ascom

DIGISTAT® Infusion

DIGISTAT® Version 4.1

User Manual
DIG UD INF IU 0003 ENG V02
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1. Contents

2. Using the manual

2.1. Aims

The effort which has gone into creating this manual aims to offer all the necessary information to guarantee a safe and correct use of the DIGISTAT® system and to allow the manufacturer identification. Furthermore this document aims to describe every single part of the system, it also intends to offer a reference guide to the user who wants to know how to perform a specific operation and a guide to the correct use of the system so that improper and potentially hazardous uses can be avoided.

The use of DIGISTAT® requires a basic knowledge of information systems concepts and procedures. The comprehension of this manual requires the same knowledge.

Always remember that DIGISTAT® systems are highly configurable, in order to satisfy the requirements of every user. This extreme flexibility makes a description of <u>all</u> the system's possibilities impossible. Hence the decision to describe a "probable", or "standard" configuration, so that we can explain what we feel to be the fundamental parts of the system, and their purposes. Consequently, the user may come across descriptions of pages and functions that are different in the configuration he is using.

To be more precise, the differences may concern

1) The appearance of the page (a page may appear different from that shown here).
2) The functions (certain operations may or may not be enabled).
3) The flow of use (certain procedures can be performed following a different sequence of pages and operations).

Care has been taken to highlight and emphasize this concept every time the configuration possibilities are such as to prevent a univocal description of the system operation.
Should you require more details regarding a specific configuration, please contact your system administrator or the ASCOM UMS technical support service.
Remember that, by specific request, ASCOM UMS is able to provide custom-made documentation for every specific type of procedure and/or configuration.

2.2. Charcters used and terminology

The use of DIGISTAT® systems requires a basic knowledge of the most common IT terms and concepts. In the same way, the comprehension of this manual is subject to such knowledge. However, in order to improve access to the document and clarify the use of certain terms relating to the DIGISTAT® systems, we have included a glossary for quick (and obviously concise) reference for the clarification of terms (see Appendix **A**).

Remember that the use of DIGISTAT® systems must only be granted to professionally qualified and properly trained personnel.

When consulting the on-line version as opposed to the paper version, cross references in the document work like hypertextual links. This means that every time you come across the reference to a picture ("Fig 7", for example) or to a paragraph ("paragraph 5.4", for example), you can click the reference to directly access that particular figure or that particular paragraph.

Every time reference is made to a button, this is written "**Bold**". For example, in expressions like:

➢ Click the "**Update**" button,

"**Update**" is a button featured on the page being described. Where possible, it is clearly indicated in a figure (with cross references as "See Fig 7 **A**"

The character ➢ is used to indicate an action which the user must perform to be able to carry out a specific operation.

The character ● is used to indicate the different elements of a list.

2.3. Symbols

The following symbols are used in this manual.

i

Useful information

This symbol appears alongside additional information concerning the characteristics and use of DIGISTAT®. This may be explanatory examples, alternative procedures or any "extra" information considered useful to a better understanding of the product.

!

Caution!

The symbol is used to highlight information aimed at preventing improper use of the software or to draw attention to critical procedures which might cause risks. Consequently, it is necessary to pay extreme attention every time the symbol appears.

3. Introduction to DIGISTAT®

The DIGISTAT® clinical modules suite is an advanced patient data management software system that is designed specifically for use by clinicians, nurses and administrators.

The software package comprises a set of modules that can either work alone or be fully integrated to provide a complete patient data management solution.

From the Intensive Care Unit to the Ward, from the Operating Room to the Administrative Department, DIGISTAT® can be used in a wide range of environments.

DIGISTAT®'s modular architecture and extensive customization capabilities allow you to build your own patient data management system and to expand the system to meet your new demands, when required.

DIGISTAT® system can only be accessed by entering username and password. Every user is defined by a detailed profile, and can access only the allowed areas. A record of every action performed is automatically generated by the system.

3.1. Modular architecture

"Modular Architecture" means that different products (or modules) having particular goals can be implemented within the same software environment (DIGISTAT® in the present case) that is characterized by a determined graphic design, general goals and terms of use.
Different modules can be added in different times, and in a way that is agreed with the user. The resultant software suite fits to the specific user needs and can change in time, according to the possible changes in the user needs.

3.2. Intended use

The product "DIGISTAT®" (hereafter "PRODUCT") is a medical device composed only of software that is licensed exclusively to create an electronic copy of certain data and recording of the unit's activity in order to provide:

- electronic documentation of the activity in the unit;

- information on the use of human resources and materials;

- deferred statistics for quality control;

- support to the diagnostic and therapeutic activities, within the limits of what specified herein below;

- support to the management of alarms coming from the connected medical devices;

- display of information to remote users for non-clinical purposes.

The PRODUCT is not aimed to administer or exchange energy to or from the human body or to transmit medicines, liquids or other substances to or from the human body.

The PRODUCT is not aimed to allow direct diagnosis or monitoring of vital physiological processes (by way of example cardiac performance, respiration or activity of CNS) and therefore the therapeutic or diagnostic procedure or maneuver, if any, deemed necessary by the User, shall be performed by him/her solely as consequence of the direct examination and of the scientific correspondence of the specific case with the data obtained through the use of the PRODUCT.

Based on the above features, the PRODUCT, even if designed to provide the maximum reliability, cannot guarantee the perfect correspondence of the provided data, nor can it substitute the direct verification of the same by the User.

In any case, the PRODUCT must be used in compliance with the safety procedures reported in the user manual accompanying the Product.

!   *Always check that the information supplied is correct. It is under exclusive responsibility of the User to make correct use of the information supplied.*

The PRODUCT can be used close to the patient and to the medical devices in order to speed up the data entry, to decrease the chances of errors and to allow the User to verify the correctness of the data through the immediate comparison with the actual data and activities.

!   *When entering patient related data it is necessary to double-check that the patient identity, hospitalization department and bed displayed in DIGISTAT® are correct.*
This is utterly important in case of critical actions as, for instance, drug administration.

The User must implement adequate procedures to guarantee that potential errors occurring in the PRODUCT are promptly detected and corrected and do not constitute a risk to the patient and the operator.

These procedures depend on the configuration of the PRODUCT and the method of use preferred by the User.

Only printouts that are signed (with digital signature or autograph) by authorized physicians or medical operators shall be considered valid clinical documents. In signing the aforementioned printouts, the User certifies that he/she has checked the correctness and completeness of the data present in the document.

Only these signed documents are a valid source of information for diagnostic or therapeutic processes and/or procedures.

!   *Only printouts signed by the authorized physicians or medical operators shall be considered valid clinical documents.*

The PRODUCT may provide, depending on the configuration, access to information on drugs. It is responsibility of the User to initially and periodically verify that this information is current and updated.

The PRODUCT can be connected to other medical devices in order to import data therefrom but is not aimed to control, monitor or influence the performances of the medical devices with which it is connected.

The PRODUCT may provide, depending on the modules installed, visual and acoustic indication of the status and operating conditions of the approved devices connected to the PRODUCT thus providing a support to the management of the alarms and to the planning of nursing workflow.

The information displayed by the PRODUCT is not meant to replace or replicate the original display of data, messages and alarms of the medical devices. The PRODUCT does not and is not intended to control, affect or modify the normal use of those connected devices.

The PRODUCT does not substitute a "Nurse Call" system and it is not a "Distributed Alarm System" (as defined by the standard EN 60601-1-8). Therefore, it must not be used in place of the direct monitoring of the alarms generated by the medical devices. This limitation is due, among the other reasons, to the specifications and limitations of the communication protocols of the medical devices and to the nature and limitations of the hospital local network.

! *DIGISTAT® is not a "Distribuited Alarm System".*

The minimum patient height is 20 cm.
The maximum patient height is 250 cm.
The minimum patient weight is 0,2 Kg.
The maximum patient weight is 250 Kg.

3.2.1. Intended users

The PRODUCT must be used by properly trained physicians, nurses, administrative staff, system administrators, biomedical engineers and technicians.

Use of the PRODUCT must be granted, by means of specific configuration of the passwords and active surveillance, only to User 1) trained according to PRODUCT indications by personnel authorized by ASCOM UMS or ASCOM UMS distributors and 2) in possession of the professional qualifications to correctly interpret the information supplied and to implement the appropriate safety procedures.

! *Use of DIGISTAT® must be granted only to professionally qualified and properly trained personnel.*

Limited parts of the PRODUCT may be used by other categories of users for non-clinical purposes, to access a limited set of information and without the ability to alter existing information or enter new ones. For example patient's family member can access information of their relative.

3.2.2. Intended environment

The PRODUCT can be used inside medical facilities in intensive care units, wards, operating blocks, operating theatres and other departments.
The PRODUCT is software-only medical device that can be run on a computer connected to the hospital local network and must be adequately protected against cyber-attacks.
The PRODUCT must be installed only on recommended PCs and/or operating systems.

!   *DIGISTAT® must be installed only on recommended PCs and/or operating systems.*

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In using the PRODUCT, the User declares to have understood and accepted the characteristics, limits and responsibilities contained herein and in the user manual. Should the User consider any of these clauses to be unacceptable, he must immediately stop using the PRODUCT and inform promptly the system administrator.

3.2.3. "Off-label" use of the Product

Every use of the Product outside what explicitly stated in the "Intended use" (usually referred to as "off-label" use) is under the full discretion and responsibility of the user and of the Responsible Organization. The manufacturer does not guarantee in any form the Product safety and suitability for any purpose when the Product is used outside what explicitly stated by the "Intended use".

3.3. Manufacturer's responsibility

The **CE** seal is a safety warranty of the product introduced on the market.
ASCOM UMS is responsible for the product's safety, reliability and performance only if:

- Use and maintenance comply with User Manual instructions;
- This Manual is stored in good conditions and all sections are readable;
- Configurations, changes and repairs are only performed by personnel formed and authorized by ASCOM UMS ;
- The Product's usage environment complies with safety regulations;
- The environment's wiring system is highly efficient and complies with related regulations.

!
WARNING!

Should the supply cause the establishment of a "medical electrical system" through electrical and functional connection of devices, the hospital organization is in charge of the required safety verification and acceptance tests, even in case that ASCOM UMS performed in whole or in part the wiring and the necessary connections.

3.4. Product tracking

In order to ensure device tracking and on-going safety and efficiency checks on site, in compliance with ISO 9001 and EN 13485 quality standards and European law on medical devices 93/42/EEC, amended by the directive 2007/47/EC, the former owner is recommended to inform ASCOM UMS/Distributor about any ownership transfer by giving written notice stating the product, former owner and new owner identification data.
Device data can be found in the product labelling (either paper label provided at installation time or "About box" displayed within the product – see paragraph 6.8.5).
In case of doubts/questions about product labelling and/or product identification please contact ASCOM UMS/Distributor technical assistance (for contacts see paragraph 9).

3.5. Post-market surveillance

The **CE** marked device is subject to a post-market surveillance - which ASCOM UMS, its distributors and dealers must provide for each marketed copy - concerning actual and potential risks, either for the patient or the User, during the Product's life cycle.
In case of deterioration of the device characteristics, poor performance or inadequate user instructions that have been or could be a hazard to either the patient or User' health or to environmental safety, the User must immediately give notice to either ASCOM UMS, one of its branches or nearest authorised dealer.

The device details can be found on its labelling.

On reception of a user feedback ASCOM UMS will immediately start the review and verification process and, when required, solve the reported non conformity.

3.6. Product life

The life time of the product does not depend on wearing or other factors that could compromise safety. It is influenced by the obsolescence of the hardware (PC and server) and is therefore assessed as 5 years since the release date of the product specific version, period in which the manufacturer is committed in keeping technical documentation and provide technical support.

3.7. CE mark and regulation conformity

ASCOM UMS DIGISTAT® product is $C\!\!\in$ marked according to 93/42/EEC directive ("Medical devices"), amended by the directive 2007/47/EC, and is therefore compliant with the EU basic safety standards there specified (received in Italy with Legislative Decree n. 37/2010 and subsequent variants and integrations).

ASCOM UMS declines all responsibility for the consequences on the safety and efficiency of the device determined by technical repairs or maintenance not performed by its own Technical Service personnel or by ASCOM UMS-authorized technicians.

The attention of the user and the legal representative of the health structure where the device is used is drawn to their responsibilities, in view of the legislation in force on the matter of safety in the workplace (Italian Legislative Decree no. 81 of 09/04/2008) and of on-site security for hazardous or potentially hazardous incidents.

The ASCOM UMS Service is able to offer clients the support needed to maintain the long-term safety and efficiency of the devices supplied, guaranteeing the skill, instrumental equipment and spare parts required to guarantee full compliance of the devices with the original construction specifications over time.

4. Software/Hardware specifications

The information provided in this chapter covers the manufacturer's obligations identified by the IEC 80001-1:2010 standard (Application of risk management for IT-networks incorporating medical devices).

4.1. Bedside

4.1.1. Hardware

According to the IEC 60601-1 regulation, for "bedside" PCs, or for PCs positioned within the "Patient Area", the use of "Medical grade" devices is required. In these places medical grade PANEL PCs are often used. If explicitly requested, ASCOM UMS is able to provide information on some suitable devices of this kind.

Minimum hardware requirements:

- Intel® processor with Intel® dual-core technology (or faster)
- Memory: 2 GB RAM (4 GB suggested)
- Hard Disk: at least 20 GB of available space
- Monitor: 1024 x 768 or higher (1280 x 1024 suggested, 65.000 colors minimum)
- Mouse or other compatible device
- Windows® compatible printer
- Ethernet interface 100 Mb/s (or higher)
- CD/DVD Drive or possibility to copy the installation files

4.1.2. Operating System

Supported operating systems:

Microsoft Corporation Windows® XP SP3 32 bit
Microsoft Corporation Windows® XP SP3 64 bit
Microsoft Corporation Windows® 7 32 bit
Microsoft Corporation Windows® 7 64 bit
Microsoft Corporation Windows® 7 SP1 32 bit
Microsoft Corporation Windows® 7 SP1 64 bit
Microsoft Corporation Windows® 8 32 bit
Microsoft Corporation Windows® 8 64 bit
Microsoft Corporation Windows® 8.1 32 bit
Microsoft Corporation Windows® 8.1 64 bit

4.2. Central

4.2.1. Hardware

Minimum hardware requirements:

- Intel® processor with Intel® dual-core technology (or faster)
- Memory: 2 GB RAM (4 GB suggested)
- Hard Disk: at least 20 GB of available space
- Monitor: 1024 x 768 or higher (1280 x 1024 suggested, 65.000 colors minimum)
- Mouse or other compatible device
- Windows® compatible printer
- Ethernet interface 100 Mb/s (or higher)
- CD/DVD Drive or possibility to copy the installation files

4.2.2. Operating System

Supported operating systems:

Microsoft Corporation Windows® XP SP3 32 bit
Microsoft Corporation Windows® XP SP3 64 bit
Microsoft Corporation Windows® 7 32 bit
Microsoft Corporation Windows® 7 64 bit
Microsoft Corporation Windows® 7 SP1 32 bit
Microsoft Corporation Windows® 7 SP1 64 bit
Microsoft Corporation Windows® 8 32 bit
Microsoft Corporation Windows® 8 64 bit
Microsoft Corporation Windows® 8.1 32 bit
Microsoft Corporation Windows® 8.1 64 bit

4.3. Server

4.3.1. Hardware

Minimum hardware requirements:

- Intel® Xeon® E series processor (or faster)
- Memory: 4 GB RAM (8 GB recommended)
- Hard Disk: at least 80 GB of available space
- Monitor: 1024 x 768 or higher (1280 x 1024 suggested, 65.000 colors minimum)
- Mouse or other compatible device
- Ethernet interface 100 Mb/s (or higher)
- CD/DVD Drive or possibility to copy the installation files

4.3.2. Operating System

Microsoft Corporation Windows Server 2012 R2 x64 Standard/Enterprise Ed. latest available SP.

Microsoft Corporation Windows Server 2008 R2 x64 Standard/Enterprise Ed. latest available SP.

4.3.3. System Software

Microsoft SQL Server 2012 R2 x64 Standard/Enterprise Ed. latest available SP.
Microsoft SQL Server 2008 R2 x64 Standard/Enterprise Ed. latest available SP.

! *WARNING!*

To correctly use DIGISTAT®, the Microsoft Windows Display Scaling must be set to 100%. Different settings may prevent the product from starting or cause malfuctions in the way DIGISTAT® is visually displaied. Please refer to the Microsoft Windows documentation for instructions on the Display Scaling settings.

! *WARNING!*

The minimum vertical resolution of 768 is supported only if DIGISTAT® is configured to run in full-screen mode or if the Windows traybar is in Auto-hide mode.

! *WARNING!*

The computers must comply with the regulations regarding the environment where they are installed. Check compliance with competent authorized personnel.

! *WARNING!*

In compliance with on-going product improvement policies pursued by ASCOM UMS, this User Manual's specifications can be changed at any moment. Please contact the Firm's authorized representative concerning market availability of the product range presented in this User Manual.

