

# Instruction Manual

Remote Divert User Interface

DI



PUBLISHED BY

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Visit our Internet pages at [www.vaisala.com](http://www.vaisala.com).

## General safety considerations

Always power off the Remote divert user interface DI before accessing the connections behind the display. Vaisala recommends the installation of an external power switch.



**Warning!** If this device is used against manufacturer's instructions, the protection for the user may be lost.

## Warranty

For standard warranty terms and conditions, see [www.vaisala.com/warranty](http://www.vaisala.com/warranty).

Please observe that any such warranty may not be valid in case of damage due to normal wear and tear, exceptional operating conditions, negligent handling or installation, or unauthorized modifications. Please see the applicable supply contract or Conditions of Sale for details of the warranty for each product.

## Technical support

Contact Vaisala technical support at [helpdesk@vaisala.com](mailto:helpdesk@vaisala.com). Provide at least the following supporting information:

- Product name, model, and serial number
- Name and location of the installation site
- Name and contact information of a technical person who can provide further information of the problem

For more information, see [www.vaisala.com/support](http://www.vaisala.com/support).

## Disposal

When wishing to dispose of an obsolete instrument or any parts of an instrument, please observe local and national regulations and requirements for the disposal of electrical and electronic equipment.



### Symbols and terms used in this manual:



This indicates a **warning**. It provides safety precaution information needed to avoid injury while operating the system.



This indicates that something is **important** for the operation of the system.

**Note.** Notes contain additional information and hints.

This product manual is delivered to the end user with a Vaisala K-PATENTS® product. Information in this manual is subject to change without notice. When the manual is changed, a revised copy is published at <http://www.vaisala.com/>



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## DI instruction manual

# 1 Description

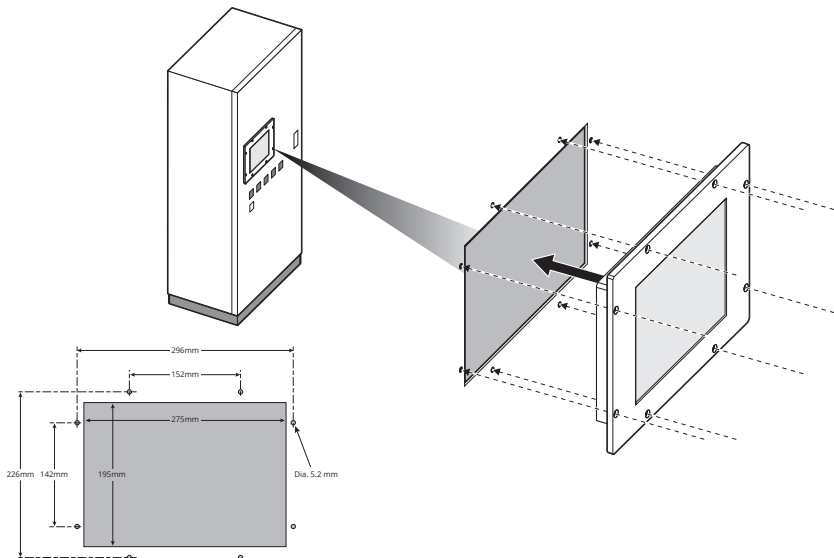
The Remote divert user interface DI is an optional extension to Digital Divert Control System DD-23. The DI allows the same use as the DD-23 remote (web) interface. The Remote divert user interface DI displays concentrations, the temperature and the instrument statuses of the refractometers in the DD-23 system. The DI does not make divert decisions, but it can be used to change divert system and refractometer settings, and such changes may cause the divert system to make a divert decision. With the additional switch panel an emergency divert button can be added, alongside a header wash key and a divert reset button.



