operational use on the vessel in which the equipment is installed. This Manual must not be copied, in full or in part, for disclosure to third part.

在安装设备时可以复制手册中所需的操作流程，本手册不能被复制，披露给第三方。

The software incorporated in the equipment is furnished on a strictly “as is” basis. The software is proprietary to Brannstrom Sweden AB. The disclosure of the software coding is not allowed. The software may not be copied in whole or part.

设备中软件严格对应系统系列号，软件为 Brannstrom Sweden AB 专有。不允许披露软件编码，软件也不全部或部分被复制。

Chapter 3 Specification 规范

3.1 Description 描述

Type 型号	CleanTrack 1000 B
Application 适用范围	Crude and Petroleum products in accordance with MEPC.108(49) as amended by Resolution MEPC.240(65) and also approved for Bio-fuel blends in accordance with MEPC.1/Circ.761 as revised. MEPC.108(49)和 MEPC.240(65)涉及的原油和石油产品，同时也适用 MEPC.1/Circ.761 涉及的生物混合燃料。
Range 范围	0 - 1000 ppm
Accuracy 符合性	According to MEPC.108(49) 符合 MEPC.108(49)决议。
Calibration 校准	Oil Type 1-9 for Crude and Petroleum products. 5 types for Bio-fuel blends. 油型 1-9 的原油和石油制品。 5 种类型的生物混合燃料。
Sample Flow rate 取样流量范围	Depending on Sample Pump. 240 liters/hour to 600 liters/hour. 根据取样泵 240L/H 到 600L/H。
Clean water Flow rate 清水流量范围	Depending on Sample Pump and Water pressure. Intermittently 200 to 600 liters/hour. Clean water is only used at Discharge Start and Stop. Approximately 6-20 liters per Start/Stop. 根据取样泵和水压，最大瞬时流量 200 到 600L/H。 淡水只在系统启动和停止时使用，每次需要约 6-20 升。
Clean water Pressure 清水压力	max. 5 bar. min. 0.5 bar higher than the pressure in the overboard line at the sample outlet connected point. 最大 5bar。 最小压力需要大于排放管取样出口处 0.5bar。

3.2 Measuring principle 测量原理

The measuring principle of the CleanTrack 1000B is based on a combination of light transmitted and light scattering in four different angles. The sample water stream is homogenized in the sample feed pump and is passed through a quartz glass tube where it is exposed to a light beam. The light transmitted and scattered in the selected angles is dependent on the type and amount of contaminates in the water stream. Signals from non-oil contaminants can be compensated for due to their different

light scattering characteristics.

测量原理：通过一组组合光束穿透取样介质，从而测量折射后四个角度的光线强度。取样水经过取样泵搅拌匀化后流经油份传感器中的组合光束照射石英玻璃管，光线穿透取样水并根据取样水的特性被折射成四个不同的角度，据此计算出水中油品的含量。非有油的物质由于折射偏转的角度不同，可以在浓度计算时补偿掉，从而保证测量的精度。

There is a pressure transmitter connected to the output of the sample feed pump that is used to measure and protect the ODME from pump blockages or starvation.

在取样泵的出口有一个压力传感器用于测量和保护泵的过载和空转。

3.3 Scope of Supply and System Supplies 供货范围

The Cleantrack 1000B parts:

- Computer unit, 1 pcs.
  计算机单元 1 套。
- Converting unit, 1 pcs.
  转换单元 1 套。
- Analyzing unit, 1 pcs.
  分析单元 1 套。
  Explosion proof electric motor, normally mounted on skid in pump room.
  防爆电机，安装在泵舱间。
- Flow meter(s).
  流量计。
- Sample probes including valves and inlet filter.
  取样探头包含阀件和过滤器。
- Overboard valve and Slop tank valve .
  排舷外阀和回舱底阀。
- Pneumatic control box for Overboard and Slop tank valves.
  用于控制排舷外阀和回舱底阀的气动控制箱。

1. Computer unit:
计算机单元：

Voltage 电压	85-265 VAC
Frequency 频率	50/60 Hz
Consumption 功率	30 Watt
Protection 防护等级	IP40
Ambient Temp.	5 - 50 °C

环境温度

Weight ~7 kg

重量

Dimensions approx. 370 x 210 mm

尺寸

2. Converting unit:
转换单元：

Voltage 380 or 440 VAC 3-phase

电压

Frequency 50/60 Hz

频率

Consumption 120 Watt

功率

Protection IP54

防护等级

Ambient Temp. 5 - 50 °C

环境温度

Weight ~14 kg

重量

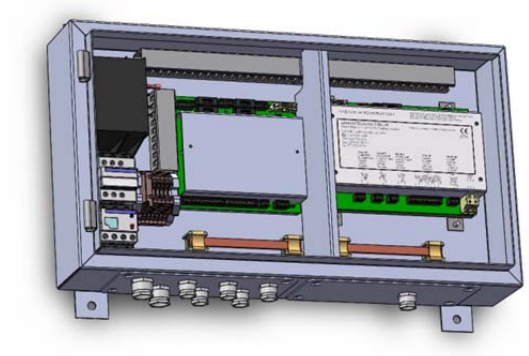
Dimensions approx. 550 x 360 x 130 mm

尺寸

Color RAL-7035

颜色

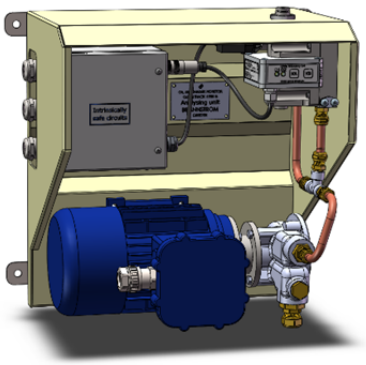
(door not displayed)



3. Analyzing unit:
分析单元：

Skid for Sample Pump with Ex. Proof Electric Motor:
(Voltage is supplied via converting unit)

取样泵为防爆电机（电压通过转换单元提供）



Voltage 380 or 440 VAC 3-phase

电压

Frequency 50/60 Hz

频率

Consumption 0.66 kWatt

功率

Sample flow 600 l/h (nominal)

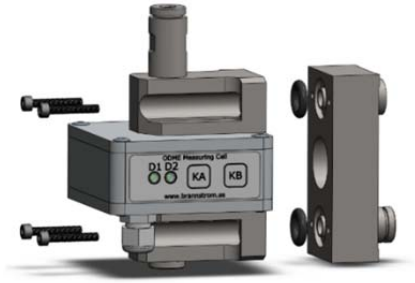
流量

Sample Temp. 0 - 65 ºC

取样温度
Ambient Temp. -20 - +55 ºC
环境温度
Weight ~35 kg
重量
Dimensions approx. 350 x 410 x 250 mm
尺寸

Parts always included in the Analyzing unit:
包含在分析单元的部件：

a. Measuring Cell:
测量装置：



Design Pressure 10 bar
设计压力
Protection IP56
防护等级
Ambient Temp. -25 - +55 ºC
环境温度
Sample Temp. 0 - 65 ºC
取样温度

b. Connection Box, (for intrinsically safe circuits only):
接线盒（用于本安电路）

Protection IP56
防护等级
Ambient Temp. -25 - +55 ºC
环境温度

c. Pressure transmitter:
压力变送器

Intrinsically safety must comply with the requirement particular hazardous area
安全 必须符合特定的安全区域
Type 4-20mA, (2-wire 24VDC loop powered)
型号
Ambient Temp. -25 - +55 ºC
环境温度
Sample Temp. 0 - 65 ºC
取样温度
Measuring range 0-16 bar
测量范围

Chapter 4 Installation 安装

4.1 Computer Unit 计算机单元

4.1.1 Mechanical 机械

Refer to drawings:CTB10030，CTB10001P，P3715090（APPENDIX A）.

参考：附录 A CTB10030，CTB10001P，P3715090 图纸。

The Computer Unit is installed in the cargo control room or an equivalent dry and safe space.

计算机单元安装在货物控制室相对干燥和安全的地方。

4.1.2 Electrical 电气

Refer to drawings:CTB110204.lel（APPENDIX A）.

参考：附录 A CTB110204.lel 图纸。

Supply voltage should be single phase 115/230VAC, 50-60Hz.

电源电压单相 115/230VAC,50-60HZ。

(Computer unit work on voltages 85 - 265VAC).

(计算机单元工作电压 85-265VAC)。

Power consumption 30VA.

功率 30VA。

The power should be equipped with a main switch, or if specified, a detachable connector.

需要一路独立的电源开关，或者如有要求，采用可拆卸连接器。

The fuse size should be 6A.

保险丝规格为 6A。

The alarm relay is normally open. An activated alarm is indicated with an open relay, which means that the alarm is activated when the power supply fails.

报警输出继电器是常开型继电器，继电器触点断开说明有没有复位的报警存在，这也意味着当电源故障时报警输出继电器处于报警状态。

Data communication between Computer Unit and Converting Unit, Cb5.

计算机单元、转换单元之间的数据通信，电缆 Cb5。

4.2 Converting Unit 转换单元

4.2.1 Mechanical 机械

Refer to drawings:CTB10003（APPENDIX A）.

参考：附录 A CTB10003 图纸。

The Converting Unit should be mounted vertically in a safe (non-hazardous) area, normally in the engine room, as close as possible to the Analyzing Unit at the other side of the bulkhead. The unit should be provided with enough space to open the cabinet door.

转换单元应安装在一个安全的（非防爆）区域，通常在机舱，尽可能靠近舱壁另一侧的分析单元，应留有足够空间以便打开柜门。

4.2.2 Electrical 电气

The power supply should be equipped with a main switch, or if specified, a detachable connector. Fuse size should be 3 x 10A for Converting Units equipped to supply electrical motor sample pumps. Check that the supply voltage corresponds to the voltage specified on the label below the mains terminals.

需要一路独立的电源开关，或者如有要求，采用拆卸连接器。用于转换单元上电动取样泵的熔断器型号为 3x10A。请检查电源电压和主电源端子下指定的电压相对应。

A 3-pole isolator switch can be installed in the safe area on Cb2 to being able to detach the sample pump while keeping power to the converting unit.

在转换单元得电时，安装在安全区域三相隔离开关通过电缆 Cb2 控制取样泵起停。

If another earthing system is preferred for the cable shields of the intrinsically safe equipment the equipotential rail should be disconnected from the PE rail and instead connected to the preferred earthing system. Connections must satisfy the requirements of the relevant classification society.

对于本安设备的屏蔽电缆，如果有合适的接地措施或者设备接入的话，不能将等电位接地轨直接连接到 PE 导轨上。

Keep Cb7 and other cables connected to intrinsically safe circuits separated from non-intrinsically safe circuit cables.

要求 Cb7 和其他本安电缆必须与非本安电缆分开。

Data communication between Converting Unit and Analyzing Unit, Cb7:

转换单元和分析单元数据通讯，Cb7：

Baudrate: 19200 baud.

波特率: 19200

Length: ≤50 meters.

长度： 小于 50 米

4.3 Analyzing Unit 分析单元

4.3.1 General drawings 总图

For item numbers and piping of a typical arrangement refer to drawing: CTB10904（APPENDIX A）.

阀件编号和管路布置参考：附录 A CTB10904 图纸。

The Analyzing Unit/Measuring Cell should be mounted vertically and lower than the sample outlet probe, to safeguard a positive pressure in the sample water system at all times.

分析单元和测量单元必须垂直安装并低于取样出口，同时保持取样水随时有正压力。

For draining possibilities of the sample piping arrangement the drain valve, item 34, should be the lowest point.

取样管路阀件 34 安装在最低点。

4.3.2 Mechanical 机械

The Analyzing Unit should be mounted in the pump room with 4 bolts welded clips on the pump room to engine room bulkhead as close as possible to the Converting Unit at the other side of the bulkhead or in an equivalent suitable location. The unit should be provided with enough space to open the cabinet door and enough space to facilitate cleaning of the Measuring Cell from above with a brush. There should also be space for operating the valve handles and taking grab samples.

分析单元由 4 个螺栓固定安装在泵舱间，并尽可能靠近舱壁另一侧合适位置的转换单元，分析单元应留有足够的维护空间，以便打开柜门，以及从上方用刷子清洗测量单元，还应该留有操作阀门和进行取样的空间。

The Analysing Unit should be mounted lower than the sample outlet probe, to safeguard a positive pressure in the sample water system at all times.

分析单元应该安装低于取样出口，同时保持取样水随时有正压力。

4.3.3 Electrical 电气

Check the Sample pump, the Measuring Cell and the Pressure transmitter documentation concerning intrinsically safety and that the equipment complies with the installation regulations for this particular hazardous area.

检查取样泵、测量装置和压力变送器安全记录和符合特定危险区的安装规定。

Connect Cb7, Cb3 and Cb3a to the Connection box. Terminate the Cables according to the electrical cable diagram for the actual sample pump used.

连接 Cb7，Cb3 和 Cb3a 至接线盒，根据取样泵示意连接电缆。

Cables Cb3 and Cb3a can also be directly wired from the flow meter to the Converting Unit without connections via the Connection box.

电缆 Cb3 和 Cb3a 也可以不通过接线盒直接从流量计连接到转换单元。

Make sure the Analyzing Unit and the Connection box is properly connected to earth according to the applicable regulations for this particular hazardous area.

按照危险区域适用规定，确认分析单元和接线盒接地无误。

Make sure the frame of the explosion proof motor is properly connected to earth according to the applicable regulations for this particular hazardous area.

按照危险区域适用规定，确认防爆电机的接地无误。

4.3.4 Inlet probe and Outlet probe 进出口探头

For basic convention requirements, see Resolution MEPC.108(49) chapter 6.3.

符合 MEPC.108（49）6.3 章，基本公约要求。

The inlet probe is mounted upstream of the outlet stub and the flow meter sensor should preferably be mounted between the inlet probe and the outlet stub. A positive water pressure must be available in the discharge line under all discharge conditions at the place where the inlet probe is located. The outlet probe shall be located higher than the analyzing unit outlet connection. The sample feed pump may be damaged if run dry for more than 10 seconds.

进口取样探头安装在出口短管上游，流量计最好安装在进口取样探头和出口中间。位于排放主管上的进口取样探头在主管排放时保持水正压。出口取样连接要高于分析单元出口。取样泵空转 10S 以上会导致泵的损坏。

4.3.5 Piping of Sample Inlet and Outlet 取样进出口管路

Pipes: Tb11 and Tb13

管路：Tb11 和 Tb13

Recommended pipe dimensions for SPP-100 pump:

对于 SPP-100 泵的管路推荐：

Pipe diameter 15x1 mm

管路直径 15x1mm

Recommended maximum pipe length 10 m

推荐最大管路长度 10 米

The sample valves and sample inlet filter should be located with space for accessibility and servicing.

取样阀和取样进口过滤器应安装位于有足够维护空间的地方。

4.3.6 Piping for Fresh water 淡水管路

Pipe: Tb8

管路：Tb8。

The pipe should be provided with a shut of valve close to the bulkhead penetration.

管路应设有一个可以关闭舱壁渗透的阀门。

Bulkhead penetrations must satisfy the requirements of the relevant classification society.

穿舱壁必须满足相关船级社要求。

The fresh water supply should be provided with one shut off and one vacuum check valve and one check valve. The fresh water temperature should not be lower than the sample water temperature. Suitable temperature is about 0º - 10º Celsius warmer than the sample water temperature. The water should, however, not be warmer than 65º Celsius.

淡水管路应设有一个球阀、一个真空单向阀和一个止回阀。淡水应该不应低于取样温度，大约比取样温度高出 0ºC-10ºC。当然，不能超过 65ºC。

The water consumption is about 250 l/h and is open about 30 seconds at start-up. It is also recommended to flush manually at closing down. This makes about 10-15 liters per start/stop.

每次启动大约 30 秒，耗水量大约 250L/h。也可以在停机后进行手动冲洗，此项操作起停大约耗水 10-15L。

The water pressure should not be higher than 5 bar and not less than 0.5 bar higher than the overboard line pressure at the sample outlet connection point.

淡水压力不能高于 5bar 且超过排放管取样出口处 0.5bar。

4.4 Flow meter and Speed log 流量计和计程仪

4. 4.1 Flow meter general 流量计

The flow meter should meet the following requirements according to IMO Resolution MEPC.108(49) chapter 6.4.

流量计应满足 MEPC.108(49)协议 6.4 章的要求。

A flow meter for measuring the rate of discharge should be installed in a vertical section of a discharge line or in any other section of a discharge line as appropriate, so as to be always filled with the liquid being discharged.

测量流量的流量计应安装在排放管的垂直部分或者视情况而定任何在排放管合适的位置，便于保持流量计充满液体。

The flow meter, as installed, should have an accuracy of ±10%, or better, of the instantaneous rate of discharge throughput the operating range for discharging the effluent.

安装后流量计瞬时排放量应在排放工作范围内±10%或更好。

The design of the flow meter arrangements should have regard to the safety requirements of the space in which such metering arrangements are located.

流量计的设计应考虑安装在安全的地方。

Any flow transmitter, having an output signal of 4-20mA and that complies with the regulations that

applies to the particular installation may be used. Follow the instructions for the selected flow meter.

流量变送器有一个 4-20mA 的输出型号且按照流量计说明书安装在符合相关规定的特定位置。

4. 4.2 Speed log genera 计程仪

The speed indication system should meet the following requirements according to IMO Resolution MEPC.108(49) chapter 6.5.

航速指示系统应满足 MEPC.108(49)协议 6.5 章的要求。

The automatic speed signal required for a monitoring system should be obtained from the ship's speed indicating device by means of a repeater signal. The speed information used may be either speed over the ground or speed through the water, depending upon the speed measuring equipment installed on board.

从船舶速度指示装置上获得自动船速信号，所用到的速度信息取决于安装在船上的速度测量设备。

The speed log signal connected to CleanTrack 1000 B should be a pulse signal form a voltage free relay or switch. The pulse frequency should be proportional to the speed.

连接到 CleanTrack 1000B 计程仪信号是以无源脉冲信号形式，脉冲频率与速度成正比。

The data of the speed output signal should meet:

速度输出信号的数据应满足：

Minimum switch on or off time:	33 ms
最少通断时间：	33 毫秒
Pulse frequency range:	45~250pulses/nm
脉冲频率范围：	45~250 脉冲/海里

4.5 Response time calculations 响应时间计算

The overall response time of the meter should not be more than 40 seconds according to IMO Resolution MEPC.108(49) chapter 6.3.6.

根据 MEPC.108(49) 6.3.6 章，整体反馈时间不应超过 40 秒。

The "Overall response time" includes the "Response time of the installation" and the "Response time of the meter".

整体反馈时间包含管路反馈时间和仪器测量反馈时间。

"Response time of the installation" is the time to transport the fluid from the overboard pipe to the Measuring Cell.

管路反馈时间是指流体从管路到测量单元的时间。

"Response time of the meter" is the response time measured according to IMO Resolution

MEPC.108(49) page 38.

仪器测量反馈时间按照 MEPC.108(49) 38 页测量。

The response time of the installation may be calculated by using the formula below:

管路反馈时间可以用下面的公式计算：

Response time of installation = $\frac{A* L*60*60}{Q}$ $[seconds]$

A = Cross sectional area of sample inlet pipe,

A = 取样进口横截面截面积

L = Length of sample inlet pipe from sample probe to Measuring Cell,

L= 取样进口探头到测量单元的距离

Q = Flow rate of Sample Pump, [/h]

Q= 取样泵的流量[/h]

Response time of the meter = 6.8 $seconds$

仪器测量反馈时间=6.8 秒

Example:

A(15 mm pipe) = πr^2= $\pi * (\frac{0.013}{2})^2$ = 0.0001327 m^2

L = 10 m

Q = 0.240 m^3/h

Response time of installation = $\frac{0.0001327 * 10 * 60 * 60}{0.240}$ = 19.9 $seconds$

Overall response time = $19.9 + 6.8 = 26.7$ *seconds(that should be no more than* 40 *seconds)*

Nominal flow of sample pumps:

Sample pump with Ex motor (SPP-100)600 l/h

实际上电动取样泵（SPP-100）的流量是 600L/h

4.6 First Start up Checklist 首次启动检查

It is very important that all electrical wires are properly tightened.

所有电缆必须正确拧紧，这个非常重要。

1. Check that the supply voltage, to be connected to the Converting Unit (Cb1) corresponds to the voltage mark, normally placed on lower left side inside the unit.

   检查电源电压，将 Cb1 按电压标记连接到转换单元，通常在左下角位置。

2. Check that all Zener Barriers are connected correctly (Cb7, Cb3 and optionally Cb3a). Verify that the intrinsically safe arrangements are in order for the cables.

   检查隔爆删接线正确（Cb7 和 Cb3 以及可供选的 Cb3a）。确保电缆为本安电缆。

3. Check the Sample Pump connection (Cb2), communication to Computer Unit (Cb5) and eventually other connections to the Converting Unit PCB.Check the motor frame to be connected to earth and that a correct cable gland is used and tightened.

检查取样泵接线（Cb2），计算机单元和转换单元电路板的通讯连接。检查电机机架与接地连接，并使用正确的电缆接头并拧紧。

4. Connect mains to the converting unit and check that at least one light emitting diode on top right of both PCB's in the unit are lit or flashing.

将电源连接到转换单元，检查至少一个发光二极管在两个电路板的顶部右侧都是点亮或闪烁。

5. Check that the supply voltage to be connected to the Computer Unit (Cb8b) corresponds to the voltage mark, normally placed on lower left side inside the unit.

检查电源电压，将 Cb8b 按电压标记连接到转换单元，通常在左下角位置。

6. Check connections for valve(s) (Cb8a) and feedback(s) (Cb13) for communication to Converting Unit (Cb5), GPS input (Cb29) and Log input (Cb12) if speed log is used.

检查阀 Cb8a，反馈信号 Cb13，通讯信号 Cb5，GPS 输入 Cb29 和计程仪信号 Cb12 电缆连接。

7. Connect mains to the computer unit. After a few seconds 2 different "Brannstrom Sweden" will appear on the screen before the screen goes black again and about 2 minutes later the Cleantrack1000B software appears.

将电源连接到计算机单元几秒钟后，有 2 个不同的"Brannstrom Sweden"就会出现，之后屏幕变黑，大约 2 分钟后，Cleantrack1000B 软件出现。

8. The following should be set up or checked at the Computer Unit:

以下应在计算机单元设置后检查:

- Flushing water configuration.

  淡水冲洗设置。
- Valve control and feedback.

  阀控制和反馈。
- Pressure transmitter programming and limits.

  压力传感器调试和设定。
- Flow meter programming and limits.

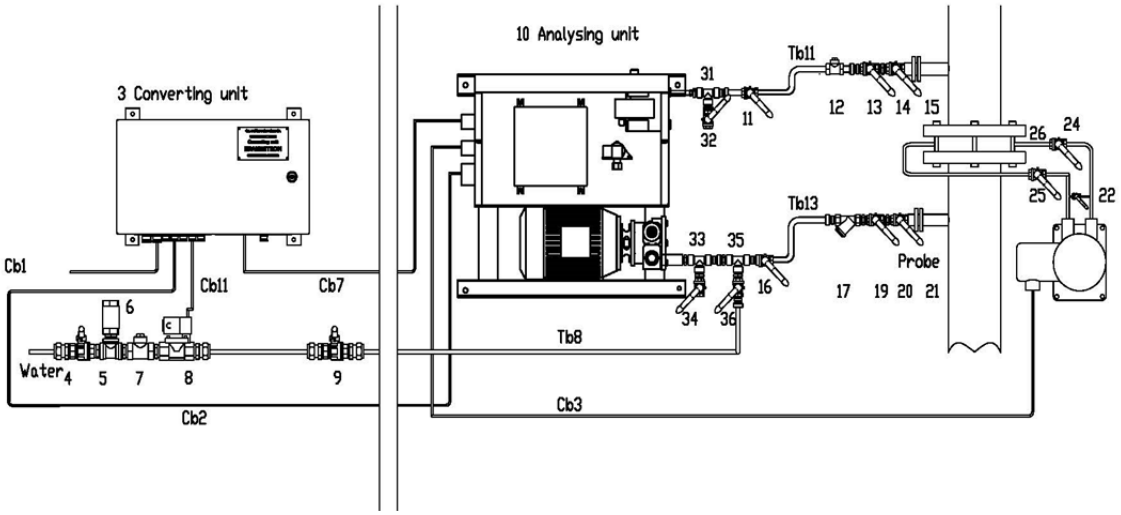
  流量计调试和设定。
- Speed log programming and limits.

  计程仪信号调试和设定。
- GPS input.

  GPS 输入。
- Printer option.

  打印机选项。

Chapter 5 Start/Stop Procedure 启动/停止步骤



Precautions must be taken to prevent the sample pump from running dry or against a closed valve.

必须采取预防措施，以防止取样泵干运转或阀关闭。

5.1 Start-up procedure 启动步骤

1. Check motor cable penetration, connections and fittings to be tightened and in order before starting.

   在启动前检查电机电缆穿线接线是否紧固。

2. Empty the Inlet Sample Filter, pos 17.

   清空取样进滤器，阀 17。

3. Remove the top cover and brush the Measuring Cell pipe with the brush dipped in cleaning solution.

   取出顶部盖，用刷蘸清洗液刷测量单元管。

4. Open Flow Meter Valves, pos 24 and 25 above.

   打开流量计阀，上图阀 24 和 25。

5. Close the Drain Valve and the Grab Sample Valve, pos 32 and 34.

   关闭排水阀和取样阀，阀 32 和 34。

6. Open all valves of the inlet pipe, pos 19, 20 and 16.

   打开取样管路所有阀件，阀 19，20 和 16。

7. Open the Grab Sample Valve slightly until the inlet pipe, the Sample Pump and the Measuring Cell is filled with water from the overboard line. This is indicated by Measuring Cell diodes "Flashing LEFT".

   轻轻地打开取样阀直至排放管路中的水充满取样进口管，取样泵和测量单元。测量单元左侧指示出现闪烁。

8. Check for leakages around the Measuring Cell and inside the Analyzing unit.

   检查在测量单元和分析单元内泄漏。

9. Open all valves of the outlet pipe, pos 11, 13 and 14.

   打开出口管路的所有阀，阀 11，13 和 14。

10. If automatic Fresh Water control, open Fresh Water Valves, pos 4 and 9.

    如果淡水自动控制，打开淡水阀 4 和 9。

11. Select "Discharge line", "Oil type" and program "Total Quantity of Oil Discharge" to 1/30000 of previous cargo. Resetting the counter to 0 liters should only be done at a new voyage (according to IMO regulations).

    选择“Discharge line”,“Oil type”和设置总货油的 1/30000 的“Total Quantity of Oil Discharge”。只有开始一个新的航程，才能重置为 0(按照 IMO 要求)。

12. Press the "Start Discharge" key on the Computer Units "Operate" page and confirm start on the next popup window.If automatic Fresh Water Control: A flushing procedure of about 45 seconds will start first.

    在计算机单元“Operate”操作页上按“Start Discharge”键，在下一个弹出窗口确认启动。如果是自动控制淡水：淡水冲洗过程先行启动 45 秒。

5.2 Close down procedure 关闭步骤

1. Press the "Stop Discharge" key on the Computer Units "Operate" page and confirm stop on the next popup window.

   在计算机单元“Operate”操作也上按“Stop Discharge”键，在下一个弹出窗口确认阻止。

2. If automatic Fresh Water Control, flush the Analyzing unit manually from the Computer unit menu.

   如果自动控制淡水，从计算机单元菜单上手动冲洗分析单元。

3. If automatic Fresh Water Control, close Fresh Water Valves, pos 4 and 9.

   如果自动控制淡水，关闭淡水阀 4 和 9。

4. Close Flow Meter Valves, pos 24 and 25.

   关闭流量计阀 24 和 25。

5. Close inlet and outlet valves, pos 19, 20, 13and 14.
   关闭取样进和取样出口阀 19，20，13 和 14。

6. Open the Drain and Grab Sample Valves, pos 32and 34. This will avoid frost damage.
   打开排水阀和取样阀 32 和 34。避免霜冻破坏。

7. Remove the Top Cover and brush the Measuring Cell pipe with the brush dipped in cleaning solution.
   取出顶部盖，用刷蘸清洗液刷测量单元管。

8. Flush the Measuring Cell with Fresh Water so it is stored clean.
   用淡水冲洗测量单元，使其保持干净。

9. Fit the Top Cover on the Measuring cell again.
   再次安装在测量单元上的顶盖。

10. The measuring cell can now be removed from its docking and stored in a dark, dry and tempered place.
    这时测量单元可以从它的对接处取出，存放在黑暗干燥的地方。

Chapter 6 Menu Operations 菜单操作

6.1 Main Menu and Top of Page indications 主菜单和页面顶部显示

Important information is show on top of all menus, except for the "Start page".

除了“首页”，其余所有菜单的重要信息都在顶部。

Running information:

运行信息：

- Grey “Stand By” - Stand By mode. No discharge going on, waiting for start.
  灰色：“待机” 待机模式，不能排放，等待开始。
- Yellow “RUNNING” - Discharge mode. Overboard valve open if discharge is below 30 L/nm.
  黄色“运行” 排放模式，如果排放低于 30L/nm 排舷外阀打开。
- Yellow/Black “RUNNING” - Flushing at start-up or closing down.
  黄色/黑色“运行” 开始或结束冲洗。

Overboard valve information:

排舷外阀信息：

- Grey “Valve Closed” - Overboard valve is closed.
  灰色“阀关闭” 阀关闭。
- Grey/Black “Valve Closed” - Overboard valve is closed but the output wants to open the valve.
  灰色/黑色“阀关闭” 阀关闭但有输出信号要开阀。
- Yellow “VALVE OPEN” - Overboard valve is open.
  黄色“阀开” 阀开。
- Yellow/Black “VALVE OPEN” - Overboard valve is open but the output wants to close the valve.
  黄色/黑色“阀开” 阀开但有输出要关阀。

Manual Override information:

手动越控信息：

- Grey “Auto” - Concentration, Overboard valve, flow and speed is all in auto.
  灰色“自动” 浓度，排舷外阀，流量和速度全在自动状态。
- Red “Manual Override” - Some of the above is in manual.
  红色“手动越控” 以上全在手动状态。

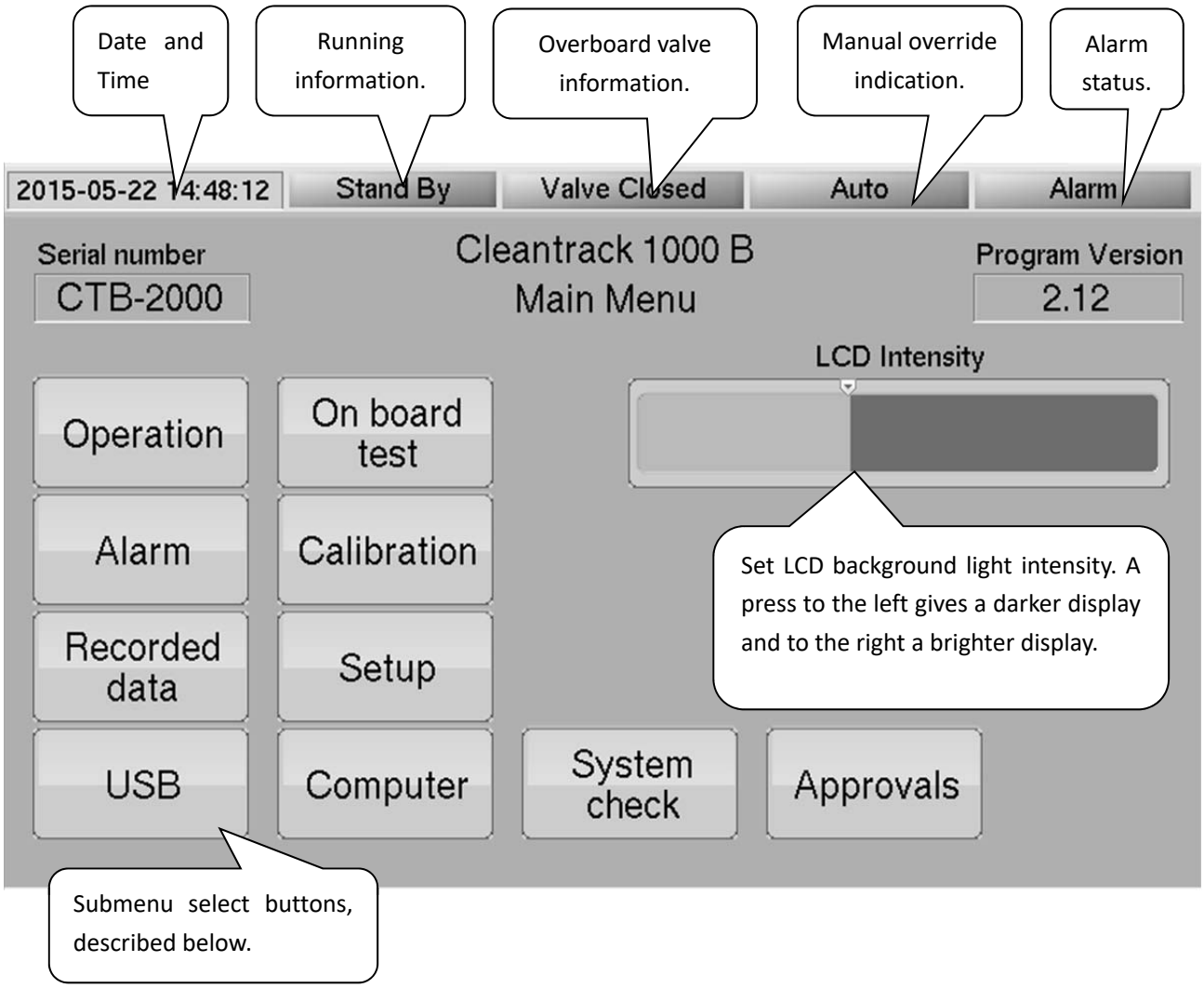
Alarm status:

报警状态：

- Grey “Alarm” - No activated alarms.

灰色“报警” 没有被激活的报警。

- Red “ALARM” - Active alarms that has been reset.
  红色“报警” 激活的报警被复位。
- Red/Black “ALARM” - At least one active alarm that has not been reset.
  红色/黑色“报警” 至少有一个报警没有被复位。



6.2 Edit Numeric values 编辑数字值

Values with white background are set values and can be changed.
具有白色背景的数值可以被设置和更改。

Press the indicated value with the tip on your finger and a Numeric Keyboard pops up.
用你手指尖按在指示值上会弹出一个数字键盘。

Normally the present value and text to indicate the selection are displayed on the Numeric Keyboard.

通常情况下，当前值和你选择的数字会在数字键盘上显示。

This example show the "Speed High limit" that is set to 20.0 kn.

例如速度上限设置为 20 节。

After the value is changed, save with the "Ok" key or cancel change by pressing "Cancel".

数值被更改后，按“Ok”保存或按“Cancel”消除。

6.3 Keys 按键

All keys, if not greyed, can be pressed.

所有不是灰色的按键都可以按。

The function of a key is explained by text above or in the key.

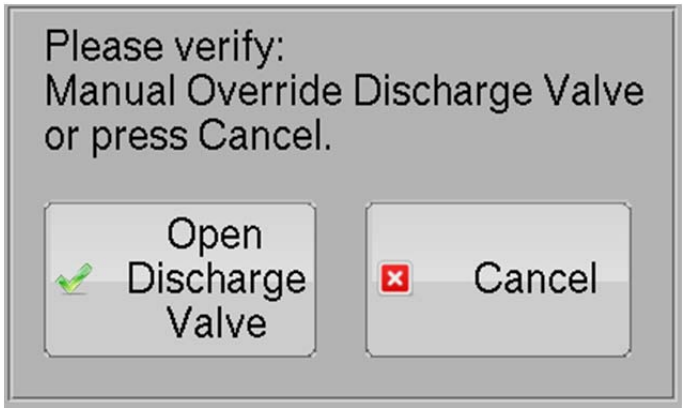
按键的功能在按键上面或在按键本体上有注释。

Different actions and feedback is taken by the computer depending on which key that is pressed.

不同的动作和反馈是由计算机取决于按下哪个键。

An example of a submenu is the verification menu that open when "Manual Override Discharge Valve" key is pressed:

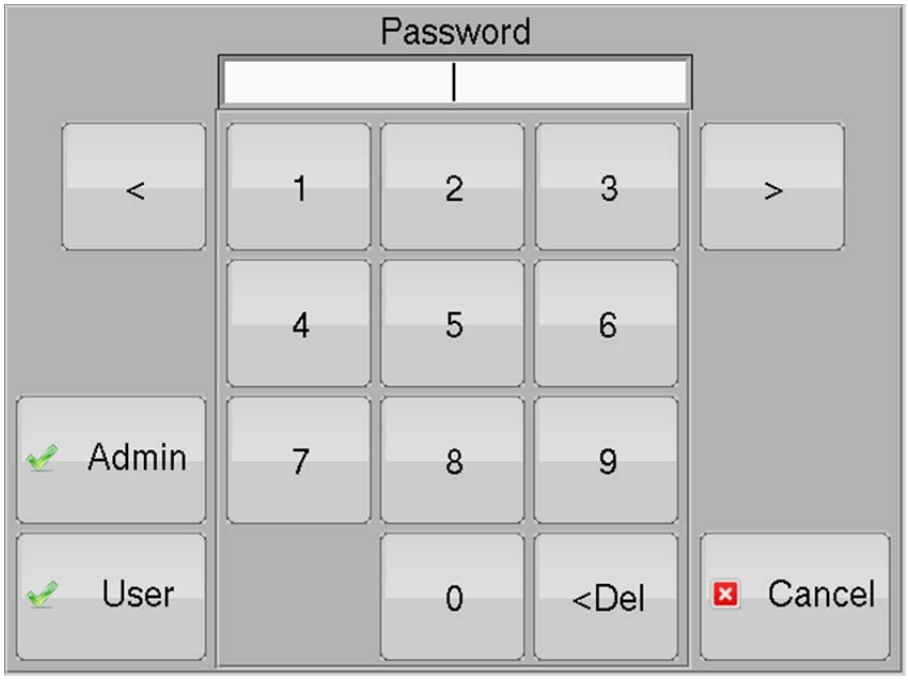
例如按下“手动越控排放阀”按键，会打开一个验证菜单。



6.4 Password 密码

Some operations need a "Password" and when pressed opens up a "Password submenu".