! *WARNING!*

The computers and the other connected devices must be suitable for the environment in which they are used and must therefore comply with the relevant regulations. The personnel in charge should perform the adequate compliance checks.

WARNING!

It is recommended to follow the manufacturer instructions for storage, transport, installation, maintenance and waste of third parties hardware. These procedures must be performed only by qualified and authorized personnel.

WARNING!

The responsible organization shall implement for the DIGISTAT® workstations a date/time synchronization mechanism to a reference source.

4.4. Firewall and Antivirus

To protect the DIGISTAT® system from possible cyber-attacks, it is necessary that:

- the Windows© Firewall is active both on the client PCs and the server;
- an antivirus software is installed and regularly updated both on the client PCs and the server.

The Responsible Organization shall ensure that these two protections are activated. ASCOM UMS tested the Product with ESET Antivirus but, considering the strategies and policies already existing in the hospital, the actual choice of the antivirus is left to the Responsible Organization. ASCOM UMS cannot ensure that the DIGISTAT® system is compatible with any antivirus or antivirus configuration.

! *WARNING!*

Some incompatibilities have been reported between parts of DIGISTAT® and the Kaspersky antivirus. The solution to these incompatibilities required the definition of specific rules in the antivirus itself.

! *WARNING!*

It is suggested to keep open only the TCP and UDP ports actually needed. These may change according to the system configuration. Please refer to the ASCOM UMS technical assistance for more information.

4.5. Local network features

This paragraph lists the features of the local network on which DIGISTAT® is installed in order to guarantee the system's full functionality.

- DIGISTAT® uses a TCP/IP traffic protocol.
- The LAN must not be congested and/or full loaded.
- DIGISTAT® requires at least a 100 Mbps LAN available to the end user. 1 Gbps backbones would be worthwhile.
- There must not be filters in the TCP/IP traffic between workstations, server and secondary devices.
- If the devices (server, workstations and secondary devices) are connected to different subnets there must be routing in these subnets.
- It is recommended to adopt redundancy strategies to ensure network service availability in case of malfunction.
- It is recommended to schedule together with ASCOM UMS the maintenance calendar in order to let ASCOM UMS or the authorized Distributor efficiently support the healthcare structure in managing the possible disservices caused by maintenance activities.

ATTENTION!

If the network does not match the requested features, DIGISTAT® performance gradually deteriorates until timeout errors occur. The system may finally switch to "Recovery" mode.

ATTENTION!

In case a WiFi network is in use, given the possible intermittence of the WiFi connection, network disconnections are possible, that cause the activation of the "Recovery Mode" and the consequent system unavailability. The Responsible Organization shall ensure an optimal network coverage and stability, and train the personnel in the management of these temporary disconnections.

4.5.1. DIGISTAT® impact on the hospital network

DIGISTAT® impacts the local network of the healthcare structure. This paragraph provides information on the traffic generated by DIGISTAT® on the network in order to make it possible for the structure to evaluate and analyse the risks related to the introduction of DIGISTAT®.

The bandwidth used by a DIGISTAT® system depends on many different factors. The most important are:

- Number of workstations,
- Number of workstations configured as central stations,
- Number and type of devices dedicated to data acquisition (either only or as well dedicated).
- Interfaces with external systems,
- DIGISTAT® configuration and mode of use.

In a configuration with 100 clients the following bandwidth occupation values can be indicatively predicted

Average: 0.8 – 6 Mbit/s

Pitch: 5 – 25 Mbit/s

5. Before starting

5.1. Installation and maintenance warnings

The following warnings provide important information on the correct installation and maintenance procedures of the DIGISTAT® product. They must be strictly respected.

DIGISTAT® must absolutely be installed and configured by specifically trained and authorized personnel. This includes ASCOM UMS (or authorized Distributor) staff and any other person specifically trained and authorized by ASCOM UMS/Distributor. Similarly, maintenance interventions and repairs on DIGISTAT® must absolutely be performed according to the ASCOM UMS company guidelines only by ASCOM UMS/Distributor personnel or other person specifically trained and authorized by ASCOM UMS/Distributor.

> **!** **DIGISTAT® must absolutely be installed and configured by specifically trained and authorized personnel. This includes ASCOM UMS (or authorized Distributor) staff and any other person specifically trained and authorized by ASCOM UMS/Distributor.**

- Only use devices approved by ASCOM UMS bearing the CE mark.

- Only use devices approved by ASCOM UMS. It is not possible to install devices without proper training.

- Only use devices approved by ASCOM UMS. There is a risk of injury to the patient and operators.

- Scrupulously observe the manufacturer's instructions for the hardware installation.

- Make provision for regular maintenance of the inner disk and checks on the operating system.

- The DIGISTAT® USB dongle must be stored and used in eligible environmental conditions (temperature, humidity, electromagnetic fields etc.), as specified by the dongle manufacturer. These conditions are equivalent to those required by common office electronic devices.

- Within "Patient Area" (see Fig 1) it is recommended to use washable waterproof devices.

- Within "Patient Area" (see Fig 1) it is recommended to use washable, sterilizable rubber keyboards and mouse devices. For "touch screens" capacitive technology (insensitive if used with gloves) is recommended because it discourages using gloves (sometimes contaminated).

5.2. Cleaning

Cleaning and disinfection procedures of hardware components must comply with the usual cleaning/disinfection procedures that the hospital adopts for all the hospital's assets (both fixed and moveable)

! *Check the suggested cleaning procedures in the manuals of the hardware products that accompany DIGISTAT®.*

5.3. Precautions and warnings

! *To guarantee the reliability and security of the software during use, strictly observe the instructions given in this section of the manual.*

! *Place the PC in order to ensure adequate anterior and posterior ventilation. Failure to meet hardware ventilation requirements may cause equipment failure, thus jeopardizing patient data management system functions.*

! *The holder of the hardware (individual, hospital or institution) and the user of the device and the software are personally responsible for ensuring that the devices follow a meticulous maintenance schedule to guarantee safety and efficiency and reduce the risk of malfunctioning and the occurrence of possible hazards to the patient and user.*

! *The device and software are destined for use only under the supervision of properly trained and authorized medical personnel.*

5.3.1. Electrical safety

The hardware devices used together with DIGISTAT® (PC, display, barcode reader, etc...) must comply with therelevant ![CE] mark prescriptions, in particular with those indicated by the 2006/95/EC directive and subsequent amendments.

The device complies with the characteristics envisaged by the ![CE] marking in accordance with directive 2006/95/EC and subsequent amendments.

! *The electrical devices installed within the Patient Area must have the same security level of an electromedical device.*

It is moreover recommended to perform all the the relevant measurements on the leakage currents of the electro-medical system in use (PC, display and possible connected devices). The hospital structure is responsible for these measurements.
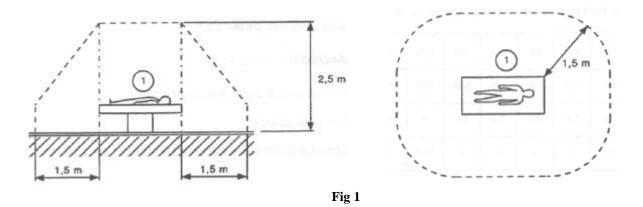
! *The hospital structure is responsible for all the required measurements on the electrical safety of the electro-medical system in use (PC, display and other possible connected devices) taking into consideration the actual environment in which the system is used.*

5.3.2. Patient Area

The term "Patient Area" or "Patient Environment" means the space in which intentional or unintentional contact may take place between the patient and parts of the system (any device) or between the patient and other people who may come into contact with parts of the system (e.g., a physician who touches the patient and other devices at the same time). This definition applies when the patient's position is pre-determined: in other cases, all the possible positions of the patient must be taken into consideration.

! *According to IEC 60601-1 standard, every computer placed within the "Patient Area" must be a medical grade device.*

Fig 1

It is the direct responsibility of the hardware licensee (individual, hospital or institution) to perform all the required measurements on the electrical safety of the electro-medical system in use (PC, display and other possible connected devices) considering the environment in which it is used.

> **!**
>
> *WARNING!*
>
> *Should the supply cause the establishment of a "medical electrical system" through electrical and functional connection of devices, the hospital organization is in charge of the required safety verification and acceptance tests, even in case that ASCOM UMS/Distributor performed in whole or in part the wiring and the necessary connections.*

5.3.3. Electromagnetic compatibility

The hardware devices used together with the DIGISTAT® system (PC, display, barcode reader, etc...) must comply with electromagnetic emission and immunity characteristics envisaged by the $C\epsilon$ seal, in compliance with Directive 2004/108/EC and following amendments.

5.3.4. Devices eligibility

It is mandatory to use devices that are suitable for the environment in which they are installed and used (meeting, for instance, the directives LVD 2006/95/EC, EMC 2004/108/EC, penetration by liquids, et al.).

5.4. Privacy Policy

The following precautions should be taken in order to protect the privacy of users and patients, and to ensure that personal data are processed by respecting data subjects' rights, fundamental freedoms and dignity, particularly with regard to confidentiality, personal identity and the right to personal data protection.

"Sensible data" are those personal data that reveal the race, the religious and/or philosophic beliefs, the personsal political opinions, the support to political parties and/or trade unions and/or associations and organizations having political, religious or philosophical aims. Moreover, "sensibile data" are those data providing information on the health conditions and/or the sexual life.

Please read the following precautions carefully and strictly observe them.

- The workstations must not be left unattended and accessible during work sessions. It is recommended to log out when leaving a workstation. See paragraph 6.5 for log out procedure.

- Sensible data saved in the system, as passwords or users' and patients' personal data, must be protected from possible unauthorized access attempts through adequate protection software (antivirus and firewall). It is the hospital structure responsibility to implement this software and keep them updated.

- The user is advised against the frequent use of the lock function (paragraph 6.5.2). Automatic log out allows to protect the system from unauthorized accesses.

In some circumstances personal and/or sensible data are transmitted in non-encrypted format and using a connection which is not phisycally secure. An example of this kind of transmission are the HL7 communications. The Responsible Organization is responsible to provide adequate security measures to comply with the local privacy laws and regulations.

5.4.1. User credentials features and use

This paragraph explains the user's DIGISTAT® credentials (username and password) features, use and update policy.

- Every precaution must be taken in order to keep personal username and password secret.

- Username and password must be kept private. Do not let anybody know your username and password.

- Each user can own one or more credentials to access the system (username and password). The same username and password must not be used by more than one user.

- Authorization profiles must be checked and renewed at least once a year.

- It is possible to group different authorization profiles considering the homogeneity of the users' tasks.

- When user accounts are created, it is recommended to always use a nominal identification. Generic users as, for instance, "ADMIN" or "NURSE" must be avoided. Every account must be used by one and only one user.

- Each user is characterized by a profile enabling him/her to access only the functionalities that are relevant for his/her working tasks. The system administrator must assign an appropriate user profile when creating the user account. The profile must be reviewed at least once a year. This revision can also be performed for classes of users. The user profile definition procedures are described in the DIGISTAT® configuration manual.

- Password must be at least 8 characters.

- The password must not refer directly to the user (containing, for instance, user's first name, family name, birthdate etc.).

- The password is given by the system administrator at user account creation time. It must be changed by the user at first access in case this procedure is defined by configuration (see paragraph 6.8.4 for the password modification procedure).

- After that, the password must be changed at least every three months.

- If username and password are left unused for more than 6 months they must be disabled. Specific credentials, used for technical maintenance purposes, are an exception. See technical manual for the configuration of this feature.

- User credentials must also be disabled if the user is not qualified anymore for those credentials (it is the case, for instance, of a user who is transferred to another department or structure). A system administrator can manually enable/disable a user. The procedure is described in the DIGISTAT® configuration manual.

The following information is reserved to system administrators:

The password must match a regular expression defined in the DIGISTAT® configuration (default is ^........* i.e. 8 characters). The password is assigned by the system administrator when a new account for a user is created. The system administrator can force the user to change the password at first access to choose a personal one. The password expires after a certain (configurable) period, after that period, the user must change the password. It is also possible (by configuration) to avoid password expiration.

See DIGISTAT®configuration manual for detailed information on user account creation procedures and password configuration.

5.4.2. System administrators

ASCOM UMS/Distributor technical staff, when performing installation, updates and/or technical assistance may have access to and deal with personal sensible data stored in the DIGISTAT® database.

ASCOM UMS srl or Distributor, for issues relating to management of personal sensible data, adopts procedures and working instructions complying with the current privacy regulation (D.Lgs 196/2003 of the 30th of June 2003).

In performing the abovementioned activities the ASCOM UMS/Distributor technical staff is configured as "System Administrator" for the DIGISTAT® system (see regulation of 25/11/2008 of the Privacy Guarantor on "System Administrators"). ASCOM UMS/Distributor staff performing this kind of procedures is appropriately trained on privacy issues and, in particular, in sensible data treatment issues.

In order to comply with the requests of the "System administrators" regulations, the responsible healthcare structure must:

- define nominal accesses;
- activate the access log both at operating system and at client and at server level;
- activate the access log to the database server Microsoft SQL Server (Audit Level);
- configure and manage all these logs to keep track of the accesses for at least one year.

5.4.3. System logs

DIGISTAT® records the system logs on the database. These logs are kept for a configurable period of time. Also, logs are kept for different times depending on their nature. Default times are:

- information logs are kept for 10 days;
- logs corresponding to warning messages are kept for 20 days;
- logs corresponding to alarm messages are kept for 30 days.

These times are configurable. See DIGISTAT® configuration manual for the configuration procedures.

5.5. Back up policy

It is recommended to regularly perform system backups.

The responsible healthcare structure using DIGISTAT® system must define a backup policy that best suits its data safety requirements.
ASCOM UMS/Distributor is available to help and support in implementing the chosen policy.

The responsible healthcare structure must ensure that backup files are stored in a way that makes them immediately available in case of need.

If data are stored on removable memory devices, the healthcare structure must protect these devices from unauthorized access. When these devices are not used anymore, they must be either definitively deleted or destroyed.

5.6. Out-of-order procedure

This paragraph describes the policy suggested by ASCOM UMS in case a DIGISTAT® workstation gets out of order. The goal of the procedure here described is to minimize the time required to replace the out-of-order workstation with one properly working.
ASCOM UMS suggests for this purpose to have at disposal, as substitute equipment, an additional PC on which DIGISTAT® is already installed.
In case of a DIGISTAT® workstation is out-of order, the substitute equipment can promptly replace the DIGISTAT® workstation.
Always remember that DIGISTAT® must only be installed by trained authorized personnel. This includes ASCOM UMS/Distributors staff and any other person specifically trained and explicitly authorized by ASCOM UMS/Distributor. Missing an explicit, direct authorization from ASCOM UMS/Distributor, the hospital staff is not authorized to perform installation procedures and/or to modify DIGISTAT® configuration.
The risk related to the DIGISTAT® workstation deactivation and substitution is that of associating the workstation with a wrong bed or room. This could lead to a "patient switch", which is an extremely hazardous condition.
The risk related to the substituion and/or reconfiguration of network equipment involved in the DIGISTAT® data acquisition (i.e port server, docking station, etc...) is that of assigning the acquired data to a wrong patient. The patient-acquired data relation is based on the IP address. Changing it could lead either to data flow interruption or, in severe cases, to assigning data to the wrong patient.

!

> *The out-of-order and replacement of a workstation is potentially hazardous. This is the reason why it must be, mandatorily, performed only by authorized and trained personnel.*
>
> *The risk related to this procedure is that of associating a wrong bed or room to the workstation and create this way the possibility to select a wrong patient.*

In case a DIGISTAT® workstation needs to be deactivated and replaced, the hospital staff must promptly call ASCOM UMS (or authorized Distributors) and request the execution of this task.
We suggest the hospital management (or anyone who is in charge) to define for this purpose a clear, univocal operating procedure and to share this procedure with all the staff members involved.

In order to speed up replacement times, we suggest to have at disposal one or more substitution equipment with all the necessary apllications already installed (OS, firewall, antivirus, RDP, ...) and with DIGISTAT® already installed, but disabled (i.e. not executable by a user without the assistance of an ASCOM UMS technician).

In case of out of order of a DIGISTAT® workstation, the substitution equipment availability assures the minimization of restoration times (hardware substitution) an limits at the same time the risk of patient exchange.

In case of out of order of a DIGISTAT® workstation we suggest to adopt the following procedure if a "substitution equipment" is available: guasto

1) The hospital staff replaces the out of order PC with the "substitution equipment"
2) The hospital staff calls ASCOM UMS/Distributor and requests the "substitution equipment" activation
3) The ASCOM UMS/Distributor staff disables the out of order workstation and correctly configure the "substitution equipment"
4) The out of order PC is repaired and prepare d as "sustitution equipment"

The instruction on how to enable/disable and replace a DIGISTAT® workstation, reserved to system administrators, are in the DIGISTAT® configuration manual.

5.6.1. Reconfiguration/substitution of network equipment

In case it is necessary to either reconfigure or substitute a network device involved in the DIGISTAT® data acquisition, the hospital staff must promptly call ASCOM UMS/Distributor and schedule the substitution/reconfiguration procedure to allow ASCOM UMS staff to either reconfigure DIGISTAT® as well or provide all the necessary information. It is recommended, for this purpose, to define a clear procedure and share it with all the involved personnel. Some general indications about this are in the DIGISTAT® configuration manual.