**Figure 1.1** DI with switch panel

## 2 Mounting

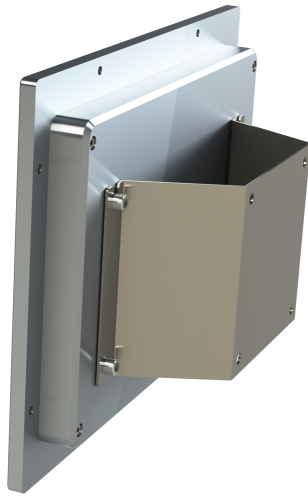
The Remote divert user interface DI is mounted in a control room or similar environment. It can be installed in a panel. With the wall mounting adapter it is also compatible with VESA 100 swivel arms. An optional table stand PR-7611 is available from Vaisala.



**Figure 2.1** Panel mounting

The Remote divert user interface DI connects to the DD-23 Divert System via Ethernet. A Platform 4 cable PR-8430 is connected between the Divert Unit and the DI.





**Figure 2.2** Wall mounting adapter



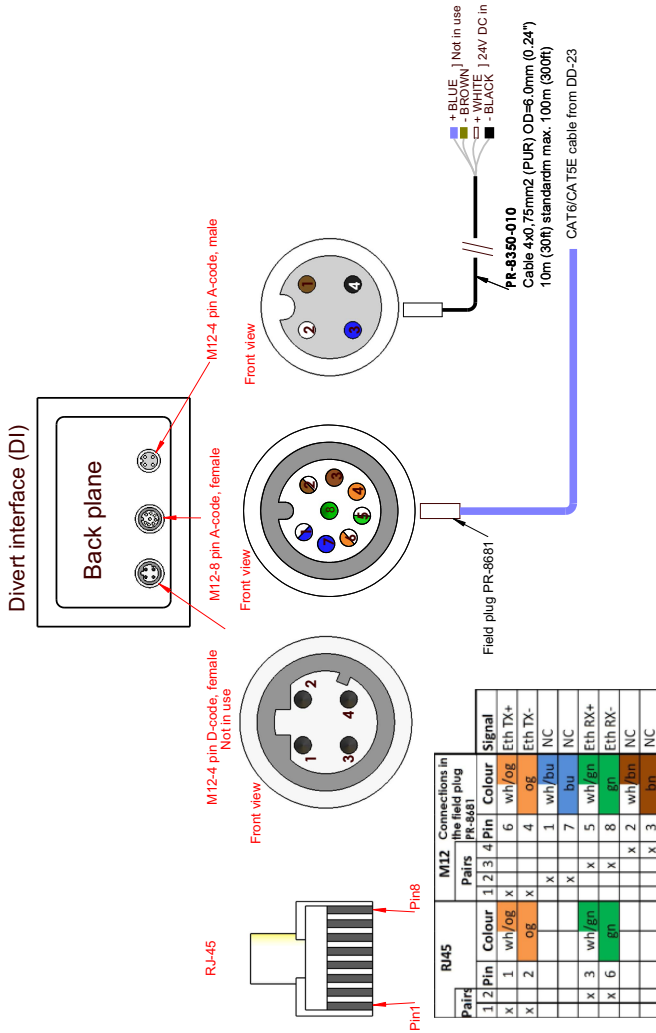


Figure 2.5 DI connection cables

The switches connect at the back of the optional switch panel.



**Figure 2.6** Switch connections

## 3 Use

The Remote divert user interface DI is operated by tapping the touch screen. The display works also with gloves, or you can tap the screen with for example the blunt end of a pen.

### 3.1 Startup

When you power up the DI for the first time, you get an error message "No connection" as you don't have connection to your DD-23 system until the IP address of your DD-23 is entered in the settings. For that, tap *Menu* in the top right corner of the screen. Then choose *Parameters* in the right-hand menu. Now you can tap the white field next to "DD-23 IP address" to enter the IP address of your Divert system.