有些操作需要一个“密码”，按下打开“密码菜单”如下



Give the Password and select "Admin" for administrator level or "User" for lower level.

输入密码，并选择“Admin”为管理员或“User”为较低权限的用户。

The most commonly used passwords are the ones needed to enter sub menus from the “Main Menu”.

最常用的密码是从“主菜单”输入子菜单所需的密码。

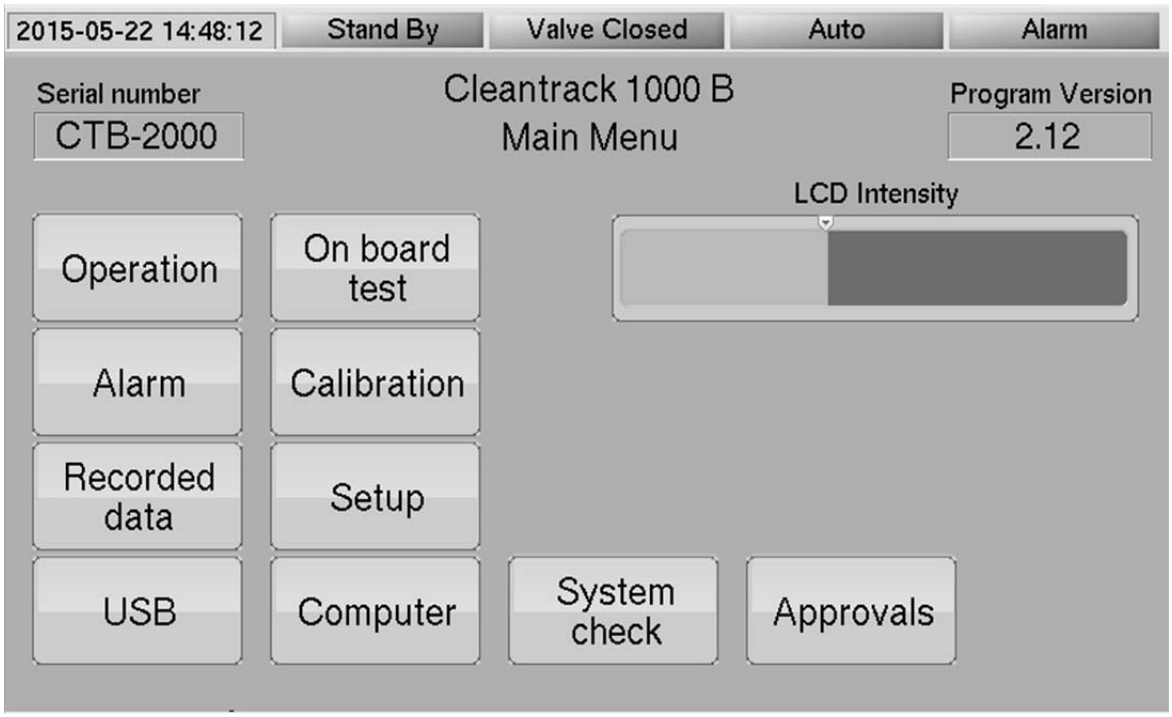
- “Setup” - Password “3” and “Admin”
- “Computer” - Password “1” and “User”
- “System check” - Password “2” and “Admin”

Chapter 7 Menu layout 菜单布置

7.1 Main Menu 主菜单

See chapter 6 page information and key usage.

参见第 6 章页面信息和关键用法。



"Operation"	Go to "Operation" page.	Chapter 7.2. Operation
“操作”	跳至“操作”页面	7.2 章 操作
"Alarm"	Go to "Alarm table".	Chapter 7.3. Alarm Table
“报警”	跳至“报警表”	7.3 章 报警页面
"Recorded data"	Go to "Recorded data table".	Chapter 7.4. Recorded data
“记录数据”	跳至“记录数据表”	7.4 章 记录数据
"USB"	Go to "USB" page.	Chapter 7.5. USB
“USB”	跳至“USB”页面	7.5 章 USB
"On board test"	Go to "On board test" page.	Chapter 7.6. On-board Test
船上测试	跳至“船上测试”页面	7.6 章 船上测试
"Calibration"	Go to "Calibration" page.	Chapter 7.7. Measuring Cell Check/Calibration
“校准”	跳至“校准”页面	7.7 章 测量单元的检查/校准

"Setup"	Go to "Setup" page.	Chapter 7.8. Setup of parameters Password: "3" and "Admin".
设置	跳至“设置”界面	7.8 章 参数设置 口令： "3" and "Admin"
"Computer"	Go to "Computer" page.	Chapter 7.9. Computer Password: "1" and "User".
计算机	跳至“计算机”界面	7.9 章 计算机 口令："1" and "User"
"Approvals"	Go to "Approvals" page.	Chapter 7.10. Approvals
符合规范	跳至“符合规范”界面	7.10 章 符合规范

7.2 Operation 操作

7.2.1 Running 运行

All important information during running of the system is displayed.
Use “Running Settings” for all settings before a discharging.

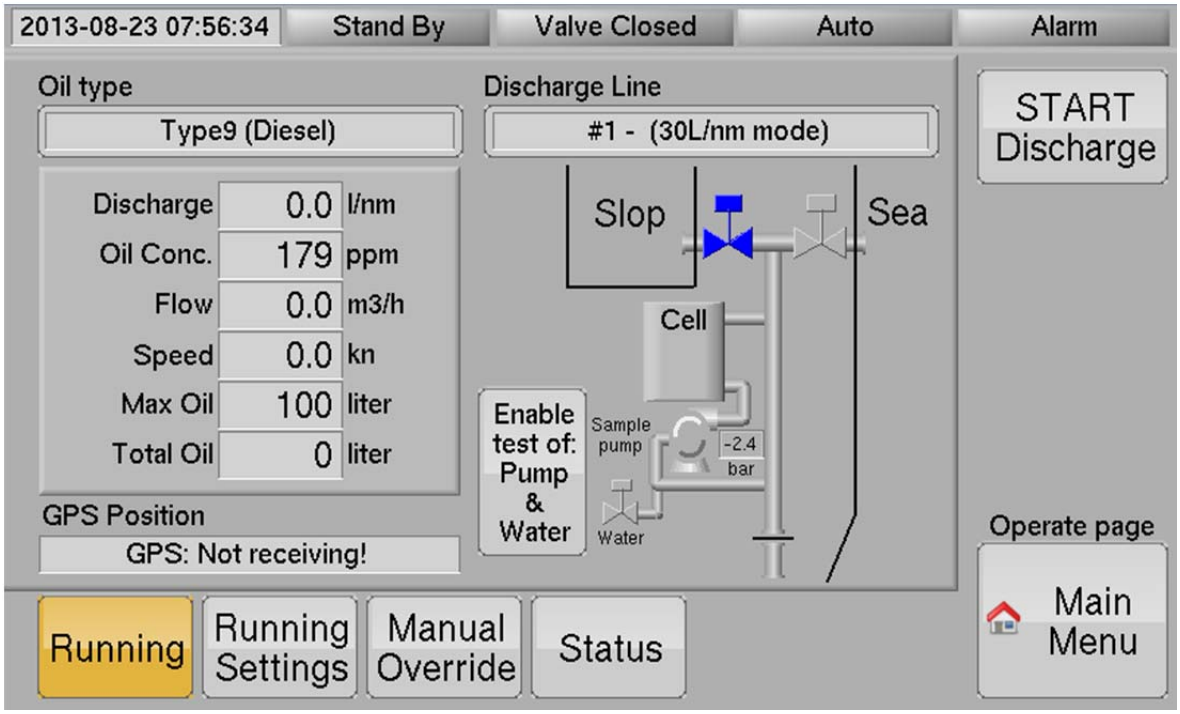
显示系统运行期间的所有重要信息。

在排放前为“运行设置”设置所有参数。

The piping arrangement turns blue or grey depending on input / output signal status.

根据输入/输出信号状态，管道布置变成蓝色或灰色。

- Overboard valve is grey and slop tank valve is blue indicating a closed overboard valve.
  舷外阀灰色和回舱底阀蓝色指的是舷外阀是关闭的。
- The water sensor in the measuring cell is not active and this is displayed with grey sample lines. The sample lines turns blue when the water sensor is activated.
  测量单元水传感器电磁阀没有被激活，取样管路显示灰色，当水传感器被激活，取样管路显示蓝色。
- The "Sample pump" turn blue when its control output is on.
  当有控制输出时，取样泵变蓝色。
- The “Water”-valve turn blue when its control output is on.
  当有控制输出时，水阀处变蓝色。
- The Overboard line turns blue when the measured discharge flow is above the flow low limit.
  当实测流量超过流量下限，排舷外管路变为蓝色。
- Indications counting down seconds can be displayed on some places on the panel. The unit is then waiting for an event. This indications can be ignored, alarms are generated for failures.
  设备在等待时，在面板上显示倒计时的指示，这个现象可以忽略报警产生的故障。



"Oil type"

Indicates the selected “Oil type”. Select in “Running Settings”-menu.

指示选定的“油型”，在运行设置菜单中选择。

"Discharge Line"

Indicates the selected “Discharge Line” Select in “Running Settings”-menu.

指示选择“排放管路”，在运行设置菜单中选择。

"START Discharge"

Starts the unit for discharging of dirty ballast water.

Refer to Chapter 5 before starting discharge.

While running the "START Discharge" button is changed to "STOP Discharge".

启动排放污水装置。

启动排放前参考第 5 章。

当“启动排放”运行时按钮改为“停止排放”。

"Alarm Reset"

A RED “Alarm Reset”- button pops up above “Main Menu”-button if active not acknowledged alarms exist ,“Alarm” indication on top right is flashing.

主菜单上面弹出一个红色的复位报警按钮，如果没有确认报警，报警指示会在右上角闪烁。

"Enable test of: Pump & Water"

Enables manual running of Sample Pump and Water Valve.

This selection need to be verified on a popup window.

The 2 buttons below is shown instead of the “Enable test ...”-button.

Refer to Chapter 5 Start/Stop procedure before activation of pump or water.

启动手动运行取样泵和淡水阀。

这个选择会出现一个窗口弹出认证。

有 2 个按钮代替“启动测试”按钮。

在淡水和泵在被激活前参考第 5 章。

"Pump 60 sec"

Manually run the sample pump for 60 seconds. Useful for testing.

Pressure check and Water check is enabled and might prohibit/stop the pump.

Pressure check and Water check is further described in chapter 7.2.4 below.

手动运行取样泵 60 秒，常用于测试。

在禁止或停泵下进行压力检查和水管路检查。

压力检查和水管路检查见下面 7.2.4 章进一步描述。

"Water 60 sec"

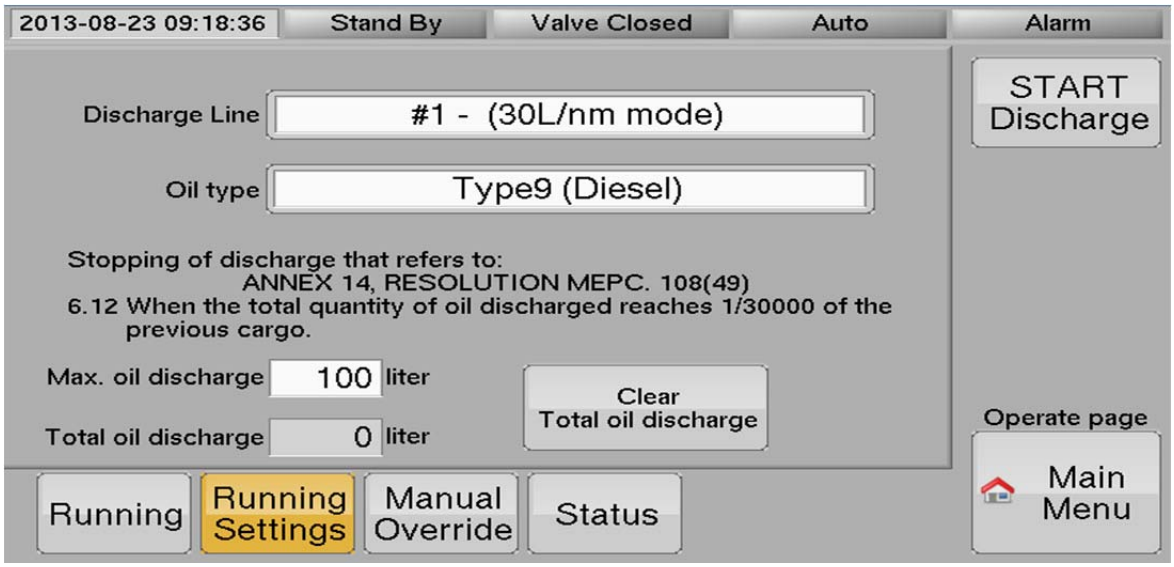
Manually flush with fresh water for 60 seconds. Useful for testing.

手动运行淡水 60 秒，常用于测试。

7.2.2 Running Setting 运行设置

Selection and settings to be made before start discharging after a voyage.

航行开始前要做的选择和设置。



"Discharge line"

Select line for discharging. A popup menu will be displayed for selection.

选择排放管路，将显示一个弹出菜单供选择。

"Oil type"

Select oil type. A submenu will be displayed for selection.

选择油类型。子菜单中将显示选择。

"Max. oil discharge"

Set to 1/30 000 part of the previous cargo.

设置为之前货油总量的 1/30 000。

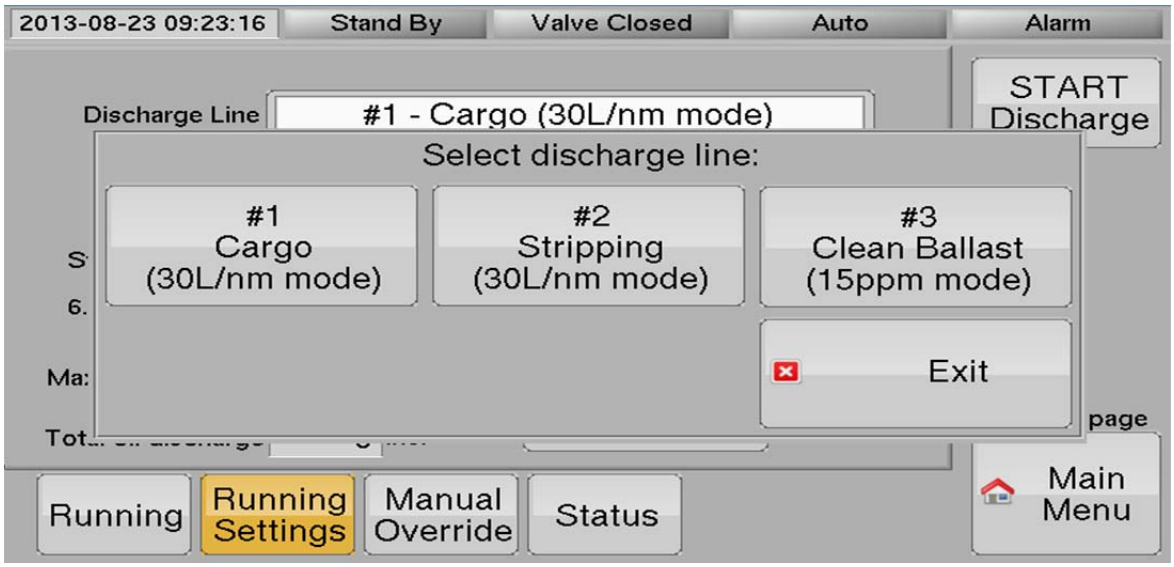
"Clear Total oil discharge"

Reset this value before discharging after a voyage.

航行后重置此值。

Discharge line popup menu.

排放管弹出的菜单

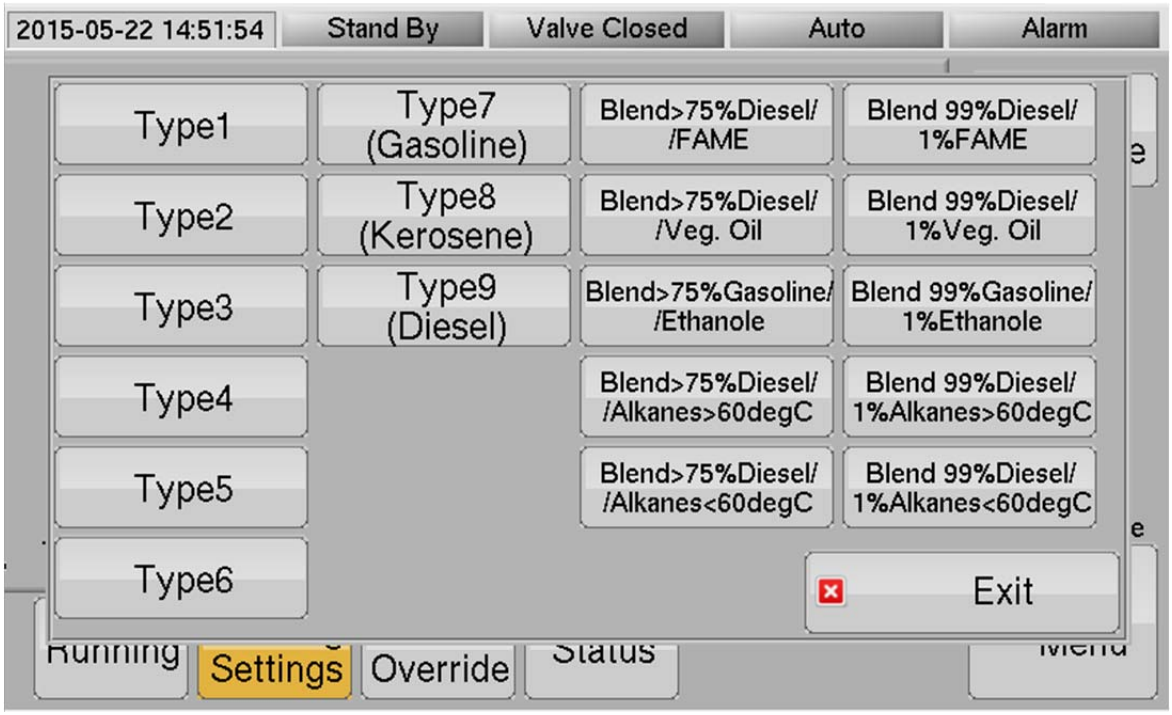


"#1", "#2", "#3" Select line for discharging.

1# 2# 3# 选择排放管

Oil type popup menu.

油种类弹出的菜单



Oil types "Type1" - "Type6" are according to "No 1-6 crude oils" in MEPC.108(49).

油型 1 到 6 号是按照 108（49）协议上的 1-6 号原油。

Oil types "Type7" - "Type9" are according to "White petroleum products" in MEPC.108(49).

油型 7 到 9 号是按照 108（49）协议上的石油产品。

No 1-6 crude oil and white petroleum products MEPC.108(49) as amended
如下 108（49）协议上 1-6 号原油和石油产品

Oil Type	**Density**	**Viscosity**	**Pour Point**	**General description**
Type 1	Low	Medium	Very low	Mixed base
Type 2	Medium	Medium	Low	Mixed base
Type 3	High	Medium	Low	Naphthenic
Type 4	Very high	Very high	Low	Asphaltic
Type 5	Medium	High	Very high	Paraffinic
Type 6	Marine residual fuel oil - RMG 35. (ISO 8217:1996)			
Type7	Automotive Gasoline			
Type8	Kerosene			
Type9	Marine distillate fuel oil - DMA - ISO8217:1996 (table1)			

7.2.3 Manual Override 手动越控

This page allows you to insert and use manual values in case of equipment malfunction.

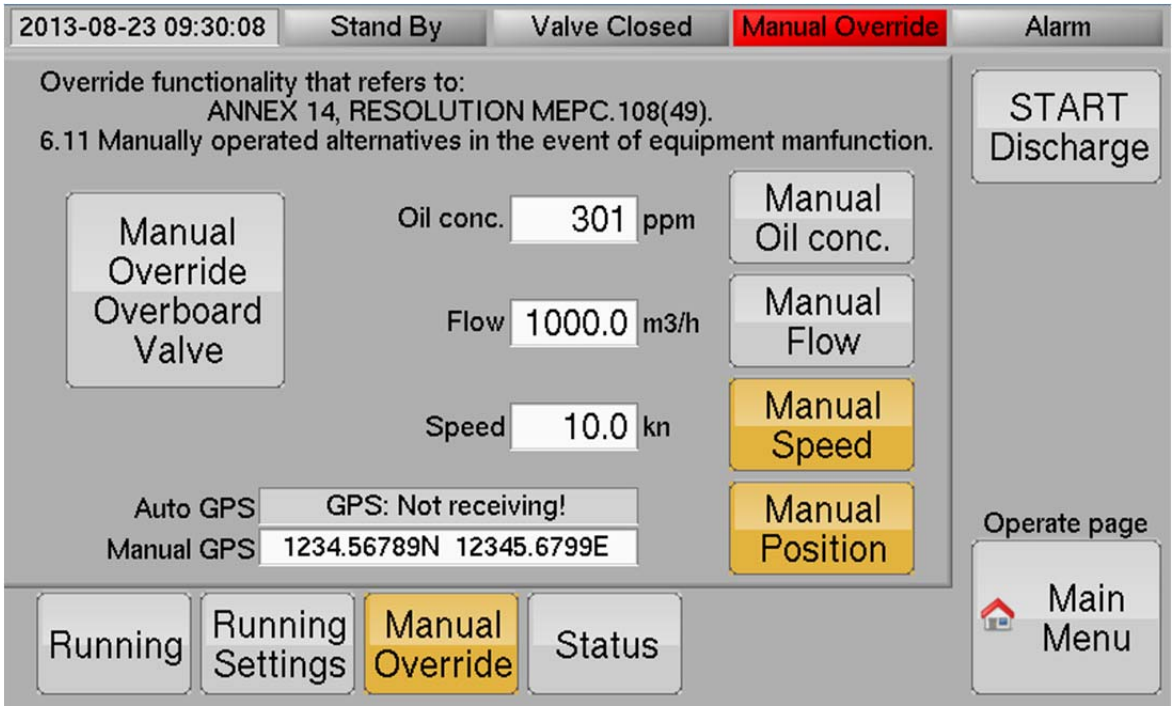
此页允许您在设备故障时手动输入值。

The “Manual Override” indication will turn red if any manual is selected.

如果有任何数值被选择手动，“Manual Override”指示将变成红色。

Manual selection is recorded in “Recorded data”.

手动选择都记录在“Recorded data”中。



"Manual Override Overboard Valve"

Forcing the Overboard Valve to open.

This selection need to be verified on a popup window.

强制打开排舷外阀。

这个选择需要在一个弹出窗口验证。

"Oil conc."

Press value indication to insert manual value.

按数值指示输入手动值。

"Manual Oil conc."

Override Oil concentration with the value inserted in "Oil conc.".

手动越控“Oil conc.”。

"Flow"

Press value indication to insert manual value.

按数值指示输入手动值。

"Manual Flow"

Override discharge Flow with the value inserted in "Flow".

手动越控“Flow”

"Speed"

Press value indication to insert manual value.

按数值指示输入手动值

"Manual Speed"

Override ship's speed with the value inserted in "Speed".

手动越控“Speed”

"Manual Position"

Override ship's position with the "Manual GPS" value.

手动越控 GPS 位置

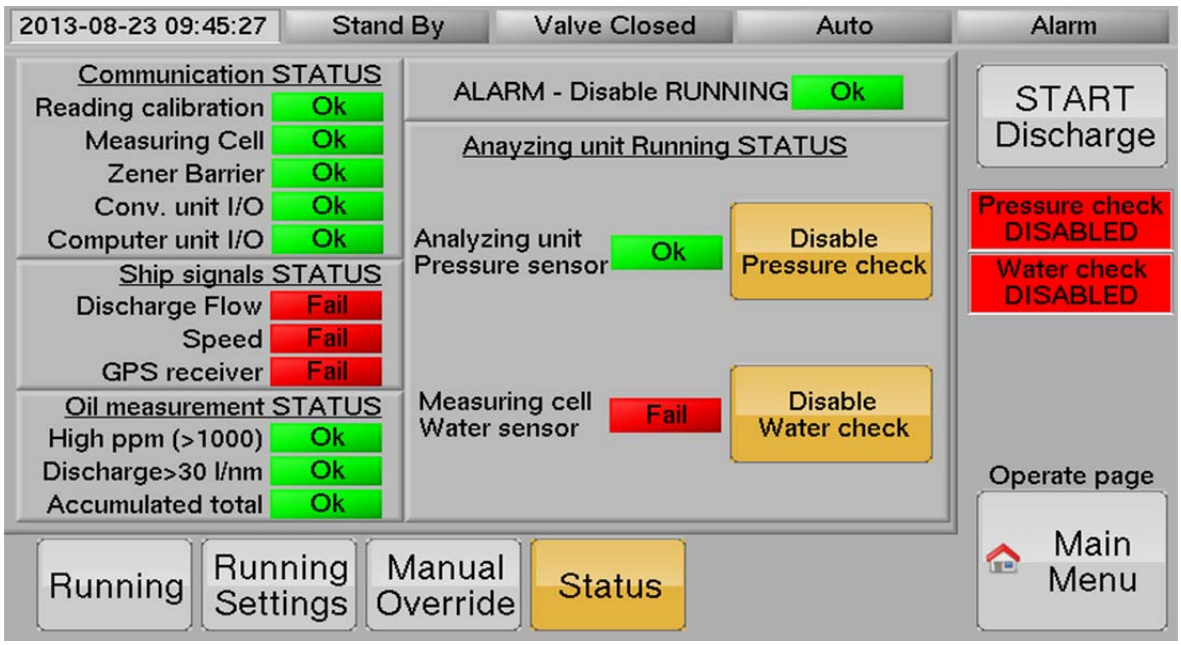
7.2.4 Status 状态

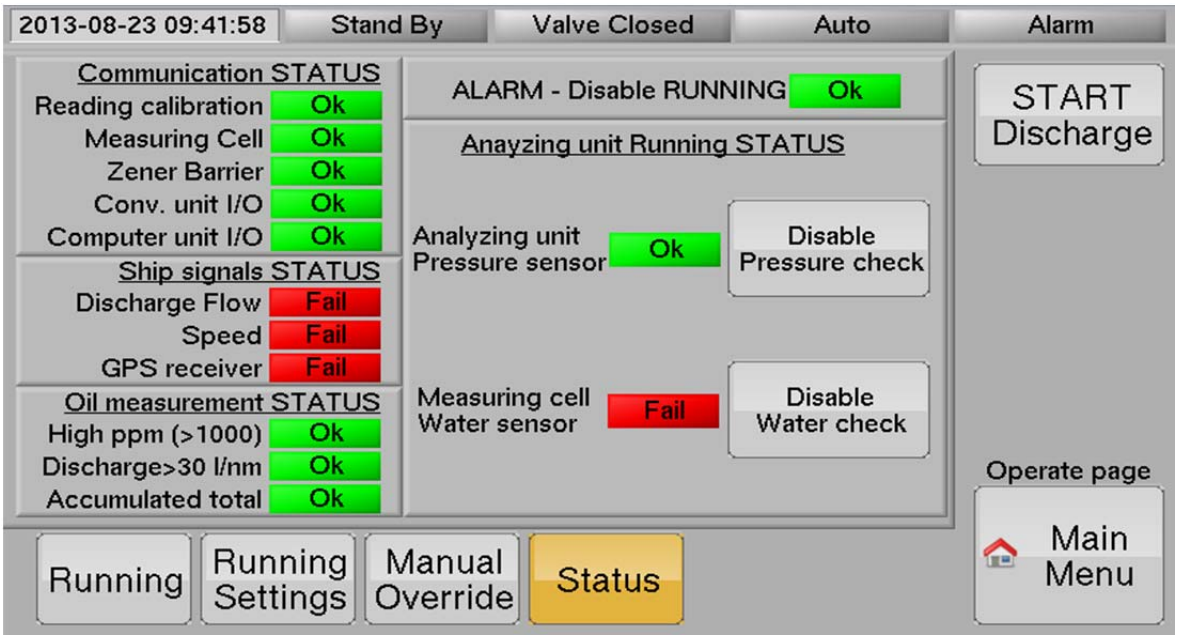
A system status indication is displayed on this page.

此页上显示系统状态指示。

This status indication gives an immediate information if discharge can be started.

如果系统启动，系统状态会给出一个直观信息。





"Ship signals Status"

Any RED indication stops discharging and blocks starts.

红色指示表示停止排放下的故障出现。

"Oil measurement Status"

Any RED indication stops discharging.

红色指示表示停止排放。

"Alarm - Disable Running"

RED indication stops running mode and blocks start. View "Alarm table" for further information about alarm status.

红色指示表示停止运行模式下的故障出现，关于报警状态查看“报警页面”的进一步信息。

"Analyzing unit Running Status"

Any RED indication stops running mode and blocks starts.

红色指示表示停止运行模式下的故障出现。

"Analyzing unit Pressure sensor"

A Pressure transmitter connected to the output of the sample pump is used to measure and protect the ODME from pump blockages or starvation.

连接在取样泵输出的压力变送器是用来测量和保护泵的堵塞或空转。

"Disable Pressure check"

Activate, Yellow indication, to disable pressure transmitter protection above.

A Red flashing indication will be shown to the right.

Only to be used in case of pressure transmitter malfunction

This selection need to be verified on a popup window.

激活，黄色指示，禁用压力变送器保护泵。

红色闪烁指示将在右侧显示。

仅适用于压力变送器故障的情况下。

这个选择需要在一个弹出窗口验证。

"Measuring cell Water sensor"

A Water sensor in the Measuring Cell is used to protect the sample pump from starvation.

测量单元上水传感器被用于保护泵空转。

"Disable Water check"

Activate, Yellow indication, to disable water checking.

A Red flashing indication will be shown to the right.

Only to be used in case of water check malfunction.

This selection need to be verified on a popup window.

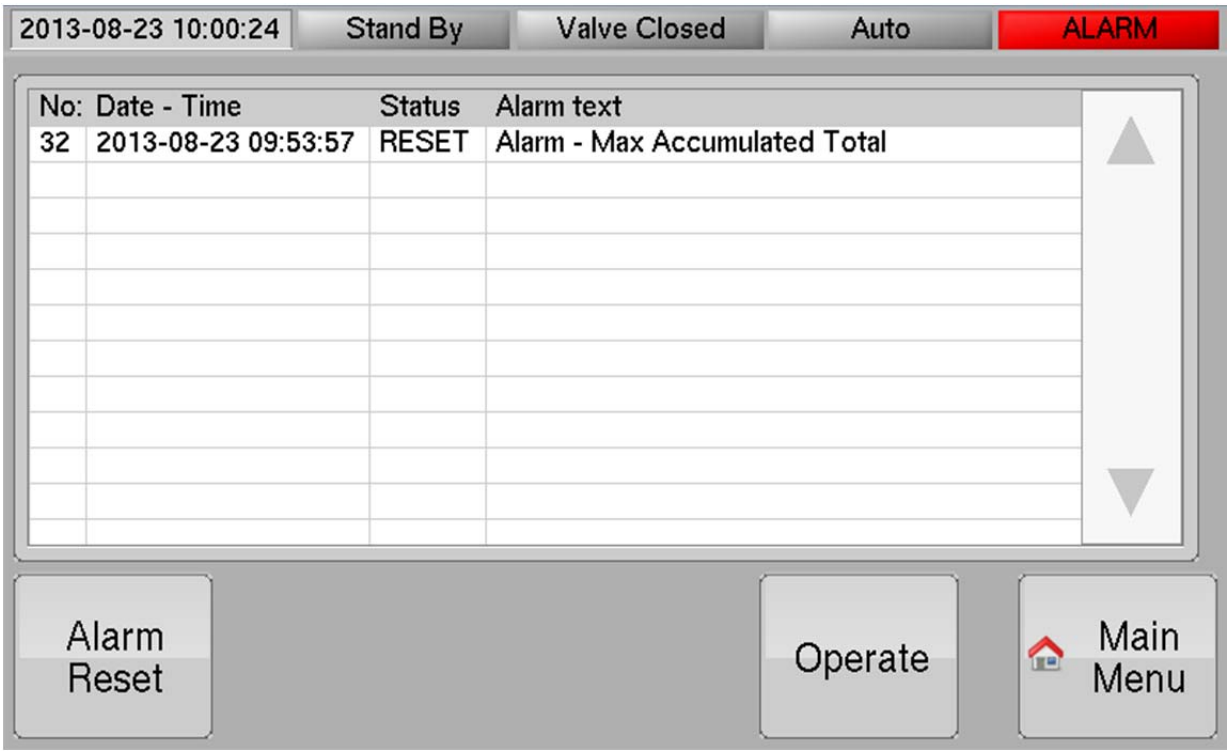
激活，黄色指示，禁用通水检查。

红色闪烁指示将在右侧显示。

只用于通水检查故障的情况下。

这个选择需要在一个弹出窗口验证

7.3 Alarm Table 报警页面



"Alarm Reset"

Resetting alarms. Status columns indicates "Active" for not reset alarms and "Reset" for remaining reset alarms.

重置报警，状态栏中“Active”表示没有重置报警，“Reset”表示已重置的报警。

"Operate"

Go to "Operate page".

转到操作页面

"Menu"

Go to "Main Menu".

转到主菜单

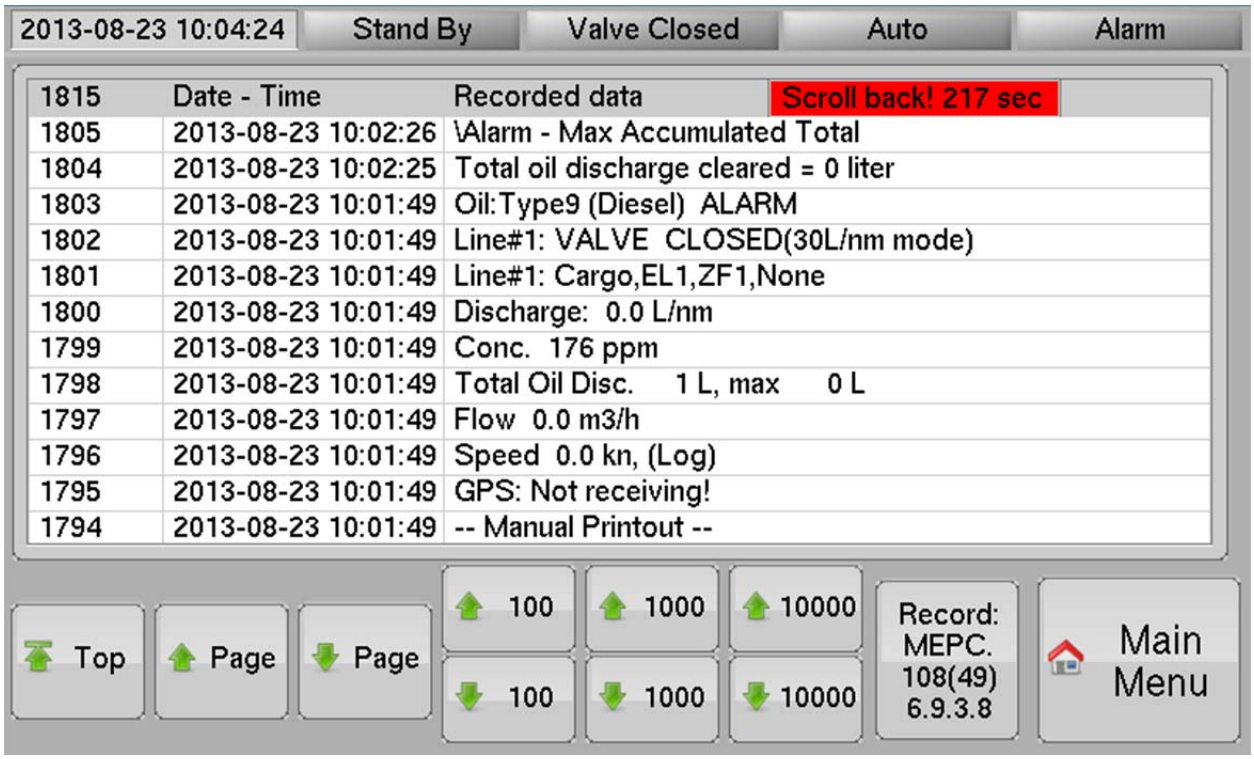
7.4 Recorded data 记录数据

The recording device is formatted electronically as mentioned in MEPC.108(49) chapter 6.9.1. Recorded date is stored in a non-volatile memory and can hold approximately 4.000.000 printouts. Optionally a paper printer can also be installed in the computer unit.

记录装置依据 MEPC.108(49) 6.9.1 章以电子格式化被记录，记录数据存储在不易丢失可容纳四百万打印输出，也可选择安装在计算机单元的纸质打印机。

Recorded data can be copied to a USB-memory stick. See chapter 7.5 USB.