5.7. Preventive maintenance

It is suggested to perform the maintenance of DIGISTAT® system at least once a year. It must be considered, by the way, that maintenance frequency must be function of system complexity. In case of high complexity it is suggested to perform maintenances more often, up to twice a year.

This is the maintenence checklist:

Preparatory checks

- DIGISTAT® update necessity check.
- Check minimum requirements for a possible DIGISTAT® update (both HW and SW).
- Check the Server Service Pack version and state.
- Schedule the server/s restart to apply possible updates.
- Check the SQL Server Service Pack version and state.

```
SELECT SERVERPROPERTY('productversion'),
SERVERPROPERTY ('productlevel'),
SERVERPROPERTY ('edition')
```

- Schedule possible updates with the technical staff

Checks to be performed

Antivirus

- Check that an Antivirus Software is installed and updated (both the application and the virus list definition).
- If viruses are present, inform the competent technician and, if authorized, try to clean the PC.

Database

- Check that an effective DIGISTAT® database clean-up and back-up policy is configuraed.
- Check that the clean-up and back-up store procedures exist (UMSBackupComplete, UMSBackupDifferential, UMSCleanLog, UMSCleanDriver) and the related schedule.
- Check that back-up files exist (both full and differential).
- Check with the hospital technical department that back-up, configuration folders and data folders are correctly copied to another storage device.
- Restore a back-upped DB to verify its correctness.
- Delete the old back-up files (.bak) and the possible files that are not inherent to DIGISTAT® configuration on the network shared path.
- Check that the other jobs on SQL Agent or scheduled tasks (for instance those that are support to integration with third-parties systems) are present, and that their schedule is adequate.
- On SQL Agent check that the different JOBs are executed and that there are not hanging JOBs or JOBs in error.
- Check the SQL Server LOGs.
- Check the DB total size and the number of records in the main tables.
  Script for checking all the tables size:

```
USE [DATABASENAME]
GO

CREATE TABLE [#SpaceUsed]
(
    [name] [nvarchar](250) NULL,
    [rows] [nvarchar](250) NULL,
    [reserved] [nvarchar](250) NULL,
    [data] [nvarchar](250) NULL,
    [index_size] [nvarchar](250) NULL,
    [unused] [nvarchar](250) NULL
) ON [PRIMARY]

DECLARE @INS AS nvarchar(MAX)
SET @INS = '';

SELECT @INS = @INS + 'INSERT INTO #SpaceUsed exec sp_spaceused ''' +
TABLE_NAME + '''; '
FROM INFORMATION_SCHEMA.TABLES
WHERE TABLE_TYPE = 'BASE TABLE'
ORDER BY TABLE_NAME

EXEC (@INS);

SELECT *
FROM #SpaceUsed
ORDER BY CAST([rows] AS INT) DESC

DROP TABLE [#SpaceUsed]
```

Server

- Check the Windows™ server event log.
- Check the permissions on the shared folders (es: Backup folder).
- Useless files and directories clean up to free up space on server disk.
- Check the displays (if any) on the server rack and verify that there are neither visual nor sound alarms.
- Check that on the different disk units there is enough space available.
- Disk check with dedicated tools (checkdisk, defrag, etc.).
- In case there are disks in RAID, check the health conditions of the RAID unit on the RAID management software.
- Check the leds of the non-alarmed RAID units.
- If an UPS is connected, check its health conditions with its management software.
- In case of UPS schedule an electric interruption (an electric failure simulation) and check thet the server is configured ti perform a CLEAN shutdown.

Workstations

- Check if the Regional Settings on the workstations are coherent with the DIGISTAT® installation language.
- Check if every workstation has a default printer.

DIGISTAT®

- Check data presence (SELECT) Patient, Admission, Bed, Location tables and some random others.
- Check on the network table that no workstation has the ALL value in the "modules" field.
- Check and in case clean the service and/or ASCOM UMS Gateway LOG.
- Check and in case clean the DAS LOGs for the Drivers (if enabled).
- Check that the privacy policy is respected as stated in this manual in paragraph 5.4.

Connection to devices

- Check the connections (cables and wiring system) with data data acquisition devices.

Instruction for use

- Chck that the user documentation in PDF format (PDF provided together with the product) is present on the server and is coherent with DIGISTAT® version.
- Check that the folder containing the user documentation in electronic format on the server is accessible to DIGISTAT® users.
- Check that the HELP button opens the user documentation.
- Check that all the other contents provided by ASCOM UMS and integrated in the HELP of DIGISTAT® system are updated and coherent.

5.8. Compatible devices

Some DIGISTAT® modules work together with the medical devices connected to the patient (as, for instance, infusion pumps, blood-gas analyzers etc…).

The list of compatible devices can be found on the ASCOM UMS website, at the following address

http://www.unitedms.com/ing/prodotto.asp?ID=9

Please note that new drivers and new connections are created very often, therefore the list published on the website may sometimes not be complete. It is possibile to make request of the updated list of devices to ASCOM UMS. Please use for this purpose the references (tel, e-mail, fax…) listed in paragraph 9.

5.9. System unavailability

If during start up there are problems connecting to the server the system provides a specific information message (Fig 2).

Fig 2

The connection problem is often automatically solved in a short time. If it does not happen it is necessary to contact the technical assistance (see paragraph 9 for the contacts list).

There are extreme cases, rare but possible, in which it is phisically impossible using the DIGISTAT® system (it is the case of natural disasters, or long black outs etc.).

It is responsibility of the healthcare structure using DIGISTAT® to define an emergency procedure to put into effect in those cases. This is necessary to

1) Make it possible for the departments to keep on working
2) Restore as soon as possible the system availability (back-up policy is part of this management. See paragraph 5.5).

WARNING!

It is responsibility of the healthcare structure using DIGISTAT® to define an emergency procedure to put into effect in case of system unavailability.

ASCOM UMS/Distributor offers full support for the definition of the above mentioned procedure.

See paragraph 9 for the contacts list.

6. "Control Bar" and DIGISTAT® environment

6.1. Introduction

This section of the manual describes the features and functionalities of the DIGISTAT® environment. Namely, here are described the functionalities of the system that are common to all the DIGISTAT® configurations.
Please remember that DIGISTAT® is a software environment that, depending on the modules that are actually implemented, can be used in different kinds of locations (as, for instance, intensive care, operating rooms, outpatients departments etc…) and for different goals.

6.2. Touch screen

DIGISTAT® can run both on touch and non-touch workstations. The same procedures can be performed using both fingers and mouse device. In this manual a "mouse" terminology is used (with terms as "click" instead of "tap", for instance). Here is a quick translation table making it possible to apply this manual to all kinds of workstations and user preferences. When specific gestures can be applied to specific screens/functionalities it will be highlighted in the relevant context. In general, the main actions can be translated this way:

Mouse	Touch
Click	Tap
Double click	Double tap
Drag	Flick
Use scrollbars	Scroll
Zoom in	Two fingers tap

6.3. Launching DIGISTAT®

To launch DIGISTAT®,

> ➢ double click the desktop icon (Fig 3).

Fig 3

The following splash-screen is displayed while the system is loading.

Fig 4
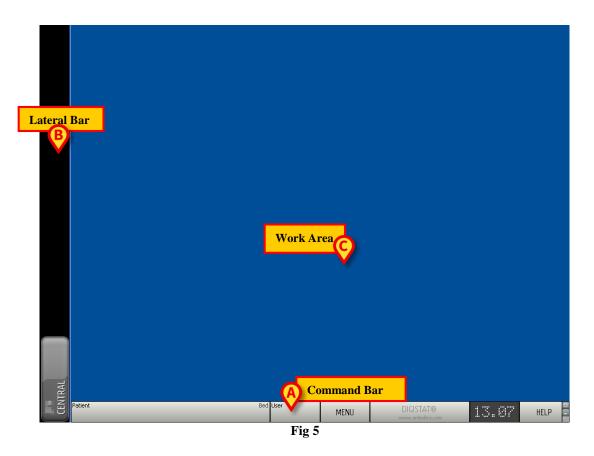
6.4. DIGISTAT® Work Area

The DIGISTAT® Work Area is defined and delimited by Control Bar, a tool that is common to all and every possible DIGISTAT® installation (Fig 5).
Control Bar manages the installed modules, the patients and their data, the users and their permissions etc.
DIGISTAT® Control Bar is formed by a horizontal command bar (Fig 5 **A**), by a vertical selection bar on the left (Fig 5 **B**) and by a central Work Area. The different screens of the installed modules are displayed within the Work Area (Fig 5 **C**).

Fig 5 shows Control Bar with no module installed.

Fig 5

The command bar (Fig 5 **A**) will be described in paragraph 6.4.1 (and subsequent).

The lateral bar displays the icons of the currently available modules. See, for instance, Fig 6, that refers to a configuration implementing the "Image Bank" and "Clinical Forms" modules.

Fig 6

The module currently selected is highlighted (yellow).

6.4.1. Selecting a module

To select a module

➤ click the corresponding icon.

The icon is this way highlighted. The module's functionalities are displayed within the Work Area.

It is possibile to select a specific module only after the user log in (paragraph 6.5).

6.5. Accessing the system

The DIGISTAT® system can only be accessed by entering the personal username and password ("Log in" procedure).
For this reason, at the beginning of every work session, it is necessary to click the **User** button (Fig 7 **A**).

The following page is displayed.

Fig 7

To access the system,

> ➢ enter the username in the "**Username**" field (Fig 7 **B**).

> ➢ Enter the password in the "**Password**" field (Fig 7 **C**).

> ➢ Click the **Ok** button (Fig 7 **D**).

The user is this way logged in. To cancel the operation

> ➢ click the **Cancel** button (Fig 7 **E**).

You can enter the username and password either using the virtual keyboard displayed on screen (clicking the letters with the mouse or touching them if you are using a touch screen)

> ! *The username and password are issued by the system administrator. If you do not have a username and a password you are not authorized to use the DIGISTAT® system.*

or the workstation keyboard.

After accessing the system, an acronym corresponding to the logged user is diaplayed on the **User** button on the control bar (the acronym is ADM in Fig 8 **A**).

Patient	Bed	User
		ADM

Fig 8

> ! *WARNING!*
>
> *The user whose credentials are displayed on the* **User** *button is responsible for all the actions performed on DIGISTAT®. It is strongly recommended to log out before leaving the DIGISTAT® workstation to avoid improper use of the system.*

To log out, click the **User** button during the work session. When this button is clicked the user is disconnected and the acronym of the user disappears from the button.

To log in again, click the **User** button again. The page shown in Fig 7 is displayed again.

> ! *WARNING!*
>
> *DIGISTAT® does not support the Microsoft® Windows® "switch user" functionality. This means that, for instance, if*
>
> a) *User 1 launches DIGISTAT®,*
> b) *User 1 switches to User 2 without logging out User 1,*
> c) *User 2 attempts to launch DIGISTAT® again,*
>
> *then the second DIGISTAT® instance cannot be launched because the first one is still running.*

6.5.1. Barcode log in

It is possible, if the functionality is implemented, to log in through barcode scanning.

To use this functionionality, when the system displays the login screen (Fig 7),

> ➤ scan the user's personal barcode.

Fig 9

The user is immediately logged in.

> **!** *Barcode technology is recommended when selecting an item. Scanning the item's barcode (as, for instance, the user's personal badge), instead of selecting it manually, helps the user to diminish selection errors.*

6.5.2. Disabling the automatic log out

If the system remains idle for a certain length of time, the user is automatically disconnected (automatic log out). This length of time depends on a configuration parameter.

To stop this from happening it is necessary, when logging in, after username and password specification and before clicking **Ok**, to

> ➤ click the **Lock** button on the "Login" screen command bar (Fig 10 **A**)

Fig 10

If the user is locked, the name of the user appears in red on the control bar (Fig 11).

Fig 11

> **!** *The user is advised against the frequent use of the lock function. Automatic log out is implemented to protect the system from unauthorized accesses.*

6.5.3. Recent users

The "Recent" area of the "Login" page (Fig 12 **A**) displays the names of users who have accessed the system recently.

Fig 12

The area is divided into rectangles. The names of the users who accessed the system recently appear inside the rectangles. When any of these rectangles is clicked, the "Username" field is automatically filled with the name appearing inside the rectangle.

6.5.4. How to use the "User List"

The **More** button on the control bar (Fig 13) makes it possible to display the complete list of possible users.

Fig 13

To display the "User List",

➢ click the **More** button.

The following window is displayed (Fig 14).

Fig 14

The window shown in Fig 14 can be used as an index book enabling to search and select a user in the list of all the possible users.

The central part of the window shows the names of possible users, in alphabetical order (Fig 14 **A**).

The letters on the left side of the window (Fig 14 **B**) work like an index and make it possible to see only the users whose names begin with a specific letter.
For example: click the **C-D** button to see the list of patients whose names begin with the letters C or D.

Use the **All** button (Fig 14 **C**) to see the list of all possible users.

Use the **Local** button (Fig 14 **D**) to see the list of users relating to the specific workstation on which you are currently working.

Use the arrows on the right side of the window (Fig 14 **E**) to scroll up and down the list of users.

To select a user

> ➢ click the name of the user.

The name will be highlighted, then

> ➢ click the **Ok** button (Fig 14 **F**).

Otherwise you can

> ➢ double-click the row displaying the name of the user.

After selection, the "**User list**" window closes and the name of the selected user appears in the "**Username**" field on the "**Login**" page (Fig 7 **A**).

Use the **Cancel** button (Fig 14 **G**) to cancel the operation and close the "User list" window without selecting any user.

6.6. DIGISTAT® Control Bar

The control bar that appears in the lower part of the screen is common to all DIGISTAT® modules. Its main characteristics are listed below. If required, a more detailed explanation of its functionalities is provided in the following paragraphs.

Fig 15

- The **Patient** button (Fig 15 **A**) will contain, after a patient has been selected, the patient's name and, if the patient has been admitted, his/her bed number.

- The **User** button (Fig 15 **B**) shows the name of the user connected. See Fig 8.

- Use the **Menu** button (Fig 15 **C**) to open the following window (Fig 16).

Fig 16

The buttons contained in this window give access to functionalities that will be described later.

- The button quoting the DIGISTAT® brand name and the ASCOM UMS srl web address (Fig 15 **D**) is used by the system to signal that there are alarms or warnings going on in one of the modules. This feature is explained in the context of the specific module.

- The display indicated in Fig 15 **E** alternately shows the current date and time.

- Use the **Help** button (Fig 15 **F**) to access the on-line documentation available.

- The small buttons highlighted in Fig 15 **G** can be used to:

  1. minimize the DIGISTAT® window (button);

  2. select the full screen display mode (button);

  3. select the window display mode (button).

i | *These three buttons are present only if enabled by configuration.*

6.6.1. How to read the "Patient" button

Patient selected

When a patient is selected, the **Patient** button displays the name of the selected patient (Fig 17 **A**). See the documentation of the specific modules for the patient selection procedure.

Fig 17

Patient admitted

When a patient is admitted the **Patient** button displays, besides the patient name, the bed number and the name of the department where he/she is admitted (Fig 18).

Fig 18

The department name and the bed number are black if the patient is located in a department associated to the workstation on which the user is working (see Fig 18).
The department name and the bed number are red if the patient is located in a department that was not associated to the workstation on which the user is working (Fig 19 - the workstation/department link depends on configuration choices).

Fig 19

i | *Every workstation is associated by configuration to one or more departments. The user is allowed to perform certain specific actions only if the patient is admitted to one of the associated departments. The red colour in the **Patient** button is used to advise the user that he/she is working with a patient that is outside the associated departments.*

The signal "Other location" (Fig 20) appears when,

Fig 20

at patient admission time, in the bed selection window (Fig 21), the user specified that the patient is not in one of the configured departments. The user therefore selected the "Other location" option in the window dispayed in Fig 21.

Fig 21

See the specific module's documentation for the patient admission procedure.

When the 🔒 icon is displayed alongside the patient name, it means that the user is not enabled to edit that patient's data.

Fig 22

i

Patient management.

The patient archives management tools can change depending on the modules installed, on the user needs, on the chosen configuration etc. The related procedures change accordingly.

The DIGISTAT® module "Patient Explorer" was explicitly created to manage the patient archives. Please refer to the "Patient Explorer" module documentation for the related procedures.

If the DIGISTAT® module "Patient Explorer" is not installed the patient management functions are performed by "Control Bar". When this is the case, the related procedures are described in the specific documentation.

If the patient archives management tool in use is not part of the DIGISTAT® environment please refer the relevant technical documentation.

WARNING!

When entering patient-relating data it is necessary to double-check that the patient identity, hospitalization department and bed displayed in DIGISTAT® match with the actual ones.
This is utterly important in case of critical actions as, for instance, drug administration.

