DIGISTAT® Fluid Balance

DIGISTAT® Version 5.0

User Manual

DIG UD FLDDNT IU 0006 ENG V01
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DIGISTAT® version 5.0
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1. Fluid Balance

For general and detailed information about the DIGISTAT® environment and the instruction for use of the Control Bar software see the document "DIG UD CBR IU 0006 ENG V01 - Digistat Control Bar User Manual". The knowledge and understanding of this document is necessary for an appropriate and safe use of the Digistat® Fluid Balance software, described in this document.

1.1. Introduction

The DIGISTAT® **Fluid Balance** module makes it possible to document the patient's fluid balance by recording daily fluid input and output. The administered volumes can either be acquired automatically from the configured infusion devices or inserted manually by the clinical staff. The system calculates both partial and total balances. The "in" and "out" items are configurable according to the department's needs.

1.2. Module selection

To select the "Fluid Balance" module

- click the corresponding icon -  - on the lateral bar.

If no patient is selected the module's functionalities are not available. A specific notification is provided in this case: "No Patient Selected". When a patient is selected the screen displays the selected patient's data.

1.3. Patient selection

To select a patient, if you are using for this purpose a DIGISTAT® software,

- click the **Patient** button on the Control Bar (Fig 1 **A**).

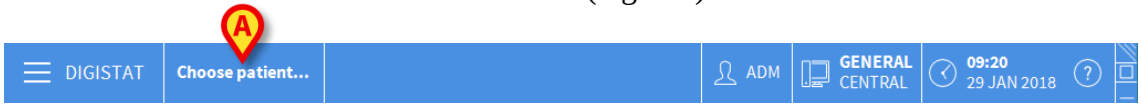


Fig 1 - No patient selected

The DIGISTAT® Patient Explorer module opens, if the module is in use. Otherwise the patient search and selection functionalities are accomplished by Control Bar. See the related technical documentation to know the specific search and selection procedures. If the software in use is not a DIGISTAT® software see the related documentation.

When a patient is selected the data displayed on the screen are referred to the selected patient (in see Fig 2 for an instance).

1.4. “Fluid Balance” main screen

The main screen is formed of three main areas:

- a table (Fig 2 **A**, see paragraph 1.5 for the description),
- a chart (Fig 2 **B** see paragraph 1.6),
- a command bar (Fig 2 **C** see paragraph 1.7).

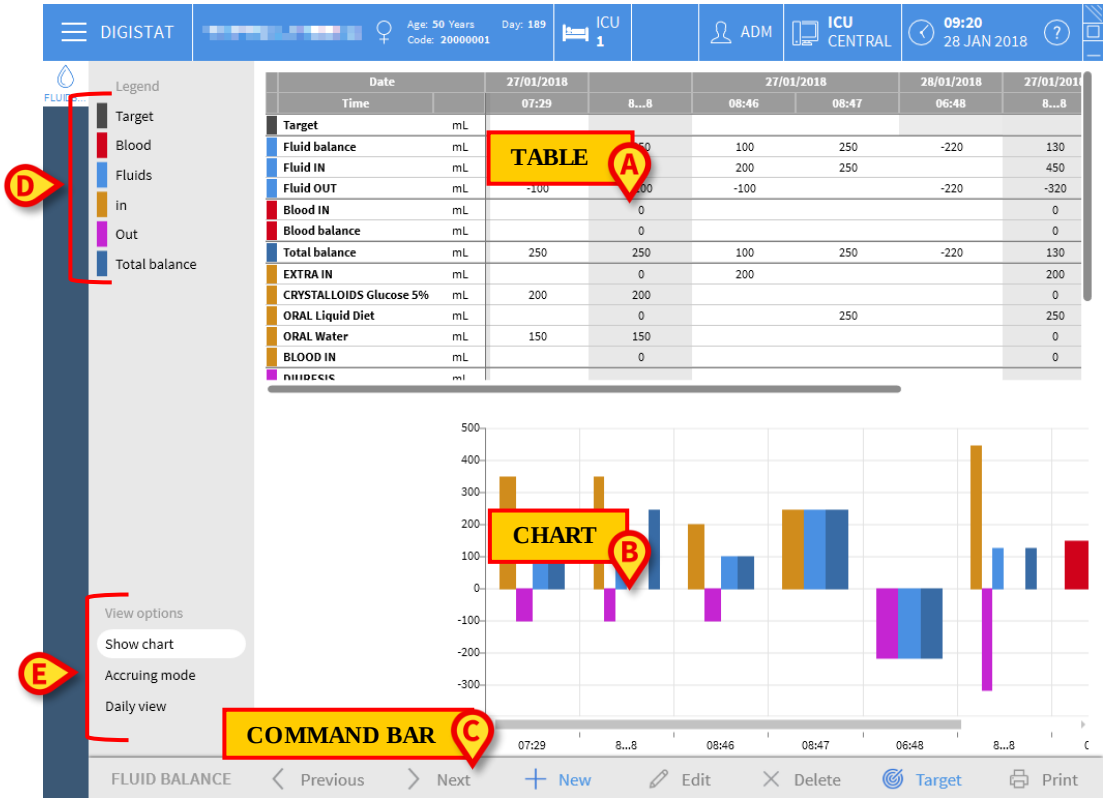


Fig 2 - Main screen - Patient selected

These areas are described in the referenced paragraphs.

In the column on the left there are:

a) a legend making it possible to understand the color code used for the balance items (Fig 2 **D**).
b) three balance display options (Fig 2 **E**).

1.4.1. Legend

The legend makes it possible to understand the meaning of the colors characterizing the various balance items (Fig 3).

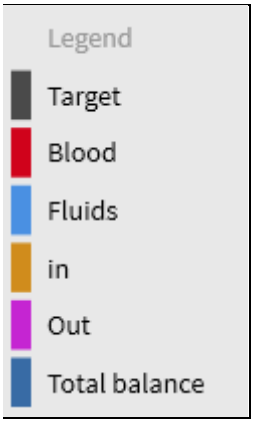


Fig 3

Target - indicates the daily target. See paragraph 1.12.
Blood - indicates the items belonging to the "Blood" class.
Fluids - indicates the items belonging to the "Fluids" class.
In - indicates the input items.
Out - indicates the output items.
Total Balance - indicates the total balance.

1.4.2. Display options

In the area indicated in Fig 2 **E** and enlarged below there are thrre data display options.

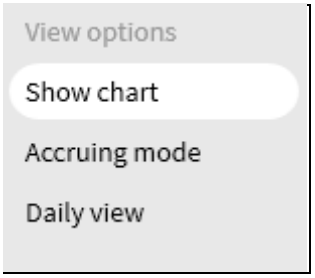


Fig 4

The **Show Chart** option, if selected, displays the fluid balance chart. Otherwise only the table is displayed. See paragraph 1.6

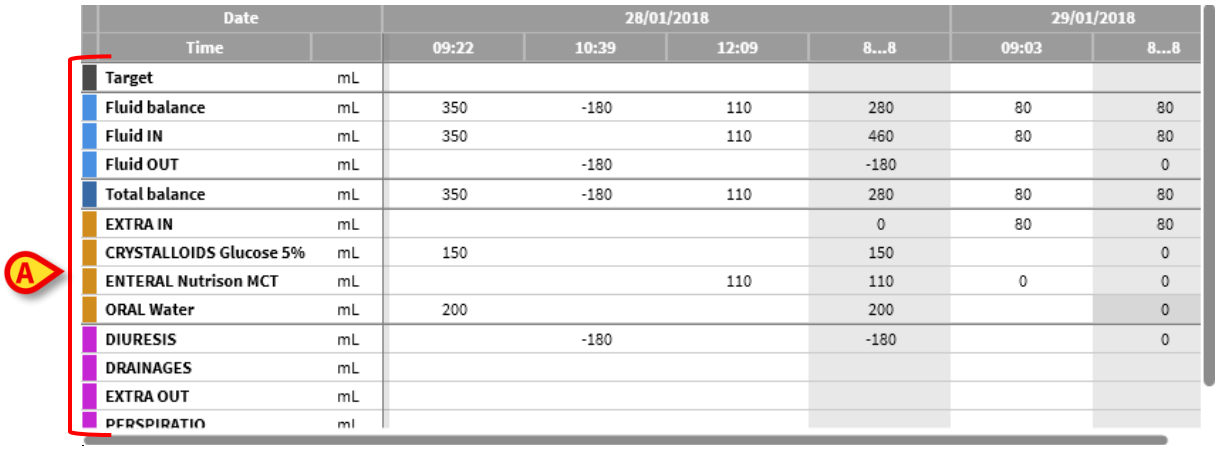
The **Accruing Mode** option displays the data in accruing mode. See paragraph 1.9

The **Daily View** displays the data in daily mode. See paragraph 1.10

A fourth option **Values/g** can be enabled by configuration. Given the patient weight, this option makes it possible to display data as fluid amount per gram.