记录的数据可以被复制到一个 USB 记忆棒。见 7.5 章 USB



The "Recorded Data" table shows printouts in according with MEPC.108(49), chapter 6.9.

显示打印的数据按照 108（49）协议 6.9 章。

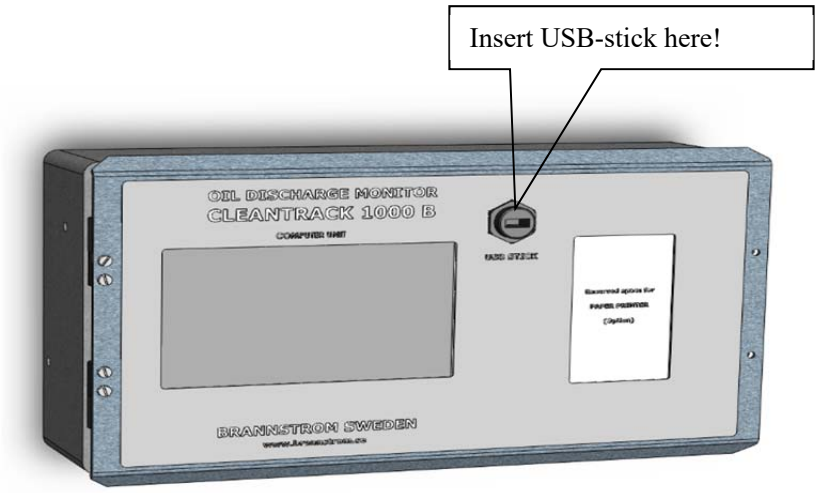
The RED "Scroll back! ### sec" is shown if latest printout is not shown on top line. After 300 seconds of inactivity indications will go back to displaying the top line.

如果新的打印纸不在顶部，会有红色“Scroll back! ### sec”指示，在 300 秒没有动作过后将返回顶部。

7.5 USB

The recording device is formatted electronically as mentioned in MEPC.108(49) chapter 6.9.1. Recorded data is stored in a non-volatile memory and can hold approximately 4.000.000 printouts. Recorded data can be copied to a USB-memory stick

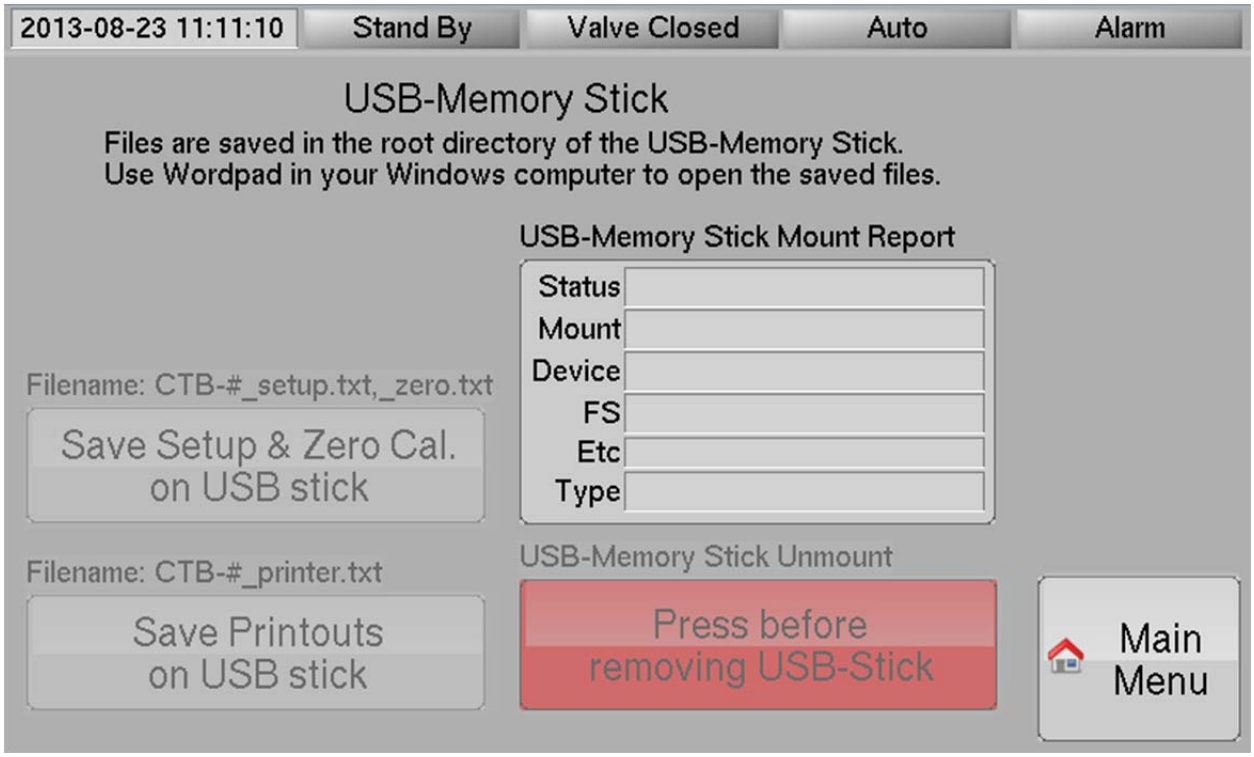
记录装置依据 MEPC.108(49) 6.9.1 章以电子格式化被记录，记录数据存储在不易丢失可容纳四百万打印输出，记录的数据可以被复制到一个 USB 记忆棒。



7.5.1 USB-Memory stick USB 记忆棒

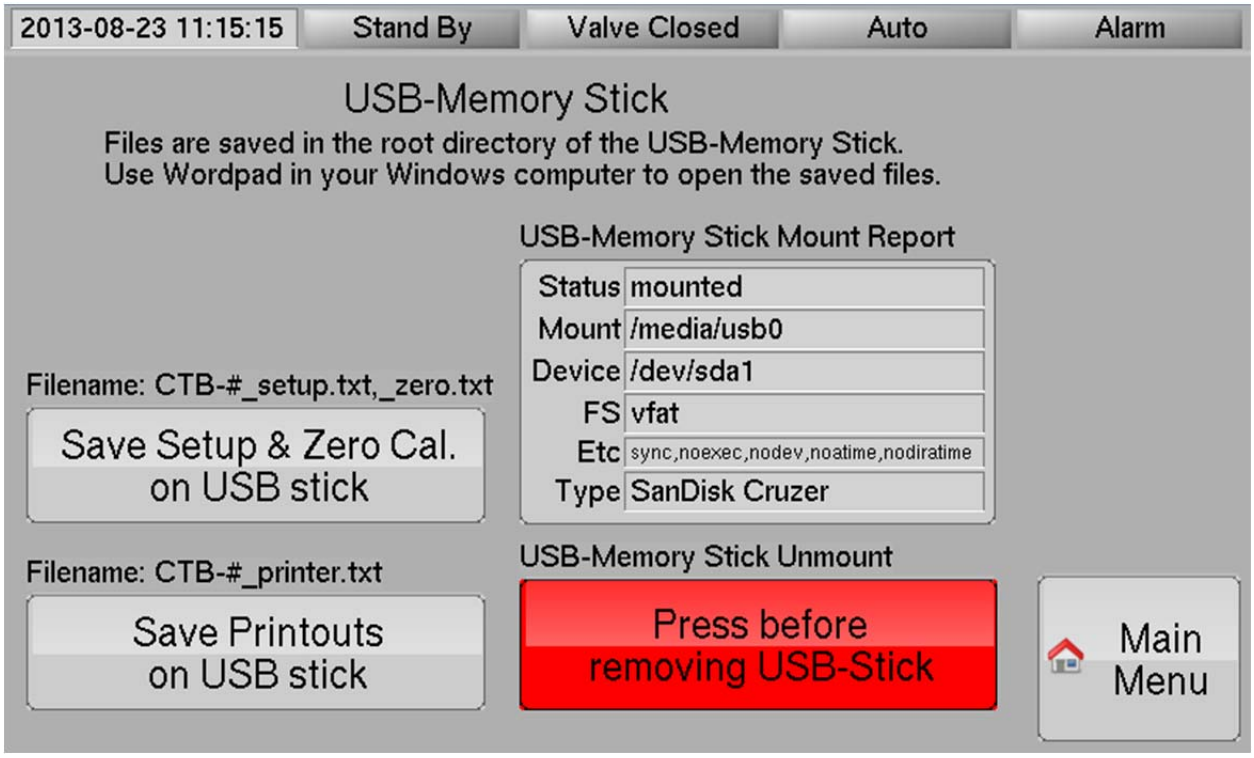
Indications before a USB-Memory stick is inserted.

插入 USB 前显示



Indications after a USB-Memory stick is inserted.

插入 USB 后显示



"USB-Memory Stick report"

Indicates if a USB-Memory stick is attached or not on its "Status" line.

When a USB-Memory stick is found the other 3 buttons becomes highlighted.

表示 USB 记忆棒已连接但不在传输“状态”。当 USB 记忆棒插入被识别后其他 3 个按钮就会突出。

"Save Printouts on USB stick"

Copy the printer file to the USB-Memory stick.

A new menu open up with selections of how many printer lines to copy.

The copy of the printer file will be stored in the root directory of the USB-Memory stick. The file name is "CTB-#_printer.txt".

复制文件到打印机的 USB 记忆棒。

打开一个新的菜单进行选择复制打印机。

需要打印的文件的副本将存储在 USB 记忆棒根目录。文件名称是“CTB-#_printer.txt”。

"Save Setup & Zero Cal. on USB stick"

Copy the Setup file and the zero calibration files to the USB-Memory stick.

The Setup file contains all settings made from the touch screen.The file name is "CTB-#_setup.txt"

The Zero calibration file contains the result from the latest successful calibration.The file name is "CTB-#_zero.txt".

复制安装文件和校零文件到 USB 记忆棒。

安装文件包含所有触摸屏设置。文件名为“CTB-#_setup.txt”。

校零文件包含最新的校准结果。文件名为“CTB-#_zero.txt”。

"Press before removing USB-Stick"

Important! Press this button before removing the USB-Memory stick.

The "Status" line will show when the stick is unmounted and can be removed.

If the USB-stick is removed before this button is pressed, power must be switched off and on again before the Computer Unit can recognize a USB-stick again.

重要！请在移除 USB 记忆棒之前按下这个按钮。

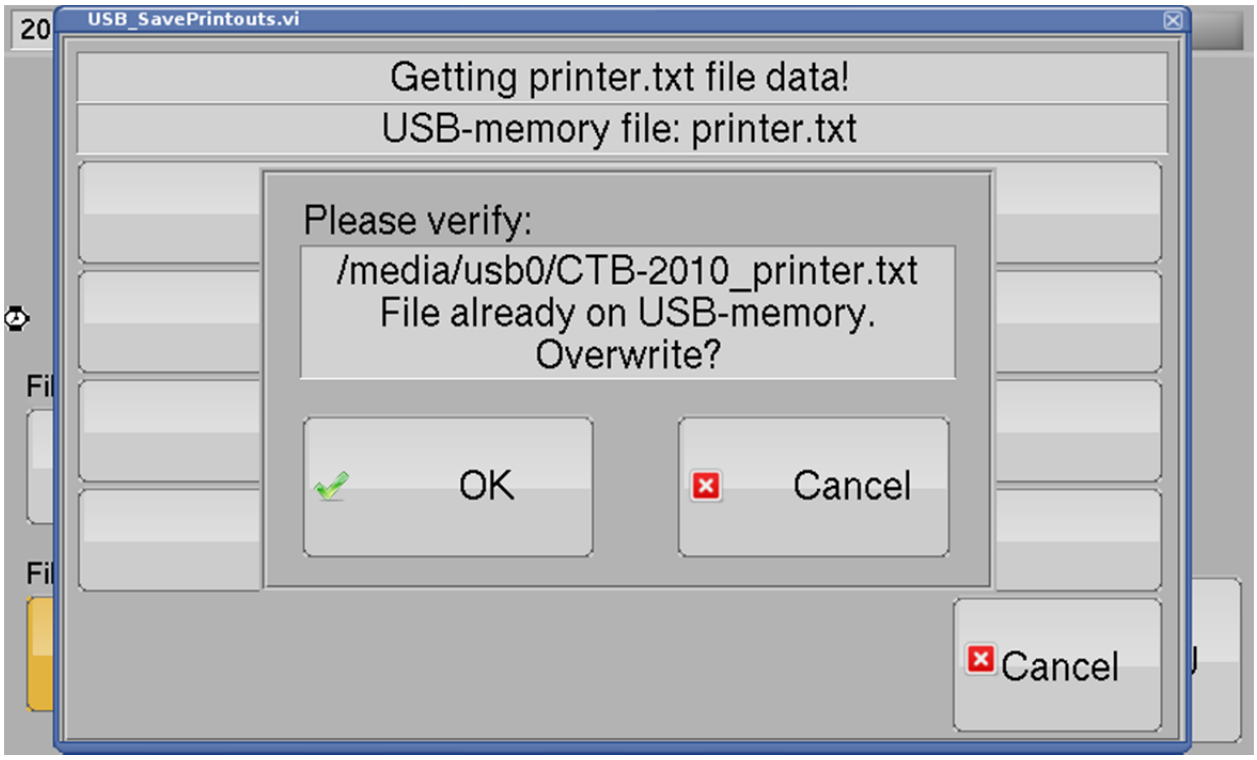
状态栏显示记忆棒被拔出。

如果在按这个键前拔出 USB，需要重启计算机单元再识别 USB 记忆棒。

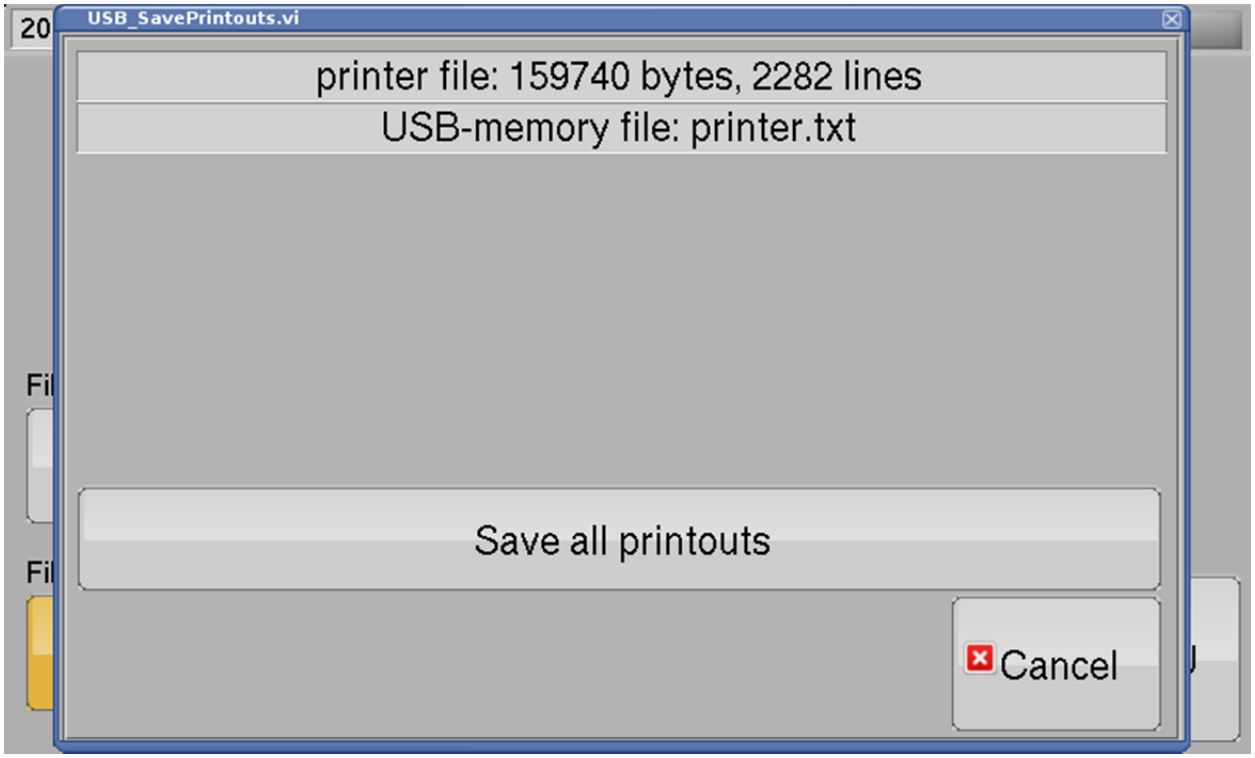
7.5.2 Save Printouts on USB stick 保存至 USB

If the printer file already exist on the USB-stick an overwrite selection is displayed.

如果打印机文件已经存在于 USB 棒上，选择覆盖显示如下。



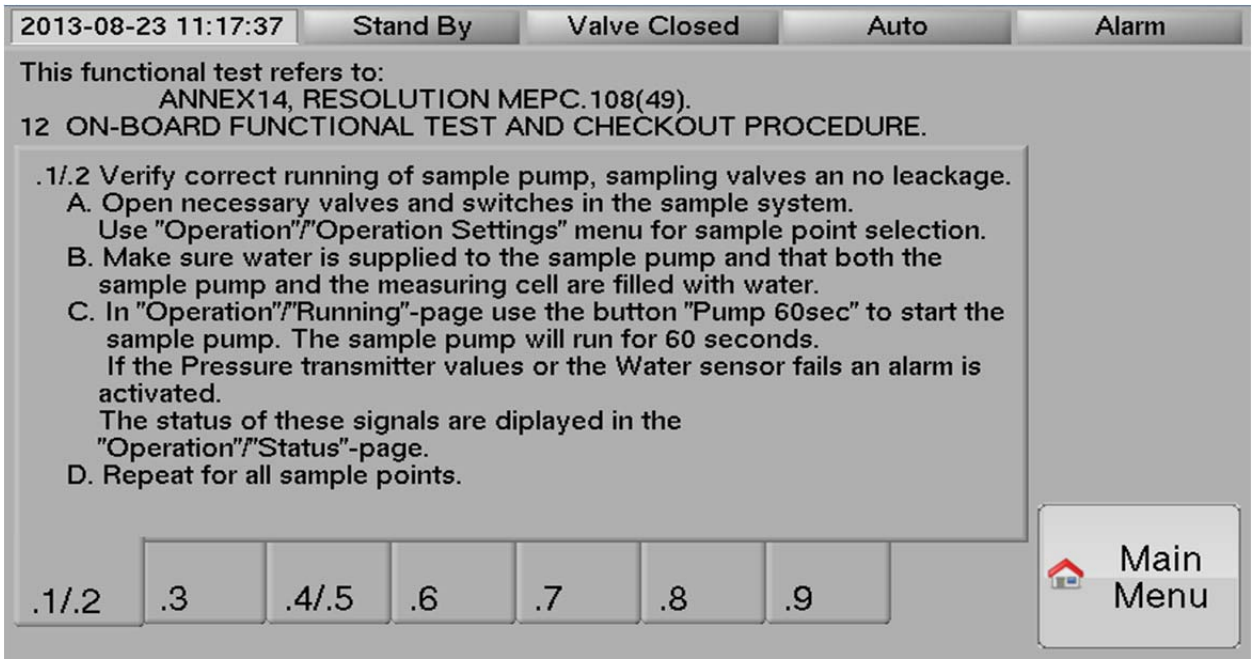
Select how many printouts to save on the USB-stick.
选择保存在 USB 记忆棒的打印输出。



7.6 On-board Test 船上功能试验

This chapter refers to ANNEX 14, RESOLUTION MEPC.108(49) chapter 12.

本章引用 MEPC.108（49）决议附则 14 第 12 章 。

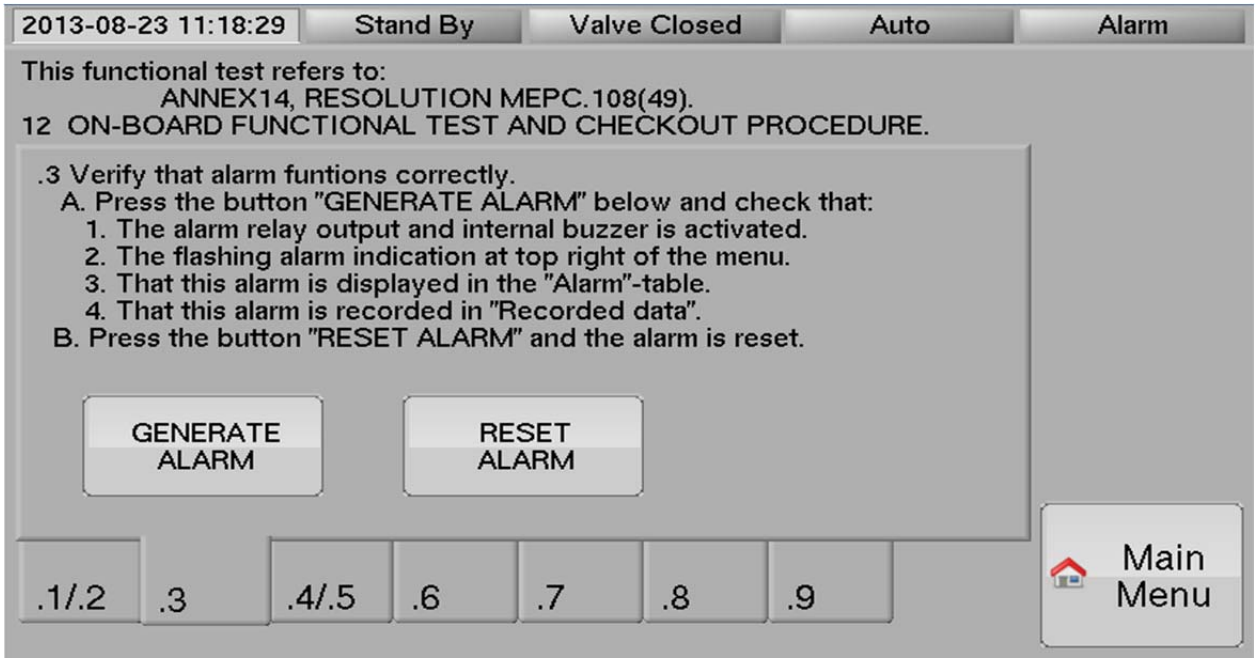


.1 Verify correct running of pumps, absence of leakage in the sample pumping and piping system, correct functioning of remote controlled sampling valves, etc.

确认泵正常运行，样品泵和管路系统无裂缝，遥控取样阀正常运行。

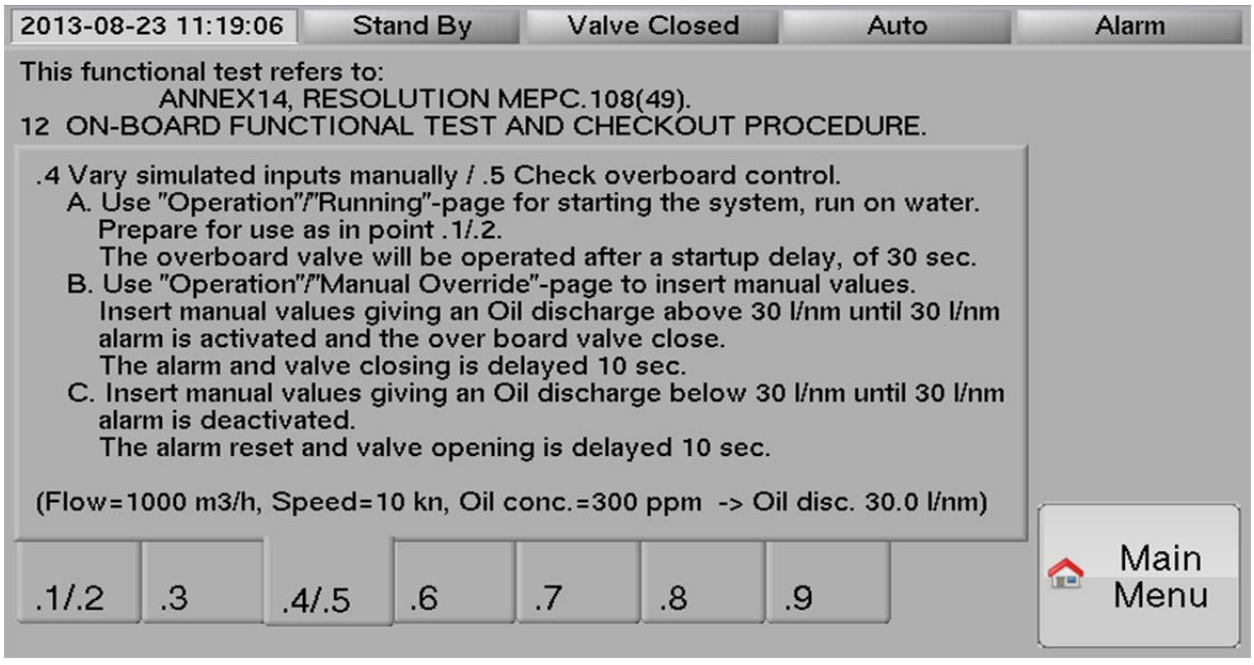
.2 Verify by checking flow rates or pressure drops, as appropriate, that the system operates under correct flow conditions. This test should be repeated separately for each sampling point.

通过核查流速或压降（如适合）确认系统在正常的流量状态下运行。对每个取样点应单独重复该试验。



.3 Verify that alarms function correctly when a malfunction occurs external to the monitoring system, such as no sample flow, no flow meter signal, power failure, etc..

确认当监控系统外发生故障时，例如无取样水流，无流量计信号，电源故障等，报警装置能正常工作。



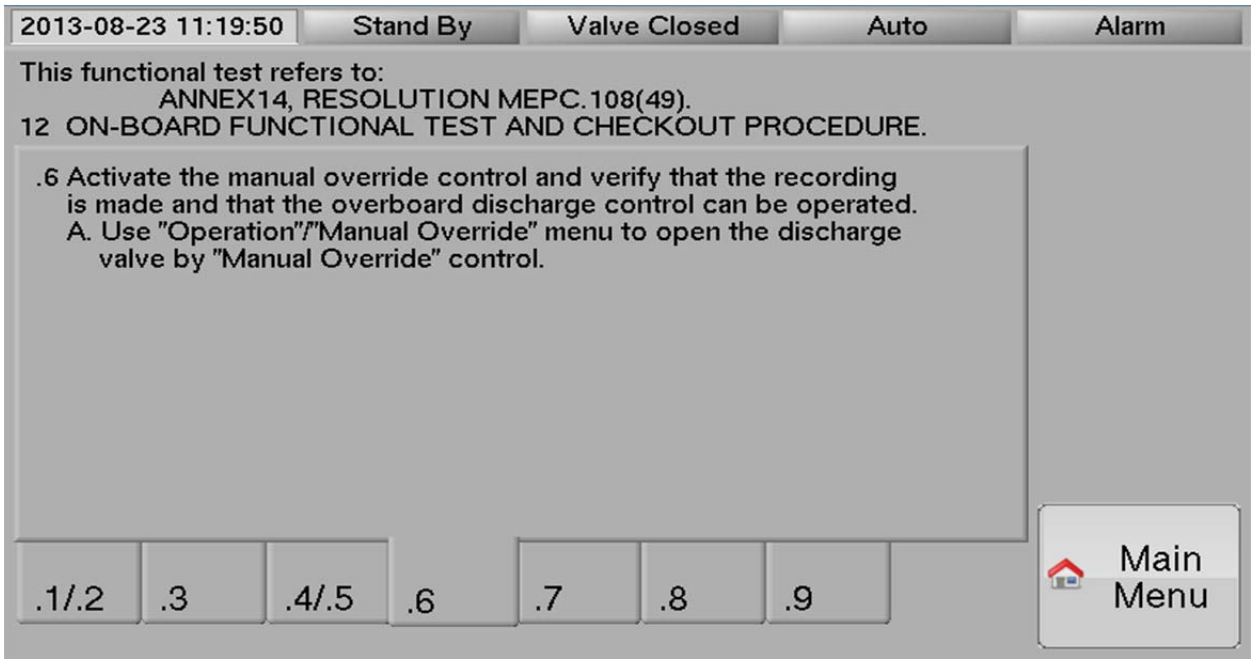
.4 Vary the simulated input signals manually while the monitoring system is operating on water and check the recordings for correct values and timing. Vary the simulated manual input signals until alarm conditions are obtained, and verify proper recordings. Ascertain that the overboard discharge control is activating and verify that the action is being recorded.

当监控系统用水工作时，手动改变模拟输入信号并核查数值和时间记录是否正确。改变模拟手动输入信号直到达到报警条件，并确认记录正确。确认舷外排放控制正在工作并确认该动

作正被记录。

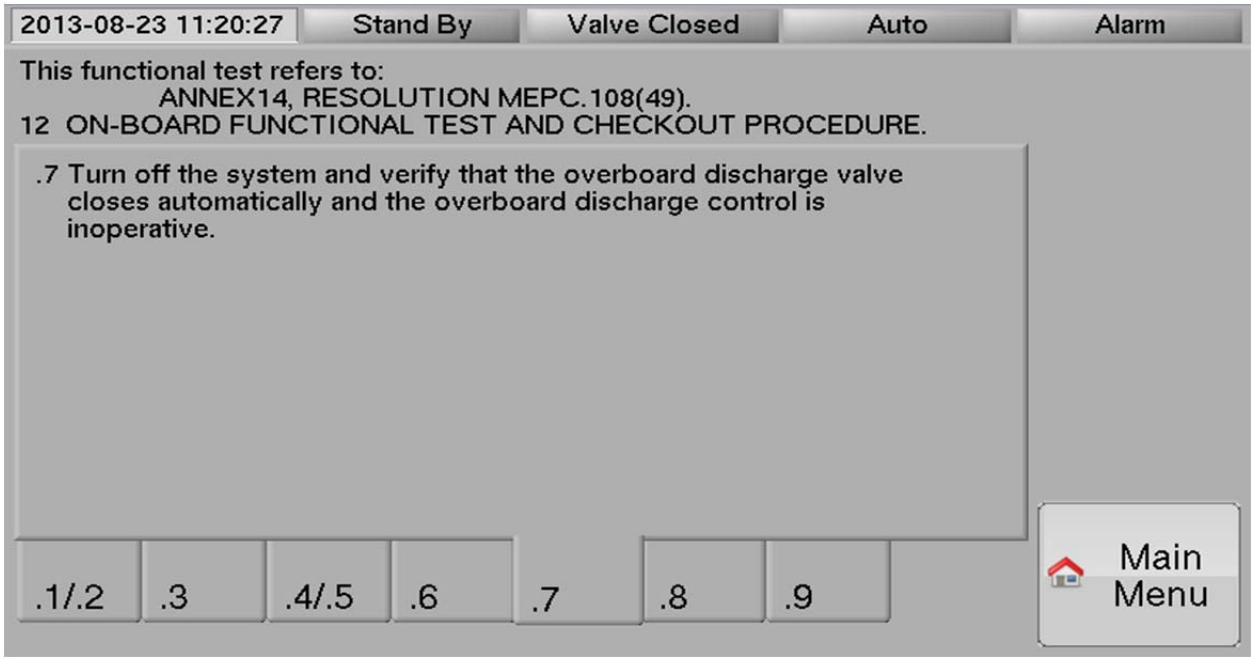
.5 Verify that normal operating condition can be reset when the value of the instantaneous rate of discharge is reduced below 30 liters per nautical mile.

确认当瞬时排放值减至 30 升/海里以下时，可重新恢复到正常操作条件。



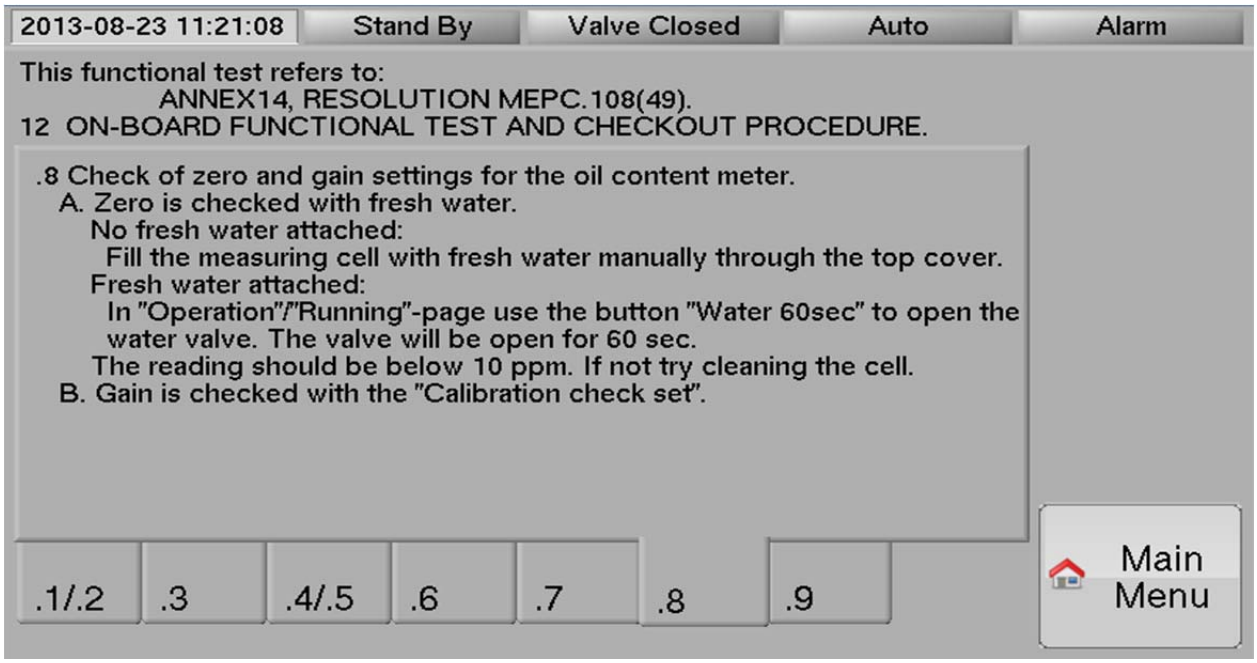
.6 Activate the manual override control and verify that a recording is made and that the overboard discharge control can be operated.

激活手动越控控制并确认已作记录且确认舷外排放控制的功能。



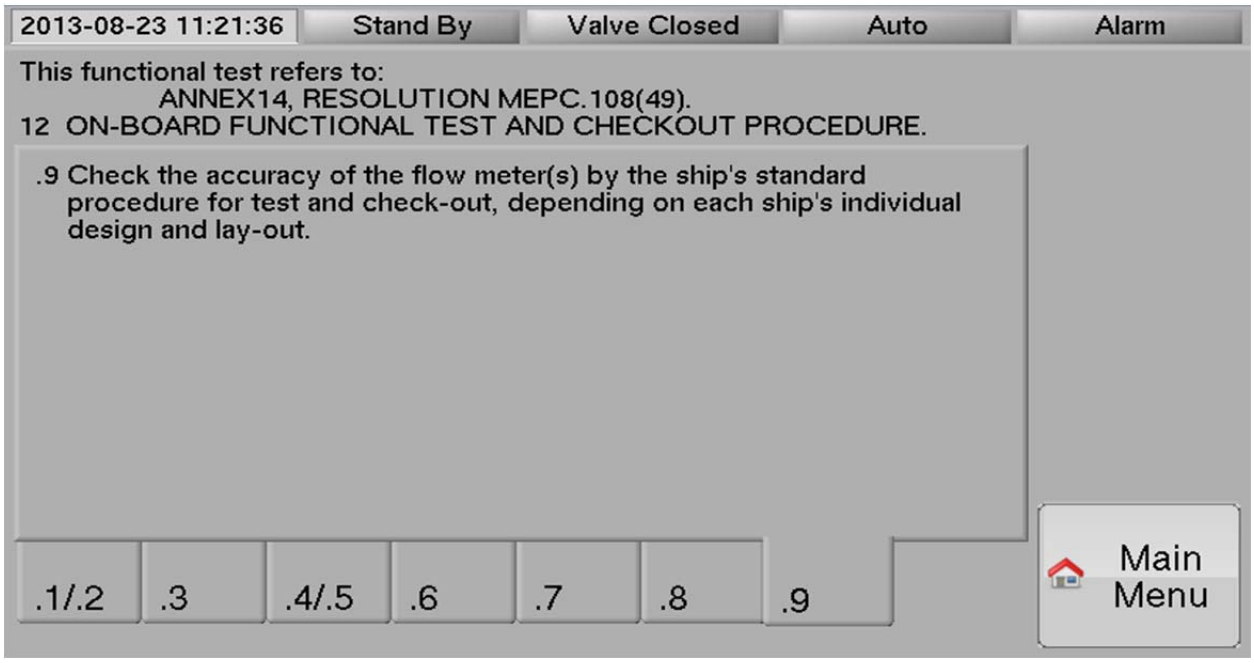
.7 Turn off the system and verify that the overboard discharge valve closes automatically or the relevant pumps are stopped and the overboard discharge control is inoperative.

关闭系统并确认舷外排放阀自动关闭或相关泵已停止，舷外排放控制不能动作。



.8 Start up the system and check the zero and gain settings for the oil content meter in accordance with the manufacturer's operations and technical manual.

按制造商的操作和技术手册起动系统，核查油份计的零位及增量设定。



.9 Check the accuracy of the flow meter(s), for example by pumping water in a loop where the flow rate may be calculated from the level change in a tank. The check should be made at a flow rate of about 50% of the rated flow of the flow meter.