6.7. Help

Click the **Help** button on Control Bar (Fig 15 **E**) to access the on-line documentation available. The page shown in Fig 23, or an analogous one, depending on the available documentation, will open.
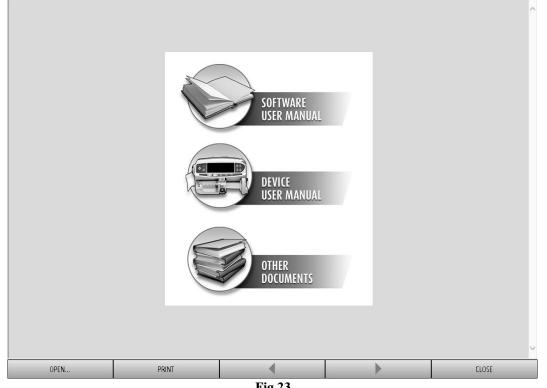
Fig 23

The command bar (Fig 24) offers some navigation possibilities.

Fig 24

- the **Open** button makes it possible to open other documents (if the user has the required permissions);

- the **Print** button prints the currently displayed document;

- the $<$ and $>$ buttons display either the previous or the next page of the document;

- the **Close** button closes the on-line help.

6.8. DIGISTAT® Main Menu

The **Menu** button placed on the DIGISTAT® Control Bar (Fig 25)

Fig 25

opens a menu containing several options (Fig 26).

Fig 26

Each button on the menu accesses a specific set of functions.

The procedures associated to the following buttons relate to system configuration and are therefore reserved to the system administrators.

**Clinical configuration** - (Fig 26 **A**)

System configuration - (Fig 26 **B**)
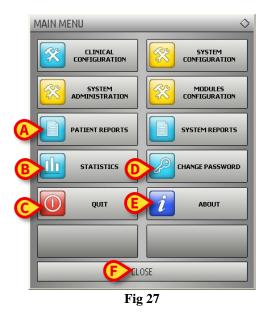
System administration - (Fig 26 **C**)

Modules configuration- (Fig 26 **D**)

System reports - (Fig 26 **E**)

Contact your system administrator for the procedures associated to these buttons.

The other buttons, indicated in Fig 27, make it possible to access features and functions that some users can perform (according to their permission level). These will be described in the following paragraphs.

Fig 27

Patient reports - (Fig 27 **A**, paragraph 6.8.1)

Statistics - (Fig 27 **B**, paragraph 6.8.3)

Quit - (Fig 27 **C**, paragraph 6.8.6)

Change Password - (Fig 27 **D**, paragraph 6.8.4)

About - (Fig 27 **E**, paragraph 6.8.5)

The **Close** button (Fig 27 **F**) closes the "Main menu" window (Fig 27).

6.8.1. Patient reports

The "**Patient reports**" button (Fig 27 **A**) makes it possible to access a set of options enabling the user to print reports of different kinds for the selected patient.

The button opens a menu containing different options (Fig 28).

Fig 28

i

The number and kind of available reports depend on the modules installed and the configuration in use. Therefore the number and kind of buttons on this menu (Fig 28) change according to the configuration in use.

6.8.2. Print reports

Use the buttons on the menu displayed in Fig 28 to access the system's print functionalities.

i

The type and the contents of some reports are customizable. Please refer to the system administrators for any request regarding the print reports customization.

To print a patient report

➢ click one of the buttons on the menu**.**

A print preview of the selected document will open (Fig 29).

Fig 29

The buttons on the command bar of the "Print preview" screen make it possible to perform various actions, listed below.

A - Use the [icon] and [icon] buttons (Fig 29 **A**) to reach the beginning and the end of the document.

B - Use the [icon] and [icon] buttons (Fig 29 **B**) to go to the previous or the next page.

C - The display [icon] (Fig 29 **C**) indicates the current page number.

D - The **Addons** button (Fig 29 **D**) activates the possible additional print management options (in this configuration the "Watermarks" option is available - see paragraph 6.8.2.1 for a description of these options).

E - The **Find** button (Fig 29 **E**) makes it possible to search the displayed document. See paragraph 6.8.2.2 for more instructions.

F – The button indicating the **100%** percentage (Fig 29 **F**) is a zoom, making it possible to change the display mode. See paragraph 6.8.2.3 for more instructions.

G - Use the **Print** button (Fig 29 **G**) to print the report.

H - Use the **Print…** button (Fig 29 **H**) to display the print options window (Fig 35). See paragraph 6.8.2.4 for a description of this window and the related procedures.

I - Use the **Export** button (Fig 29 **I**) to export the document contents to different file extensions. See paragraph 6.8.2.5 for more instructions.

L - Use the **Close** button to close the "Print preview" screen.

6.8.2.1. Addons

The **Addons** button (Fig 29 **D**) activates the possible additional print management options.

To display the available options,

> ➢ Click the **Addons** button.

> ➢ Click the button corresponding to the functionality you want to activate.

Addons - Watermark

To add watermarks to the print report (either text or image, if the option is enabled by configuration),

> ➢ Click **Addons** and then **Mark**.

The following window is displayed (Fig 30).

Fig 30

To add a textual watermark,

> ➢ Ensure that the "**Enabled**" checkbox is checked (Fig 30 **A**). If not, the window's contents cannot be edited.

> ➢ Insert the text in the "**Text**" field (Fig 30 **B**).

➢ Use the "**Rotation**" menu (Fig 30 **C**) to specify the watermark orientation (diagonal, horizontal, vertical).

A print preview is displayed in the area indicated in Fig 30 **D**.

➢ Use the buttons indicated in Fig 30 **E** to select the watermark font and color.

➢ Click the **Ok** button (Fig 30 **F**).

The text is this way inserted as watermark.

If the "**Apply to all pages**" checkbox is selected (Fig 30 **G**) the watermark is applied to each page in the document, otherwise it is applied only to the current page.

To insert a picture as watermark

➢ Click the "**Picture**" tab indicated in Fig 31 **A**.

The following window is displayed (Fig 31).

Fig 31

Follow these steps to insert an image as watermark,

➢ Ensure that the "**Enabled**" checkbox is checked (Fig 31 **B**). If not, the window's contents cannot be edited.

➢ Click the "**Load**" button indicated in Fig 31 **C**.

This opens the window making it possible to browse the computer contents.

➢ Search and select the image to be uploaded.

The image is displayed in the area indicated in Fig 31 **D**.

➢ Use the "**Size**" drop-down menu to set the size of the image (Fig 31 **E**).

➢ Use the "**Transparency**" cursor to set the transparency level of the watermark image (Fig 31 **F** - maximum transparency when the cursor is aon the left).

➢ Click the **Ok** button (Fig 31 **G**).

The watermark image is this way inserted.

If the "**Apply to all pages**" checkbox is selected (Fig 31 **H**) the watermark is applied to each page in the document, otherwise it is applied only to the current page.

To delete an already selected image,

➢ Click the "**Clear**" button indicated in Fig 31 **I**.

6.8.2.2. Find

The **Find** button (Fig 29 **E**) makes it possible to search the print report currently displayed.

To search the print report,
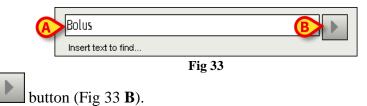
➢ Click the **Find** button.

The following window opens (Fig 32).

Fig 32

➢ Insert in the window the text to be found in the print report (Fig 33 **A**).

Fig 33

➢ Click the [▶] button (Fig 33 **B**).

The text specified, if found, will be highlighted in the print report.

➢ Click the [▶] button again to search for the other instances in the text.

6.8.2.3. Zoom

The **Zoom** button (on which, by default, the **100%** size is displayed - Fig 29 **F**) is a zoom, making it possible to change the display size and mode.

To change the display mode,

> ➢ click the Zoom \button. The following menu is displayed (Fig 34).

Fig 34

> ➢ Click the wanted option on the menu.

The page is displayed anccordingly. The mode currently selected is indicated on the button.

The following options are available:

The **Width** button makes it possible to display the page using the full screen width;

the **Page** button displays the whole page;

the **200%** button doubles the page size (200% zoom);

the **100%** button displays the page in its actual size (100% zoom);

the [136] area contains a cursor that can be used to zoom the page contents (left is zoom out, right is zoom in). The percentage value corresponding to the page size is displayed above the cursor. Values range from 100 to 200 %. The selected value is also displayed on the **Zoom** button on the command bar after selection.

6.8.2.4. Print

The **Print…** button opens a window offering several print options.

➢ Click the **Print…** button (Fig 29 **H**) to display the print options window (Fig 35)

Fig 35

This window makes it possible to select the printer and the number of copies to be printed.

➢ Click the wanted option on the menu to select the printer (Fig 35 **A**).

➢ Use the [−] (one less copy) and the [+] (one more copy) buttons to specify the number of copies (Fig 35 **B**).

➢ Click the **Print** button (Fig 35 **C**) to print the report.

6.8.2.5. Export

The **Export** button (Fig 29 **I**) makes it possible to export the displayed document contents to different file extensions.

➢ Click the **Export** button to open the "Export" menu.

The menu displays all the extensions currently supported by the system in use.

➢ Click the option corresponding to the wanted extension.

The document is this way exported to the corresponding extension.

6.8.3. Statistics

The **Statistics** button on the main menu (Fig 36) makes it possible to access the system's statistical calculation tools.

Fig 36

The button opens another menu (Fig 37) that enables to access various distinct tools.
The type and number of accessible tools depend on the configuration in use and the specific modules installed.

These tools are mainly reserved to the system administrators. Please see the specific technical documentation for a description.

The "Query assistant" tool, which is accessible for users having specific permissions, is described in paragraph 6.8.3.1.

Fig 37

6.8.3.1. Query Assistant

The **Query Assistant** button (Fig 37) accesses a tool making it possible to create, save and execute queries on the DIGISTAT® database (Fig 38).

Fig 38

The user can select a query from a list of pre-defined queries, to execute it and display the results in a specific window.
The "Select a Query" area displays the list of all the pre-defined queries (Fig 38 **A**).

To run a query

    ➤ click the corresponding name on the list,

The name will be highlighted (Fig 39 **A**).

A textual description of the query is displayed in the "Description" area (Fig 39 **B**).
The "SQL" area (indicated in Fig 39 **C**) displays the content of the query in SQL language (Structured Query Language).

i   *The "edit", "cancel" and "new" query options are reserved to the system administrators.*

Fig 39

To run the query

➢ click the **Query** button (Fig 39 **D** - bottom-right).

The results are displayed in a new window, as a table (Fig 40).

Fig 40

The **Edit** button placed on the right of the "Query Assistant" window (Fig 38 **B**) makes it possible to edit an existing query.

The **New** button placed on the right of the "Query Assistant" window (Fig 38 **C**) makes it possible to create a new query.

The **Delete** button placed on the right of the "Query Assistant" window (Fig 38 **D**) makes it possible to cancel an existing query.

6.8.4. Change password

The **Change Password** button on the DIGISTAT® main menu (Fig 41 **A**) opens a window making it possible to change the password of the user currently logged to the system.

Fig 41

To change the user password

➢ click the **Change Password** button (Fig 41 A).

The "Change password" window will open.

Fig 42

➢ Type the current password in the "**Enter the OLD password**" field (Fig 42 **A**).

➢ Verify that the "**Enable password**" checkbox (Fig 42 **B**) is selected.

➢ Type the new password in the field indicated in Fig 42 **C**.

➢ Type again the new password in the field "**Re-emter new password**" (Fig 42 **D**).

➢ Click the **Ok** button (Fig 42 **E**).

The passwords <u>are not</u> sensibile to uppercase and lowercase. The passwords can only be formed by numbers (0 to 9) and letters (A-Z).

6.8.5. About DIGISTAT®

The **About** button on the DIGISTAT® main menu (Fig 41 **B**) displays a window containing information on the DIGISTAT® version installed and the related licences (Fig 43).

Fig 43

6.8.6. Quit DIGISTAT®

The **Quit** button on the DIGISTAT® main menu (Fig 45 **A**) makes it possible to quit the DIGISTAT® environment.

To quit DIGISTAT®

➢ click the **Menu** button on the control bar (Fig 44).

Fig 44

The DIGISTAT® main menu will open (Fig 45).

Fig 45
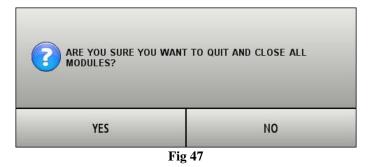
➢ Click the **Quit** button (Fig 45 **A**).

Another menu is displayed (Fig 46).

Fig 46

➢ Click the **Quit** button again (Fig 46 **A**).

User confirmation is required (Fig 47).

Fig 47

➢ Click **Yes** to exit DIGISTAT®.

i | *A user must have the required permissions level to exit DIGISTAT®.*

6.9. Warning messages

Different types of pop-up windows are used throughout the DIGISTAT® environment to provide information or warnings regarding the correct use of the software. Also, when a critical operation is being performed, they are used to request confirmation of the operation.

The possible messages are communicated by 4 different types of window, here explained.

1) Timer window with single option (Fig 48).
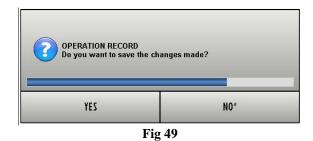
Fig 48

This type of window is generally used to issue warnings or error messages to the user. The bar indicated in Fig 48 is a timer indicating how much time the window remains on screen. The blue part of the bar gets shorter as time goes by.
When the blue part reaches the left side of the bar the window disappears.
To make the window disappear immediately, click the **Ok** button.

2) Timer window with double choice (YES or NO - Fig 49).

Fig 49
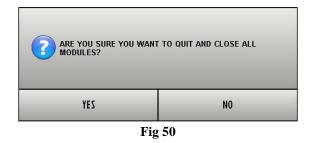
This window offers two options, usually related to an action which has just been performed. Click the **Yes** button to perform the action, click the **No** button to cancel the action.
The bar indicated in Fig 49 is a timer. The blue part of the bar gets shorter as time goes by.
When the blue part reaches the left side of the bar the window disappears. When this happens the system automatically makes a choice depending on the type of question and the context in which the message appears.

3) Window without timer with double choice (YES or NO - Fig 50).

Fig 50

The window shown in Fig 50, as the previous one, requires a choice between the options **Yes** and **No** in relation to an operation which has just been performed. Click the **Yes** button to perform the action, click the **No** button to cancel the action. This type of window has no timer and remains on screen until a choice is made.

4) Window without timer with single option (Fig 51)

Fig 51

The window shown in Fig 51 provides information regarding a procedure error. No timer here, the kind of information provided requires a reading confirmation from the user (click **Ok**).

i   *The presence or absence of the timer in a window depends on the context it appears in. Certain messages only make sense momentarily and with reference to the operation the user is performing. These messages have a timer and disappear after a certain time.*
Other messages must be received by anyone using the system, even after some time, and require a reading confirmation. These messages have no timer.

i   *The messages provided by the DIGISTAT® environment are complete and comprehensible. There is no need to refer to special codes in order to understand them. In case of unclear messages, please inform your ASCOM UMS referent as soon as possible, for reporting and clarity improvement purposes.*

7. Infusion

7.1. Introduction

The DIGISTAT® "Infusion" module acquires online data from the infusion systems. DIGISTAT® "Infusion" performs monitoring of drug infusions in progress: drug concentration, dosage, pressure in the drip and alarms.
DIGISTAT® "Infusion" also shows the history of all events: change of infusion velocity, alarms, boluses, user notes, etc.

7.2. Supported devices

Please contact ASCOM UMS/Distributor for the updated list of supported devices. See paragraph 9 for the ASCOM UMS contacts list.

7.2.1. Information for the user

Please read carefully the following warnings.

!

> **WARNING!**
>
> **"Infusion" is not designed to check correct pump function but rather to acquire and catalogue clinical data. Pump information is _not_ provided in real time and must be used _solely as documentation_.**
> **Do not use "Infusion" as a remote alarm repeater but refer directly, for this purpose, to the existing specific instruments.**

!

> **WARNING!**
>
> **Disconnecting the pumps while they are running causes the interruption of data acquisition on DIGISTAT®. The pumps data that are lost during the disconnection period are _not_ recovered by DIGISTAT® after reconnection.**

!

> **WARNING!**
>
> **The use of hardware (included the PC in use) different from that specified in the software documentation can cause malfunctions.**

!

> **WARNING!**
>
> **If the generic Alaris© Driver is in use it is necessary to wait at least ten seconds after disconnecting a pump before connecting another.**

WARNING!

The user is advised that he/she must never change the infusion pumps serial number

WARNING!

"INFUSION" is NOT a "Distributed alarm system", as described in the EN 60601-1-8 regulation. Alarms are not visible in all conditions and they may lack sound. Also, they appear with a one-minute delay.

WARNING!

Alarms must be used for documentation only. "INFUSION" must neither be used as an alarm system nor should it influence the use of pumps.

WARNING!

The update of data displayed on screen caused by pump connection, power off, disconnection and change of status depends on the time required by the "docking station" to communicate the changes. This time depends on various factors, among them are "docking station" type and infusion pump type. In some conditions the delay in communicating changes might be important. During the execution of tests the following times were observed:

- *Communication of: new infusion pump connected – 10 to 120 seconds*
- *Communication of: infusion pump powered off – up to 120 seconds*
- *Communication of: infusion pump detached from the "docking station" – up to 20 seconds*
- *Communication of: pump status (end of infusion, infusion start, alarm, warning, etc.) – 5 to 20 seconds*

The time stated above must be considered just as an indication. They might change depending on devices configuration and operational conditions.

