DITTEL AE6000UP MARPOSS

Installation, User and Programming Manual

Manual code No.:

D2DSAE00GF

MARPOSS

AE6000 UP PB

AE6000 UP PN

MANUFACTURER	MARPOSS S.p.A.
ADDRESS	Via Saliceto, 13 - Bentivoglio (BO) Italy www.marposs.com
MODEL	AE6000 UP
COVERS DSCC SOFTWARE	Version 3.74 or later
COVERS MODULE SOFTWARE	Version 2.0
FUNCTION	AE Process Monitoring Module
MANUAL CODE	D2DSAE00GF
ISSUE	03/2024
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The information and descriptions contained in this manual are provided in good faith and **MARPOSS** declares that they are accurate at the date of publication. **MARPOSS** is not obliged to update the contents or to inform its customers of changes to the product.
The instructions contained in this document are intended for professional users who have a thorough working knowledge of the product in question.
Using the **MARPOSS** product for any purpose other than those described in this document, or carrying out any operation on it not described herein, shall invalidate any and all warranty agreements it may be covered by.
MARPOSS declines any responsibility for losses, damage or claims deriving from incorrect use of this manual. This manual, and all the information it contains, are protected under intellectual property rights legislation.

Original language Italian

CE	UKCA
This product conforms to the following directives: • 2014/30/EU EMC directive • 2011/65/UE RoHS & 2015/863/EU RoHS III The applicable standards are: • EN 61326 -1 (EMC) • EN 61010 - 1 (SAFETY) • EN IEC 63000 (RoHS)	This product conforms to the following UK regulations: • SI 2016/1091 The Electromagnetic Compatibility Regulations 2016 • SI 2012/3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 The applicable standards are: • EN 61326 -1 (EMC) • EN 61010 - 1 (SAFETY) • EN IEC 63000 (RoHS)

About the directive "**ROHS**" regulating the presence of certain hazardous substances in electrical and electronic equipment: http://www.marposs.com/compliance_detail.php/eng/rohs

RoHS

For information about possible use in Marposs products of materials coming from conflict areas, refer to:
http://www.marposs.com/compliance_detail.php/eng/conflict_minerals

INFORMATION FOR USERS

European Directive 2006/66/EC and United Kingdom regulations UK SI 2009/890 and UK SI 2008/2164
DISPOSAL OF EXHAUSTED REMOVABLE CELLS/BATTERIES

The crossed out wheelie-bin symbol printed on the battery, or its packaging, indicates that the cell or battery fall within the scope of the European Directive 2006/66/EC and UK regulations SI 2009/890 and SI 2008/2164, therefore it must be separated from the other waste products at the end of their working life. Correct waste separation and environmental disposal helps to prevent possible negative effects on the environment and human health and safety.
For Countries outside of the European Union and the United Kingdom (UK), collection and disposal must be carried out in compliance with the Standards in force or with other Laws of that Country regarding treatment of obsolete batteries.
For information about the type of used batteries and how to replace them without endangering the user, refer to the equipment instruction manual

INFORMATION FOR USERS

pursuant to the European Directive 2012/19/EU and UK Regulation SI 2013/3113 regarding waste from electrical and electronic equipment (RAEE-WEEE).

The crossed out wheelie bin symbol that appears on the product or its packaging indicates that the product must be disposed of separately from other waste materials at the end of its working life.

The manufacture shall be responsible for organizing and handling separate collection of the equipment described in this manual at the end of its working life. Users who wish to dispose of the equipment must contact the manufacture and follow the procedures implemented by the latter for the separate collection of the equipment at the end of its working life.

Sorting the equipment to be disposed of into its component materials before recycling, treatment and environmentally compatible disposal helps to prevent potentially harmful effects on health and the environment and favours re-use and/or recycling of these materials.

Illegal disposal of the product by the user is punishable by the application of fines or other penalties as defined by the applicable regulation.

CONTENTS

1 GENERAL WARNINGS

1.1 *Warnings for users*

This manual provides all the specific information necessary for knowledge and correct use of the Marposs equipment in your possession. The buyer must ensure that all personnel assigned to install, operate and service the equipment read this manual. The information contained in this manual is intended for use by the following categories of personnel:

- Marposs personnel, or personnel assigned by the manufacturer of the machine tool that will house the AE6000 UP (hereafter the “Customer”), who will be directly responsible for installing the equipment.
- Technical personnel employed by the end user (hereafter the “User”) who will be directly responsible for operating the Marposs equipment.
- Technical Personnel assigned by the User to carry out maintenance work on the production line where the AE6000 UP is installed.

The manual is an integral part of the equipment, therefore the user must ensure that it is always available and is kept good condition throughout the working life of the equipment. The liability of Marposs is limited to correct use of the AE6000 UP as defined in this manual and its attachments. Marposs shall provide the customer with a copy of this manual and its attachments. Preparations that are the responsibility of the Customer.

- Switch OFF the machine tool when installing or adjusting components of the Process Monitoring System. Be sure the machine spindle has come to a standstill before working on it. Secure the machine against unauthorized or accidental switching on.
- Do not put any solid objects or liquids such as water into the unit. In case of an accident cut off the power supply.
- Using the unit with any object inside may cause fire or electric shock.
- Do not remove the cover. Refer servicing to qualified personnel only.
- Do not pull or bend the power cable and the signal cables. Replace damaged cables right away. Unused ports and connectors must remain covered with protecting ESD caps.
- Only personnel ordered and instructed by the management may operate the AE6000 UP.

The customer shall:

- Correctly position the AE6000 UP on its own machine and secure it.
- Make the electrical connections.
- Setup the AE6000 UP

The User shall:

- Program the AE6000 UP
- Perform the routine and extraordinary maintenance operations.

The safety of any system that incorporates this device and its accessories is the sole responsibility of the system assembler.

1.2 *Testing and guarantee*

Materials are guaranteed against defects, with the following limitations:

- DURATION OF THE WARRANTY: the warranty covers the product and all repairs carried out on it during the standard guarantee period.
- SUBJECT OF THE WARRANTY: the warranty applies to the product or its parts marked with the serial number or other identification systems used by Marposs.

The above guarantee applies unless other agreements are reached between Marposs and the Customer.

1.3 *Requesting technical assistance and maintenance*

In case of failures or faults that require the intervention of Marposs personnel contact your local technical support centre (for a complete list, go to: http://www.marposs.com/worldwide_addresses.php/eng).

1.4 *How to order spare parts*

To order spare parts contact your closest Marposs centre (see: http://www.marposs.com/worldwide_addresses.php/eng).

1.5 *Original version*

This document was originally written in Italian. In case of any dispute arising from translation errors and inaccuracies, even where carried out by Marposs, the definitive version shall be in Italian.

1.6 *Authorised and unauthorised use*

1.6.1 *Intended use*

- Use the AE6000 UP exclusively to measure acoustic emission signals and to monitor grinding and dressing processes.
- Operate the Module in industrial environment only.
- The device is suitable for indoor use only.
- Operate the AE6000 UP device only with original Marposs accessories.
- Do not operate the device in explosive areas. Operation of the AE6000 UP in such an environment means an essential endangering of safety.
- Unauthorized modifications and changes of the system are forbidden. When replacing defective parts use only original spare parts or standard parts recommended by the manufacturer.

1.6.2 *Unauthorised uses*

Under no circumstance may the AE6000 UP be used for any purpose other than that for which it was designed. Any use that differs from the use described in this manual shall be considered unauthorised.
The following are also prohibited:

1. Modification of the original AE6000 UP configuration;
2. Connection of the AE6000 UP to power supplies other than those described in this manual;
3. Use the components for purposes not envisaged by Marposs;
4. Allow unauthorised personnel to carry out maintenance work on the system;
5. Removal of safety indications and warnings displayed on the equipment.

All modifications or maintenance operations not covered by the technical documentation shall be considered arbitrary. Marposs declines any responsibility for non-compliance with this requirement.

1.7 *Identification Labels and Pictograms*

Various different text formats were used when preparing this manual. Various safety warnings have been defined.

1.7.1 *Symbols used in the manual*

ATTENTION / WARNING
This type of note indicates a risk of damage to the electronic unit or other devices connected to it, or risk conditions for the operator or technician.

N.B.
Important information that may help the operator to use and understand the system is contained in boxes indicated by the letters “N.B.” in bold type.

ENVIRONMENTAL HAZARD
Recycle and/or dispose of in accordance with the applicable regulations in the destination Country.

CAUTION
Observe the procedures for handling devices that are sensitive to electro-static discharges. Failure to comply may cause malfunctions or damage the equipment.
For the AE6000 UP, this symbol is on the packaging of the I/O BOX (“3.6 Removing the AE6000 UP from its packaging” on page 16)

ELECTRIC SHOCK HAZARD
Dangerous voltages: There may be electric shock hazards when troubleshooting on live components.

GENERIC HAZARD
Warning sign that indicates the possibility of damage to things or a generic risk to people.
In the case of AE6000 UP, this symbol is associated with the rating IK, which means that the device has an impact protection level equivalent to 1 J, corresponding to a rating of IK06. If the glass is broken, use the appropriate safety gloves when handling the object and contact customer service in order to replace the equipment. The symbol is present both in the documentation and on the rear of the panel, in order to remind the user to consult the manual.

1.7.2 *Symbols present on the equipment*

Below there is a list of the pictograms on the device and referred to in the manual:

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1.7.3 *Plates/markings on the AE6000 UP and components*

The identification plate is positioned on the side part of the **AE6000 UP** device. The following information appears on the plate:

- The Marposs product identification CODE.
- The SERIAL N. of the individual **AE6000 UP** device.
- The CE mark.
- The UKCA mark.
- The MARPOSS Logo.
- The MADE IN ITALY mark.
- The MARPOSS QR code.

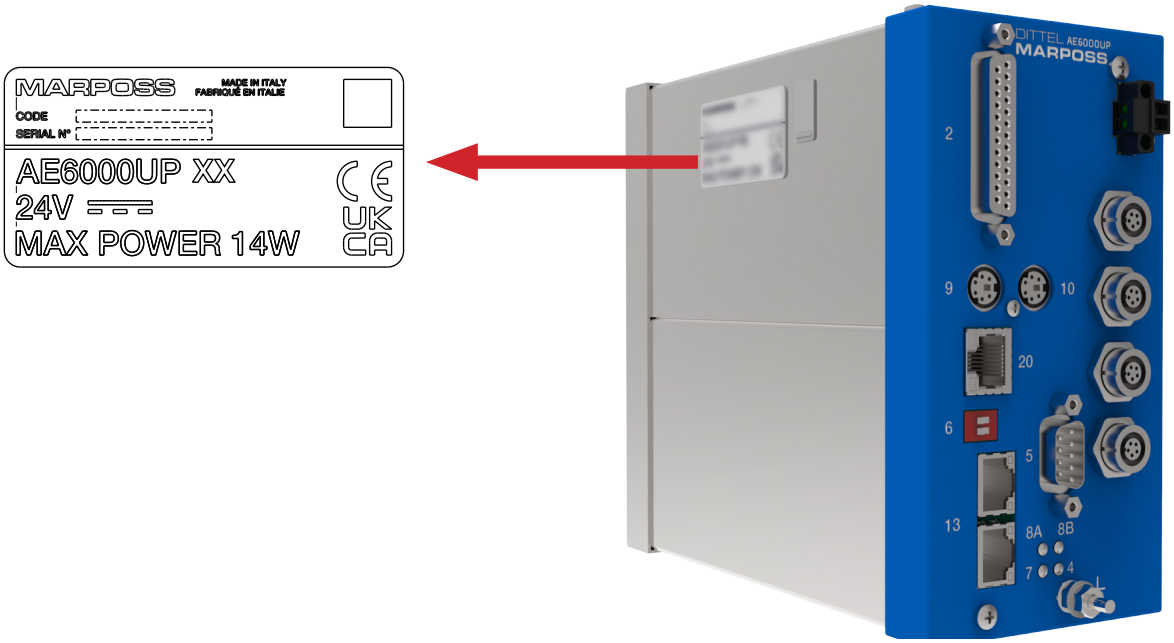


Fig.1. AE6000 UP Position of data plate

N.B.
All the data listed on the plate must always be legible.
If a data plate is damaged or even partially illegible due to wear, ask MARPOSS for another one, quoting the data in these instructions or on the original data plate.

2 SAFETY DEVICES

2.1 General safety information

2.1.1 Reference directives

The AE6000 UP has been designed and manufactured in accordance with the directives indicated on pages 2 and 3 of this manual.
The AE6000 UP must be managed by a machine tool used to machine mechanical parts, in compliance with the applicable safety standards for machinery equipment in the user's country.

2.1.2 Product conformity

The safety warnings are intended to prevent injuries to personnel and damage to both the AE6000 UP and the environment in which it is used. All operators are expected read the safety warnings, and respect them at all times.
The AE6000 UP is a state-of-the-art device that guarantees a high level of safety, provided all the appropriate safety measures are implemented during daily use.
The End User's responsibilities include defining such measures, and ensuring that they are implemented. Failure to observe the following instructions may result in serious injury as an indirect consequence of improper usage of the device. Device safety may only be guaranteed if the following instructions are adhered to.

WARNING
Any modification that alters the AE6000 UP design and/or build specifications may only be implemented by Marposs, who shall be responsible for certifying compliance with the safety standards.
Therefore the modifications or maintenance interventions not set out in this document shall be considered unauthorised.
Marposs declines all responsibility in case of any non-compliance with the above.

2.2 AE6000 UP User Categories and Duties

Installation technician: person qualified to install the AE6000 UP system inside the machine.
Duties:
1. lift, transport and store the AE6000 UP;
2. assemble and program the AE6000 UP;
3. remove the AE6000 UP.

Maintenance technician: person who is trained and qualified to carry out routine and extraordinary maintenance work on the AE6000 UP.
Duties:
1. routine maintenance;
2. extraordinary maintenance;
3. Notify Marposs customer service personnel of unexpected situations (e.g. wear, failures, breakages, errors, etc.) not set out in this document and therefore generated by unforeseen causes.

Operator: person assigned to activate the measurement acquisition cycle and monitor the correct operation of the AE6000 UP.
Duties:
1. Monitor the process
2. Modify the programmed parameters via the control panel, when necessary.

The operator is not required to intervene in any way while the AE6000 UP is operating.

2.2.1 Physical and mental health of the operator/installation personnel

The operator assigned to install the AE6000 UP must be aware of the dangers that may be created while installing machining equipment, and be capable of dealing with them.

2.3 *Training*

THE FINAL MACHINE DOCUMENTATION MUST BE READ
The training of operators assigned to normal operation must follow the instructions set out in the documentation of the final machine that the AE6000 UP is installed in, as this documentation cannot be exhaustive.

Personnel included in the following categories are obliged to read the manual supplied with the equipment.

Installation technicians personnel assigned to transport, store and install the gauge, in order to:
- Ensure they are aware of the appropriate lifting and transport methods used for the parts of the AE6000 UP, as stipulated by Marposs, in order to prevent the risks associated with moving loads;
- Ensure they are aware of the correct storage procedures for the parts of the AE6000 UP in order to avoid damaging important parts, not only in terms of safety but also from an operational point of view;
- Ensure they are aware of the correct AE6000 UP installation procedures, such as wiring the electrical parts, in order to prevent assembly errors that could lead to dangerous situations for the health and safety of the operators.

Operators assigned to supervise normal operation of the equipment, in order to:
- Ensure they adhere to the applicable regulations governing use of the equipment, and that they read and following the instructions and other information provided in the attached documentation.

AE6000 UP maintenance technicians, in order to:
- Ensure they are aware of the correct procedures for carrying out scheduled and unscheduled maintenances activities on the AE6000 UP.

2.4 *Electrical Dangers*

Every effort has been made to adopt all the necessary safety and protection measures during the design phase, however some electrical dangers remain. These risks are listed below.

ELECTRICAL PARTS
The system is energized by an electrical power supply. Personnel may be exposed to the risk of electric shocks in the event of electrical faults or when working on electrical parts. Ensure that all electrical work is carried out exclusively by qualified personnel.
Display the appropriate warning signs. After deactivating the machine, and before starting working on its electrical parts, make sure that the control panel or system controls are not connected to the electrical power supply.

Moreover, it is important to remember that:
Incorrect actions by the operator can cause residual risks.
The risks and dangers generated by:
- Operator carelessness,
- Failure to comply with the information and instructions contained in these operating instructions,
- Deliberate tampering with the AE6000 UP or its safety devices.

Any modification that alters the AE6000 UP build specifications, whether mechanical or electrical, can only be performed by Marposs, which will certify compliance with the safety standards. Any modification or maintenance not indicated in this document shall be considered unauthorised.
Marposs declines all responsibility in case of any non-compliance with the above.

3 TRANSPORTATION. STORAGE

3.1 Personal protection equipment (PPE)

The operators assigned to transportation, storage and installation of the AE6000 UP must obtain and use the PPE indicated in this manual, as well as the mandatory PPE for the environment in which the AE6000 UP is used.

3.2 Training

The operators assigned to transportation, storage and installation of the AE6000 UP must be trained and informed as required by the applicable directives in the relative countries.

3.3 State of tools and equipment

The operators must use the equipment listed in the corresponding paragraphs when carrying out transportation, storage and installation operations.
It is important to ensure that the equipment and tools are in good condition and that they are not worn, excessively aged or fatigued in any way.
The tools must be selected in accordance with the applicable laws and regulations governing working tools and must be used in accordance with the manufacturers' instructions.

3.4 Taking delivery of the material

During packing, all the AE6000 UP technical material is thoroughly checked in order to ensure that no damaged material is shipped.
When unpacking the material, check that the AE6000 UP is in perfect condition and not damaged in any way. Notify Marposs immediately if it is damaged.

3.5 Packaging, handling, transport

3.5.1 Packaging

The AE6000 UP is protected with carton and an internal insert for handling and transportation.

3.5.2 Handling the package

No specific equipment is required for handling the package.

3.5.3 Transporting the package

The package containing the AE6000 UP must be transported on covered transport vehicles so that it and the AE6000 UP are not exposed to the weather.

3.5.4 Disposing of packaging materials

The packaging used for the AE6000 UP consists of materials that can be disposed of without exposing people, animals or property to any significant hazards.

Operators or personnel responsible for disposing of the packaging should be aware that it consists of:
- Cardboard: external container and internal insert
- Polyurethane film: internal insert.

ENVIRONMENTAL HAZARD
The polyurethane film is NOT biodegradable. It must NOT be disposed of in the surrounding environment: recycle and/or dispose of materials in accordance with local regulations.

3.6 *Removing the AE6000 UP from its packaging*

Marposs has not indicated special devices for removing the AE6000 UP from the packaging.

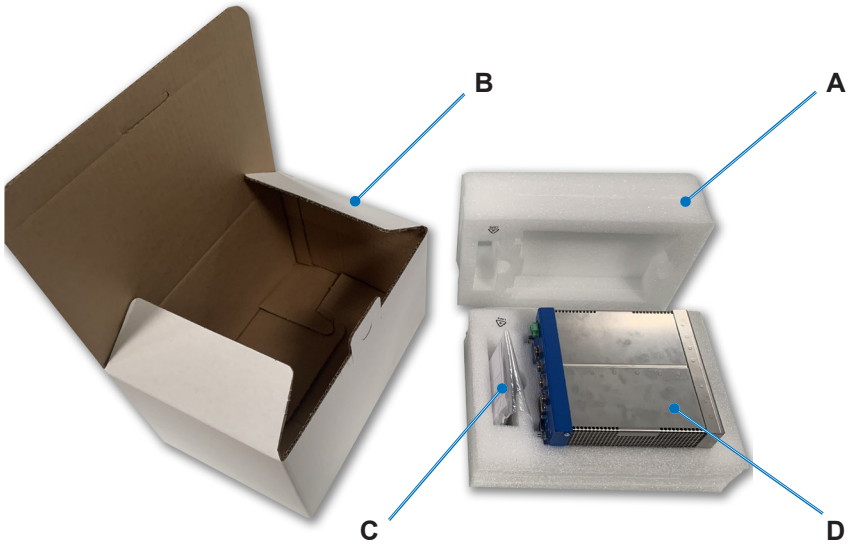


Fig.2. AE6000 UP packaging

- Remove the AE6000 UP packaging (A) from the box (B)
- Remove from the packaging the CDs (C) containing the manuals (to be kept)
- Finally, remove the connector and the AE6000 UP (D) from the packaging.

4 ENVIRONMENTAL CONDITIONS

The mechanical and electronic components installed in the AE6000 UP have been selected for their reliability and durability. The components meet the manufacturing safety requirements in force and have been designed to withstand temperatures from -20 °C to +70 °C (from -4 °F to 158 °F) during transport and storage.

4.1 *AE6000 UP Storage Environment*

The AE6000 UP must be stored in a covered area where dust and humidity levels are kept to a minimum.
The warehouse storage shelf must be level and smooth.
Do not rest other materials, even light items, on top of the AE6000 UP package or the AE6000 UP itself, as this may damage it.

4.2 *AE6000 UP Working Environment*

When installing the unit, the operator must check that the final machine has been designed and built to operate in the environmental conditions set out below.

TYPE OF ENVIRONMENT:

The AE6000 UP and the relative electrical components have been designed and built to be installed in a heavy industrial environment, and to be used only in closed environments where they are protected from the weather. Do not use the equipment in residential or light industrial environments.
Atmosphere must be free of conductive substances, corrosive gases, vapours, oily mist, and dripping water. In addition, avoid salty air, as well as localities where condensation can appear by temperature variation.
The AE6000 UP is intended to be installed in control cubicles. Mounting hardware is available for installation on vertical surfaces, either a mounting panel or a clamping device for DIN mounting rails.
Unless otherwise specified in the contract, the AE6000 UP can only operate regularly in the environmental conditions set out below. Environmental conditions other than those described may damage the machine or cause it to malfunction, giving rise to potential hazardous situations for the operator and exposed personnel.

AMBIENT AIR TEMPERATURE

The AE6000 UP components will operate correctly at temperatures: +0 ÷ +50 °C (32 to 122 °F). No direct sunlight.

OPERATING RELATIVE HUMIDITY

Relative humidity when in use: 20% ÷ 80%.

ENVIRONMENTAL POLLUTION GRADE

Grade 2

ALTITUDE

The electrical components are designed to operate correctly: 0 ÷ 2,000 m / 0 ÷ 6,600 ft.

POLLUTANTS

The electrical components are adequately protected against the infiltration of solid bodies when using the AE6000 UP for the intended purposes and in the specified operating environment.
Unless otherwise stated in the contract, the electrical components DO NOT have specific protections against contaminating agents such as dust, liquids, acids, corrosive gases, salt, etc.
If it is necessary to use the electrical components and the complete equipment in environments subject to such contaminating agents contact Marposs immediately. Marposs will check the suitability of the assembly based on the environments they are used in.

“NORMAL” ENVIRONMENTAL LIGHTING

The installation procedure must be carried out under “normal” lighting conditions, i.e. without dazzling the operators with too much light or causing them to strain their eyes in insufficient lighting.
The personnel responsible for installing the AE6000 UP must comply with the minimum requirements set out by the applicable laws in the respective countries in terms of natural and artificial lighting of the premises.
If there is poor lighting in the workplace the operator must use portable lighting equipment.

5 GENERAL DESCRIPTION OF THE SYSTEM

The AE6000 UP has been designed and built as an a state-of-the-art Process Monitoring Module developed and produced according to recognised safety directives, rules, standards, and regulations. During a grinding or dressing process the high sensitive Process Control System AE6000 UP monitors and/or controls – depending on use – first touch signal, touch dressing control, air grinding time, and/or Crash Control. For use on surface, external and internal grinding machines a variety of AE sensors are available. The AE signal is picked up at the source – e.g. in the centre of a rotating spindle – and fed to the unit for analysis.

An additional outstanding function Envelope (licensed) monitors a complete dressing cycle by measuring and evaluating the output voltage of the AE sensor. During the following processes, when the signal falls below or exceeds a once learned envelope, a failure signal is fed to the machine CNC control. Up to 31 learned envelopes together with their parameters can be stored (depends on the “size” of the envelopes).

Up to four AE sensors and a voltage source may be connected to the Module. The selection of the inputs is carried out manually or externally by switching over from the machine control. Evaluation of the AE signal from one AE sensor is carried out either by the AE function or by the Envelope function. Using the AE function a Crash signal (using the same AE sensor) and/or a voltage can be displayed additionally.

All settings, display and operation of the AE6000 UP are exclusively carried out on a PC integrated Automation System for machine tools or a standard PC based on Microsoft Windows®. Predefined, individual adjustable user levels are provided like Service / Administrator / Expert / Operator / Observer. The display window can be specified individually as well with regard to graphic representation, or window width.

By additional Process Monitoring Modules AE6000 UP, it is possible to supervise and to control many machine spindles at the same time; complicated switching-over is dropped. Just as simple is the extension by one or more Balancing Modules for the spindles, either operated electromechanically (M6000) or by using the coolant as balancing medium (H6000). The total number of all modules and control units (PC, Automation System) is restricted to 15.

A serial and parallel interface as well as a PROFIBUS interface are available. There are also variants with PROFINET instead of PROFIBUS. An overview can be found in the following table.

Variant	RS232	ETHERNET	PROFIBUS	PROFINET	Hardwire interface
AE6000 UP PB 830L820001	X	X	X		X
AE6000 UP PN 830L820002	X	X		X	X

AE6000 UP PB

AE6000 UP PN

Fig.3. AE6000 UP variants

5.1 *Components of an AE Process Monitoring System*

To monitor and evaluate an AE signal, caused by dressing or grinding processes, the following components are required:

- A Process Monitoring Module AE6000 UP,
- An Automation System or a standard PC, based on Microsoft Windows®, and corresponding hardware.
- A DSCC Software,
- Up to four AE sensors, for example 'S', 'M', 'Mini-M' or 'R' Type, Fluid Sensor, customer designed ID sensors, AE sensors integrated in the fixing flange of a balancing unit, etc.),
- Connection and extension cables, as required.

5.2 *Example: Monitoring a Dressing Cycle by Evaluation of the Acoustic Emission (AE) Signal (RS-232 or Ethernet) on AE6000 UP PB*

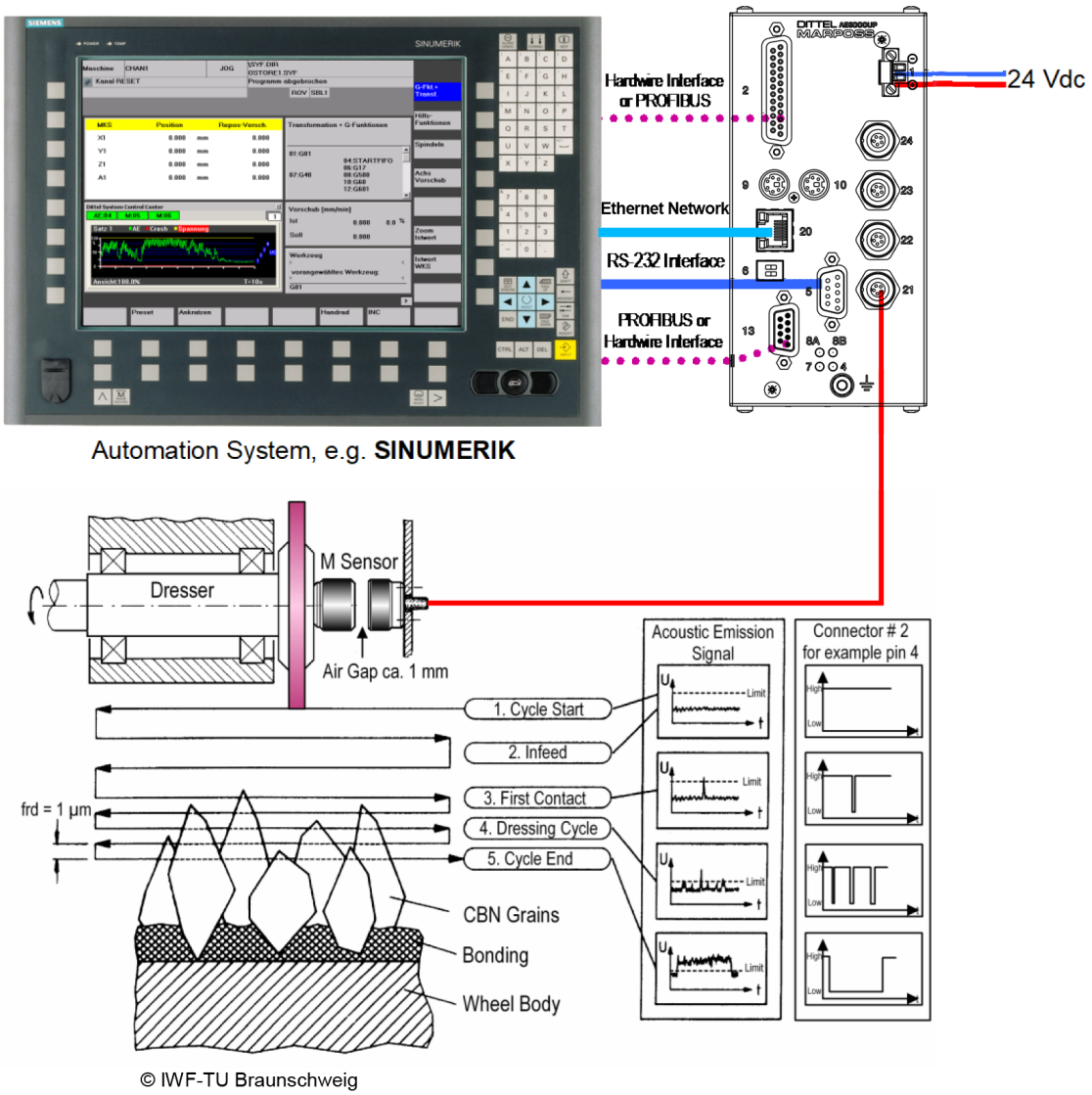


Fig.4. Example of a monitoring of Dressing Cycle by Evaluation of the Acoustic Emission (AE) Signal on AE6000 UP PB

5.2.1 *Connection of different DS6000 UP Modules*

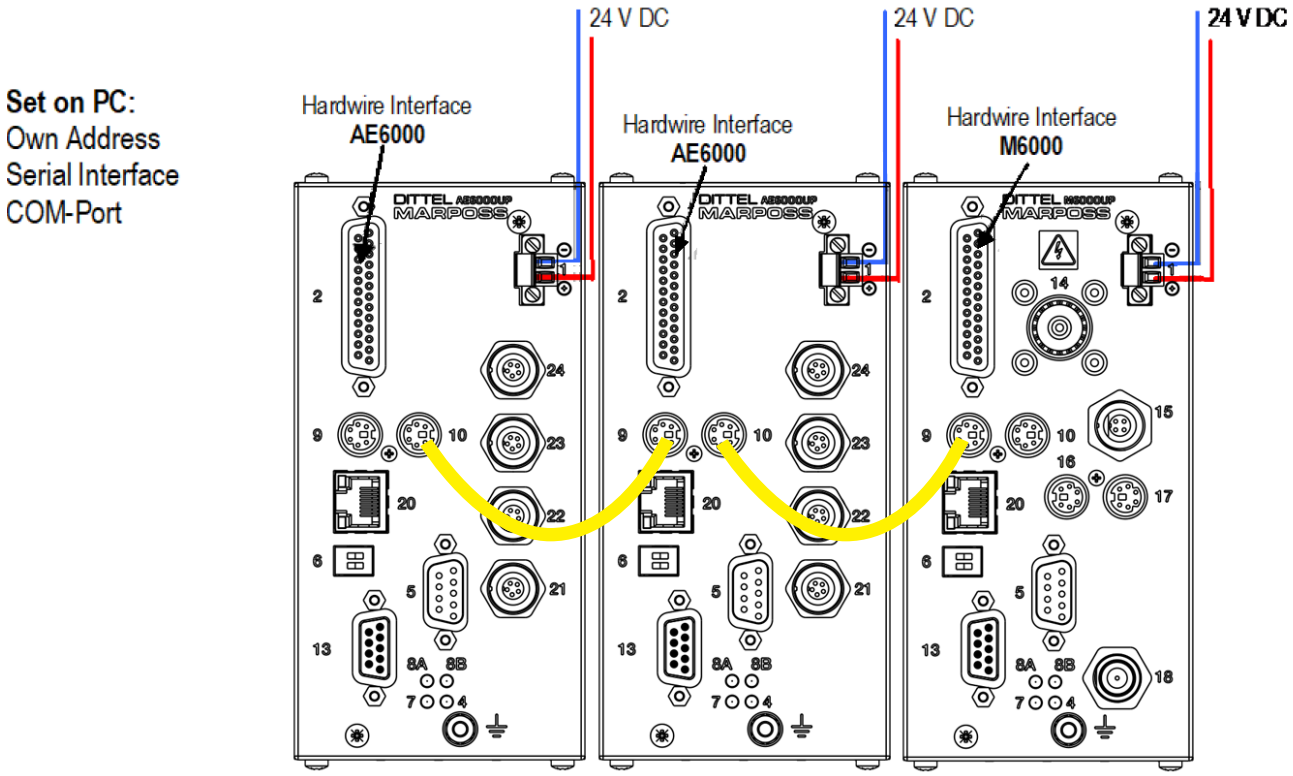


Fig.5. Example of a monitoring of connection of different DS6000 UP Modules

5.3 *Overall dimensions*

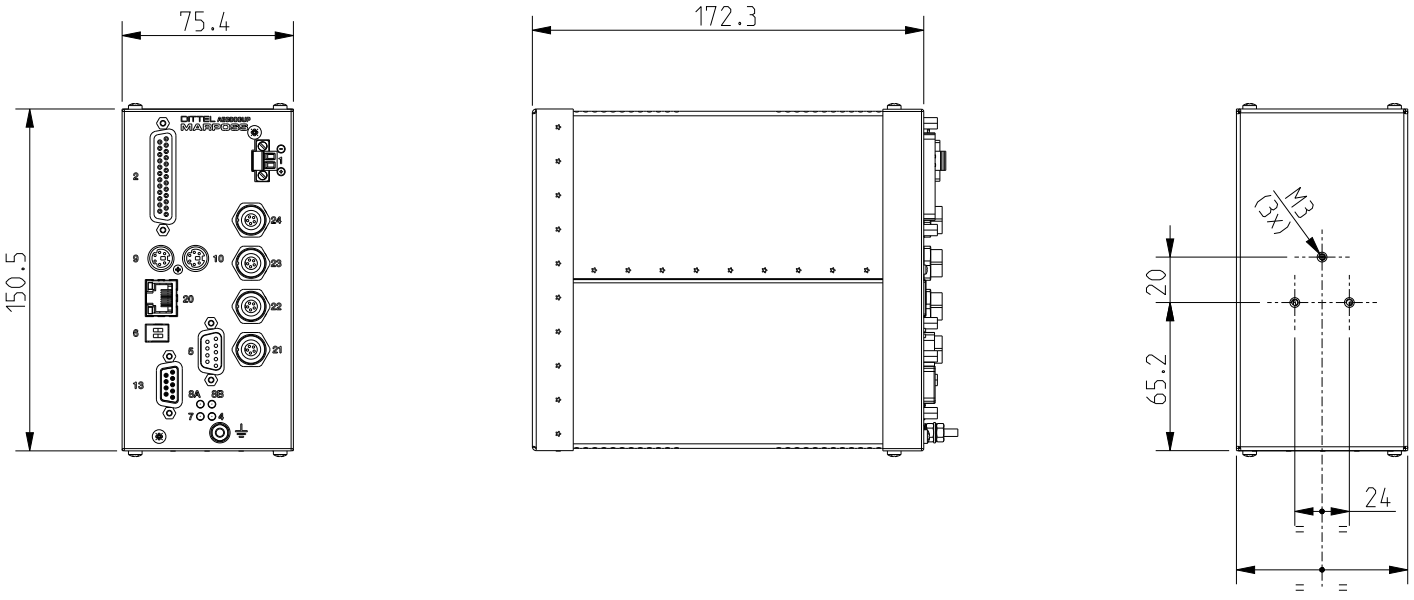


Fig.6. AE6000 UP dimensions

5.4 *Technical Specifications*

Supply, nominal Range	Direct current ⎓ 24 Vdc (± 25%) SELV type	
Power Consumption	ca. 14 Watts	
Internal Fuse	2.5 Amps, resettable fuse (Poly Switch RUE 250)	
External Fuse	4 Amps, time-lag, IEC 60127 type, (T4A)	
Environmental Temperature	0 °C … +50 °C (32 °F … 122 °F)	
Pollution Degree 2	Do not use in environment with conducting pollutants	
Altitude	0 - 2,000 m (0 - 6,562 ft.)	
Relative Humidity	20% - 80%, without Condensation	
Safety Class	IP 20	
In-/Outputs	24 Vdc, according EN 60950 SELV Hardwire Interface Serial Interface RS-232 Ethernet Interface Serial Interface RS-422 PROFIBUS / PROFINET Interface AE Input 1 AE Input 2 AE Input 3 AE Input 4 Chassis Ground	# 1 # 2 # 5 # 20 # 9 and # 10 # 13 # 21 # 22 # 23 # 24 Stud and Hex Nut M4
Hardwire Interface Connector # 2		
All digital Inputs	Input Signal LOW Input Signal HIGH Input Current	-30 Vdc … +3 Vdc +13 Vdc… +30 Vdc typical 5.5 mA at 24 Vdc
Digital Outputs, pin 1 to 5, 8, 10 and 11	Output Current Recommended Load Power Dissipation of Switching Transistor	10 mA 2k2 … 4k7 at 24 Vdc **Drive inductive load with clamping diode only!** maximum 75 mWatts
Digital Outputs, pin 6 and 7	Output Current overload proof Total of Output Currents Voltage Drop at Output Output Leak Current Recommended Load	maximum 500 mA, short-circuit and maximum 2 Amps maximum I_{Load} × 0.4 ohm maximum 10 µA 2k2 … 4k7 at 24 Vdc
Analogue Input	Voltage Input, pin 22, against common ground (pin 25) 0 … 1 Vdc, 0 … 2 Vdc, 0 … 5 Vdc, 0 … 10 Vdc, adjustable in Tab '**Settings**'.	
Analogue Outputs	Analogue Output pin 23, AE Offset Range = 0 … 25%: with AE Offset 0% with AE Offset 25% Analogue Output pin 24, AE Offset Range = 0 … 25%: with AE Offset 0% with AE Offset 25%	AE output from µP, output impedance 600 Ohms, filtered with adjusted signal smoothing 0 … 100% of the display corresponds to 0 … 8 Vdc 0 … 100% of the display corresponds to 2 … 10 Vdc AE output, raw, output impedance 600 Ohms, f_{Lowpas}s = 1000 Hz 0 … 100% of the display corresponds to 0 … 8 Vdc 0 … 100% of the display corresponds to 2 … 10 Vdc

Serial Interface, Connector # 5	
	RS-232-C Interface Hardware-handshake RTS/CTS, 8 Data bits, Baud Rate adjustable via DSCC Software to 19,200, 38,400 or **57,600 Baud**, 1 Stop bit, no Parity.
Ethernet interface, Connector # 20	
	RJ45 Port, Ethernet 10BASE-T or 100BASE-TX (Auto-Sensing) LED indicators Network connected (lights green) and Data transfer (flashes yellow)
PROFIBUS interface, Connector # 13	
	Standard DB-9 Connector, female All input and output signals managed through Hardwire Interface of standard DB-25 Connector # 2 can be driven even through PROFIBUS/PROFINET interface.
PROFINET interface, Connector # 13	
	RJ45 Port, Ethernet 100BASE-TX with Autocrossover, the minimum cable requirement is Cat 5e with SF/UTP shielding. LED indicators Network connected (lights yellow) and Data transfer (flashes green)
Maximum number of modules on a machine control unit (computer, automation system)	15
Accessory supplied	CD-ROM or DVD containing DSCC Software and Installation Manuals (1) 24 Vdc Cable Plug (1), Standard DB-25 Connector, male, with shell (1)
Module Weight	ca. 1.2 kg (2.7 lbs.) without mounting hardware
Dimensions	Mounting Panel width 79 mm, height 186 mm, Front Panel width 75.4 mm height 150.4 mm Depth 180 mm including Mounting Panel to leading edge of Front Panel

N.B.
When a conducted RF interference of 10 V in the frequency range of 150 kHz to 1 MHz occur on the sensor cables - leading to connectors # 21, # 22, # 23 and # 24 of Module AE6000 UP - measurement results may be partially overdriven (increase from approximately 50% to 100%) since this is the useful frequency range of the AE sensors.