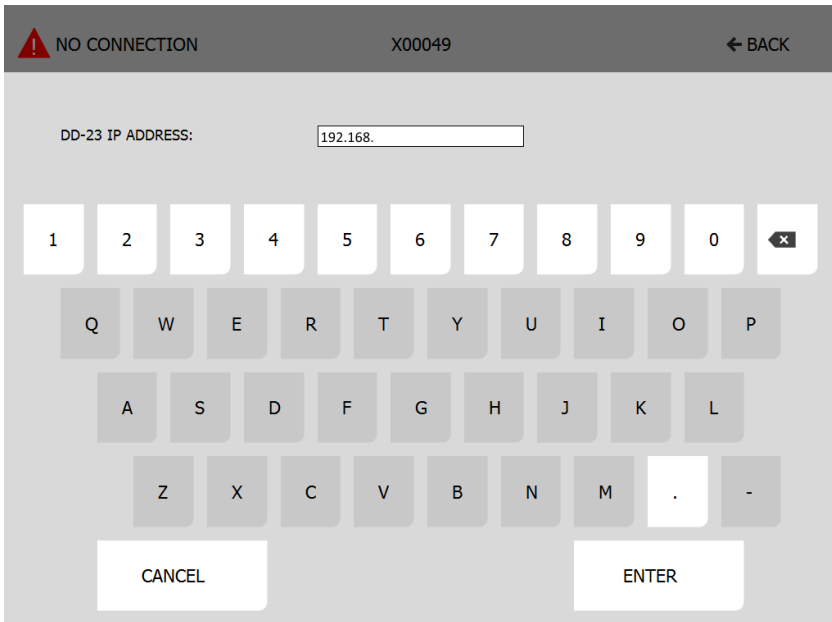
The screenshot shows the 'PARAMETERS' page of the SAFE SOLIDS interface. At the top, it displays 'SAFE SOLIDS' and 'X00049'. A yellow warning message states: 'N.B. The calibration lock is not set, setting the parameters is possible. Please note that errors in changing the parameters may cause the system to enter the divert function.' The right-hand menu includes 'LOG', 'DIAGNOSTICS', 'PARAMETERS' (highlighted), and 'TRENDS'. The main content is divided into several sections:

- INSTRUMENT TAGS:** Refractometer A tag: 064-AT-1117-A; Refractometer B tag: 064-AT-1117-B; Divert control unit tag: 064-AT-1117-A-B-5.
- NETWORK SETTINGS:** DD-23 IP address: 192.168.100.25; System IP address: 192.168.100.24; System subnet mask: 255.255.255.0; System gateway address: (empty); Ethernet IP address: (empty); Ethernet subnet mask: (empty); Ethernet gateway address: (empty).
- OPERATIONAL PARAMETERS:** Alarm limit: 58; Warning limit: 65; Difference: 2.
- DISPLAY PARAMETERS:** Display units: F (selected) and °C; Screen brightness: 1, 2, 3, 4 (selected), 5.
- DATE AND TIME SETTINGS:** Set date and time: Mon 4. Apr 09:48:23 2016.

At the bottom, it shows 'DD-23-DI Version 1.00, Serial CB00102, Tag SM2015'.

**Figure 3.1** Parameter page

Making the connection to the DD-23 may take some time. When the message on the left top changes e.g. to Safe solids, the connection has been made. Now tap *Back* to get to the Main display.



**Figure 3.2** Entering the DD-23 IP address

### 3.1.1 DI network settings

There are three different IP settings in the DI:

- DD-23 IP address is the address of the DD-23 unit
- System IP address is SYSTEM connector address of DI unit to connect to DD-23 unit
- Ethernet IP address is ETHERNET connector address for remote use of DI unit

NETWORK SETTINGS	
DD-23 IP address:	<input type="text" value="192.168.100.25"/>
System IP address:	<input type="text" value="192.168.100.24"/>
System subnet mask:	<input type="text" value="255.255.255.0"/>
System gateway address:	<input type="text"/>
Ethernet IP address:	<input type="text"/>
Ethernet subnet mask:	<input type="text"/>
Ethernet gateway address:	<input type="text"/>

When connecting a stand-alone (non-networked) system, DD-23 IP address is 192.168.100.25 and System IP address should be set to 192.168.100.x where x is anything between 1-255 except 25. Subnet should be 255.255.255.0.

**Figure 3.3** IP settings of a DI

When connecting through a network, contact system admin for DD-23 IP address and other settings to avoid address conflicts.