1.5. Table

The table (Fig 5) displays all the "in" and "out" values of the fluids to and from the patient, providing at the same time total and partial fluid balances.



Date			28/01/2018				29/01/2018	
Time		09:22	10:39	12:09	8...8	09:03	8...8
Target	mL						
Fluid balance	mL	350	-180	110	280	80	80
Fluid IN	mL	350		110	460	80	80
Fluid OUT	mL		-180		-180		0
Total balance	mL	350	-180	110	280	80	80
EXTRA IN	mL				0	80	80
CRYSTALLOIDS Glucose 5%	mL	150			150		0
ENTERAL Nutrison MCT	mL			110	110	0	0
ORAL Water	mL	200			200		0
DIURESIS	mL		-180		-180		0
DRAINAGES	mL						
EXTRA OUT	mL						
PERSPIRATIO	mL						

Fig 5

1.5.1. How to read the table - Rows

On the left are the names of the fluid balance items whose values are specified in the table (Fig 5 **A**). The first cell of every row indicates the name of the balance item whose values are displayed in the row itself, the color characterizing its class and the unit of measure.

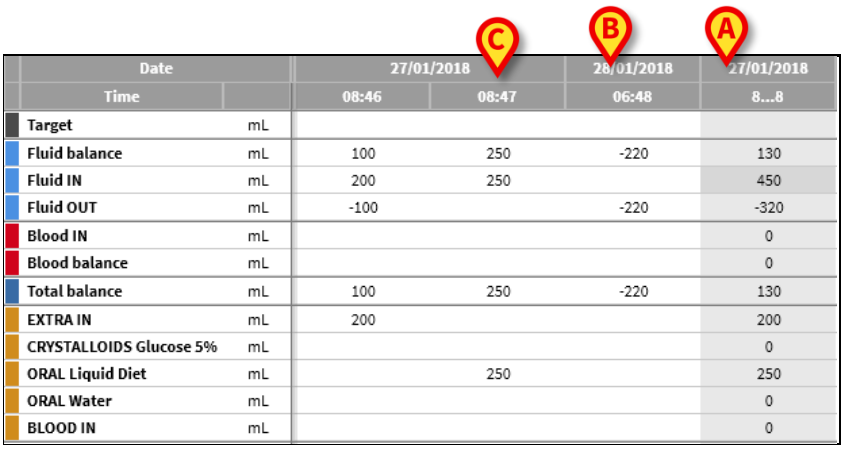
1.5.1.1. Date

The first row indicates the date to which the values on the table refer.

Date		28/01/2018				29/01/2018	
Time		09:22	10:39	12:09	8...8	09:03	8...8

Fig 6

The system considers a 24 hours period (configurable) as one "clinical day". The "clinical day" usually begins at 8:00 o'clock (configurable). Therefore, a day starts at 8:00 and ends the morning after at 8:00. All the values recorded during this period are assigned by the system to the same clinical day and labelled together. I.e.: the balance of the 27th of January starts at 8:00 a.m. on the 27th and ends at 8:00 a.m. on the the 28th. A value inserted at 6:48 a.m. on the 28th belongs to the balance of the previous day (27th). The table, in this case, looks like the one shown in Fig 7. Here the **A** column shows the total balance of the 27th of January, the **B** column shows the last value inserted for that day, at 6:48 a.m. on the 28th. The **C** column shows the value inserted at 8:47 a.m. on the 27th. The **B** and **C** columns both belong to the balance of the same day (displayed in grey, column **A**).



Date		27/01/2018		28/01/2018	27/01/2018
Time		08:46	08:47	06:48	8...8
Target	mL				
Fluid balance	mL	100	250	-220	130
Fluid IN	mL	200	250		450
Fluid OUT	mL	-100		-220	-320
Blood IN	mL				0
Blood balance	mL				0
Total balance	mL	100	250	-220	130
EXTRA IN	mL	200			200
CRYSTALLOIDS Glucose 5%	mL				0
ORAL Liquid Diet	mL		250		250
ORAL Water	mL				0
BLOOD IN	mL				0

Fig 7

1.5.1.2. Time

The second row displays the time of every fluid balance calculation.

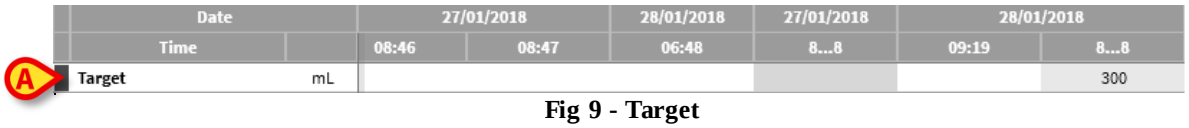
Date	28/01/2018				29/01/2018	
Time	09:22	10:39	12:09	8...8	09:03	8...8

Fig 8

Time is automatically recorded every time a fluid value is recorded. See paragraph 1.8.1 for the fluid balance values recording procedure. The column displaying the daily total balances is indicated by the "8… 8" label. On this column, the ⚠ icon, when displayed, indicates that there are user notes referring to that balance.

1.5.1.3. Target

The third row displays the daily target, i.e. the target balance indicated for the patient.



Date		27/01/2018		28/01/2018	27/01/2018	28/01/2018	
Time		08:46	08:47	06:48	8...8	09:19	8...8
Target	mL						300

Fig 9 - Target

The daily target can be specified both for the current and for the following day. See paragraph 1.5.1.3 for the daily target setting procedure.

1.5.1.4. Total balances

Three lines, highlighted blue, display the total balances (Fig 10).

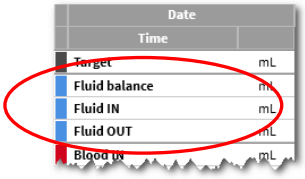


Fig 10 - Total Bilances

The total balance, the total "in" balance and the total "out" balance are displayed (in this order).

1.5.1.5. Blood balance

Three lines, highlighted red, display the blood balances (Fig 11).

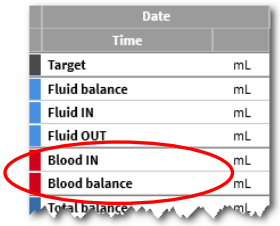


Fig 11 - Blood balance

The blood IN balance, the blood OUT balance and the total blood balance (the sum of "Ins" and "Outs") are displayed.

1.5.1.6. Total balance

The "Total Balance" row displays the total balance, considering all the in and out items.

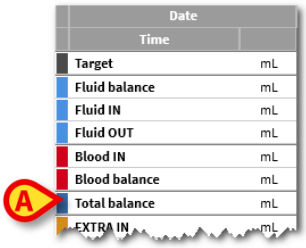


Fig 12

1.5.1.7. Detalied IN and OUT values

The rows marked yellow display the detailed fluids IN values (Fig 13 **A**).
The rows marked magenta display the detailed fluids OUT values (Fig 13 **B**).