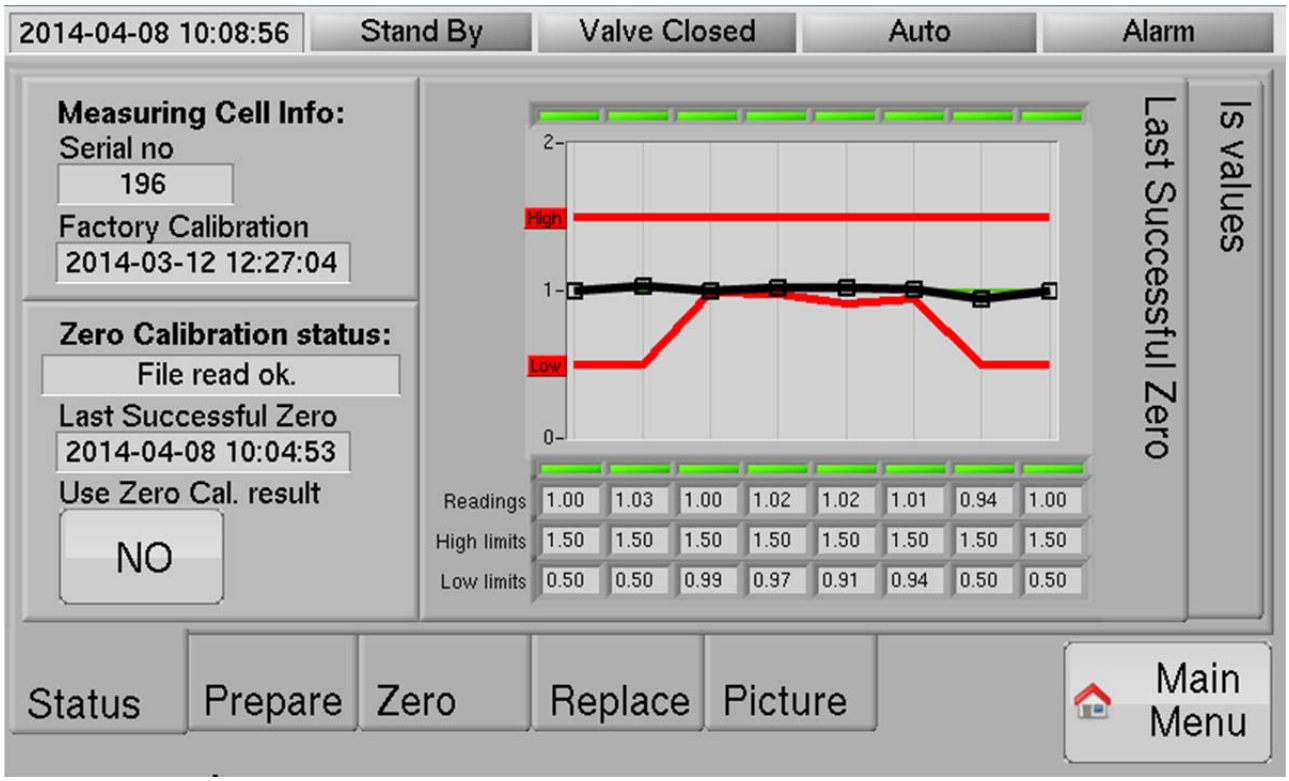
核查流量计的精度，例如通过泵吸弯曲外的水，流速可从舱中的液位改变来计算。应在流量计额定流速的 50%的流速情况下进行核查。

7.7 Measuring Cell Check/Calibration 测量单元检查/校准

7.7.1 Zero Calibration Status 校零状态

Indicates the Zero Calibration status of the connected Measuring Cell.

连接的测量单元的校零状态指示。



The graph indicates eight different values measured in the Measuring Cell. Values from the left are: #1 internal reference, #2-6 photo diodes, #7 water detector, #8 temperature.

图表示测量单元中测量的八个不同值。1#内部参考，2-6#光电二极管，#7 水探测，#8 温度。

The upper red line is the high limit and the lower red line indicates the low limits for accepting as fresh water (0 ppm).

图中上红线是上限，下红线表示接受淡水的下限（0 ppm）。

Values outside of accepted areas are indicated by a red light and inside by a green light.
Measured values (Readings) and limits are also displayed numeric below the graph.

被认可区域以外的值由红灯指示，内部由绿灯指示。

测量值（读数）和限制的数值也显示在图表下面。

"Serial no"

Serial number of the connected Measuring Cell.

连接测量单元的序列号。

"Factory Calibration"

Factory calibration time of the connected Measuring Cell.

连接测量单元的工厂校准时间。

"Zero Calibration status:"

Calibration status.

校准状态。

"Last Successful Zero"

Display the time of the last successful Zero Calibration of the connected Measuring Cell. Unsuccessful trials are not indicated here.

显示连接测量单元最后一次成功零校准的时间。

不成功的不显示在这里。

"Use Zero Cal. result"

Selection if the Zero Calibration Result is used in the concentration calculations.

在浓度计算中使用校零结果。

"Last Successful Zero"

Displays the values from the last successful zero.

显示来自上次校零成功的值。

"Is values"

Displays the measured values.

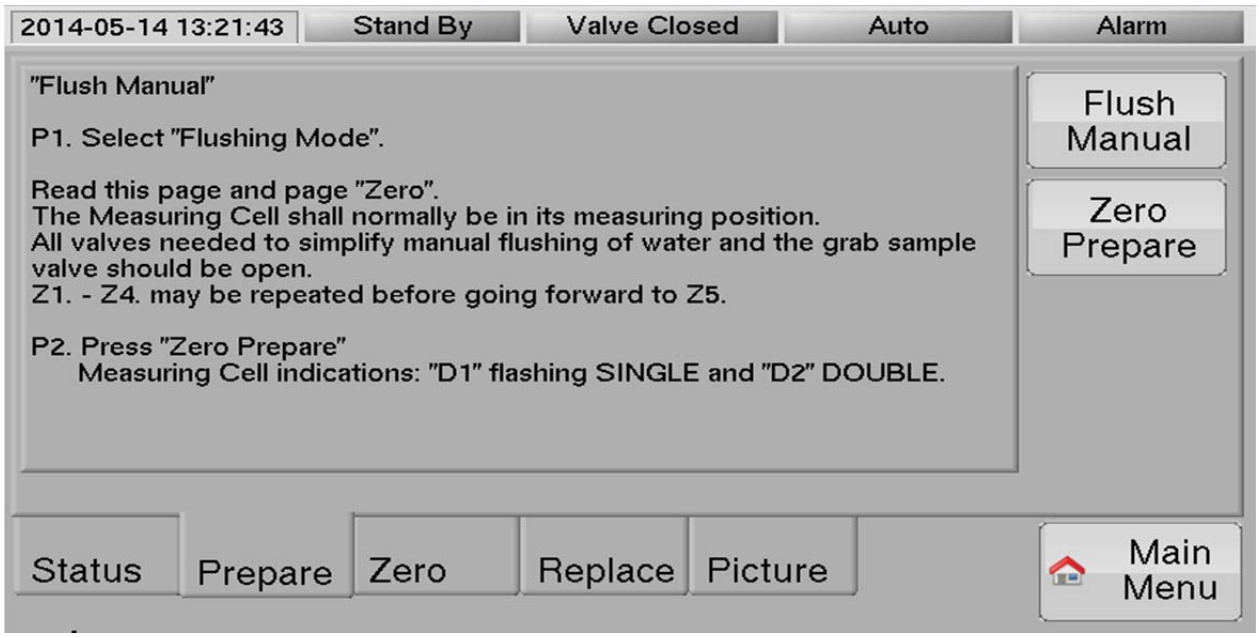
显示测量值。

7.7.2 Zero Calibration Prepare 校零准备

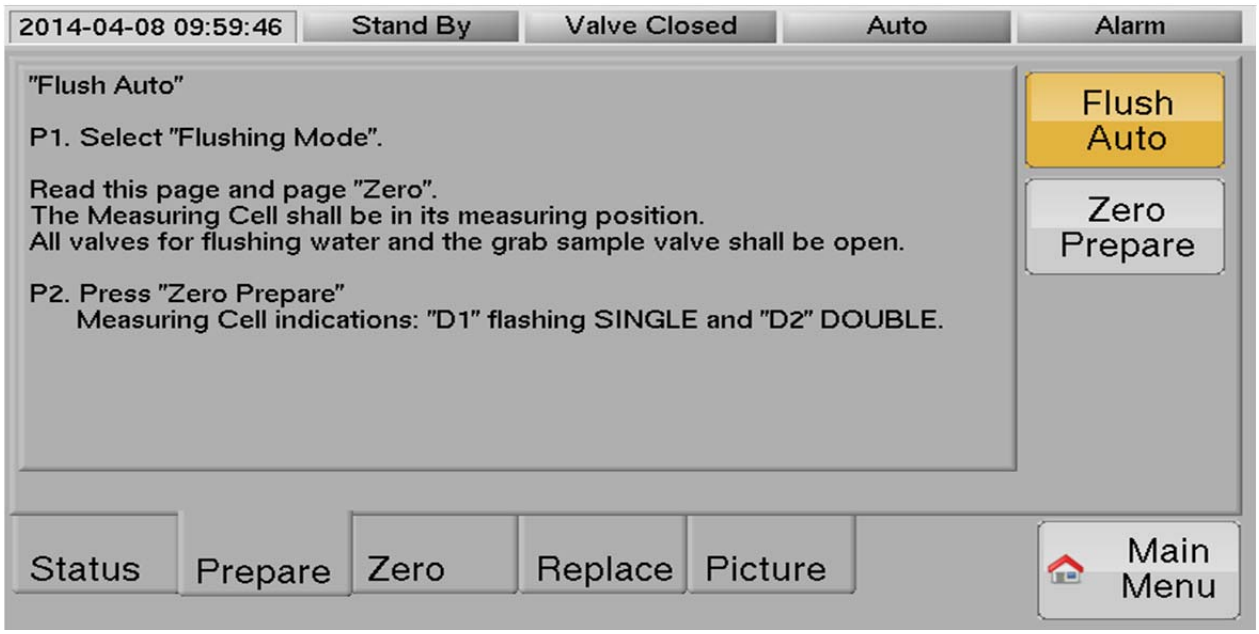
Zero Calibration can be performed in 2 different ways. If the installation has a "Controlled Water Valve" this fresh water can be used for calibration. If not, water has to be manually poured into the Measuring Cell.

零校准可以用 2 种不同的方式进行。如果安装有“控制水阀”，这种淡水可用于校准。如果没有，水必须手动倒入测量单元。

Flush Manual:



Flush Auto:



"Flush Manual/Auto"

Press this key to toggle between manual flushing and automatic flushing by the "Controlled Water Valve". If "No Controlled Water Valve" is selected in the Setup/Config-page this button is not visible.

按“Controlled Water Valve”按键切换手动冲水和自动冲水的。如果选择“No Controlled Water Valve”，配置页中选择此按钮是不可见的。

"Zero Prepare"

Press this key to start preparations for Zero Check/Calibration.

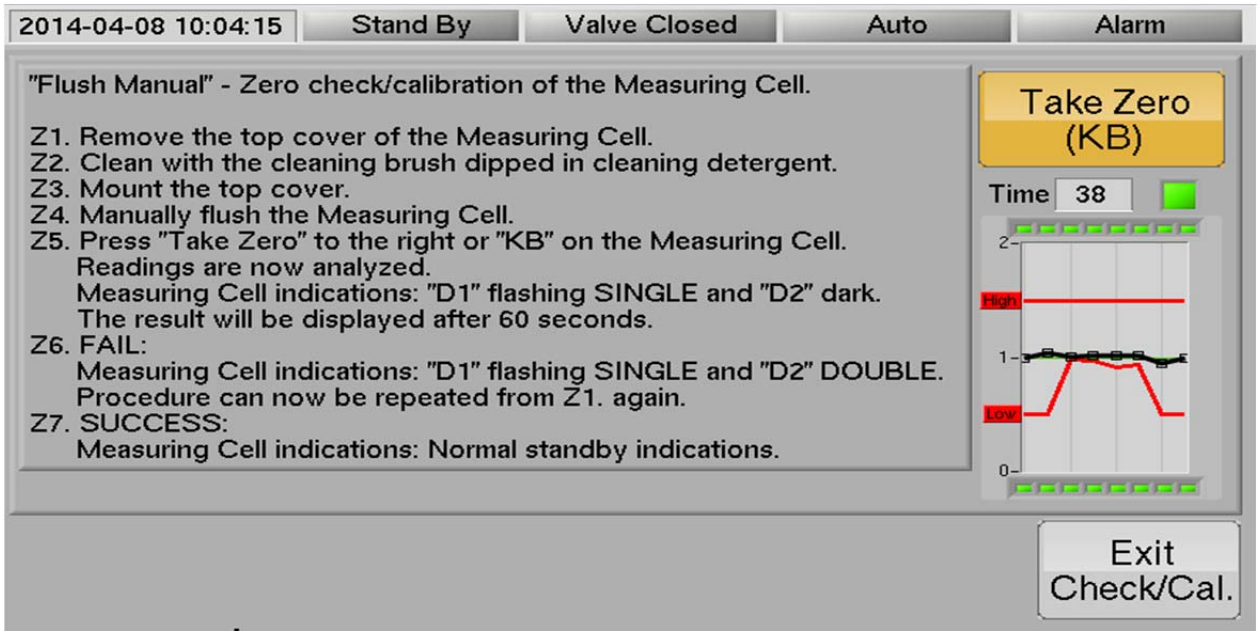
按这个键开始准备零检查/校准。

7.7.3 Zero Calibration Take Zero 校零

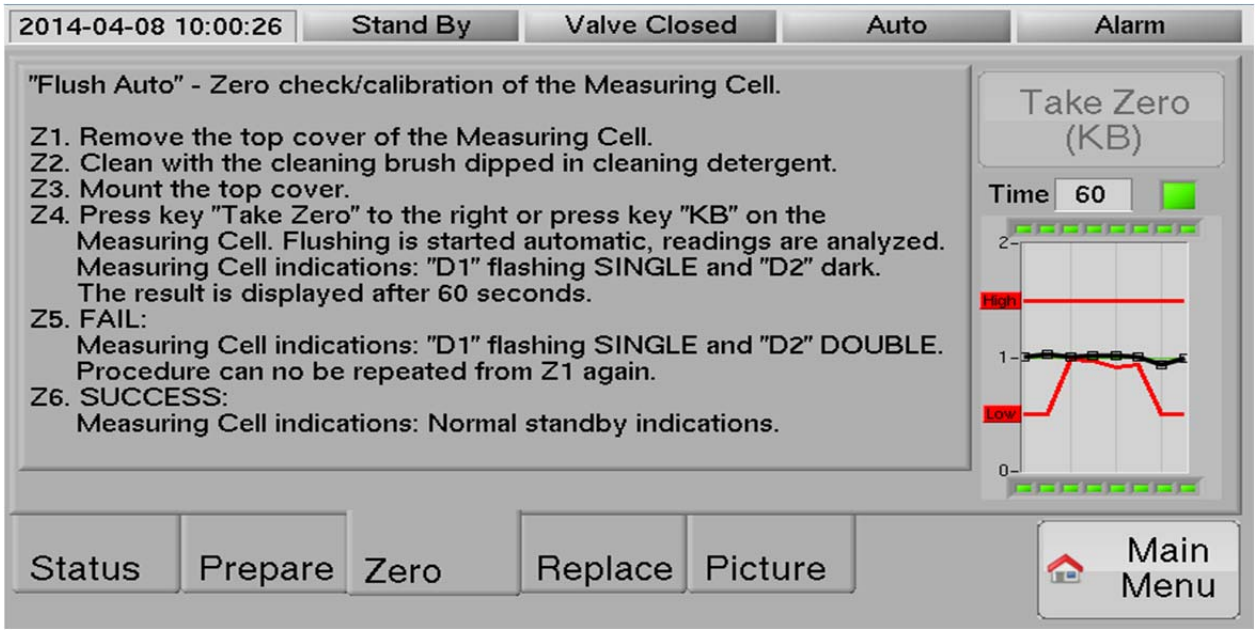
When "Zero Prepare" is pressed the tabs "Status","Prepare",...,"Picture" are no longer visible.

当“Zero Prepare”被按下，“Status”,“Prepare”，“Picture”等将不会再显示。

Flush Manual:



Flush Auto:



"Take Zero (KB)"

Press this key to start Zero Check/Calibration. Reading are analyzed for 60 seconds.

按此键开始零检查/校准。分析阅读需要 60 秒。

"Time"

Counting down seconds while reading are analyzed.

分析阅读时的倒数秒数。

"Square indication"

Indicates the result of the Check/Calibration, red = fail / green = ok.

表示检查/校准的结果，红色表示失败/绿色表示成功。

"Graph indication"

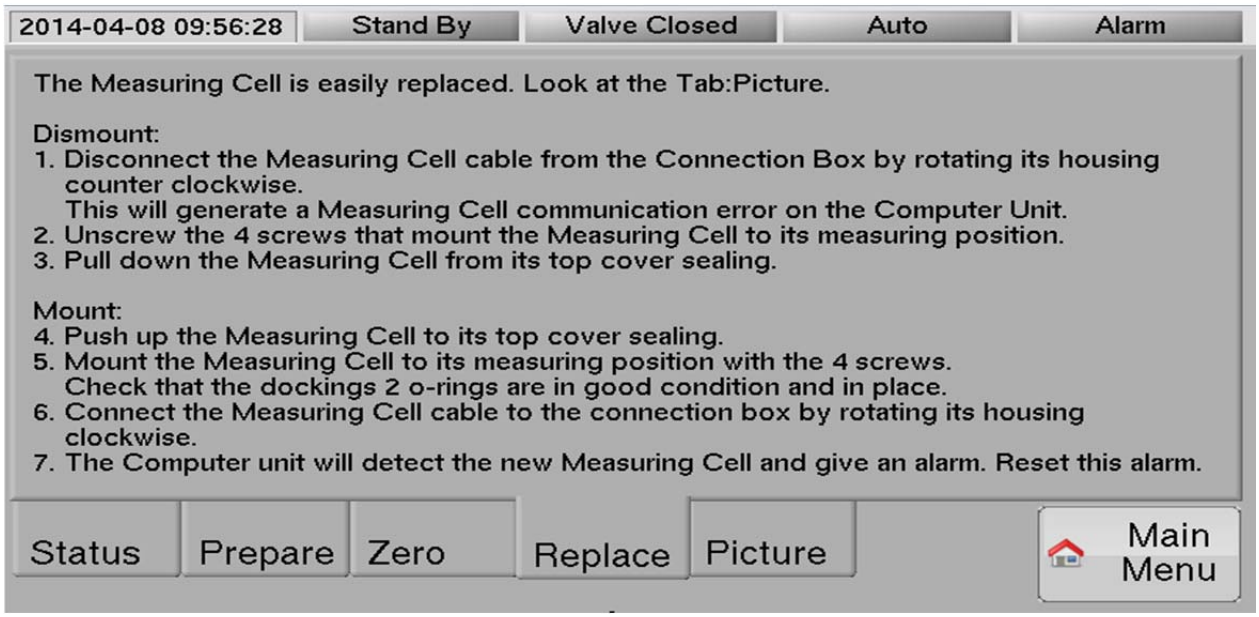
See explanation 2 pages up when where Status is explained.

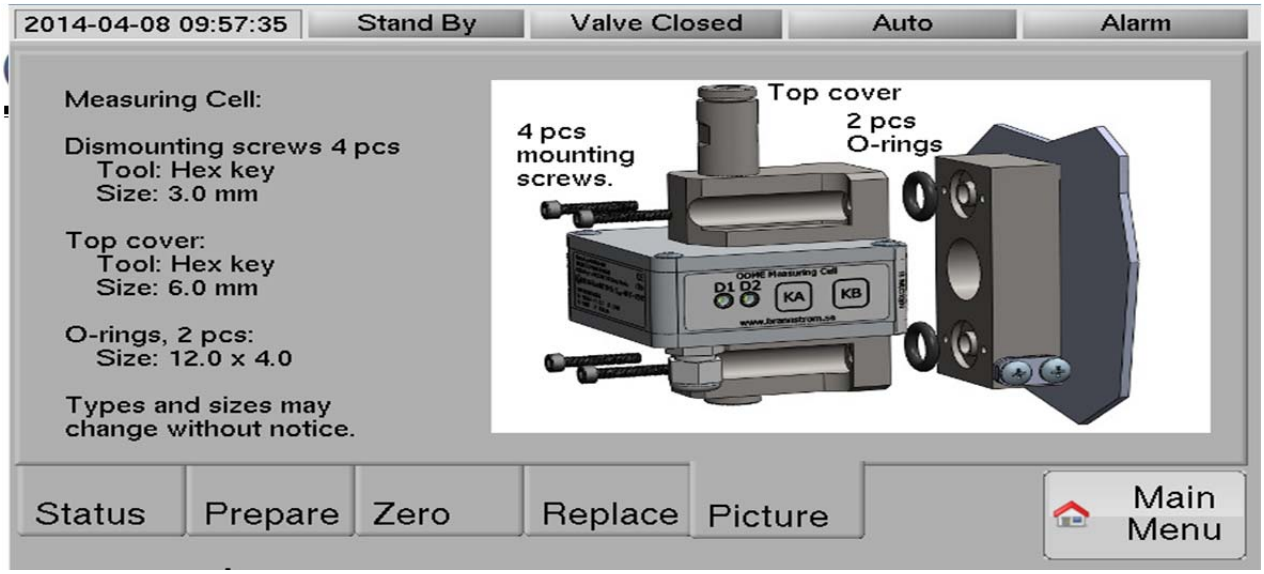
详细状态的解释见第 2 页。

7.7.4 Replace Measuring Cell 置换测量单元

The instructions on the 2 pages below describes how the Measuring Cell is replaced and the tools needed.

在下面 2 页的说明描述了如何更换测量单元和所需的工具。





7.8 Setup of parameters 参数设置

In each system setting the system details are selected by pressing indicators with white background or buttons. To enter the “Setup”-page you should first use: Password: "3" and "Admin".

在每个系统设置中，通过按压白色的背景或按钮选择系统设置。要进入“设置”页，您应该首先使用：密码：“3”和"Admin"。

Greyed out indications and buttons cannot be changed without giving the password for “Restricted Settings”. Password: “8515 and “Admin”.

灰色的标志和按钮没有“限制设置”的密码是无法修改的。密码：“8515”和“Admin”。

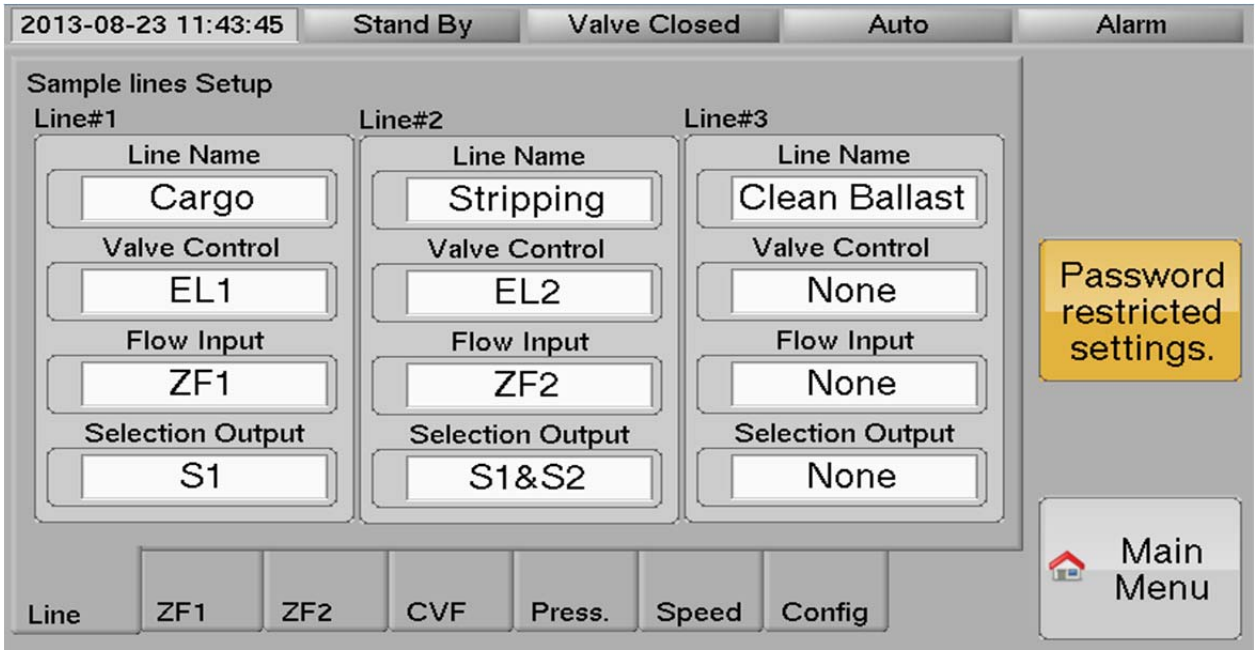
Caution must be taken before changing setup settings. Changes are recorded at change time or on normal printouts.

更改设置之前必须谨慎。更改时间或正常打印都会被记录下来。

7.8.1 Line of discharge 管路排放

The system handles a maximum of 3 discharge lines but maximum of 2 overboard valves.

该系统最多安装 3 个排放管，但舷外阀最多 2 个。



"Line Name" Name of each overboard line. Drop down list below:

每个排放管的名称，列表如下：

"Not Used" Line is not used.

管路没有被使用。

" " 30 L/nm alarm mode, line has no name.

30 升/海里报警模式，管路没有名字。

"Cargo" 30 L/nm alarm mode, line name is "Cargo".

30 升/海里报警模式，货油管路。

"Stripping" 30 L/nm alarm mode, line name is "Stripping".

30 升/海里报警模式，洗舱管路。

"Slop" 30 L/nm alarm mode, line name is "Slop".

30 升/海里报警模式，污水管路。

"Dirty Ballast" 30 L/nm alarm mode, line name is "Dirty Ballast".

30 升/海里报警模式，污压载水管路。

"Clean Ballast" 15 ppm alarm mode, line name is "Clean Ballast".

15PPM 报警模式，干净压载水管路。

"Valve Control" Hardware relay output and input.

硬件继电器输出输入。

"None" No valve control.

没有阀控制。

"EL1" Relay output on terminals 3 and 4 in Computer Unit.
Feedback input on terminals 26 and 27 in Computer Unit.

计算机单元端子 3 和 4 上的继电器输出。

计算机单元端子 26 和 27 上的反馈输入。

"EL2" Relay output on terminals 5 and 6 in Computer Unit.
Feedback input on terminals 28 and 29 in Computer Unit.

计算机单元端子 5 和 6 上的继电器输出。
计算机单元端子 28 和 29 上的反馈输入。

"EL1-ZD1" Relay output on terminals 3 and 4 in Computer Unit.
Feedback input on terminals ZD1 in Converting Unit.
计算机单元端子 3 和 4 上的继电器输出。
转换单元端子 ZD1 上的反馈输入。

"EL2-ZD2" Relay output on terminals 5 and 6 in Computer Unit.
Feedback input on terminals ZD2 in Converting Unit.
计算机单元端子 5 和 6 上的继电器输出。
转换单元端子 ZD2 上的反馈输入。

"EL1-INV" Relay output on terminals 3 and 4 in Computer Unit.
Feedback input on terminals 26 and 27 in Computer Unit.
Open contact indicating closed overboard valve.
计算机单元终端 3 和 4 上的继电器输出。
计算机单元终端 26 和 27 上的反馈输入。
指示触点打开，关闭舷外阀。

"EL2-INV" Relay output on terminals 5 and 6 in Computer Unit.
Feedback input on terminals 28 and 29 in Computer Unit.
Open contact indicating closed overboard valve.
计算机单元终端 5 和 6 上的继电器输出。
计算机单元终端 28 和 29 上的反馈输入。
指示触点打开，关闭舷外阀。

"Flow Input" Actual flow meter.
实际流量计。

"None" No flow meter for this line.
管路上没流量计。

"ZF1" ZF1 input on Zener Barrier PCB is used.
Zener Barrier PCB 板上 ZF1 被使用。

"ZF2" ZF2 input on Zener Barrier PCB is used.
Zener Barrier PCB 板上 ZF1 被使用。

"CVF" CVF input on Converting Unit PCB is used.
转换单元 PCB 上 CVF 被使用。

"ZF1->ZF2" ZF1 input on Zener Barrier PCB is used but calculations are setup in ZF2-page.
Zener Barrier PCB 板上 ZF1 被使用但计算值设置在 ZF2 那一页。

"Selection Output" Hardware relay output to activate when line is selected

当选择管路时，硬件继电器输出被激活。

"None" No hardware relay output for this line.

此管路上没有继电器输出。

"S1" Relay output on terminals 5 and 6 on Converting Unit PCB.

转换单元端子 5 和 6 继电器输出。

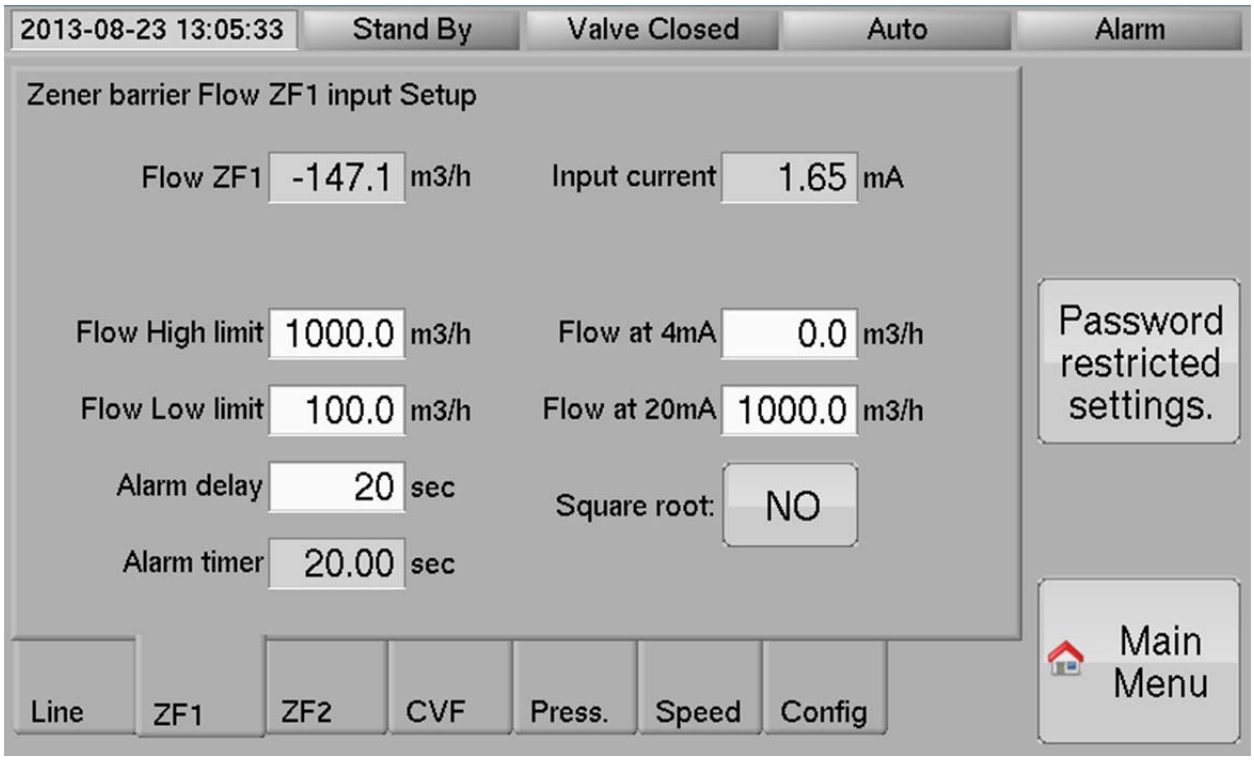
"S2" Relay output on terminals 7 and 8 on Converting Unit PCB.

转换单元端子 7 和 8 继电器输出。

"S1&S2" Both relay outputs above are activated.

以上两个继电器输出均被激活。

7.8.2 ZF1 (Zener barrier flow input 1)流量设置



"Flow ZF1" Is value, calculated flow.

计算流量值。

.

"Flow High limit" High flow limit.

流量上限。

"Flow Low limit" Low flow limit.

流量下限。

"Alarm delay" Alarm delay.

报警延时。

"Alarm timer" Alarm time to count down the alarm delay.

报警延时时间倒数。

"Input current" Measured current on ZF1 input.

测量 ZF1 输入流量。

"Flow at 4mA" Corresponding flow for current input of 4 mA.

电流输入 4 mA 的相应流量。

"Flow at 20mA" Corresponding flow for current input of 20 mA.

电流输入 20 mA 的相应流量。

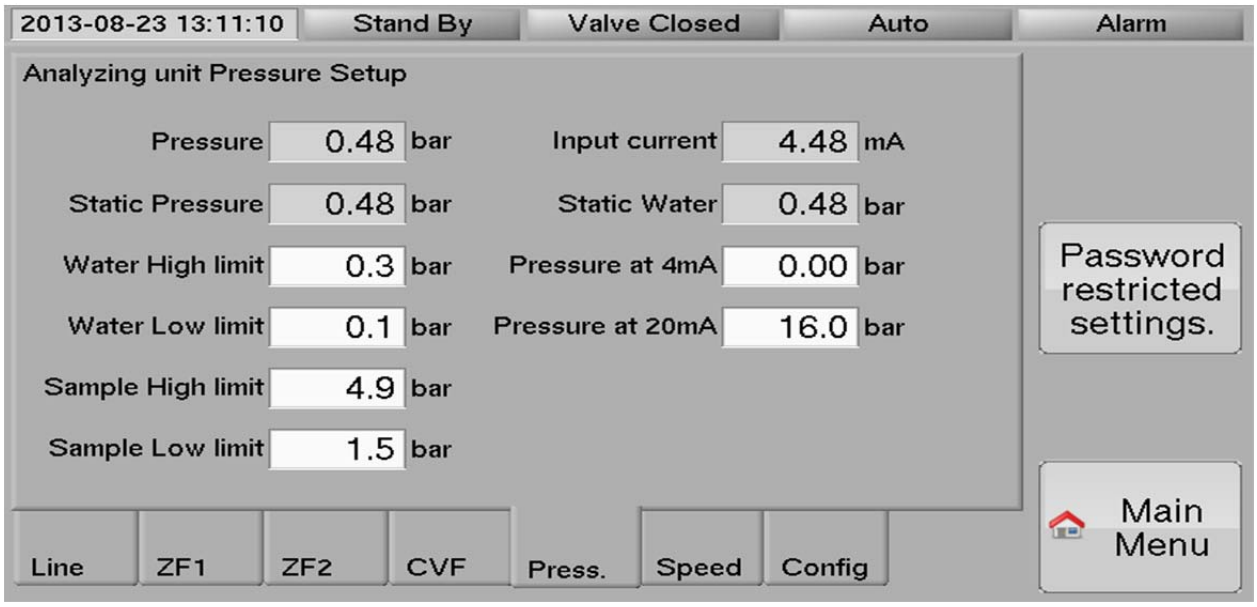
"Square root" NO if current is linear to flow, YES if current is linear to pressure.

NO 是电流和流量成线性关系，YES 是压力和流量成线性关系。

ZF2 and CVF Same as ZF1 above.

ZF2 和 CVF 如上述 ZF1 相同。

7.8.3 Pressure 压力



"Pressure" Is value, calculated pressure.

计算出的压力值。

"Static Pressure" Measured counter pressure from overboard line.

从舷外管测量的反压力。

"Water High limit" High pressure limit from fresh water.

淡水压力上限。

"Water Low limit" Low pressure limit from fresh water.