Therefore the data displayed on "INFUSION" might temporarily be different from the actual situation of the devices.

7.3. Module selection

To select the DIGISTAT® "Infusion" module

➢ click the corresponding icon on the lateral bar (Fig 52).

Fig 52 - "Infusion" module icon

The module's main screen screen opens, that is either a "Ward station" (Fig 54) or a "Patient Station" (Fig 67), depending on the kind of configuration in use.

7.4. Patient selection

There are two ways to select a patient:

1. On the "Ward station" click the relevant patient's bed area (see paragraph 7.9). When the "Ward station" is displayed again (either after user action or due to the automatic "timeout"), the patient can be either deselected or not, depending on a configuration parameter. See next paragraphs for a description of the above-mentioned functionalities.

2. Click the **Patient** button on "Control Bar" (Fig 53).

Fig 53

The DIGISTAT® Patient Explorer module opens if the module is present in the system in use. 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.

> **!** *If your Healthcare Structure doesn't use a DIGISTAT® software for the patient search and selection, please refer to the specific related documentation.*

The selected patient's name is displayed on the **Patient** button on Control Bar (Fig 53).
When a patient is selected the data displayed on the screen are referred to the selected patient.

7.4.1. Generic patient mode

The "Infusion" module can acquire data without a selected patient. It is this way possible to monitor the infusion trends for a bed, without referring to a specific patient. The bed must be configured in the workstation domain, but if no patient is specified for the bed "Infusion" displays the infusion trends as referred to the bed, and not to the patient.

7.5. Central and Bedside workstations

A workstation can either be central or bedside. A Central Workstation works on a set of beds, named "Domain". The domain definition (i.e. the definition of the set of displayed beds) is defined by configuration. The "Infusion" home page of a Central Workstation is the "Ward Station" screen (see Fig 54).
A Bedside Workstation works on a single bed, with or without patient. The Bed is determined by configuration. The INFUSION home page of a Bedside Workstation is the "Patient Station" screen (see Fig 67). A Bedside Workstation cannot display the "Ward station" screen..

7.6. Screen Timeout

From any screen, after a certain period of inactivity (defined by configuration), the system goes back to the Home Page ("Ward Station" screen for Central Workstations and "Patient Station" screen for Bedside Workstations).

7.7. Pharmacokinetic mode

Some kinds of pumps can be set to "Pharmacokinetic" mode. I.e. a target value is set on the pump. The target value can be either "plasmatic" or "effect site". When this mode is active the INFUSION module:
   a) displays specific icons and other graphic elements to indicate that the infusion is in "pharmacokinetic" mode;
   b) displays the "Target" value anywhere it is relevant.

7.8. Enteral Pumps

Some pumps, depending on the firmware installed on the pump, can be defined as "Enteral".
To have them correctly recognized and reported as "Enteral", it is necessary to set the pump ServiceMessage to "Enteral". Refer to the pump service manual for the detailed procedure.

7.9. Ward station

The "Ward station" screen displays all the pumps connected to each patient in the ward (Fig 54).
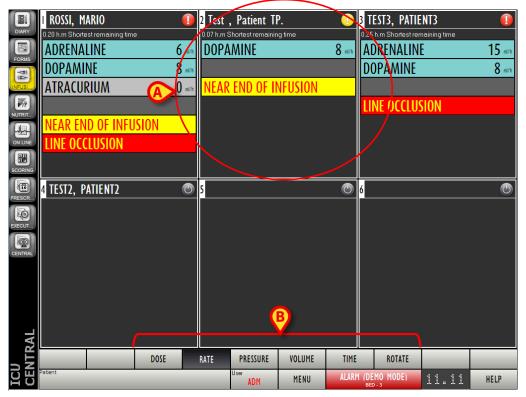

Fig 54 - Ward station

The screen is divided in rectangular areas (Fig 54 **A**). Every area, called "patient area", refers to a bed and contains a schematic representation of all the pumps connected to a patient. The boxes placed within the rectangular areas (Fig 55) represent the connected pumps. Each box represents a pump.
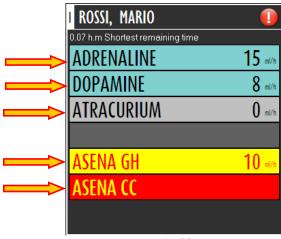
Fig 55

The pump-boxes can appear in four colors:
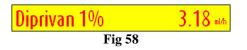
1) cyan if the pump is infusing (Fig 56);

| Asena CC | 0.1 ml/h |

Fig 56

2) light grey if the pump is in pause (Fig 57);

| Propofol | 0 ml/h |

Fig 57

3) yellow if there is a "Warning" on the pump (Fig 58); in this case a phrase describing the kind of warning currently occurring appears inside the box, alternating with the name of the infused drug;

| Diprivan 1% | 3.18 ml/h |

Fig 58

4) red if there is an alarm on the pump (Fig 59); in this case a phrase describing the kind of alarm currently occurring appears inside the box, alternating with the name of the infused drug.

| ROCURONIUM |

Fig 59
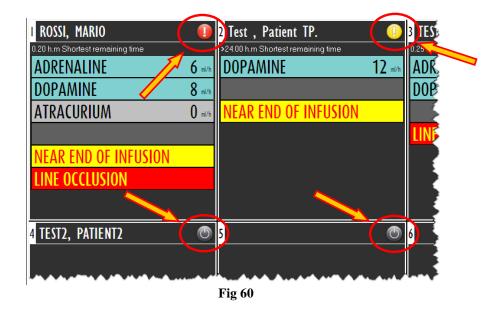
i

If the name of the drug is not specified either during the pump parameters setting or using the "Infusion" module functions, the box displays the name of the connected pump (this is the case displayed in Fig 56).
See paragraph 7.16 for the manual pump-drug connection procedure.
See the technical documentation of the specific pumps for the pump setting procedures.

The possible dark-grey boxes indicate empty slots (or bearing a pump turned off).

In the upper-right corner of every patient area there is a round icon. The round icon provides information on the status of the connected pumps (Fig 60).

Fig 60

If there are no pumps connected, no box is displayed within the patient area. This is the corresponding icon: ⏻.

If the pumps connected are turned off, the boxes within the patient area are dark grey. This is the corresponding icon: ⏻.

If there are no alarms or warnings on the connected pumps, and the pumps are infusing, the corresponding icon appears like this: ✓.

If there is at least an alarm going on, the icon is a red exclamation mark: ❗ .

If there is at least a warning going on, and no alarms, the icon is a yellow exclamation mark: ⚠.

> **!**
>
> *WARNING!*
>
> *Please remember that "Infusion" is not designed to check correct pump function but rather to acquire and catalogue clinical data. Pump information is <u>not</u> provided in real time and must be used <u>solely as documentation</u>.*
> *Do not use "Infusion" as a remote alarm repeater but refer directly, for this purpose, to the existing specific instruments.*

When the icon on the upper-right corner of the patient area is clicked, the corresponding patient area is enlarged (Fig 61); when clicked again the patient area returns to the original size.

Fig 61 - Enlarged patient area

7.9.1. Patient Area

This paragraph describes the features of a single patient area. The patient area (Fig 62) corresponds to a bed and displays all the pumps connected to the bed.
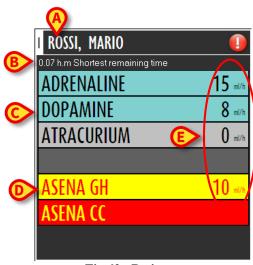
Fig 62 - Patient area

In the upper section the patient name (Rossi Mario in the figure) and the bed number (bed 1 in the figure) are displayed - Fig 62 **A**.

Beneath the patient name a counter indicates the time remaining before the end of the infusion of the pump that is the closest to the end of the infusion (Fig 62 **B**).

Beneath the "Shortest remaining time" are the pump-boxes described in the previous paragraph.

If the connected pump sends the name of the infused drug, the drug name is displayed in the corresponding pump-box (on the left - Fig 62 **C**).
If the connected pump does not send the name of the infused drug, the pump name is displayed in the corresponding pump-box (Fig 62 **D**).
It is possible, when this is the case, to associate manually the drug name to the pump (see paragraph 7.16 for the detailed procedure).

If the drug name is specified manually it appears underlined in the pump-box (Fig 63).

Fig 63 - Manually inserted drug

Each pump-box provides - on the right - information on the parameters acquired by the pump (Fig 62 **E**).

The parameters that can be displayed are:

- dose rate,
- volume rate,
- totale infused volume,
- infusion circuit pressure,
- time remaining to the end of the infusion.

!   ***Some pumps refer drug dosage information in ml/h. The "Infusion" module considers drug dosage in ml/h as equivalent to the infused volume rate. Therefore, when the pump refers this information in ml/h, only the volume rate is displayed on the button.***

The user can select which parameter is displayed using the buttons on the command bar (Fig 54 **B**, Fig 65).

If numerous pumps are connected to one bed the patient area appears as in Fig 64.
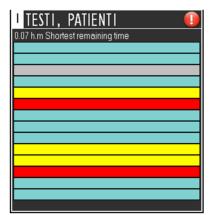
Fig 64 – Numerous connected pumps

When this is the case, click the round icon on the upper-right corner to enlarge the patient area and display the pump-box data. Click the same icon to return to the original size.

7.9.2. "Ward station" command bar

The user decides which parameter is displayed within the pump boxes (indicated in Fig 62 **E**) selecting one of the buttons on the "Ward station" command bar (Fig 54 **B**, Fig 65).

| | | DOSE | RATE | PRESSURE | VOLUME | TIME | ROTATE | | |

Fig 65 - "Ward station" command bar

The selected button appears in dark grey.

When the **Dose** button is selected the pump boxes display the infused drug dose.
When the **Rate** button is selected the pump boxes display the infused drug dose rate in ml/h.
When the **Pressure** button is selected the pump boxes display the infusion circuits pressure.
When the **Volume** button is selected the pump boxes display the drug total infused volume.
When the **Time** button is selected the pump boxes display the time remaining to the end of the infusion.
When the **Rotate** button is selected all the different parameters are displayed in rotation. The currently displayed parameter is highlighted on the command bar (dark grey).

When the number of beds displayed on the screen is smaller than the number of beds configured in the system (i.e. when it is not possible to display all the beds on the same screen) two arrow-buttons appear on the command bar (Fig 66). The arrow-buttons make it possible to "scroll" the beds up and down.

| ▲ | ▼ | DOSE | RATE | PRESSURE | VOLUME | TIME | ROTATE | | |

Fig 66 – Command bar with scroll buttons

If there is at least an alarmed pump on one of the non-displayed beds the arrow button turns red.
If there is at least a pump in warning status (and no alarmed pumps) on one of the non-displayed beds the arrow button turns yellow.
If there is a warning and an alarm at the same time the arrow button turns red.
The highlighted button indicates the direction of the alarmed/warning pumps.
When one of the pumps on a non-displayed bed provides an information message (and there are no warnings or alarms on the same bed) the arrow turns blu.

i

> *The number of beds that can be displayed on the "Infusion" Ward Station screen (Fig 54) is configurable. I.e. the user decides how many beds are displayed on one screen. Please refer to your system administrator for more information.*

7.10. Patient station

The "Patient station" screen (Fig 67) offers a detailed view of all the data coming from the pumps connected to a patient. To access the "Patient station" screen

> ➢ click the patient area corresponding to the specific patient (Fig 62). The "Patient station" screen is displayed (Fig 67). The corresponding patient is automatically selected.

The screen is formed of three main parts:

1. the list of the pumps and syringes connected to the patient. It is on the left (Fig 67 **A**, see paragraph 7.10.1);
2. a chart showing the changes in time of the dose rate values (if available, otherwise the volume rate values are displayed) of the infused drugs. It is in the central part of the screen ("Infusion chart" - Fig 67 **B** - the kind of value represented in the chart depends on the kind of pump/syringe, see paragraph 7.11);
3. the infused fluid counters. These are on the right (Fig 67 **C**, see paragraph 7.10.2).

The ASCOM UMS logo is on the top-right corner of the screen (Fig 67 **D**); the logo flashes if one of the pumps (at least) is running.
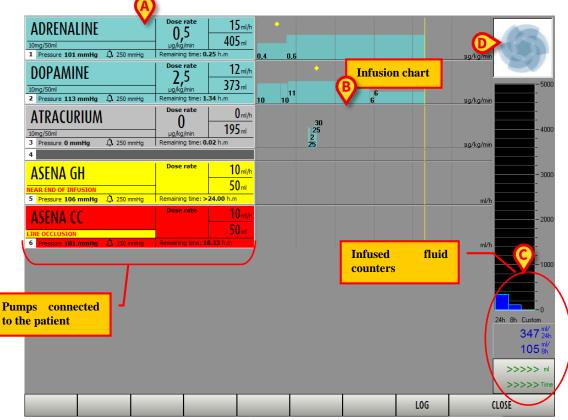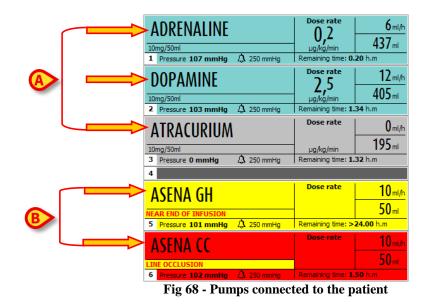

Fig 67 - Patient station

The three areas here mentioned are described in the following paragraphs.

7.10.1. Pumps connected to the patient

The boxes on the left represent the different pumps. Each box represents one pump (Fig 67 **A**, Fig 68).

Fig 68 - Pumps connected to the patient

Each box displays the name of the infused drug if the pump provides this information (this is the case shown in Fig 68 **A**).
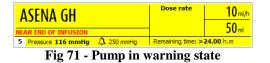
If the pump doesn't send the drug name the pump-box displays the pump name (Fig 68 **B**). The drug name can, in these cases, be associated manually (see paragraph 7.16 for the detailed procedure). When the drug name is associated manually it appears underlined on the corresponding pump box (Fig 69)

Fig 69 - Pump running

If the connected pump is alarmed the corresponding pump box is red (Fig 70).

Fig 70 - Alarmed pump

If the connected pump is in warning state the corresponding pump box is yellow (Fig 71).

Fig 71 - Pump in warning state
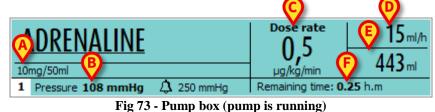
If the connected pump is paused the corresponding pump box is grey (Fig 72).

Fig 72 - Paused pump

7.10.1.1. How to read the pump-box

The box representing the pump (Fig 73) can display different kinds of data.

Fig 73 - Pump box (pump is running)

These are:

- drug concentration (Fig 73 **A**);
- circuit pressure (Fig 73 **B**); the icon [🔔 250 mmHg] placed nearby indicates the pressare value beyond which the pump is alarmed;
- the dose rate (Fig 73 **C**);
- the volume rate (Fig 73 **D**);
- the total infused volume (Fig 73 **E**);
- the time remaining to the end of the infusion (Fig 73 **F**).

7.10.2. Infused fluid counters

The infused fluid counters (Fig 74) indicate the total volumes infused in the past 24 hours (Fig 74 **A**) and in the past 8 hours (Fig 74 **B**).
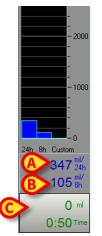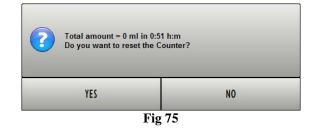
Fig 74 - Infused fluid counter

Another counter, that the user can reset any time, is placed beneath the volume counters (Fig 74 **C**). That counter displays the time since the last reset and the total infused volumes in the corresponding period.

To reset

➢ click the counter [0 ml / 0:04 Ora] (Fig 74 **C**).

User confirmation is required (Fig 75).

Fig 75

➢ Click **Yes** to confirm.

If the counter is not reset for more than 48 hours it stops displaying values and appears like this: [>>>>> ml / >>>>> Time].

Numeric data are also graphically represented. See the diagram in Fig 76.

Fig 76 - Diagram
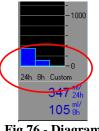
i | *The fluid amount values displayed on the counters are calculated every 10 minutes (by default)). When the reset button is clicked these values are immediately calculated and displayed in the reset confirmation pop-up window (Fig 75).*

7.11. Infusion charts

The infusion chart displayed in the central area of the "Patient station" screen represents the trends of some of the infusion values (Fig 77).

The infused quantities are represented by colored rectangular areas (Fig 77 **D** e **B**).

Fig 77 - Chart ("Patient station" screen)

If the pump provides the dose rate value (Fig 77 **A**) the height of the chart is proportional to the dose rate. The dose rate value is displayed (in numbers) every time the dose rate changes. The chart is light blue (Fig 77 **B**).
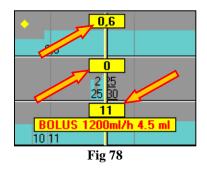
If the dose rate value is not provided the height of the chart is proportional to the infusion volume rate (this is the case highlighted in Fig 77 **C**).
The volume rate value is displayed (in numbers) on the chart every time it changes. The chart is white (Fig 77 **D**).