6 INSTALLATION

The Module AE6000 UP is intended to be installed in control cubicles. Mounting hardware is available for installation on vertical surfaces, either a mounting panel (Mounting Set 6000-rear panel, article number O10L0001001) or a clamping device for DIN mounting rails (Mounting Set 6000-clamping device, article number O20L0001001).

6.1 *Mounting on vertical surface*

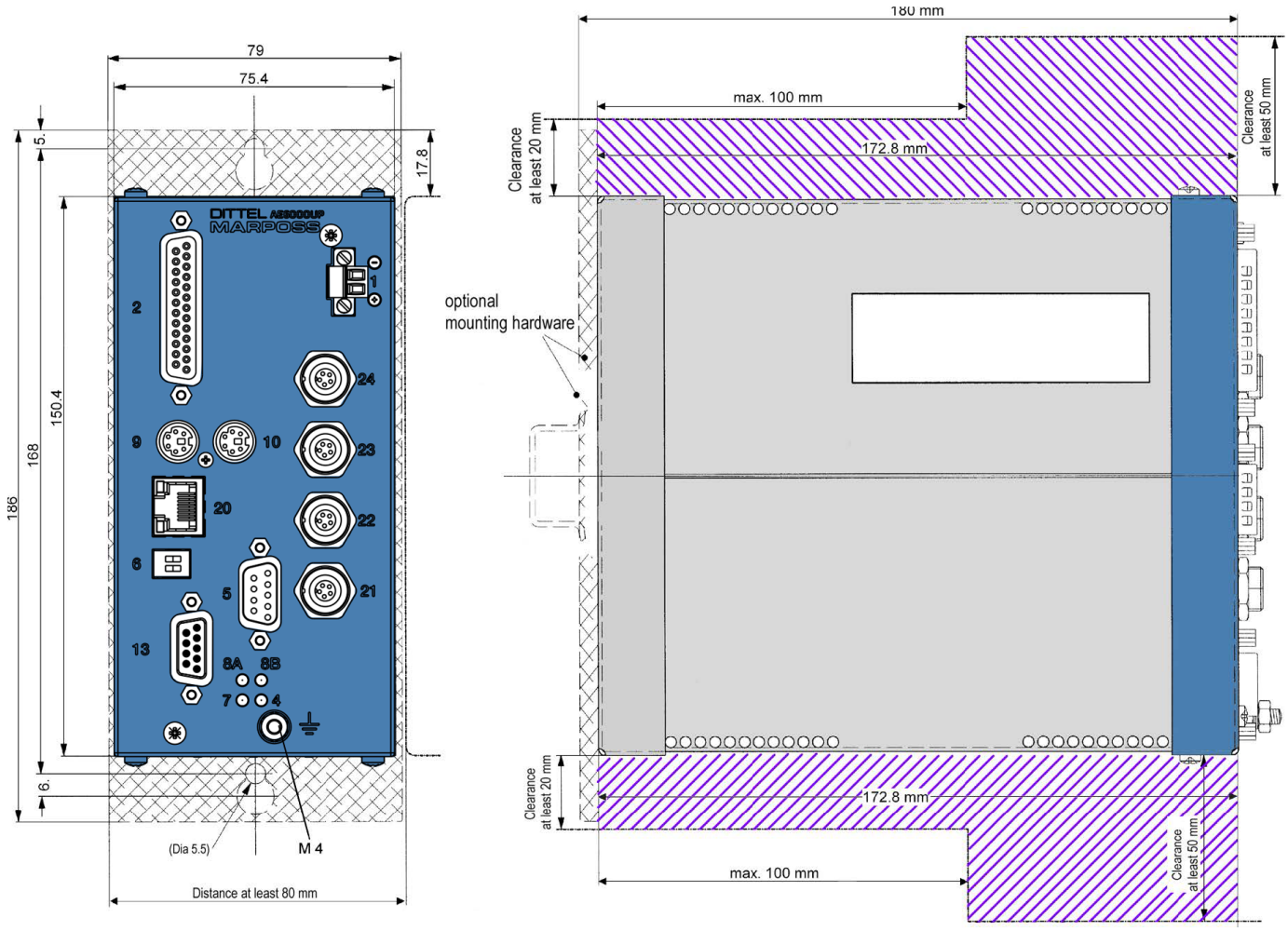


Fig.7. Example of AE6000 UP mounting on vertical surface

6.2 *Mounting on DIN guide*

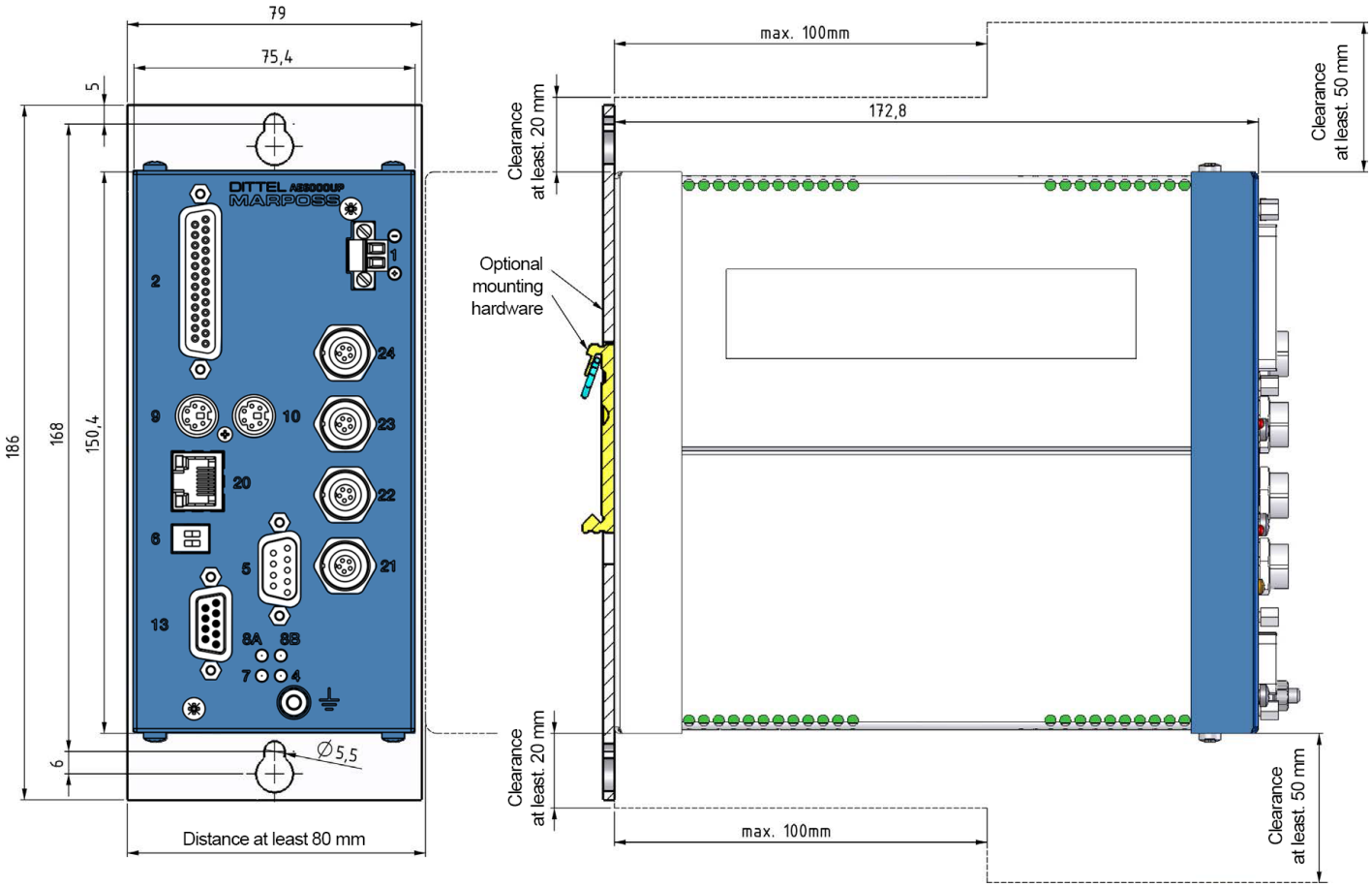


Fig.8. Example of AE6000 UP mounting on DIN guides

6.3 *Installation of AE sensors*

Contact MARPOSS or your nearest MARPOSS Agency for application assistance.
Dimensions and illustration of our standard AE sensors are available on request.

6.3.1 *General Installation of AE sensors*

WARNING
Risk of injuries by rotating parts!
Switch OFF the machine when installing or adjusting AE sensors! Ensure that the machine spindle has stopped before working on it!
Protect the machine against unauthorised or accidental switching ON!
NEVER operate a machine tool without all proper safety guarding in place.
Marposs declines all responsibility in case of any non-compliance with the above.

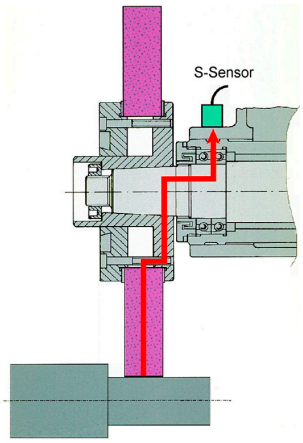
N.B.
The location and installation of the AE sensor is crucial to successful operation of the AE6000 UP Process Monitoring!
NEVER mount the AE sensor on thin or loosely attached machine parts like wheel guards. Take care to have only little numbers of joints between the source of the signal (e.g. wheel or work piece) and the sensor.
Ensure that suitable bonding straps bond all sensitive components to a common local earth (ground).

GENERAL

The standard AE sensors can be mounted on the machine tool or spindle either permanently stud mounted or kept by magnetic force (type MGP 1).
The sensor location should be flat, smooth, and free of paint, and must be free of foreign matter such as burrs or cuttings. Apply a thin layer of silicone grease before mounting to achieve minimal loss of the AE signal.
When choosing the position of the AE sensor(s) be aware that any blast of compressed air, or any heavy ‘metal to metal contact’, may cause the AE6000 UP to feed a “Crash” signal to the machine control, which may initiate an “Emergency Stop”.

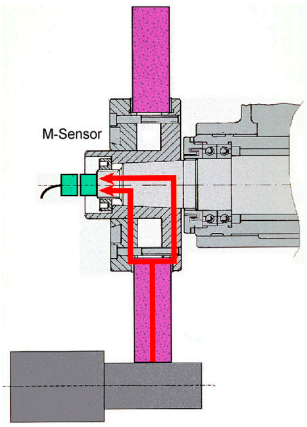
AE SENSOR ‘S’ OR MAGNETIC TYPE AE SENSOR ‘MGP1’

These AE sensors consist of one part and are connected directly to the Process Monitoring Module. The AE signal is picked up via the base plate.
The AE sensor with magnetic base plate MGP1 needs only a flat spot with at least 40 mm diameter. The pull-off strength is approximately 60 Newton (13.5 lbf).
To fix the AE sensor ‘S’ a flat spot with at least 22 mm diameter and a threaded M6 hole, depth at least 8 mm, is necessary.
To obtain a good “signal to noise ratio” the following locations are recommended for both types of sensors:
• Tailstock close to the work piece axis,
• Work piece headstock near the spindle,
• Grinding machine’s headstock close to the wheel axis.

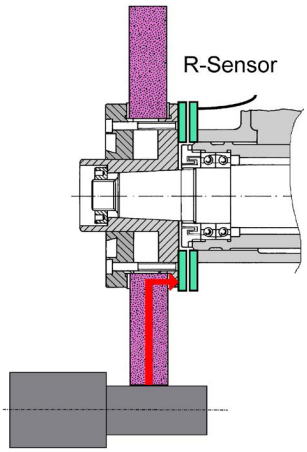


CENTRE MOUNTED AE SENSOR 'M' OR AE RING SENSOR 'R'

These sensors consist of two parts:
• A rotating part, mounted on or in the spindle,
• A fixed part which receives the AE signal contact free from the rotating sensor.
To fix the AE sensor "M" a threaded M6 hole, depth at least 8 mm, is necessary. Fix the appropriate sensor receiver centrally within a distance of 0.5 to 1.0 mm by means of two M3 screws (for standard dimensions please contact our nearest agency).



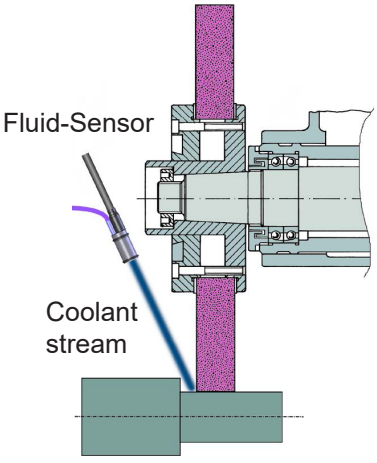
Ring shaped AE sensors are manufactured according to customer's specification. Therefore, they differ in mounting and size (for minimum dimensions please contact our nearest agency).



The following locations are recommended for both types of sensors:
• Spindle or flange of dressing unit (esp. for monitoring of Touch Dressing),
• Grinding wheel spindle,
• Work piece spindle.

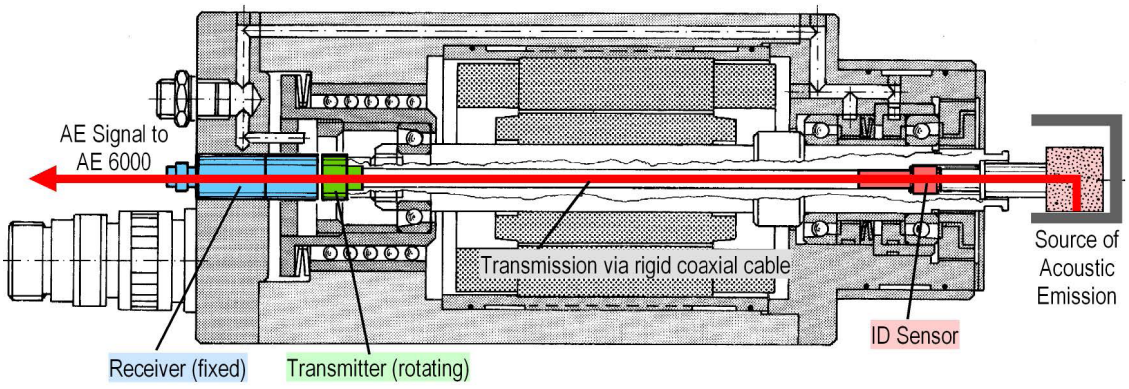
AE FLUID SENSOR

This AE sensor consists of one part and is connected electrically direct to the Process Monitoring Module. The AE signal is picked up via the coolant stream.
• Attach the AE Fluid sensor so that its coolant stream hits directly the monitored process.
• Perfect results are obtained when coupling the measuring stream to non-rotating surfaces (e.g. workpiece when surface grinded).



CUSTOM-DESIGNED AE SENSORS, E.G. ID SENSORS

The mounting of custom-designed sensors is carried out according local conditions.



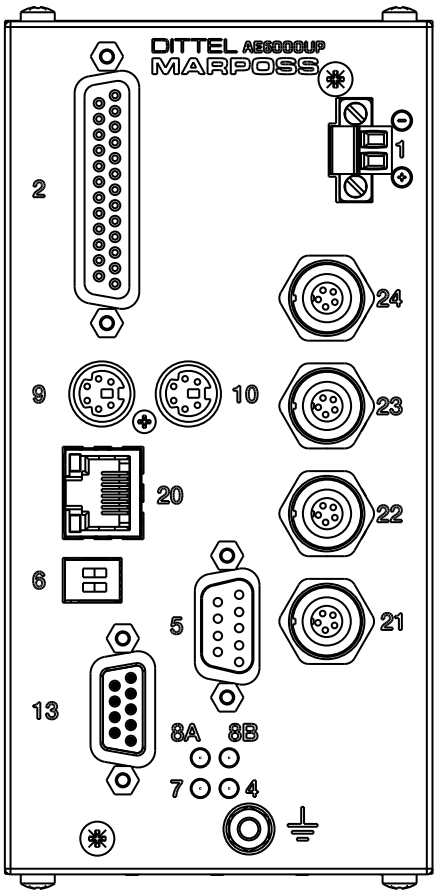
6.4 *Electrical Installation*

N.B.
To ensure proper function of the AE6000 UP Module(s) use only connection cables or extension cables supplied by Marposs.

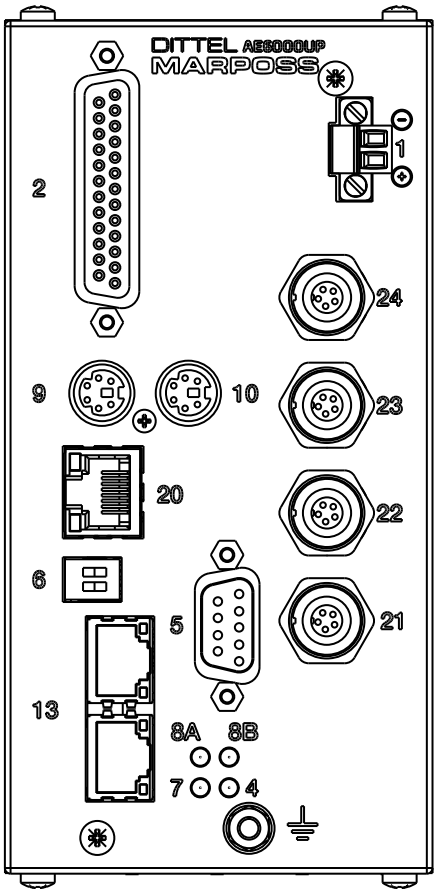
N.B.
To reduce electrical interference make sure that the Module AE6000 UP, all sensors and the machine CNC control are on a common mass potential. If this is not guaranteed by the installation on the machine all components must be bonded by suitable bonding straps to a common local earth (ground).

N.B.
Secure all Standard DB Connectors by using the provided screw locks.
Safeguard cables with strain relief. Make sure that no tensile stress is exerted on the connectors by the connected cables.

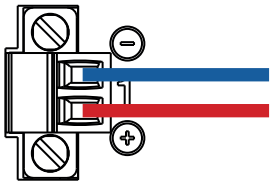
AE6000 UP PB



AE6000 UP PN



CONNECTOR # 1, 24 VDC SUPPLY



The supplied 2-pole DC plug with coded lugs fits the DC input of the AE6000 UP. For wiring, use stranded wires, cross section 1.0 to 1.5 mm², and wire-end sleeves.
Fix plug with both screws!
The AE6000 UP is switched ON and OFF by the external power supply, the Module itself contains NO ON/OFF switch.
Lack of supply voltage does not result in loss of information of the memory.

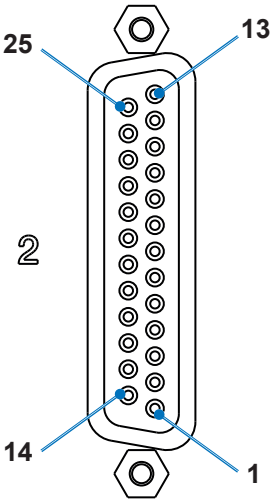
Contact	Signal
+	+ 24 Vdc ± 6 Vdc
-	Power Ground

N.B.
Wiring the supply must be made by qualified staff of the customer!

N.B.
Power the device from a 24 Vdc supply only! The power source must comply with EN 60950 SELV (Safety Extra Low Voltage). Applying a higher voltage can cause a damage of the device.

N.B.
The AE6000 UP module must be protected by an external fuse of 4 amps time-lag (T4A). This fuse must comply with IEC 60127 and must blow within 120 sec or less at a current of 8.4 amps.

CONNECTOR # 2, HARDWIRE INTERFACE OF PROCESS MONITORING



Type: Standard DB-25 Connector, female
Static interface to the Automation System.
Via the inputs, the Automation System using HIGH or LOW signals can control the Process Monitoring Module AE6000 UP.
Via the outputs, the Automation System receives various messages from the AE6000 UP as HIGH or LOW signals.

N.B.
Wiring the interface mating plug # 2 (supplied) to the machine control must be made by qualified staff.

N.B.
Use only shielded cable (shield connected to plug housing), cross-section of the cable 0.25 sq mm (#24 AWG) minimum.

N.B.
Cover the solder joints on the 25-pole mating plug with shrinking tube.

N.B.
Safeguard cables with strain relief.

Pin no.	Function	Input/ Output	Signal name / Action
1	Status	O	AE/Crash/Voltage monitoring in progress: HIGH at the output
2	Monitoring AE / Crash sensor	O	Monitored sensor OK: HIGH at the output Open sensor input: LOW at the output
3	Monitoring Voltage (U) input	O	Voltage input OK: HIGH at the output Open or overdriven Voltage input: LOW at the output
4	Monitoring AE Limit 1	O	Signal below AE Limit 1: HIGH at the output Signal above AE Limit 1: LOW at the output
5	Monitoring AE Limit 2	O	Signal below AE Limit 2: HIGH at the output Signal above AE Limit 2: LOW at the output
6	Monitoring AE Limit 3	O	Signal below AE Limit 3: HIGH at the output Signal above AE Limit 3: LOW at the output
7	Monitoring AE Limit 4	O	Signal below AE Limit 4: HIGH at the output Signal above AE Limit 4: LOW at the output
8	Monitoring Voltage Limit U	O	Voltage below Limit U: HIGH at the output Voltage above Limit U: LOW at the output
9	CM	I	+24 Vdc supply, must fulfil EN 60950 SELV, for example from the CNC Control
10	Monitoring Crash Limit C	O	Signal below Crash Limit C: HIGH at the output Signal above Crash Limit C: LOW at the output
11	Fast AE Limit 1 or Envelope*	O	For Fast AE Limit 1: Signal below AE Limit 1: HIGH at the output Signal above AE Limit 1: LOW at the output For Envelope: Refer to Envelope description
12	AE / CR / U monitoring Start/Stop	I	Static Signal from LOW to HIGH: AE / CR / U monitoring START Static Signal from HIGH to LOW: AE / CR / U monitoring STOP
13	Reserved for Envelope	I	Do not wire
14	Operation via keys or buttons inhibit	I	Static HIGH Signal: Operator actions on the PC or Automation System keyboard/softkeys are disabled
15	Selects Set No.	I	Truth table, see following page
16	Selects Set No.	I	Truth table, see following page
17	Selects Set No.	I	Truth table, see following page
18	Selects Set No.	I	Truth table, see following page
19	Selects Set No.	I	Truth table, see following page
20	Ground	I	0 Vdc (Ground), e.g. from the CNC control
21	AE / U Auto-Offset	I	HIGH-pulse > 50 ms: AE / U Auto-Offset ON
22	Voltage Input	I	Voltage Input 0 … 1 Vdc, 0 … 2 Vdc, 0 … 5 Vdc or 0 … 10 Vdc selectable. Voltage against common ground, pin 25.
23	AE Analog Output 1	O	AE Output from µP
24	AE Analog Output 2	O	AE analog Output, not filtered
25	Analog Ground	-	Common Ground of Voltage input, pin 22, and analog Output, pin 24.

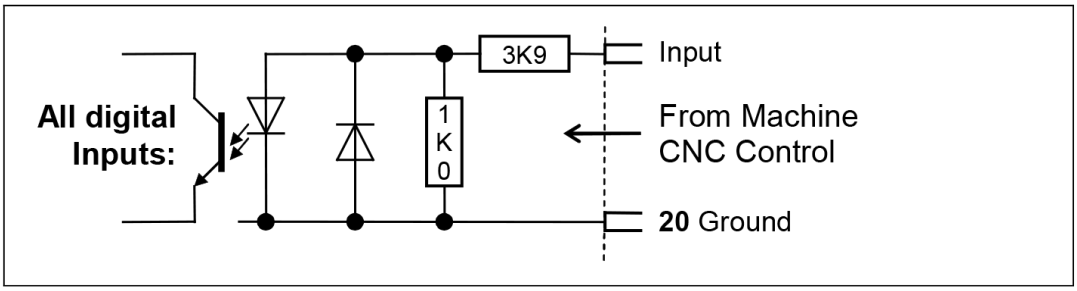
* The fast AE Limit 1 refers to the same settings that are done for AE Limit 1, which can be managed within the Module Settings, it cannot be switched to another Limit and it is not present within the PROFIBUS/PROFINET interface. If the license for the Envelope is present and is also used within the setting for the dedicated set number, the FAST AE Limit 1 is replaced through Envelope function.

Connector # 2,
Truth table, to select appropriate Set no. by the machine CNC control:

N.B.
During Process Monitoring, the unit recognizes NO change of the Set Number - neither externally nor manually!

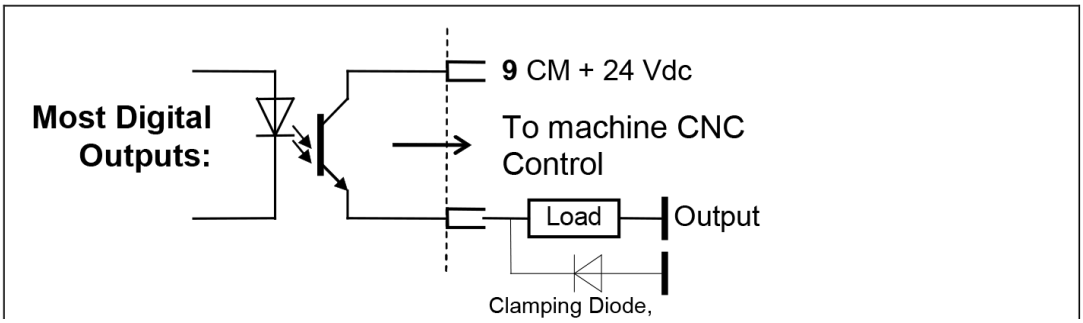
Set no.	# 2/pin 15	# 2/pin 16	# 2/pin 17	# 2/pin 18	# 2/pin 19
No change	LOW	LOW	LOW	LOW	LOW
1	HIGH	LOW	LOW	LOW	LOW
2	LOW	HIGH	LOW	LOW	LOW
3	HIGH	HIGH	LOW	LOW	LOW
4	LOW	LOW	HIGH	LOW	LOW
5	HIGH	LOW	HIGH	LOW	LOW
6	LOW	HIGH	HIGH	LOW	LOW
7	HIGH	HIGH	HIGH	LOW	LOW
8	LOW	LOW	LOW	HIGH	LOW
9	HIGH	LOW	LOW	HIGH	LOW
10	LOW	HIGH	LOW	HIGH	LOW
11	HIGH	HIGH	LOW	HIGH	LOW
12	LOW	LOW	HIGH	HIGH	LOW
13	HIGH	LOW	HIGH	HIGH	LOW
14	LOW	HIGH	HIGH	HIGH	LOW
15	HIGH	HIGH	HIGH	HIGH	LOW
16	LOW	LOW	LOW	LOW	HIGH
17	HIGH	LOW	LOW	LOW	HIGH
18	LOW	HIGH	LOW	LOW	HIGH
19	HIGH	HIGH	LOW	LOW	HIGH
20	LOW	LOW	HIGH	LOW	HIGH
21	HIGH	LOW	HIGH	LOW	HIGH
22	LOW	HIGH	HIGH	LOW	HIGH
23	HIGH	HIGH	HIGH	LOW	HIGH
24	LOW	LOW	LOW	HIGH	HIGH
25	HIGH	LOW	LOW	HIGH	HIGH
26	LOW	HIGH	LOW	HIGH	HIGH
27	HIGH	HIGH	LOW	HIGH	HIGH
28	LOW	LOW	HIGH	HIGH	HIGH
29	HIGH	LOW	HIGH	HIGH	HIGH
30	LOW	HIGH	HIGH	HIGH	HIGH
31	HIGH	HIGH	HIGH	HIGH	HIGH

Connector # 2, specification of all digital inputs:



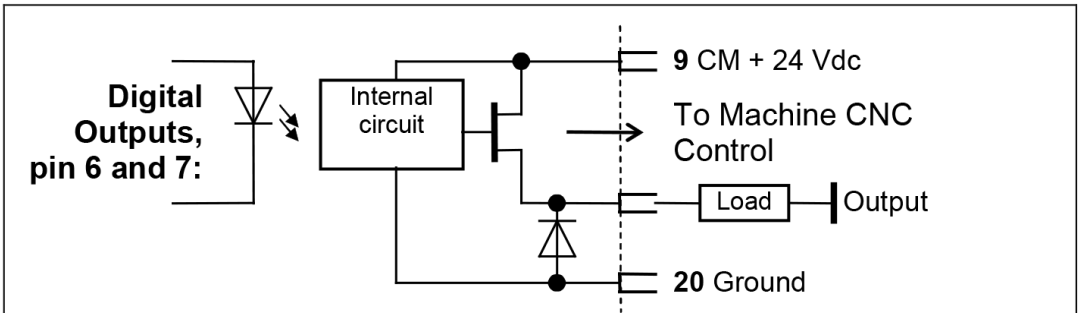
Input Signal LOW:	-30 Vdc … +3 Vdc
Input Signal HIGH:	+13 Vdc … +30 Vdc
Input Current:	typical 5.5 mA at 24 Vdc

Connector # 2, specification of digital outputs, refer to pins 1 to 5, 8, 10 and 11:



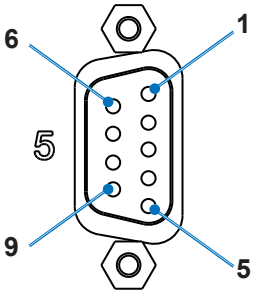
Output Current:	10 mA
Recommended Load:	2.2 kΩ – 4.7 kΩ at 24 Vdc **Drive inductive load with clamping diode only!**
Power dissipation of Switching Transistor:	75 mW maximum

Connector # 2, specification of digital outputs, refer to pin 6 and 7:



Output Current:	500 mA max. short circuit proof and over-load protected
Total of all Output Currents:	2 amps maximum
Voltage Drop across Output:	I_{Load} × 0.4 ohm maximum
Output Leak Current:	10 µA maximum
Recommended Load:	2.2 kΩ – 4.7 kΩ at 24 Vdc

CONNECTOR # 5

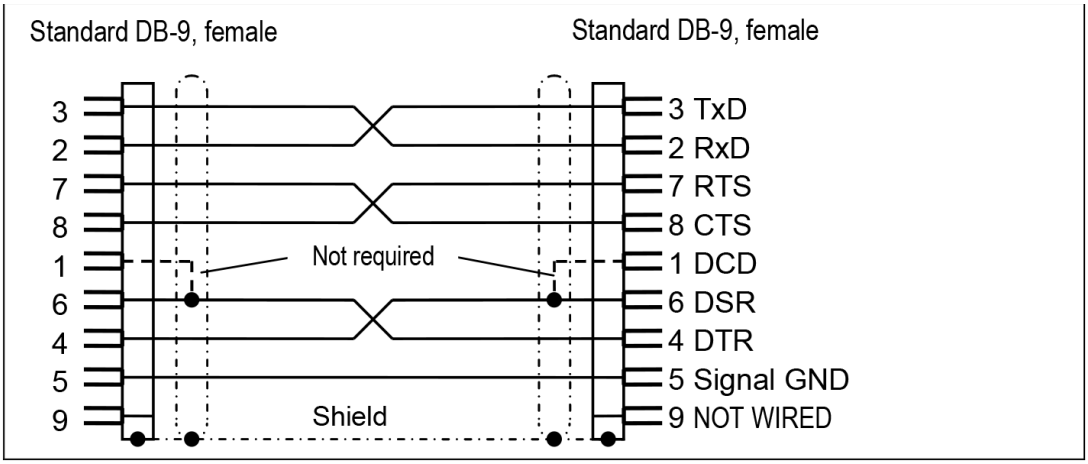


Type: Standard DB-9 Connector, male
RS-232-C Software Interface to operate the AE6000 UP Module through a computer based Automation System or a standard Windows® Computer (Windows® 7 / 10) and additional DSCC Software.

Pin no.	Input/ Output	Signal name
1	In	DCD
2	In	RxD
3	Out	TxD
4	Out	DTR
5	-	Signal GND
6	In	DSR
7	Out	RTS
8	In	CTS
9	-	not wired

Connect Module's Connector # 5 by a shielded 9-pole Serial Interface cable to an available serial port of your Automation System or Computer.

Serial Interface Cable to connect a PC or Automation System

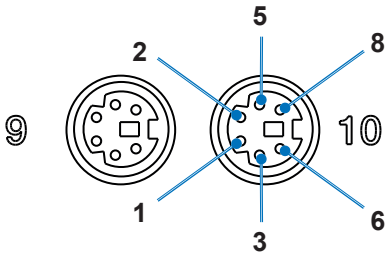


Serial Interface Cable

5 m	A/N O67L0010500 (A/N K0010500)	10 m	A/N O67L0011000 (A/N K0011000)
15 m	A/N O67L0011500 (A/N K0011500)	20 m	A/N O67L0012000 (A/N K0012000)

CONNECTORS # 9 AND # 10

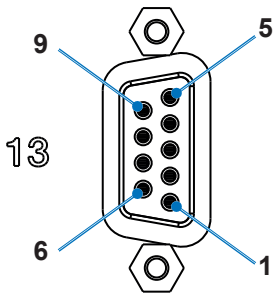
N.B.
These sockets are used to connect up more than one DS6000 UP Module!
The first and last Module of the network has to be terminated (refer to “6.5.1 Setting the Dip-Switch # 6” on page 35, switch SW2 = ON).



Type: 6-pole Miniature Sockets
When operating more than one DS6000 UP Module they must be connected up by special Patch Cords, length e.g. 18 cm/ 7” (A/N O67L0020018, formerly A/N K0020018).
At Modules placed side by side, practically Connector # 9 is connected to Connector # 10 of the next Module and so on. However, connecting Connector # 9 to # 9 or Connector # 10 to # 10 is permitted as well.

Pin no.	Signal name
1	not connected
2	not connected
3	CAN-H
5	COMM GND
6	not connected
8	CAN-L

CONNECTOR # 13, PROFIBUS INTERFACE OF PROCESS MONITORING (ONLY FOR AE6000 UP MODULES WITH PROFIBUS INTERFACE)

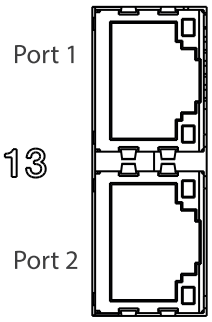


Type: Standard DB-9 Connector, female
All input and output signals managed through Hardwire Interface of standard DB-25 Connector # 2 can be driven even through PROFIBUS/PROFINET interface.
Connection to a PROFIBUS Interface of an Automation System or PC requires special PROFIBUS-cable and -plug.

N.B.
Qualified staff of the customer must make the wiring of the PROFIBUS Interface, Connector # 13, to the PC or Automation System!

Pin no.	Signal name
1	not connected
2	not connected
3	RxD/TxD-P (Data line B)
4	CNTR-P
5	DGND (Data reference potential)
6	VP (Power supply plus)
7	not connected
8	RxD/TxD-N (Data line A)
9	not connected

CONNECTOR # 13, PROFINET INTERFACE OF PROCESS MONITORING (ONLY FOR AE6000 UP MODULES WITH PROFINET INTERFACE)



Type: Double Ethernet socket
All input and output signals managed through Hardwire Interface of standard DB-25 Connector # 2 can be driven even through PROFIBUS/PROFINET interface.
Connection to the PROFINET interface of an automation system or PC using a special cable and connector.

LED indicators: Network connected (lights yellow) and Data transfer (flashes green)

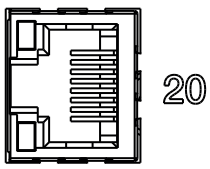
N.B.
Qualified staff of the customer must make the wiring of the PROFINET Interface, Connector # 13, to the PC or Automation System! The minimum cable requirement is Cat 5e with SF/UTP shielding.

N.B.
The PROFINET implementation is certified to PNIO version V2.42. The interface is certified to Conformance Class A, B and C. The AE6000 UP PROFINET module uses only Conformance Class A. The network load was tested to Class III.

N.B.
The MAC address of the PROFINET module is shown on the rating plate of the AE6000 UP module.
- The MAC address of port 1 is: MAC address of the PROFINET module + 1
- The MAC address of port 2 is: MAC address of the PROFINET module + 2
- Example: MAC address of PROFINET module: 70:B3:DB:00:80:CE

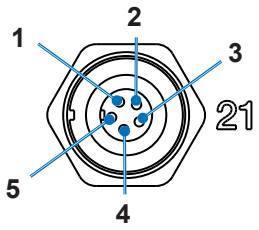
N.B.
In case of upgrade of DITTEL AE6000 module with AE6000 UP, the GSDML file used for interfacing with the former device must be replaced with a new one tailored on DS6000UP models

CONNECTOR # 20



Type: RJ45-Jack
Connect the RJ45 jack via a ready-made Ethernet cable with an Ethernet Hub or Switch, which in turn is connected to the Ethernet network interface card of the Automation System.
If you want to connect the AE6000 UP Module directly to the Ethernet network interface card of a notebook computer, an Ethernet Cross Over cable may be required.
LED indicators: Ethernet cable connected (lights green) and Data transfer (flashes yellow)

CONNECTORS # 21 TO # 24



Type: 5-pole Miniature Sockets
To connect an AE sensor each.

Pin no.	Signal name
1	+ Supply of an Active Sensor
2	+ AE Sensor Signal
3	- AE Sensor Signal
4	RESERVED
5	- Supply of an Active Sensor

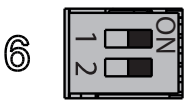
GROUND TERMINAL, STUD M4 AND HEX NUT

To reduce electrical interference make sure that the Module AE6000 UP, all sensors and the machine CNC control are on a common mass potential. If this is not guaranteed by the installation on the machine all components must be bonded by suitable bonding straps to a common local earth (ground).

- Bond the AE6000 UP via the ground terminal stud M4. Use a bonding strap with ring-type cable lug.
- The bonding straps should be as short as possible, the cross section as big as possible.

6.5 *Settings before getting started*

6.5.1 *Setting the DIP-SWITCH # 6*



N.B.
Before getting started the AE6000 UP, some settings must be carried out with the two switches, if applicable!