## 3.2 Main display

The Main display shows the status of both refractometers and the divert system.

Tap on *Menu* in the Main display to get additional information and to change parameters. You can choose between *Log*, *Diagnostics*, *Parameters* and *Trends displays*. The one currently chosen has dark background in the navigation bar on the right.

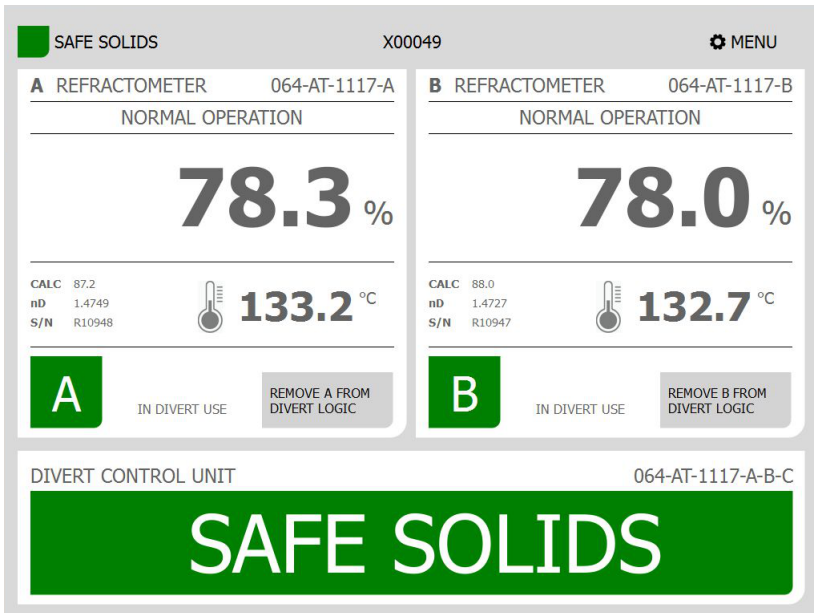


Figure 3.4 Main display



### 3.3 Event log

The Log display shows the event log of the DD-23 system. 5000 lines of log entries are shown, swipe the display to scroll up and down in the log.

The screenshot displays the event log for the SAFE SOLIDS X00049 system. The interface includes a top header with the system name, ID, and a back button. A sidebar on the right provides navigation options. The main area contains a list of log entries, each with a timestamp and a description.