That is: when the dose rate value is provided the chart is function of the quantity of infused <u>drug</u>; when the dose rate is not provided the chart is function of the quantity of infused <u>fluid</u>.

A specific dose rate/volume rate value corresponds to each moment in time. Time is indicated by a time bar placed on the bottom of the chart area.
Click the chart area to display a vertical yellow bar indicating (in labels) the dose rate/volume rate values corresponding to the clicked chart point (Fig 78). A specific label on the bottom indicates the corresponding time.

Fig 78

The yellow spots highlighted in Fig 79 indicate boluses.
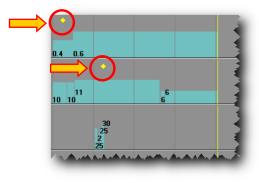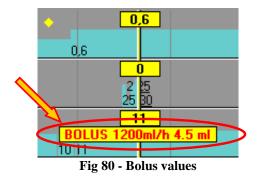
Fig 79 - Boluses

Click a bolus-spot to display, on a specific label, the available information on the bolus (infusion speed and total volume in ml - Fig 80)

Fig 80 - Bolus values

! *The infusion chart (Fig 67 B) is updated every minute; the pump-boxes (Fig 67 A) are updated more frequently, depending on the kind of connected pump.*

7.12. The "Patient station" screen command bar

Four buttons are on the command bar of the "Patient Station" screen.

Fig 81 – "Patient station" command bar

The arrow buttons on the left (Fig 81 **A**) make it possibile to scroll up and down the screen when it is not possibile to display all the configured pumps at the same time.
When one (at least) of the non-displayed pumps is alarmed the corresponding button turns red.
When one (at least) of the non-displayed pumps is in warning state and no pump is alarmed the corresponding button turns yellow.
In case of alarms and warnings occurring together the arrow button turns red.
When one of the non-displayed pumps provides an information message (and there are no warnings or alarms on the same pump) the arrow turns blue.

The **Log** button (Fig 81 **B**) displays the infusion history and the pump log (Fig 82, see paragraph 7.13).
The **Close** button (Fig 81 **C**) closes the "Patient station" screen to display the "Ward station" screen again (Fig 54).

7.13. Infusion history

Click the **Log** button (Fig 81 **B**) on the command bar of the "Patient station" screen to display a screen containing the history of all the infusions of the selected patient (Fig 82).

Fig 82 - Infusion history

The screen is formed of three main parts. These are:

- a list of all the events occurred on all the pumps connected to the selected patient during his stay (Fig 82 **A** - this area is described in paragraph 7.13.1);

- a chart representing all the patient's infusions (Fig 82 **B** - the charts are described in paragraph 7.11);

- a command bar making it possible to manage the chart display mode (Fig 82 **C** - the command bar is described in paragraph 7.13.2).

> ! *The data displayed on this screen are not updated in real time; they are updated every time the screen is accessed.*

7.13.1. Event list

The table shown in Fig 83 contains the list of all the events occurred on all the pumps connected to the selected patient during his/her stay.

Fig 83 - Events table

The first line displays the date of occurrence of the different events on the list (Fig 83 **A**).
Every line on the list corresponds to an event. For every event the following information is provided:

- the time of occurrence,
- the number of the pump on which the event occurred,
- a short description of the event.

The events highlighted red refer to alarms. The events highlighted yellow refer to warning messages.

Click on the events list to display a graphic menu that can be used to operate on the list (Fig 84).

Fig 84 - Graphic menu

The buttons on the menu can be used to perform different actions.

The **Scroll up** button scrolls the list up.
The **Scroll down** button scrolls the list down.
The **Show alarms** button displays the alarms only.
The **Show bolus** button displays the boluses only.

The **New event** button makes it possibile to add a new event manually (see paragraph 7.15 for the detailed procedure).

The **Show messages** button displays the messages only.

The **Delete** button deletes all the events displayed.

The **Show user** button displays the events added by the user only.

The **Show all** button displays the full list back.

The **Close** button closes the graphic menu.

7.13.2. The "Infusion history" command bar

The command bar on the "Infusion History" screen (Fig 85) contains the buttons that can be used to perform different actions.

Fig 85 - Command Bar

The ⬆ and ⬆ buttons scroll up and down the charts area when the available charts are too many to be displayed all at the same time.

The ⊖ button decreases the chart scale and increases this way the time span displayed (the maximum time span that can be displayed on the same screen is 8 days).
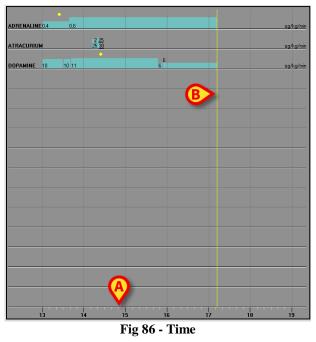
The ⊕ button increases the chart scale and decreases the time span displayed (the minimum time span that can be displayed on one screen is 45 minutes).

The ◀ button displays a time preceding the time currently displayed (it makes it possible, namely, to move backwards on the time line).

The ▶ button displays a time following the time currently displayed (it makes it possible, namely, to move forwards on the time line).

The ⋈ button makes it possible to display the current time back.

The **Close** button closes the "Infusion history" screen and brings back to the "Patient station" screen (Fig 67). The timeline is displayed at the bottom of the screen (Fig 86 **A**). The yellow cursor indicated in Fig 86 **B** indicates the current time.

Fig 86 - Time

Click any part of the chart to display the time cursor and the labels shown in Fig 80.

7.13.3. The charts on the "Infusion history" screen

The charts displayed on the "Infusion history" screen are analogous to those displayed on the "Patient Station" screen and described in paragraph 7.11.

See paragraph 7.11 for a description of the chart features.

7.14. Pump detail

On the "Patient station" screen (Fig 67), click one of the pump buttons (Fig 87 shows an example),

Fig 87 - Pump button (example)

to display a screen containing detailed information on the pump (Fig 88).
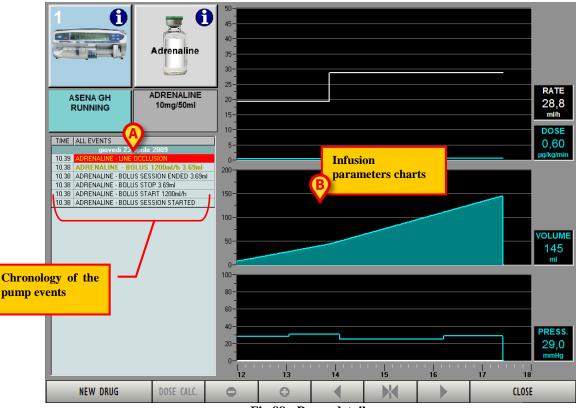
Fig 88 - Pump details

The "Pump detail" screen contains a list of all the events occurred on the selected pump (on the left, Fig 88 **A**), and three charts on the right, representing some of the trends of the current infusion parameters (Fig 88 **B**).

> **!** *The event list (Fig 88 A) refers to the association of a given pump with a specific drug. Therefore, if a new drug is associated to a given pump, the event list starts all over again. The new combination is a new entity for INFUSION. If the former drug is later associated with the same pump once again, the history of this combination (the former event list) will be shown again.*

7.14.1. The charts on the "Pump detail" screen

The charts on the right of the screen (Fig 88 **B**) display the trends of some of the infusion parameters.
The values of the different parameters are indicated along the vertical axis of the charts. The horizontal axis represents the time (namely, it indicates the hours and minutes).
The represented parameters are:

- the volume rate (white) and the dose rate (cyan) of the infused drug (Fig 89);
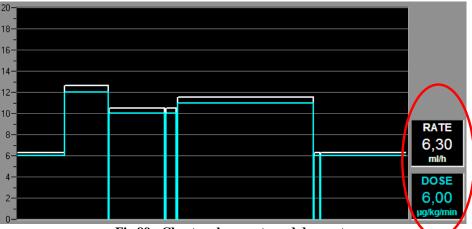
Fig 89 - Chart: volume rate and dose rate

- the total infused volume (Fig 90);
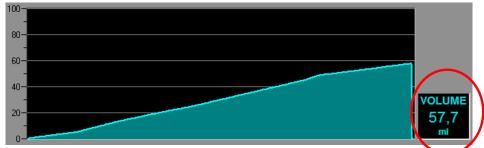
Fig 90 - Chart: volume

- the infusion circuit pressure (Fig 91).
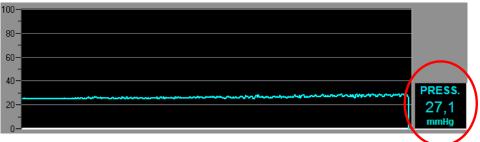
Fig 91 - Chart: pressure

i

For some pump models it is not possibile to display the infusion circuit pressure values.

The current values of the four parameters are indicated on the right of each chart (they are red-circled in the figures).

! *Charts are updated at one minute intervals. The values displayed on the right are updated every 5 seconds.*

Click on any of the charts to display a cursor (Fig 92 **A**). The corresponding time appears at the bottom, in a label (Fig 92 **B**). The corresponding values appear on the four displays on the right (Fig 92 **C**).
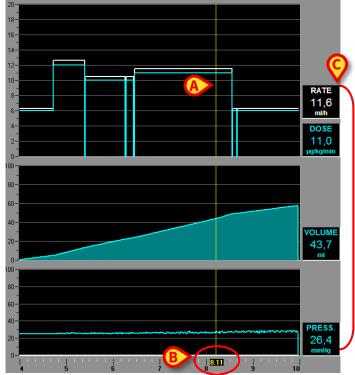
Fig 92 -Time indication and corresponding values

7.14.2. The "Pump detail" screen command bar

The command bar on this screen contains various buttons making it possible to perform different actions.

Fig 93 - "Pump detail" screen command bar

The **New Drug** button can be used to select a drug and associate it to a pump in case the connected pump does not provide the drug name. The procedure is explained in detail in paragraph 7.16.

The **Dose Calc.** button opens a tool making it possible to calcolate the drug doses. See paragraph 7.17 for a description of the "Dose calculator".

The **Close** button closes the "Pump detail" screen and displays again the "Patient station" screen (Fig 67).

The five buttons circled in Fig 93 **A** make it possible to change the chart display mode. These are their functions:

the [—] button decreases the chart scale and increases this way the time span displayed (the maximum time span on the same screen is 8 days);

the [+] button increases the chart scale and decreases the time span displayed (the minimum time span on one screen is 45 minutes);

the [◄] button displays a time preceding the time currently displayed (it enables, namely, to move backwards on the time line);

the [►] button displays a time following the time currently displayed (it enables, namely, to move forewards on the time line);

the [⋈] button enables to display the current time.

i *When the chart display mode is changed with the [—] and [+] buttons, the [⋈] button flashes. The user is this way constantly warned ([⋈]).*

7.14.3. Event list of a selected pump

A chronological list of all the events occurred on the selected pump is displayed on the left (Fig 88 **A**, Fig 94).

i *An "event" is any information recorded by the pump regarding both the user actions and the device operativity.The kind and nature of the possible events depend mainly on the pump in use. See the pumps technical documentation for a more detailed description of the possible events.*

Fig 94 - Event list of a selected pump

The first line displays the date in which the events occurred (Fig 94 **A**). The following lines refer to the single events. The time of occurrence and a sintetic description are provided for every event.
The events highlighted red are alarms. The events highlighted yellow are warning messages.
The kind of messages displayed is variable because many of them are generated by the pump in use. See the pump technical documentation for a detailed description of these events. Some events are generated by the "Infusion" module. These are:

1) Lost Data – this message appears when some pump data are lost. When this message shows up, it is highly recommended to double check pump recordings (See, in the figure, the event recorded at 12.16).

2) Pump is changed – this message appears when a pump is changed in a certain tile. The message shows the serial number of the pump that was removed and the serial number of the newly inserted pump. (See, in the figure, the event recorded at 11.31: the message informs that pump n. 8001-08930 was removed and was replaced with pump n. 8003-07807).

3) Timeout, pump is disconnected – this message appears when the module doesn't receive any data from a given pump for a certain time span (the time span can be configured, see the Technical Manual for details). In this case the system assumes that the pump is disconnected and informs us with this message. It is recommended to double check the correctness of recorded data after the message appears.

4) Bolus - This message appears whenever a bolus is administered to a patient. In this case the event is shown on two lines: the first line (grey) shows that a bolus was administered and displays the drug amount; the second line indicates infusion speed, duration and bolus mode. See, in the figure, the lines regarding the event recorded at 3.46 pm.

! *The event list refers to the association of a given pump with a specific drug. Therefore, if a new drug is associated to a given pump, the event list starts all over again. The new association is a new entity for INFUSION. If the former drug is later associated with the same pump once again, the history of this association (the former event list) will be shown again.*

Click on the events list to display a graphic menu that can be used to operate on the list (Fig 95).

Fig 95 - Graphic menu

The buttons on the menu can be used to perform different actions.

The **Scroll up** button scrolls the list up.

The **Scroll down** button scrolls the list down.

The **Show alarms** button displays the alarms only.

The **Show bolus** button displays the boluses only.

The **New event** button makes it possibile to insert a manual note (see paragraph 7.15 for the detailed procedure).

The **Show messages** button displays the messages only.

The **Delete** button deletes all the events displayed.

The **Show user** button displays the user notes only.

The **Show all** button displays the events full list back.

The **Close** button closes the graphic menu.

7.14.4. Pump buttons and on-line help

The "Pump detail screen" displays, on the top left corner, an image of the selected pump and an image of the infused drug (Fig 96).

i

Images are available only for certain pump models and only for certain drugs. It is possible to upload images and the related on-line help pages. Contact the system administrator for more information.
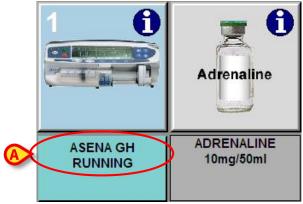
Fig 96 Pump-button

The button placed beneath the pump image (Fig 96 **A**) displays the pump name and the pump model. The buttons colour also provides information on the pump status. The meaning of the buttons colour is explained in paragraph 7.10.1.

In Fig 96 **A**, for example, the button specifies that the pump in use is an "Asena GH" and that the pump status is "Running".There are five possibile statuses:

1- "Running" – the pump is infusing (light blue);

2- "On hold" – the pump is paused (grey);

3- "Bolus" – a bolus is being administered on the pump;

4- pump in warning state (yellow - Fig 97 **A**)

5- alarmed pump (red - Fig 97 **B**);

In the last two cases the button can be clicked to display a help page regarding the specific warning/alarm.
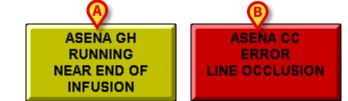
Fig 97 - Pump buttons (alarmed - right, red - or in warning state - left, yellow).

In Fig 97 **A** the button informs us that the pump is providing a warning message ("near end of infusion").

In Fig 97 **B** the button informs us that the pump is alarmed (alarm "line occlusion").

Click the pump button to display detailed information on the specific alarm or warning (Fig 98).

Fig 98 - On-line help

> **WARNING!**
>
> **DIGISTAT® "Infusion" is <u>NOT</u> a "Distributed alarm system", as described in the EN 60601-1-8 regulation. Alarms are not visible in all conditions and they lack sound. Also, they appear with a one minute delay.**

> **WARNING!**
>
> **Alarms must be used for documentation only**
>
> **DIGISTAT® "Infusion" must neither be used as an alarm system nor should it influence the use of pumps.**

7.14.4.1. Pumps and drugs on-line help

Click the buttons displaying the pumps and drugs photographs (Fig 96) to access the available on-line documentation on the pump in use and the infused drug. See Fig 23 for an instance.
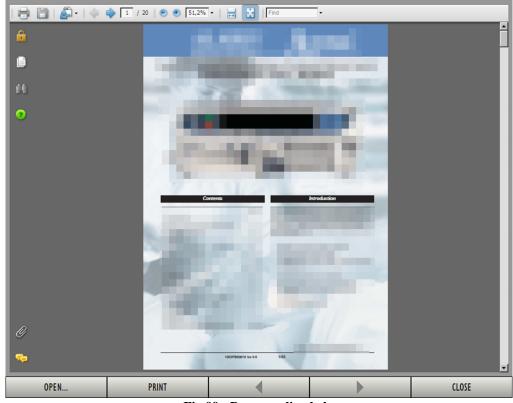
Fig 99 - Pump on-line help

On the command bar (Fig 100),

Fig 100

- The **Open…** button makes it possible to open other documents (if the user has the required permissions);

- the **Print** button prints the currently displayed document;

- the **<** and **>** buttons display either the previous or the next page of the document;

- the **Close** button closes the on-line help.