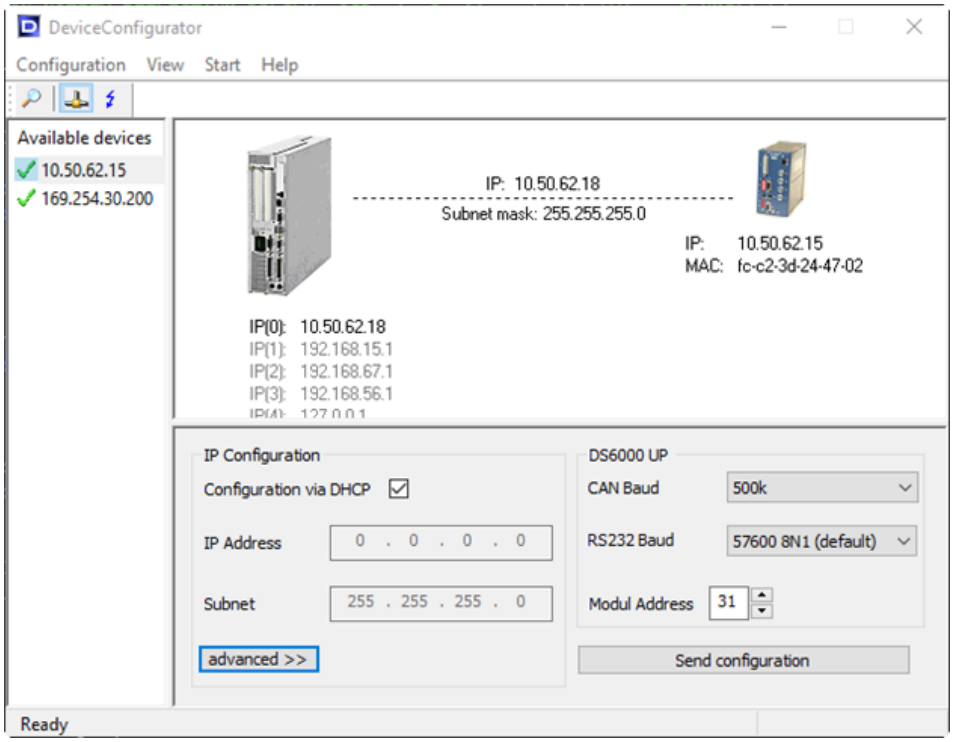
Switch no.	Signal name
SW1	Not used
SW2	CAN Terminator ON/OFF (Factory Setting: OFF)

SW2: The first and the last Module of a module network must be terminated, i.e. switch SW2 of these Modules must be set to ON!

6.5.2 *Perform AE6000 UP DeviceConfigurator*

6.5.2.1 *Module configuration*

In the AE6000 UP some of the settings previously available by physical switches are now possible via DeviceConfigurator software tool.
The Dip Switches for CAN BAUD-RATE and RS232 BAUD-RATE and the Rotary Switches for the MODULE ADDRESS are no more present.



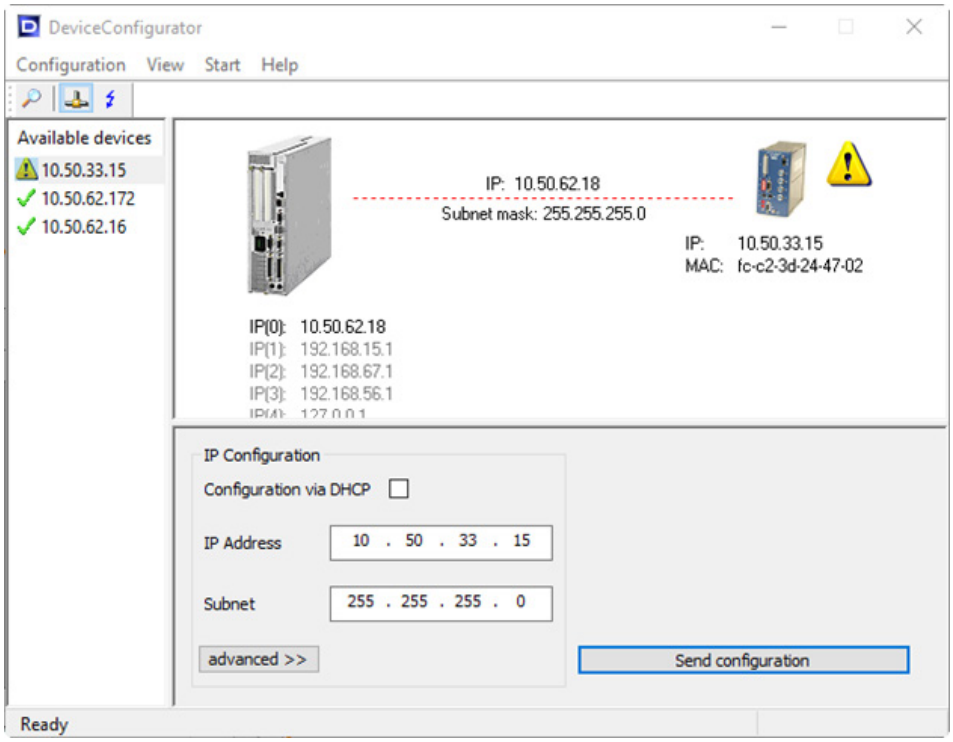
CAN BAUDRATE
All modules in the CAN network must have the same baudrate, the default one is 500K and is also recommended.
- 500K (Default)
- 125K
- 250K
- 1000K

RS232 BAUDRATE
This is for the configuration of the baudrates of the serial interface at the module only. Because the DSCC is in most cases independent of this parameter configured to 576008N1, it is not recommended to change this configuration. It is present because of compatibility issues with former DS6000 modules. The Baudrates of the USER depends on the configuration inside Parameter settings inside DSCC.
- 576008N1 (default)
- 38400 8N1
- 19200 8N1
- (USER)

MODULE ADDRESS
Each Module in the network must have unique module address; the allowed values are 1-99.
The module address is also the address to be selected for Profibus.

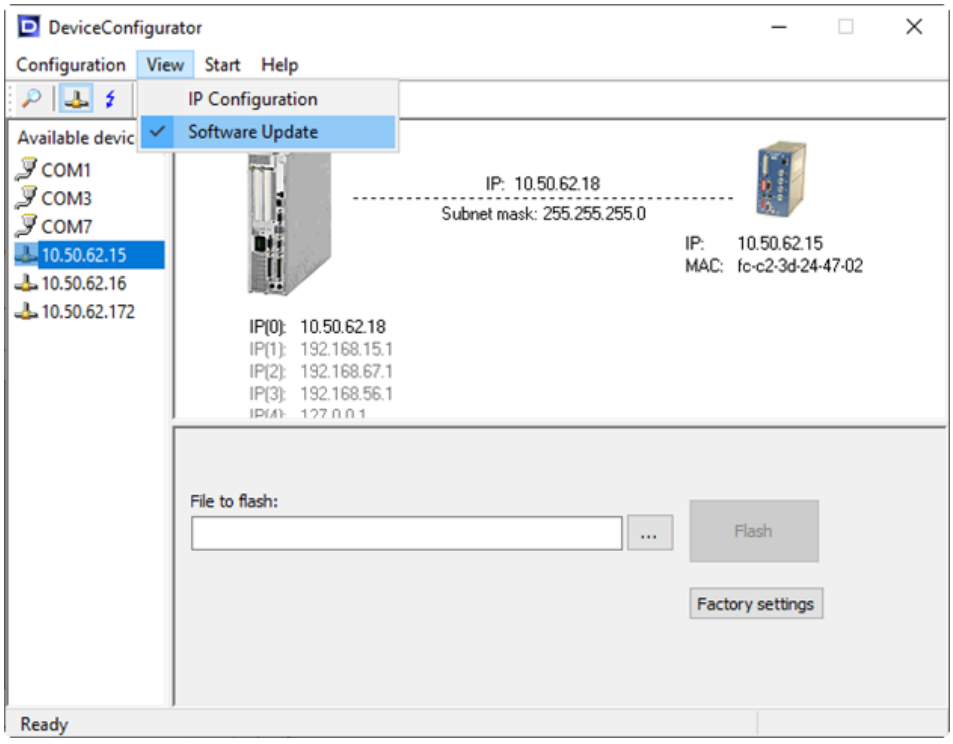
RESTRICTION

The configuration is only possible if the module is detected as a DS6000 UP and in the same subnet of the configurator. Otherwise the group box with the DS6000 UP configuration remains empty:



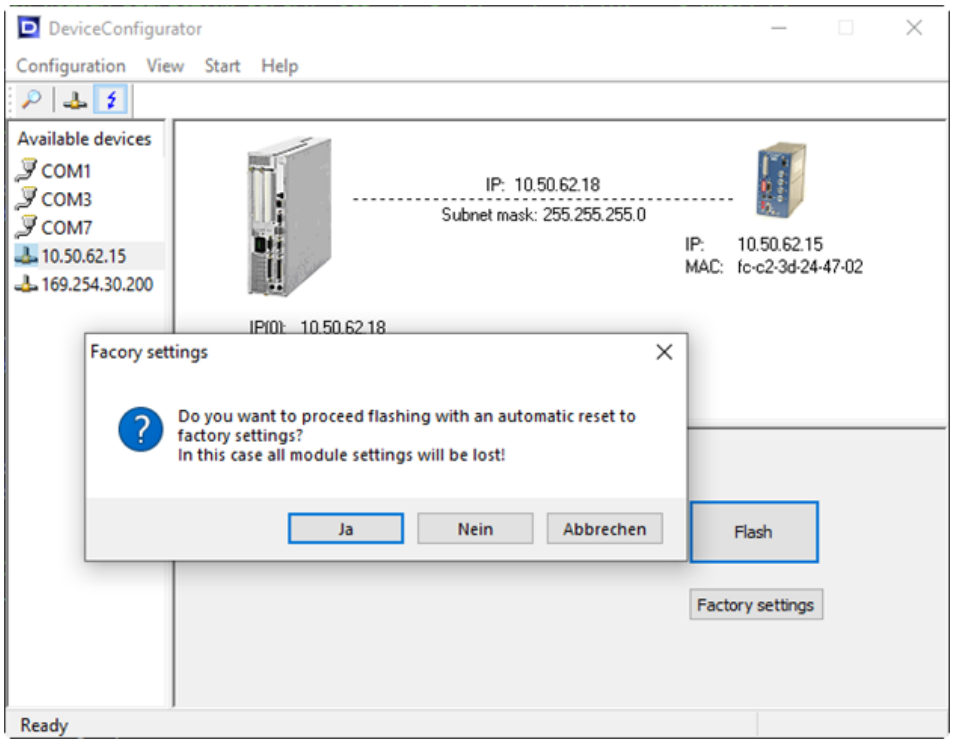
6.5.2.2 *Software Update*

Switch to “Software Update” Screen from Menu (View -> Software Update):



The Software update is easier than on former DS6000 devices, because no DIP-Switches are involved and there is no disconnection/connection of the 24V power supply necessary. The firmware package is an encrypted bin file supplied by Marposs.

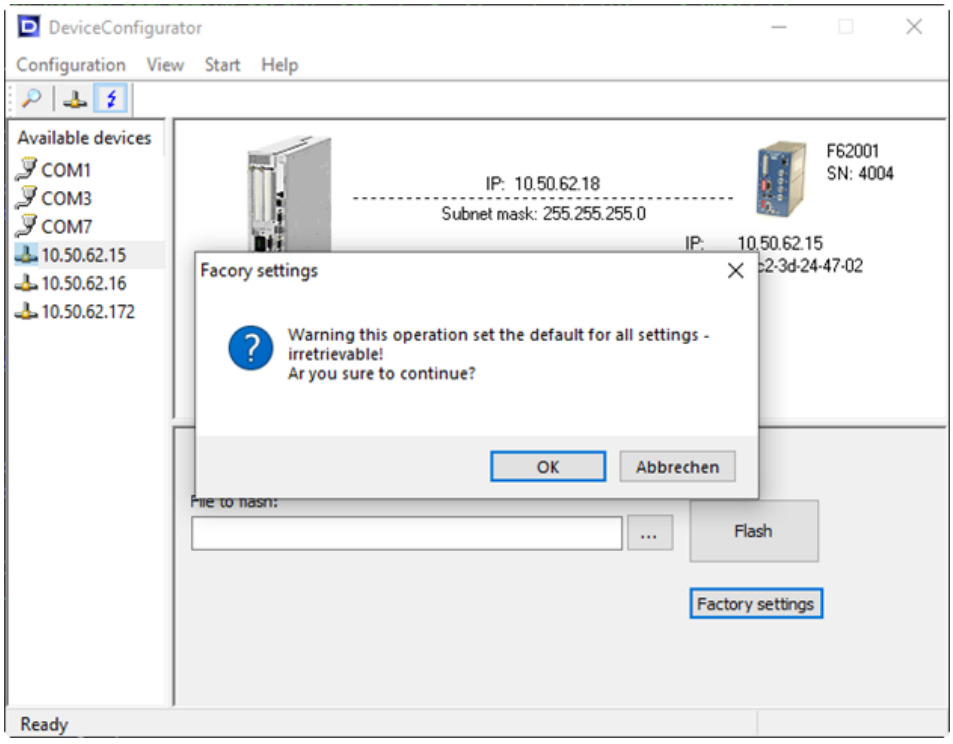
Select Firmware and click on Flash key.



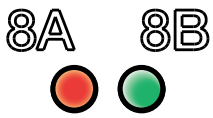
Before the update procedure starts the DSCC requests if you want to perform an additional Factory Reset of the stored settings. This is optional.

6.5.2.3 *Factory Settings*

At former DS6000 modules the factory reset was triggered by a special combination of the rotary encoder and DIP switches. This feature moved now to the Deviceconfigurator as follows:



6.5.3 *LED Displays while operating*



The LEDs 8A and 8B are for PROFIBUS and PROFINET operating status.

ONLY FOR AE6000 UP MODULES WITH PROFIBUS INTERFACE

LED 8A

Operating Mode		
LED State	**Indication**	**Comments**
Off	Not online / No power	-
Green	Online, data exchange	-
Flashing Green	Online, clear	-
Flashing Red (1 flash)	Parameterization error	-
Flashing Red (2 flashes)	PROFIBUS Configuration error	-

LED 8B

Status		
LED State	**Indication**	**Comments**
Off	Not initialized	-
Green	Initialized	-
Flashing Green	Initialized, diagnostic events(s) present	-
Red	Exception error	-

ONLY FOR AE6000 UP MODULES WITH PROFINET INTERFACE

LED 8A

Network Status		
LED State	**Indication**	**Comments**
Off	Offline	No power-No connection with IO controller
Green	Online (RUN)	Connection with IO controller established, IO controller in Run state
Green, 1 flash	Online (STOP)	Connection with IO controller established, IO controller in STOP state or IO data bad, IRT synchronization not finished
Green, 3 flashes	Identify	Flashing 3 times (1Hz) continuously to identify slave (DCP_Identify)
Red	Fatal event	Major internal error (this indication is combined with a red module status LED)
Red, 1 flash	Station Name error	Station name not set
Red, 2 flashes	IP address error	IP address not set
Red, 3 flashes	Configuration error	Expected Identification differs from Real identification

LED 8B

8B – Module State		
LED State	**Indication**	**Comments**
Off	Not initialized	No power or Module not ready
Green	Normal Operation	
Green, 1 flash	Diagnostic Event	Diagnostic event(s) present
Red	Exception error or Fatal Event	Modul in exception state or Major internal error (this indication is combined with a red Network Status LED)

The LED 7 is for System monitor status and the LED 4 is for the power status.

LED 7

System monitor		
LED State	**Indication**	**Comments**
Green	System is ok	-
Red	System is not ok (different for AE6000 UP and M6000 UP)	for AE6000 UP: - AE Sensor signal of the active set number is missing (e.g. faulty sensor or cable, no sensor connected or AE input without connected sensor selected). - Simultaneously a System Monitor Failure Signal (LOW signal) is fed through pin 2 of connector #2 or PROFIBUS/PROFINET interface connector #13 to the machine CNC control.

LED 4

Power		
LED State	**Indication**	**Comments**
OFF	The M6000 UP or AE6000 UP Module is not powered by a 24 Vdc source and/or the internal, resettable fuse and/or external fuse (4 Amp) has triggered.	-
ON (light green)	The M6000 UP or AE6000 UP Module is ready to operate.	-

7 DSCC SOFTWARE

7.1 General

7.1.1 Hardware Requirements

To use the DSCC Software the following hardware is required:

- a PC based Automation System for machine tools (e.g. SINUMERIK®) or a standard Windows® PC with Intel®- or AMD®- Processor and with a hardware equipment corresponding to the operating system,
- a free serial port (RS-232) on the Automation System or computer,
- or an Ethernet interface on the Automation System or computer.

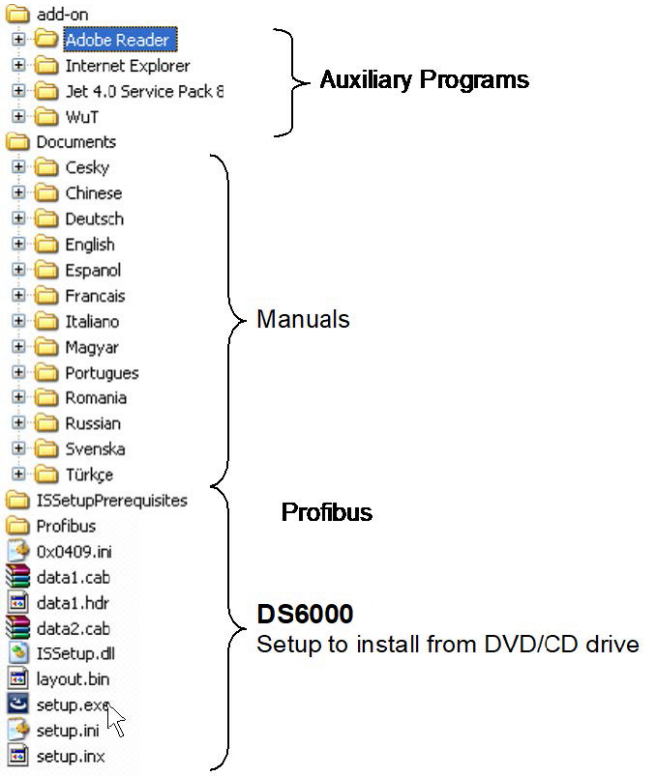
7.1.2 Supported Operating Systems / System Requirements

Operating System	Remarks
Windows® 7	no restriction
Windows® 10	no restriction

Applies to all operating systems:

- TCP/IP-Stack must be installed.
- At least an 8-bit (256 colours) screen display is recommended.
- For the Online Help function a Microsoft Internet Explorer Version 5.x or later is required (refer to the following paragraph).

7.1.3 Directory Structure



7.1.4 *Running set-up program using CD-ROM or DVD*

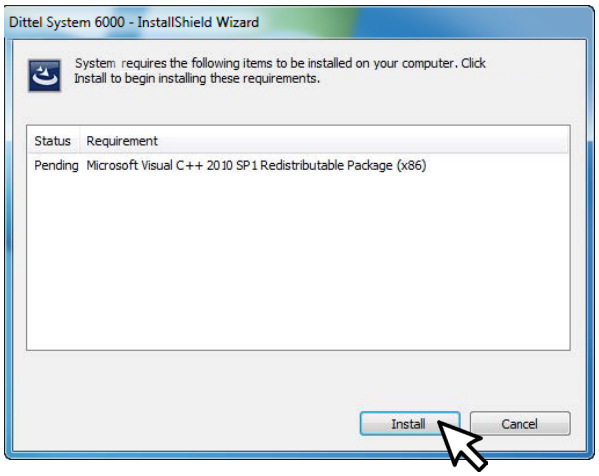
N.B.
Installing the set-up program on Windows® 7 / 10 must be done with administrator rights!

Proceed as follows:
- Insert the DSCC Software CD-ROM or DVD into the respective drive of your Automation System or computer.
- From Windows® start the file manager (e.g. Explorer) and select the appropriate drive.
- Start Setup.exe.
- Continue with running the set-up program as described in the following paragraph.
- If you want to update the program, continue as described in the paragraph “7.3 Software Update” on page 49.

7.2 *Software Installation*

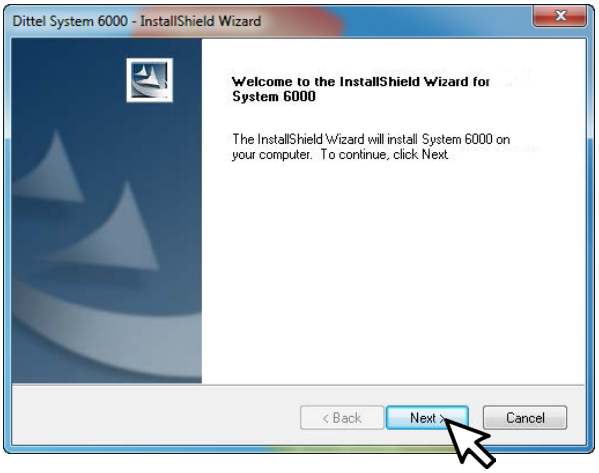
7.2.1 *Standard Windows®*

N.B.
Should the DSCC Software be installed on a SINUMERIK® 840D, skip this chapter and proceed as described in the paragraph “7.2.2 SINUMERIK® 840D” on page 45.



If not all prerequisites for installation have been met yet, the opposite dialog will be displayed.

Click on [Install >] to continue.



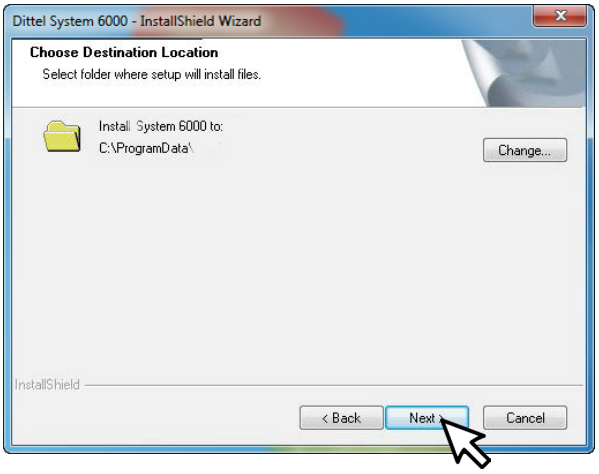
If all prerequisites for installation have been met, a Welcome screen opens after starting the set-up.

Click on [Next >] to continue.

Read the License Agreement thoroughly. If required, the License Agreement can be printed, see key [Print].

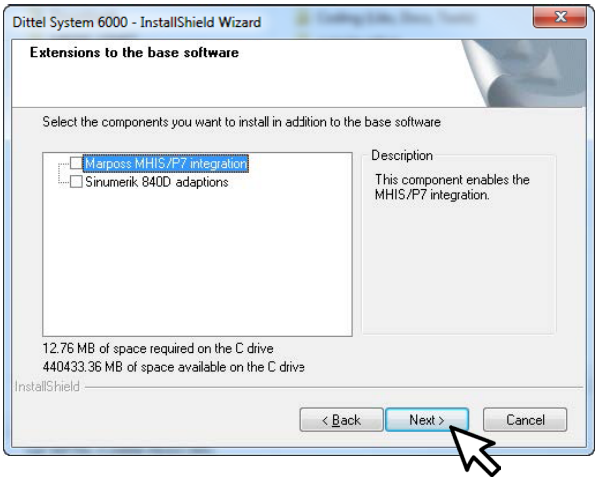
If you accept the License Agreement, click on [Next >].

The installation process will continue.



On the opposite screen select the folder where the set-up will install the files:

It is recommended not to change the path.
Click on [Next >] to continue.



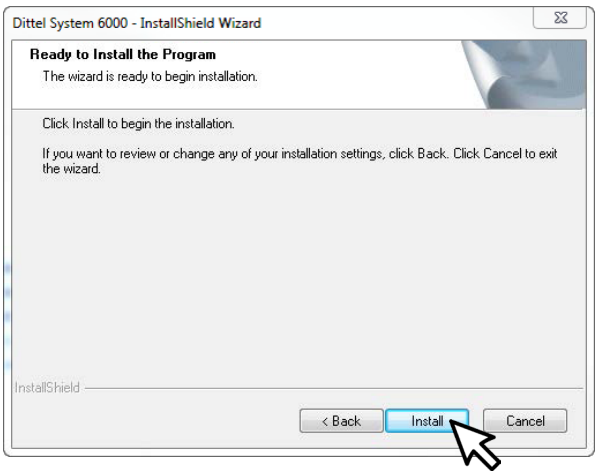
Additionally to the base software the following extensions may be installed:

1) Marposs MHIS/P7 integration.
With this option the Marposs MHIS software is integrated and activated or deactivated.

2) Sinumerik 840D adaptions
This option should NOT be selected when a standard Windows® installation is running.

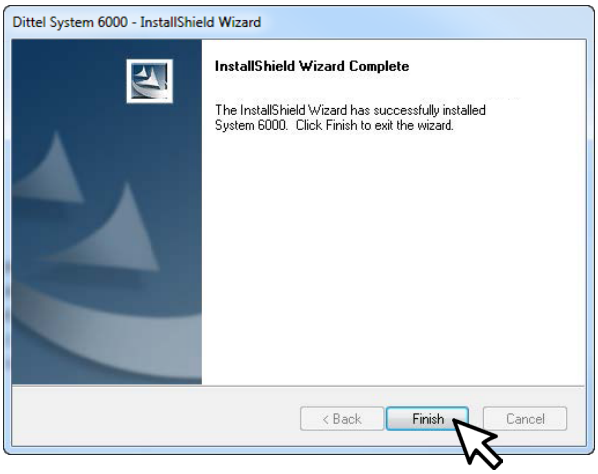
If no extension is highlighted only the base software is installed.

Click on [Next >] to confirm the extension - if any.



The installation starts with the opposite screen:

Click on [Install] to continue.



After successful installation the opposite screen is displayed:

Click on [Finish] to complete the installation of the DSCC Software.

N.B.
WHEN USING Windows® 7 / 10:
If the request for a restart should appear, then it is mandatory that you apply again with the same user name. The installation can be completed successfully only in such a way.

7.2.2 *SINUMERIK® 840D*

The following chapter describes the installation of the DSCC Software on a SINUMERIK® 840D (based on Windows® 7 / 10).

PCU 50

How to start the SINUMERIK® in the Service Mode:

- During the start-up phase of the SINUMERIK® the message “Please select operating system to start” is displayed. Press the [↓] key once.
- Confirm by pressing the yellow [Input] key and the main menu is displayed.
- Select “Standard Windows (Service Mode)” by pressing the [4] key.
- In the following menu select “Standard Windows (without starting SINUMERIK® HMI)” by pressing the [1] key.
- Without operating any key wait till the restart is complete.
- If you are asked for the password, enter <SUNRISE>.
- Run the set-up as described in the paragraph “7.1.4 Running set-up program using CD-ROM or DVD” on page 42.

PCU 50.3

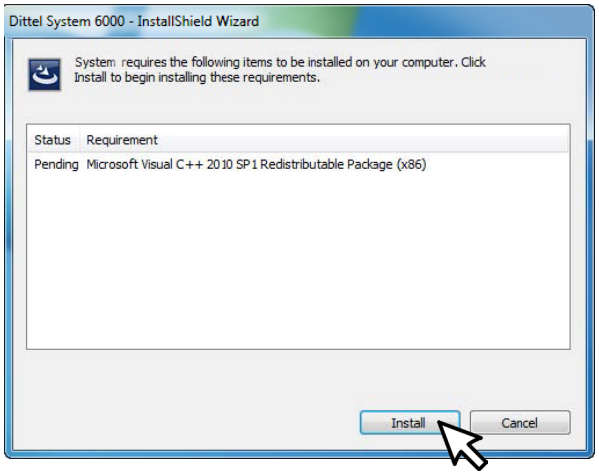
How to start the SINUMERIK® Service-Desktop:

- During the start-up phase of the SINUMERIK® press the [3] key as soon as the Version number is displayed in the lower right corner of the boot screen.
- If you are asked for the password, enter <SUNRISE>.
- In the following menu select “Service-Desktop” or press the [Return] key.
- Run the set-up as described in the paragraph “7.1.4 Running set-up program using CD-ROM or DVD” on page 42.

PCU 50.5

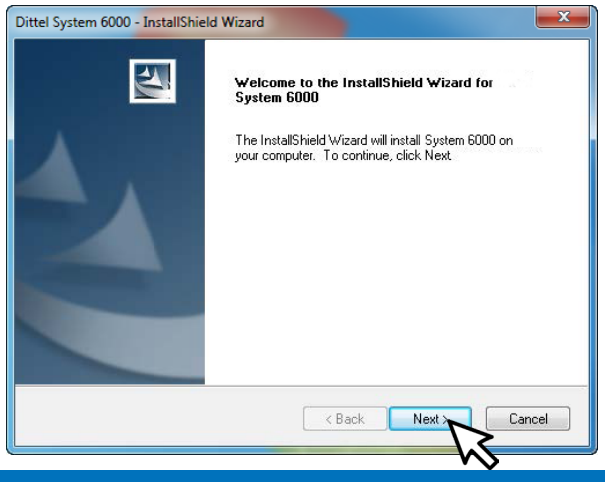
How to start the SINUMERIK® Service-Desktop:

- During the start-up phase of the SINUMERIK® press the [3] key as soon as the Version number is displayed in the lower right corner of the boot screen. Or if a Touch Panel is used, as soon as counted down from 3.
- Login with the administrator account, which was created by installing the PCU Base Software.
- Run the set-up as described in the paragraph “7.1.4 Running set-up program using CD-ROM or DVD” on page 42.



If not all prerequisites for installation have been met yet, the opposite dialog will be displayed.

Click on [Install >] to continue.



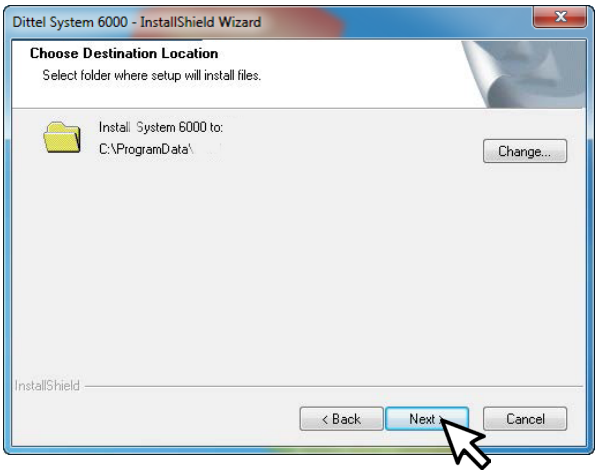
If all prerequisites for installation have been met, a Welcome screen opens after starting the set-up.

Click on [Next >] to continue.

Read the License Agreement thoroughly. If required, the License Agreement can be printed, see key [Print].

If you accept the License Agreement, click on [Next >].

The installation process will continue.

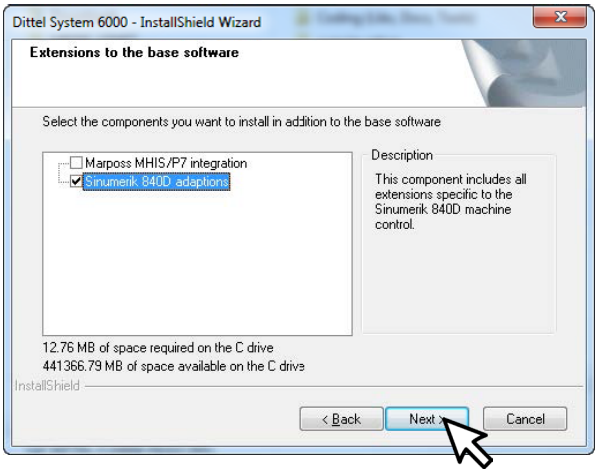


The target directory can be changed in the adjacent screen:

We recommend that you leave the path unchanged.

The following steps relate to the default installation path (see the paragraph “7.5.1 Default installation path” on page 51).

Click on [Next >] to continue.

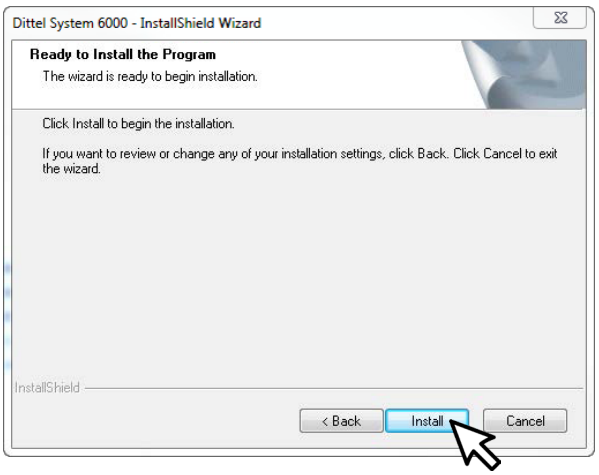


Additionally to the base software the following extensions may be installed:

1) Marposs MHIS/P7 integration.
With this option the Marposs MHIS software is integrated and activated or deactivated.

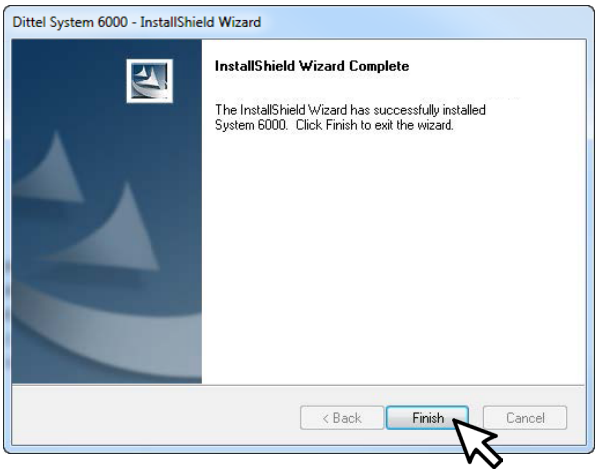
2) Sinumerik 840D adaptions
Make sure this option is selected!

Click on [Next >] to confirm the extension.



The installation starts with the opposite screen:

Click on [Install] to continue.



After successful installation the opposite screen is displayed:

Click on [Finish] to complete the installation of the DSCC Software.

N.B.
WHEN USING Windows® 7 / 10:
If the request for a restart should appear, then it is mandatory that you apply again with the same user name. The installation can be completed successfully only in such a way. In this case start the SINUMERIK® in the “Service Mode” or with the “Service-Desktop” (as described at the beginning of this paragraph).

Now you can generate a softkey for the DSCC Software.

Additionally a directory oem was created in the directory %ALLUSERSPROFILE%\Marposs. Here you will find examples for the integration of the DSCC Software into SINUMERIK® HMI Advanced (regie.ini, oemframe.ini and language\re_xx.ini) or SINUMERIK Operate (systemconfiguration.ini and oemframe.ini).
The paths of the sample files (systemconfiguration.ini and regie.ini) to the executable files scc.exe and sccviewer.exe were adjusted automatically by the Setup.

N.B.
The system environment variable %ALLUSERSPROFILE% depends on the operating system and user settings.
To find out where the directory is actually located, enter the path %ALLUSERSPROFILE%/Marposs in the address bar of Windows® Explorer. Confirm the input with the [Enter] key.

SINUMERIK® HMI Advanced

Copy the files regie.ini, oemframe.ini and language\re_xx.ini into your OEM-directory (e.g. f:\oem) or extend your configuration files according to the example files.

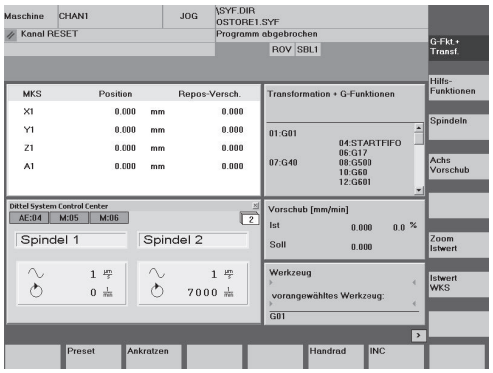
Now you can close the Service Mode or the Service-Desktop and start the Automation System normally. The DSCC Program starts when pressing the appropriate softkey.

N.B.
If only a pre-configured minimum view shall be started and not the complete application the following program arguments are available when calling the program “sccviewer” (see example file Regie.ini):
Task10 = name := oemframe, cmdline := “f:\\oem\\DS6000 UP\\sccviewer.exe /mode:start 0,400 220x140 /layer 1 /autohide”, Timeout := 6000, WindowName := “Marposs System viewer”, HeaderOnTop := FALSE, Preload:=TRUE
Please note: it may be necessary to adjust the path to the SCC.exe and the sccviewer.exe in the file regie.ini..

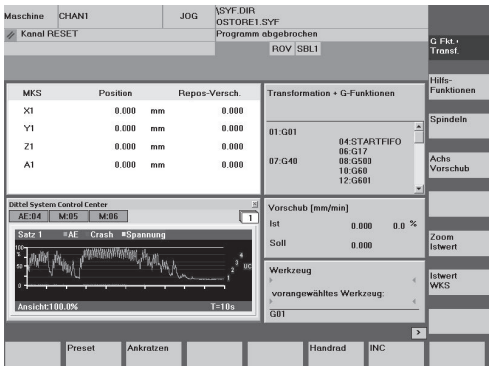
In the example /mode:start 0,400 220x140 /layer 1 /autohide

0,400	x/y Position of window (related to the coordinate origin (0/0) in the upper left screen corner)
220x140	Width and height of window
/layer 1	Program starts with Display Layer 1
/autohide	When the operating area ‘MACHINE’ is left, then the view is blanked automatically. In this context, it is useful to set the parameter ‘Preload’ to ‘TRUE’ (see above). Through this the program is started automatically when starting the machine control. Without this option, the view is always visible on a fixed display position (even when the operating area MACHINE is not selected).

Example:
Balancing
Module
M6000 UP



Example:
AE-Module
AE6000 UP



N.B.
The full-screen mode and the minimum view mode are using the same interface settings. If one of these applications is already active and the second application is started additionally, the first application closes automatically to release the occupied interface.

SINUMERIK Operate

Copy the file systemconfiguration.ini into your User or OEM-directory (e.g. f:\oem).
• <Sinumerik_Operate_Installationspfad>/user/sinumerik/hmi/cfg
• <Sinumerik_Operate_Installationspfad>/oem/sinumerik/hmi/cfg or extend your configuration files according to the example files.

Copy the file oemframe.ini into your directory <Sinumerik_Operate_Installationspfad>/compat/user/oem
or extend an existing configuration file of the same name according to the example files.

Now you can close the Service Mode or the Service-Desktop and start the Automation System normally. The DSCC Program starts when pressing the appropriate softkey.

N.B.
In the systemconfiguration.ini find examples how the Marposs System Viewer can be embedded in „Sinumerik Operate“.

Key shortcuts SCC.ex sccviewer.exe

[Ctrl] + [1] … [9]
selects the Display Layer 1 to 9 directly provided that the keyboard focus is set to that application (either particularly by computer mouse or by softkey “Marposs System viewer”)

[Ctrl] + [End]
exits the application “sccviewer” (it does not matter if the keyboard focus is set to that application or not).

7.3 *Software Update*

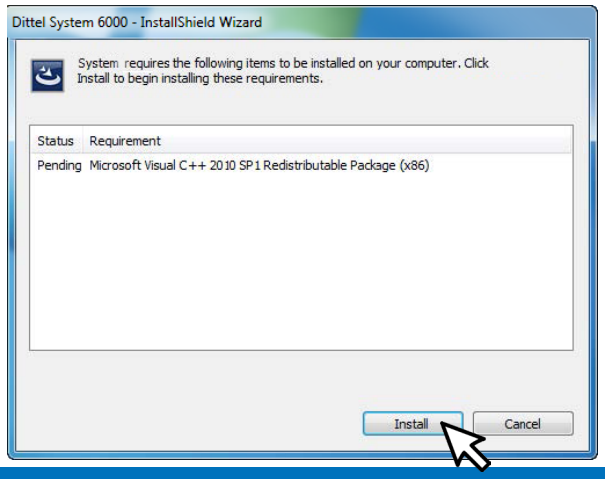
Due to improvements and extensions like functions, languages, operation, etc. but also corrections, it may be necessary to update your DSCC Software.