淡水压力下限。

"Sample High limit" High pressure limit from sample pump.
取样泵压力上限。

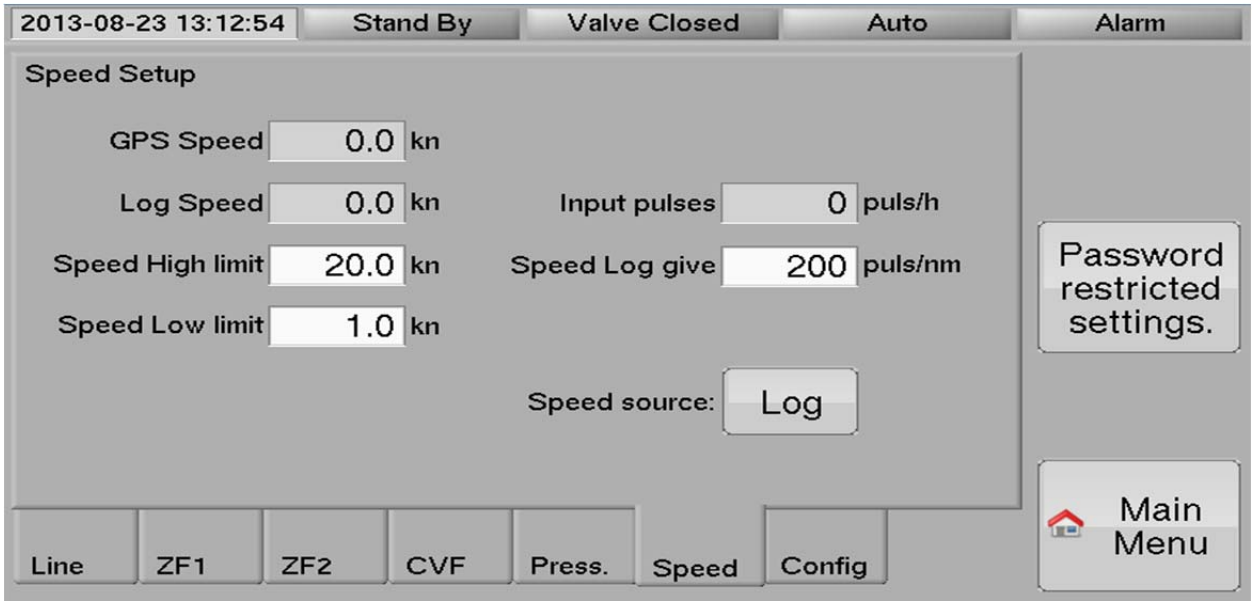
"Sample Low limit" Low pressure limit from sample pump.
取样泵压力下限。

"Input current" Measured current on Pressure input.
压力输入测量电流。

"Pressure at 4mA" Corresponding pressure for current input of 4 mA
电流输入 4 毫安的相应压力。

"Pressure at 20mA" Corresponding pressure for current input of 20 mA.
电流输入 20 毫安的相应压力。

7.8.4 Speed 航速



"GPS Speed" Speed indicated by the GPS.
GPS 航速指示。

"Log Speed" Speed measured from the speed log.
计程仪航速。

"Speed High limit" High speed limit.
航速上限。

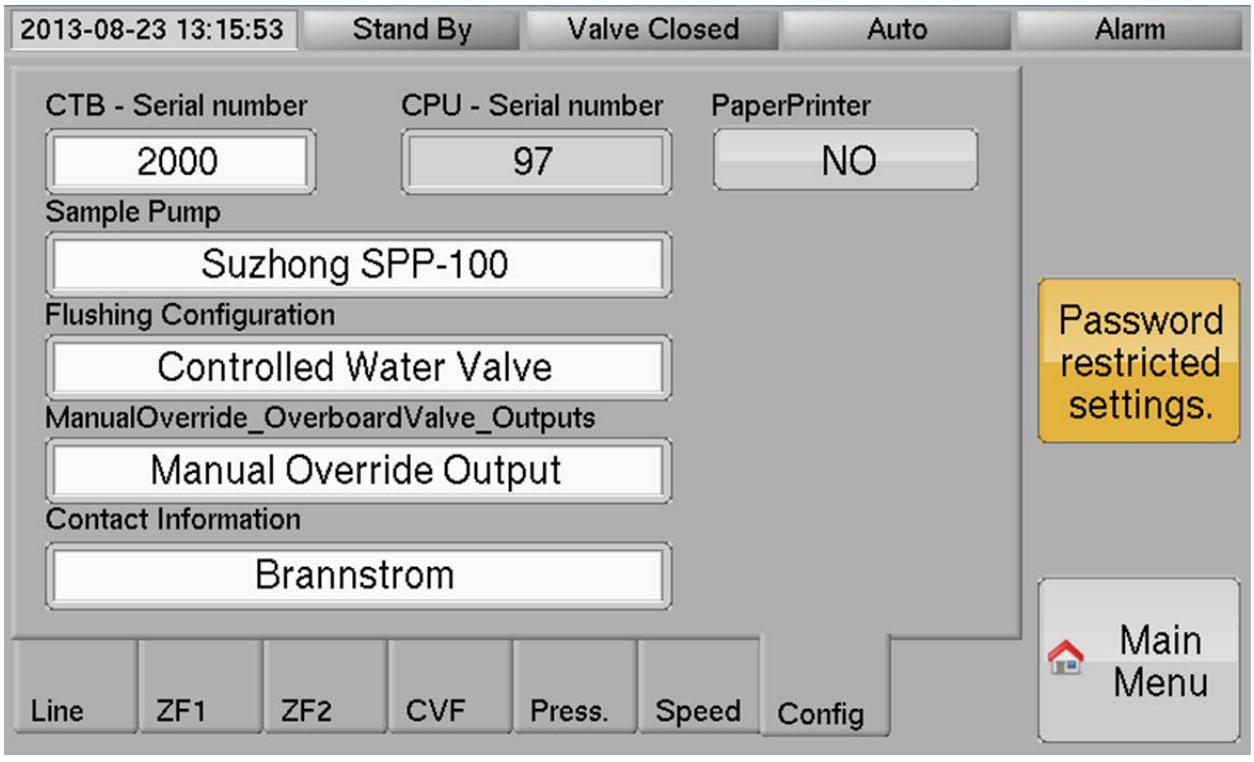
"Speed Low limit" Low speed limit.
航速下限。

"Input pulses" Measured pulse frequency from the speed log.
从计程仪中测得脉冲频率。

"Speed Log give" Speed log pulses per nautical mile.
每海里速度计程仪脉冲。

"Speed source" Selected speed source. "Log" speed pulse log, "GPS" speed from GPS.
选择速度源，从计程仪中读取和 GPS 中读取。

7.8.5 System Configuration Setup 系统配置设置



"CTB - Serial number" Serial number of the unit.
CTB 系列号。

"CPU - Serial number" Serial number of the Computer Unit PCB.
计算机 PCB 板系列号。

"PaperPrinter" Select whether a paper printer is installed of not.

选择是否安装了纸张打印机。

If “NO” no printouts are made and no printer alarms are generated.

If “YES” the same printouts that are made to “Recorded data” are made on the printer. Printer errors will stop overboard discharging.

如果选择“NO”，没有打印输出也没有打印机产生的报警。

如果选择“YES”，记录数据打印在打印纸上。打印机错误将停止舷外排放

"Sample Pump" Set to the used sample pump.

设置为取样泵。

"Flushing Configuration" Set to the installed water flushing arrangement.

设置已安装的冲水装置。

"No Controlled Water Valve" No fresh water valve is controlled by the unit.

机组无淡水阀控制。

"Controlled Water Valve" A fresh water valve is controlled by the unit.

机组有淡水阀控制。

“Indicated Water Valve” An indicated fresh water valve is connected to the unit.

指示淡水阀连接到机组。

"ManualOverride_OverboardValve_Output"

Selection of which relay output should be activated when the button:"Manual Override Overboard Valve" is activated. Relays are in Computer Unit.

选择继电器输出时应激活按钮：“手动越控舷外阀”被激活。继电器在计算机单元。

“Manual Override Output” Activating “Manual Override Relay”, terminals 7, 8 and 9. Normally used to remove an external interlock.

激活“手动越控继电器”，端子 7，8 和 9。

通常用于清除外部联锁。

“Overboard Valve Output” Activating relay output of selected overboard line.

激活排舷外管的继电器输出。

“Override and OBV Valve Outputs” Activating both functions above.

激活以上 2 个功能。

"Contact Information"

Contact information can be displayed in the "Start page" and in the"Alarm table".

联系人信息可以显示在“开始页”和“报警表”中。

7.9 Computer 计算机

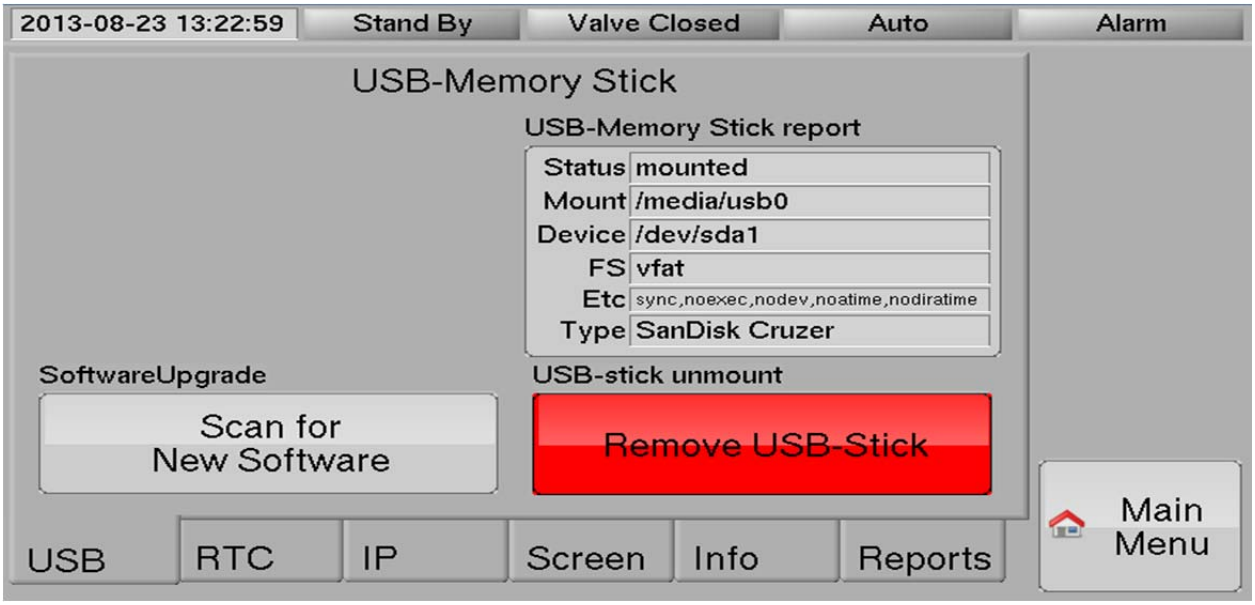
7.9.1 USB-Memory stick USB 记忆棒

To enter the “Computer”-page you should first use: Password: "1" and "User".

Indications with an inserted USB-Memory stick.

要进入“计算机”页-您应该首先使用：密码：“1”和“用户”。

插入 USB 记忆棒后的显示。



"USB-Memory Stick report"

Indicates if a USB-Memory stick is attached or not on its "Status" line.When a USB-Memory stick is fount the other 3 buttons becomes highlighted.

表示 USB 记忆棒已连接但不在“Status”状态。当 USB 记忆棒插入识别后其他 3 个按钮就可以使用。

"Scan for New Software"

Used to install new software on the unit. When pressed the root directory of the USB-Memory stick is scanned for new software. A new menu will open up with the result of the scan and installation selection.

用于在单元上安装新的软件。在根目录按下 USB 记忆棒扫描软件，将打开一个新的扫描结果和安装选择的菜单。

"Remove USB-Stick"

Important! Press this button before removing the USB-Memory stick.

The "Status" line will show when the stick is unmounted and can be removed.

重要！在移除 USB 记忆棒之前按下按钮。

状态栏显示记忆棒被拔出。

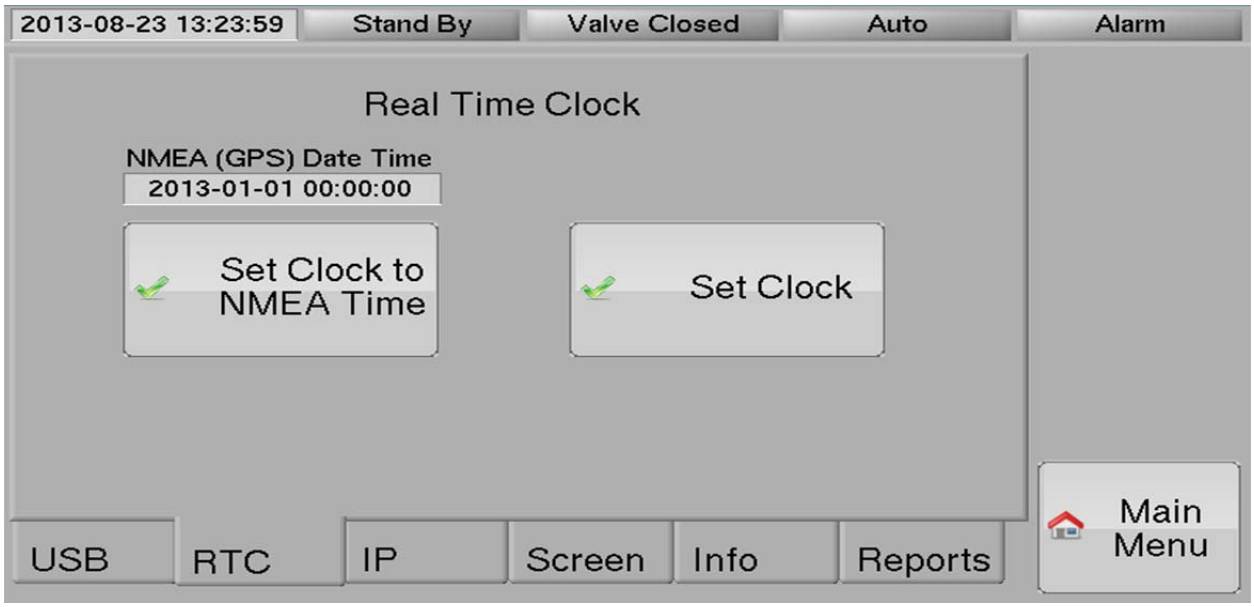
7.9.2 Real Time Clock 实时时钟

Setting of the Real Time Clock. Clock shall be set to GMT-time.

实时时钟的设置。时钟将被设置为标准时间。

The clock can be set manually or to the time read from the GPS.

时钟可以手动设置或从 GPS 读取时间。



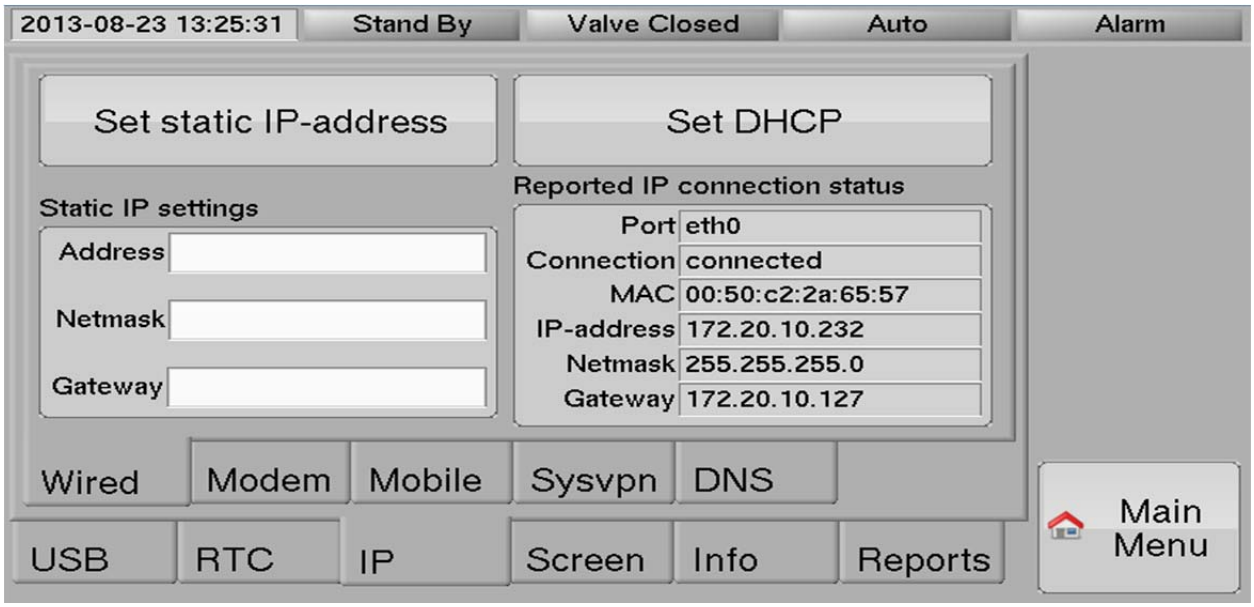
7.9.3 IP-address IP 地址

If the unit is connected to the local area network on the vessel it normally by a wired ethernet connection.

如果该单元与别的局域网相连，通常通过有线以太网连接。

One this page a static IP-address or IP-address received through DHCP can be selected.

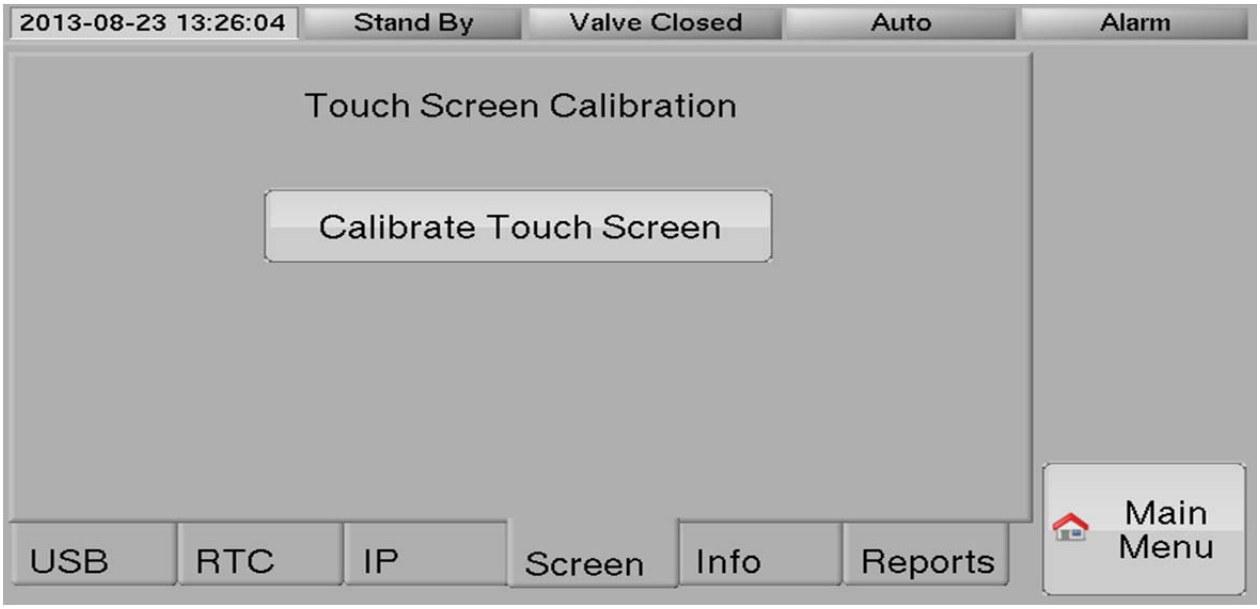
静态 IP 地址或动态 IP 地址通过 DHCP 可以选择。



7.9.4 Touch Screen 触摸屏

Calibration of touch screen.

触摸屏校准。



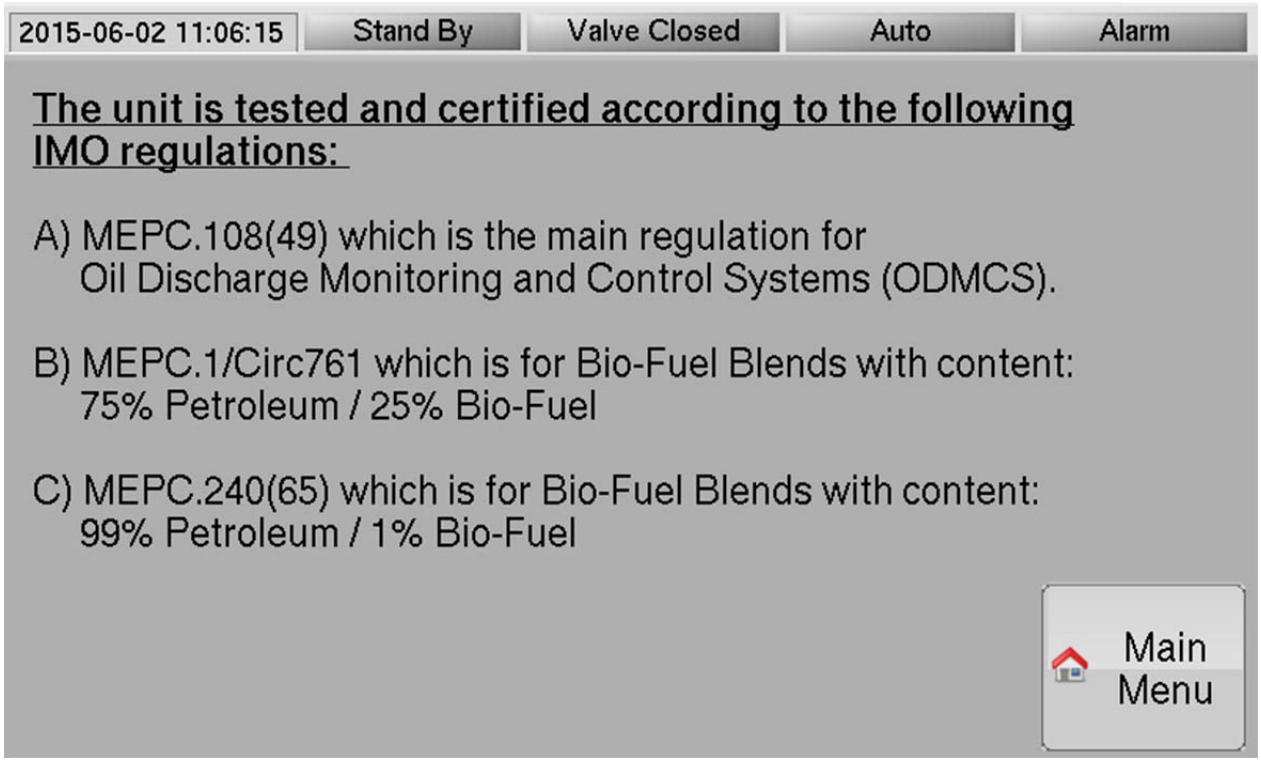
Normally the touch screen calibration should be in effect directly after exit from the calibration but sometimes a power cycle of the computer unit is also needed.

通常情况下，触摸屏校准应在退出校准后直接生效，但有时也需要重启计算机单元。

7.10 Approvals 符合规范

Indicating approvals to the Cleantrack1000B.

CT-1000B 符合规范列表。



Chapter 8 Fault-finding 故障查找

The computer program contains functioning resulting in a number of alarms for internal malfunctions and abnormal operational conditions. This section gives a summary of the functioning and, where appropriate, how the alarms are used in fault-finding. The information given is useful for experienced computer and electronic engineers as well as for the operator in fault-finding of the entire system.

系统在内部故障和异常操作的条件下会显示一系列警报数值。本节主要概述在报警时如何查找故障。这些信息是由经验丰富的计算机电子工程师提供的，便于在整个系统中查找故障原因。

This section contains essentially descriptive and explanatory information. Guidance to trouble shooting based on the computer alarm indications is given below.

本节包含了一些基本描述和解释信息。下面给出了基于计算机报警指示的故障排除指南。

8.1 List of displayed alarms 报警显示列表

0 System - Setup file Key error
1 System - Setup file Read error
2 System - Setup file Write error
3 System - Acc total file Key error
4 System - Acc total file Read error
5 System - Acc total file Write error
10 System - Ref Error Measuring Cell
12 System - Reading Cal Data
13 System - Communication error Computer Power
14 System - Communication error Converting unit I/O
15 System - Communication error Converting unit Zener Barrier
16 System - Communication error Measuring Cell
17 System - Computer I/O error
18 System - Replaced Measuring Cell?
20 Alarm - NMEA (GPS) receiver timeout
21 Alarm - Low Flow
22 Alarm - High Flow
23 Alarm - Low Speed
24 Alarm - High Speed
25 Alarm - OBV Open no feedback
26 Alarm - OBV Close no feedback
30 Alarm - High Conc. > 1000 ppm
31 Alarm - Discharge > 30 l/nm
32 Alarm - Max Accumulated Total Oil
36 Alarm - Oil conc. > 15 ppm
37 Alarm - Manual Override Valve
39 ON-BOARD FUNCTIONAL TEST ALARM
40 Alarm - High Work Pressure
41 Alarm - Low Work Pressure

42 Alarm - No water in Measuring Cell
43 Alarm - High Water Pressure
44 Alarm - Low Water Pressure
45 Alarm - Over current
46 Alarm – High Pump Temperature
50 Alarm – Printer Busy
51 Alarm – Printer Busy (Xoff)
52 Alarm – Printer Feedback Error
53 Alarm – Printer Cover Open
54 Alarm – Printer Paper End/Cover Open
55 Alarm – Printer Head Temp Error
56 Alarm – Printer Voltage Error
57 Alarm – Printer Feedback Missing
58 Alarm – Printer Buffer Overflow

8.2 System file errors 系统文件故障

The unit cannot run with one of these alarms remaining.
以下故障存在任意一个，系统都将无法运行。

"0 System - Setup file Key error"

Error in the content of the programmed setup data.
程序设置的数据内容错误。
At least one setting need to be changed before this alarm can be reset.
在这个报警复位前，至少有一个设置值被更改。
Check all settings or consult a service engineer for corrective actions.
检查所有设置或咨询售后服务工程师更改设置。

"1 System - Setup file Read error"

File system error while reading the setup data.
读取设置数据时系统文件出错。
Consult a service engineer for corrective actions.
咨询售后服务工程师更改设置。
(Computer CPU printed circuit board need to be replaced.)
（更换电脑CPU主板）

"2 System - Setup file Write error"

File system error while writing the setup data.
写入设置数据时系统文件出错。
Consult a service engineer for corrective actions.
咨询售后服务工程师更改设置。
(Computer CPU printed circuit board need to be replaced.)
（更换电脑CPU主板）

"3 System - Acc total file Key error"

Error in the content of the saved accumulated oil content data.
保存的累计油含量数据错误。
Reset total oil discharged. See chapter 7.2.2. Running Settings, page **错误!未定义书签。**.
重置排油总量。见第25页7.2.2章“运行设置”。 .
Reset the alarm.
复位报警。

"4 System - Acc total file Read error"

File system error while reading the content of the accumulated oil content data.
读取累积的油含量数据时系统文件出错。
Consult a service engineer for corrective actions.
咨询售后服务工程师更改设置。
(Computer CPU printed circuit board need to be replaced.)
（更换电脑CPU主板）

"5 System - Acc total file Write error"

File system error while writing the content of the accumulated oil content data.
写入累积的油含量数据时系统文件出错。
Consult a service engineer for corrective actions.
咨询售后服务工程师更改设置。
(Computer CPU printed circuit board need to be replaced.)
（更换电脑CPU主板）

8.3 System communications errors 系统通信错误

The Computer PCB (master) is communicating with the Computer Power supply, the Converting unit I/O and the Zener barrier PCB that also transmits data to and from the Measuring Cell.
计算机PCB（Master）与计算机电源、转换单元I/O和隔离栅PCB进行通信，同时和测量单元之间数据传送。

The communication is Modbus RTU over an RS485 line at the speed of 19200 baud.
Modbus RTU通过RS485总线实现通讯，速度为19200波特率。

The Zener barrier PCB and the Measuring Cell has a special 2-wire connection. The Measuring cell is powered through the same 2-wires as where the half duplex communication is going on.
隔离栅PCB和测量单元通过特制的2芯线连接。测量单元使用同样的2芯线为半双向通讯提供电源。

For light emitting diode indications, see chapter **8.8 Indications on PCB's** page **69.**
对于发光二极管的说明，请参阅第70页第8.8章关于“PCB的说明”。
When a communication error occurs the communication wiring, power supply wiring and fuses must be checked.
出现通信错误时，必须检查电源接线和保险丝。

The unit cannot run with one of these alarms remaining.
以下故障存在任意一个，系统都将无法运行。

Press the "Alarm Reset"-button in the "Alarm Table" to reset the alarm and try to fix the fault.
See chapter **7.3. Alarm Table**, page 错误!未定义书签。**.**
按“复位报警”键并尝试修复故障，详见第31页第7.3章“报警列表”。

"10 System - Ref Error Measuring Cell"

An internal error on the IR-measurement readings in the Measuring Cell.
测量单元中测量数据错误。

Normally the Measuring Cell needs to be replaced.
通常需要更换测量单元。

Note that the communication to the ZBCT must work before this communication failure can be solved.
注：在故障解决之前，ZBCT必须保持通讯状态。

"12 System - Reading Cal Data"

The Computer CPU failed to read the Measuring Cell calibration data.
计算机CPU读取测量单元校准数据失败。

Check the connection between the Zener barrier PCB (ZBCT) and the Measuring cell. This is a special 2 wire connection. The measuring cell is powered on the same 2 wire as where the communication is done.
检查隔离栅 PCB 和测量单元之间连接。这是一根特制 2 芯线。测量单元使用同样的 2 芯线为半双向通讯提供电源。

Note that the communication to the ZBCT must work before this communication failure can be solved.
注：在故障解决之前，ZBCT 必须保持通讯状态。

For light emitting diode indications, see chapter **8.8.3 Zener barrier PCB indications page 71.**
对于发光二极管的说明，请参阅第71页第8.8.3章关于“隔离栅PCB的介绍”。

"13 System - Comm. error Computer Power PCB"

Computer CPU failed to communicate with the Computer power supply.
计算机CPU无法与计算机电源通信。

This is a Modbus RTU communication over an RS485 line at the speed of 19200 baud.
Modbus RTU通过RS485协议实现通讯，速度为19200波特率。

Check the flat cable connections in the Computer unit cabinet. There are 2 flat cables, the 34 pole flat cable with grey contacts that connects the Computer CPU PCB with the Computer I/O CPU (CUIO) and the 14 pole flat cable with red contacts the connects the Computer Power supply with the Computer I/O CPU.
检查计算机单元柜中的扁平电缆连接。一共有2根扁平电缆，一根是用于连接计算机CPU板与计算机I/O CPU的34号灰色扁平电缆（CUIO）和另一根是用于连接计算机电源与计算机I/O CPU

的14号红色扁平电缆。

"14 System - Comm. error Converting I/O PCB"

Communication error between the Computer CPU and the Converting unit I/O PCB.
计算机CPU和转换单元I/O PCB之间的通信错误。

This is a Modbus RTU communication over an RS485 line at the speed of 19200 baud.
Modbus RTU通过RS485协议实现通讯，速度为19200波特率。

Check the connection between the Computer unit and the Converting unit.
检查计算机单元和转换单元之间的连接。

For light emitting diode indications, see chapter **8.8.2 Converting unit I/O PCB indications** page **70.**
对于发光二极管的说明，请参阅第71页第8.8.2章关于“转换单元I/O PCB的介绍”。

"15 System - Comm. error Zener Barrier PCB"

Communication error between the Computer CPU and the Converting unit I/O PCB.
计算机CPU和转换单元I/O PCB之间的通信错误。

This is a Modbus RTU communication over an RS485 line at the speed of 19200 baud.
Modbus RTU通过RS485协议实现通讯，速度为19200波特率。

Check the connection between the Computer unit and the Converting unit.
检查计算机单元和转换单元之间的连接。

Check the flat cable between the Converting unit I/O PCB and the Zener barrier PCB inside the Converting unit.
检查转换单元中I/O PCB和隔离栅PCB之间的扁平电缆。

For light emitting diode indications, see chapter **8.8.3 Zener barrier PCB indications** page **70**
对于发光二极管的说明，请参阅第71页第8.8.3章关于“隔离栅PCB的介绍”。

"16 System - Comm. error Measuring Cell"

Communication error between the Computer CPU and the Measuring cell.
计算机CPU和测量单元之间的通信错误。

Check the connection between the Zener barrier PCB and the Measuring cell.
检查隔离栅PCB和测量单元之间的连接。

Check communication to the Zener barrier PCB to work before fail searching this error.
请先检查隔离栅PCB是否正常工作。

Normally at least one light emitting diode on the Measuring Cell is lit.
通常测量单元上至少有一个发光二极管被点亮。

"17 System - Computer I/O error"

Communication error between the Computer CPU and the Computer I/O PCB.
计算机CPU和计算机I/O PCB之间通讯错误。

Check the flat cable connections inside the Computer unit.
检查计算机单元内的扁平电缆连接。

"18 System - Replaced Measuring Cell?"

If the Measuring Cell is replaced while power is connected to the Computer Unit, it will give this alarm.
如果测量单元被更换时，计算机单元连着电源，它还会发出这个报警。

Reset the alarm to acknowledge.
确认复位报警。

8.4 External sensor alarms 外部传感器报警

Refer to drawing CTB110204.1el/pn for electrical connections.
请参阅图纸CTB110204.1el/pn的电气连接。

"20 Alarm - NMEA (GPS) receiver timeout"

This alarm is generated if the NMEA signal drops out.
如果NMEA信号丢失，将出现此报警。

The NMEA should have the speed of 4800 baud and the NMEA sentence "RMC" must be included in the NMEA message from the GPS.
NMEA传输速度为4800比特率，RMC必须包含NMEA的GPS信息。

Check the connection of the NMEA transponder to the Computer unit.
检查NMEA转发器与计算机单元之间的连接。

"21 Alarm - Low Flow"

"22 Alarm - High Flow"

This indicates a too high or a too low flow alarm.
这表示流量太高或太低报警。

Check the connection of the 2-wire flow connection on terminals ZF1 or ZF2 on the Zener barrier PCB in the Converting unit. Flow meter is normally connected to ZF1.
检查转换单元中隔离栅PCB上端子ZF1或ZF2和流量计的连接。流量计通常是连接到ZF1。

Flow meter selection and scaling is made in the "Setup"-menu.
流量计的选择和标定是在“设置”菜单。

See chapter **7.8.1. Line of discharge** page 错误!未定义书签。 for actual selection and the

following pages for scaling.
见第46页第7.8.1章“排放管路”，用于实际的选择和标定。

The transmitter is a 2-wire, 4-20 mA with 24 VDC supply.
流量变送器是2相的，电流4-20 mA，24V直流电压。

The voltage should be between 16 VDC and 25 VDC.
电压在16VDC到25VDC之间。

It is only the selected flow input that has the 24 VDC power enabled.
只有电流是输入量，24VDC只作为电源。

"23 Alarm - Low Speed"
"24 Alarm - High Speed"

This indicate a high or a low speed alarm.
这表示航速过高或过低报警。

Check that the Speed source selection is correct, Pulse log or GPS.
检查速度源选择是脉冲信号还是GPS信号。

If source is GPS, check that the NMEA communication from the GPS works.
如果源是GPS，检查从GPS到NMEA的连接。

If source is Pulse log, check the connection and the programming of pulses / hour.
如果源是脉冲，检查连接和编程时设定每小时的脉冲数。

See chapter **7.8.4. Speed**, page 错误!未定义书签。**.**
详见第51页第7.8.4章“航速”。

"25 Alarm - OBV Open no feedback"
"26 Alarm - OBV Close no feedback"

The overboard valve position feedback signal has not acknowledged the output signal within the timeout. The Timeout is normally 60 seconds. Stops overboard discharging. The overboard valve may be in the wrong position due to some part of the overboard discharge valve control or the power supply for the valve control system has failed.

在规定时间范围内排舷外阀位置反馈信号未检测到信号。通常为60秒。停止舷外排放。控制排舷外阀的某些部分故障或控制阀门系统的电源故障，导致排舷外阀失效。

The overboard valve is controlled by the overboard valve relay output in the computer unit. Check the fuse(s) for the overboard valve and both the output and the feedback connections.

排舷外阀是由计算机单元的排舷外阀继电器输出控制。检查排舷外阀的保险丝和输出反馈的连接。

Refer to drawing CTB110204.1el/pn.

请参阅图纸CTB110204.1el/pn。

8.5 Measurement alarms 测量报警

The unit closes the overboard valve and does not discharge with any of the alarms 30-36 below active.
出现 30-36 中的任何一个报警，系统都将关闭排舷外阀，停止排放。

Press the "Alarm Reset"-button in the "Alarm Table" to reset the alarm. See chapter **7.3. Alarm Table**, page **31.**
按“报警复位”按钮，复位报警。见第 31 页第 7.3 章“报警列表”。

"30 Alarm - High Conc > 1000 ppm"
Measured oil concentration is above the measuring range of 1000 ppm.
测量的油浓度大于1000 ppm。

"31 Alarm - Discharge > 30 l/nm"
Measured oil discharge is above 30 l/nm.
测量的油排放大于30 l/nm。

"32 Alarm - Max Accumulated Total Oil"
Discharged oil is has reached the programmed maximum total oil discharge.
油排放已达到程序设置的最大总油量。

For setting of total oil, see chapter **7.2.2. Running Settings**, page **25.**
设置总油量，见第 25 页 7.2.2 章“运行设置”。

"36 Alarm - Oil conc. > 15 ppm"
The unit is in oil concentration mode (15 ppm mode).
该单元的油浓度模式（15ppm 模式）。

Measured oil concentration is above 15 ppm.
测量油浓度在15ppm以上。

"37 Alarm - Manual Override Valve"
This alarm is generated when the "Manual Override Overboard Valve" button is activated.
当“手动控制舷外阀”按钮被激活时产生此警报。

"39 ON-BOARD FUNCTIONAL TEST ALARM"
This alarm is generated when the "GENERATE ALARM" button is activated in the "On board test" .3 page.
这个报警是在“On board test”第3页中按下“生成报警”按钮被激活的。

8.6 Measurement sample alarms 测量样品报警

"40 Alarm - High Work Pressure"
High sample water pressure in the analyzing unit for 10 seconds.