Timestamp	Description
Mon Oct 05 09:57:47 2015	B: on-line, sensor s/n R10947
Mon Oct 05 09:57:45 2015	B: malf: timeout
Mon Oct 05 09:57:43 2015	Divert reset
Mon Oct 05 09:57:41 2015	Safe solids
Mon Oct 05 09:57:41 2015	B: on-line, sensor s/n R10947
Mon Oct 05 09:57:41 2015	A: on-line, sensor s/n R10948
Mon Oct 05 09:57:34 2015	Divert
Mon Oct 05 09:57:34 2015	B: malf: timeout
Mon Oct 05 09:57:34 2015	A: malf: timeout
Thu Oct 01 15:24:27 2015	Divert reset
Thu Oct 01 15:24:27 2015	Divert reset
Thu Oct 01 15:09:06 2015	A: Bias: -9
Thu Oct 01 15:09:06 2015	Safe solids
Thu Oct 01 15:08:25 2015	A: Calc: 87.6, nD: 1.4739, F00: -30
Thu Oct 01 15:08:25 2015	A: Solids alarm, Conc: 58.0, Temp: 133.1 C
Thu Oct 01 15:08:22 2015	SS: 58.0, SW: 65.0, SD: 2.0, HY: 0.05
Thu Oct 01 15:08:21 2015	TAG DD/AB: 064-AT-1117-A-B-C/064-AT-1117-A/064-AT-1117-B
Thu Oct 01 15:08:21 2015	Degrees: C
Thu Oct 01 15:08:21 2015	IP: 172.16.100.23/255.255.0.0, GW: 172.16.0.1
Thu Oct 01 15:08:21 2015	DD-23 v.2.01 starting up (S/N: 49)
Thu Oct 01 15:08:12 2015	A: Calc: 87.6, nD: 1.4739, F00: -30
Thu Oct 01 15:08:12 2015	A: Solids warning, Conc: 59.9, Temp: 133.1 C
Thu Oct 01 15:07:57 2015	A: Bias: -30
Thu Oct 01 15:07:57 2015	B: Calc: 88.2, nD: 1.4729, F00: -9.5
Thu Oct 01 15:07:57 2015	B: , Conc: 78.7, Temp: 133.1 C
Thu Oct 01 15:07:57 2015	A: Calc: 87.6, nD: 1.4739, F00: -30
Thu Oct 01 15:07:57 2015	A: , Conc: 75.9, Temp: 133.1 C
Thu Oct 01 15:07:57 2015	Refractometer difference
Thu Oct 01 15:07:16 2015	Safe solids
Thu Oct 01 15:07:16 2015	SS: 58.0, SW: 60.0, SD: 2.0, HY: 0.05
Thu Oct 01 15:07:16 2015	TAG DD/AB: 064-AT-1117-A-B-C/064-AT-1117-A/064-AT-1117-B
Thu Oct 01 15:07:15 2015	Degrees: C
Thu Oct 01 15:07:15 2015	IP: 172.16.100.23/255.255.0.0, GW: 172.16.0.1
Thu Oct 01 15:07:15 2015	DD-23 v.2.01 starting up (S/N: 49)
Thu Oct 01 15:06:57 2015	Divert

Figure 3.5 Log display

### 3.4 Diagnostics display

The Diagnostics display shows all the information on your system. Tap and hold the arrows to scroll up and down on the page. Alternatively you can drag the scroll bar (the grey box) to scroll up and down.

**SAFE SOLIDS** X00049 ← BACK

**GENERAL**

Timestamp:	948493538, 464275
DD version:	2.03
DD serial:	X00049
Relay card version:	0.99
Relay card serial:	Y00000
UI version:	0.99
UI serial:	Z00051
Tag:	DEEDEEkakskoime

**REFRACTOMETER A**

In divert use:	NOT IN DIVERT USE
Status:	PRISM WASH
Concentration:	0.0
Temperature:	0.0°C
Tag:	A-MOOSES

**REFRACTOMETER B**

In divert use:	IN DIVERT USE
Status:	NORMAL OPERATION
Concentration:	71.4
Temperature:	128.6°C
Tag:	B-ABBE

**BUTTONS**

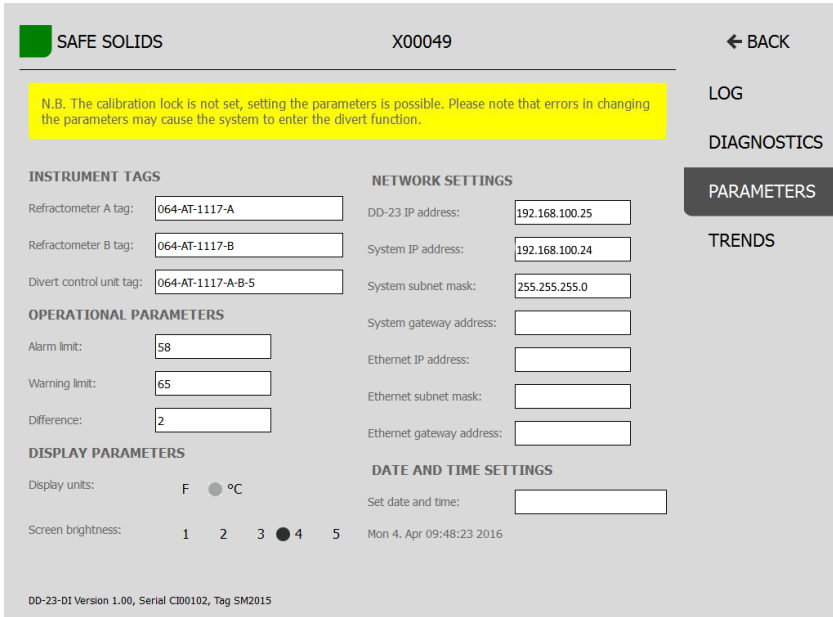
Light test	not pressed
A in operation	not pressed
B in operation	not pressed
Alarm reset	not pressed