7.3.1 *Changing the Installation Directory*

If you run an update from a version earlier than 3.60, follow the instructions in the paragraph “7.2 Software Installation” on page 42. Your data are retained and imported into the new version.
Please note that from Version 3.60 on a change of the installation path took place. Now, the DSCC software is located at %ALLUSERSPROFILE%\Marposs, where the environment variable is resolved differently depending on the operating system and any adjustments (see paragraph “7.5.1 Default installation path” on page 51”).
Under Windows® 7 / 10 the resolved path is called by default C:\ProgramData\Marposs.

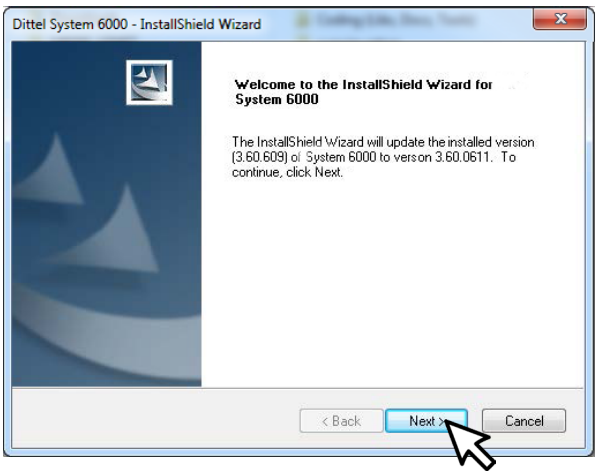
Proceed as follows:

Close the current DSCC Software on your Automation System or Computer, if applicable.
Install the new software version from the CD/DVD considering the instructions given in paragraph “7.1.4 Running set-up program using CD-ROM or DVD” on page 42.
Start the program Setup.exe by double-clicking.



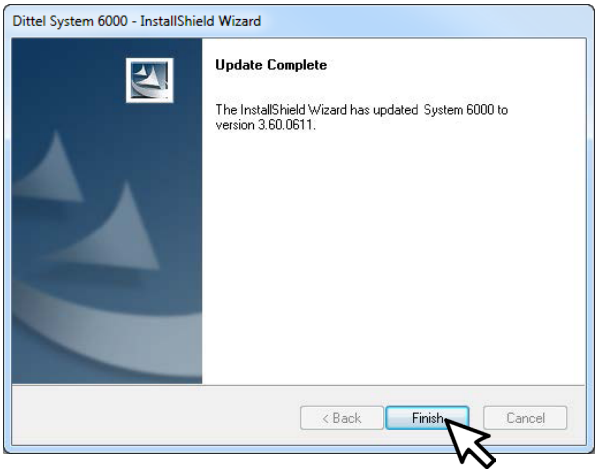
If not all prerequisites for installation have been met yet, the opposite dialog will be displayed.

Click on [Install >] to continue.



The program creates the InstallShield.

Click on [Next >] to update the DSCC.



The new version of the DSCC Software will overwrite the present version. All settings like Sets, Limits, Offset, etc. remain unchanged.

To complete the Update click on [Finish].

Start the program as usual.

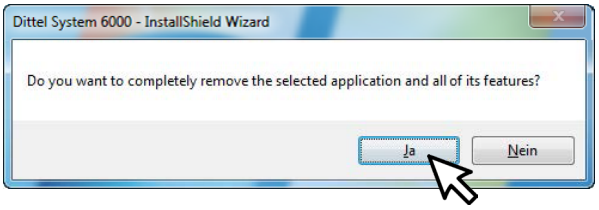
7.4 *Delete the DSCC Software*

The DSCC Software can be deleted completely from your computer or Automation System using the Windows® Control Panel.

Proceed as follows:

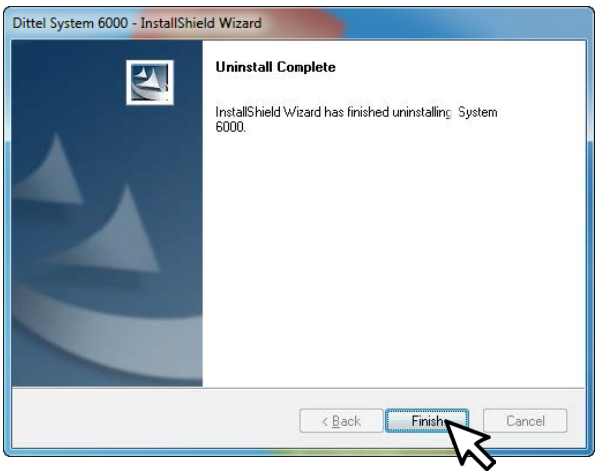
If applicable, close the current DSCC Program.

Windows® 7: Open the folder Programs and Functions via Start / (Settings) / Control Panel.
Windows® 10: Open the folder Programs and Features via Start / (Settings) / Control Panel.
In the list, highlight the line Marposs System 6000 and click on Change (Add) / Remove.



A dialog box opens and asks “Do you want to completely remove the selected application and all of its features?”.

Confirm the uninstallation by clicking on [Yes].



The DSCC Software will be deleted.

Also a system reboot may be necessary. Choose if you want to reboot your computer now or later.

Complete the uninstallation by clicking on [Finish].

If the uninstallation program gives the message that files could not be removed completely, delete the remaining files in the folder Marposs System 6000 with the help of the Windows® Explorer.

7.5 *Further information*

7.5.1 *Default installation path*

The default installation path for the DSCC software is %ALLUSERSPROFILE%\Marposs.

N.B.
%ALLUSERSPROFILE% is a system environment variable and depends on the operating system and user settings. To determine the precise location of the directory, enter the path %ALLUSERSPROFILE%\Marposs in the Windows Explorer address line and press [Enter] to confirm. Windows® then automatically replaces the placeholder with the full path, which you can read in the Explorer address line.

Example Under Windows® 7 / 10 the full default path is C:\ProgramData\Marposs.

7.5.2 *Command line options*

You can run the SCC.exe and sccviewer.exe programs using command line options. The text file command-line.txt in the <Install_path>\ctrl\help\ directory contains an overview of the available command line options.

7.5.3 *Keyboard shortcuts*

You can control the SCC.exe and sccviewer.exe programs using keyboard shortcuts. The text file keyboard-shortcuts.txt in the <Install_path>\ctrl\help\ directory contains an overview of the the available keyboard shortcuts.

8 DSCC GENERAL SETTINGS

8.1 Starting the Program

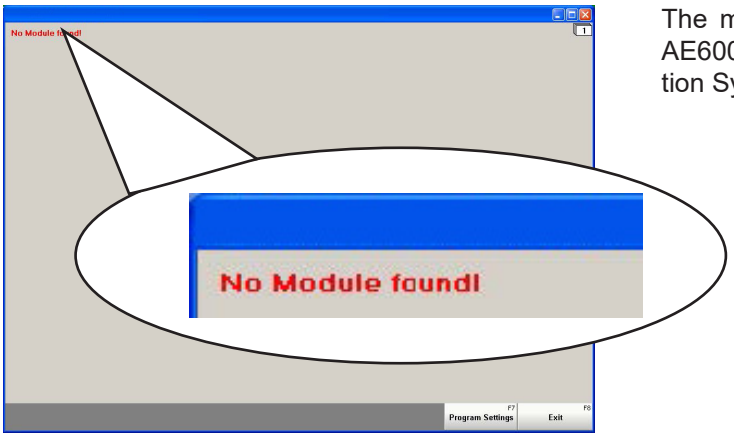
Start the Program on your Automation System or computer by clicking on button Start and then on symbol “Dittel System Control Center”.

Or start the Program by clicking on buttons Start / Programs / Dittel System 6000 and finally on the symbol “Dittel System Control Center”.

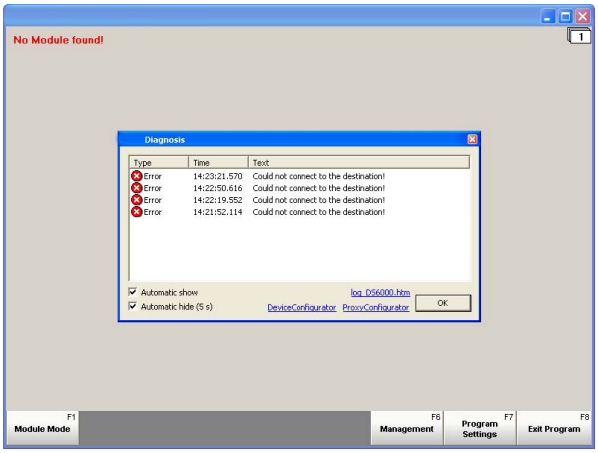
In the SINUMERIK® HMI-Environment you can start the “DSCC Program” by pressing the appropriate softkey.

N.B.
A new installed DSCC Software always starts in the English language!
These ‚General Settings’, particularly the RS-232 interface communication to the Automation System, can only be carried out with operational DS6000 UP Module(s)!

When starting the DSCC Software the very first time the following start screen should open:

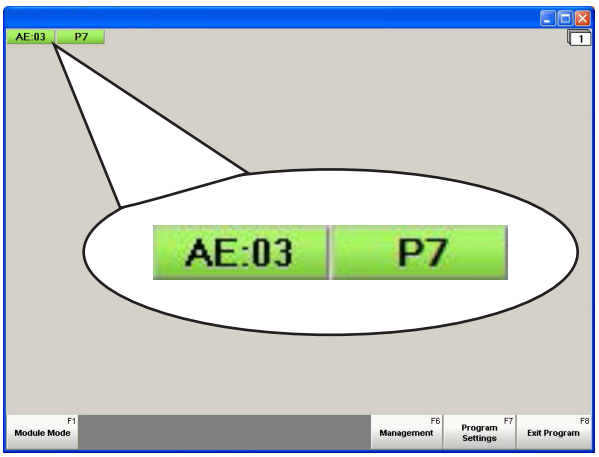


The message “No Module found!” appears since the Module AE6000 UP cannot communicate with the Computer or Automation System yet.



After some seconds, the notice ‘Error Could not connect to the destination’ is displayed repeatedly.

Ignore this notice by clicking on [OK] key or pressing the [Enter] key on the PC keyboard or [Input] on the SINUMERIK® keypad to continue.



With an interface already configured once the following start screen of the module should open:

In this example a Module for AE Process Monitoring, AE6000 UP with the address AE:03, and a MARPOSS Module P7, are connected to the Automation System or Computer.

To set a different language of the screen, the access levels and the communication between your PC or Automation System and Module the following General Settings have to be carried out.

N.B.
For integration of MARPOSS MHIS software and operation of the MARPOSS module P7, see Appendix A and documentation regarding MHIS software and P7 hardware.

8.1.1 *Requirements to configure the RS-232 interface*

The DSCC Software with Software Version V 3.00 or later is installed on your Windows®-based Automation System or on your Standard Windows® computer with appropriate hardware equipment.

One Module is connected via a serial interface cable to an available RS-232 Port of your Automation System or computer.

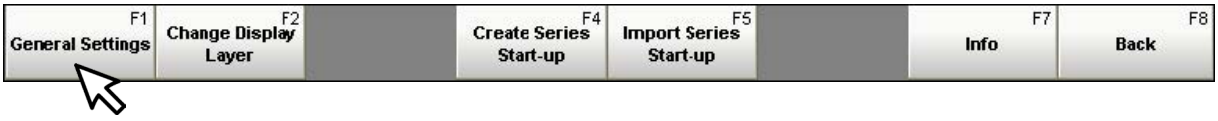
All DS6000 UP Modules are connected to a suitable 24 Vdc power source (all green LEDs # 4 light).

Several DS6000 UP Modules are connected with each other by special patch cords A/N O67L0020018, formerly A/N K0020018 (connectors # 9 or # 10), the first and last Module is terminated (DIP-switch # 6, switch SW2 to „ON“).

8.1.2 *General Settings*

To configure the DSCC Program press or click on the [Program Settings] key or the function key [F7).

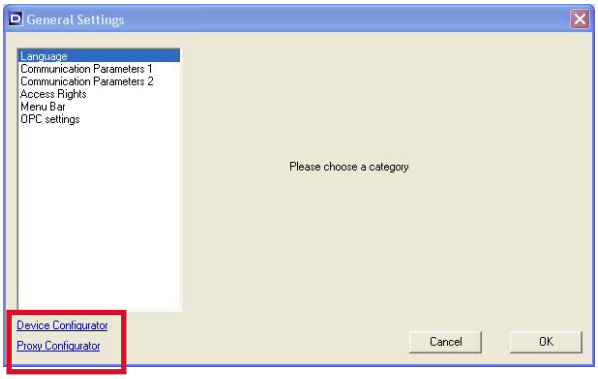
Then click or press on the [General Settings] key or function key [F1].



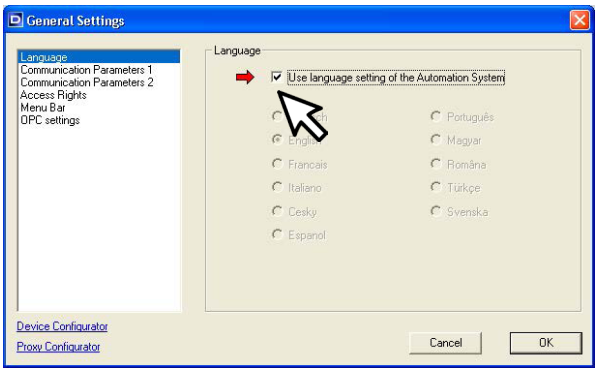
N.B.
If the Proxy Service was installed additionally while installing or updating the DSCC Software to version V 2.20 or later the shortcut to the Proxy Configurator is displayed at the lower left corner on the screen. The Device Configurator is installed automatically when installing or updating the DSCC Software to version V 2.30 or later.

The following screen should open.

8.1.3 *General Settings: Language*

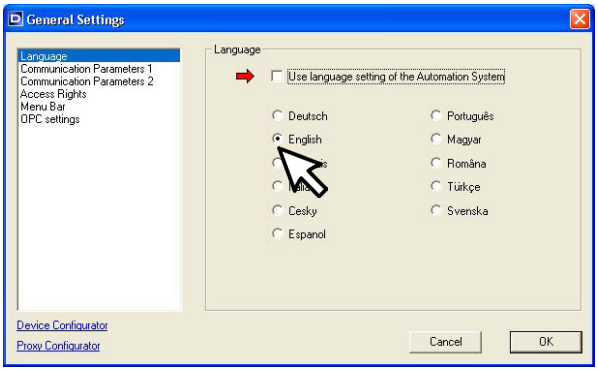


Operation using softkeys/function keys:	Operation using computer mouse:
With the Up- [▲] or Down- [▼] softkey or the function key [F1] or [F2] highlight the wanted Category. To open the options display press the softkey [Select] or function key [F6].	Click on the wanted Category.



Use language setting of the Automation System
Only in combination with an Automation System and installed OPC Server!
Notice the OPC settings!
If this function is activated (check box active), the DSCC Software takes over the language setting of the Automation System.

Operation using softkeys/ function keys:	Operation using computer mouse:
With the [+] / [-] softkeys or the function keys [F3] / [F4] activate or deactivate the function.	Click into the check box to activate or deactivate the function.



Manual Language setting

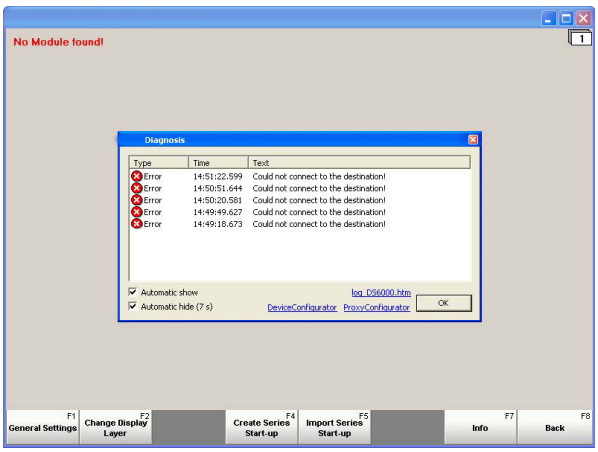
Factory setting: **English**,
can be set to German, English, French, Italian, Czech, Spanish, Portuguese, Hungarian, Romanian, Turkish or Swedish.
Additional languages on request.

With the [+] / [-] softkeys or the function keys [F3] / [F4] highlight the wanted **Language**, in this case English.	Click on the wanted **Language**, in this case English.

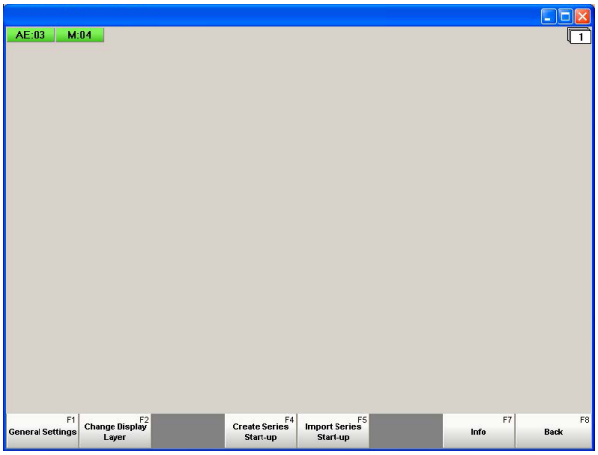
N.B.
Confirm a change in **Language** by clicking on the [OK] key or pressing the [OK] softkey or function key [F8]. The following screen opens in the selected language.

Press or click the [Back to General Settings] / [F5] key and you return without any change to select another **General Setting**.

Press or click the [Cancel] / [F7] key and you return without any change to the English start screen.

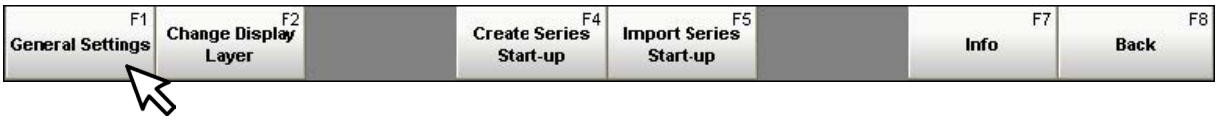


After you have selected and confirmed the language, you return to the opposite screen.
If the RS-232 Interface of the Module is not configured yet the notice **Error Could not connect to the destination** can be displayed repeated.
Ignore this notice by clicking on [OK] key or pressing the [Enter] key on the PC keyboard or [Input] on the SINUMERIK® keypad to continue.
The softkeys and messages have changed into the new language, if applicable.



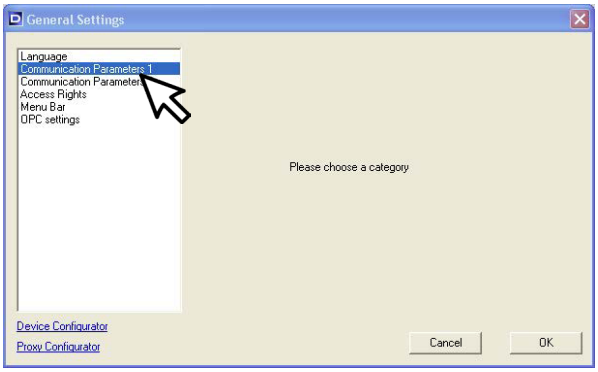
With configured interface and operational DS6000 UP Modules, the screen will show green Module addresses.

To continue click or press on the [General Settings] key or function key [F1].

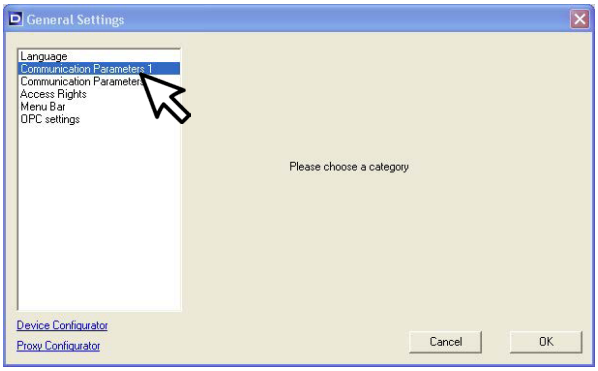


8.1.4 *General Settings: Communication Parameters 1*

N.B.
For Ethernet Interface, see supplementary document «Ethernet Interface, article number ODNDL03EN03».



Operation using softkeys/function keys:	Operation using computer mouse:
With the Up- [▲] or Down- [▼] softkey or the function keys [F1] / [F2] highlight the Category **Communication Parameters 1**. To open the options display press the softkey [Select] or function key [F6].	Click on Category **Communication Parameters 1**.

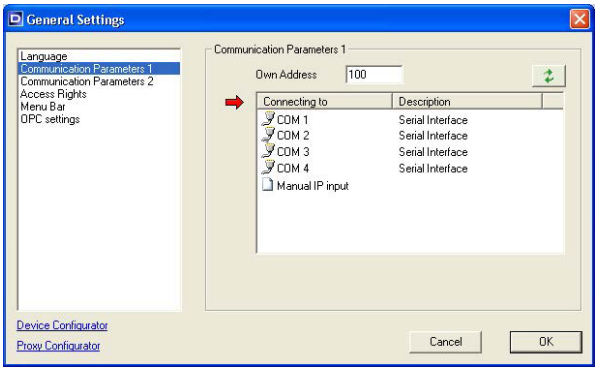


Own Address
Factory setting: **100**,
variable from 100 to 109.

The address setting 100 is intended for the Operator PC or the Automation System. Only with this address, automatic data configuration is possible.

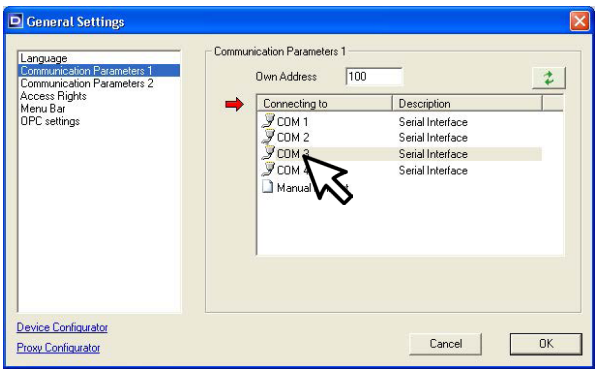
Enter an address higher than 100 when you want to configure the System externally via a Notebook etc. Then the functionality is restricted.

With the [+] or [-] softkey or function keys [F3] / [F4] enter the wanted address.	Click into the address screen, highlight numbers, and enter the wanted address. Or click on [+] or [-] keys to increase or decrease the address.



As soon as Category **Communication Parameters 1** is opened, the DSCC Software is searching for available interfaces of your Computer or Automation System.

With the Up- [▲] / [F1] or Down-softkey [▼] / [F2] set the red arrow to «Connecting to».



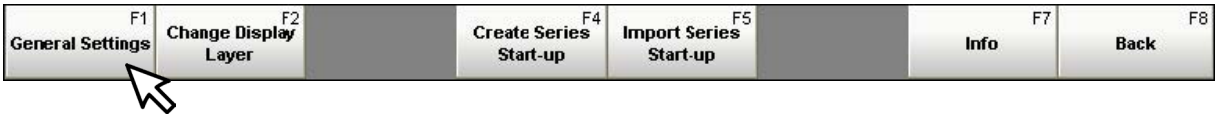
With the mouse cursor or with the [+] / [F3] or [-] / [F4] softkey highlight the Serial Interface of your Computer or Automation System which is connected via a RS-232 Interface cable to a DS6000 UP Module.

When using an Automation System SINUMERIK®, COM1 is always internally occupied, that means, you have to set the Serial Interface to COM2 or higher.

N.B.
Confirm the setting in **Communication Parameters 1** by clicking on the key [OK] or pressing the softkey [OK] or function key [F8]. Communication is done with a Standard Baud Rate of **57600**. After successful connection to the module, the screen with green Module addresses will appear.

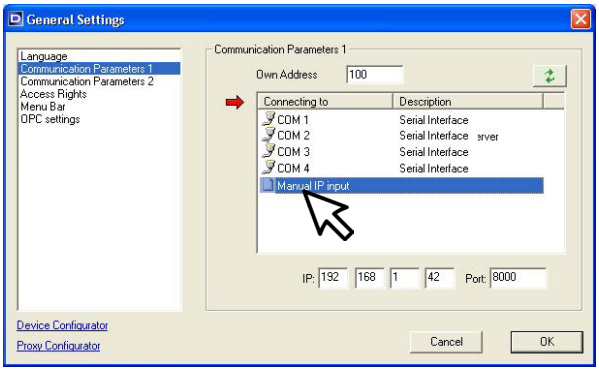
Press or click the key [Back to General Settings] / [F5] and you return without any change to select a new **General Setting**.

To continue click or press on the [General Settings] key or function key [F1].



Setting the IP Address of an Ethernet Interface Converter

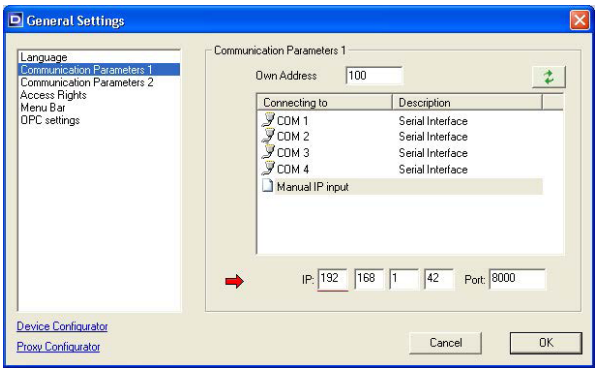
This settings are required when the DS6000 UP Module(s) should be operated via an external interface converter (serial / Ethernet) with an Ethernet interface of your computer or Automation System. IP-address and TCP-Port must be set corresponding to your interface converter:



Manual IP input

Operation using softkeys/function keys:	Operation using computer mouse:
With the Down-softkey [▼] set the red arrow to Connecting to. With the [+] or [-] softkey highlight **Manual IP input**.	With the mouse cursor click on '**Manual IP input**'.

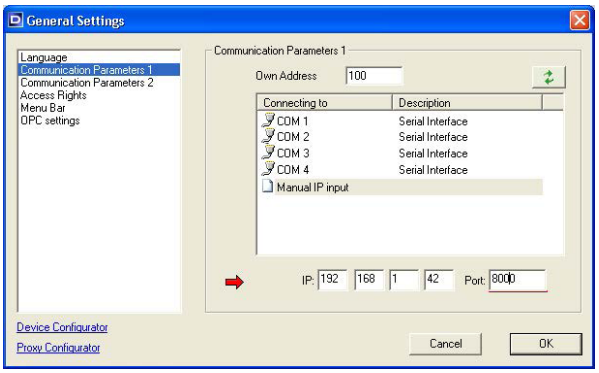
Additional screens open:



IP Address

Factory setting: **192 168 1 42**

With the Down-softkey [▼] set the red arrow to IP. The first screen is underscored red. With the [+] or [-] softkey set the wanted IP-Address. With the Down-softkey [▼] underscore the second screen, set the next numbers using the [+] or [-] softkeys and so on.	Click or highlight each screen and type the wanted IP Address or use the [+] or [-] keys.



Port

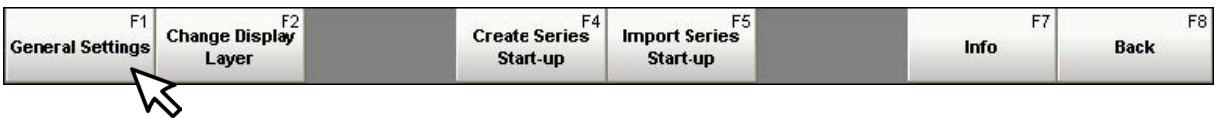
Factory setting: 8000

Operation using softkeys/function keys:	Operation using computer mouse:
With the Down-softkey [▼] highlight the screen Port. With the [+] or [-] softkey set the wanted TCP Port number.	Click or highlight the screen and type the wanted TCP Port or use the [+] or [-] keys.

N.B.
Confirm a change in **Communication Parameters 1** by clicking on the [OK] key or pressing the [OK] softkey / function key [F8]. After successful connection to the module the screen with green Module addresses will appear.

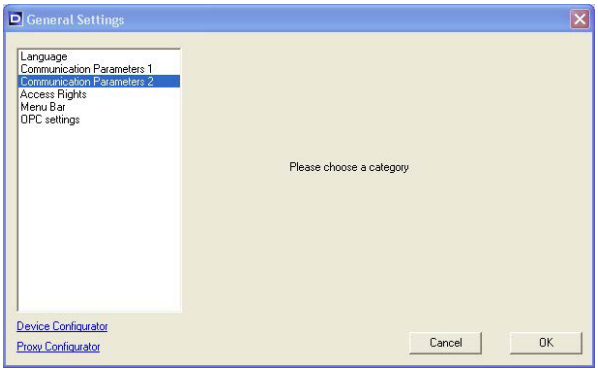
Press or click the key [Back to General Settings] / [F5] and you return without any change to select a new **General Setting**.
Clicking or pressing the [Cancel] / [F7] key returns you without any change to the screen that will show green Module addresses.

To continue click or press on the [General Settings] key or function key [F1].



8.1.5 *General Settings: Communication Parameters 2*

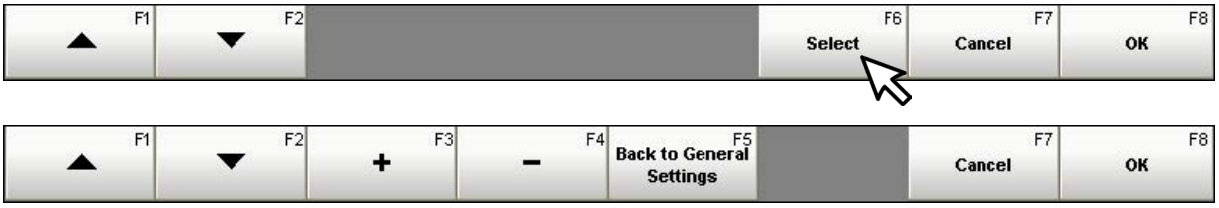
N.B.
This setting is intended for future use, please DO NOT activate!
An activation of this function may cause an error message and no connection to the module can be made!



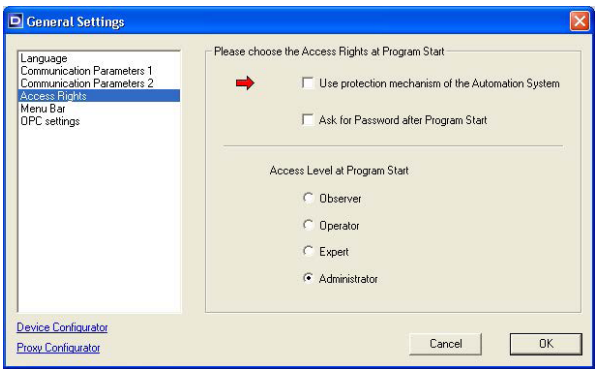
8.1.6 *General Settings: Access Rights*

N.B.
Ex-factory the DSCC Software is shipped with Access Level 'Administrator' and without password.
We recommend not restricting the Access Rights as long as the DS6000 UP Modules are not running properly on the machine tool!

Operation using softkeys/function keys:	Operation using computer mouse:
With the Up- [▲] or Down- [▼] softkey highlight the category **Access Rights**. To open the options display press the softkey [Select] / [F6].	Click on the category **Access Rights**.



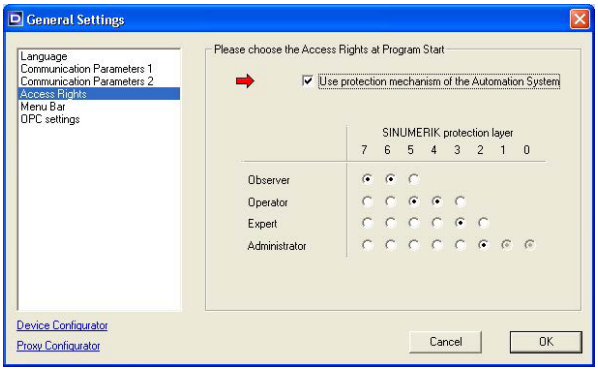
N.B.
The following setting applies only in combination with an Automation System and installed OPC Server!
Notice the OPC settings!



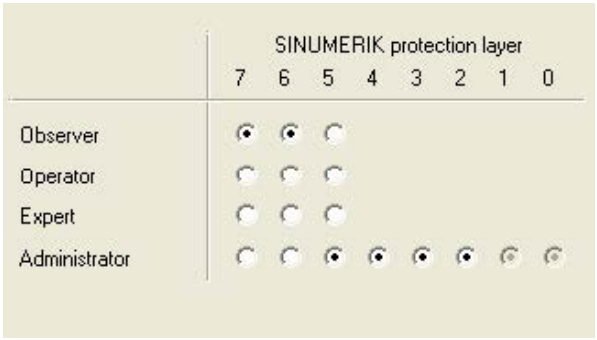
Use protection mechanism of the Automation System

Factory setting: ☐ (not active).

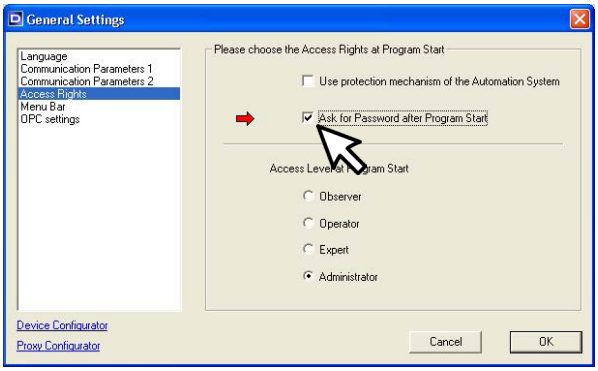
Can be set to ☐ (non-active) or ☑ (active).
With this function, the used protection layers of the Automation System are transferred to the DS6000 UP Modules.



Operation using softkeys/function keys:	Operation using computer mouse:
With the [+] / [F3] or [-] / [F4] key activate or deactivate the function. When activated the following setup screen opens.	Click into the check box and activate or deactivate the function. When activated the following setup screen opens.



For example, the operation and programs of the SINUMERIK® Automation System are protected internally via a 7-stage access mode, in which ‘0’ indicates the highest and ‘7’ the lowest access level.
With the Up- [▲] / [F1] or Down- [▼] / [F2] key and the [+] / [F3] or [-] / [F4] key activate the desired access levels. Or click into the respective check boxes.
When starting the DSCC software the program starts always with the access level predefined by the Automation System. While operating the actual access level of the Automation System determines the access level of the DS6000 UP Modules according the opposite setting.

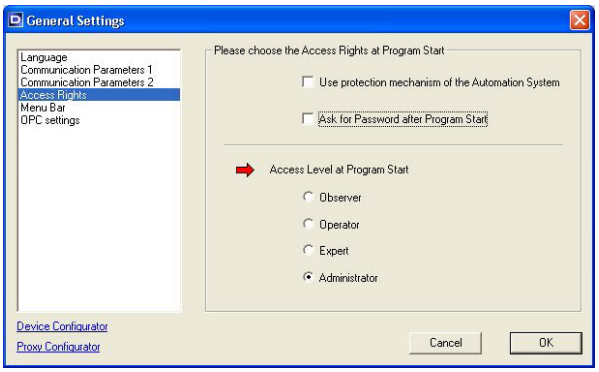


Ask for Password after Program Start

Factory setting: ☐ (not active), no password stored.

Can be set to ☐ (non-active) or ☑ (active).
If this function is active, a password for the selected access level must be entered when starting the program (see next setting).
If this function is not active then the program starts immediately without password in the selected access level.

Operation using softkeys/function keys:	Operation using computer mouse:
With the Up- [▲] / [F1] or Down- [▼] / [F2] key highlight the setting **Ask for Password after Program Start**. With the [+] / [F3] or [-] / [F4] key activate or deactivate the password prompt.	Click into the check box and activate or deactivate the password prompt.



Access Level at Program Start

Factory setting: **Administrator**.
With this setting adjustments or operation can be limited, depending on the access level. Nevertheless, if the Administrator wants to access the program, it is possible any time after entering the valid password.

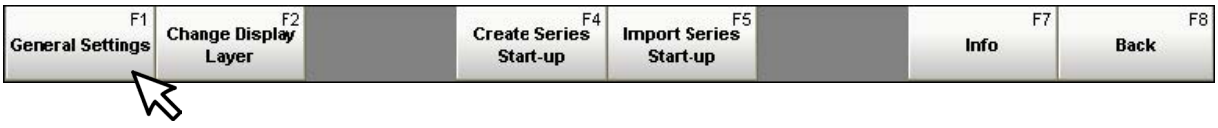
Operation using softkeys/function keys:	Operation using computer mouse:
With the Up- [▲] / [F1] or Down- [▼] / [F2] key highlight the setting **Access Level at Program Start**. With the [+] / [F3] or [-] / [F4] key set the wanted Access Level at Program Start	Click into the check box to set the wanted **Access Level at Program Start**.

AE6000 UP:

Observer: Only observation of the process possible. Control is done solely by external machine commands.
Operator: Like Observer, additionally authorized to select the memory sets and to Start or Stop the AE measurement.
Expert: Like Operator, additionally authorized to set or change the memory sets and to perform Auto Setup of the AE Module.
Administrator: No restriction, full range of operation and setting.

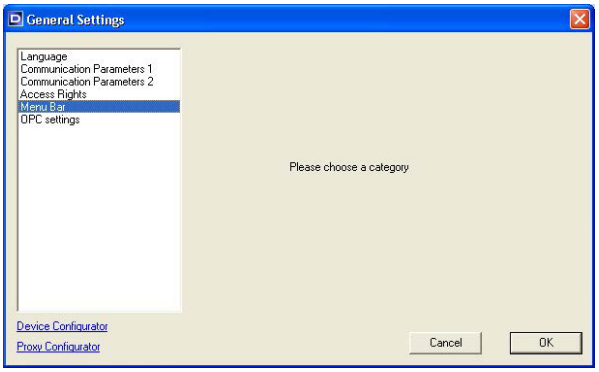
N.B.
Confirm a change in Access Rights by clicking on the [OK] key or pressing the [OK] softkey or function key [F8]. You return to the green screen.
Press or click the [Back to General Settings] / [F5] key and you return without any change to select a new General Setting.
Pressing or clicking the [Cancel] / [F7] key returns you without any change to the green screen.

To continue click or press on the [General Settings] key or function key [F1].

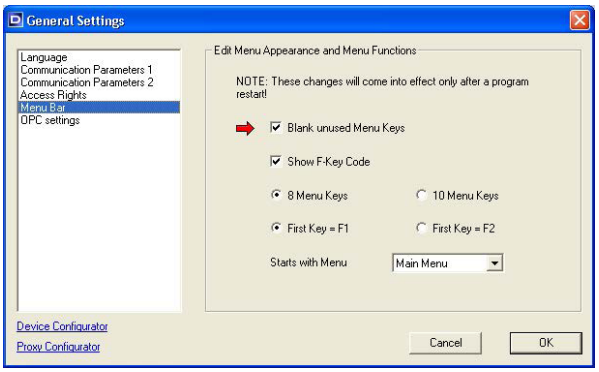


8.1.7 *General Settings: Menu Bar*

N.B.
The following settings get effective only after a restart of the DSCC software!



Operation using softkeys/function keys:	Operation using computer mouse:
With the Up- [▲] / [F1] or Down- [▼] / [F2] key highlight the category Menu Bar. To open the options display press the softkey [Select] or [F6].	Click on the category **Menu Bar**.