分析单元内取样水压力高超过 10 秒。

It indicates a problem on the outlet side of the analyzing unit.
它表示分析单元出水口的问题

Running is stopped.
停止运行。

This alarm is also displayed with a popup window indicating all pressures.
此报警会显示一个弹出窗口，显示所有的压力。

See chapter **7.8.3. Pressure**, page **50** and 错误!未找到引用源。, page 错误!未定义书签。.
见第 50 页 7.8.3 章“压力”和第 52 页 7.8.5 章“系统配置设置”。

"41 Alarm - Low Work Pressure"

Low sample water pressure in the analyzing unit for 10 seconds.
分析单元内取样水压力低超过10秒。

It indicates a problem on the inlet side of the analyzing unit or with the sample pump.
它表示分析单元进水口或取样泵的问题。

Running is stopped.
停止运行。

This alarm is also displayed with a popup window indicating all pressures.
此报警会显示一个弹出窗口，显示所有的压力。

See chapter **7.8.3. Pressure**, page **50** and 错误!未找到引用源。, page 错误!未定义书签。.
见第 50 页 7.8.3 章“压力”和第 52 页 7.8.5 章“系统配置设置”。

"42 Alarm - No water in Measuring Cell"

The water sensor in the measuring cell has been deactivated for 10 seconds.
测量单元中的水传感器停用10秒。

Indicates a problem with the fresh water or sample water. Relevant valves must be checked.
表示淡水或取样水的问题。必须检查相关阀门。

Running is stopped.
停止运行。

This alarm is also displayed with a popup window.
这个报警也会显示一个弹出窗口。

"43 Alarm - High Water Pressure"

High water pressure in the analyzing unit for 10 seconds.
分析单元淡水压高超过10S。

Indicates a problem on the outlet side of the analyzing unit.
它表示分析单元出水口的问题。

Running is stopped.
停止运行。

See chapter **7.8.3. Pressure**, page **50** and 错误!未找到引用源。**,** page 错误!未定义书签。**.**
见第 50 页 7.8.3 章“压力”和第 52 页 7.8.5 章“系统配置设置”。

"44 Alarm - Low Water Pressure"

Low water pressure in the analyzing unit for 10 seconds.
分析单元淡水压低超过10S。

Indicates a problem on the fresh water supply to the analyzing unit.
它表示在分析单元淡水供应问题。

Running is stopped.
停止运行。

See chapter **7.8.3. Pressure**, page **50** and 错误!未找到引用源。**,** page 错误!未定义书签。**.**
见第 50 页 7.8.3 章“压力”和第 52 页 7.8.5 章“系统配置设置”。

"45 Alarm - Over current"

The over-current protection relay in the Converting Unit is activated.
在转换单元中的过电流保护继电器被激活。

The cause for an activated relay could be the sample pump pumping against a closed valve or a clogged pipe. The sample pump itself might be clogged.
激活继电器的原因可能是取样泵的阀门关闭或进水管道的堵塞。取样泵本身可能堵塞。

Reset the over-current protection relay by pressing the button at the front of the relay. The relay is located to the left in the Converting Unit.
按下转换单元内左侧过流保护继电器前面的复位按钮。

Operating conditions that require frequent and repeated resetting of the over-current relay might harm the sample pump.
频繁操作和反复重置过电流继电器可能会损害取样泵。

Running is stopped.
停止运行。

"46 Alarm – High Pump Temperature"

The high temperature guard connected to terminals 17 and 18 in the Converting Unit is activated.
This indicates a high temperature of the pump shaft seal.

转换单元中高温保护器的端子17和18短接后被激活，这表明泵轴封高温。

Check shaft seal oil refilling.
检查轴封补油。

Running is stopped.
停止运行。

8.7 Paper Printer alarms 有纸打印机报警

The Computer PCB (master) is communicating with the Paper Printer continuously and will give Printer alarm immediately.
计算机PCB（Master）与有纸打印机连续通信，将立即发出打印机报警。

The unit cannot discharge with one of the paper printer alarms remaining.
主机存在任意一个有纸打印机报警都停止排放。

Press the "Alarm Reset"-button in the "Alarm Table" to reset the alarm and try to fix the fault.
See chapter **7.3. Alarm Table**, page **31.**
按“复位报警”按钮并尝试修复故障。见第31页第7.3章“报警列表”。

However the printer can be deselected in the Setup menu. See chapter **7.8.5. System Configuration Setup** page 错误!未定义书签。
打印机可以在设置菜单中取消选择。见第52页7.8.5章“系统配置设置”。

Printer hardware is RS232 and baudrate is 9600 baud.
打印机接口是RS232，波特率为9600波特率。

"50 Alarm – Printer Busy"
"51 Alarm – Printer Busy (Xoff)"
Printer is busy and do not accept more printouts.
打印机忙，不接受更多的打印输出。

Check cable connections to the printer and that printer paper is correctly installed.
检查打印机的接线并正确安装打印纸。

"52 Alarm – Printer Feedback Error"
Wrong format on printer reply. Check cable connections to the printer and its baudrate settings.
打印机反馈错误。检查电缆连接和打印机的波特率设置。

"53 Alarm – Printer Cover Open"
"54 Alarm – Printer Paper End/Cover Open"
Printer has no paper or its paper cover is open. Check the printer paper and its cover.

打印机没有纸或其纸盖子处于开启状态。检查打印机纸张和它的盖子。

"55 Alarm – Printer Head Temp Error"

If this alarm remains the printer need to be replaced.
如果警报仍然存在，需要更换打印机。

"56 Alarm – Printer Voltage Error"

If this alarm remains the printer and/or the CUIO PCB connected to the printer need to be replaced.
如果报警仍然存在，需要更换打印机或者与打印机连接的 CUIO PCB。

"57 Alarm – Printer Feedback Missing"

No reply from Printer. Check cable connections to the printer.
没有打印机反馈。检查打印机的电缆连接。

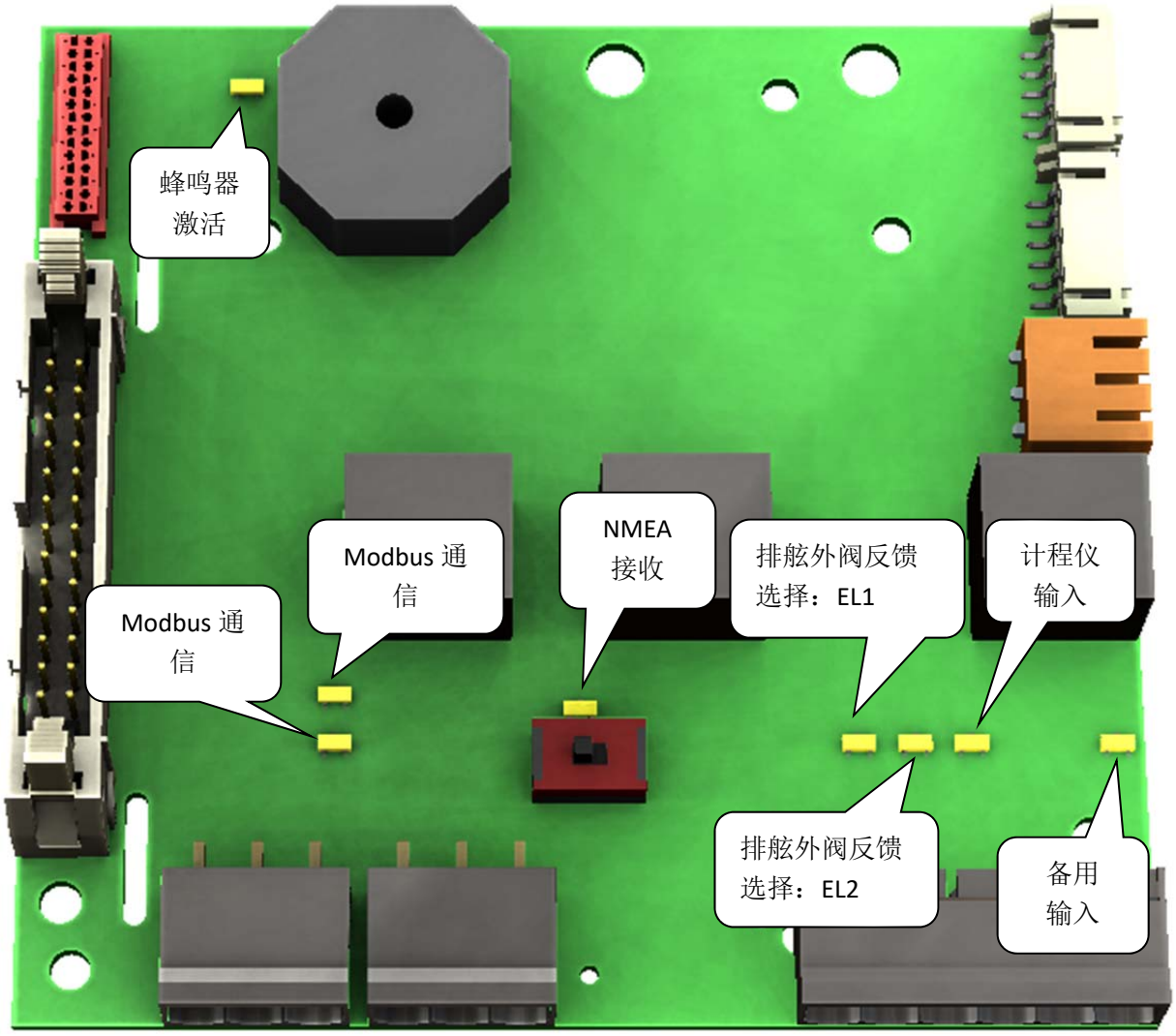
"58 Alarm – Printer Buffer Overflow"

Printer buffer has overflow. Printer busy do not work, check cable connections to the printer.
打印机缓冲区溢出。打印机忙不工作，检查与打印机连接的电缆。

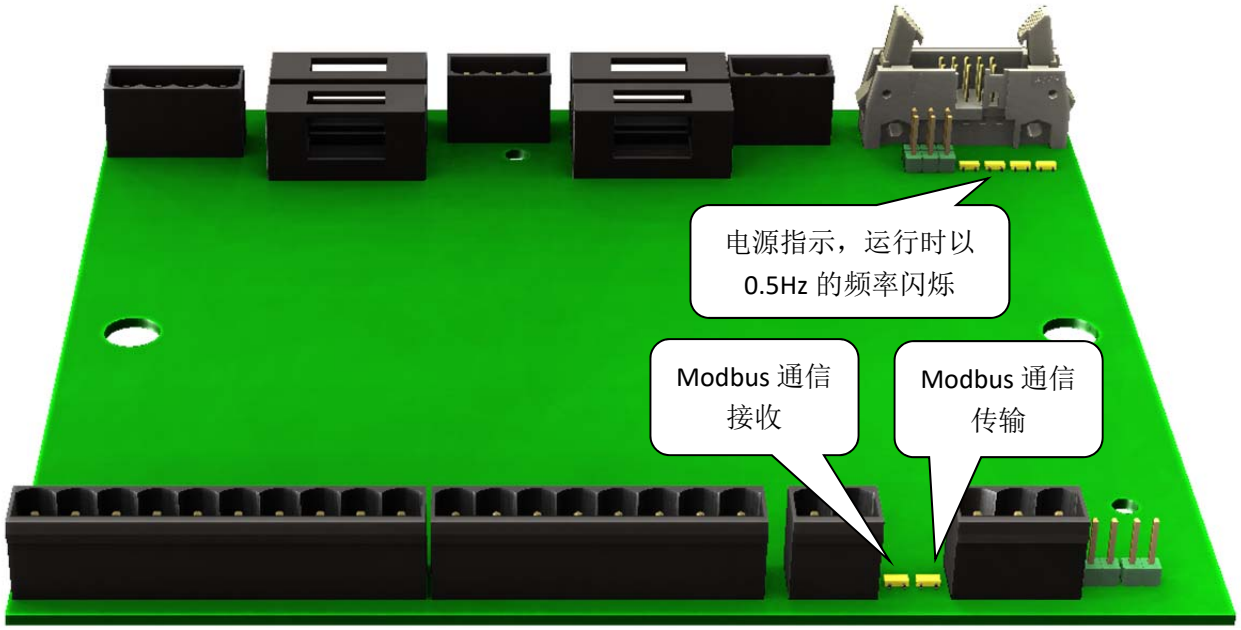
If this alarm remains the printer and/or the CUIO PCB connected to the printer need to be replaced.
如果报警仍然存在，需要更换打印机或者与打印机连接的 CUIO PCB。

8.8 Indications on PCB's 线路板说明

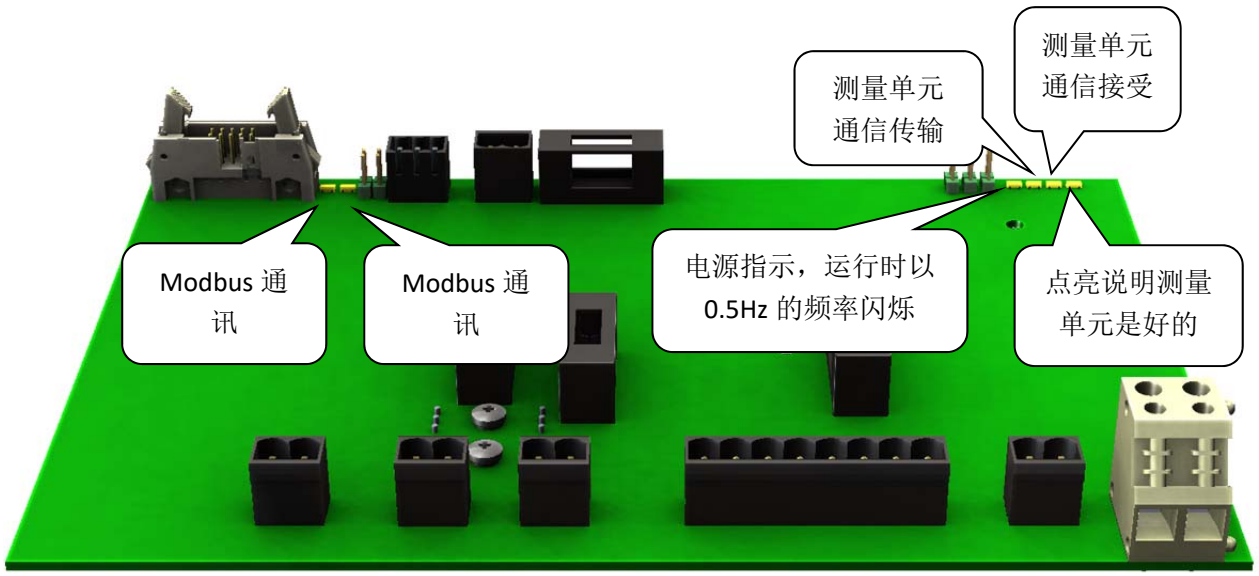
8.8.1 Computer unit I/O PCB indications 计算机单元 I/O PCB 说明



8.8.2 Converting unit I/O PCB indications 转换单元 I/O PCB 说明



8.8.3 Zener barrier PCB indications 隔离栅 PCB 说明



Chapter 9 Maintenance Instructions 保养说明

9.1 Periodic Checks and Servicing 定期的检查和维修

Certain checks and servicing should be carried out at regular intervals in order to minimize the risk for unexpected malfunctions during operation. Below is a maintenance list to be carried out after each use and another list to be carried out at regular intervals of 6 months.

为了尽量减少操作过程中出现意外故障的风险，需要定期进行检查和维修。以下是每次使用后要进行的维护清单和每隔 6 个月进行的另一份清单。

After each time of usage:

在每次使用后

- Check the installation and the components for signs of leakage. Clean if necessary.
  检查安装和漏水迹象，如有必要进行清洁。
- Close all manually operated sample valves.
  关闭所有手动取样阀。
- Drain the Analyzing unit to protect from frost damages.
  排尽分析单元中的水防止冻坏。

Every six months:

每六个月：

- Inspect the interior of all cabinets for general condition and cleanliness.
  检查所有机柜内部的状况和清洁度。
- Check all components with respect to proper mounting, clamping of cables, and any signs of damage.
  检查所有部件的正确安装，电缆松紧，和任何损坏的迹象。
- Check all connections to be tightened and not leaking.
  检查所有连接被收紧，确保不漏水。
- Check the cables to the analyzing unit along their entire length with respect to any signs of chafe, wear or other damage and the bulkhead penetrations to be in proper conditions.
  沿着分析单元检查整个长度的电缆是否有摩擦损坏。
- Inspect and clean the Inlet Filter .
  检查和清洁进气过滤器。

9.2 Cleaning of Inlet Filter 入口过滤器的清洗

When Cleantrack 1000B is in standby mode, close the sample inlet probe valve, open the drain valve and close the Analyzing unit inlet valve. Remove and clean the filter screen. Usage of Cleantrack 1000B sample pump unit without inlet filter screen could harm the sample pump.

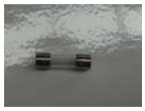
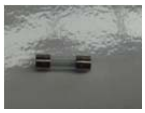
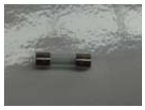
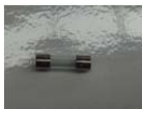
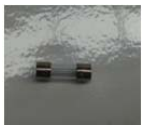
当 Cleantrack 1000B 在待机模式下，关闭进样探头阀，打开排水阀和关闭分析单元的进水阀。拆卸并清洁过滤网。Cleantrack 1000B没有入口过滤器会损坏取样泵。

9.3 Storage before installation 安装前存储

Prior to installation the unit should be stored in a tempered and dry location protected from sunlight.

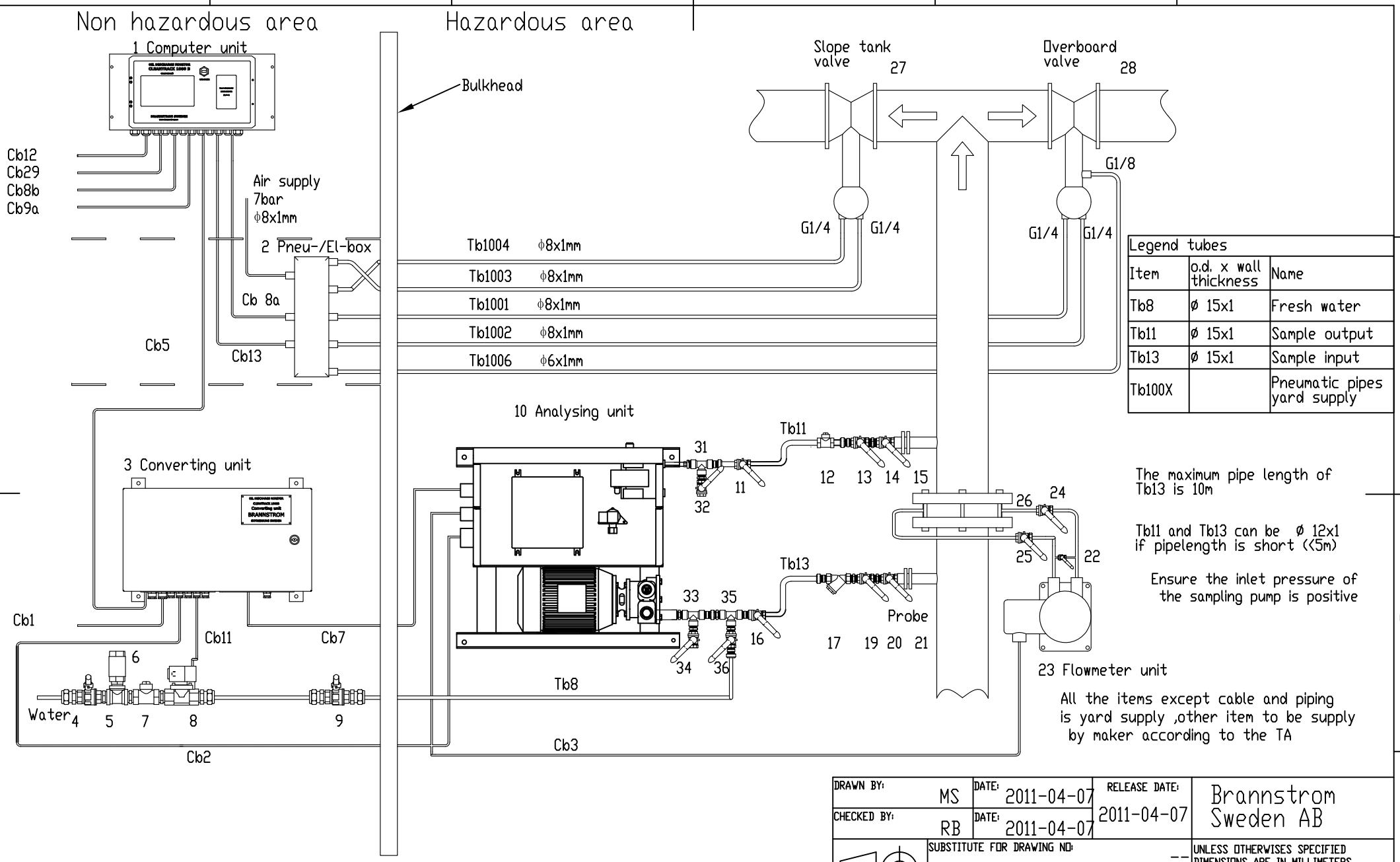
安装前，设备应贮存在干燥、避光保护的地方。

Chapter 10 Spare Parts List 备件清单

Item 序号	Photo 照片	Part name 名称	Description 说明	Qty 数量	Unit 单位	Part No. 编号
Standard Spare Parts 标准备件						
1		Fuse (250V 315mA) 保险丝 Φ5x20mm	Converting Unit 转换单元	2	pcs	1H5360022
2		Fuse (250V 1A) 保险丝 Φ5x20mm	Converting Unit 转换单元	4	pcs	1H5360023
3		Fuse (250V 500mA) 保险丝 Φ5x20mm	Converting Unit 转换单元	2	pcs	1H5360016
4		Fuse (250V 3.15A) 保险丝 Φ5x20mm	Converting Unit 转换单元	2	pcs	1H5360025
5		Fuse (250V 63mA) 保险丝 Φ5x20mm	Converting Unit 转换单元	1	pcs	9F1000010
6		Fuse (250V 1A) 保险丝 Φ8.5x8.5mm	Computer Unit 计算机单元	1	pcs	9F1000001
7		Coil of solenoid valve 电磁阀线圈 GSR K0511856 24V 50/60Hz 10.5VA	Fresh water assembly 淡水管路	1	pcs	1B3080007
Tools 专用工具						
8		Brush 清洁刷	Pneumatic Control box 气动控制箱	1	pcs	1F0028001

Appendix 附录 A: Drawings 图纸

Drawing Description 描述	Drawing No. 图号	Version 版本号	Total number of pages 总页数
Flow Drawing 流程图	CTB10904		1
Scope of Supply 供货清单			1
Electrical Drawing 电气图	CTB110204.1 EL		1
Computer Unit Drawings 计算机单元	CTB10030 CTB10001P P3715090		3
Converting Unit 转换单元	CTB10003		3
Analyzing Unit 分析单元	CTB10015		3
Sample Inlet Probe 取样进	4911-4-13		1
Sample Outlet Probe 取样出	4911-4-14		1
Horizontal Arrangement(optional) 水平布置（可选）	4911-2-0		1
Vertical Arrangement(optional) 竖直布置（可选）	4911-1-0		1
Pneumatic Control Box 气动控制箱	4911-10-0		1
Flow meter 流量计	4911-4-10 CT891215.5 4911-4-11		3
Orifice Plate Assembly 节流孔板	4911-4-12		1
Fresh Water Assembly 淡水管路	4911-4-15		1
Slop Tank Valve 回舱底阀	4911-5-1		1
Overboard Valve 排舷外阀	4911-5-2		1



Legend tubes		
Item	o.d. x wall thickness	Name
Tb8	ø 15x1	Fresh water
Tb11	ø 15x1	Sample output
Tb13	ø 15x1	Sample input
Tb100X		Pneumatic pipes yard supply

The maximum pipe length of Tb13 is 10m

Tb11 and Tb13 can be ø 12x1 if pipelength is short (<5m)

Ensure the inlet pressure of the sampling pump is positive

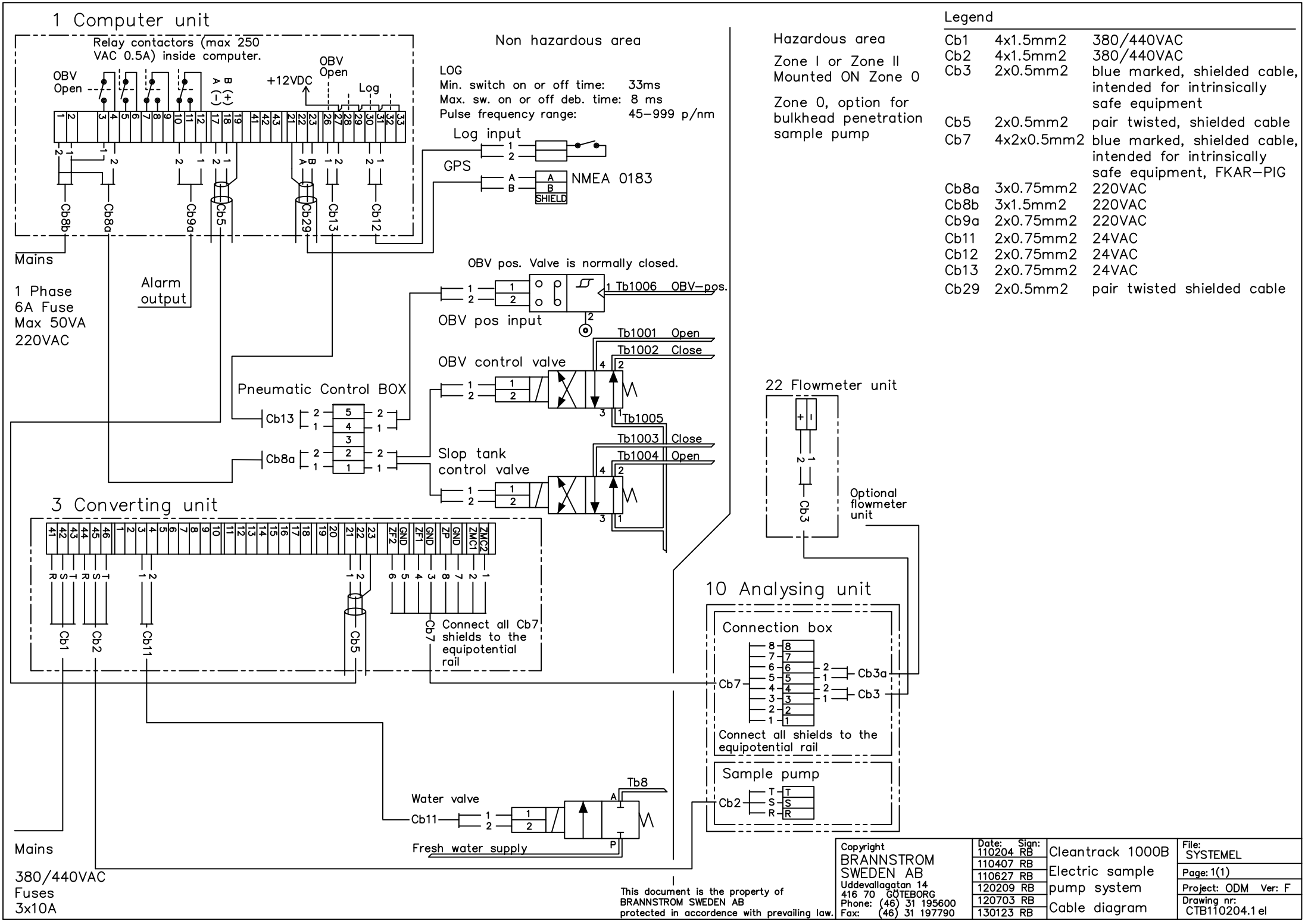
All the items except cable and piping is yard supply ,other item to be supply by maker according to the TA

DRAWN BY: MS	DATE: 2011-04-07	RELEASE DATE: 2011-04-07	Brannstrom Sweden AB
CHECKED BY: RB	DATE: 2011-04-07		
SUBSTITUTE FOR DRAWING NO: --			UNLESS OTHERWISES SPECIFIED DIMENSIONS ARE IN MILLIMETERS.
NET WEIGHT: --	GENERAL TOLERANCES: ±-		SCALE: 1:15 / SHEET 1 OF 1
MATERIAL: Electric Samplepump System			
DESCRIPTION: CleanTrack 1000B, GA-plan		DRAWING NO: CTB10904	REV. A

Scope of supply : CleanTrack 1000B

Notice : Drawing CTB10904

Item	Part No	Description	Quantity		Remark
1	1F1011002	Computer unit	1	pcs	
2	1F1021013	Pneu-/El-box 1	1	pcs	
3	1F1012002	Converting unit	1	pcs	
Water					
4	1B2011019	DN15 Ball valve	1	pcs	material:brass
5	1B2141016	DN15 Tee	1	pcs	material:brass
6	1B2090012	DN15 Vacuum breaker	1	pcs	material:brass
7	1B2020015	DN15 Check valve	1	pcs	material:brass
8	1B3010005	DN15 GSR Solenoid valve	1	pcs	material:brass
9	1B2011019	DN15 Ball valve	1	pcs	material:brass
Analysing unit					
10	1F1013002	Analysing unit (Sample pump with explosion proof electric motor)	1	pcs	
11	Brannstrom	DN15 Ball valve	1	pcs	material:CW617N
31	Brannstrom	DN15 Tee	1	pcs	material:CW617N
32	Brannstrom	DN15 Ball valve	1	pcs	material:CW617N
16	Brannstrom	DN15 Ball valve	1	pcs	material:CW617N
33	Brannstrom	DN15 Tee	1	pcs	material:CW617N
34	Brannstrom	DN15 Ball valve	1	pcs	material:CW617N
35	Brannstrom	DN15 Tee	1	pcs	material:CW617N
36	Brannstrom	DN15 Ball valve	1	pcs	material:CW617N
Sample inlet/outlet					
12	1B2020006	DN15 Check valve	1	pcs	material:316L
13	1B2011001	DN15 Ball valve	1	pcs	material:316L
14	1B2011001	DN15 Ball valve	1	pcs	material:316L
15	20049-3-1-0A	Probe outlet	1	pcs	material:316L
	20049-2-2-0A	Probe	1	pcs	material:316L
17	1B1411001	DN15 Strainer	1	pcs	material:316L
19	1B2011001	DN15 Ball valve	1	pcs	material:316L
20	1B2011001	DN15 Ball valve	1	pcs	material:316L
21	20049-2-1-0A	Probe inlet	1	pcs	material:316L
	20049-2-2-0A	Probe	1	pcs	material:316L
Flowmeter unit					
22	1B2011005	DN8 Ball valve	1	pcs	material:316L
23	1H5423003	Flowmeter FKCT35V5-AUCYY-BA	1	pcs	
24	1B2011005	DN8 Ball valve	1	pcs	material:316L
25	1B2011005	DN8 Ball valve	1	pcs	material:316L
Orifice plate assembly					
26	24911-1-1-0	Orifice plate DN125 PN16	1	pcs	Standerd: GB/T2506-2005
Slope tank valve					
27	1B2062072	Pneumatic butterfly valve with double acting actuator DN125 PN16	1	pcs	Body:Cast iron Disc:316L Seat:PTFE
Overboard valve					
28	1B2062072	Pneumatic butterfly valve with double acting actuator DN125 PN16	1	pcs	Body:Cast iron Disc:316L Seat:PTFE



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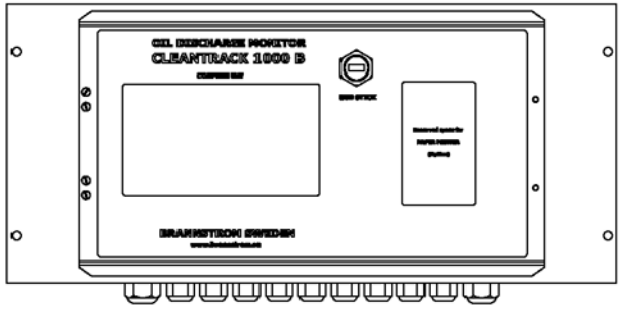
Uddevallagatan 14
416 70 GÖTEBORG
Phone: (46) 31 195600
Fax: (46) 31 197790

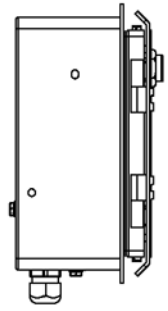
Date:	Sign:
110204	RB
110407	RB
110627	RB
120209	RB
120703	RB
130123	RB

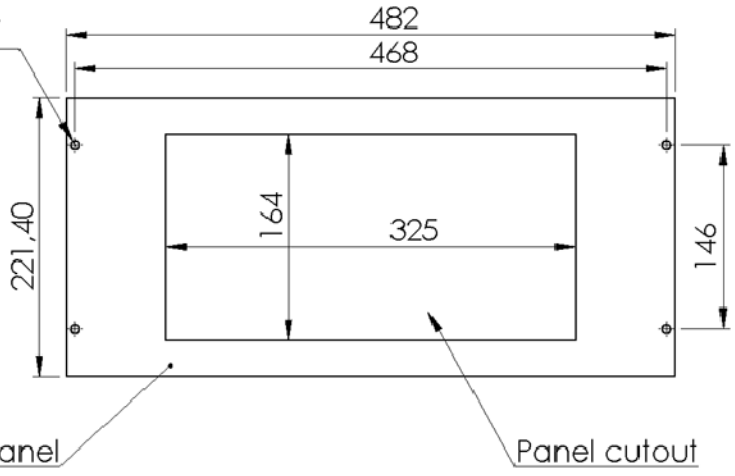
Cleantrack 1000B
Electric sample pump system
Cable diagram

File: SYSTEMEL
Page: 1(1)
Project: ODM Ver: F
Drawing nr: CTB110204.1 el

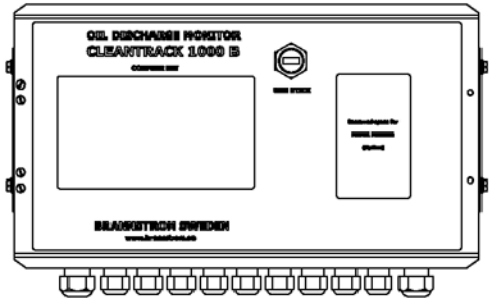
Panel mount

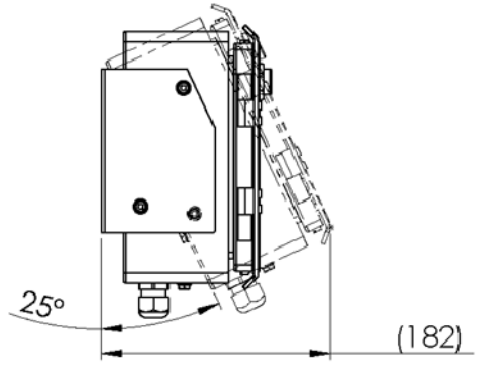


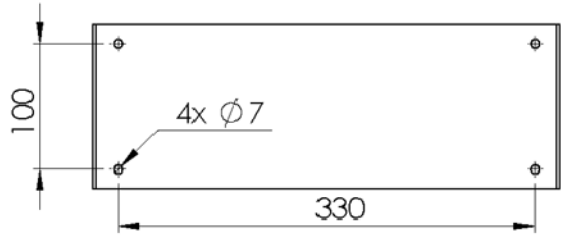




Wall mount

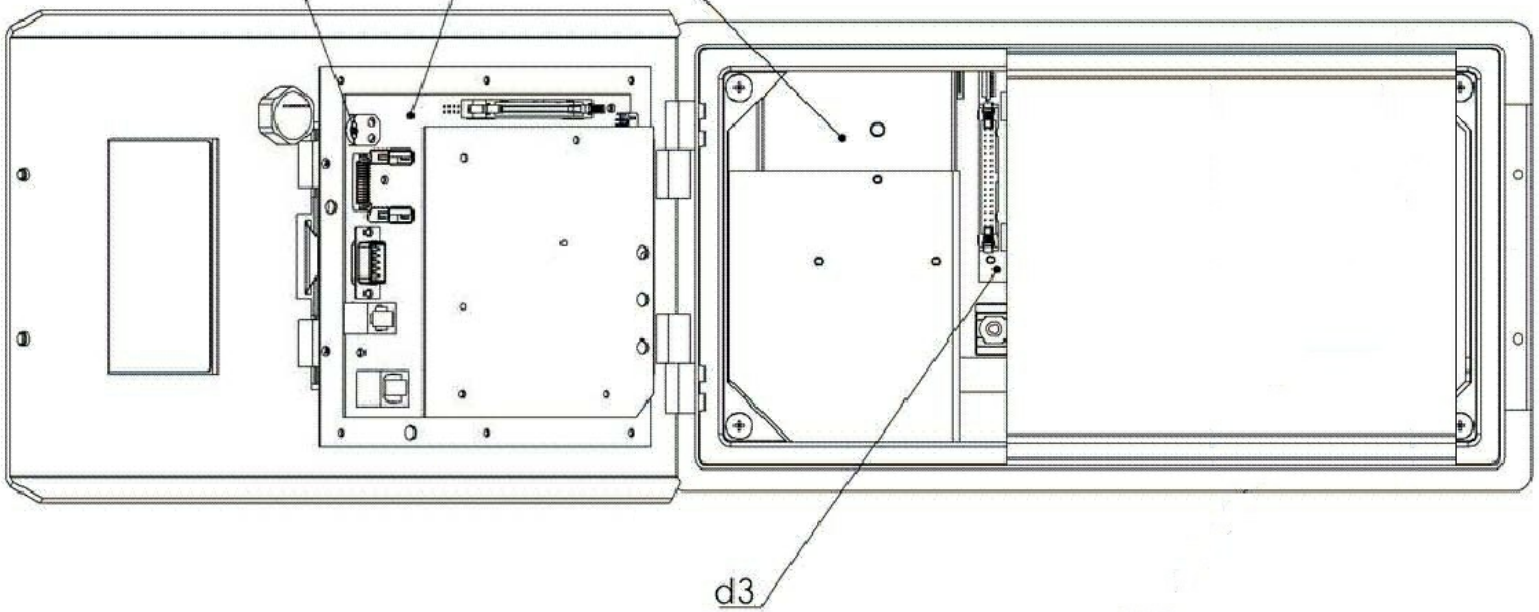




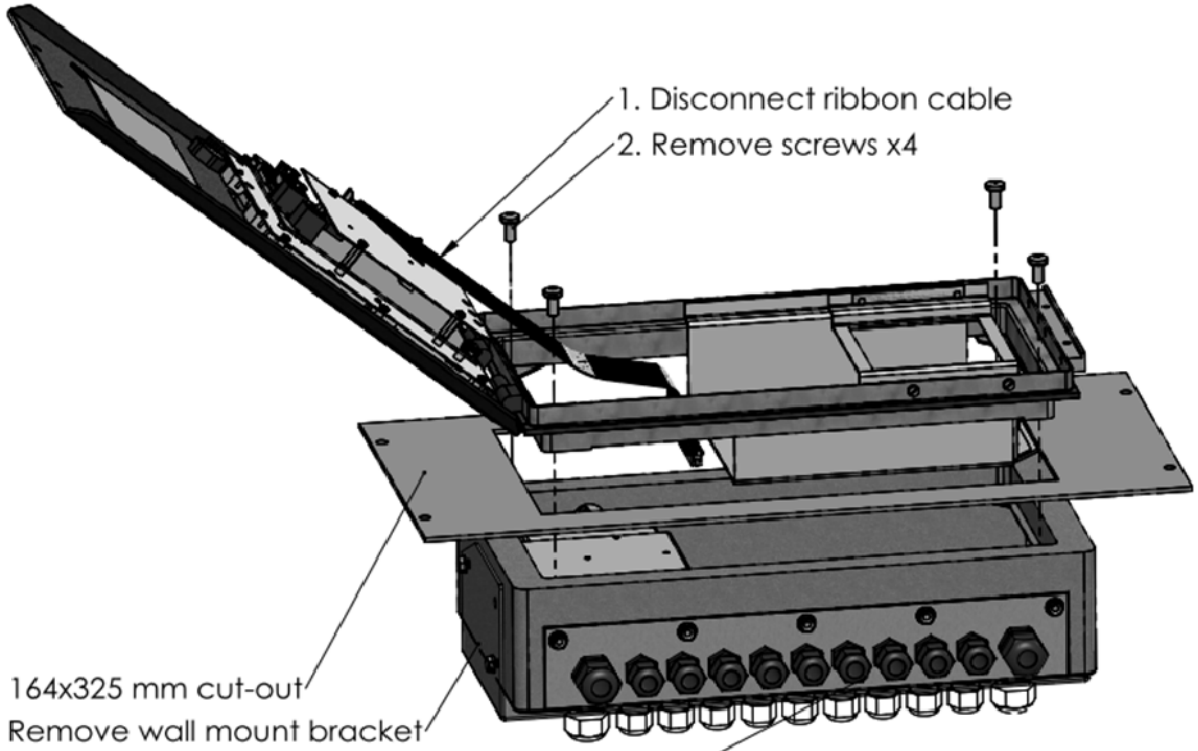


DRAWN BY: ML	DATE: 2013-01-23	RELEASE DATE: --	**Brannstrom Sweden AB**	
CHECKED BY: --	DATE: --			
	SUBSTITUTE FOR DRAWING NO: --		UNLESS OTHERWISES SPECIFIED DIMENSIONS ARE IN MILLIMETERS.	
	NET WEIGHT: --	GENERAL TOLERANCES: ±0.2	SCALE: 1:5	SHEET 1 OF 1
MATERIAL: --				
DESCRIPTION: CleanTrack 1000B, CPU mounting	DRAWING NO: CTB10030	REV. C		