LOG  
**DIAGNOSTICS**  
PARAMETERS  
TRENDS

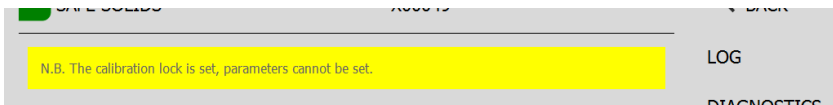
**Figure 3.6** Diagnostics display

### 3.5 Parameters display

The Parameters display allows you to change DD-23 parameters, *if calibration lock is off*. If calibration lock is on, you cannot change the parameters and will get a warning about this.



**Figure 3.7** Parameters display



**Figure 3.8** Calibration lock warning

For more information on calibration lock see DD-23 user manual, section 5.1.

### 3.6 Trends display

The Trends display shows the trends of the various measurement values, choose the value on the left. The active value has dark background, CONC in the graphic below.

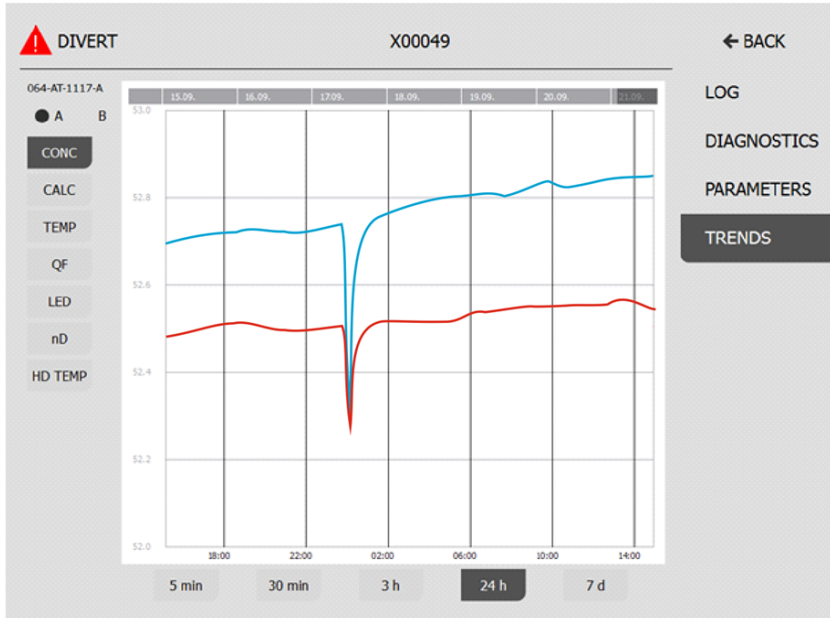


Figure 3.9 Trends display

### 3.7 Refractometer information and settings

In the Main display you can access each refractometer by tapping the indicating letter, A or B. This shows you the refractometer status display. If you press the DETAILS button, you get additional information on that refractometer and its settings. Press PICTURE to get back to the status display.



Figure 3.10 Refractometer B status

**SAFE SOLIDS**
X00049
← BACK

**B REFRACTOMETER**
B-ABBE

<b>DTR</b>	<b>SENSOR</b>	
MAC	00:0d:6e:00:00:b8	CCD 39.44550
dtrserial	T55555	LED 16
fahrenheit	0	PTraw 102695
h1serial	H04563	QF 186.1328
h1version	2.99	calc 63.88124
maout1	12551	conc 71.37791
maout2	20000	current 40
mbserial	M00186	decimals 1
mbversion	1.01	model PR-23-GP
processorserial	P00184	nD 1.467407
programversion	4.11	processorserial S15317
relays	4	programversion 3.04
switches	0x10	rhens 10.90000
tag		sn R10686
temp	36	status NORMAL OPERATION
volt24	22.82500	t 128.6200
volt33	3.098000	tag
		timestamp 180870050
		traw 21.92000
		tsens 26.66000
		unit 4