Blank unused Menu Keys

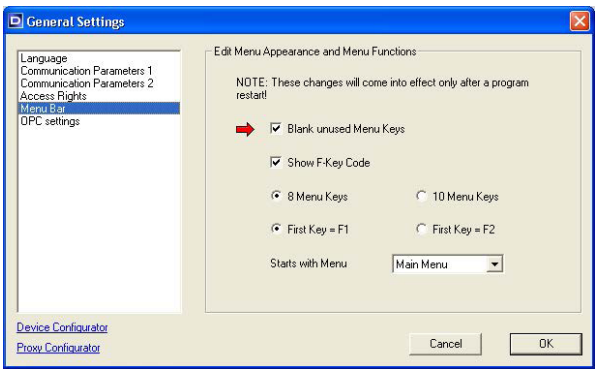
Factory setting: ☑ (active).

Can be set to ☐ (non-active) or ☑ (active).
With this setting, unused menu keys are either blanked or visible.

With the [+] / [F3] or [-] / [F4] key activate or deactivate the function.	Click into the check box and activate or deactivate the function.

Setting: ☑ **Blank unused Menu Keys**

Setting: ☐ **Blank unused Menu Keys**



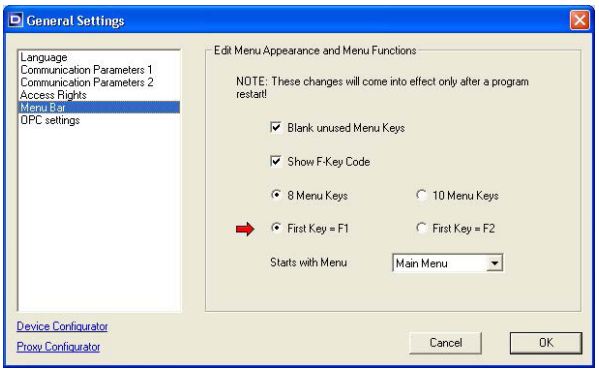
8 Menu Keys - 10 Menu Keys

Factory setting: **8 Menu Keys**.
Can be set to **8 Menu Keys or 10 Menu Keys**.
With this setting, you can determine the number of menu keys (softkeys) to the number of keys at the Automation System.

With the Up- [▲] / [F1] or Down- [▼] / [F2] key highlight the line **8 Menu Keys - 10 Menu Keys**. With the [+] / [F3] or [-] / [F4] key determine the number of menu keys.	Determine the number of menu keys by clicking into the appropriate check box.

Setting: **8 Menu Keys**

Setting: **10 Menu Keys**

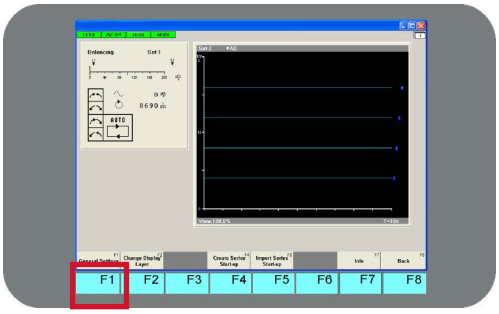


First Key = F1 – First Key = F2

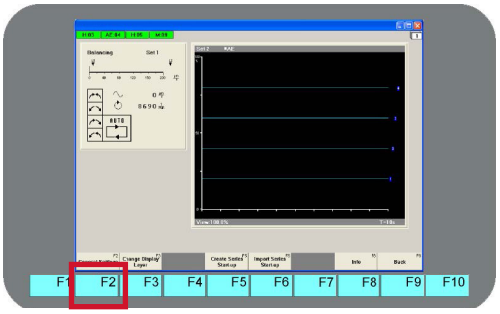
Factory setting: **First Key = F1**.
Can be set to **First Key = F1** or **First Key = F2**.
If the **F1-Key** is occupied yet, e.g. for the HELP function, the first softkey can be set as **F2-Key**.
All function keys described in this operator's manual apply to the setting **First Key = F1**!

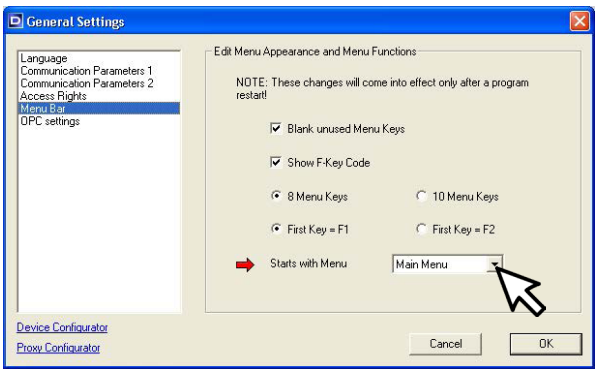
Operation using softkeys/function keys:	Operation using computer mouse:
With the Up- [▲] / [F1] or Down- [▼] / [F2] key highlight the line **First Key = F1 – First Key = F2**. With the [+] / [F3] or [-] / [F4] key determine the appropriate setting.	Determine the setting by clicking into the appropriate check box.

Setting: **First Key = F1**



Setting: **First Key = F2**

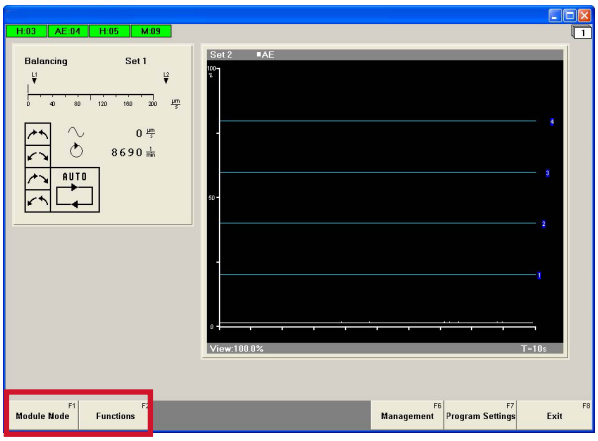




Starts with Menu

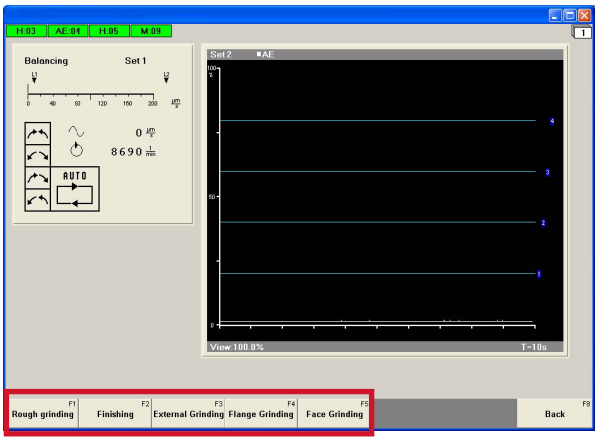
Factory setting: **Main Menu**.
Can be set to **Main Menu** or Functions.
With this setting, you can determine with which menu the DSCC software starts.

Operation using softkeys/function keys:	Operation using computer mouse:
With the Up- [▲] / [F1] or Down- [▼] / [F2] key highlight the line Starts with Menu. With the [+] / [F3] or [-] / [F4] key determine the Starts with Menu.	Click on the wanted Starts with Menu.



Program starts with setting **Main Menu**

The additional key [Functions] is only available when new menu keys were defined in the menu **Management - Setup Functions**.

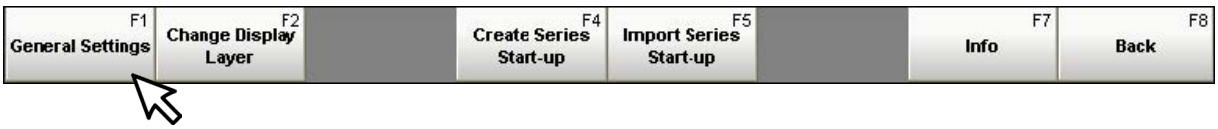


Program starts with setting **Functions**

The program starts with the keys defined in the menu **Management - Setup Functions**.
In this example the keys are defined as ‘Rough grinding’, ‘Finishing’, ‘External Grinding’, etc.

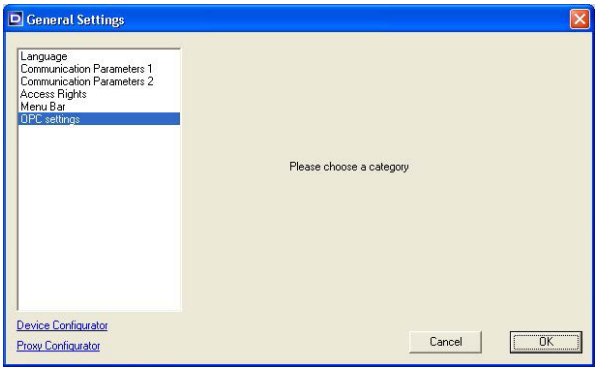
N.B.
Confirm a change in **Menu Bar** by clicking on the [OK] key or pressing the [OK] softkey or function key [F8]. You return to the green screen.
Exit the DSCC software and restart it, only then the changes get effective!
Press or click the [Back to General Settings] / [F5] key and you return without any change to select a new **General Setting**.
Pressing or clicking the [Cancel] / [F7] key returns you without any change to the green screen.

To continue click or press on the [General Settings] key or function key [F1].

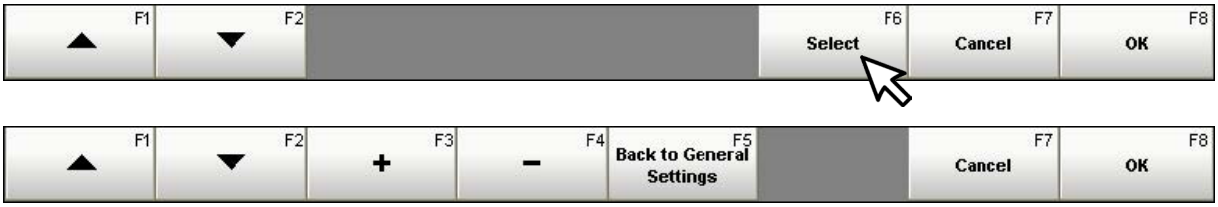


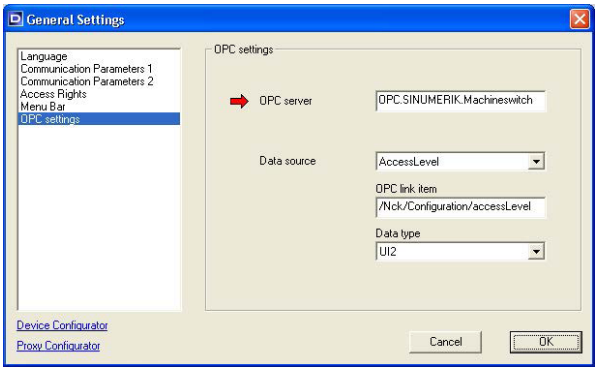
8.1.8 *General Settings: OPC Settings*

N.B.
An OPC Server software must be installed on your Automation System!



Operation using softkeys/function keys:	Operation using computer mouse:
With the Up- [▲] / [F1] or Down- [▼] / [F2] key highlight the category OPC Settings. To open the options display press the soft-key [Select] or [F6].	Click on the category **OPC Settings**.





OPC Server

Factory setting: OPC.SINUMERIK.Machineswitch

For more information, please contact our Sales Department.

N.B.
Confirm a change in OPC Settings by clicking on the [OK] key or pressing the [OK] softkey or function key [F8]. You return to the green screen.
Press or click the [Back to General Settings] / [F5] key and you return without any change to select a new General Setting.
Pressing or clicking the [Cancel] / [F7] key returns you without any change to the green screen.

To continue click or press on the [General Settings] key or function key [F1].

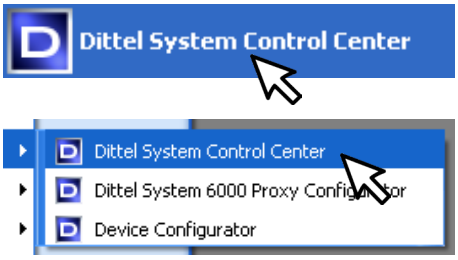
9 MODULE SPECIFIC SETTINGS

9.1 Precondition

a) One pre-set Process Monitoring Module AE6000 UP is
- connected to a 24 Vdc power source (green LED # 4 lights),
- connected to an Automation System (e.g. SINUMERIK®) or Standard-Windows® Computer with appropriate hardware equipment via the Serial Interface (RS-232), connector # 5, or via Ethernet.
- The DSCC Program is properly installed (refer to paragraph “7 DSCC Software” on page 41) and the interface configured (see paragraph “8.1.4 General Settings: Communication Parameters 1” on page 56). For Ethernet interface, see Supplementary Document “Ethernet Interface” A/N ODNDL03EN03.

b) Several pre-set Process Monitoring Modules AE6000 UP and/or Balancing Modules M6000 UP/ H6000 are:
- connected to a 24 Vdc power source (all green LEDs # 4 light),
- connected with each other by special Patch Cords (A/N O67L0020018, formerly A/N K0020018), the first and last Module is terminated (DIP-switch # 6 is ON).
- ONE Module must be connected to an Automation System (e.g. SINUMERIK®) or Standard-Windows® Computer with appropriate hardware equipment via the serial interface (RS-232) or via Ethernet. The interface of THIS Module is appropriately configured (see paragraph “8.1.4 General Settings: Communication Parameters 1” on page 56 for RS-232, for Ethernet see Supplementary Document A/N ODNDL03EN03).
- The DSCC Software is properly installed and the interface configured (refer to paragraph “7 DSCC Software” on page 41).

9.2 Starting the Program



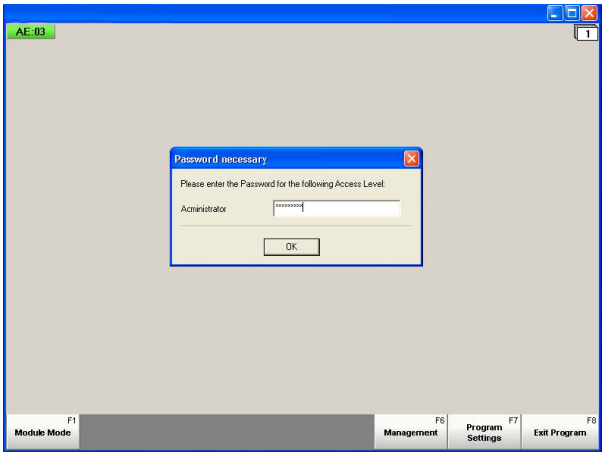
Start the Program on your Automation System or computer by clicking on button Start and then on symbol “Dittel System Control Center”.

or start the Program by clicking on buttons Start / Programs / Dittel System 6000 and finally on the symbol “Dittel System Control Center”.

In the SINUMERIK® HMI-Environment, you can start the DSCC Program by pressing the appropriate softkey.

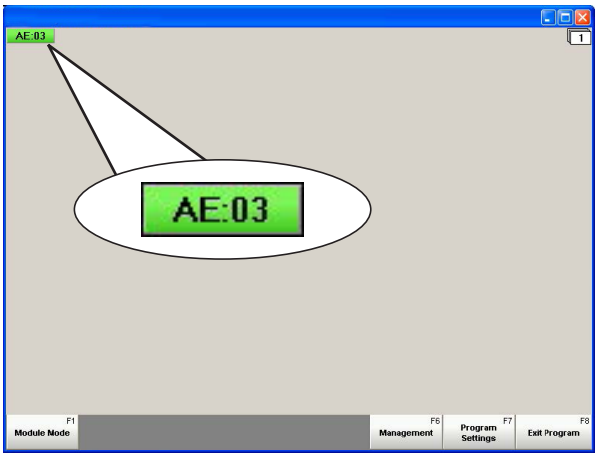
The following Start Screen should open:

9.2.1 Start Screen

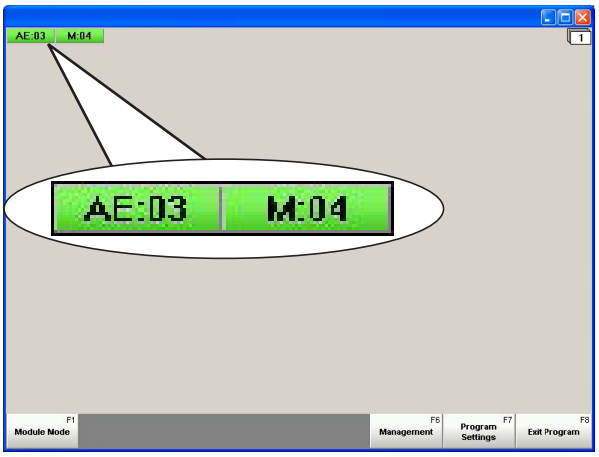


When the password prompt is activated (see paragraph “8.1.6 General Settings: Access Rights” on page 59) the opposite screen is displayed.
If no password has been entered till now, click on [OK] or press [Enter] on your computer keyboard or [Input] on the SINUMERIK® keypad.
Otherwise enter your password and click on [OK] or press [Enter] on your computer keyboard or [Input] on the SINUMERIK® keypad.

When the password prompt is not activated or you have confirmed by clicking on [OK] or pressing [Enter] / [Input] the following start screen is displayed depending on number of connected Modules:



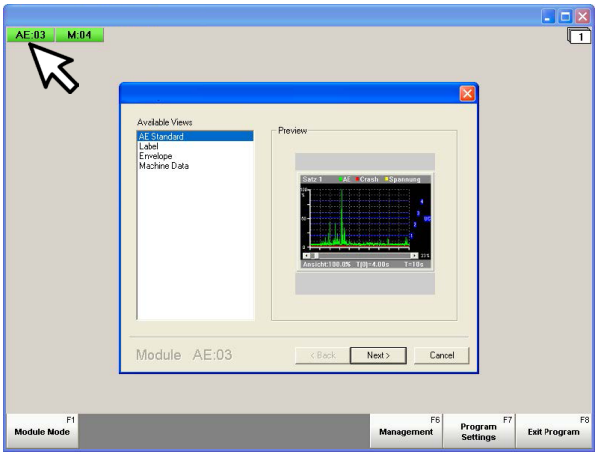
A green Module Address **AE:03** shows a ready to operate AE6000 UP Process Monitoring Module with the address 03.



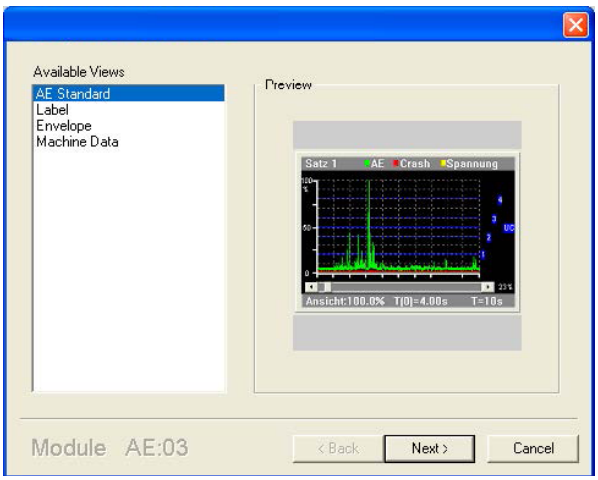
Green Module Addresses **AE:03 M:04** show two ready to operate Modules; one AE6000 UP Process Monitoring Module with the address 03, and one M6000 UP Electromechanical Balancing Module with the address 04.

9.2.2 *Activating the Module(s)*

N.B.
Without the following settings, an AE6000 UP Process Monitoring Module is not operable via an Automation System or PC! Each Module must be 'visible' at least on one of the Display Layers!

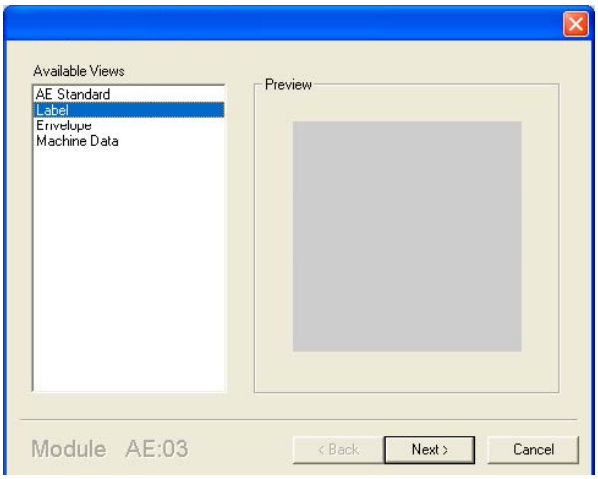


Activate a Process Monitoring Module by double-clicking, for example on Module Address **AE:03**. The opposite options display opens.
There are three different Module Views available to represent the Process Monitoring Module AE6000 UP on the screen. The preview shows you examples.



AE Standard

The Module View ‘AE Standard’ shows the complete AE screen in a scalable window.

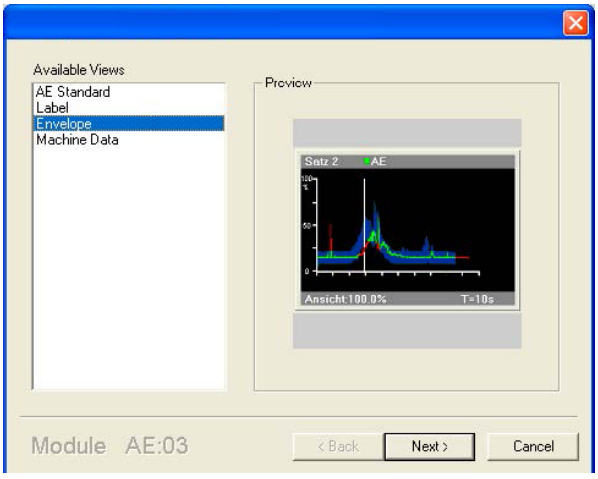


Label

The view ‘Label’ shows only a lettering space, which is scalable.

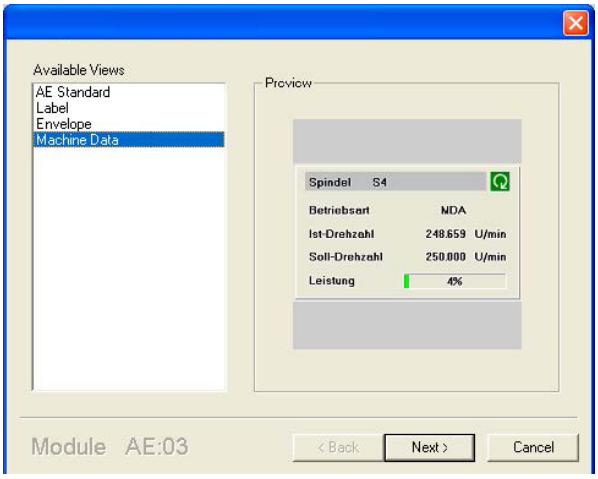
Also in this Module View the Process Monitoring Module is fully able to work. However, an evaluation of AE or Crash signals can only be made by the machine CNC control.

No Error messages are displayed on the screen!



Envelope

This view is only useful when the function “Envelope” is licensed and available.
Refer to supplementary document «Operation Manual Envelope».

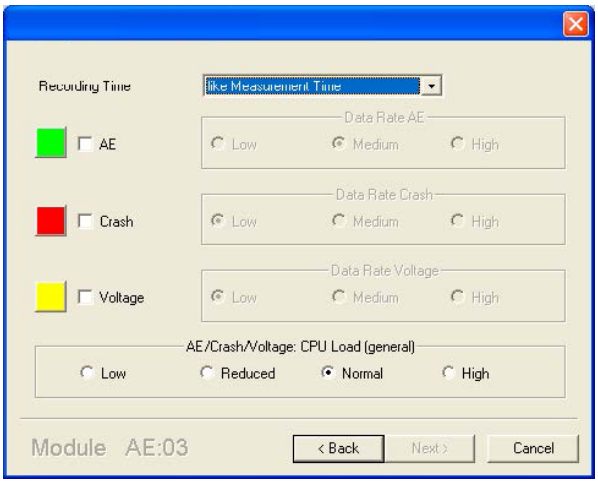


Machine Data
THIS IS NOT A PROCESS MONITORING FUNCTION!

This screen representation “Machine Data” only makes sense in connection with a SINUMERIK® Automation System and OPC server software.

In this view, the machine data of the actual operated spindle are displayed.

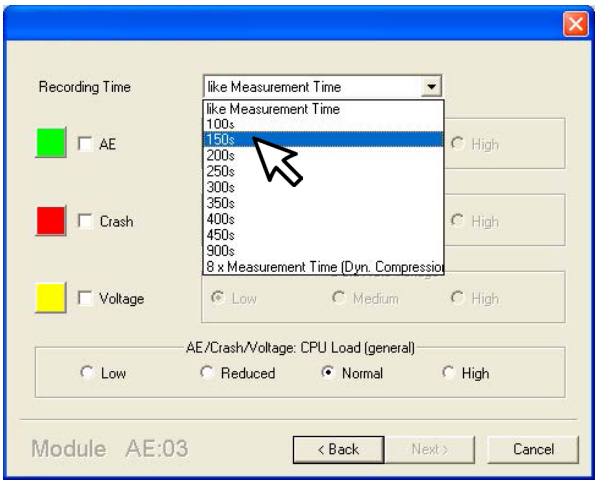
With a computer mouse click or the arrow keys [↑] [↓] of your keyboard select the wanted Module view and click on [Next >] or press the [Enter] key.



If you have selected the 'AE Standard' view the following option display opens:

In this menu you can set:

- Recording time
- Wanted signals, its colours and respective data rate to be transferred.
- General CPU load



Recording Time:

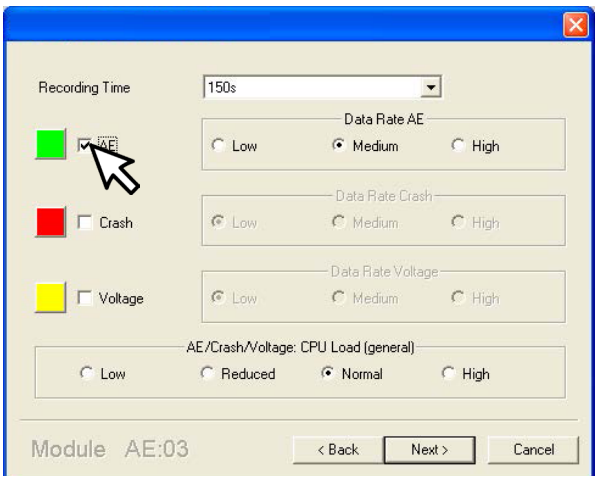
- Factory setting: like Measurement Time, can be set from 100s to 900s or 8x Measurement Time (Dynamic Compression).

- The Recording Time determines the duration of the stored AE signal before triggering the AE STOP signal.
- At the later setting of the Set adjust the function 'Continuous Measurement' always to True since otherwise monitoring breaks off after expiry of the Measurement Time!

like Measurement Time — the signal Recording Time is equally the Measurement Time. The Measurement Time is adjustable from 1 s to 90 s accessible either with the tab 'Current Settings' or with the softkey [Direct Setting]. The Measurement Time corresponds with the AE window width.

e.g. 150s — the Recording Time is 150 seconds. The AE signal is displayed according to the Measurement Time, e.g. for 10 s, but recorded for 150 s. For this purpose the function 'Continuous Measurement' must be set to 'True' (see tab 'Current Settings' or softkey [Direct Setting].

8x Measurement Time — Dynamic Compression; the total signal Recording Time is eight times the Measurement Time. After starting the AE measurement only the Measurement Time is displayed. After reaching the end the x-axis switches over to twofold Measurement Time and so on, till the eightfold Measurement Time is displayed. For this purpose the function 'Continuous Measurement' must be set to 'True' (see tab 'Current Settings' or softkey [Direct Setting]).



Measurement' must be set to 'True' (see tab 'Current Settings' or softkey [Direct Setting].

Selecting the Signal(s) to be displayed

The signals AE, Crash, and Voltage can be displayed one at a time or in any combination.

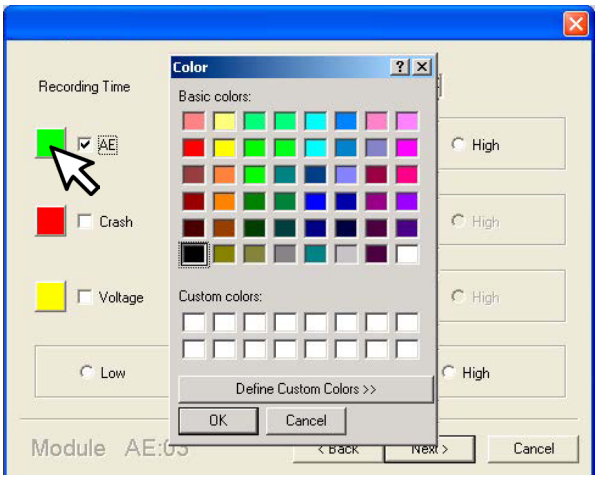
AE shows the filtered AE signal of the active AE sensor.

Crash shows the filtered Crash signal of the active AE sensor.

Voltage shows the voltage applied at connector # 2, pins 22 and 25.

At least one type of signal has to be selected.

Click with the mouse on those signals, which you would like to have displayed on the AE screen.

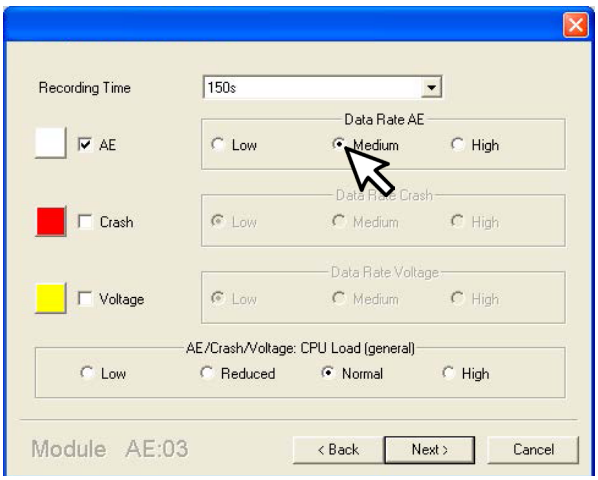


Selecting the Colours

Each signal can be displayed in an individual colour.

For this click with the PC mouse on the colour rectangle in question. The Windows® Color adjustment opens. Select a new colour and confirm with [OK].

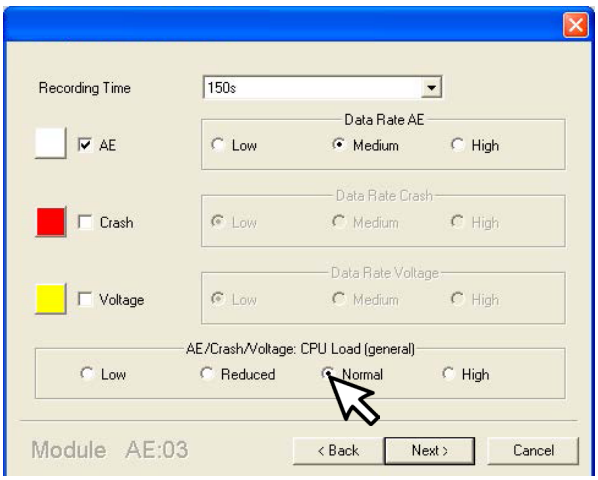
The AE screen background is black! When selecting an unsuitable colour a warning message appears!



Data Rate

Factory setting:	AE:	**Medium**
	Crash:	**Low**
	Voltage:	**Low**

For each type of signal, the transferred data rate, i.e. the number of measurements per second, is adjustable. Depending on importance of the signal, highlight the respective Data Rate on 'Low', 'Medium' or 'High'.



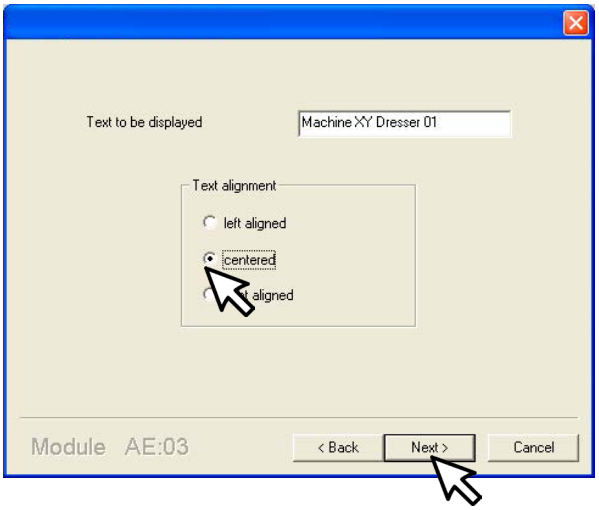
CPU Load (general)

Factory setting: **Normal**

This setting depends on the performance of the processor of your Automation System or PC.
The setting 'High' should be selected only with efficient computers.

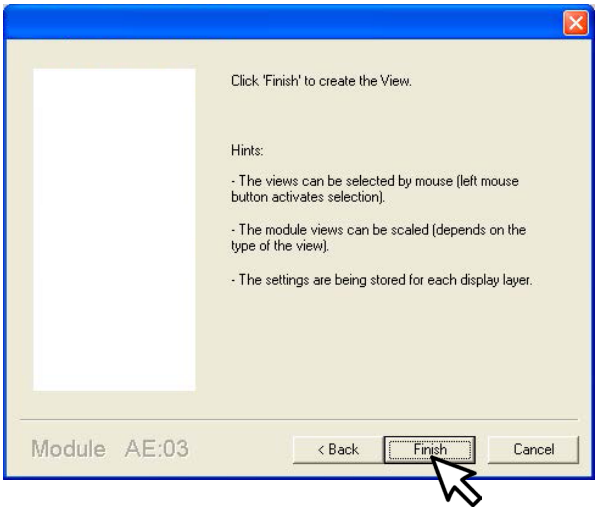
With the PC mouse highlight a suitable 'CPU Load' and then click on the [Next >] key or press the [Enter] key.

If you have selected the view '**Label**' the following screen opens:



Highlight and overwrite the example text with your application, e.g. **Machine XY Dresser 01**.
Select the Text Alignment of the displayed Label.
Click on [Next >] key or press the [Enter] key.

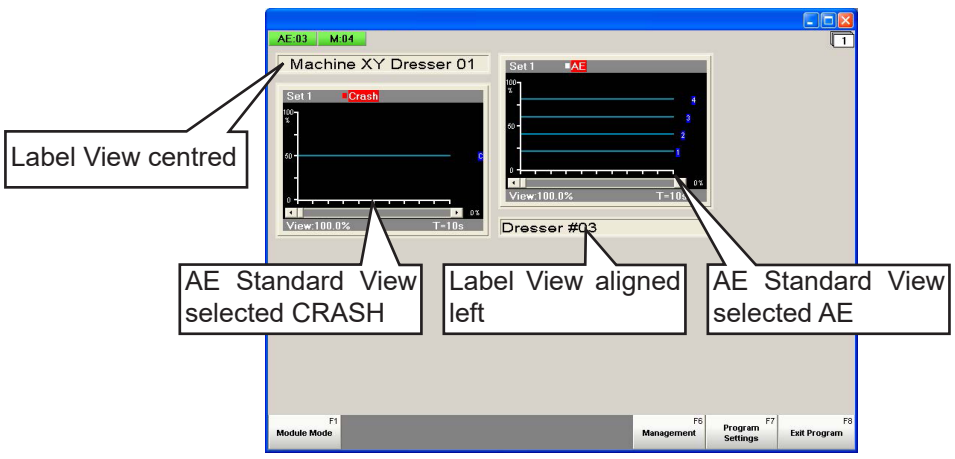
In both cases the following screen opens:



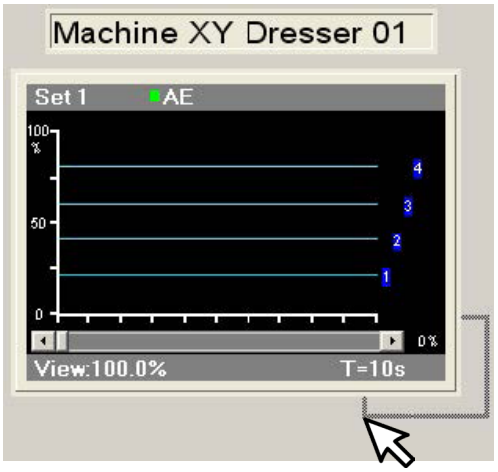
Click on the [Finish] key or press the [Enter] key at the Automation System keypad to create the wanted Module view.

N.B.
Make every Process Monitoring Module operable as described above!
Every Module view can be displayed on the screen as many as you like. Simply repeat the steps as described above.

The example shows a Process Monitoring Module which is opened in four available views:



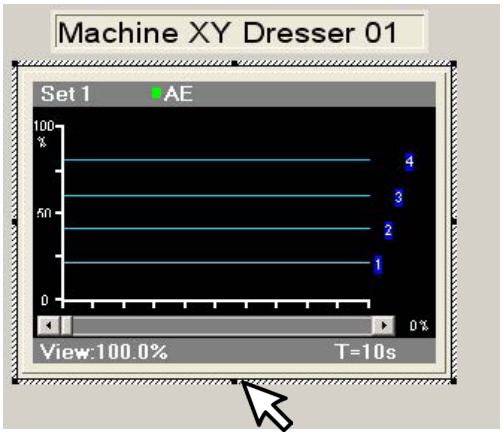
9.2.3 *Module View – highlighting, positioning and scaling*



To position and/or scale the Module View, highlight the Module View first.

To highlight the Module View(s) move the cursor arrow outside the Module View(s), press and hold the LEFT mouse button.

Drag a frame into the Module View(s) and release the mouse button. The Module View(s) will be highlighted (marked).



To position the Module View(s) move the cursor arrow to touch the marking of the Module View(s). An additional ‘move’ symbol appears.

Press and hold the LEFT mouse button and move the Module View(s) to a convenient position on the screen.

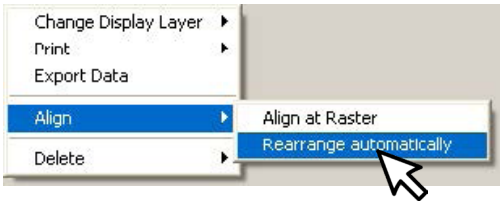
Release the mouse button.

After highlighting, the width and height of the Module Views ‘Standard’ and ‘Label’ can be scaled.

To do this, move the cursor arrow to a “handle” of the marking. The cursor arrow changes to make horizontal, vertical, or diagonal changes in size.

Press and hold the LEFT mouse button and drag the Module View to a convenient size. The font size and symbols adapt to the label size automatically.

Release the mouse button.



To align different Module Views move the cursor arrow outside a Module View, then press the RIGHT mouse button. Move the cursor to ‘Align’, a context menu opens where you can select how to align the Module Views:

Align at Raster: The Module Views are aligned within a 10 x 10 pixel raster.
Rearrange automatically: The Module Views are arranged automatically from left to right in the order of their module addresses.

With the cursor highlight the wanted alignment and click with the left mouse button.

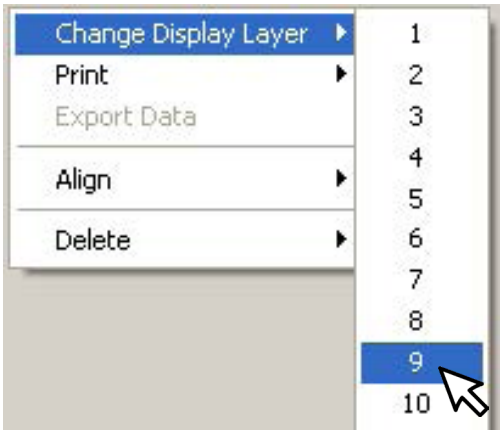
9.2.4 *Create different Display Layers*

The DSCC Software offers you to create up to twenty different display layers.

To position and/or scale the Module View, highlight the Module View first.