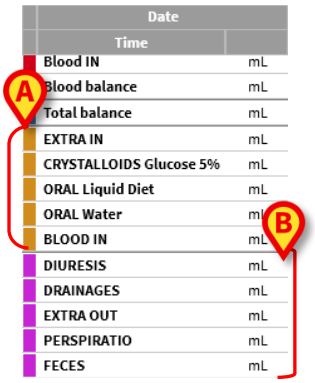


Fig 13

If the DIGISTAT® "Infusion" module is installed the values coming from the infusion pumps are automatically acquired.

1.5.2. How to read the table - columns

A column is added to the table every time a user specifies any fluid values. See paragraph 1.8.1 for the related procedure.
The first cell of every column displays the time the column was added. The time displayed, therefore, is the values insertion time (Fig 14 **A**).

Date		28/01/2018				29/01/2018	
Time	A	09:22	10:39	12:09	8...8	09:03	8...8
Target	mL						
Fluid balance	mL	350	-180	110	280	80	80
Fluid IN	mL	350		110	460	80	80
Fluid OUT	mL		-180		-180		0
Total balance	mL	350	-180	110	280	80	80
EXTRA IN	mL				B 0	80	80
CRYSTALLOIDS Glucose 5%	mL	150			150	C	0
ENTERAL Nutrison MCT	mL			110	110	0	0
ORAL Water	mL	200			200		0
DIURESIS	mL		-180		-180		0
DRAINAGES	mL						
EXTRA OUT	mL						
PERSPIRATIO	mL						

Fig 14 - Table

The total fluid values referring to the previous day are displayed in a specific column, characterized by the grey background color (Fig 14 **B**). This column is automatically added when the clinical day begins and is updated during the day with the new values specifications. At daily balance closing time the column is "frozen" and a new column is created. The daily balance closing time depends on a configuration parameter. In the configuration here explained the clinical day ends at 8:00. The last column of the table (Fig 14 **C**) displays the total values for the current day updated to the present time.
The first cell of the "Totals" column displays the date to which the total balances refer (Fig 15 **A**); the second cell specifies the relevant time span (Fig 15 **B** - in the present configuration it is 8:00 to 8:00); the third column displays, if specified, the daily target (Fig 15 **C**).

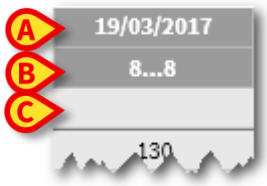


Fig 15

Specific information tooltips are displayed when the mouse pointer indicates the column headings on the table (Fig 16).

Fig 16

1.6. Chart

The lower part of the DIGISTAT® Fluid Balance main screen (Fig 17 **A**) displays in a chart the balance values specified in the table. The chart is displayed only when the corresponding display option is selected.

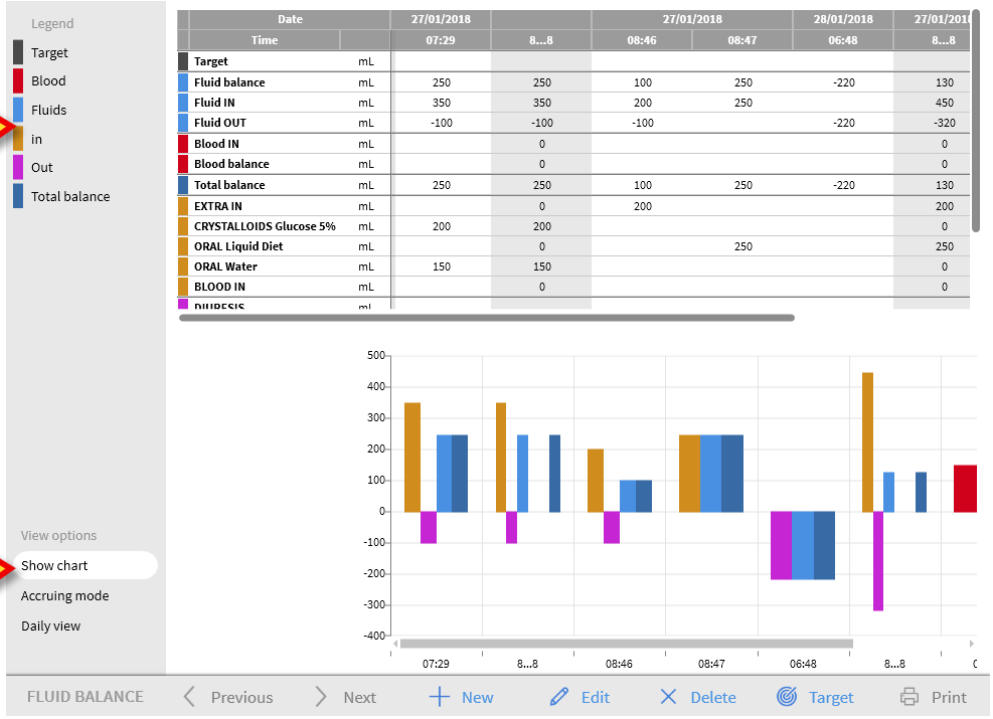


Fig 17

The fluid IN and OUT quantities can be read on the vertical axis (in ml - Fig 18 **A**). The fluid variation date and time can be read on the horizontal axis (Fig 18 **B**).

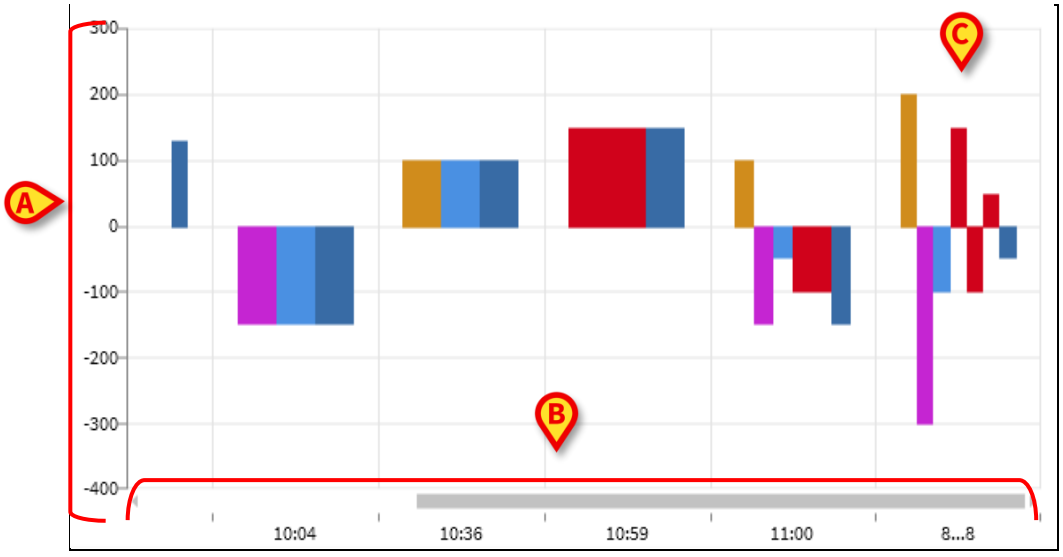


Fig 18 - Chart

The variations in the fluid balance are represented by vertical bars. The color corresponds to the color of the corresponding class, as explained by the legend (Fig 17 **B**). Move the mouse pointer on

the chart to display a tooltip indicating the reference class. The bars above the 0 represent fluid INs, the bars below the 0 represent fluid OUTs.
When the clinical day changes (at 8:00 a.m. in this configuration), a bar labelled as 8… 8 is added, showing all the daily total balances.

1.7. The command bar

The buttons on the command bar of the Fluid Balance module main screen make it possible to perform different procedures.

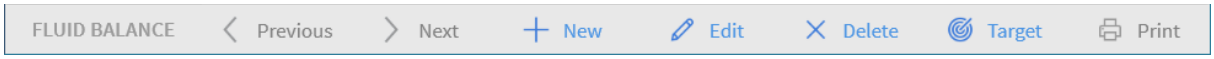


Fig 19 - Command bar

This paragraph briefly describes the functions of the different buttons. The related procedures are described later in the indicated paragraphs.