**MEASUREMENTS**

Status NORMAL OPERATION

Concentration 71.4

Temperature 128.6°C

nD 1.4674

**DIAGNOSTIC VALUES**

CALC 63.9

QF 186.1

CCD 39.4

LED 16.0

**DIAGNOSTIC MEASUREMENTS**

Internal temperature 26.7°C

Internal humidity 10.9

PICTURE

**Figure 3.11** Refractometer B details

## 4 Regular maintenance

### 4.1 Battery replacement

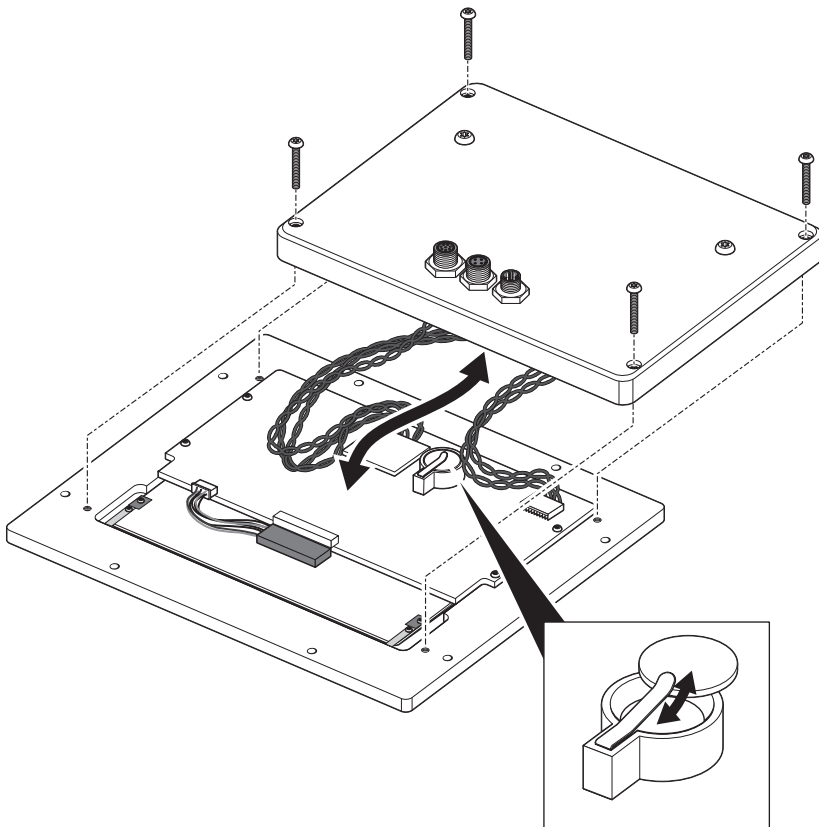
A small lithium battery keeps time in the Remote divert user interface DI when it isn't powered. Vaisala recommends that this battery is replaced every five years.

**Note:** Only DI timekeeping is affected by the battery, i.e. log may get wrong times if the DI has been powered off with an empty battery. Measurement is not affected.

To replace the battery, you need a Lithium CR2032, 3V battery and a Torx TX20 Screw driver.

1. Place the DI on a table face down.
2. Open the screws in the four corners of the backplate.
3. Carefully move the backplate away from you to expose the battery.
4. Replace the battery. + sign comes on top.
5. Move the backplate back in place. Make sure that all the cables are inside the backplate, then screw it on.
6. Turn on the DI, check time and adjust as needed in the Parameters display.

See Figure 4.1 on the next page.