To highlight the Module View(s) move the cursor arrow outside the Module View(s), press and hold the LEFT mouse button.

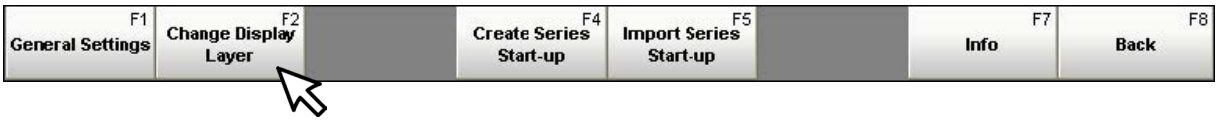
Drag a frame into the Module View(s) and release the mouse button. The Module View(s) will be highlighted (marked).



With the mouse button, click on the wanted Display Layer number. The screen changes immediately to the new Display Layer.

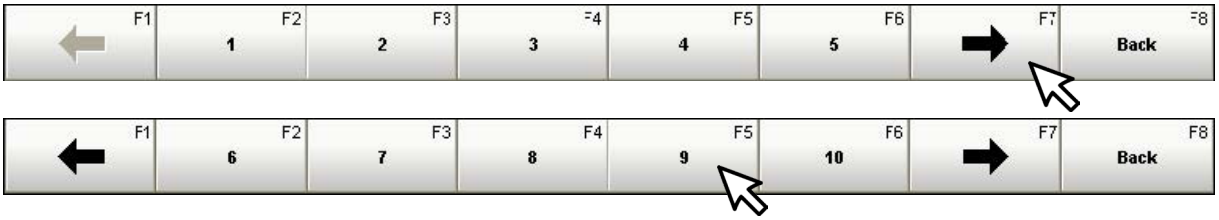
Or you press the softkey [Program Settings] / [F7]

and then [Change Display Layer] / [F2]

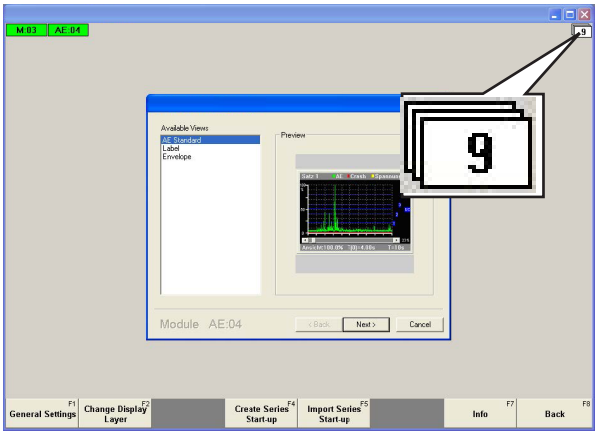


With the arrow keys or function keys [F1] / [F7] the keys 1 to 20 are displayed.

Press the key with the wanted Display Layer number. The screen changes immediately to the new Display Layer.



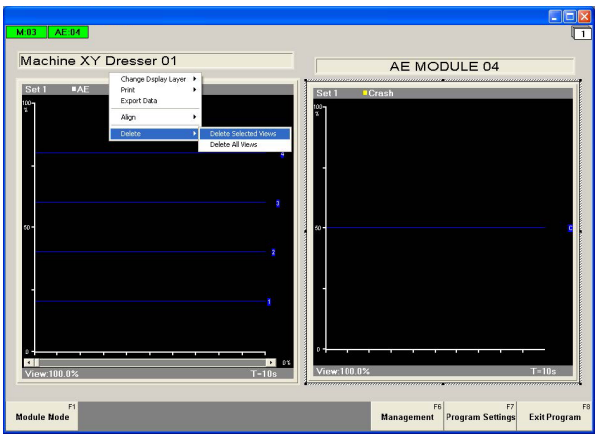
Create a new Display Layer, e.g. Display Layer 9, as described in paragraph“9.2.2 Activating the Module(s)” on page 67:



With the key shortcut [Ctrl] + [1] … [9] a direct and fast selection of the first nine Display Layers is possible as well.

9.2.5 *Delete Module View(s)*

N.B.
Never delete all Module Views.
If all Module Views are deleted on all Display Layers, the Module is no longer operational via the Automation System or computer!

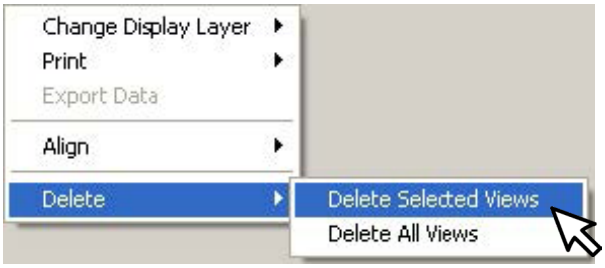


Change to the Display Layer in which you would like to delete Module Views.

If you would like to delete only certain Module Views, highlight the Module View to be deleted. After holding down the RIGHT mouse button, a context menu opens.

Click on **Delete Selected Views**.

All selected Module Views are immediately deleted.



If you would like to delete all Module Views on that Display Layer, hold down the RIGHT mouse button and a context menu opens.

Click on **Delete All Views**.

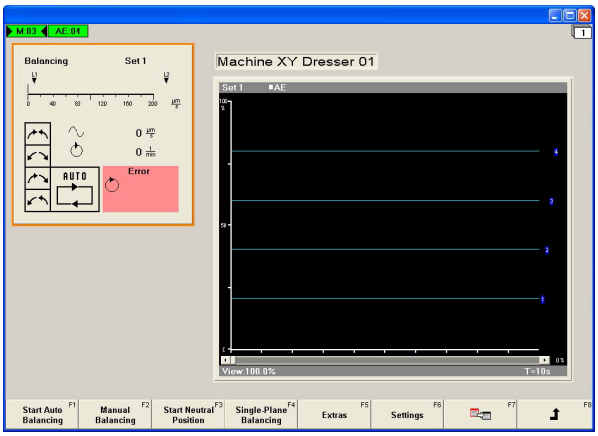
All Module Views are deleted immediately.

9.3 *Module Settings*

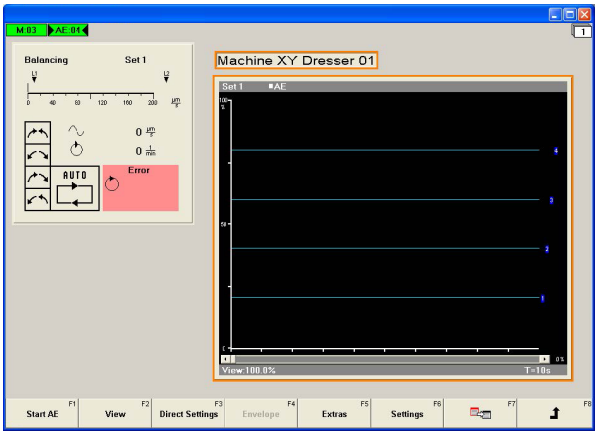
N.B.
The Process Monitoring Module AE6000 UP is factory pre-set for check and testing purposes. To achieve perfect process monitoring results it is therefore necessary to adapt the Module AE6000 UP to your conditions. Please carry out the following setting carefully.
All quantities shown in the following illustrations are examples or factory settings!

When restarting the system always the Display Layer 1 is shown (if not changed). With [Ctrl] + [1] … [9] or the softkeys [Program Settings] - [Change Display Layer] select the Display Layer where the Module to be set is shown.

To carry out the Module Setting of an AE6000 UP Module press or click on [Module Mode] or [F1].



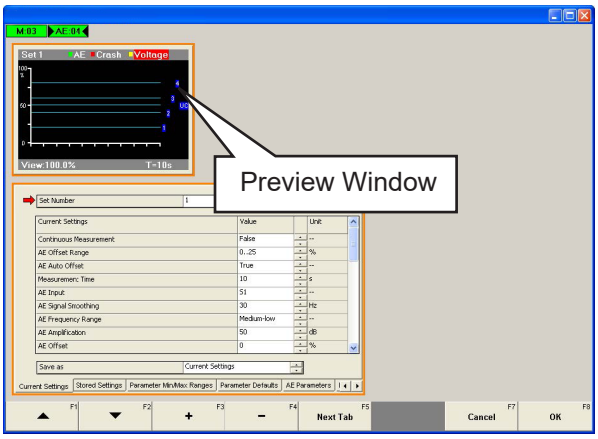
When restarting the program, on the selected Display Layer always the first “visible” Module is highlighted, e.g. **M:03**, as well as the corresponding Module View (marked orange). The softkeys to operate the Module are displayed.



If several modules are “visible” select the module to be set by using the key corresponding to the F7 function or [F7] = next Module, in this example **AE:04**. The Module will be highlighted as well as the corresponding Module View (marked orange).

Press or click on the key [Settings] / [F6].

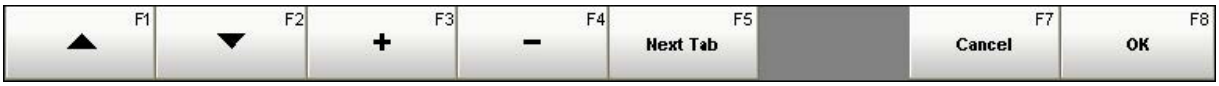
An options display with Preview Window opens – independent of the Module View - to set the selected Process Monitoring Module AE6000 UP:



Softkeys:

By pressing the Up- [▲] or Down-key [▼] scroll through the options display, the red arrow cursor jumps into the wanted line.
By pressing the keys [+] or [-] the value of the selected line is changed.
By pressing the key [Next Tab] the next Tab will be shown.

Have a choice of the following tabs:
Current Settings,
Stored Settings,
Selection “Direct Settings”*)
Parameter Min/Max Range*),
Parameter Defaults*),
AE Parameters,
Module Parameters and
Identification Data.
**) only visible with access level “Administrator”!*



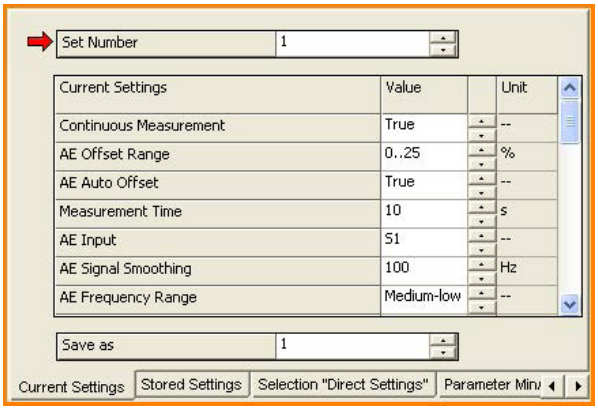
N.B.
When pressing the key [Cancel] / [F7] you return without storage of any changes to the Process Monitoring Mode.
When pressing the key [OK] / [F8] changes in the Module Settings are taken over into the set number displayed in the line Save as. You return to the Process Monitoring Mode.
When pressing the key shortcut [Ctrl] + [H] or the HELP button at the SINUMERIK® keyboard a menu opens containing explanations of the following settings.

9.3.1 *Tab: Current Settings*

N.B.
The following settings determine essentially the monitoring function of AE6000 UP. Only trained staff should therefore perform all settings.

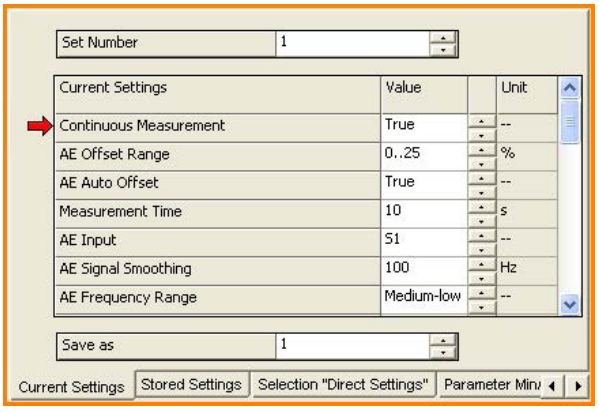
General Settings

Choose the Tab Current Settings. When using this Tab you see the consequence of the change on some settings directly on the “Preview Window” presentation.



Set Number

Factory setting: **1**,
can be set with the [+] or [-] key from 1 to 31.
All parameters, which are necessary to monitor a process by AE or voltage, are saved under a Set Number. For example, by changing the Set Number during a grinding process, it is possible to change the limits or to select either one AE sensors out of four or a voltage sensor with their specific parameters for different applications.
All information saved under a Set Number is permanently stored. Interruption of the power supply does not result in loss of information.
Changing the Set Number is immediately visible on the preview window.



Continuous Measurement

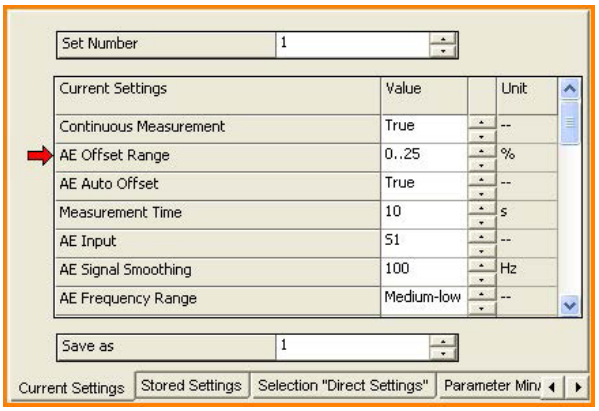
Factory setting: **True,**
can be set with the [+] or [-] key to:

True After a Start command, measurement is carried out continuously. After each run the AE, Crash and/or Voltage curve on the screen is overwritten by a new curve till the measurement is stopped (manually or by external STOP command).

False After a Start command, one shot is carried out (duration depends on the adjusted **Measurement Time**), measuring stops automatically after reaching the right edge of the screen (= measurement time).

Settings concerning Acoustic Emission (AE)

N.B.
The AE signal is always monitored even when you have selected only the Crash- and/or Voltage Signal during installation of the AE6000 UP!
When no AE sensor is connected to one of the inputs or not selected accordingly, the preview window shows a red AE sensor error.



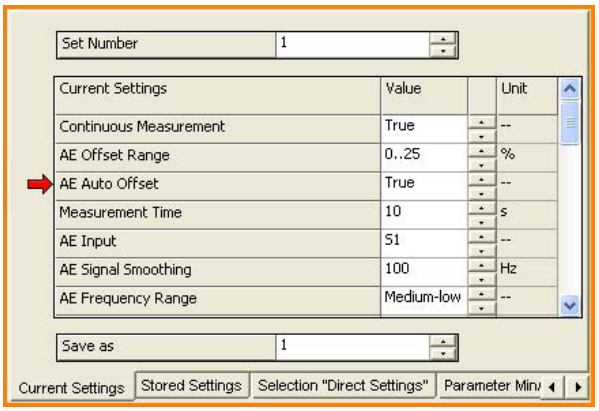
AE Offset Range

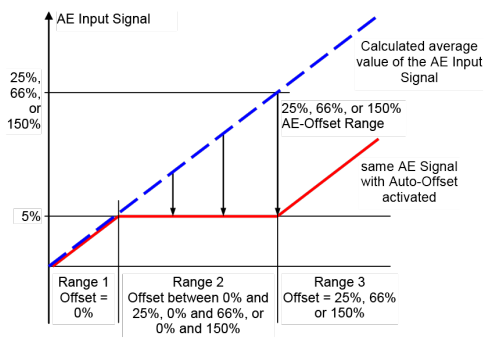
Factory setting: **0 ... 25%,**
can be set with the [+] or [-] key to:

0 ... 25% The AE Offset Range is manually adjustable from 0% to 25%. In the Auto-Offset mode the signal is pulled down on the 5%-line at most by 20%.

0 ... 66% The AE Offset Range is manually adjustable from 0% to 66%. In the Auto-Offset mode the signal is pulled down on the 5%-line at most by 61%.

0 ... 150% The AE Offset Range is manually adjustable from 0% to 150%. In the Auto-Offset mode the signal is pulled down on the 5%-line at most by 145%.



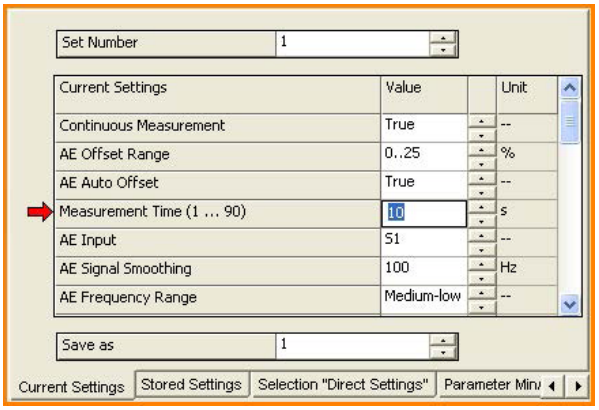


AE Auto Offset (related: Voltage Auto Offset)

Factory setting: **True,**
can be set with the [+] or [-] key to:

False The AE Offset is manually adjustable from 0% to 25%, from 0% to 66%, or from 0% to 150%, depending on the AE Offset Range.

True When applying a HIGH signal on the Auto Offset Input (connector # 2, pin 21, or equivalent via PROFIBUS/PROFINET, connector # 13) all input values of a AE Signal are stored, for example during air grinding. With the following falling edge on the Auto Offset Input out of the stored values, the average is calculated. The AE Offset is then adjusted automatically to show the evaluated average signal along the 5%-line (provided that the AE Offset Range is sufficient).
During a following grinding or dressing cycle the offset setting remains unchanged till it is changed manually, by setting a new set number or when activating the Auto Offset Input once more.

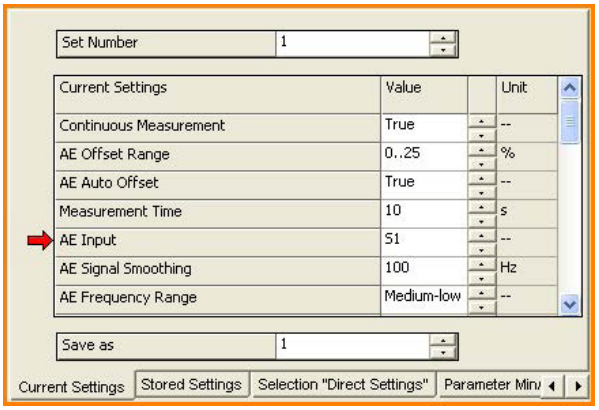


Measurement Time

Factory setting: **10 s**,
can be set with the [+] or [-] key from **1 s to 90 s** in steps of 1 second or entered directly with the keyboard.
This operator defined setting establishes the duration of the showed period.
The adjusted Measurement Time is valid for AE, Crash and Voltage measurements!

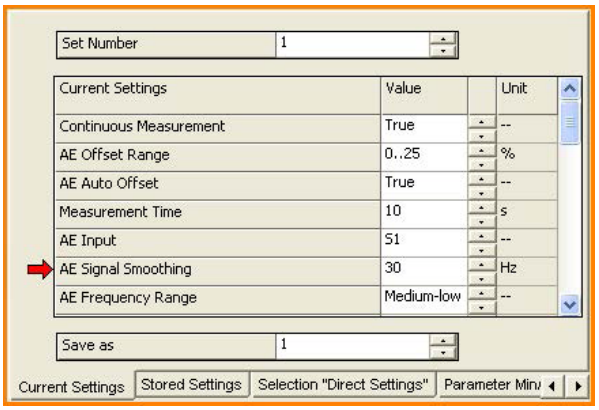
N.B.
The complete Recording Time is adjusted while installing the AE Module! The recording time may be different for AE, Crash and Voltage measurement when a separate view for each signal is activated!

Changing the Measurement Time is immediately visible on the preview window.



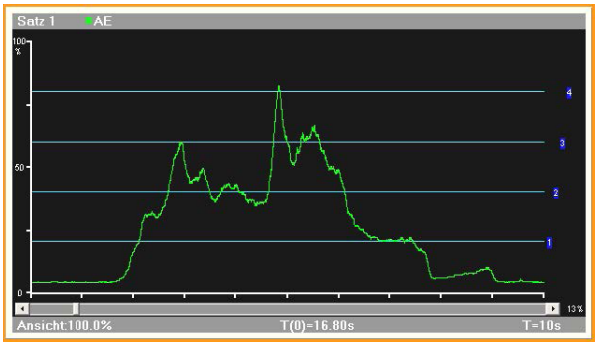
AE Input

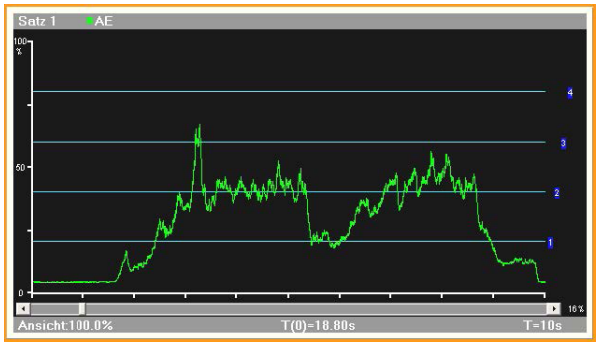
Factory setting: **S1**,
can be set with the [+] or [-] key to **S1, S2, S3 or S4**.
Up to four AE sensors may be connected to the Module AE6000 UP. However, the AE/Crash signal is displayed and evaluated from one sensor only.
With this operator defined setting it is determined, which AE input – see sockets **# 21, # 22, # 23, # 24** – is assigned to the actual Set Number.

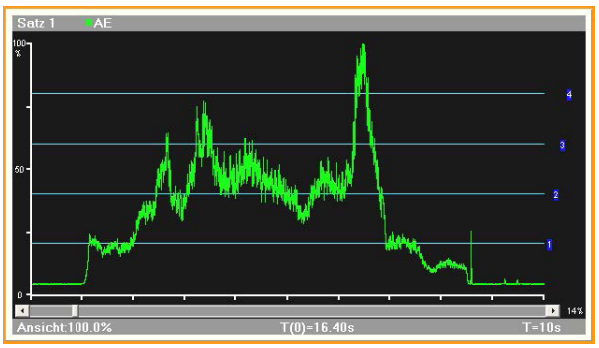


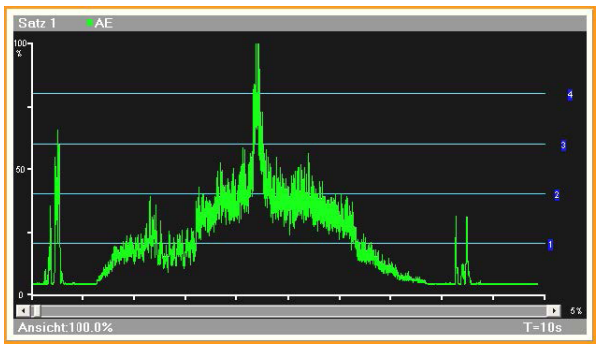
AE Signal Smoothing

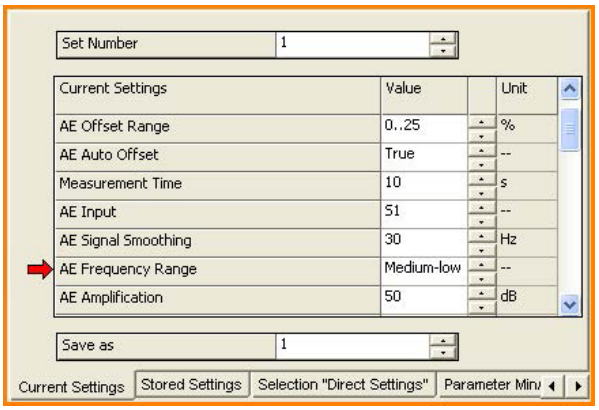
Factory setting: **30 Hz**,
can be set with the [+] or [-] key to **3 Hz, 10 Hz, 30 Hz or 100 Hz**.
This operator defined setting alters the time constant of the AE curve and therefore its appearance. The influence of the time constant is shown in the following figures:











AE Frequency Range

Describes the Frequency Range of the AE signal to be picked up.

Factory setting: **Medium-low**,
can be set with the [+] or [-] key to:

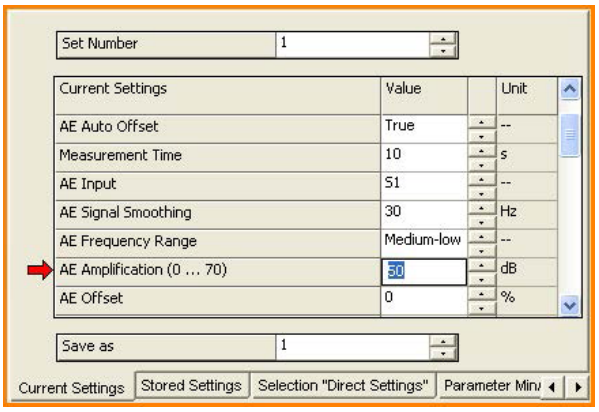
Low Frequency range 35 kHz to 50 kHz, e.g. when carrying out AE measure-ments using a Magnet-ic Sensor or an S Sensor mounted on the head-stock (bearings attenuate high AE frequencies).

Medium-low Frequency range 70 kHz to 100 kHz

Medium-high Frequency range 250 kHz to 350 kHz, e.g. when carrying out AE measure-ments using an R- or M-Sensor direct on the spindle or flange, or an AE Fluid Sensor.

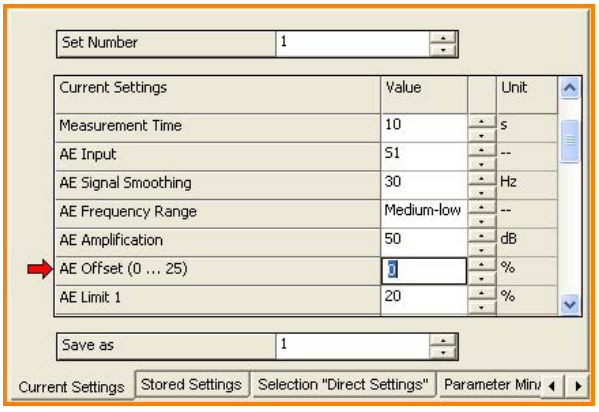
High Frequency range 400 kHz to 600 kHz, e.g. when carrying out AE measure-ments using an AE Flu-id Sensor.

For AE Frequency Range see also paragraph “10.2.5 The ‘Extras’ Key – the ‘Setup’ Key” on page 93



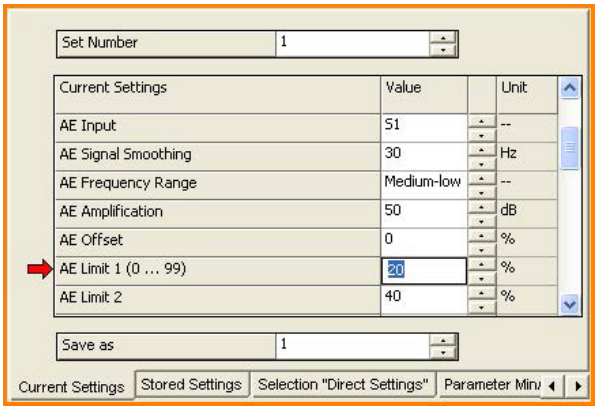
AE Amplification

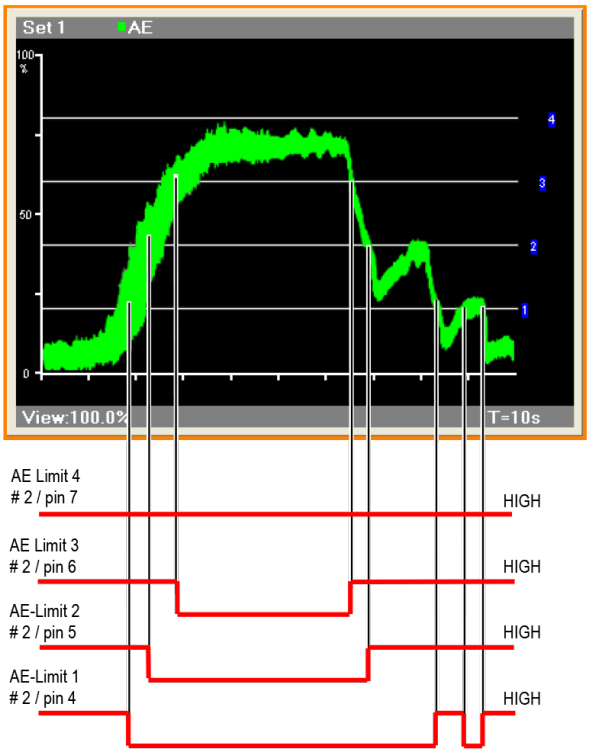
Factory setting: **50 dB**,
can be set with the [+] or [-] key from **0 dB to 70 dB** in steps of 1 dB or entered directly with the keyboard.
This operator defined setting alters the amplification and therefore the height (amplitude) of the AE signal, displayed on the screen.



AE Offset

Factory setting: **0%**,
can be set with the [+] or [-] key from **0% to 25%**, from **0% to 66%**, or from **0% to 150%** (see setting of **AE Offset Range**) in steps of 1% or entered directly with the keyboard.
Adjusting the AE Offset manually. For example, by setting a certain AE Offset, the basic noise may be suppressed without reducing the gain of the AE signal. Then mostly the wanted signal is dis-played on the screen.





AE Limit 1
Factory setting: **20%**,
can be set with the [+] or [-] key from **0% to 99%** in steps of 1% or entered directly with the keyboard.
This operator defined setting establishes the position of the AE Limit 1 line, marked with "**1**", which acts as an indicator for a certain AE level. When reached, a message "AE signal Limit 1 exceeded" is fed as a LOW signal through pin 4 of hardwire interface connector # 2 or equivalent via PROFIBUS/PROFINET, connector # 13.

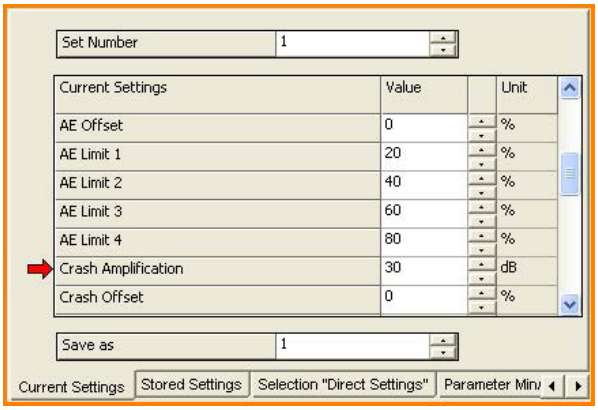
AE Limit 2
Factory setting: **40%**,
can be set with the [+] or [-] key from **0% to 99%** in steps of 1% or entered directly with the keyboard.
This operator defined setting establishes the position of the AE Limit 2 line, marked with "**2**", which acts as an indicator for a certain AE level. When reached, a message "AE signal Limit 2 exceeded" is fed as a LOW signal through pin 5 of hardwire interface connector # 2 or equivalent via PROFIBUS/PROFINET, connector # 13..

AE Limit 3
Factory setting: **60%**,
can be set with the [+] or [-] key from **0% to 99%** in steps of 1% or entered directly with the keyboard.
This operator defined setting establishes the position of the AE Limit 3 line, marked with "**3**", which acts as an indicator for a certain AE level. When reached, a message "AE signal Limit 3 exceeded" is fed as a LOW signal through pin 6 of hardwire interface connector # 2 or equivalent via PROFIBUS/PROFINET, connector # 13.

AE Limit 4
Factory setting: **80%**,
can be set with the [+] or [-] key from **0% to 99%** in steps of 1% or entered directly with the keyboard.
This operator defined setting establishes the position of the AE Limit 4 line, marked with "**4**", which acts as an indicator for a certain AE level. When reached, a message "AE signal Limit 4 exceeded" is fed as a LOW signal through pin 7 of hardwire interface connector # 2 or equivalent via PROFIBUS/PROFINET, connector # 13.
Changing the AE Limits is immediately visible on the preview window.

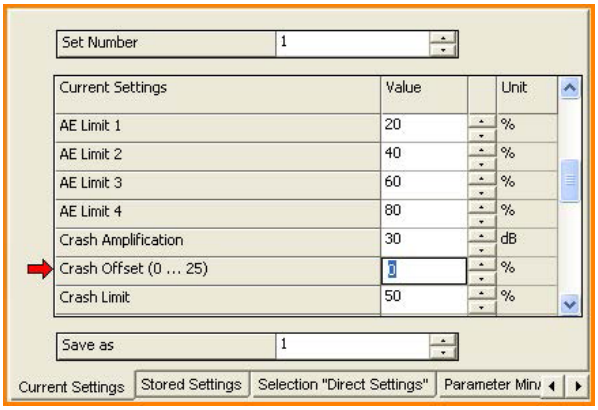
Settings concerning Crash signal

N.B.
The Crash signal is always monitored even when you have selected only the AE and/or Voltage Signal during installation of the AE6000 UP!



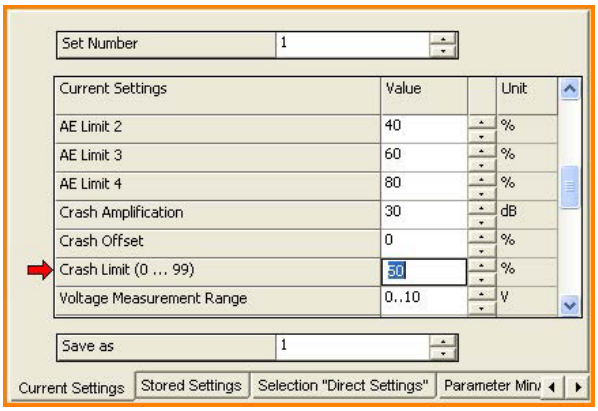
Crash Amplification

Factory setting: **10 dB**,
can be set with the [+] or [-] key from **0 dB to 35 dB** in steps of 5 dB.
The incoming signal from the AE sensor is fed via a special filter for Crash evaluation and display.
This operator defined setting alters the amplification of the Crash signal and therefore the height (amplitude) of the Crash signal, displayed on the screen.



Crash Offset

Factory setting: **0%**,
can be set with the [+] or [-] key from **0% to 25%** in steps of 1% or entered directly with the keyboard.
Adjusting the Crash Offset manually. For example, by setting a certain Crash Offset, the basic noise may be suppressed without reducing the gain of the Crash signal. Then mostly the wanted signal is displayed on the screen.

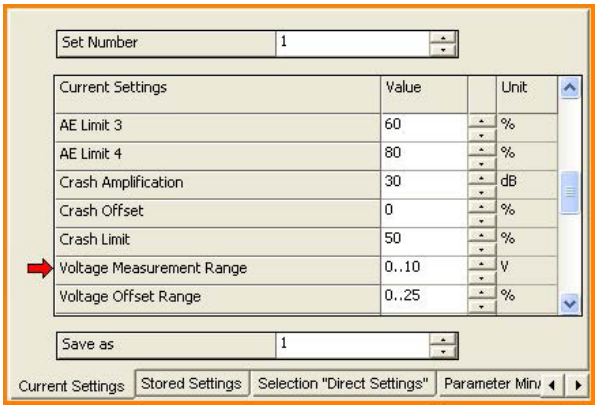


Crash Limit

Factory setting: 5**0%**,
can be set with the [+] or [-] key from **0% to 99%** in steps of 1% or entered directly with the keyboard.
This operator defined setting establishes the position of the Crash Limit line, marked with “C”, which acts as an indicator for a certain Crash level. When reached, a message “Crash Limit exceeded” is fed as a LOW signal through pin 10 of hardwire interface connector # 2 or equivalent via PROFIBUS/PROFINET, connector # 13.
Changing the Crash Limit C is immediately visible on the preview window.

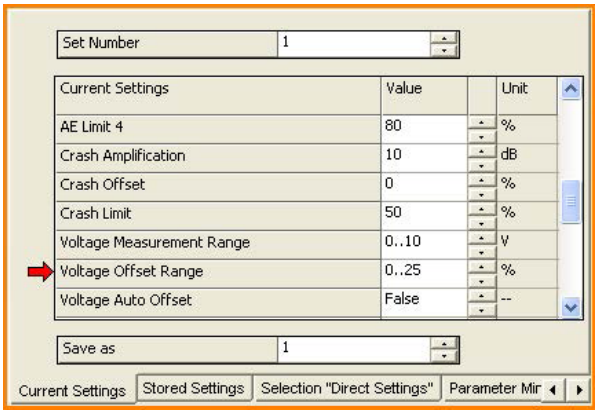
Settings concerning the Voltage signal

N.B.
The Voltage signal is always monitored even when you have selected only the AE and/or Crash Signal during installation of the AE6000 UP!
When setting a Voltage Offset or a Voltage Auto Offset the voltage indicated on the screen does not correspond to the percentage measurement range any more.
When you have selected 'Voltage' during installation but if no voltage source is connected to hardwire interface # 2, pin 22 and pin 25, then:
- the preview window shows a Voltage Error (red highlighted 'Voltage'),
- when measurement is started the indicated Voltage Signal is 100%.



Voltage Measurement Range

Factory setting: **0 ... 10 V**,
can be set with the [+] or [-] key to 0 ... **1 V, 0 ... 2 V, 0 ... 5 V, 0 ... 10 V**.
When applying a voltage to the hardwire interface connector # 2, pin 22 (V+) and pin 25 (ground), coming from a voltage source or current shunt for example, the voltage is shown time-dependent on the screen.



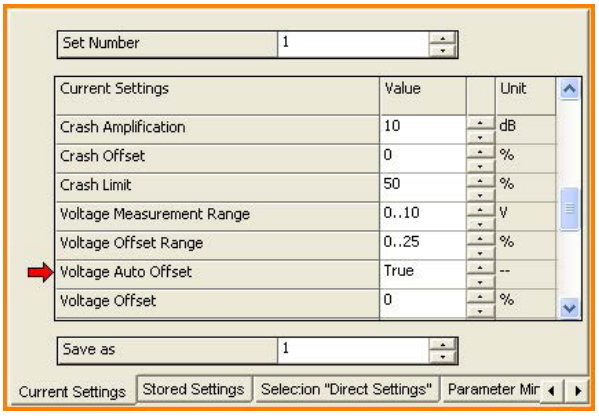
Voltage Offset Range

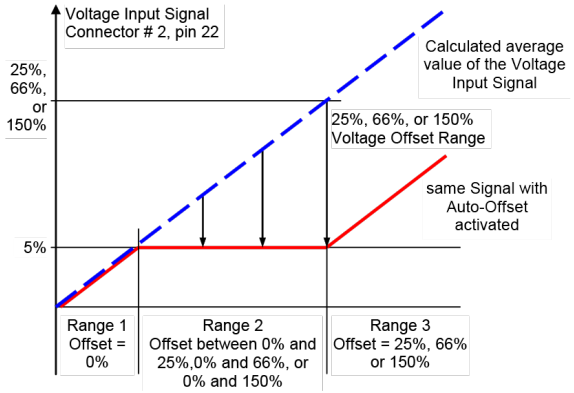
Factory setting: **0 ... 25%**,
can be set with the [+] or [-] key to:

0 ... 25% The Voltage Offset is manually adjustable from 0% to 25%. In the Auto-Offset mode the signal is pulled down on the 5%-line at most by 20%.

0 ... 66% The Voltage Offset is manually adjustable from 0% to 66%. In the Auto-Offset mode the signal is pulled down on the 5%-line at most by 61%.

0 ... 150% The Voltage Offset is manually adjustable from 0% to 150%. In the Auto-Offset mode the signal is pulled down on the 5%-line at most by 145%.