! *Always check the correctness and the release date of the information provided by every document. Read the issue-related notes at the end of each document.*

7.15. How to add an event manually
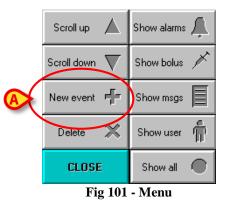
The present paragraph explains how to add an event manually to the list of events described in paragraphs 7.13.1 e 7.14.3. The procedure is the same both for the single pump event list (paragraph 7.14.3) and for the general list of all the pump events (paragraph 7.13.1).
To add an event to the single pump events list it is necessary to access the "Pump detail" screen (Fig 88) and click the event list on the left of the screen (Fig 88 **A**).
To add an event to the general list of all the events it is necessary to access the "Infusion history" screen (Fig 82) and click the event list on the left of the screen (Fig 82 **A**). To add an event,

➢ click the event list on the left of the screen.

The following menu is displayed (Fig 101).

Fig 101 - Menu

➢ Click the **New event** button (Fig 101 **A**). A virtual keyboard appears (Fig 102).

Fig 102 - Virtual keyboard
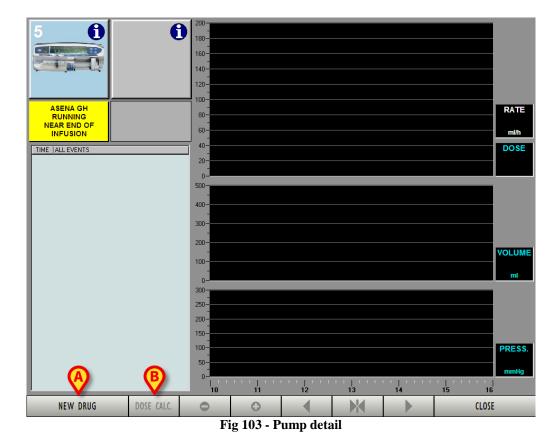
➢ Type the event description using the virtual keyboard (Fig 102 **A**).

➢ Click the **Ok** button (Fig 102 **B**).

The event is this way added to the list, in bold characters.

7.16. Manual pump-drug association

Certain pump models provide the "Infusion" module with information regarding the infused drug as, for instance, the drug name and the drug dose rate. When this is the case "Infusion" displays these data automatically on the different screens.

Other pump models don't do that. In these cases the "Infusion" module cannot display those parameters unless they are manually specified by the user. I.e. the user must associate a pump and a drug. To select a drug and associate it to a certain pump,

> access the "Pump detail" screen (Fig 103).

Fig 103 - Pump detail

> click the **New Drug** button (Fig 103 **A**).

The following screen opens (Fig 104).

Fig 104 - Manual pump-drug connection

The screen contains the list of all the selectable drugs (configurable).

➢ Click the button corresponding to the drug that you want to select.

The button is highlighted yellow (Fig 105 **A**). If available by configuration, an image of the selected drug appears on the top-right corner of the screen (Fig 105 **B**). The image can be clicked to access a document containing information on the drug.

Fig 105 - Drug selected

The "Drug amount" field (Fig 105 **C**) and the "Solution volume" field (Fig 105 **D**) display the default values defining the drug concentration in the syringe. To edit the "Drug amount" and the "Solution volume",

> ➤ use the keypad shown in Fig 106.

Fig 106 - Keypad

i | *The key* $\boxed{C}$ *in the keypad has a dual function. Click it once to enter a decimal separator; click it again to reset the field.*

After editing these values

> ➤ click the **Ok** button on the command bar.

The drug is this way linked to the specific pump. On the "Patient station" screen (Fig 67) the drug name is displayed on the pump-button. The name, being the drug manually inserted, is <u>underlined</u> (Fig 107).
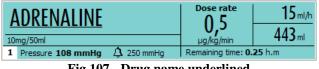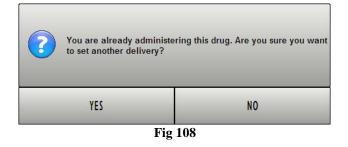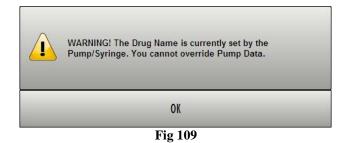
Fig 107 - Drug name underlined

If you select a drug that is already linked to another syringe, a warning message appears requesting a confirmation (Fig 108).

Fig 108

You cannot manually link a drug to a syringe that is already connected to another drug. The system provides a specific message when the user tries to perform this kind of action

Fig 109

7.17. Dose Calculator

The "Dose calculator" (Fig 110) is a tool that converts the drug dosage into the solution's infusion velocity (ml/h). This facilitates the pump-setting procedures on those pumps lacking the automatic dose-infusion velocity conversion.

> **!**
>
> *If the pump implements the automatic conversion function, it is to be preferred to the DIGISTAT® dose calculator.*
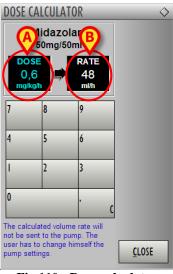
Fig 110 - Dose calculator

The "Dose calculator" only works if you manually link a drug to a pump.

After the pump-drug manual connection (se paragraph 7.16 for the procedure), if you want to calculate the infusion velocity it is necessary to

➢ click the [DOSE CALC.] button on the "Pump detail" screen (Fig 103 **B**).

The calculator shown in Fig 110 appears.

➢ Use the keypad to specify the dose.

The dose appears on the display indicated in Fig 110 **A**.

The corresponding velocity in ml/h is automatically calculated and appears on the display placed nearby (Fig 110 **B**).

> **!**
>
> *WARNING!*
>
> *The "Dose calculator" is just a help for converting drug velocity to solution velocity.*
>
> *The "Infusion" module does <u>NOT</u> set the pump infusion velocity automatically.*
>
> *The User must check all calculation results and then manually set the pumps.*

7.18. Pump log print report

To print the connected pumps log,

➢ click the **Menu** button on the DIGISTAT® Control Bar (Fig 111).

Fig 111 - Control Bar

The following window opens (Fig 112).

Fig 112 - Main menu

➢ Click the **Patient Reports** button (Fig 112 **A**). The following menu opens (Fig 113).

Fig 113 - Patient reports

The number and the type of buttons on the "Patient reports" menu depend both on the DIGISTAT® modules installed and the configuration in use. When the "Infusion" module is installed the **Pump Log** button is on the menu.

➢ Click the **Pump Log** button (Fig 113 **A**). The following window opens (Fig 114).

Fig 114 - Print options

➢ Click the buttons on the left to select the information to be printed (alarms, boluses, messages, user notes, all).The buttons corresponding to the chosen options appear as selected. Multiple selection is enabled (Fig 115 **A**).
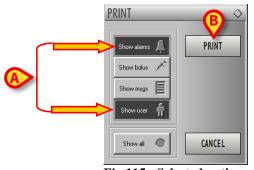
Fig 115 - Selected options

➢ Click the **Print** button (Fig 115 **B**). A print preview is this way displayed. The system's print functionalities are described in paragraph 6.8.2.

7.19. Alarms and warnings display on Control Bar

The occurrence of pump alarms and warnings is notified on the DIGISTAT® Control Bar (Fig 116).

Fig 116 - Control Bar

The button circled in Fig 116 can be used as a display to indicate the possible alarms and warnings occurring on one or more infusion pumps. This notice is always visible, independently from the DIGISTAT® module currently selected. The User is this way informed on the status of the pumps at all times, also if the "Infusion" module is not currently displayed.

If neither alarms nor warnings are activated, the button shows the DIGISTAT® logo and the ASCOM UMS website address. This is the case shown in Fig 116.

If a pump alarm is activated, the button turns red and specifies the number of the alarmed bed (Fig 117).

Fig 117 - Bed 2 alarm

In case of warning, the button turns yellow and specifies the number of the relevant bed (Fig 118).

Fig 118 - Bed 1 warning

If there is relevant information available about one or more pumps, the button turns blue and specifies the number of the corresponding bed (Fig 119).

Fig 119 - Info available

Priorities in the kind of information displayed on the button are set as follows:
- the button shows the latest alarm, until alarm conditions are removed;
- the button shows the latest warning, if there are no alarms;
- the button shows the latest information provided, when there are neither alarms nor warnings;
- the button shows the DIGISTAT® logo and the ASCOM UMS web address, if there are neither alarms, nor warnings, nor information available.

The button is clickable: click the button to access a page containing the full list of current alarms, warnings and information with all related details (Fig 120).

Fig 120 - Alarms and warnings list

Click the arrow button on the right of the screen (Fig 120 **B**) to directly access the "Patient station" screen (Fig 67 - this screen shows the details of all mentioned pumps).

i *The screen accessed by the* [→] *button depends on the configuration in use. The destination screen can be decided by the user. Contact your system administrator for more information.*

Click the check button on the right of an information line ([✓] - Fig 120 **B**) to accept the information and make it disappear.

i *An on-line guide explaining all the possibile alarms and warnings is available.*

To access this guide click the pump button on the "Pump detail" screen. See paragraphs 7.14 and 7.14.4).

! **WARNING!**

DIGISTAT® "Infusion" is <u>NOT</u> a distributed alarm system, as described in EN 60601-1-8 regulation. Alarms are not visible in all conditions and they lack sound. Also, they appear with a one minute delay.

!

> **WARNING!**
>
> **Alarms must be used only for documentation purposes.**
> **DIGISTAT® "Infusion" must not be used as an alarm system, nor should it influence the use of pumps.**

7.20. Switching from Standard Time to Daylight Saving Time

This paragraph explains the way information is displayed on the module's charts when the time switches from standard time to daylight saving time and vice versa (see Fig 92 and Fig 82 for chart examples).

When switching from standard time to daylight saving time, the time scale on the chart starts with the standard time. Also, a red label appears, indicating "Standard Time".

When switching from daylight saving time to standard time, the times scale on the chart starts with the daylight saving time. Also, a red label appears, indicating "Daylight time".

When the moment of "switch" is not displayed anymore, the chart goes back to the usual display mode.

8. Enclosed Documentation

The following documents are enclosed

1. *End-user licence agreement*. To be fully read, signed and sent to ASCOM UMS

END-USER LICENSE AGREEMENT
FOR "DIGISTAT®", A ASCOM UMS PRODUCT

IMPORTANT—READ CAREFULLY. This ASCOM UMS End-User License Agreement ("Contract") is a Contract between the User (either a natural or corporate person) and the Firm ASCOM UMS S.r.l. unipersonale ("ASCOM UMS") for the "DIGISTAT®" System produced by ASCOM UMS. The product "DIGISTAT®" ("PRODUCT") comprises computer software and may include associated storage media, printed materials and "online" or electronic documentation. The PRODUCT also contains updates, if any, and integrative components for the original PRODUCT supplied by ASCOM UMS. Any software supplied with the PRODUCT and associated with a separate End-User License is licensed to the User in compliance with the said Contract's terms and conditions. By installing, copying, downloading, viewing or otherwise using the PRODUCT, the User agrees to be bound by the terms of this Contract. If the User does not agree to the terms and conditions of this Contract, he is not authorized to use the PRODUCT and must immediately stop using it.

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    - **Separation of Components.** The PRODUCT is licensed as a single product. Its component parts may not be separated for use on more than one computer.

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    - **Sub-license and Rental.** The User may not rent, sub-license, lease, or lend the PRODUCT.

    - **Technical Assistance Service.** ASCOM UMS may provide the User with a Technical Assistance Service for the PRODUCT ("Technical Assistance Service"). Use of the Technical Assistance Service is governed by ASCOM UMS policies and programs, which are provided on request. Any additional software code provided to the User as part of the Technical Assistance Service shall be considered as part of the PRODUCT and subject to the terms and conditions of this Contract. Concerning technical information the User may give ASCOM UMS during the Technical Assistance Service, ASCOM UMS may use such information for its business purposes, including product support and development.

- **Termination.** Without prejudice to any other rights, ASCOM UMS may terminate this Contract if the User fails to comply with the terms and conditions of the same. In such an event, the User must destroy all copies of the PRODUCT and all its component parts.

3. **UPGRADES** - If the PRODUCT is labeled as an upgrade ("Upgrade"), the User must be properly licensed to use a product identified by ASCOM UMS as being eligible for upgrades required to use the PRODUCT. A PRODUCT labeled as an upgrade replaces and/or supplements (and can deactivate) the PRODUCT that forms the basis for your eligibility for the upgrade. The User may use the resulting upgraded PRODUCT only in compliance with the terms of this Contract. If the PRODUCT is an upgrade for a component of a software program package licensed to the User as a single PRODUCT, the PRODUCT may be used and transferred only as part of that single PRODUCT package and may not be separated for use on more than one COMPUTER.

4. **COPYRIGHT** - PRODUCT rights and copyright (including, but not only, every image, photo, animation, video, audio, music, text and "applet" integrated with the PRODUCT), annexed printed material and any copy of the PRODUCT are the property of either ASCOM UMS or its suppliers. Intellectual property title and rights on the contents the User may access by using the PRODUCT are the property of the respective owners and can be protected by copyright or by other laws and treaties on intellectual property. This Contract does not grant the right to use such contents. If the PRODUCT contains documentation supplied only in electronic format, the User is authorized to print a copy of the abovementioned electronic documentation. The User may not copy the printed material annexed to the PRODUCT.

5. **BACKUP COPY** - After installing a copy of the PRODUCT in compliance with the terms of this Contract, the User may preserve the original media on which ASCOM UMS supplied him the PRODUCT only for backup or storage purposes. If he needs the original media to use the PRODUCT, he may create only one copy of the PRODUCT for backup or storage purposes. Except for this Contract's express specifications, the User may not run copies of the PRODUCT or of the annexed printed material for other purposes.

LIMITED WARRANTY
ASCOM UMS warrants for a period of twelve (12) months from the date of delivery of the PRODUCT to the User that: (a) the media on which the PRODUCT is supplied shall be free of material and of manufacturing defects under normal conditions of use; and (b) the PRODUCT shall perform substantially in accordance with its published specifications.
Except for the above specifications, the PRODUCT is supplied "just as it is". This Limited Warranty shall apply only to the initial User/licensee.
The sole obligation of ASCOM UMS under this warranty shall be, to the discretion of ASCOM UMS, either to repair or replace the PRODUCT or to refund the price paid for the purchase of the PRODUCT, provided that the defect of the PRODUCT is technically attributable to ASCOM UMS and that ASCOM UMS has authorized its return.
Responsibility for loss or damages suffered by the PRODUCT during its shipment in connection with this warranty shall vest on the party shipping the PRODUCT.
ASCOM UMS does not guarantee that the PRODUCT will be free from errors or that the User can operate the system without problems or interruptions.
Furthermore, due to the ongoing development of intrusion methods and attacks of networks, ASCOM UMS does not guarantee, notwithstanding its performance of the due checks and its preparation of upgrades based on the best knowledge and experience in existence from time to time, that the PRODUCT or other equipment systems, or the network itself on which the PRODUCT is used, will be invulnerable to intrusions and attacks.
It is the responsibility of the User to install and to maintain software means for the protection against intrusions or attacks (i.e. antivirus, firewall, etc.)

Limitations. This warranty does not apply if the PRODUCT: (a) has been installed, repaired, maintained or in any other way altered by persons not authorized by ASCOM UMS, (b) has not been used in compliance with ASCOM UMS instructions, (c) has been subjected to abnormal physical or electronic stress, improper or negligent use or accident, or (d) is granted only for pilot testing, evaluation, testing, demonstration purposes or free of charge, for which ASCOM UMS receives no payment as license fee.

Limitation of Liability. IN NO CASE WILL ASCOM UMS OR ITS SUPPLIERS BE HELD RESPONSIBLE FOR THE LOSS OF INCOME, PROFIT OR DATA OR FOR SPECIAL, INDIRECT, SUBSEQUENTIAL, INCIDENTAL OR PUNITIVE DAMAGES EITHER CAUSED, TRIGGERED OR RESULTING FROM THE USE OR INABILITY TO USE THE PRODUCT, EVEN IF ASCOM UMS OR ITS SUPPLIERS WERE INFORMED ABOUT THE POSSIBILITY THAT SUCH DAMAGES COULD OCCUR. Under no circumstance will either ASCOM UMS or its suppliers' responsibility cover compensation exceeding the price paid by the Client. UNDER NO CIRCUMSTANCE WILL THESE GENERAL CONTRACT CONDITIONS INVOLVE ACKNOWLEDGEMENT OF UMS OR ITS

SUPPLIERS' RESPONSIBILITY IN CASE OF DECEASE OR PERSONAL LESIONS RESULTING FROM THE USE OF THE PRODUCT. The said limitations shall apply even if this warranty fails to meet its essential purpose. THE ABOVEMENTIONED LIMITATIONS SHALL NOT APPLY IN THE STATES AND IN THE JURISDICTIONS WHICH DO NOT ALLOW LIMITATION OR EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGE.

This Contract and the warranty concerning the PRODUCT shall be subject to the Italian law. The United Nations Convention on the International Sales of Goods shall not apply. Should one or more provisions of this Contract be held as null or void by a Court of competent jurisdiction, the remaining provisions shall be considered as fully valid and effective. Except for what expressly provided for herein, this Contract constitutes the complete agreement between the parties on the license of the PPRODUCT and replaces any other conflicting or additional provision of the purchase order. The date of shipment of the PRODUCT by ASCOM UMS is recorded in the shipment documentation or in the PRODUCT delivery documentation.