The Previous and Next buttons make it possible to display the balance values inserted before or after the time currently displayed.

New - use this button to insert values in the fluid balance table (see paragraph 1.8).

Edit - use this button to edit the values of an already existing balance (see paragraph 1.8.3).

Delete - use this button to delete one of the inserted balances (see paragraph 1.8.4).

Target - use this button to set the daily target (see paragraph 1.12).

Print - use this button to access the system's print functionalities (see paragraph 1.13).

1.8. Data entry: the “New” button

The **New** button on the command bar (Fig 20) makes it possible to record a change in the patient’s fluid balances (i.e. to insert a fluid balance value - see paragraph 1.8.1 for an example of this functionality).

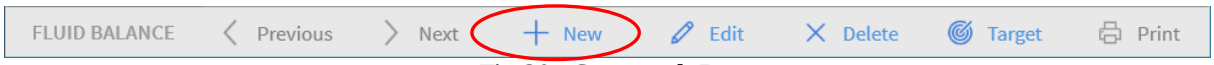


Fig 20 - Command Bar

Click the **New** button to access the following screen (Fig 21).

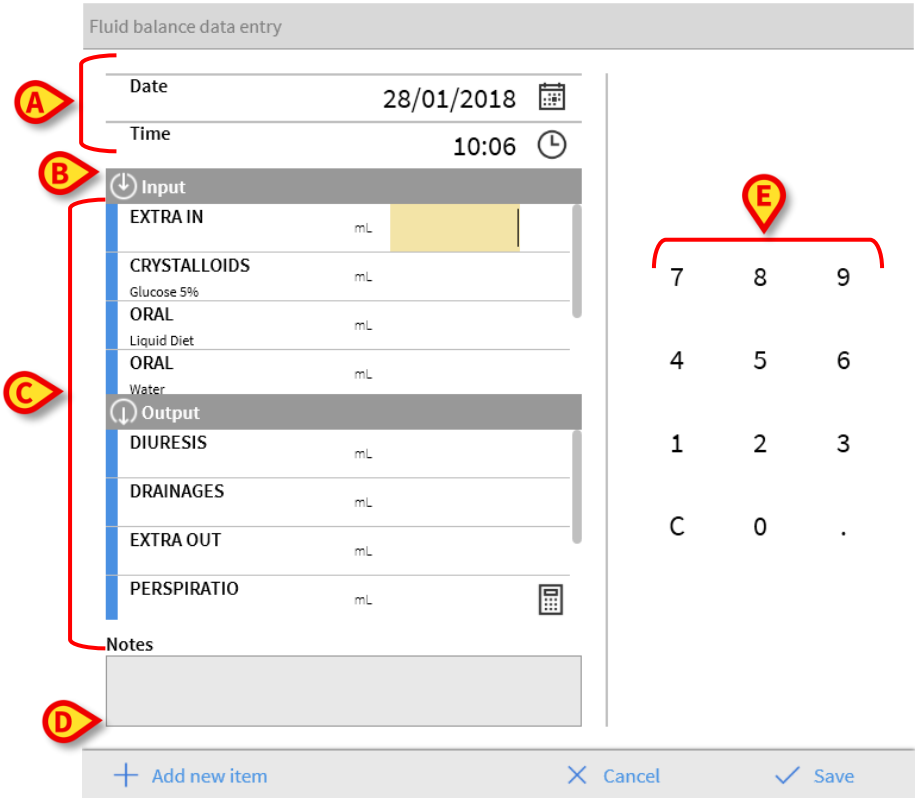


Fig 21 - data entry window

On the window the following tools are available:

Date/Time indicator (Fig 21 A)

Current date/time are set by default, i.e. the time in which the **New** button is clicked. To change the date click the  button. A calendar opens, making it possible to select the date to which the balance refers (Fig 22).

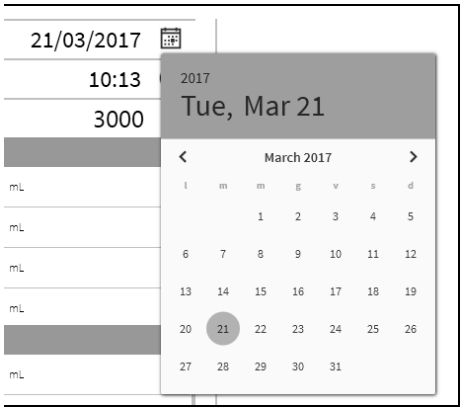


Fig 22

To change the time, click the button. A clock making it possible to select the time to which the balance refers is displayed (Fig 23).

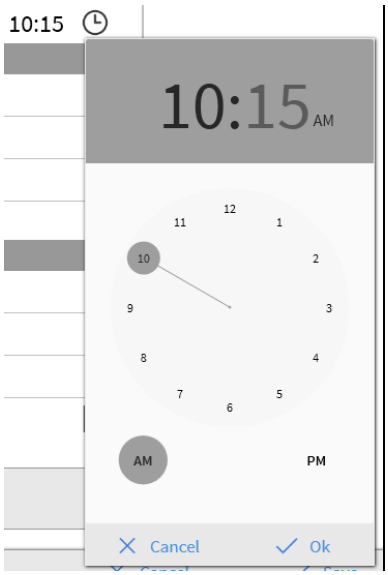


Fig 23

It is not possible to set a future time.

Patient weight indication (Fig 21 B)

The patient weight indication can be enabled or not by configuration. If enabled, the patient weight must be here specified at every balance insertion. The patient weight indication enables the Values/Grams display mode described in paragraph 1.4.2.

Balance items table (Fig 21 C)

In this table the balance items are inserted. To do that, click the balance item you want to add, on the right of the unit of measure (Fig 24 **A**).

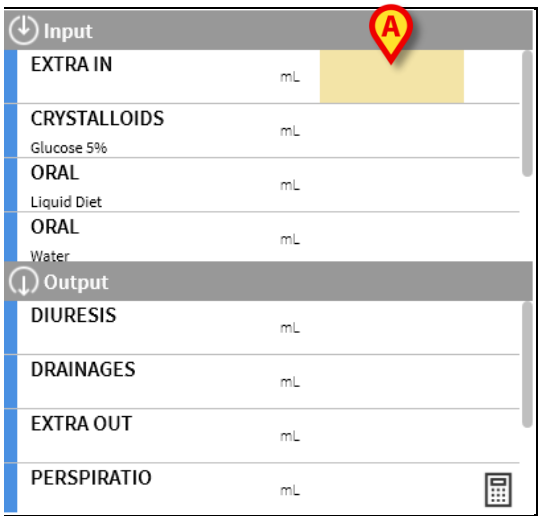


Fig 24

To specify the balance values you can use either the workstation keyboard or the virtual keyboard indicated in Fig 21 **E**.

Notes (Fig 21 B)

In the notes area it is possible to add any note as free text. If there is a note referring to a balance specification, a specific icon is displayed on the balances table, alongside the insertion time (Fig 26 **A**). Move the mouse pointer on the icon to display a tooltip containing the full note text.

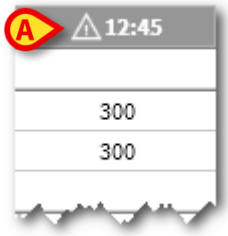


Fig 25

1.8.1. How to insert the balance values

This paragraph describes, using an example, the fluid balance values insertion procedure.