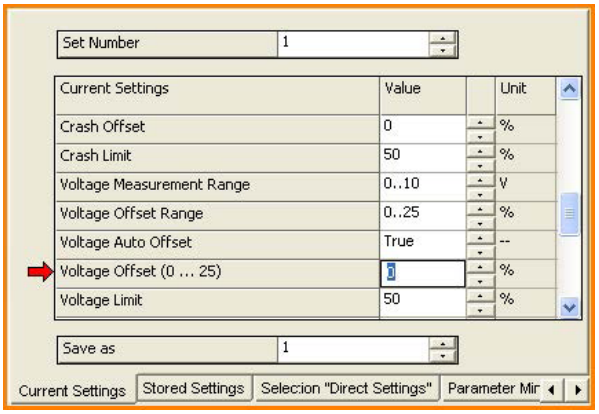
Voltage Auto Offset (related: AE Auto Offset)

Factory setting: **False**,
can be set with the [+] or [-] key to:

False The Voltage Offset is manually adjustable from 0% to 25%, from 0% to 66%, or from 0% to 150%, depending on the Voltage Offset Range.

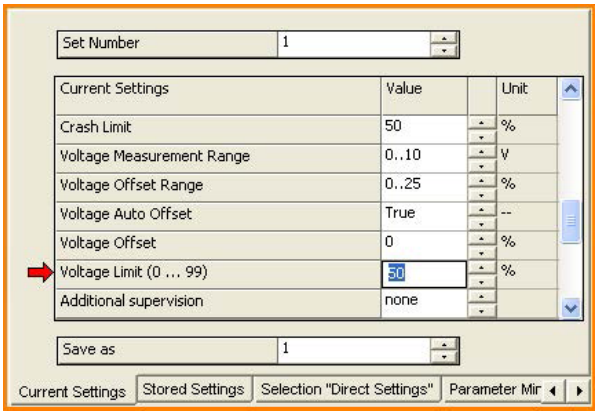
True When applying a HIGH signal on the Auto Offset Input (connector # 2, pin 21, or equivalent via PROFIBUS/ PROFINET, connector # 13) all input values of a Voltage Signal are stored, for example from a logarithmic sensor during air grinding. With the following falling edge on the Auto Offset Input out of the stored values, the average is calculated. The Voltage Offset is then adjusted automatically to show the evaluated average signal along the 5%-line (provided that the Voltage Offset Range is sufficient).

During a following grinding or dressing cycle the offset setting remains unchanged till it is changed manually, by setting a new set number or when activating the Auto-Offset input once more.



Voltage Offset

Factory setting: **0%**,
can be set with the [+] or [-] key from **0% to 25%**, from **0% to 66%**, or from **0% to 150%** in steps of 1%, or entered directly with the keyboard, depending on setting of the Voltage Offset Range. Adjusting the Voltage Offset manually. For example by setting a certain Voltage Offset, a basic voltage ripple may be suppressed without reducing the sensitivity of the voltage input. Then mostly the wanted signal is displayed on the screen. 'Measurement' of a voltage is only valid for a Voltage Offset of 0%.

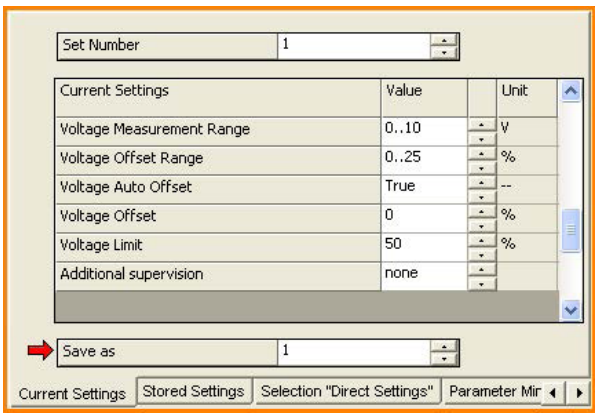


Voltage Limit

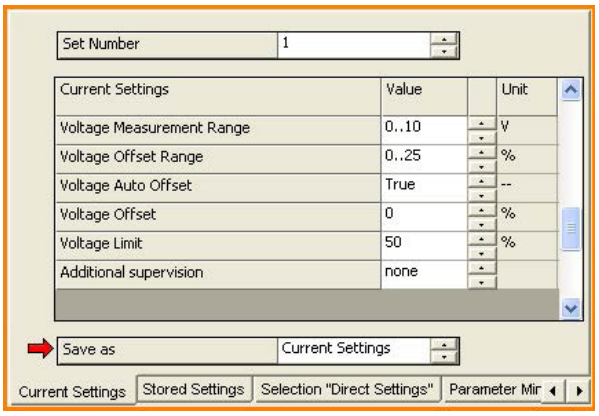
Factory setting: **50%**,
can be set with the [+] or [-] key from **0% to 99%** in steps of 1% or entered directly with the keyboard.
This operator defined setting establishes the position of the Voltage Limit line, marked with "**U**", which acts as an indicator for a certain Voltage level. When reached, a message "Voltage Limit exceeded" is fed as a LOW signal through pin 8 of hardwire interface connector # 2 or equivalent via PROFIBUS/PROFINET, connector # 13.
Changing the Voltage Limit U is immediately visible on the preview window.

Save the Settings

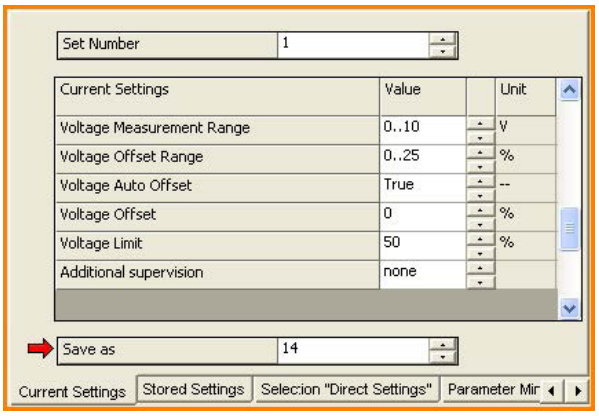
Save as
Can be set with the [+] or [-] key to **Current Settings** or **1 … 31**.



Standard Setting: If you want to store the changes permanently under the same **Set Number** as shown above, check whether the Set Number is the same and click on **OK** or press [F8]. The Set Number will be overwritten with the new data. You return to the Module Mode.

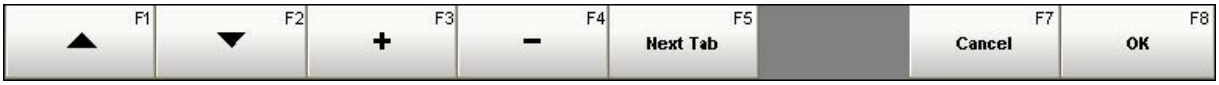


If you want to store the changes temporarily (e.g. for testing) set with the [+] or [-] key **Save as** to '**Current Settings**' and then click on **OK**. You return to the Module Mode. The new settings are taken over until the next Set Number is called up.



If you want to store the changes under a different **Set Number** as above, set with the [+] or [-] key **Save as** to **1 … 31** and click to **OK**. The new Set Number will be overwritten with the new data. You return to the Module Mode.

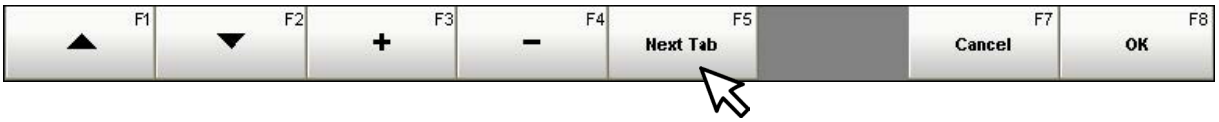
If you want to bypass the changes click or press the key [Cancel]. You return to the Module Mode.



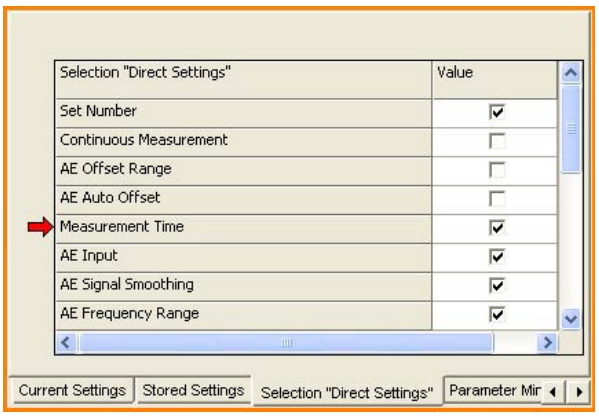
N.B.
If you want to set and save a further set, press the key [Settings] again and choose the wanted Set Number. Repeat the settings as described above.
If you would like to change settings of another Process Monitoring Module AE6000 UP, press the key "next Module" repeatedly until the wanted Module is highlighted. Then press the key [Settings] and select the wanted Set Number. Repeat the settings as described above.

9.3.2 *Tab: Selection "Direct Settings"*

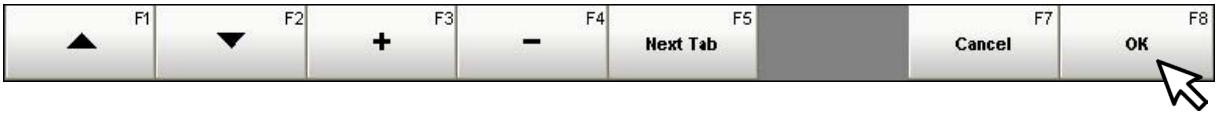
Press the key [Settings] again and open the Tab **Selection "Direct Settings"** by pressing or clicking on key [Next Tab] / [F5] repeatedly.



N.B.
The following settings are true for all 31 Sets of the Process Monitoring Module!
The Tab **Selection "Direct Settings"** is only available with Administrator rights.



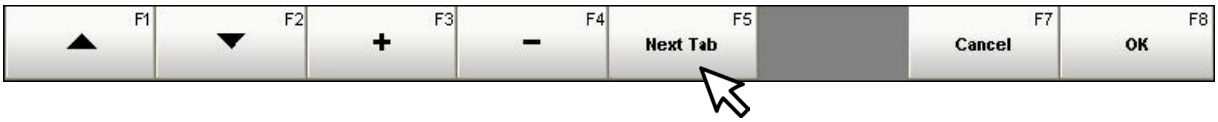
Factory setting: **All Parameters active** (all check boxes active). With this setting, it is determined which Parameters are adjustable with the key **Direct Settings** (refer to paragraph "The "direct settings" key").
Activate or deactivate the check boxes to select the Parameters.



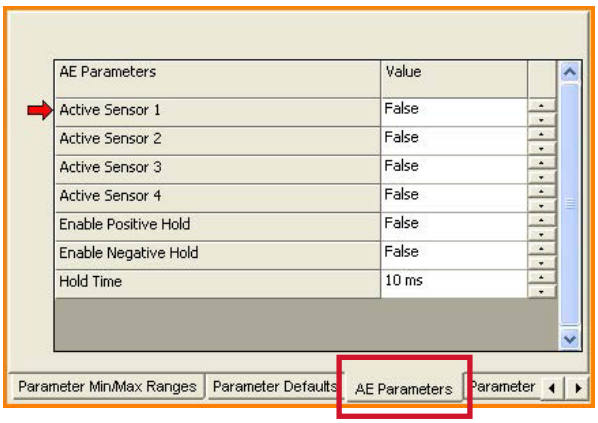
N.B.
Save all settings of this tab by clicking or pressing on key [OK] / [F8]. You are leaving the options display.
Bypass any changes by pressing or clicking on key [Cancel] / [F7]. You are leaving the options display.

9.3.3 *Tab: AE Parameters*

Press the key [Settings] again and open the Tab AE Parameters by pressing or clicking on key [Next Tab] / [F5] repeatedly.



N.B.
The following settings are true for all 31 Sets of the Process Monitoring Module!



Active Sensor 1

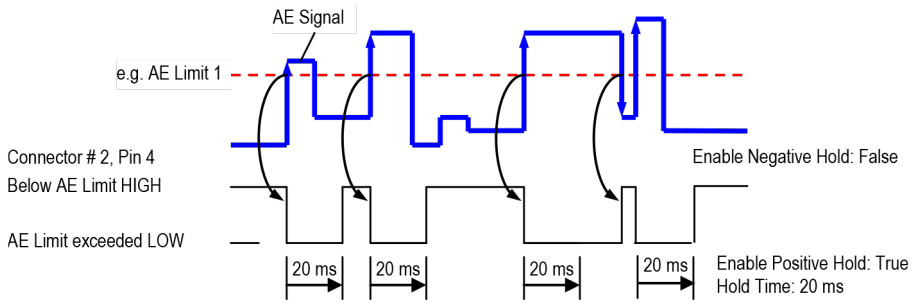
Factory setting: **False**,
can be set with the [+] or [-] key to:

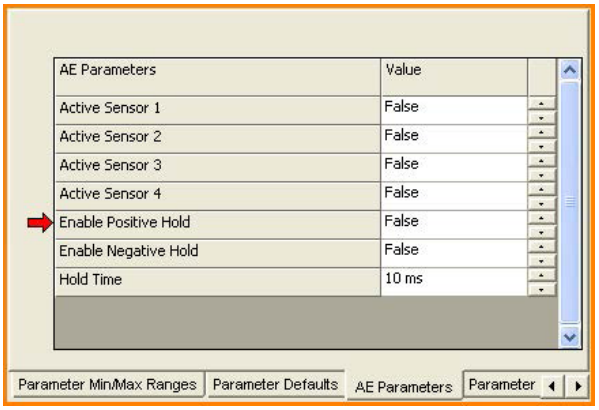
True if an active AE sensor is connected to AE Input connector # 21. This setting switches ON the supply of the sensor.

False if a standard AE sensor is connected to AE Input connector # 21.

The settings of **Active Sensor 2** to **Active Sensor 4** correspond to the AE Inputs connector # 22 to # 24.

N.B.
The following settings are necessary only for certain applications:
If a signal (AE, Crash or Voltage) exceeds or falls below its respective Limit for a very short time, also very short LOW or HIGH pulses are fed to the machine CNC control. For evaluation purposes, it may be necessary to “hold” these pulses to be recognised by the machine CNC control.



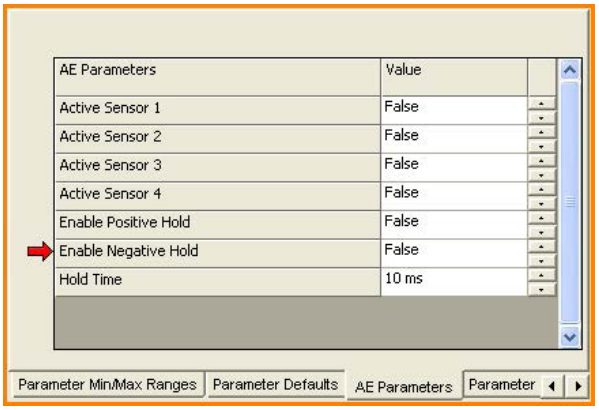


Enable Positive Hold

Factory setting: **False**,
can be set with the [+] or [-] key to:

True Permanent Hold Function. Reacts, when the leading edge of an increasing signal exceeds its Limit. Therefore every signal 'Limit exceeded' lasts at least as long as the 'Hold Time'.

False No Hold Function.

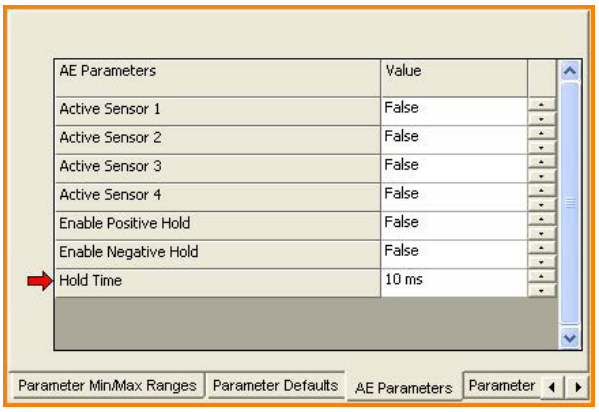


Enable Negative Hold

Factory setting: **False**,
can be set with the [+] or [-] key to:

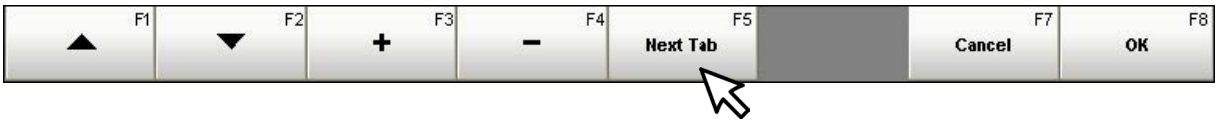
True Permanent Hold Function. Reacts when the falling edge of a decreasing signal falls below its Limit. Therefore every signal 'falls below Limit' (HIGH) lasts at least as long as the 'Hold Time'.

False No Hold Function.



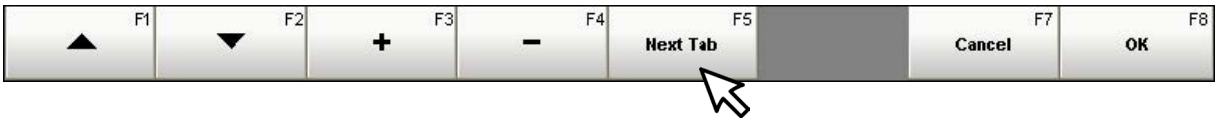
Hold Time

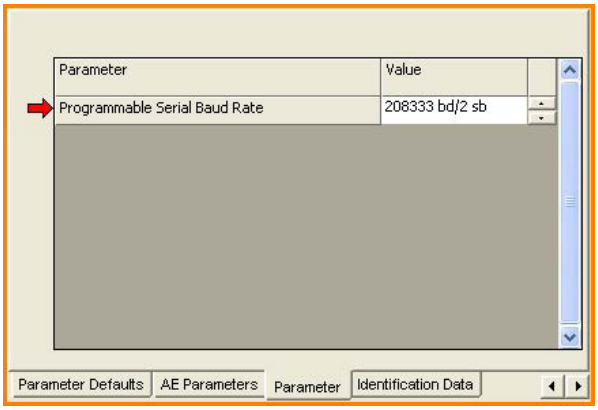
Factory setting: **10 ms**,
can be set with the [+] or [-] key from **10 ms to 1000 ms** in steps of 10 ms.
This setting determines the minimum duration of an 'Limit exceeded-' and/or 'falls below Limit-' Signal fed to the machine CNC control.
Check with your CNC Control for required signal time!
If the hold time is set too long, it may happen that short pulses in sequence are covered by the Hold Time and therefore not be recognized by the machine control.
This setting is redundant if both 'Hold Enable' are set to FALSE.



N.B.
Save all settings of this tab by clicking or pressing on key [OK] / [F8]. You are leaving the options display.
Bypass any changes by pressing or clicking on key [Cancel] / [F7]. You are leaving the options display.

9.3.4 *Tab: Parameter*





Programmable Serial Baud Rate

Factory setting: **208333 bd/2 sb**,
can be set with the [+] or [-] key to a Baud rate (bd) of 1200, 2400, 4800, 9600, 19200, 38400, 57600, 125000, 156250 or 208333, no parity. Except 208333, all others can be set to either 1 or 2 Stopbit(s) (sb).

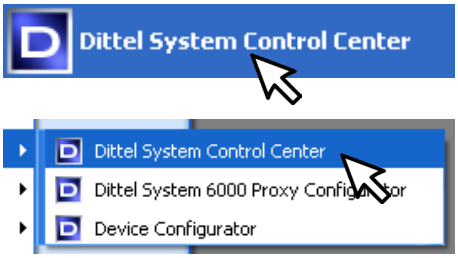
10 THE PROCESS MONITORING MODULE

This Section contains a description of useful features of the Process Monitoring Module AE6000 UP and its adaptation to machine specific conditions.

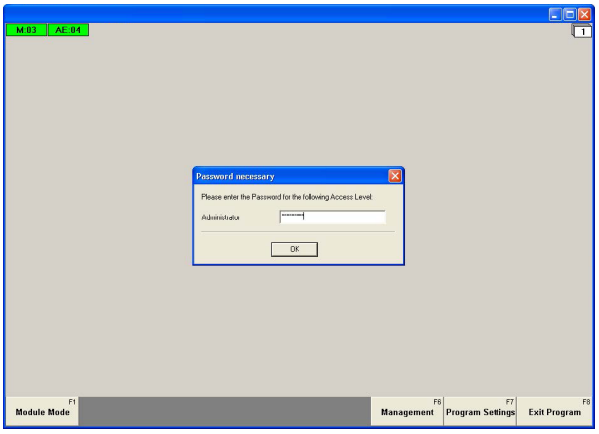
10.1 *Prerequisite*

The Process Monitoring Module AE6000 UP is installed, pre-set (for example module address 04) and properly powered. On your Computer or Automation System, the DSCC Software is installed and operating.
At least one AE sensor is mounted on the spindle and connected to the AE6000 UP Module, for example AE Input 1, connector # 21.

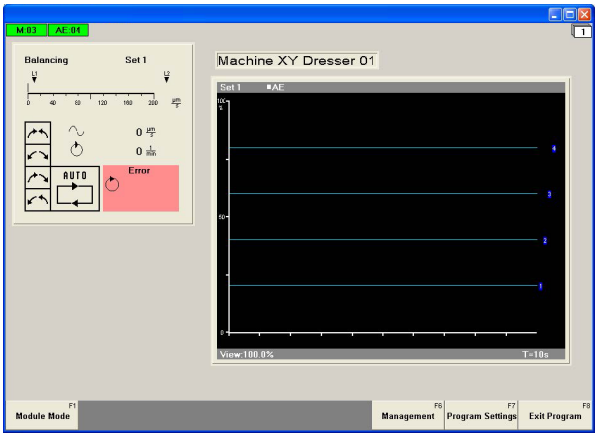
10.2 *Getting started*



Start the Program on your Automation System or computer by clicking on button Start and then on symbol “Dittel System Control Center”.
Or start the Program by clicking on buttons Start / Programs / Dittel System 6000 and finally on the symbol “Dittel System Control Center”.
In the SINUMERIK® HMI-Environment you can start the DSCC Program by pressing the appropriate softkey.



When the password prompt is activated (see paragraph “8.1.6 General Settings: Access Rights” on page 59) the opposite screen is displayed.
If no password has been entered till now, click on [OK] or press the key [Enter] on your computer keyboard or [Input] on the SINUMERIK® keypad.
Otherwise enter your password and click on key [OK] or press the [Enter] / [Input] key.
The next screen opens.



When the password prompt is not activated or you have entered and confirmed your password by clicking on [OK] or pressing [Enter] / [Input] the following start screen is displayed depending on number of connected modules and activated modules on Display Layer 1. The example shows a connected Balancing Module **M:03** and a connected and on Display Layer 1 activated Process Monitoring Module **AE:04**.

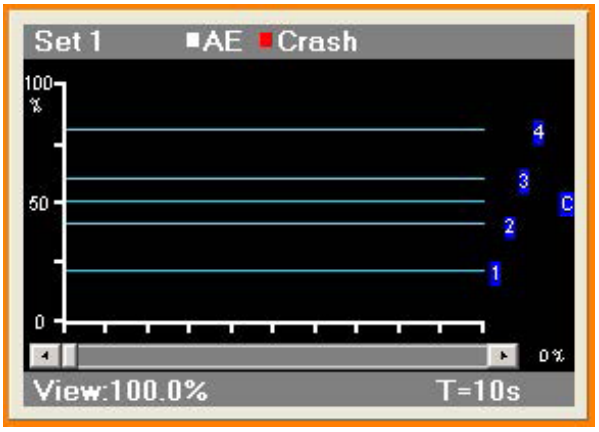
Click or press on the key [Module Mode].

Always the first activated Module on this Display Layer is highlighted, here for example the Balancing Module **M:03**, as well as the correspondent Module View(s) (marked orange).

The softkeys are changing into Balancing Mode:

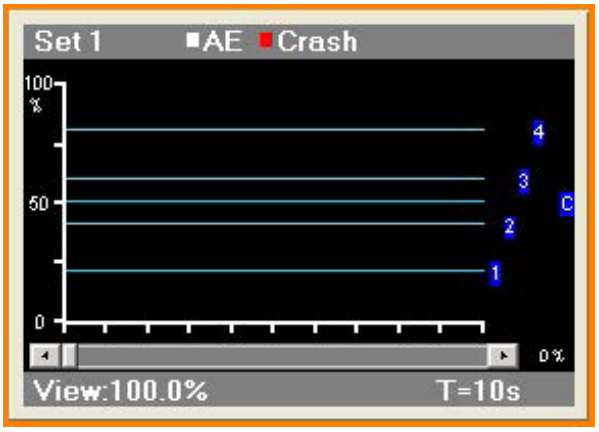
To operate the Process Monitoring Module AE6000 UP click or press on the key next Module (Function key F7).

10.2.1 *The AE Monitor*



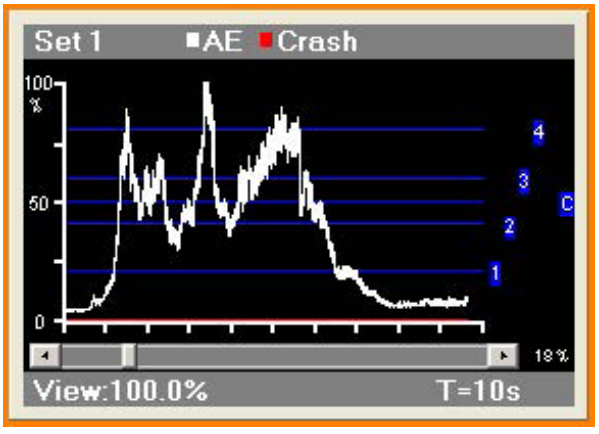
It is shown:

- Set number (here Set 1),
- 4 AE Limits (here 20%, 40%, 60%, 80%),
- Crash-Limit C (here 50%)
- Colour of the AE signal (here white) and the Crash signal (here red), Voltage will not be shown,
- Measurement time T (here 10 seconds),
- Recording Time is not equal Measurement Time (recognizable on a scroll bar and right side %-information)
- View (here 100.0%).



When you move the cursor arrow into the AE Module View the cursor arrow changes to a magnifying glass. When clicking with the RIGHT mouse button you zoom out - the time axis increases, i.e. a longer period of time is displayed.
When clicking with the LEFT mouse button you zoom in - the time axis decreases, i.e. a shorter period of time is displayed.
The View percentage changes accordingly.

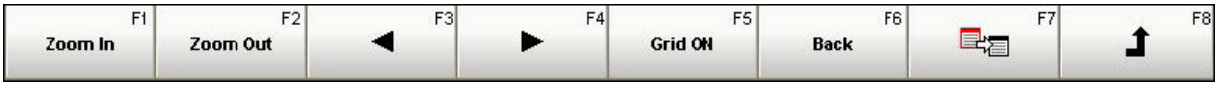
10.2.2 *The 'Start AE' Key*

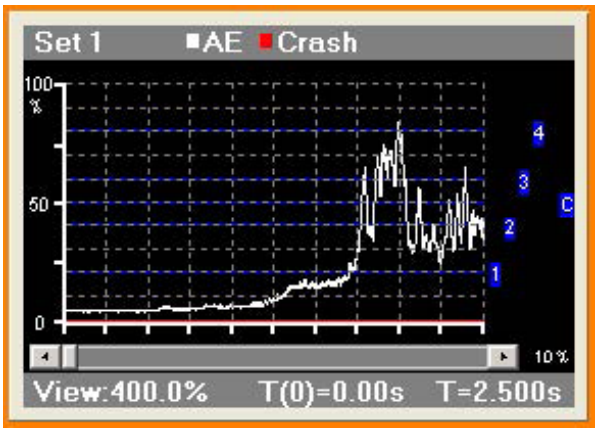


- An AE / Crash and/or a Voltage measurement is started manually by pressing or clicking on the [Start AE] key. The [Start AE] key changes to [Stop AE].
- When using the **Setting - Continuous Measurement - False**, the measurement is stopped automatically after one run (= Measurement Time). The key [Stop AE] changes to [Start AE].
- When using the **Setting - Continuous Measurement - True**, the measurement lasts as long as the Recording Time or it is stopped earlier by pressing or clicking the [Stop AE] key. The signal may be stored up to 900 seconds (Recording Time); progress is visible on the lower scroll bar and the right-hand percentage.

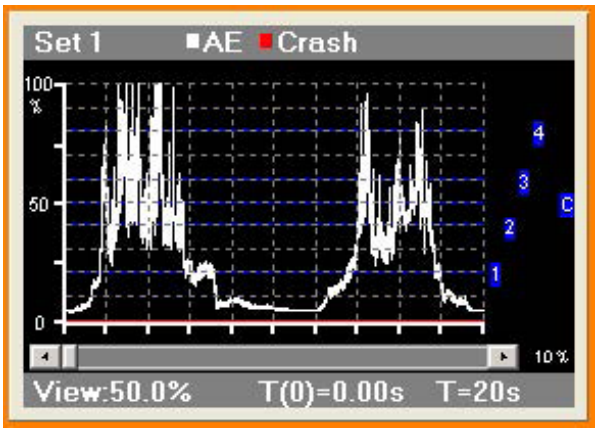
10.2.3 *The 'View' Key*

Press or click on the key [View], the softkeys are changing:

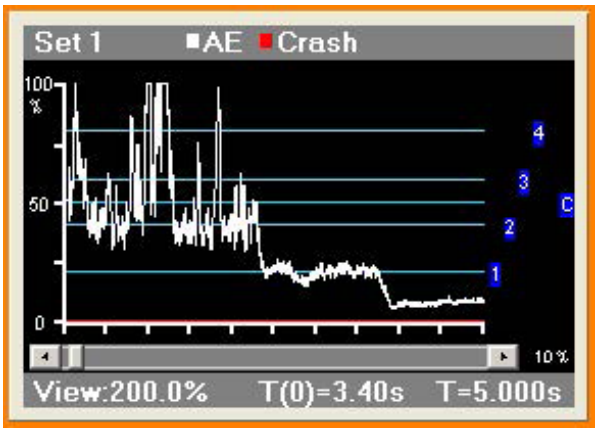




To magnify the recorded signal press or click on the softkey [Zoom In]. Zooming in is possible up to 3200%. Additional the zero mark is indicated, here T(0)=0.00s. When zooming in with the soft-key it is always done from this zero, the displayed Measurement Time is reduced correspondingly.



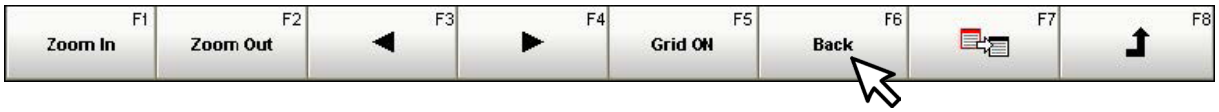
To scale down the recorded signal press or click on the softkey [Zoom Out]. Zooming out is possible down to 12.5%. When scaling down with the softkey it is always done from the zero mark. The displayed Measurement Time is extended correspondingly.



To shift the recorded signal to the left or right press or click on the softkey [►] or [◄] . The time T(0) shows the new zero mark, here T(0)= 3.4 seconds.

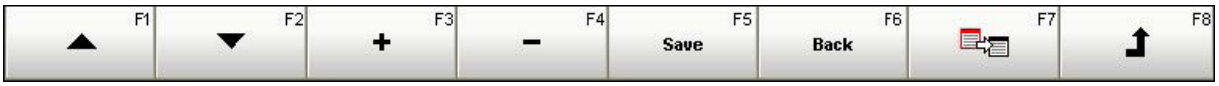
To switch on or off the grid on the screen, press or click on the softkey [Grid ON] or [Grid OFF]. Compare the Figure above and the opposte Figure. This setting has no influence when printing the AE signal.

Press or click on the softkey [Back]:



10.2.4 *The 'Direct Settings' Key*

Press or click on the key [Direct Settings], the softkeys are changing:



And the AE Monitor:

With the Up- [▲] or Down-key [▼] all settings which are enabled (see paragraph "10.2.4 The 'Direct Settings' Key" on page 92) can be scrolled through. With the [+] or [-] key the value can be changed.

Except 'Measurement Time', all settings are changeable also during a running AE measurement.

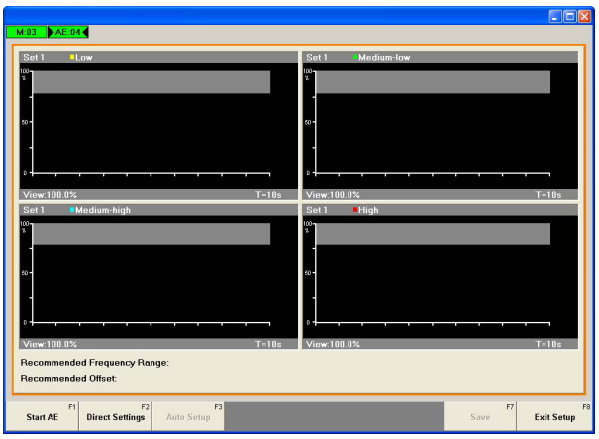
When changing the 'Measurement Time' during a running process the recording starts from '0' again.

N.B.
All changes can be permanently stored in the actual Set Number by pressing or clicking on key [Save].
By pressing the [Back] key you return to the Process Monitoring Mode.
When pressing the key [Back] / [F6] the changes are taken over temporarily till the next set number change. You return to the Process Monitoring Mode.
When pressing the key shortcut [Ctrl] + [H] or the HELP button at the SINUMERIK® keyboard a menu opens containing explanations of the actual setting.

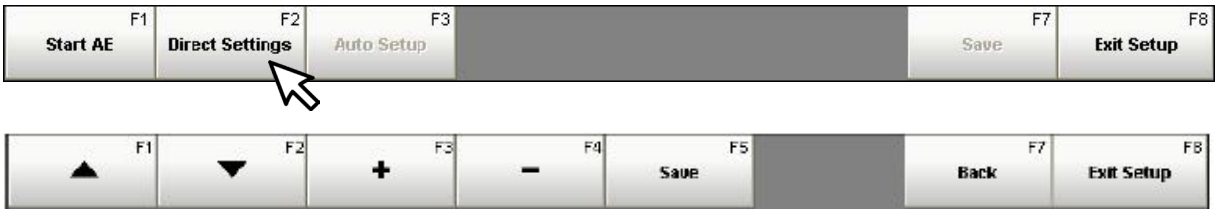
10.2.5 *The 'Extras' Key – the 'Setup' Key*

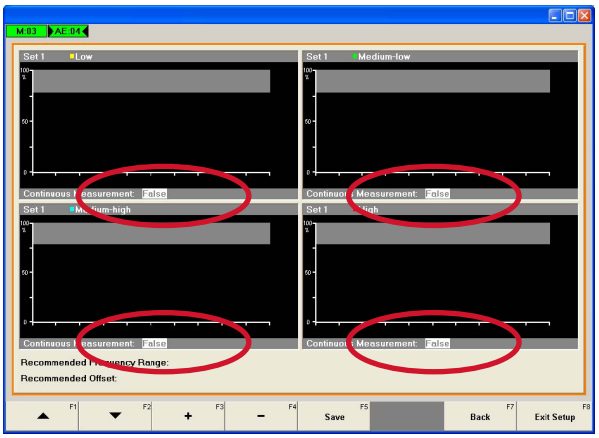
Press or click on the key [Extras], the softkeys are changing:

Then press or click on the key [Setup]:



The opposite screen opens. After a test grinding or a test dressing process with this quadruple AE screen the best frequency setting and AE offset can be determined and stored.
This screen always opens with the set number which was used or changed last. If the setup should be done with another Set number as indicated, press or click on the key [Direct Settings] and change the settings.





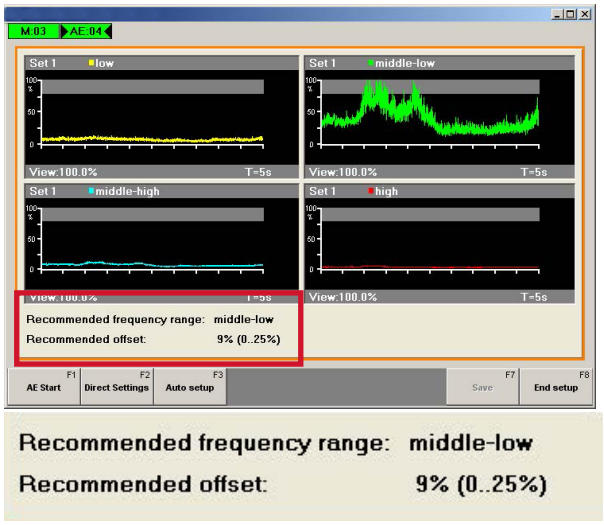
With the Up- [▲] or Down- [▼] softkey you can click through the following settings and with the [+] or [-] key you can change its value.

- **Set** (factory setting '1')
- **Continuous Measurement** (factory setting 'False')
- **AE Offset Range** (factory setting '0% … 25%')
- **Measurement Time** (factory setting '10s')
- **AE Input** (factory setting 'S1')
- **AE Amplification** (factory setting '50 dB')
- **AE Offset** (factory setting ,0%').

The upper grey bar shows the adjusted AE Offset Range (0% … 25%, 0% …66% or 0% …150%), a possible lower grey bar the adjusted AE Offset.

N.B.
All changes can be stored permanently in the current Set Number by pressing or clicking on the key [Save]. Then leave the screen for 'Direct Settings' by pressing or clicking on the key [Back].
Bypass any changes by pressing or clicking on the key [Back].
In both cases, you return to the quadruple 'Setup' screen.

Start now a test cycle of a grinding or dressing process. Start the Process Monitoring Module by pressing the [Start AE] key or by an external Start command via Connector # 2, pin 12 or PROFIBUS, Connector # 13.

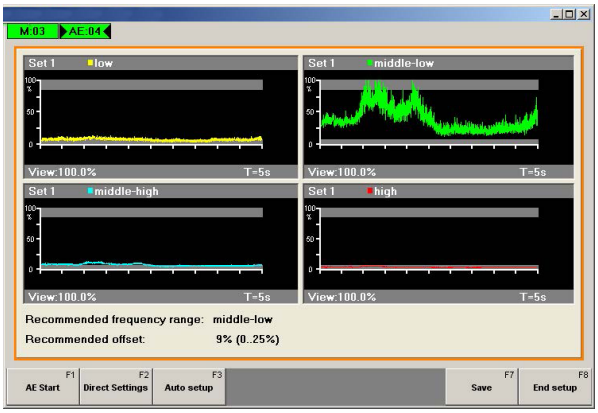


Recommended frequency range: middle-low
Recommended offset: 9% (0..25%)

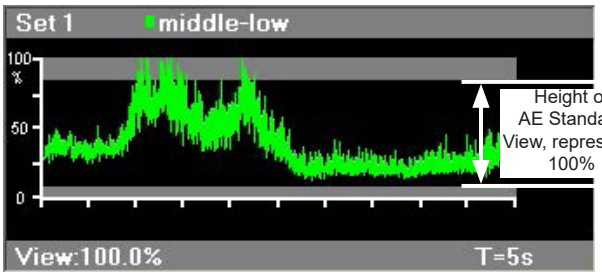
The measured AE signal is displayed at the same time but differently on all four screens. After reaching the Measurement Time or when pressing the [Stop AE] key or when stopping the measurement from externally, the AE6000 UP recommends a frequency range and an Offset/Offset Range.

N.B.
The AE signal should fill the screen but not overdrive it. With [Direct Settings] increase or decrease the ‚**AE Amplification**'.
A complete dressing or grinding cycle should be displayed, otherwise change with [Direct Settings] the ‚**Measurement Time**'. If necessary, repeat the test cycle.