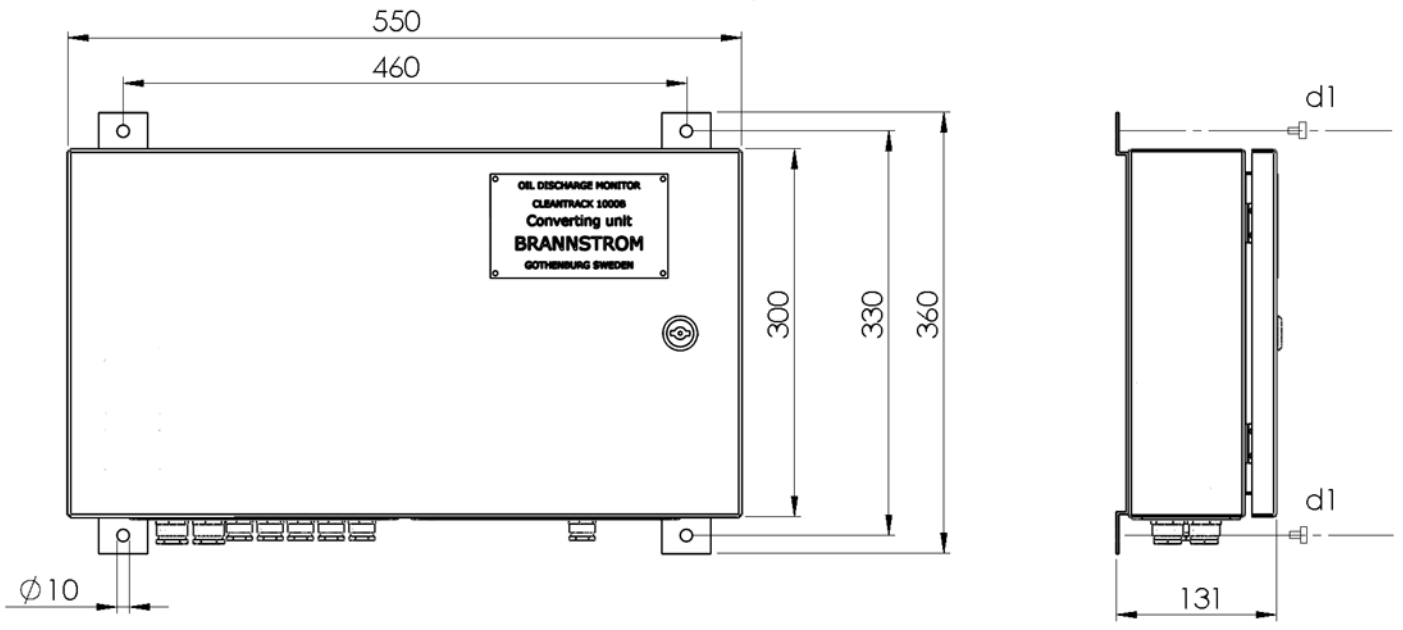
Legend	
Item	Name type
d1	Power supply unit
d2	Battery
d3	Computer unit I/O PCB
d4	Computer unit PCB



DRAWN BY: ZSL	DATE: 2017.07.26	RELEASE DATE:	**Brannstrom Sweden AB**	
CHECKED BY: SKJ	DATE: 2017.07.26	2017.07.26		
SUBSTITUTE FOR DRAWING NO: –			UNLESS OTHERWISES SPECIFIED DIMENSIONS ARE IN MILLIMETERS.	
NET WEIGHT: --	GENERAL TOLERANCES: ±0.2		SCALE: 1:3	SHEET 3 OF 3
MATERIAL: Printer version				
DESCRIPTION: CleanTrack 1000B, Computer unit		DRAWING NO: CTB10001p		REV. C.1



DRAWN BY: ML	DATE: 2015-06-10	RELEASE DATE: 2015-06-10	**Brannstrom Sweden AB**	
CHECKED BY: BB	DATE: 2015-06-10			
SUBSTITUTE FOR DRAWING NO: --			UNLESS OTHERWISES SPECIFIED DIMENSIONS ARE IN MILLIMETERS.	
NET WEIGHT: --	GENERAL TOLERANCES: ±--		SCALE: 1:4	SHEET 1 OF 1
MATERIAL: CleanTrack 1000B Computer Unit Panel Mount				
DESCRIPTION: Panel mount instructions		DRAWING NO: P3715090		REV. A

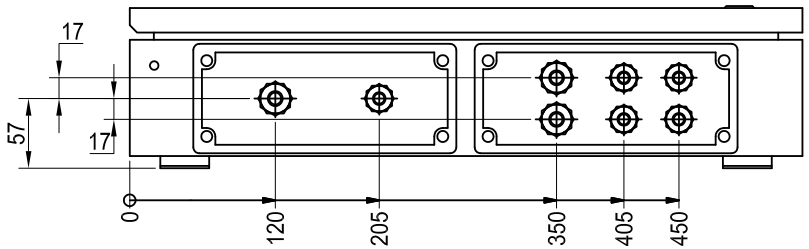


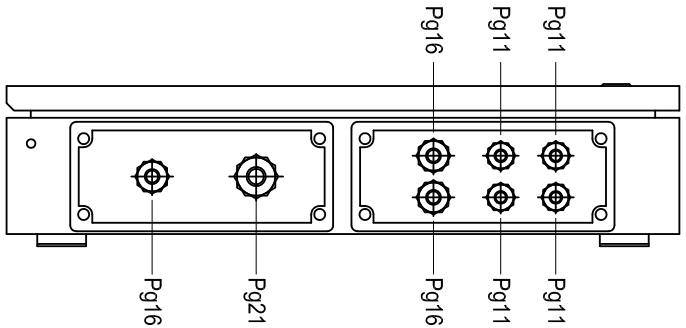
Weight approx 14 kg

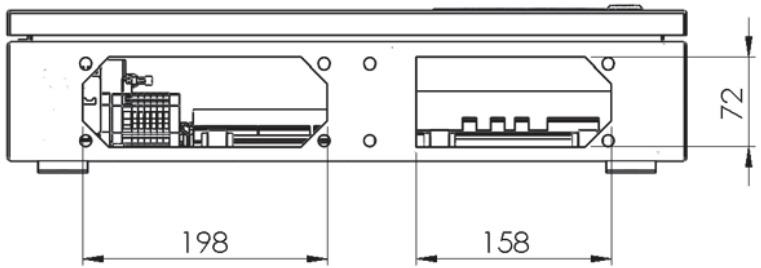
Legend		
Item	Qty	Name type dimension
d1	4	Installation bolt M6SM8 x 12

DRAWN BY: MS	DATE: 2011-05-06	RELEASE DATE: 2011-05-06	**Brannstrom Sweden AB**	
CHECKED BY: RB	DATE: 2011-05-06			
SUBSTITUTE FOR DRAWING NO: --			UNLESS OTHERWISES SPECIFIED DIMENSIONS ARE IN MILLIMETERS.	
NET WEIGHT: --	GENERAL TOLERANCES: ±0.2		SCALE: 1:5	SHEET 1 OF 3
MATERIAL: --				
DESCRIPTION: ClenTrack 1000B, Converting unit	DRAWING NO: CTB10003	REV. B1		

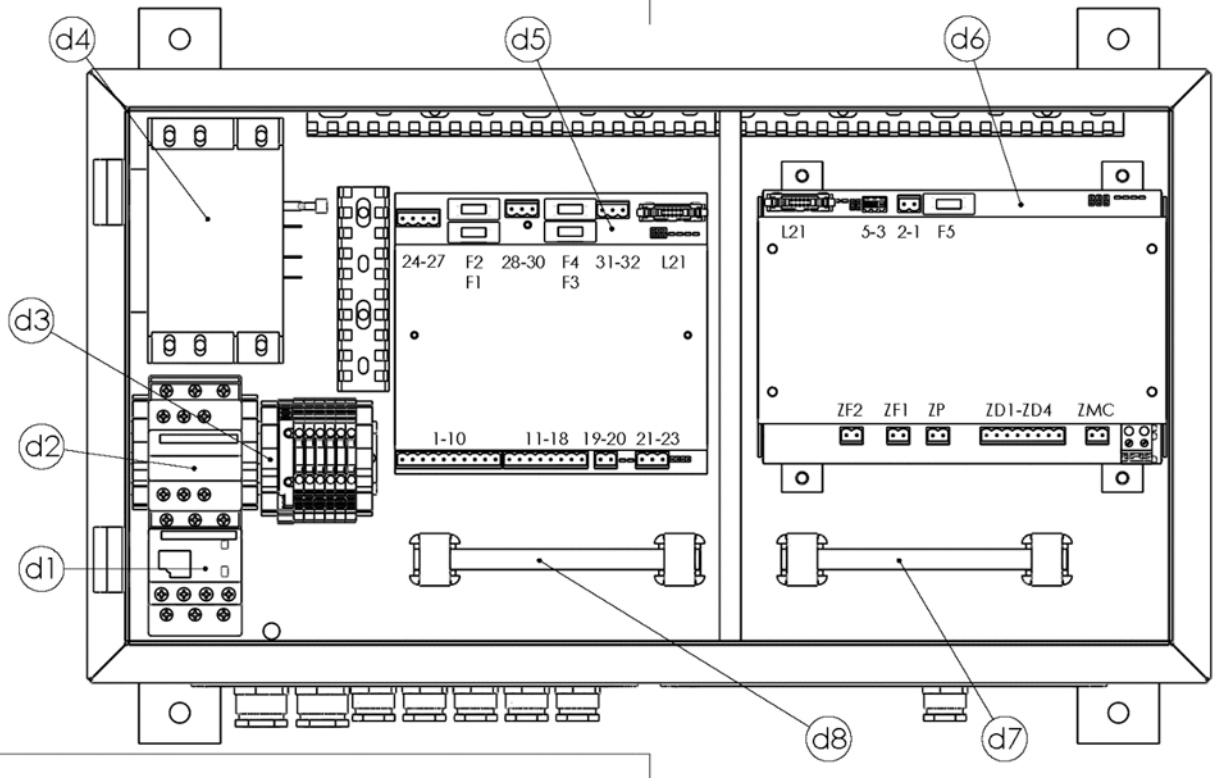
Electrical cable penetrations







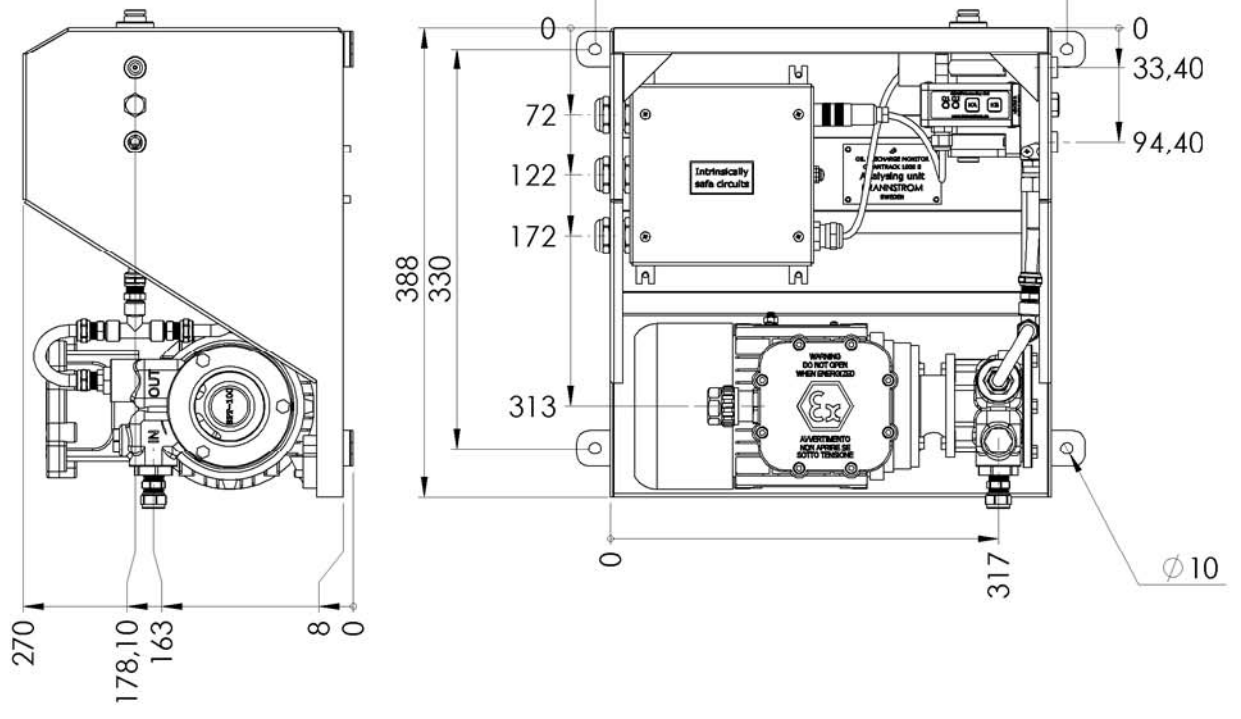
DRAWN BY: MS	DATE: 2011-05-06	RELEASE DATE: 2011-05-06	**Brannstrom Sweden AB**		
CHECKED BY: RB	DATE: 2011-05-06				
	SUBSTITUTE FOR DRAWING NO: --		UNLESS OTHERWISES SPECIFIED DIMENSIONS ARE IN MILLIMETERS.		
	NET WEIGHT: --	GENERAL TOLERANCES: ±0.2	SCALE: 1:5	SHEET 2 OF 3	
MATERIAL: --					
DESCRIPTION: ClenTrack 1000B, Converting unit		DRAWING NO: CTB10003	REV. B1		



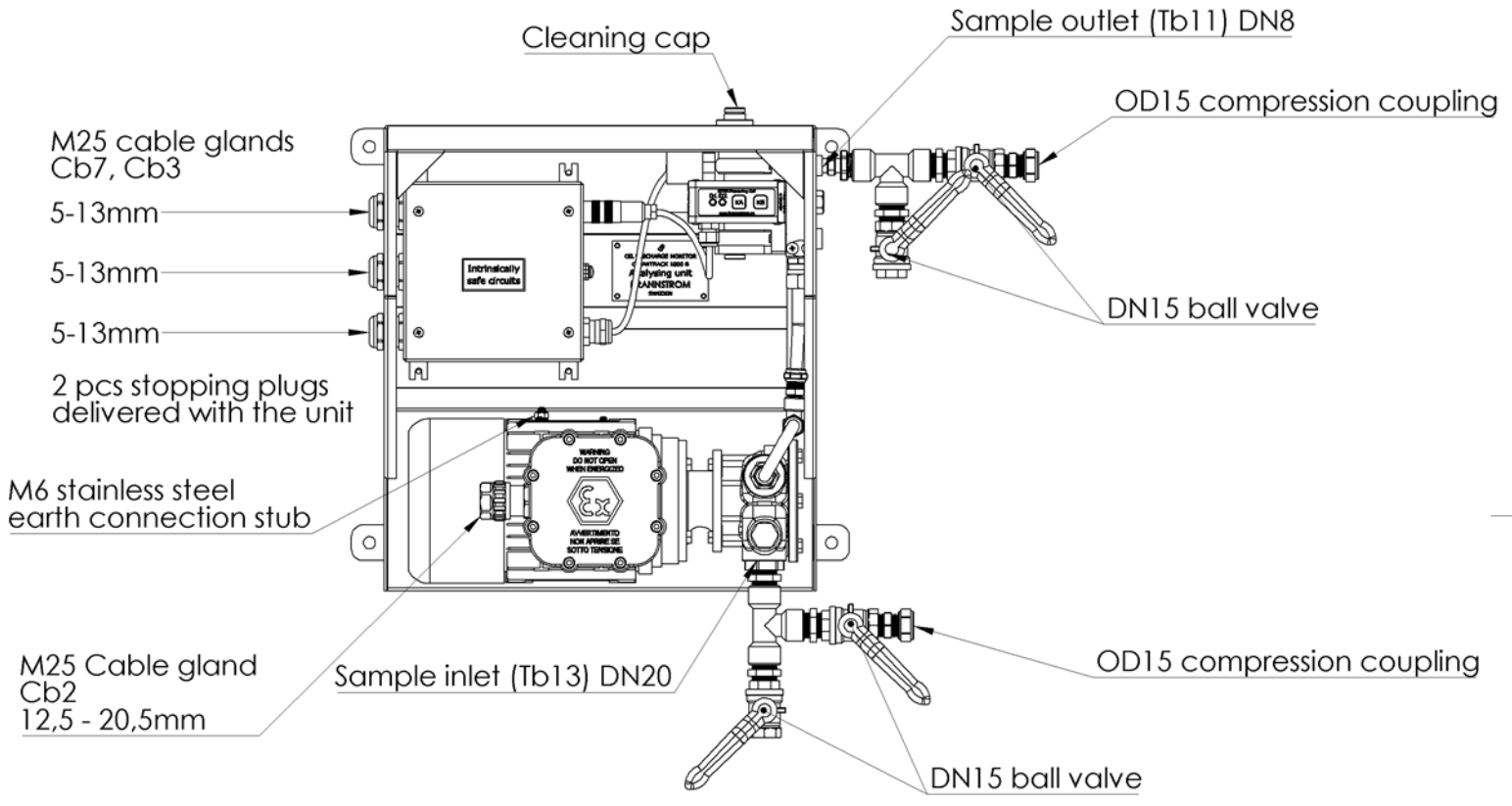
Legend

Item	Type El (CTB110627.1el)	Type Pn (CTB110627.1pn)	Type Pnz (CTB110627.1pnz)	Description
d1	Oc1	-	-	Overcurrent relay
d2	K1	-	-	Contactor
d3	41-46	41-42	41-42, 21-23	Power supply terminals
d4	Tr1el	Tr1pn	Tr1pn	Transformer
d5	Pcb_CV	Pcb_CV	-	Converting PCB
d6	Pcb_ZB	Pcb_ZB	Pcb_ZB	Zener Barrier PCB
d7	Gnd_ZB	Gnd_ZB	Gnd_ZB	Ground connections
d8	Gnd_CV	Gnd_CV	Gnd_CV	PE connections

DRAWN BY: MS	DATE: 2011-05-06	RELEASE DATE: 2011-05-06	**Brannstrom Sweden AB**	
CHECKED BY: RB	DATE: 2011-05-06			
SUBSTITUTE FOR DRAWING NO: --			UNLESS OTHERWISES SPECIFIED DIMENSIONS ARE IN MILLIMETERS.	
NET WEIGHT: --	GENERAL TOLERANCES: ±0.2		SCALE: 1:3	SHEET 3 OF 3
MATERIAL: --				
DESCRIPTION: ClenTrack 1000B, Converting unit		DRAWING NO: CTB10003		REV. B1



DRAWN BY: ML	DATE: 2015-06-05	RELEASE DATE: 2014-06-27	**Brannstrom Sweden AB**	
CHECKED BY: –	DATE: –			
SUBSTITUTE FOR DRAWING NO: –			UNLESS OTHERWISES SPECIFIED DIMENSIONS ARE IN MILLIMETERS.	
NET WEIGHT: --	GENERAL TOLERANCES: ±0.2		SCALE: 1:5	SHEET 1 OF 3
MATERIAL: Skid electrical Ex motor sample pump type				
DESCRIPTION: CleanTrack 1000B, Analysing unit		DRAWING NO: CTB10015	REV. B	



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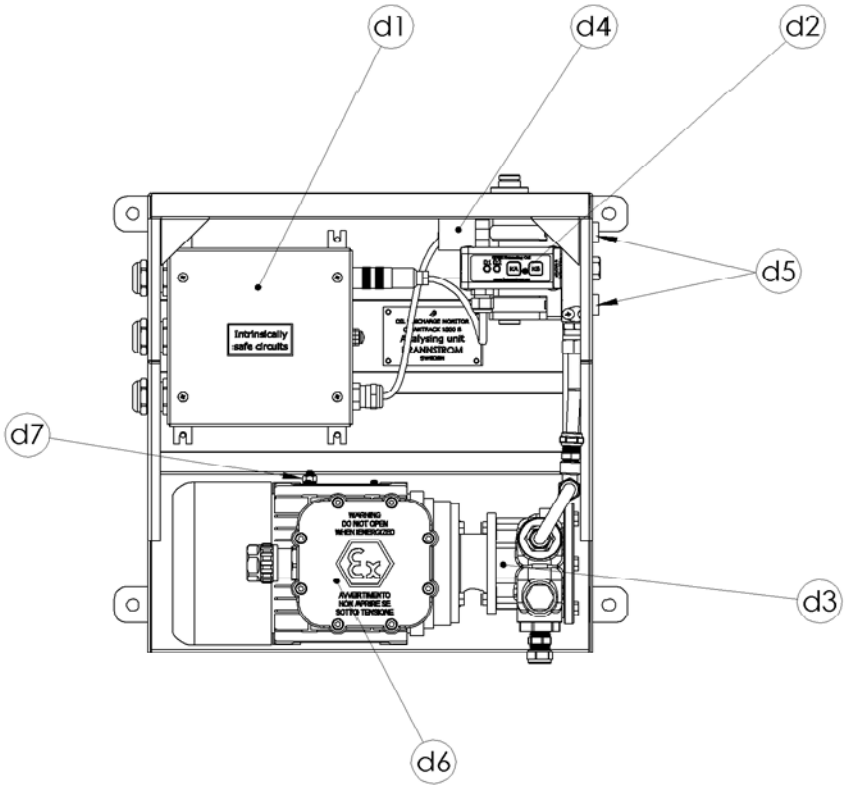
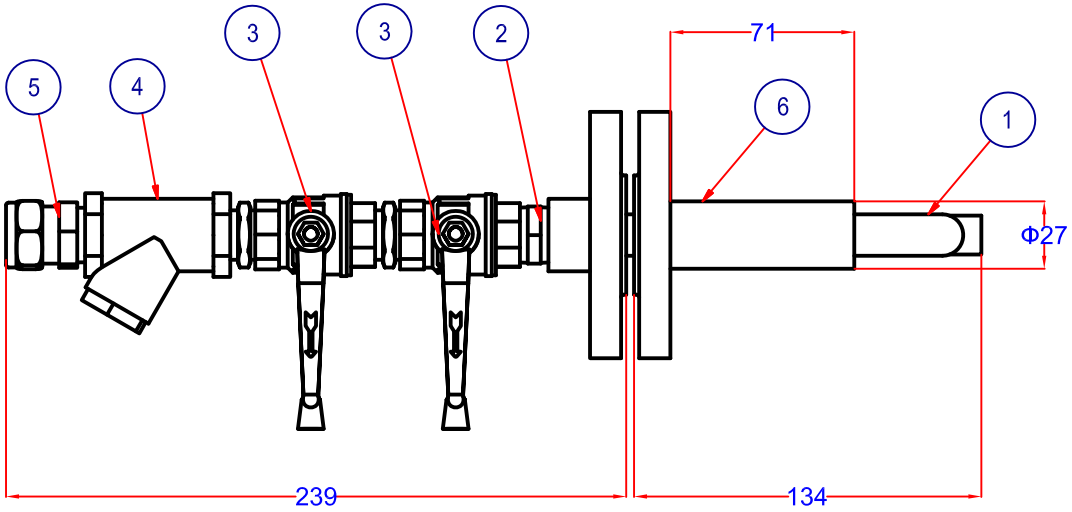
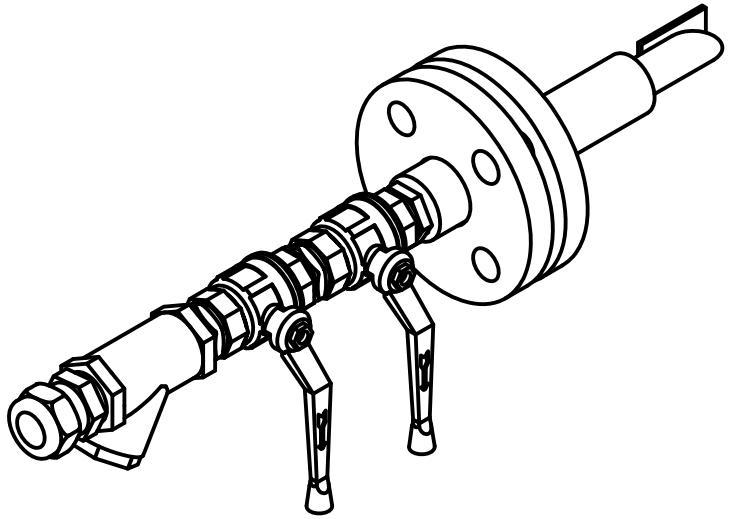
CHECKED BY: --	DATE: --			
SUBSTITUTE FOR DRAWING NO: --			UNLESS OTHERWISES SPECIFIED DIMENSIONS ARE IN MILLIMETERS.	
NET WEIGHT: --	GENERAL TOLERANCES: ±0.2		SCALE: 1:5	SHEET 2 OF 3
MATERIAL: Skid electrical Ex motor sample pump type				
DESCRIPTION: CleanTrack 1000B, Analysing unit		DRAWING NO: CTB10015	REV. B	



Legend	
Item	Name type
d1	Connection box
d2	Measuring cell
d3	Sample pump
d4	Pressure transmitter (option)
d5	2 pcs, O-ring 19x2
d6	Motor connection box
d7	Motor earth stub, M6 s/s

DRAWN BY: ML	DATE: 2015-06-05	RELEASE DATE: 2014-06-27	**Brannstrom Sweden AB**	
CHECKED BY: --	DATE: --			
	SUBSTITUTE FOR DRAWING NO: --		UNLESS OTHERWISES SPECIFIED DIMENSIONS ARE IN MILLIMETERS.	
	NET WEIGHT: --	GENERAL TOLERANCES: ±0.2	SCALE: 1:5	SHEET 3 OF 3
MATERIAL: Skid electrical Ex motor sample pump type				
DESCRIPTION: CleanTrack 1000B, Analysing unit		DRAWING NO: CTB10015	REV. B	





ITEM	QT	DESCRIPTION	STOCK NUMBER
6	1	Probe	20049-2-2-0A
5	1	Male Connector 1/2"	1B2111020
4	1	316 Strainer DN15	1B1411017
3	2	316 Ball Valve DN15	1B2011001
2	3	316 Nipple 1/2"	1B2121003
1	1	Probe inlet	20049-2-1-0A

SUBJECT		SIZE A3	MODEL ID 4911-4-13
			PAGE 1 /1
DRAWN	2021-2-26	Byron	
CHECK	2021-2-26	Jason	
APPR.	2021-2-26	Matthew	
REV	A.0		

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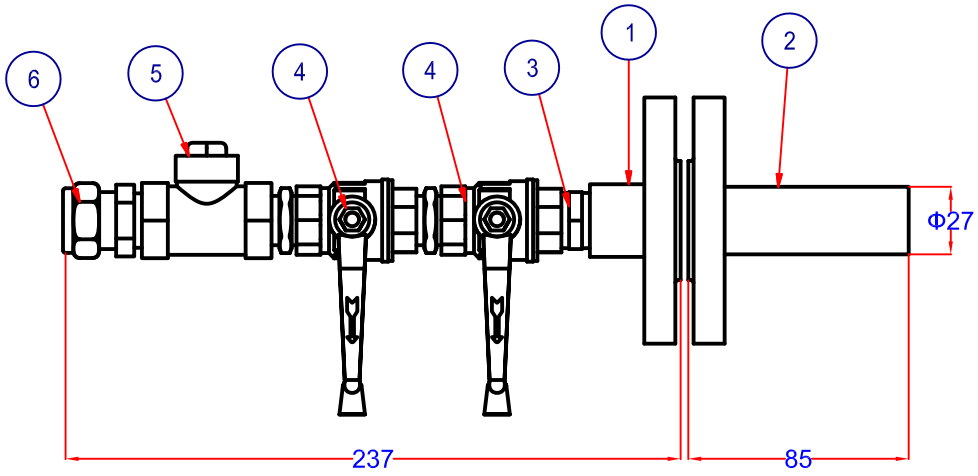
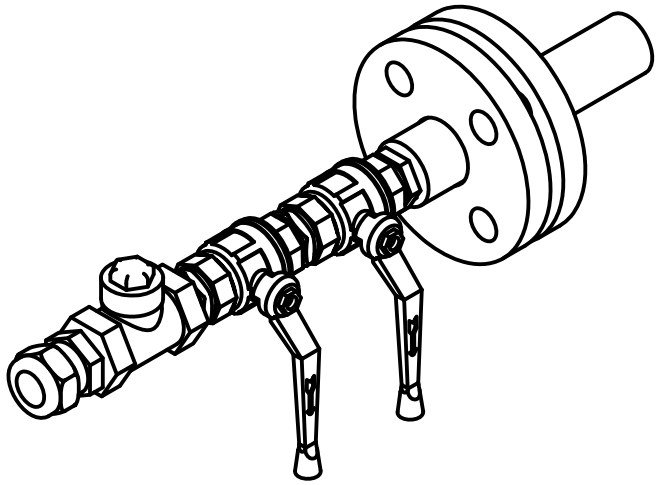
Probe Inlet Assembly

ID NO 4911-4-13





ITEM	QT	DESCRIPTION	STOCK NUMBER
6	1	Male Connector 1/2"	1B2111020
5	1	316 Check Valve DN15	1B2020006
4	2	316 Ball Valve DN15	1B2011001
3	3	316 Nipple 1/2"	1B2121003
2	1	Probe	20049-2-2-0A
1	1	Probe outlet	20049-3-1-0A

SUBJECT		SIZE A3	MODEL ID 49-11-04-14 / PAGE 1 /1
DRAWN	2021-2-26	Byron	
CHECK	2021-2-26	Jason	
APPR.	2021-2-26	Matthew	
REV	A.0		

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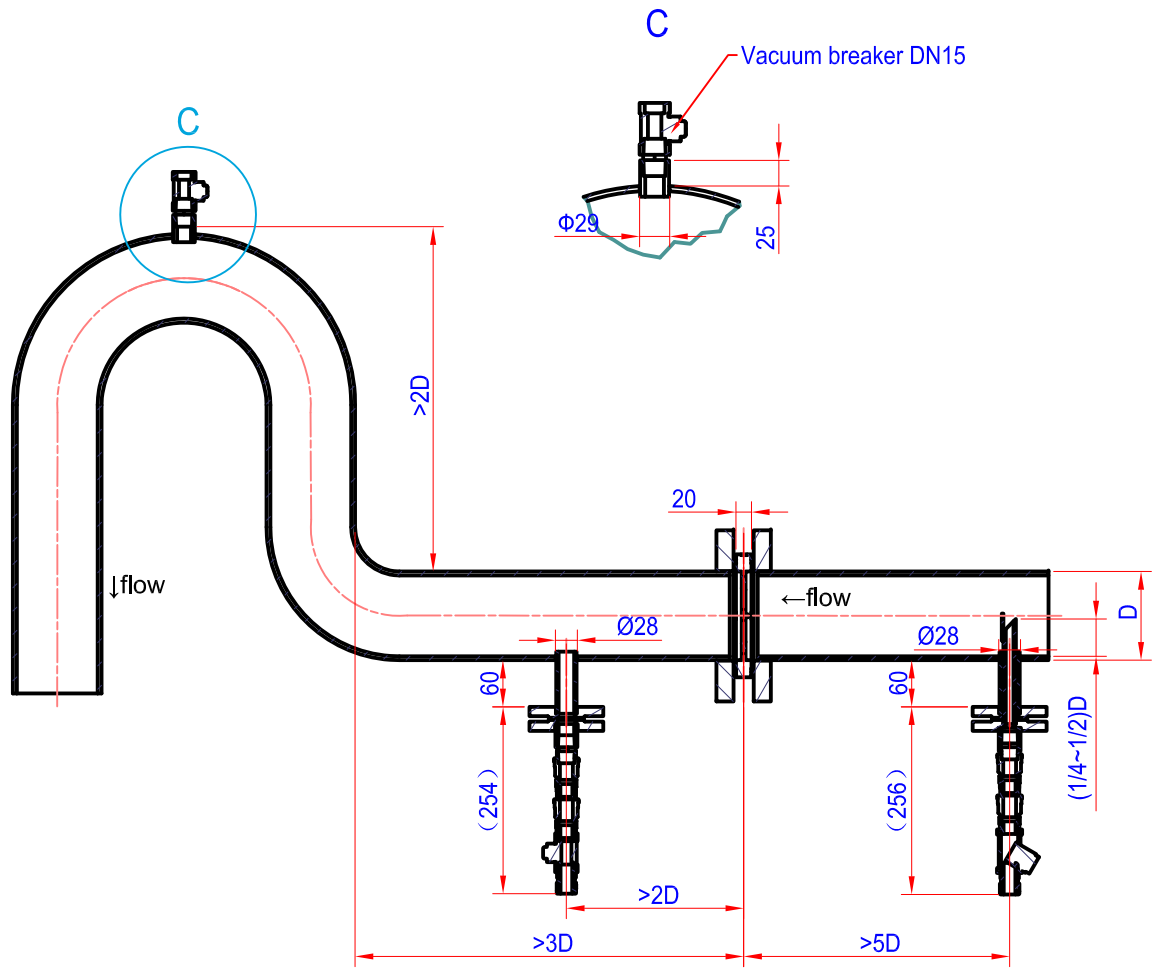
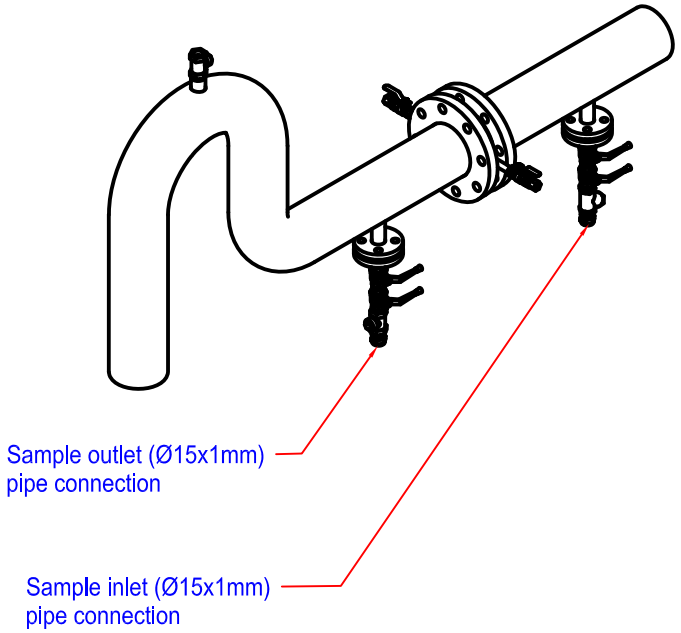
Probe Outlet Assembly