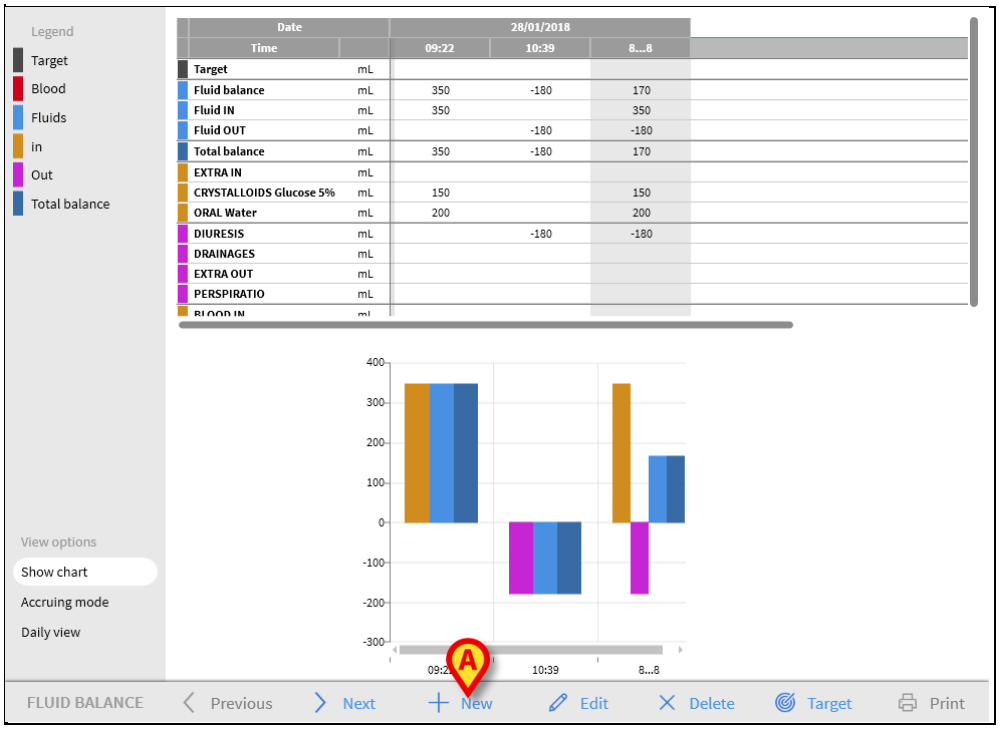


Fig 26

- Click the **New** button on the command bar (Fig 26 **A**). The following window opens (Fig 27).

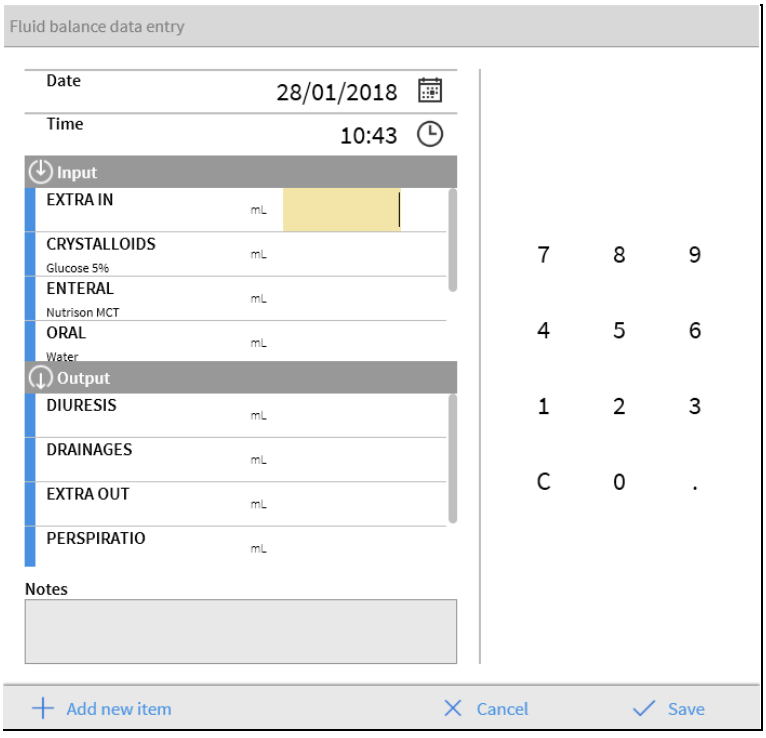


Fig 27

- Insert the balance values using either the workstation keyboard or the virtual keyboard on the right. See Fig 28 **A** for an example.

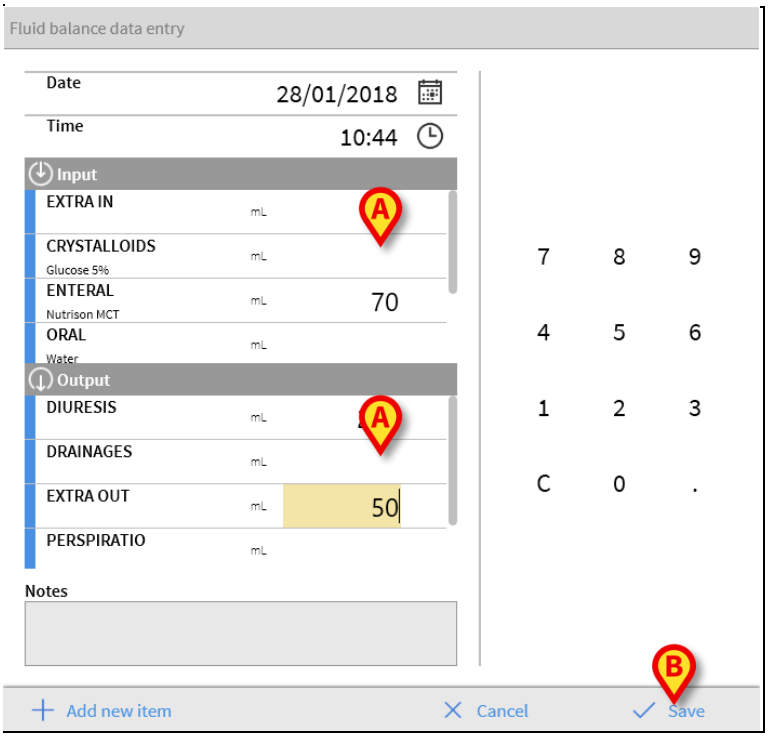


Fig 28

- Click the **Save** button (Fig 28 **B**). A column is this way added to the balance table (Fig 29 **A**).

Date		28/01/2018		A	
Time		09:22	10:39	10:44	8...8
Target	mL				
Fluid balance	mL	350	-180	-30	140
Fluid IN	mL	350		220	570
Fluid OUT	mL		-180	-250	-430
Total balance	mL	350	-180	-30	140
EXTRA IN	mL			150	150
CRYSTALLOIDS Glucose 5%	mL	150			150
ENTERAL Nutrison MCT	mL			70	70
ORAL Water	mL	200			200
DIURESIS	mL		-180	-200	-380
DRAINAGES	mL				
EXTRA OUT	mL			-50	-50
PERSPIRATIO	mL				

Fig 29

Total and partial balances calculations are automatically performed.

Values automatically acquired from the infusion devices are characterized by a specific icon - .

Other balance items can be added to the table by selecting them from a set of pre-configured items. See paragraph 1.8.2 for the procedure.

1.8.1.1. Perspiratio

The "Perspiratio" values can be inserted using an integrated calculation tool (if enabled by configuration). Click the button placed alngside the "Perspiratio" name on the data entry window (Fig 30 **A**).

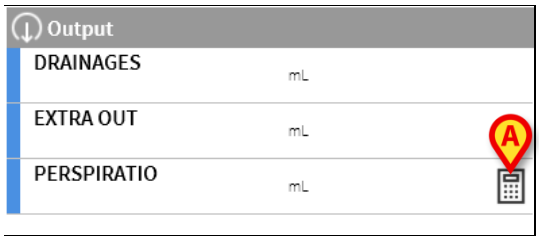


Fig 30

The following window opens (Fig 31).