INTENDED USE
The PRODUCT is a medical device composed only by software that is licensed exclusively to create an electronic copy of certain patients' data and recording of the unit's activity in order to provide:
- electronic documentation of the activity in the unit;
- information on the use of human resources and materials;
- deferred statistics for quality control;
- support to the diagnostic and therapeutic activities, within the limits of what specified herein below;
- support to the management of alarm coming from the connected medical devices;
- display of information to remote users for non-clinical purposes.

The PRODUCT is not aimed to administer or exchange energy to or from the human body or to transmit medicines, liquids or other substances to or from the human body.
The PRODUCT is not aimed to allow direct diagnosis or monitoring of vital physiological processes (by way of example cardiac performance, respiration or activity of CNS) and therefore the therapeutic or diagnostic procedure or maneuver, if any, deemed necessary by the user, shall be performed by him/her solely as consequence of the direct examination and of the scientific correspondence of the specific case with the data obtained through the use of the PRODUCT.

Based on the above features, the PRODUCT, even if designed to provide the maximum reliability, cannot guarantee the perfect correspondence of the provided data, nor can it substitute the direct verification of the same by the user.
In any case, the PRODUCT must be used in compliance with the safety procedures reported in the user manual accompanying the Product.

The PRODUCT can be used close to the patient and to the medical devices in order to speed up the data entry, to decrease the chances of errors and to allow the user to verify the correctness of the data through the immediate comparison with the actual data and activities.

The user must implement adequate procedures to guarantee that potential errors occurring in the PRODUCT are promptly detected and corrected and do not constitute a risk to the patient and the operator.
These procedures depend on the configuration of the Product and the method of use preferred by the user.

Only printouts that are signed (with digital signature or autograph) by authorized physicians or medical operators shall be considered valid clinical documents. In signing the aforementioned printouts, the user certifies that he/she has checked the correctness and completeness of the data present in the document.
Only these signed documents are a valid source of information for diagnostic or therapeutic processes and/or procedures.

The PRODUCT may provide, depending on the modules installed, access to information on drugs. This information is taken from official publications. It is responsibility of the user to periodically verify that this information is current and updated.

The PRODUCT can be connected to other medical devices in order to import data therefrom but is not aimed to control, monitor or influence the performances of the medical devices with which it is connected.

The PRODUCT may provide, depending on the modules installed, visual and acoustic indication of the status and operating conditions of the approved devices connected to the PRODUCT thus providing a support to the management of the alarms and to the planning of nursing workflow.

The information displayed by the PRODUCT is not meant to replace or replicate the original display of data, messages and alarms of the medical devices. The PRODUCT is not intended to control, affect or modify the normal use of those devices.

The PRODUCT does not substitute a "Nurse Call" system and it is not a "Distributed Alarm System" (as defined by the regulation EN 60601-1-8). Therefore, it must not be used in place of the direct monitoring of the alarms generated by the medical devices. This limitation is due, among the other reasons, to the specifications and limitations of the communication protocols of the medical devices and to the nature and limitations of the hospital local network.

INTENDED USERS
The PRODUCT must be used by properly trained physicians, nurses, administrative staff, system administrators, biomedical engineers and technicians.
Use of the system must be granted, by means of specific configuration of the passwords and active surveillance, only to trained personnel in possession of the professional qualifications to correctly interpret the information supplied and to implement the appropriate safety procedures.

Limited parts of the PRODUCT may be used by other categories of users for non-clinical purposes, to access a limited set of information and without the ability to alter existing information or enter new ones. For example patient's family member can access information of their relative.

INTENDED ENVIRONMENT
The PRODUCT can be used inside medical facilities in intensive care units, wards, operating blocks, operating theatres and other departments.

The PRODUCT is software-only medical device that can be run on a computer connected to the hospital local network and must be adequately protected against cyber-attacks.
The PRODUCT must be installed only on recommended PCs and/or operating systems.

In using the PRODUCT, the user declares to have understood and accepted the characteristics, limits and responsibilities contained herein and in the user manual.

CONFLICTING TERMS
Should the User and ASCOM UMS enter into an agreement for the supply and/or the license of the PRODUCT containing terms different from those contained herein, the terms of that agreement shall prevail on the terms of this Contract which are not compatible with them, it being understood that all the remaining terms of this Contract shall remain fully valid and the enforceable.

* * * * *

Should you have any questions concerning this End-User License Contract, please contact the ASCOM UMS representative in your area or write to ASCOM UMS srl unipersonale, Customer Service, Via di Mucciana 19, 50026 San Casciano in Val di Pesa (Firenze), Italy (or use contacts listed below).

Date   Signature

SPECIFIC ACCEPTANCE OF CERTAIN PROVISIONS IN THIS CONTRACT

IMPORTANT—READ CAREFULLY

In compliance with articles 1341 and 1342 of the Italian Civil Code or to any other equivalent provision applicable in any other jurisdiction, I hereby declare that I have read, fully understood and specifically accept the following clauses of the ASCOM UMS End-User License Contract concerning the product "DIGISTAT®":

- COPYRIGHT
- LIMITED WARRANTY
- LIMITATIONS
- LIMITED LIABILITY

- INTENDED USE
- RESTRICTIONS.

Date   Signature

9. Contacts

- **ASCOM UMS srl unipersonale**

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Tel. (+39) 055 0512161
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- **Technical assistance**

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- **Sales and products information**

sales@unitedms.com

- **General info**

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Appendix A: glossary

The use of DIGISTAT® systems requires a basic knowledge of the most common IT terms and concepts. In the same way, the comprehension of this manual is subject to such knowledge. However, in order to improve access to the document and clarify the use of certain terms relating to the DIGISTAT® systems, we have included a glossary for quick (and obviously concise) reference for the clarification of terms.

Remember that the use of DIGISTAT® systems must only be granted to professionally qualified and properly trained personnel.

! *Use of DIGISTAT® systems must only be granted to professionally qualified and properly trained personnel.*

ALARM MESSAGE

An "Alarm message" coming from any one of the devices in use warns the user about an immediate danger for the patient or the users of the device. Alarm messages are of vital importance and must be managed with the highest priority.

BUTTONS

❖ **Function buttons**

Buttons which, when clicked, make it possible to perform different operations or access different functions of the software. In Figure 2 the active function buttons are **New**, **Show**, **Delete**, **Change** and **Reports**.

❖ **Active button**

Button which, in the context present, can be clicked and makes it possible to perform operations or access particular functions.

❖ **Inactive button**

Button which, in the context present, cannot be clicked.

❖ **Make button active**

Perform an operation which means that a certain button becomes clickable.

CHECKBOX

Small box, usually square, which can be clicked to select an option. It can also be called a "selection box".
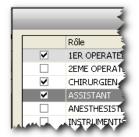

Figure 1 - Checkbox

❖ **Selection box**

See "Checkbox".

CLICK

Move the mouse over a specific object and press one of the buttons (the left one unless otherwise specified).

❖ **Double Click**

Click twice in rapid succession.

CLIENT

A computer connected to a server (see) in an information network that requests the server for one or more services.

COMMAND BAR

Term used to generically indicate a portion of screen containing different function buttons (Figure 2).
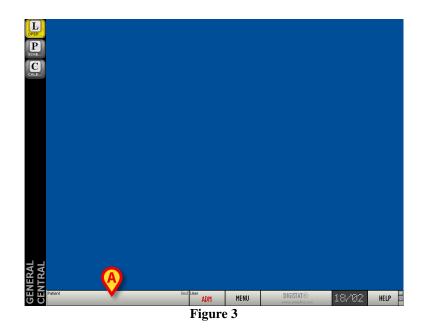
| NEW | SHOW | DELETE ▲ | | CHANGE ▲ | | LOCK ▲ | REPORTS ▲ | | |

Figure 2

CONFIGURATION

The configuration of a software product is a series of operations and choices which determine the general set-up of the software and its operation and appearance. The configuration is not to be performed by the user (see) but by a system technician/administrator (see).

CONTROL BAR

The external portion of each page on the DIGISTAT® environment, comprised a control bar at the bottom and a side control bar. "Control Bar" is used to manage, among other things, access to the system (login - see), exit from the system (logout - see) and selection of the module required.

Figure 3

CURSOR

Moving mark indicating a position. It is often a short blinking vertical line indicatine where the user is inserting data.

DATABASE

A database is a collection of data organized so that it is easily accessible. The data in a database can be consulted, edited and updated.

DEFAULT

A value is classed as being "by default" when it is automatically used by the system if the user does not specify any other values.

DIGISTAT®

❖ **DIGISTAT® Module**

Software designed and developed to offer a solution to a specific series of needs and problems.

❖ **DIGISTAT® System**

A series of DIGISTAT® modules that work in an integrated, synchronized and interdependent way.

❖ **DIGISTAT® Environment**

The combination that encompasses and characterizes all DIGISTAT® modules and systems

DRAG

To "drag an item" means to move to an object with the cursor of the mouse, click and, keeping the button pressed, move the cursor across the page. The object moves with the cursor. The "dragged" items stops when you release the left button.

DRAG AND DROP

"Drag and drop" is the act of dragging an item to move it to a different point of the screen (see "drag").

EDIT

Modify the data on a screen.

❖ **Edit Mode**

A screen is said to be in edit mode when it can be edited by the user.

❖ **Edit state**
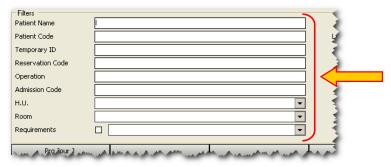
See "Edit Mode".

EVENTS

In the OranJ system, an event is a significant occurrence in the operating process which must be documented. The number and kind of possible events depend on the user needs and are set by configuration.

FIELD

Portion of screen in which you can enter data (digits, letters or both - Figure 4).

Figure 4 - Fields

❖ **Free field**

A field is "free" when you can enter any type of text or digit and it is not restricted to a series of pre-defined options.

LOCATION

The term "Location", when used within the DIGISTAT® environment, indicates the area (fo instance a department, or a ward) for which the system is configured.

LOG

Item recording in real-time and chronologically certain operations defined as "meaningful".

LOGIN (procedure)

The act of accessing (by means of username and password - see) the system.

❖ **Logout**

The act of exiting the system.

MARKER

In the OranJ system, markers are events which are defined as characterizing every operating event. The number and nature of markers, as well as the logic of succession, can be configured to suit the user's needs. The OranJ system envisages 6 markers as standard:

1. Entrance to the block (the patient has undergone block check-in)

2. Entrance to the room (the patient has undergone room check-in)

3. Skin incision

4. Suture

5. Exit from the room (Operation done)

6. Exit from the block

MESSAGE CENTER

A software that manages the messages and the licences within the DIGISTAT® environment (see). The use of "Message Center" is reserved to the system administrators (see).

PAGE

Term used to indicate what can be seen on the screen in a specific moment.

PASSWORD

A password is a sequence of numbers and/or letters used to access a protected area. It should only be known to the user concerned.

PATIENT

❖ **Admitted Patient**

Within the DIGISTAT® environment, the expression "admitted patient" means that the patient has been admitted to the hospital structure. The admission of a patient involves the assignment of a bed and a location. When a patient is admitted, the number of his/her bed appears alongside his/her name on the **Patient** button on the ControlBar (see Figure 3 **A**).

❖ **Patient registered in the database**

The expression means that the name and data of a patient appear in the archive that we are consulting.

❖ **Patient Selected**

Within the DIGISTAT® environment, when the patient is selected, his/her name appears on the **Patient** button on the ControlBar (see Figure 3 **A**).

POP-UP

Window containing a message for the user (see) which appears following the performance of any operation.

QUERY

A database interrogation performed to obtain a specific set of data.

RADIOBUTTON

Selection tool enabling to select one among many available options and having the feature: . The selection of an option excludes the other options. See, for instance, the radiobuttons shown in Figure 5.

Figure 5

READ-ONLY

This expression means that a series of data cannot be edited by the user.

RECORD

A series of data organized rationally and composed of coherent items. An example of a record could be the patient data composed of name, last name, address, code, etc.

RESERVE

In the OranJ and Smart Scheduler systems, reserves are those operations which have not been assigned a time, block or room but which have been included in the daily schedule.

The "reserve" concept has been introduced to enable the immediate scheduling of emergency operations which become necessary from one minute to the next. The criterion observed for these urgent cases is "as soon as a place is free, the operation goes ahead".

SCREEN

Term used to indicate what can be seen on the computer screen in a specific moment.

SERVER

An informatic component (a computer, for instance) providing services to other components (tipically named "clients" - see) in an information network.

SLOT

In the Smart Scheduler system, the term "slot" indicates the range of time in which an operating room is available to a hospital unit for scheduling. From the graphic point of view, on the scheduling grid, the slot is one of the ochre yellow colored areas (Figure 6).

Figure 6 - slot

STATE (of the operation)

In the OranJ and Smart Scheduler systems, the "operation state" is the "stages" in which an operation is, in relation to the process necessary to its completion. There are 6 visible operation states in the two systems. These are

1) Foreseen – It has been decided that an operation must be performed for a specific patient.

2) Requested – It has been declared that the operation can be included in the schedule of the structure where you are operating, therefore its scheduling has been requested.

3) Scheduled – The operation has been included in the schedule of the structure where you are operating. The location and time of the operation have been decided.

4) Ready - The patient has undergone check-in and is inside the surgical block.

5) In progress – The patient has undergone room check-in. The operation is being performed.

6) Completed - The patient is out of the operating room. The operation is over.

The Smart Scheduler system manages operations up to scheduling, i.e., in the three states described here. The OranJ system manages the operations from scheduling up to completion (the last 4 states). Within OranJ the states are characterized by different colors. The "scheduled" state is light gray; the "ready" state is green; the "in progress" state is blue; the "completed" state is dark gray.

SYSTEM ADMINISTRATOR

Specialized technician responsible for managing the IT system used. This is the first person to contact if you have any kind of problem.

TAB

Tabs like those of an address book, which you click to access a different page (Figure 7).

Figure 7 - Tab

TOOLTIP

A tooltip is an area containing information about one of the items displayed on screen. The tooltip appears when the mouse pointer passes over the specific item (clicking is not necessary).
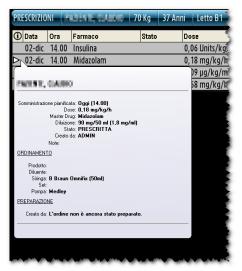
Figure 8 - Tooltip

TOUCH SCREEN

Particular type of screen in which the operations usually performed using the mouse are performed by touching the surface of the glass.

USER

The person using the system.

❖ **User Connected**

See "User Logged In".

❖ **User Logged In**

User who has accessed the system (login - see) by entering his/her username and password and is therefore authorized to access some of its functions. The user logged in is also known as the "user connected".

❖ **User Logged-out**

User who has not accessed the system (login) or who has exited the system (intentionally or otherwise) and cannot therefore access his/her functions without logging in again.

USERNAME

The name which identifies the user of a system. It can be composed of letters, numbers or both together.

WARNING MESSAGE

A "Warning message" warns the user that an ongoing situation or procedure could lead to a danger for the users or the patient. Warning messages are very important and must be managed as soon as possible.

WORKSTATION

In this manual the word "workstation" indicates the computer on which the software or part of it is installed.

Appendix B – Residual risks

The risk management process has been actualized for the DIGISTAT® medical device according to the relevant technical regulations (EN14971, EN62304, EN62366). All the possible control measures have been defined to reduce all residual risks to the minimum level and make them this way acceptable considering the benefits brought in by the product. The total residual risk is also accettable if compared to the same benefits.

The risks listed below have been taken into consideration and reduced to the minimum level possible. Yet, given the inherent nature of the "risk" concept, it is not possible to completely remove them. It is therefore necessary, according to the regulations, let the users know each and every possible risk (even though remote).

- Impossibility in using the system or some of its functionalities, which can cause delays and/or errors in the therapeutic/diagnostic actions.
- Slowdown of device performance, which can cause delays and/or errors in the therapeutic/diagnostic actions.
- Circulation of users' and/or patients' sensible data.
- Unauthorized actions carried out by users, which can cause errors in the therapeutic/diagnostic actions and in the attribution of responsibilities of these actions.
- Wrong data insertion and display, which can cause errors in the therapeutic/diagnostic actions.
- Display of either partial or hard-to-read information, which can cause delays and/or errors in the therapeutic/diagnostic actions.
- Attribution of patient data to the wrong patient (patient exchange), which can cause errors in the therapeutic/diagnostic actions.
- Accidental data deletion, resulting in loss of data, which can cause delays and/or errors in the therapeutic/diagnostic actions.

RISKS RELATING TO THE HARDWARE PLATFORM IN USE

- Electric shock for the patient and/or the operator, which can cause injury and/or death for the patient/operator.
- Hardware components overheating, that can cause injury for the patient/operator.
- Infection contraction for the patient/operator.