**Figure 4.1** Battery replacement



## 5 Specifications

Display:	10" color touch screen display 1024x768, 4-wire resistive
Power:	+24VDC±10%, Max 10W
Electrical classification:	General purpose, ordinary locations
Connections:	1xM12-4pin, D-coded, F (External Ethernet) 1xM12-8pin, A-coded, F (Instruments) 1xM12-4pin A-coded, M(24VDC)
Inputs/outputs:	Power, Ethernet (Instruments and external)
Dimensions:	H 242mm x W 312mm x D 49mm
Materials:	Aluminum frame
IP classification:	IP66, Type 4X
Weight:	3.2 kg (7 lbs) (without switch panel)
Mounting:	Panel mounting: 8pcs M5 screw VESA 200x100: 4pcs M6 screws
Cables:	PR-8430 Platform 4 cable M12-8pin, A-coded, F+M Ethernet, length max. 50 m PR-8350 Power cable M12, M12-4pin, A-code, F, 24V, max. length 10 m <i>For existing DD-23 installations:</i> PR-8665 Enclosure Ethernet cable, RJ45 to M12-8pin, A-coded M wall mount (inside DD-23)

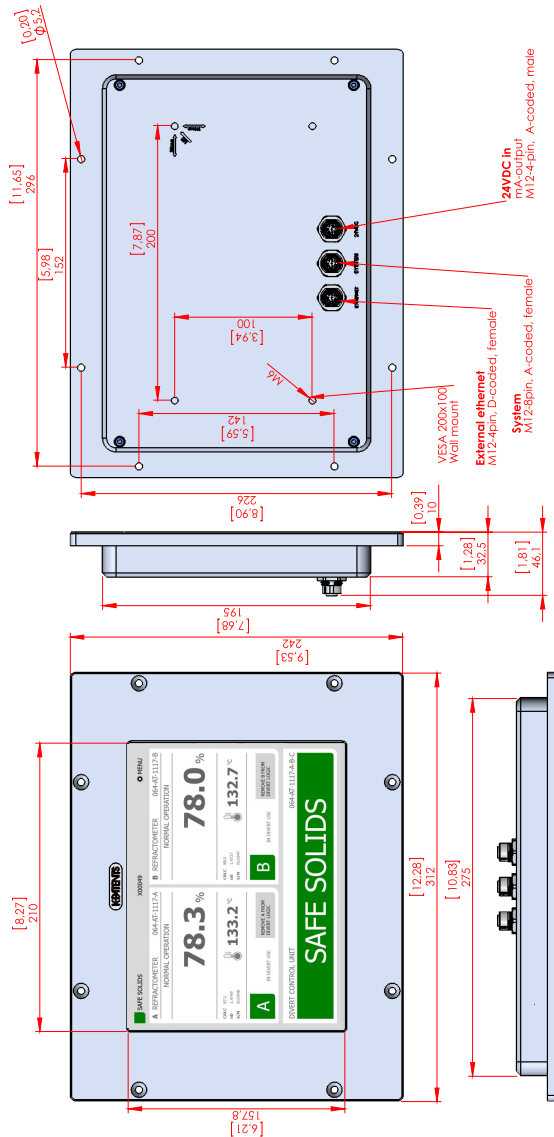


Figure 5.1 DI panel dimensions

# A EU declaration of conformity

**VAISALA**

2019-09-01K/JAMO

1 (1)

## EU DECLARATION OF CONFORMITY

Manufacturer: Vaisala Oyj  
Mail address: P.O. Box 26, FI-00421 Helsinki, Finland  
Street Address: Vanha Nurmijärventie 21, Vantaa, Finland

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Object of the declaration:

**K-Patents Remote Divert User Interface DI**

The object of the declaration described above is in conformity with Directives:

RoHS Directive (2011/65/EU)  
EMC Directive (2014/30/EU)

The conformity is declared using the following standards:

**EN 50581:2012** Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

**EN 61326-1:2013** Electrical equipment for measurement, control and laboratory use – EMC requirements – intended for use in industrial locations

Signed for and on behalf of Vaisala Oyj, in Vantaa, on 1<sup>st</sup> September 2019



Jukka Lyömä  
Standards and Approvals Manager



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