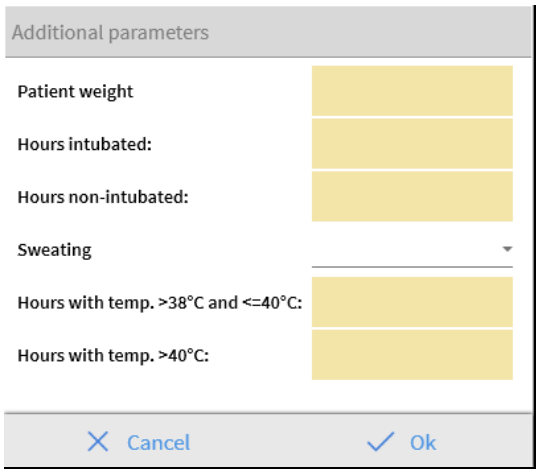


Fig 31

Insert the required data and click **Ok**. The perspiration value is automatically calculated.

1.8.2. How to add a balance item

It is possible to add a new item to those listed in the "Fluid Balance items" table,

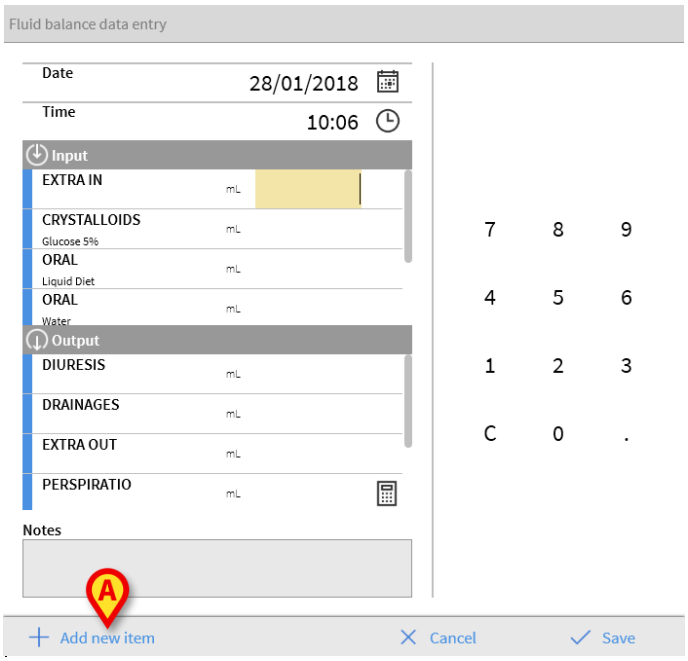


Fig 32 - Add new item

- click the **Add New Item** button on the data entry window (Fig 32 **A**).

The following window is displayed

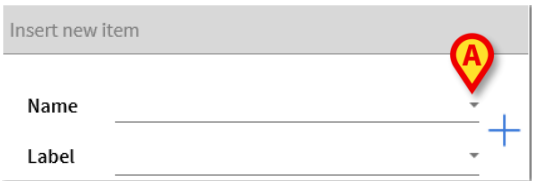


Fig 33 - Select new item

- Click the arrow indicated in Fig 33 **A**. A menu containing all the configured items opens (Fig 34). The different items are described by the Fluid Balance module's color code. See the "Legend" described in paragraph 1.4.1. Use the lateral scrollbar to display all the configured items.

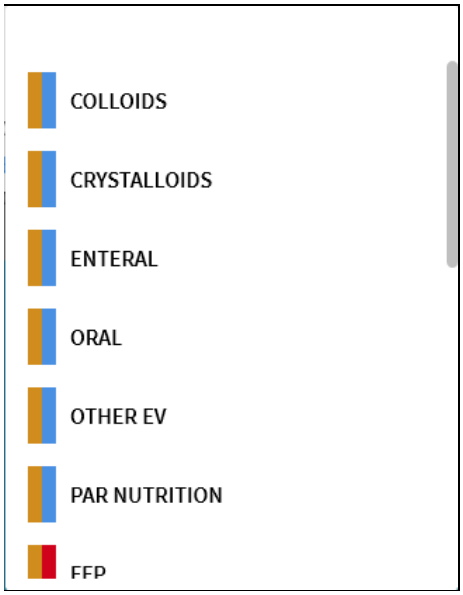


Fig 34

- Double click the item to be added. The item's name is this way displayed in the "name" field (Fig 35).

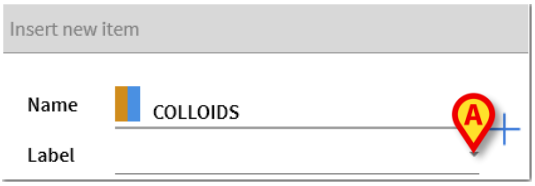


Fig 35

Use the "Label" menu to further specify the item, if necessary. See Fig 36 for an instance.

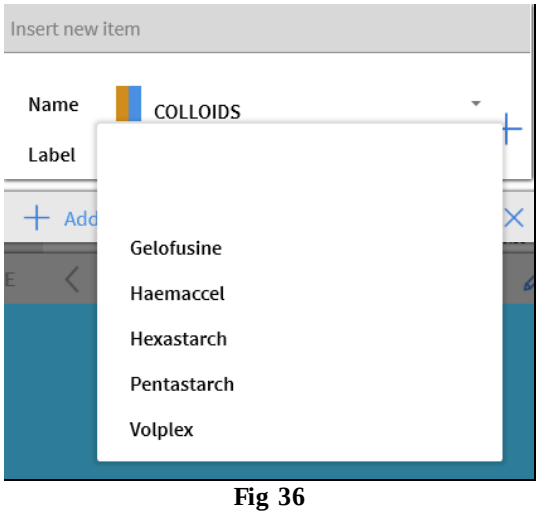


Fig 36

After label specification (not mandatory),

click the + button to add the item to the items table (Fig 37 **A**).

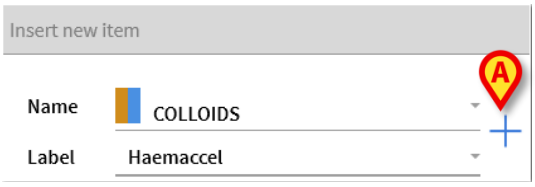


Fig 37

1.8.3. How to edit an existing balance

To edit an existing balance

- Click the column corresponding to the balance to be edited. The column is highlighted (Fig 38 **A**).

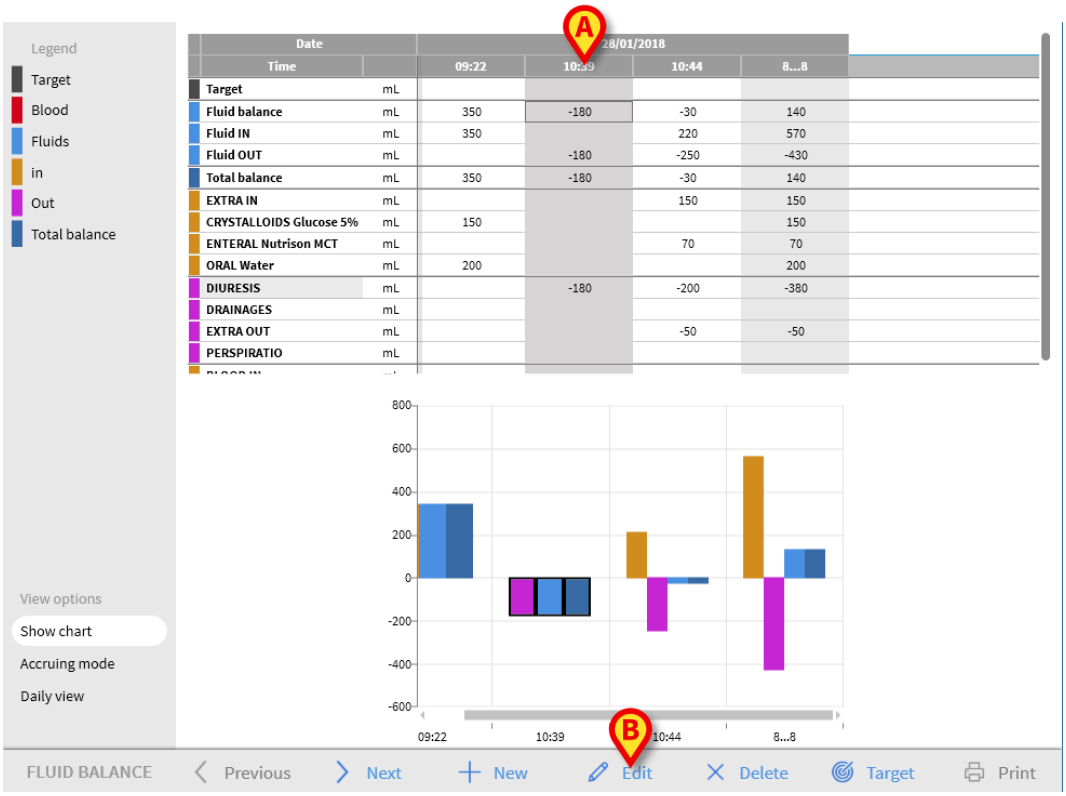


Fig 38

- Click the **Edit** button on the command bar (Fig 38 **B**).