ID NO 4911-4-14





Note: The sampling probes are to be positioned downwards

SUBJECT	SIZE A3	MODEL ID	PAGE 1 /1
DRAWN 2021-2-26 Byron			
CHECK 2021-2-26 Jason			
APPR. 2021-2-26 Matthew			
REV A.0			
Horizontal Arrangement Sampling & Flowmeter		DWG NO 4911-2-0	

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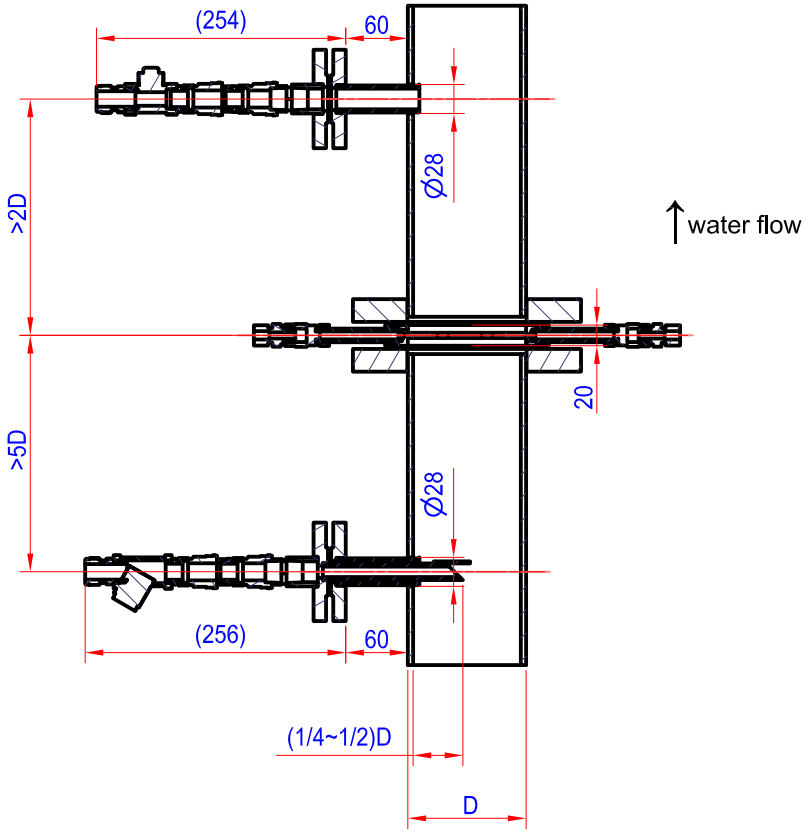

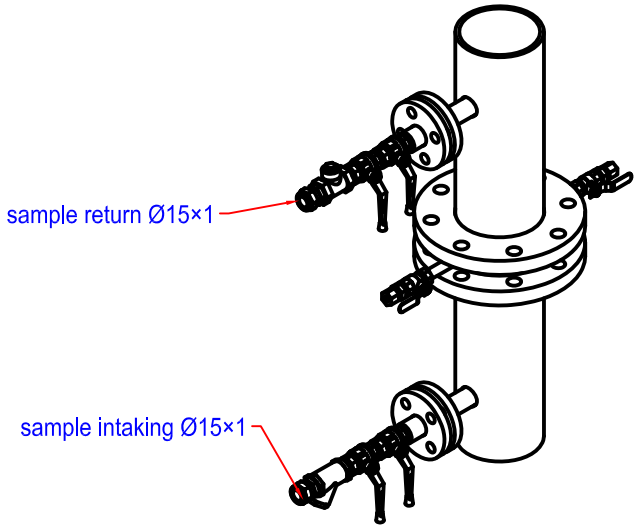

SUBJECT	SIZE A3	MODEL ID	PAGE 1 /1
DRAWN 2021-2-26 Byron			
CHECK 2021-2-26 Jason			
APPR. 2021-2-26 Matthew			
REV			

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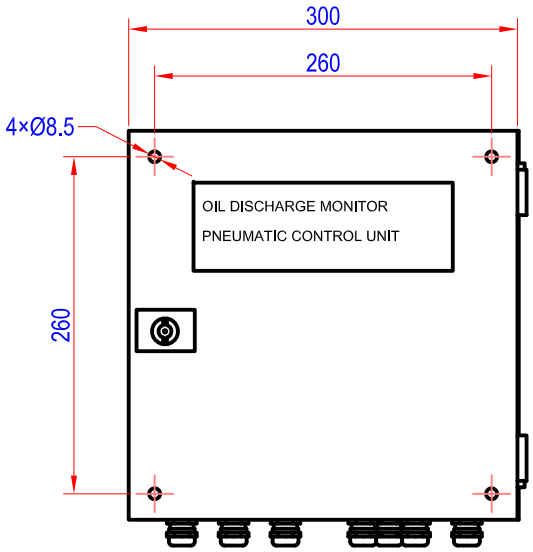
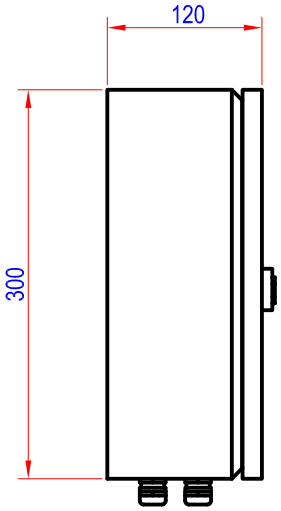
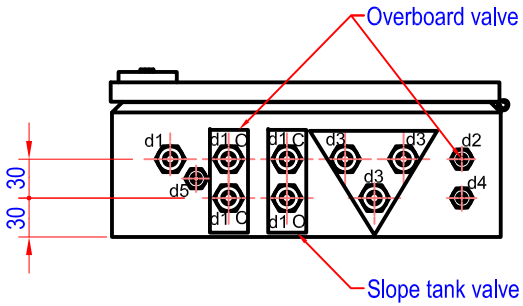
Vertical Arrangement
Sampling & Flowmeter

ID NO 4911-1-0







O: Open
C: Close

Legend

Item	Qty	Name type dimension
d1	5	Bulkhead union o.d.Ø8×1. Air supply and control air to CBV and STV
d2	1	Bulkhead union o.d.Ø6×1. Feedback from OBV(air).
d3	3	Electrical cable penetrations Pg13.5 for pressure switch and solenoid valves
d4	1	Electrical cable penetrations Pg7 for earthing
d5	1	Bulkhead union o.d.Ø6. Drain for air supply filter.

SUBJECT	SIZE A3	MODEL ID	PAGE 1 /1
DRAWN 2022/6/13 Byron			
CHECK 2022/6/13 Jason			
APPR. 2022/6/13 Matthew			
REV: A.0			
Pneumatic Control Box		ID NO 24911-10-0	

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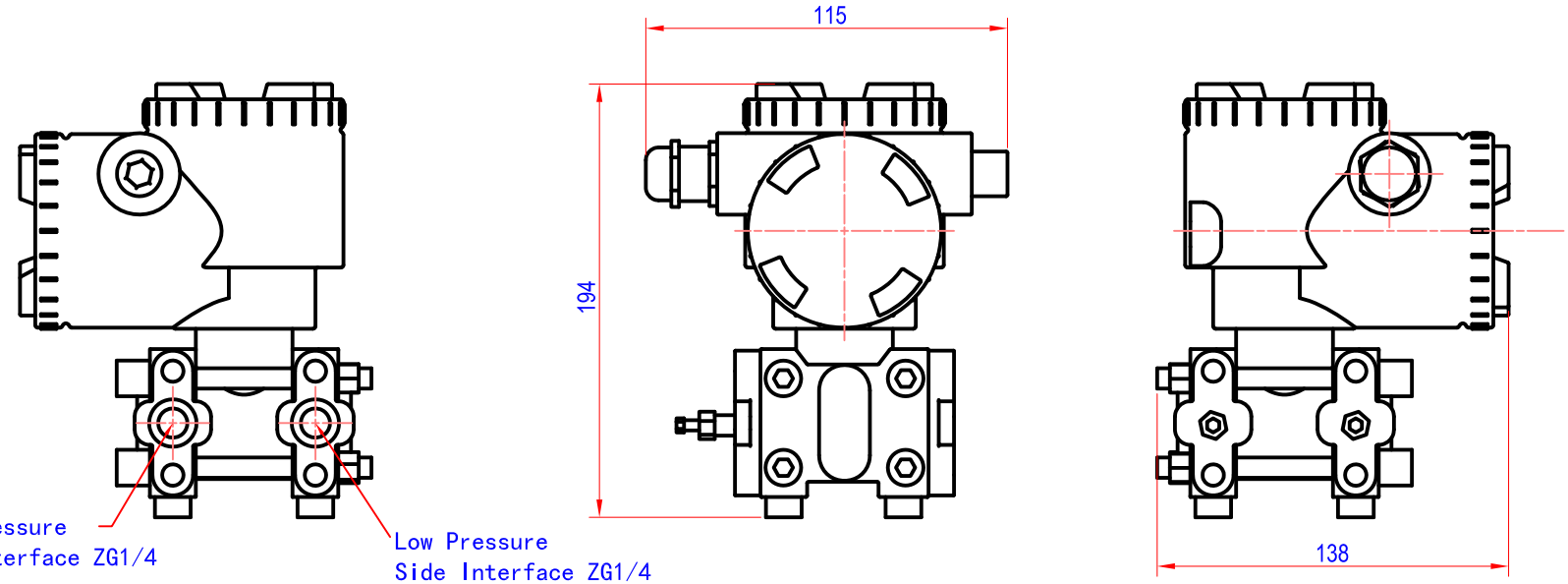

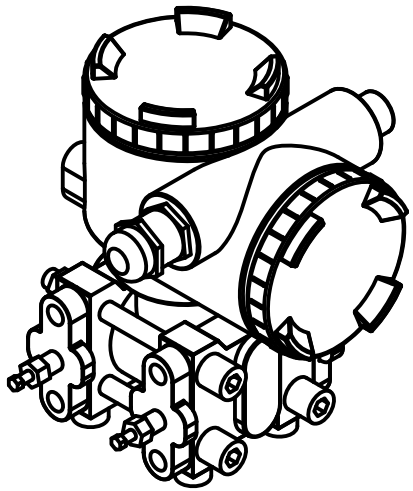

Technical data:
Type: FKCT35V5-AUCYY-BAY
Pressure Range: 0~120kPa
Power Supply: 42.4VDC max
Output: 4~20mA DC
Max Working Pressure: 16MPa
Protection Classification: IP 67

SUBJECT	SIZE A3	MODEL ID	PAGE 1 /1
DRAWN 2021/2/16 Byron			
CHECK 2021/2/16 Jason			
APPR. 2021/2/16 Matthew			
REV: A.0			
Flow Meter		ID NO 4911-4-10	

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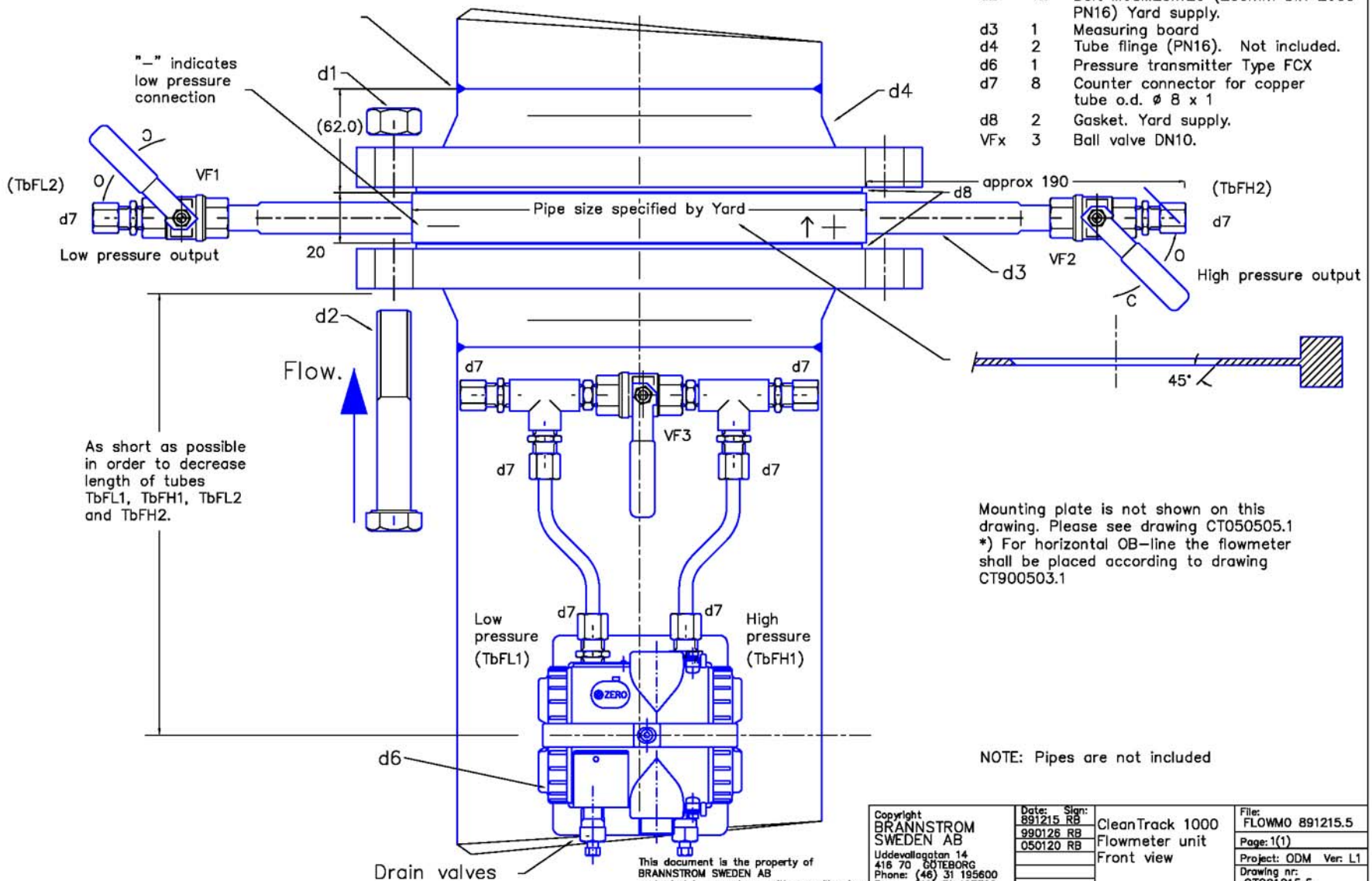
Vertical *) OB–line



Legend

Item	Qty	Name type dimension Material
d1	12	Nut M6MM20 (200mm DIN 2633 PN16) Yard supply.
d2	12	Bolt M6SM20x120 (200mm DIN 2633 PN16) Yard supply.
d3	1	Measuring board
d4	2	Tube flinge (PN16). Not included.
d6	1	Pressure transmitter Type FCX
d7	8	Counter connector for copper tube o.d. ø 8 x 1
d8	2	Gasket. Yard supply.
VFx	3	Ball valve DN10.

Mounting plate is not shown on this drawing. Please see drawing CT050505.1
*) For horizontal OB–line the flowmeter shall be placed according to drawing CT900503.1

NOTE: Pipes are not included

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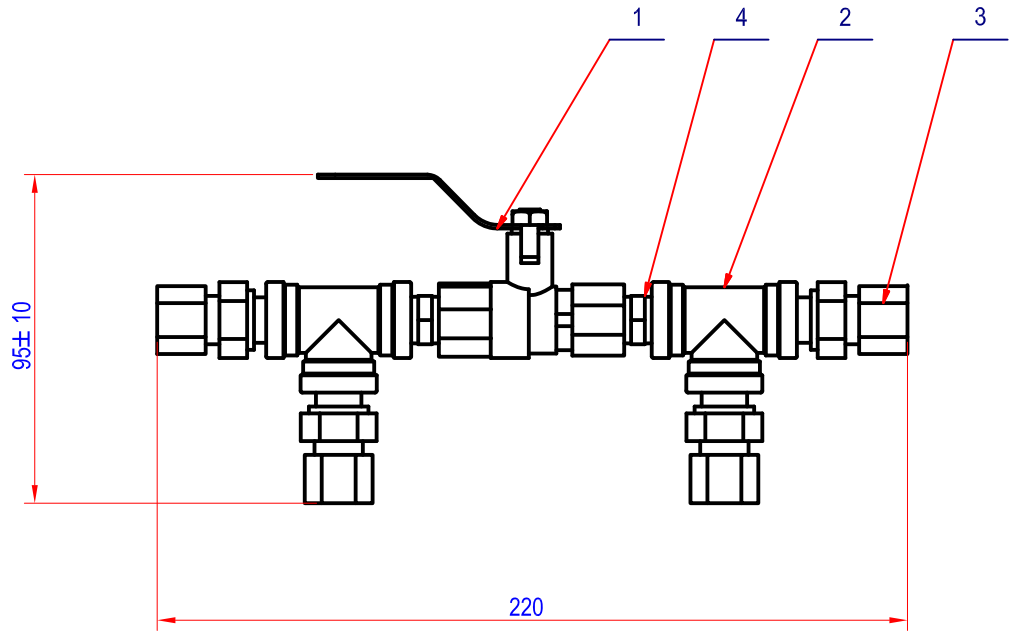
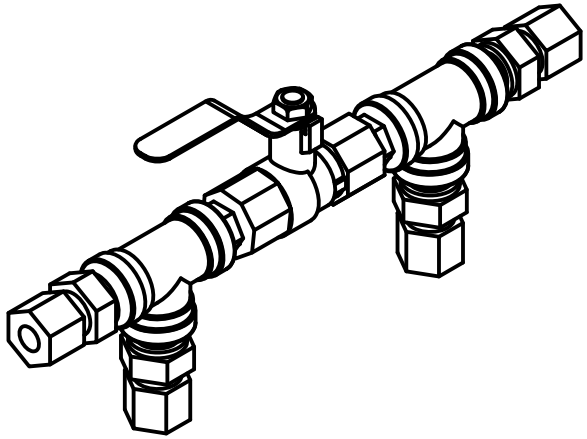
416 70 GÖTEBORG
Phone: (46) 31 195600
Fax: (46) 31 197790

Date:	Sign:
891215	RB
990126	RB
050120	RB

CleanTrack 1000
Flowmeter unit
Front view

File: FLOWM0 891215.5
Page: 1(1)
Project: ODM Ver: L1
Drawing nr: CT891215.5





IT	QT	DESCRIPTION	MTRL	DATA	ID NUMBER
4	2	Male Nipple	316	G1/4	1B2121001
3	4	Male Compression Nipple	316L	G1/4-φ8	1B2111004
2	2	Female Tee	316	G1/4	1B2141001
1	1	Ball Valve	316	G1/4	1B2011005

SUBJECT	SIZE A3	MODEL ID	PAGE 1 /1
DRAWN 2021/2/16 Byron			
CHECK 2021/2/16 Jason			
APPR. 2021/2/16 Matthew			
REV: A.0			
Valve 22		ID NO 4911-4-11	

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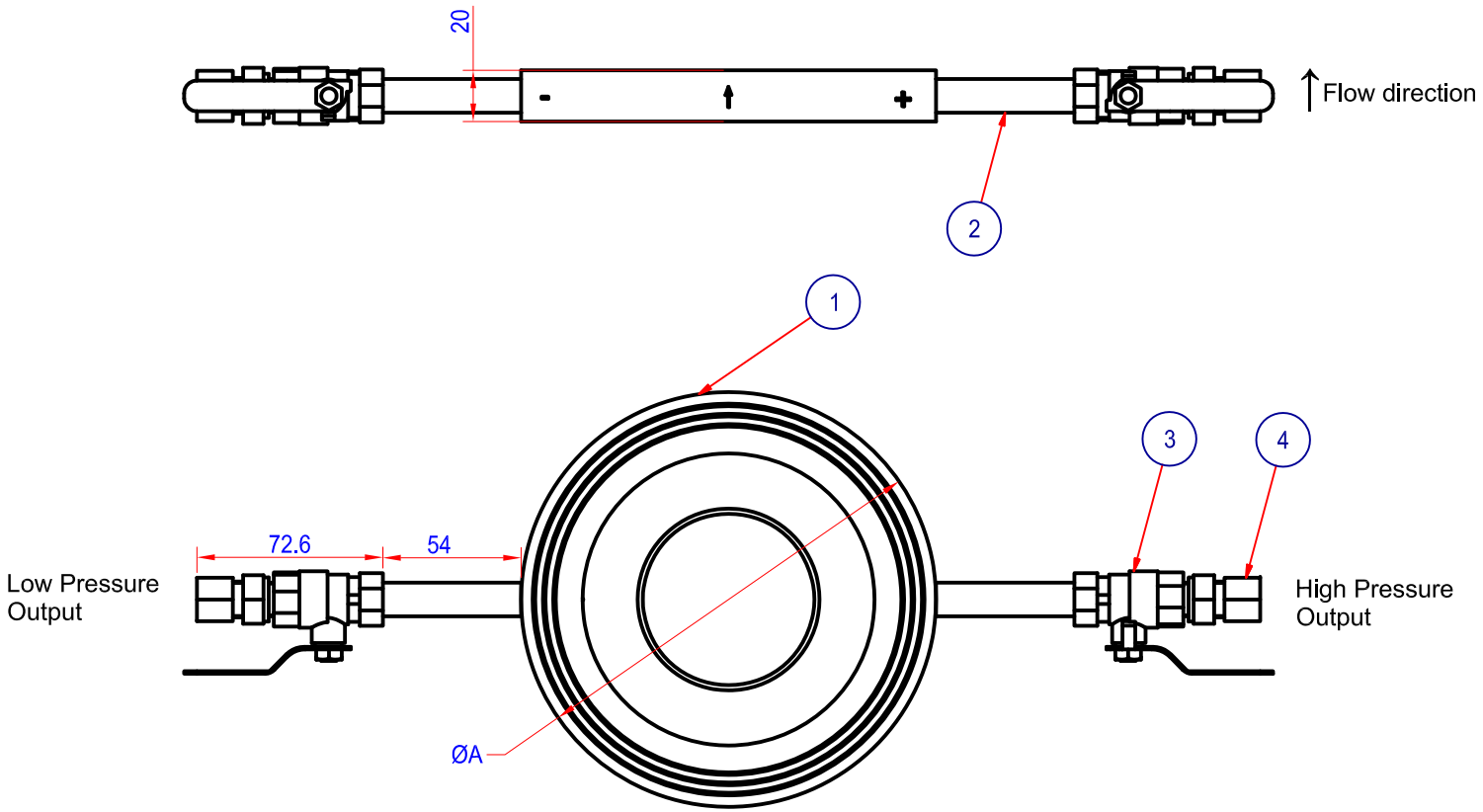

Parameter：
Nominal diameter DN**
Flow rate ** m³/h

NOTE：
1.Standard of flange: GB/T 9119-2010
2.Nominal pressure: PN10

ITEM	QTY	DESCRIPTION	STOCK NUMBER
4	2	316 Male Connector 1/4"-Φ8	1B2111012
3	2	316 Ball Valve DN8	1B2011005
2	2	316 Nipple 1/4"	24911-1-2
1	1	Orifice Plate	24911-1-1-0

SUBJECT		SIZE A3	MODEL ID
PAGE 1 /1			
DRAWN 2021-2-16	Byron		
CHECK 2021-2-16	Jason		
APPR. 2021-2-16	Matthew		
REV A.0			

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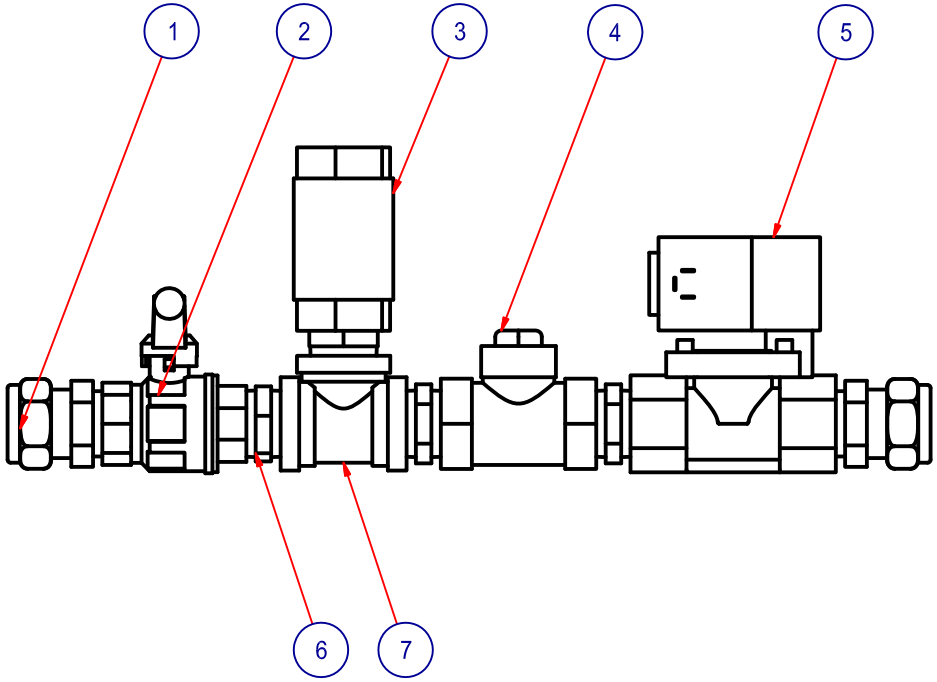
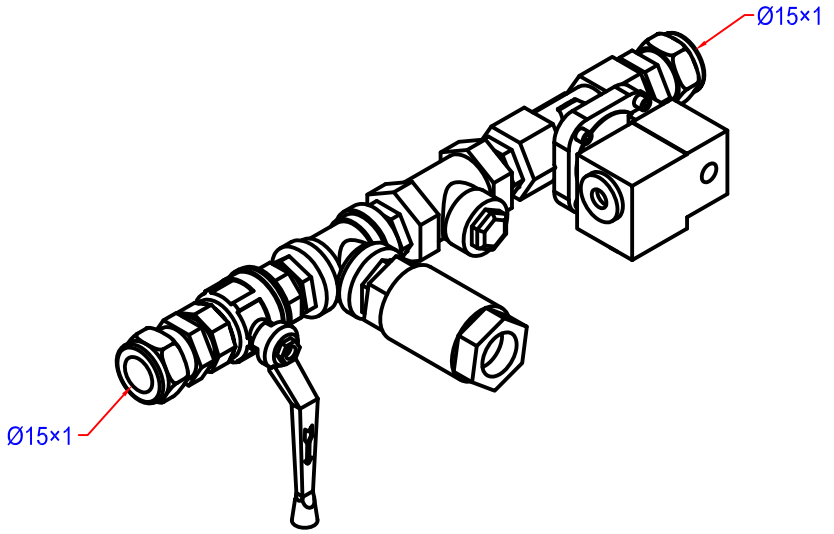
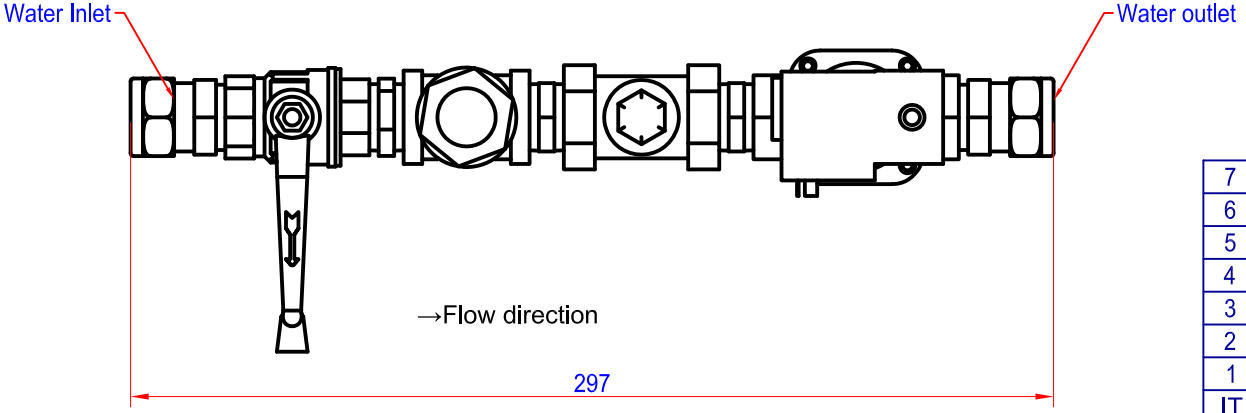
Orifice Plate Assembly

ID NO 4911-4-12







IT	QT	DESCRIPTION	MTRL	ID NUMBER
7	1	Female Tee DN15	Brass	1B2141016
6	2	Nipple DN15	Brass	1B2121011
5	1	Solenoid Valve DN15	Brass	1B3010007
4	1	Check Valve DN15	Brass	1B2020015
3	1	Vacuum Breaker	Brass	1B2090012
2	1	Ball Valve DN15	Brass	1B2011008
1	2	Male Connector DN15	Barss	1B2111020

SUBJECT	SIZE A3	MODEL ID	PAGE 1 /1
DRAWN 2021-2-16 Byron			
CHECK 2021-2-16 Jason			
APPR. 2021-2-16 Matthew			
REV A.0			

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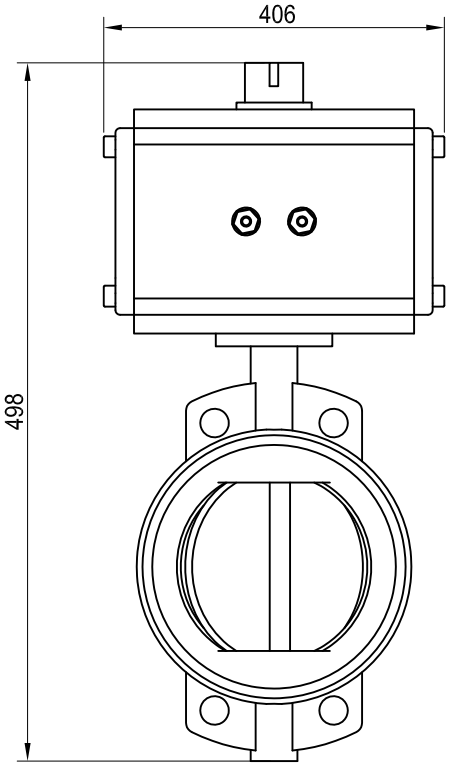
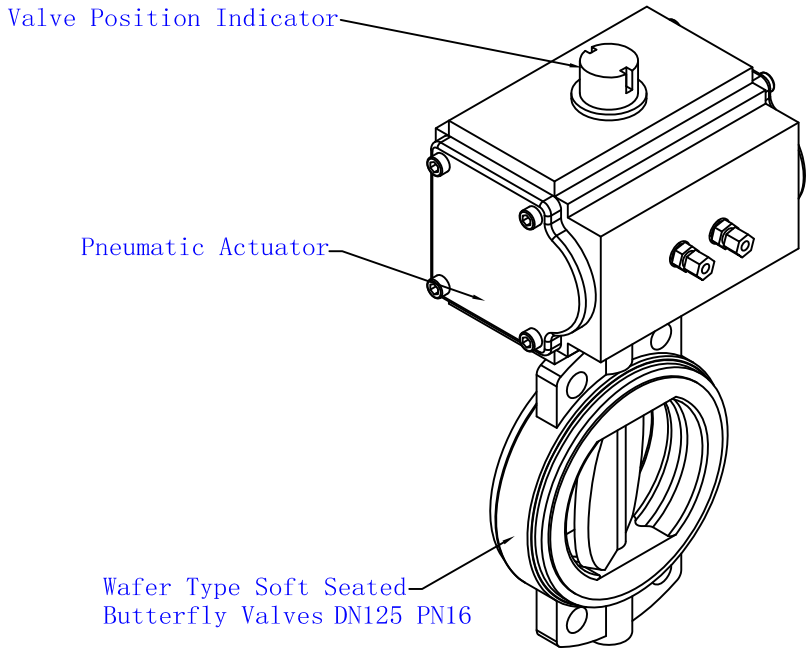
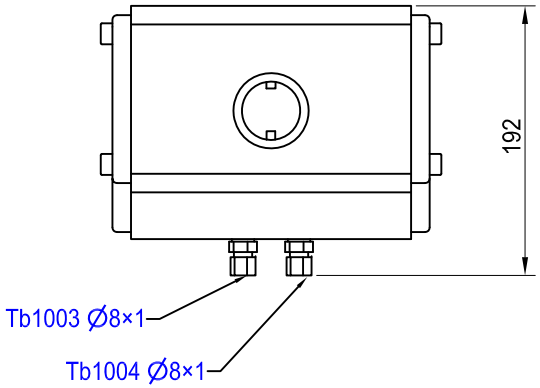
Fresh Water Assembly

ID NO 4911-4-15







技术要求：
阀体：球墨铸铁
阀板：316L
阀座：PTFE

SUBJECT		SIZE A3	MODEL ID
			PAGE 1 /1
DRAWN	2016/4/12	Gavin	
CHECK	2016/4/12	guyaomin	
APPR.	2016/4/12	matthew	
REV	A.0		

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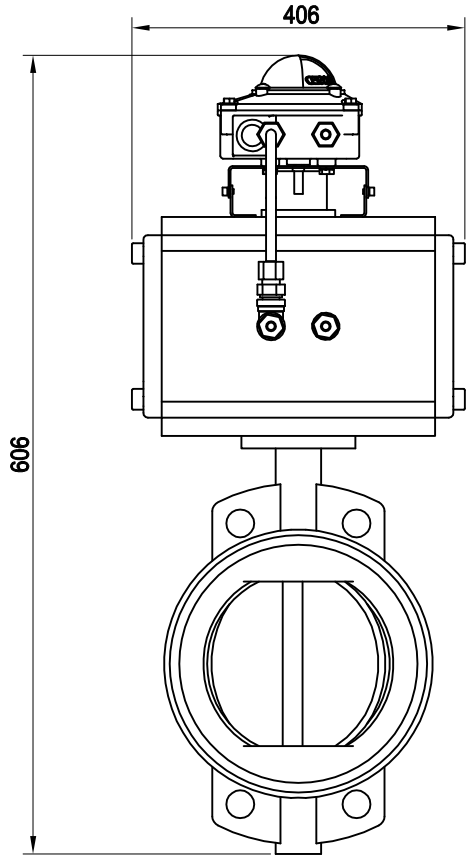
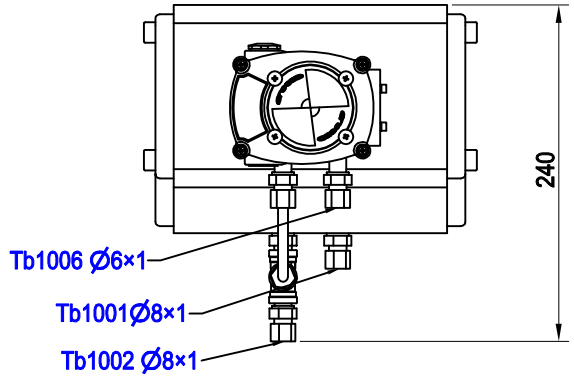
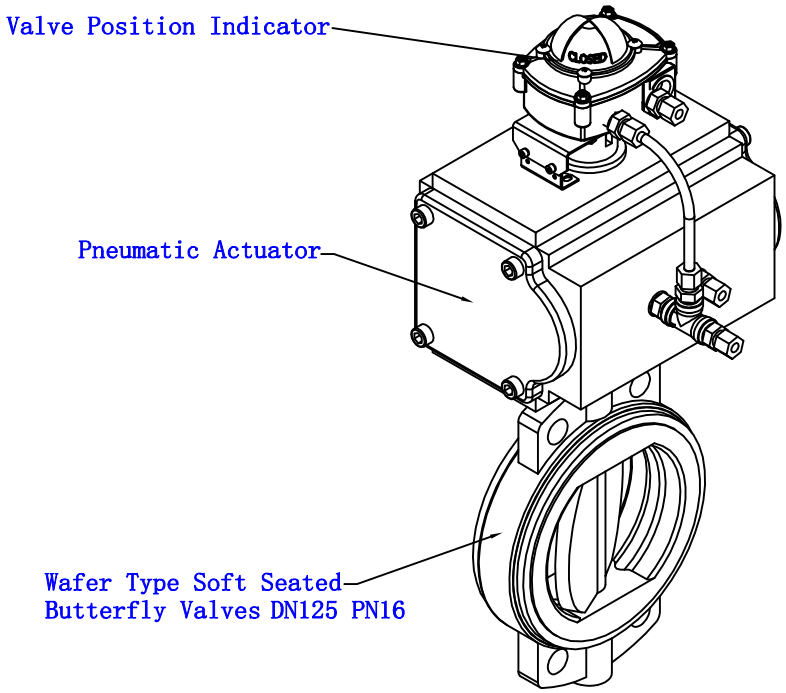
Slop Tank Valve

ID NO 24911-5-1







SUBJECT	SIZE A3	MODEL ID	PAGE 1 /1
DRAWN 2023/5/16 CSE			
CHECK 2023/5/16 guyaomin			
APPR. 2023/5/16 matthew			
REV A.0			
Overboard Valve		ID NO 24911-5-2	

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