The data entry window opens, containing the values of the selected balance/column (Fig 39).

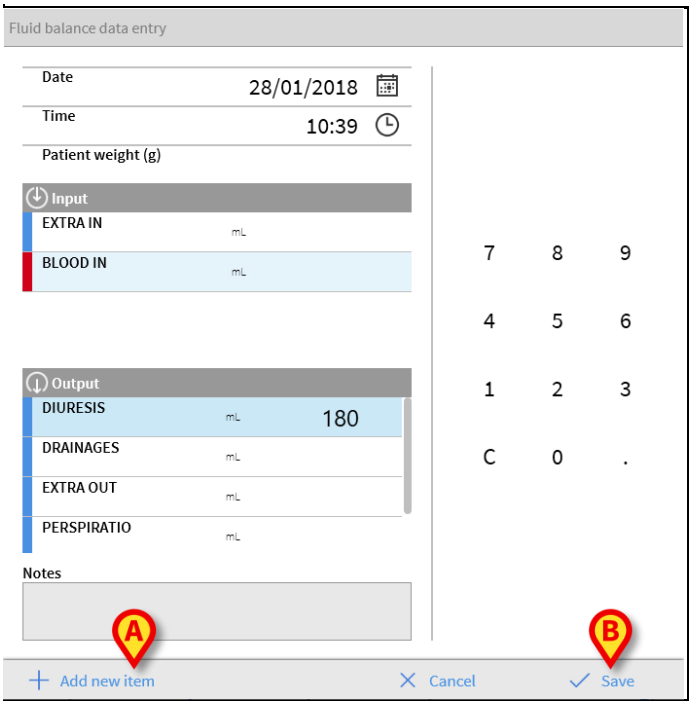


Fig 39

It is now possible to

a) Edit the values of the already inserted items
b) Add new items using the "Add new item" functionality (Fig 39 **A**) described in paragraph 1.8.2.

➢ Click **Save** to save the changes made (Fig 39 **B**).

1.8.4. How to delete an existing balance

To delete an existing balance

- Click the column relating to the balance to be deleted. The column is this way highlighted (Fig 40 **A**).

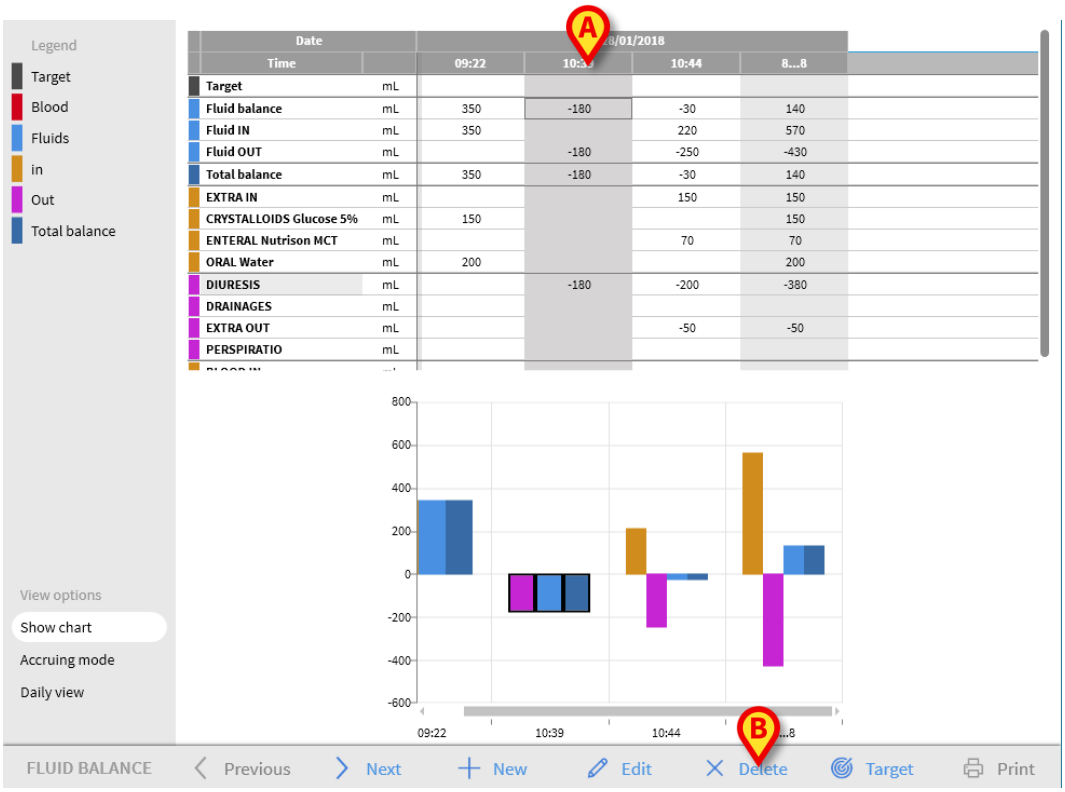


Fig 40

- Click the **Delete** button on the command bar (Fig 40 **B**).

User confirmation is required. Click **Yes** to delete the balance/column.

1.9. “Accruing” fluid balance

The **Accruing** option (Fig 41) makes it possible to change the balance table display mode to “Accruing mode”.

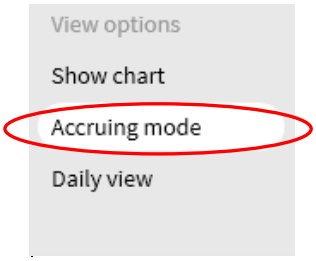


Fig 41

This button, when selected, displays the total values in every column in an “Accruing” mode.
The following example shows the difference between the two display modes (Fig 42 and Fig 43):

Date		28/01/2018			
Time		13:36	13:36	13:37	8...8
Target	mL				
Fluid balance	mL	-100	-100	-100	-300
Fluid OUT	mL	-100	-100	-100	-300
Total balance	mL	-100	-100	-100	-300
EXTRA IN	mL				
DIURESIS	mL	-100	-100	-100	-300
DRAINAGES	mL				
EXTRA OUT	mL				
PERSPIRATIO	mL				
BLOOD IN	mL				

Fig 42 - Normal mode

Date		28/01/2018			
Time		13:36	13:36	13:37	8...8
Target	mL	-->	-->	-->	
Fluid balance	mL	-100	-200	-300	-300
Fluid OUT	mL	-100	-200	-300	-300
Total balance	mL	-100	-200	-300	-300
EXTRA IN	mL	-->	-->	-->	
DIURESIS	mL	-100	-200	-300	-300
DRAINAGES	mL	-->	-->	-->	
EXTRA OUT	mL	-->	-->	-->	
PERSPIRATIO	mL	-->	-->	-->	
BLOOD IN	mL	-->	-->	-->	

Fig 43 - Accruing mode

The two tables shown in Fig 42 and Fig 43 refer to the same balance. The first one is displayed in “Normal” mode, the second one is displayed in “Accruing” mode.
The table refers to three subsequent data entries. The first one at 13.36 (100 ml Diuresis); the second one at 11:36 (100 ml Diuresis); the third one at 13:37 (100 ml Diuresis).
Notice, on the tables, the values referring to the Diuresis item (red circled in the figure).
In Fig 42 (Normal mode), the second column displays the value 100, the third column displays the value 100.
In Fig 43 (Accruing mode), the second column displays the value 200 (100+100), the third column displays the value 300 (100+100+100).
Total values are displayed in the fourth column. They are the same in both figures (300 Ml Out is the total balance value for the Diuresis item).

1.10. “Daily” Fluid Balance

The “Daily view” option(Fig 44 **A**) makes it possible to change the fluid balance table display mode.

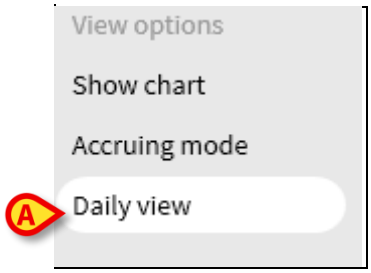


Fig 44

This are displayed only the “grey” columns, those displaying the daily totals. See for instance Fig 45.

Date		26/01/2018	27/01/2018	28/01/2018
Time		8...8	8...8	8...8
Target	mL			300
Fluid balance	mL	250	130	0
Fluid IN	mL	350	450	0
Fluid OUT	mL	-100	-320	0
Blood IN	mL	0	0	150
Blood balance	mL	0	0	150
Total balance	mL	250	130	150
EXTRA IN	mL	0	200	0
CRYSTALLOIDS Glucose 5%	mL	200	0	0
ORAL Liquid Diet	mL	0	250	0
ORAL Water	mL	150	0	0
BLOOD IN	mL	0	0	150
DIURESIS	mL			
DRAINAGES	mL	0	-220	0
EXTRA OUT	mL	-100	0	0
PERSPIRATIO	mL			
FECES	mL	0	-100	0

Fig 45

WARNING!

It is possible to display the values in “Daily” and “Accruing” mode at the same time. This kind of display mode increases the possibility for the user to enter values which are not exact. It is therefore necessary to pay particular attention to the exactness of data when using this display mode.

1.11. Value/grams display mode

The Value/grams display mode, when enabled by configuration, makes it possible to display the values as amount per gram. In order to activate this mode, the current patient weight must be specified when fluid balance values are entered, on the data entry window. See paragraph 1.8.

1.12. Target

The **Target** button on the command bar (Fig 46) can be used to specify the balance daily target.

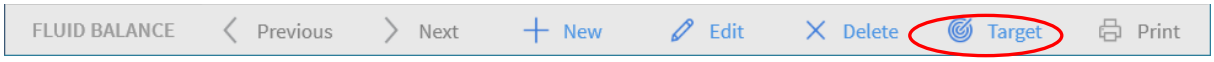


Fig 46

The daily target can be specified both for the current day and for the next day. To specify the daily target

- click the **Target** button. The following window opens (Fig 47).

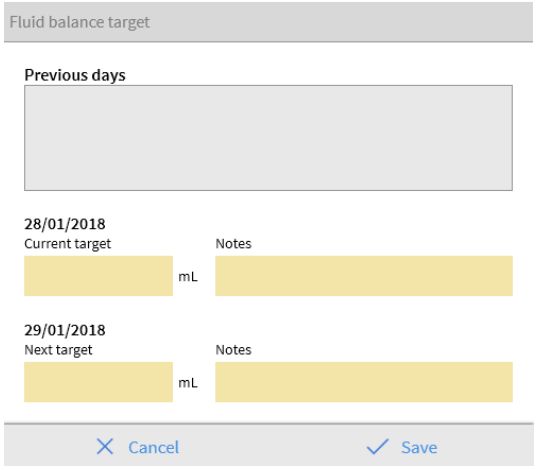


Fig 47 - Fluid balance target

- Type the target value in the "Current target" field (Fig 48 **A**).

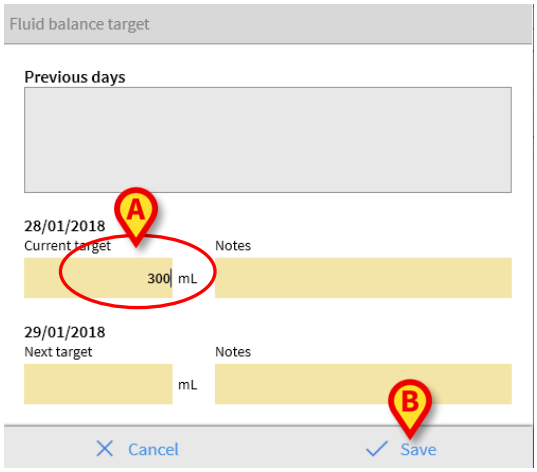


Fig 48 - Target specification

- Click the **Save** button (Fig 48 **B**). The fluid balance target is this way displayed in the table (Fig 49 **A**).

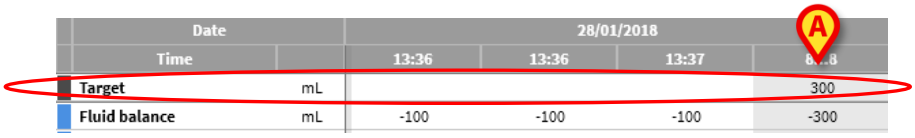


Fig 49 - The target is displayed on the table

1.12.1. “Fluid balance target” window description

The “Fluid balance target” window provides the following information.

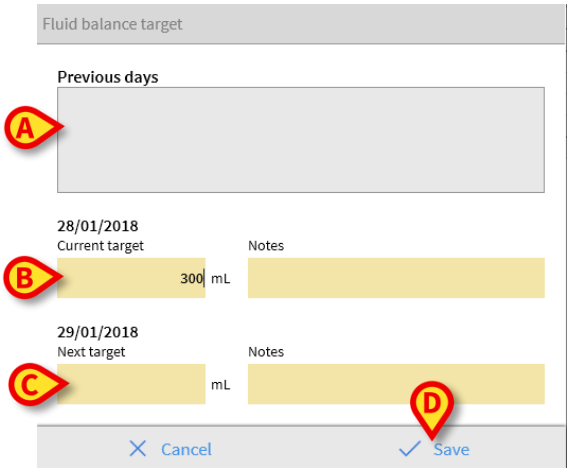


Fig 50 - “Fluid balance target” window

The “Previous days” field (Fig 50 **A**) displays a list of all the targets specified since. The display format is “Date / Target value / Acronym of the user who specified the value”.
The “Current target” area (Fig 50 **B**) makes it possible to specify the target for the current day. Use the “Note” field to insert a textual note.
The “Next target” area (Fig 50 **C**) makes it possible to specify the target for the next day. Use the “Note” field to insert a textual note.
Both areas display the date to which the specified target refers.

The **Save** button (Fig 50 **D**) records the specified target and inserts it into the fluid balance table.

1.13. Print reports

The **Print** button on the command bar makes it possible to create a print report containing the patient’s fluid balances data (Fig 51). Different print reports can be configured according to the healthcare structure needs.

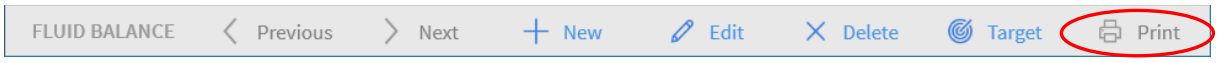


Fig 51 - Command bar

To create a print report

- click the **Print** button. A menu listing the available print reports is displayed. Click the button corresponding to the wanted template. A print preview is displayed.

3. Contacts

For any issue please refer to the distributor who installed the Product.
Here are the manufacturer contacts.

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800999715 (toll free, Italy only)

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