If you want to use the recommended settings press or click on the [Auto Setup] key. The recommended Frequency Range and Offset together with the Offset Range, the current Measurement Time, AE Amplification, way of measurement and AE Input are stored in the actual Set Number temporarily for further testing.



The four views are changing. The recommended Offset is shown on the lower screen edge as a grey bar (in this example 9%).



Only the area BETWEEN the grey bars is displayed in the Standard AE view. In this example, the AE Amplification should be reduced.
To save all settings permanently in the actual Set Number press or click on the [Save] key.

When pressing or clicking on [Exit Setup] you return to the Module View of the standby AE mode.

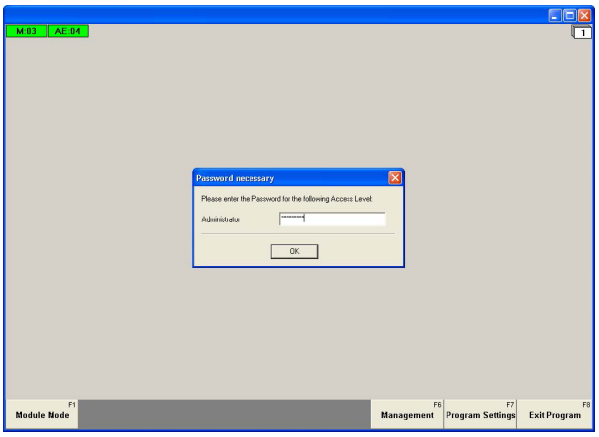
If applicable, repeat the setup with another grinding or dressing cycle using a new set number.

11 AE PROCESS MONITORING

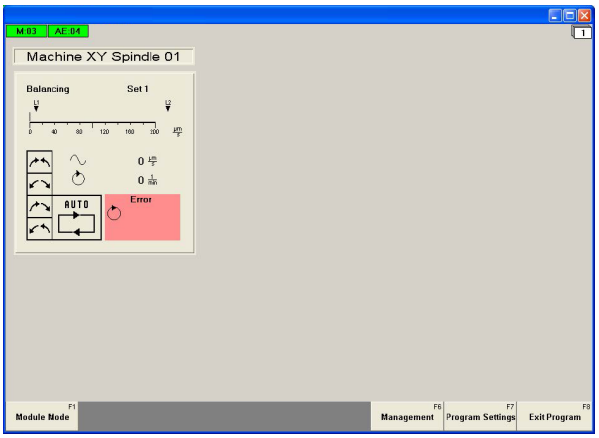
N.B.
During AE Process Monitoring, do not allow any operation that causes vibrations or shaking movements like feeding or reverse movement, loading or unloading etc., since this could distort the AE signal, exceed a limit value, or even let the Crash Control to response.
Wire and program your machine CNC control so, that AE Process Monitoring is only carried out during grinding or dressing cycles!

11.1 *Prerequisite*

- Start the machine tool.
- Switch ON the power supply for the DS6000 UP Modules.
- For a short time LEDs # 7 and # 8 light up.
- Start your Automation System or computer.
- Start the Program on your Automation System or computer by clicking on button start and then on symbol “Dittel System Control Center”.
- or start the Program by clicking on buttons Start / Programs / Dittel System 6000 and finally on the symbol “Dittel System Control Center”.
- In the SINUMERIK® HMI-Environment you can start the DSCC Program by pressing the appropriate softkey.
- In this example, the program recognizes two modules of the DS6000 UP Series.

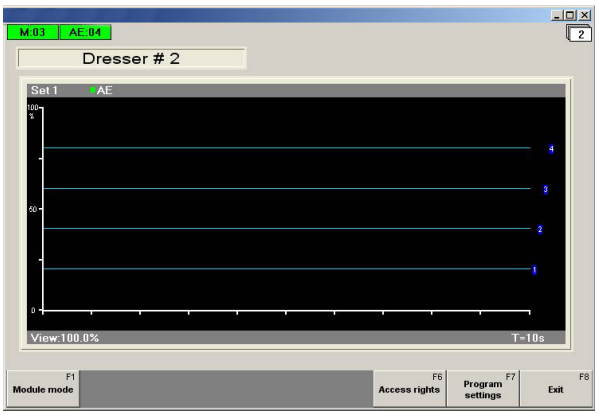


When the password prompt is activated (see paragraph “8.1.6 General Settings: Access Rights” on page 59) the opposite screen is displayed.
The program opens with that Access Level which was entered during installation under ‘**Access Rights**’ (see paragraph “8.1.6 General Settings: Access Rights” on page 59) .
Enter your password, in this example for Administrator, and confirm by clicking on [OK] or by pressing [Enter] key on your computer keyboard or [Input] on the SINUMERIK® keypad.



It always opens the Display Layer 1 (if not changed). The contents of the Display Layer 1 correspond to the screen with which you have left the programme last time, in this example the Standard Balancing View.

Let us assume, the AE Module **AE:04** is installed on Display Layer 2, press the keys [Ctrl] + [2] or select the Display Layer 2 as described in paragraph “9.2.4 Create different Display Layers” on page 73:

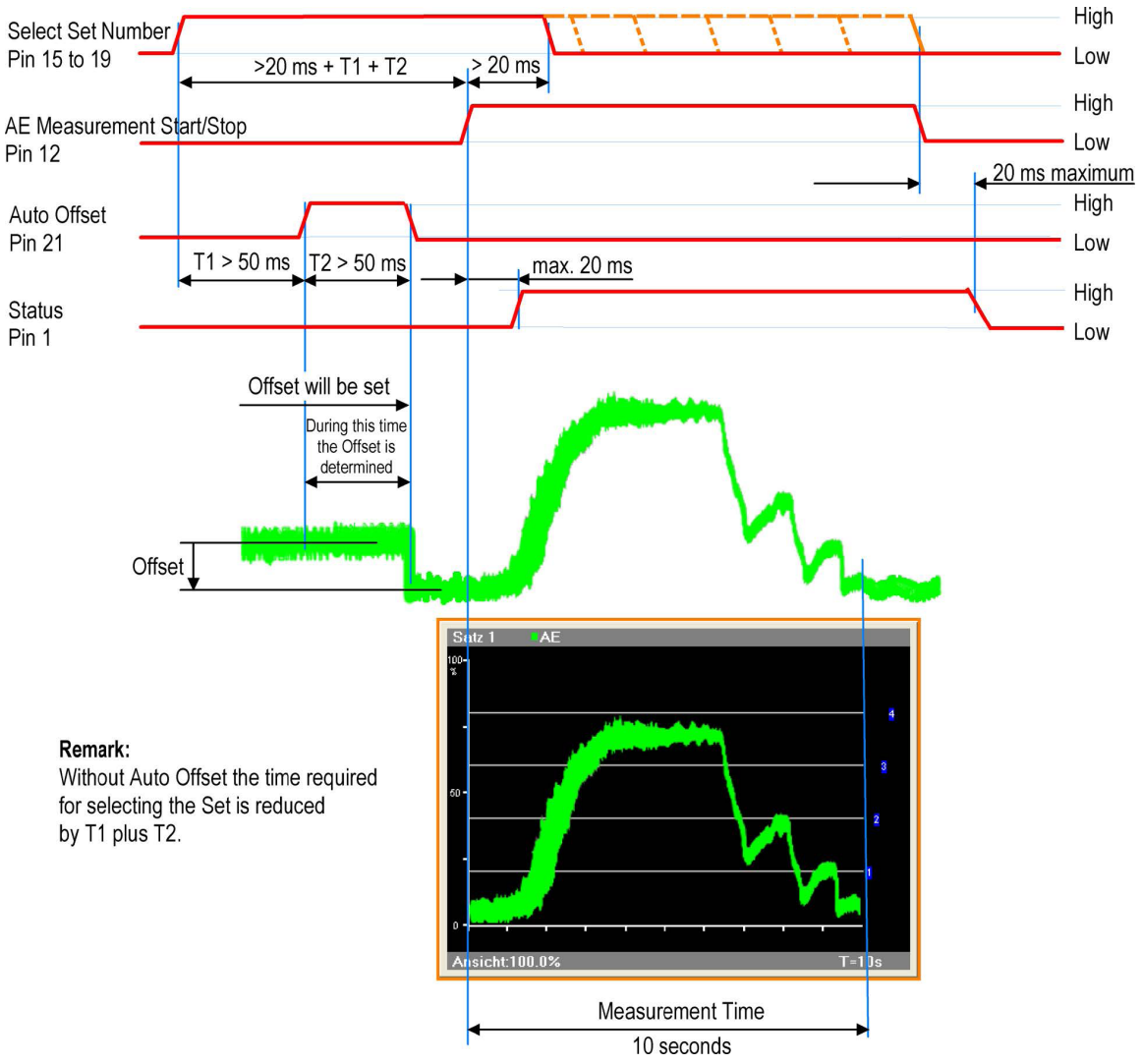


For example, it is shown:

- Set Number (here 1),
- Measurement Time (here 10 s),
- AE Signal only, Sensor OK (no error),
- Limits 1 to 4 (20%, 40%, 60%, and 80%).

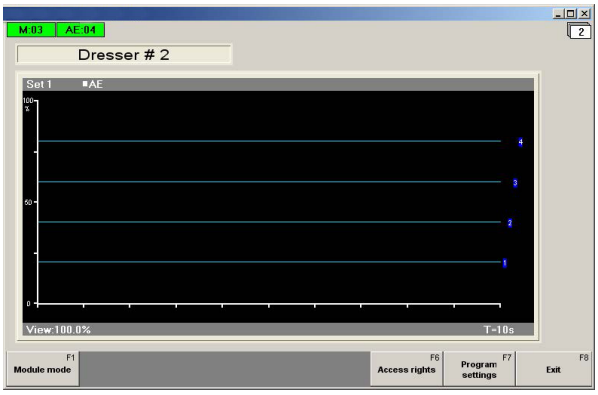
11.2 *AE Process Monitoring, external Start/Stop – Auto Offset*

N.B.
During Process Monitoring NO change of the Set Number is permitted (a change of the Set is not recognized by the unit) or possible!
The Process monitoring Module AE6000 UP can be started externally via the hardwire Interface Connector # 2 or equivalent via PROFIBUS/PROFINET, connector # 13.



Remark:
Without Auto Offset the time required for selecting the Set is reduced by T1 plus T2.

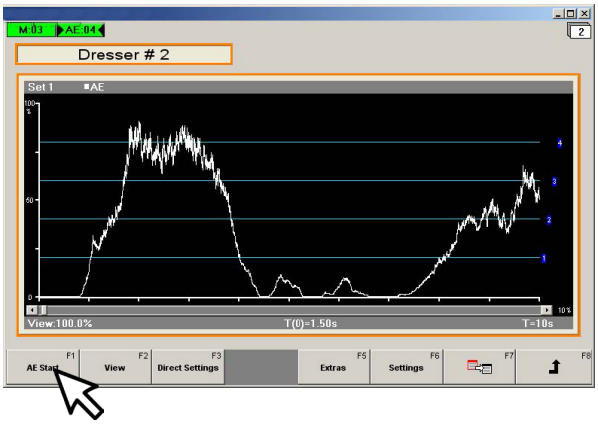
11.3 *AE Process Monitoring, manual Start/Stop*



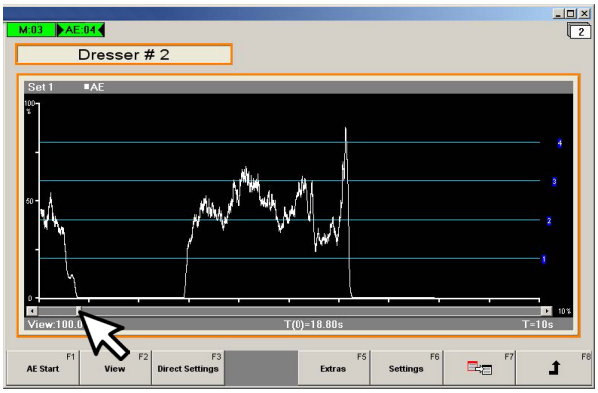
To start or stop a Process Monitoring Module AE6000 UP manually the wanted Module must be set into the Module mode first. Press the key [Module Mode] or [F1].

If more than one module is visible on the Display Layer, select the wanted Module by pressing the key (= next Module) or [F7]. The wanted Module Address will be highlighted **AE:04**, just as the Module View (orange frame).
The softkeys are changing for AE mode.

N.B.
Also in the ‚Module Mode' the AE6000 UP can be operated externally via the hardwired interface connector # 2 or PROFIBUS interface connector # 13, see paragraph “11.2 AE Process Monitoring, external Start/Stop – Auto Offset” on page 97.

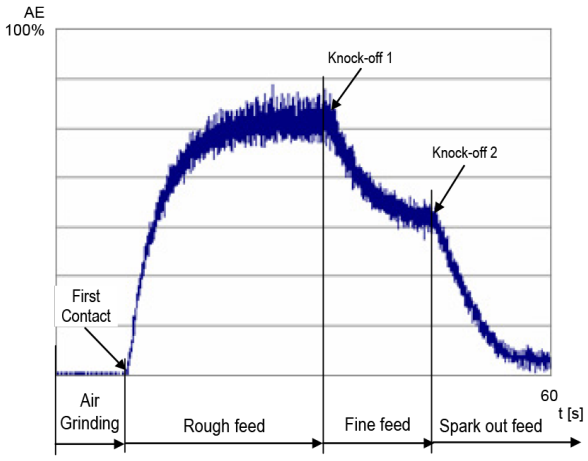


If you start now a grinding or dressing cycle and press the key [Start AE] the AE signal picked up by the AE sensor will be visible on the screen!
Depending on the setting the recorded AE signal stops after reaching the right screen edge (setting: Continuous Measurement = False, Recording Time = like Measurement Time or longer), or the AE signal will be recorded as long as the adjusted ‘Recording Time’ or you press the [Stop] button before.

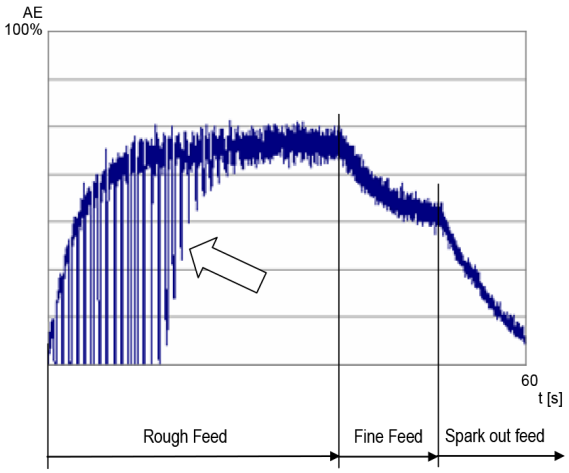


With the scrollbar or the [►] / [◄] keys (after pressing the [View] key) or the ‚Magnifying Glass' the complete recorded AE signal can be examined.

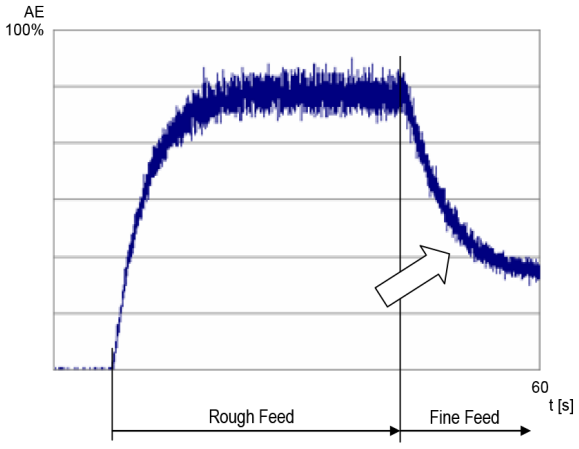
11.4 *AE Signals during a grinding process*



Normal Grinding Cycle

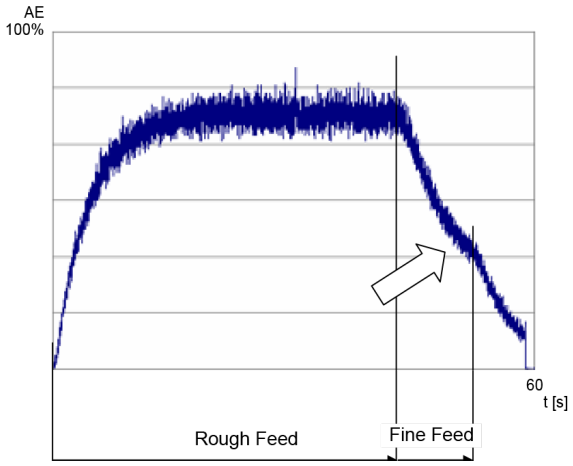


Workpiece out of round



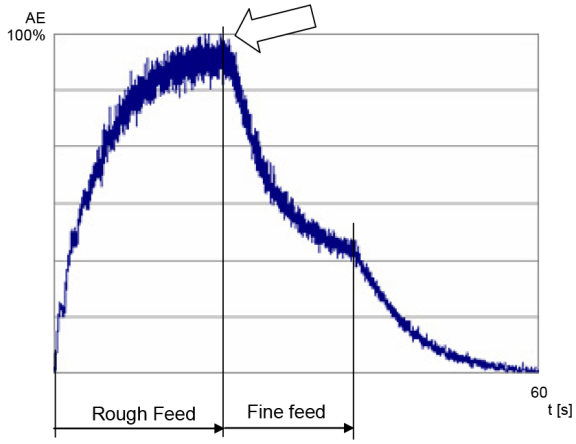
Fine Feed too low

- Grinding cycle too long
- Increase the Fine Feed Rate

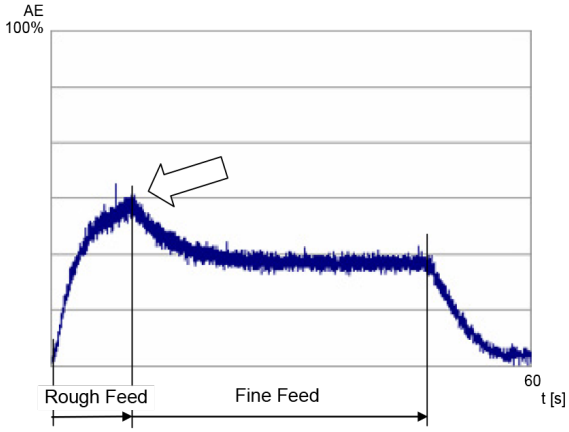


Fine Feed too short

- decreasing accuracy



Rough Feed too high



Rough Feed too low

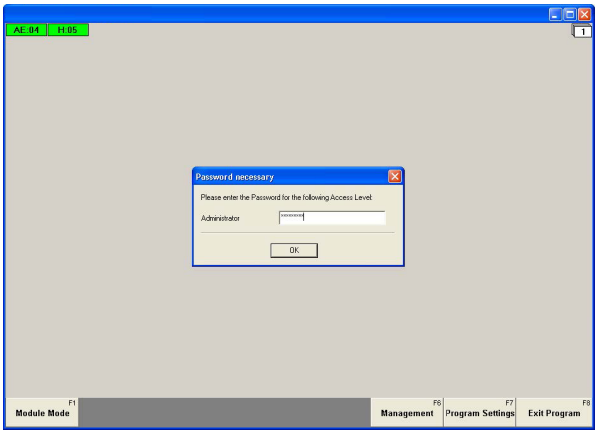
11.5 *Special Features*

11.5.1 *Placing the Access Rights*

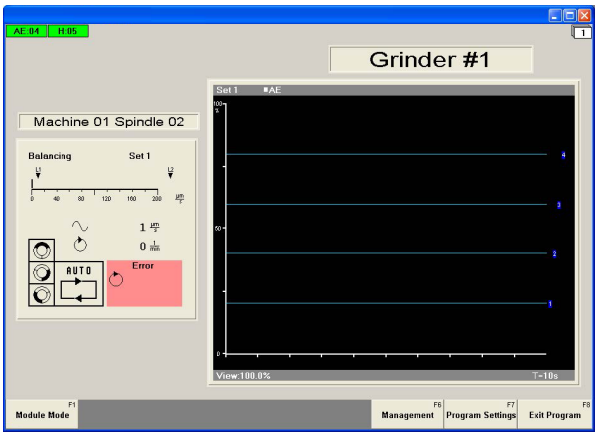
N.B.
Ex-factory, the DSCC Software is shipped with Access Level Administrator and without password, except for Access Level Service.
Passwords and access rights are valid for all DS6000 UP Modules connected to the Computer or Automation System. An individual placing is not possible.

After completion of all settings and the first successful operation attempts, the DS6000 UP Module(s) can be locked or unlocked for the respective user group.

11.5.1.1 *Placing a password the very first time*



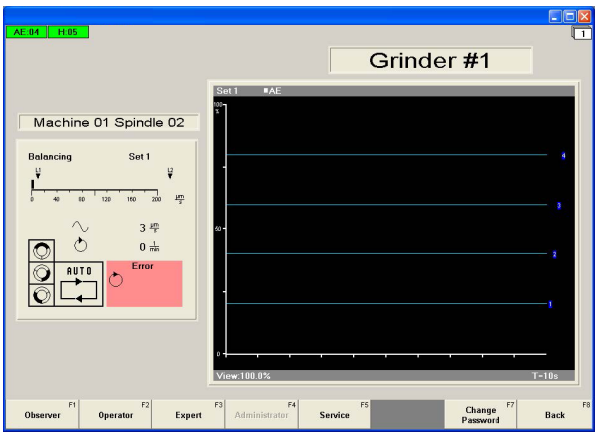
If you have activated “Ask for Password after Program Start” in the options menu **Access Rights** (see paragraph “8.1.6 General Settings: Access Rights” on page 59), the opposite screen opens on every program start.
Since you have not entered a password, click on the key [OK] or press the key [Enter] on your keyboard or [Input] on the SINUMERIK®.
The next screen opens.



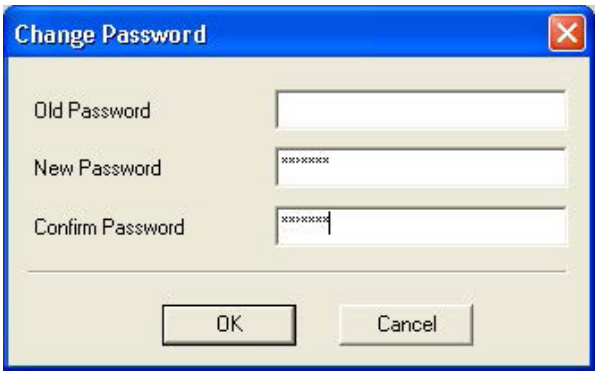
If you have **NOT** activated “Ask for Password after Program Start” in the options menu **Access Rights** (see paragraph “8.1.6 General Settings: Access Rights” on page 59) the opposite screen opens on every program start.
It opens always with Display Layer 1 (if not changed) and its view(s) which were created or active before last leaving the DSCC Program.
The Module View is just an example.

To enter a password press or click on key [Management] / [F6]

and then the key [Access Rights] / [F1]



The key assignments change to enter or to change a password, or to change the Access Level. The current Access Level is highlighted
To enter a password the **very first time** – in this example for **Administrator** – click or press the [Change Password] key.



The DSCC Software is shipped ex works without Password.
Therefore, with the keyboard or keypad enter your password only in the “New Password” screen.
Enter again your Password in the “Confirm Password” screen and then click on the [OK] key or press the [Enter] / [Input] key.

Execute the entered Password by clicking on the [OK] key or pressing the [Enter] / [Input] key.

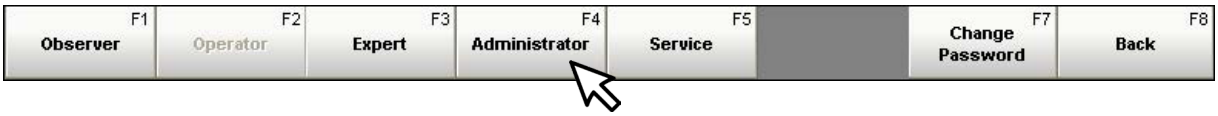
You can allocate a separate Password for every access level. Click or push on the desired access level and then again on the key [Change Password]. Repeat the procedure for the new password as described above.

11.5.1.2 *Change actual Access Level*

When the Access Level shall be changed from a **high** access level to a **lower** access level, e.g. from “Administrator” to “Operator” it is sufficed to click or to press on the softkey in question.

Confirm the new Access Level by clicking on the [OK] key or pressing the [Enter] / [Input] key.

When the Access Level shall be changed from a **low access** level **to a higher access level**, e.g. from “Operator” to “Administrator” click or press on the softkey in question.



With the keyboard or keypad, enter the Administrator Password. Confirm by clicking on the [OK] key or pressing the [Enter] / [Input] key.

Execute by clicking on the [OK] key or pressing the [Enter] / [Input] key.

From now on you have all access rights of an Administrator.

11.5.1.3 *Change your Password*

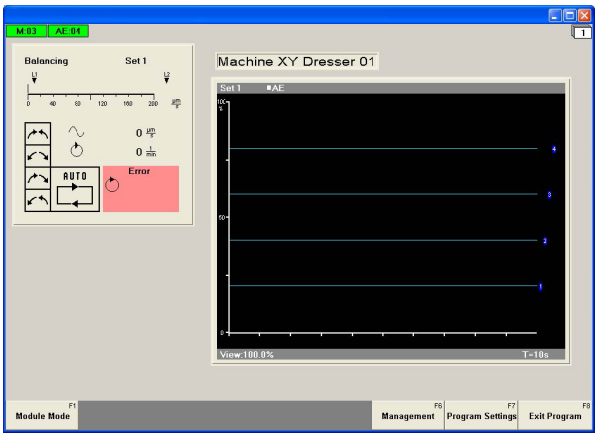
If you want to change your password of the current Access Level (highlighted, here Administrator) click or press on the softkey [Change Password]:

With the keyboard or keypad, enter your “Old Password” and then your “New Password” into the respective screen.
Repeat your “New Password” in the third line.
Confirm by clicking on the key [OK] or pressing the [Enter] / [Input] key.

Execute by clicking on the key [OK] or pressing the [Enter] / [Input] key.
From now on, the new password is valid for the current Access Level.

11.5.2 *User-defined Function Keys*

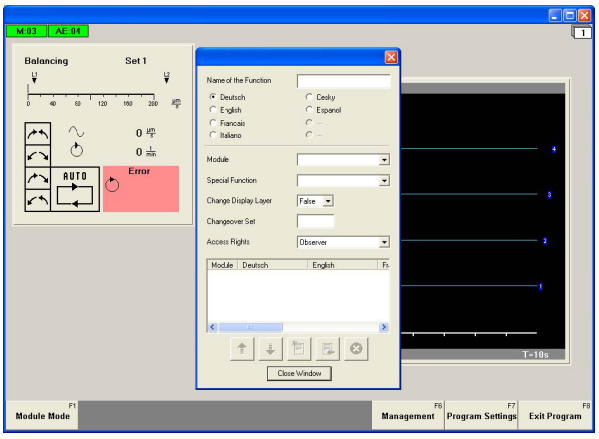
The DSCC Program gives you the opportunity to create user-defined Function Keys. This allows a fast access to the respective Module, the Display Layer or the Set number.



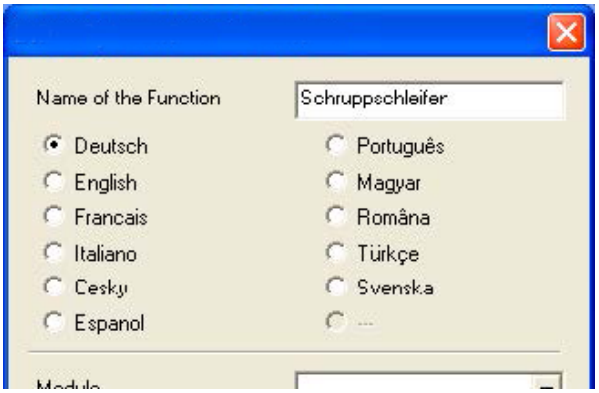
When restarting, the program opens always with Display Layer 1 (if not changed) and its view(s) which were created or active before last leaving the DSCC Program.
This Module View is just an example.

To create user-defined Function Keys press or click on key [Management] / [F6]

and then the key [Setup Functions] / [F2].



To create a user-defined Function Key a separate setup screen opens.

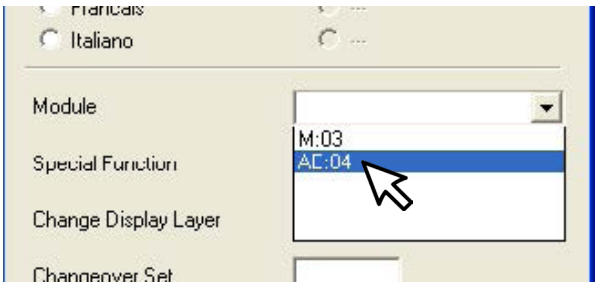


Name of the Function

With the keyboard, enter the desired name of the function, e.g. Schruppschleifen (rough grinding). This name of the function appears later on the user-defined Function Key, too.
If you enter only one name (no matter in which available language), then the user-defined Function Key shows the same name in every language.

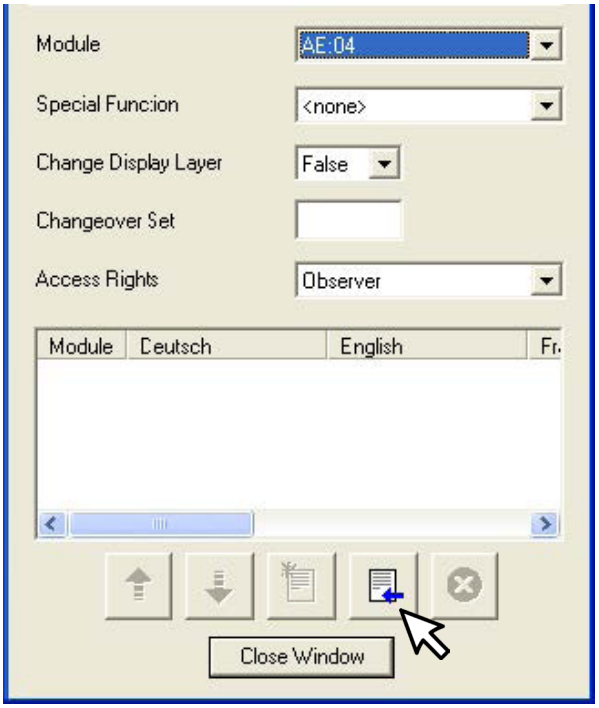
Language

You can assign a separate name of the Function in every available language by selecting a language.
If you enter the name in every language, then the user-defined Function Key shows the respective name of the Function when switching over the language.
Not filled names are displayed with the English name.



Module

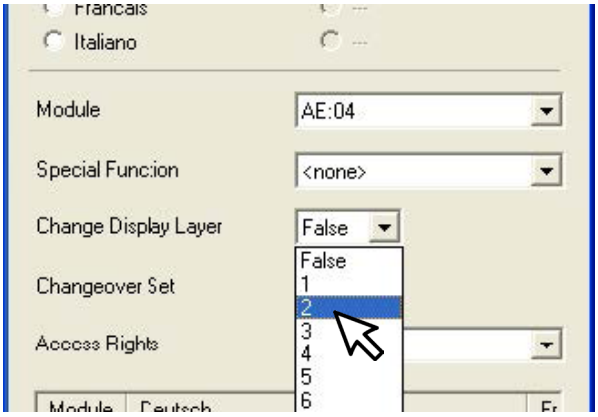
In the context menu, select the wanted module, here e.g. the Process Monitoring Module AE6000 UP with the address 04.



From now on the **Save** key is active. By clicking on the **Save** key the entered Function name is displayed in the screen below. Then any further setup of the user-defined Function Key is no longer possible.

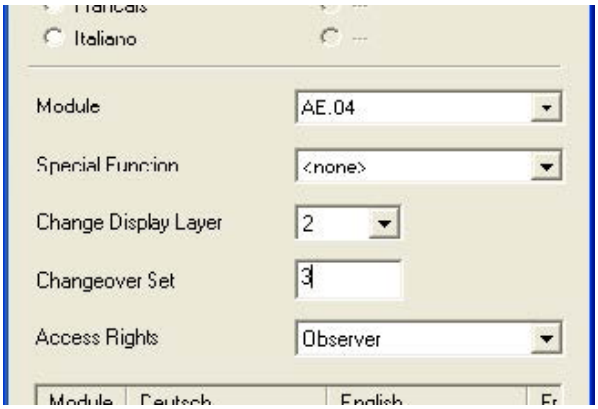
Special Function

In this context menu, select the function in which the Module – selected above – should start after pressing the user-defined Function Key. Only available functions are displayed.
When the setting <none> is selected the Module starts with its activated Module View.



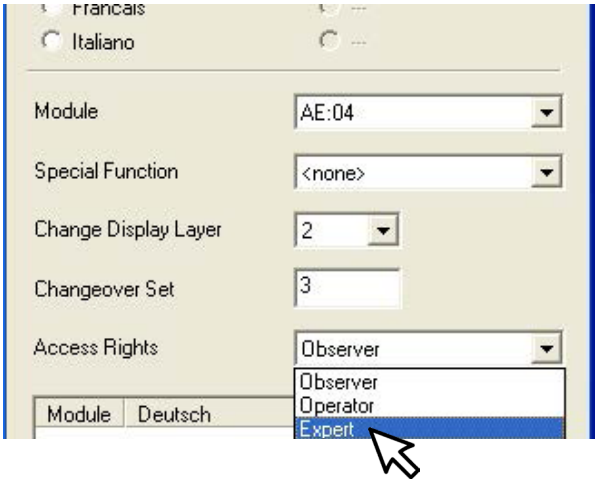
Change Display Layer

This setting is only available when **Special Function** is set to **<none>**!
In this context menu, select the Display Layer on which the Module – selected above – should start after pressing the user-defined Function Key. For this purpose, the Module must be activated (visible) on that Display Layer.
When the setting False is selected the Display Layer does not change.



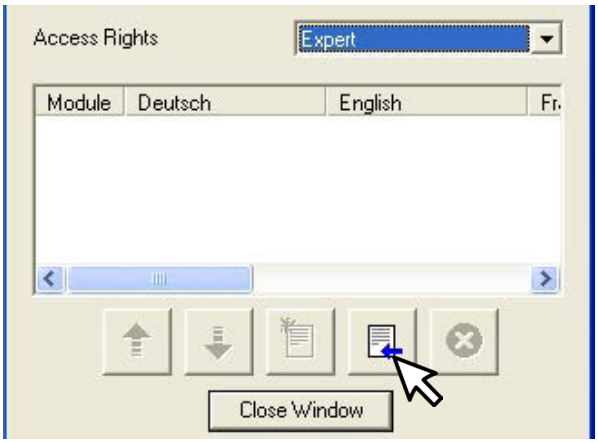
Changeover Set

With the keyboard, enter the Set Number in which the Module should start after pressing the user-defined Function Key.
At an empty screen, the actual Set Number does not change.

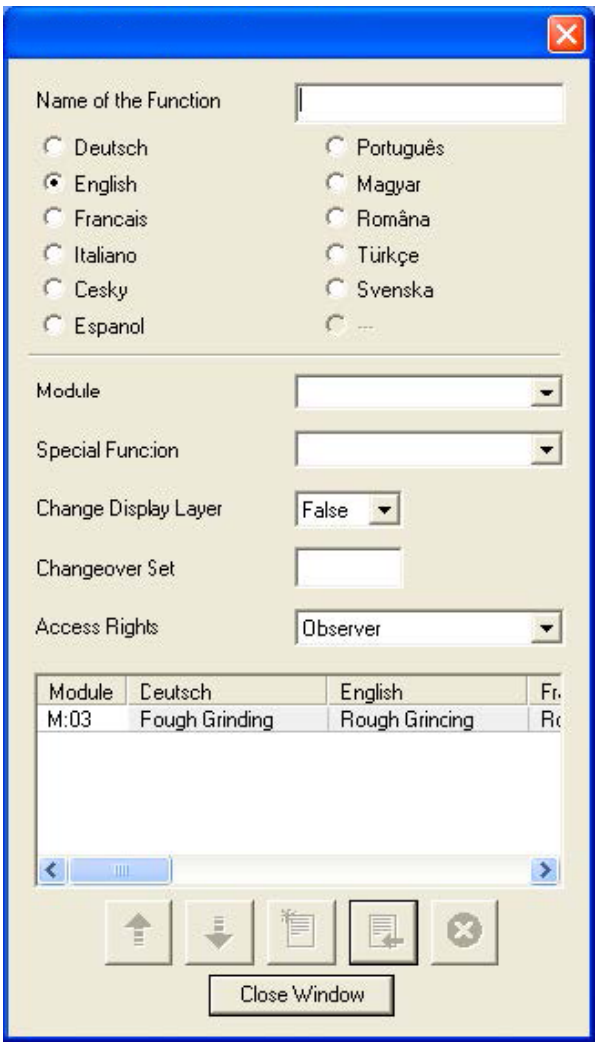


Access Rights

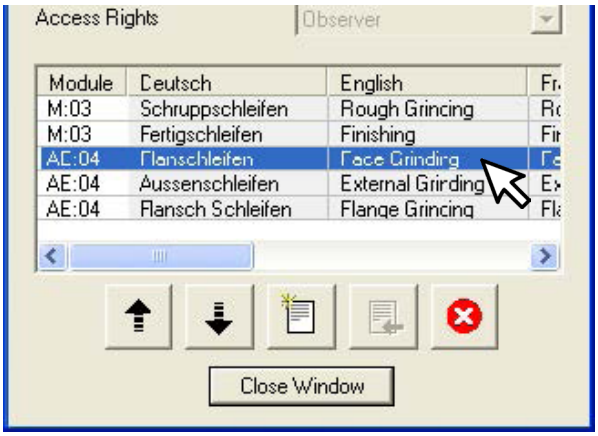
In this context menu, select the Access Right under which the user-defined Function Key may be operated.
Example:
When you choose **Observer**, then the Function Key can be operated in all Access Levels assigned to the Module(s).
When you choose **Administrator**, then the Function Key can be operated only when the Access Level **Administrator** is assigned to the Module(s) (see paragraph “11.5.1 Placing the Access Rights” on page 101).



With this setting, the setup of the user-defined Function Key is complete.
To save the settings click on the ‘**Save**’ key.



The setup is stored and the screens, to create another user-defined Function Key, are ready for a new input.



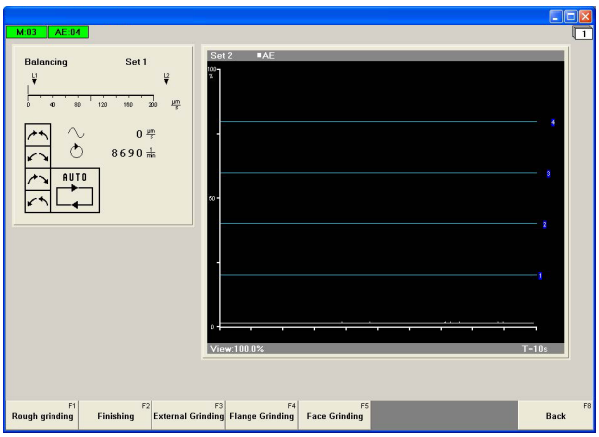
Create for every Module user-defined keys as many as you like. See example.

To organise the list the following keys are used:

With the **Up** or **Down** arrows keys the lines and therefore the Function Keys are changed in their order.
Highlight the line in question and move it with the Up- or Down key.

With the **New** key, all input fields are cleared and ready to create a new user-defined Function Key.

With the **Delete** key, a user-defined Function Key can be deleted.
Highlight the line in question and then click on this key.



When you have selected **Functions** as **Starts with Menu** (**Program Settings - General Settings - Menu Bar - Starts with Menu**) the program starts with the opposite screen showing the user-defined Function Keys.

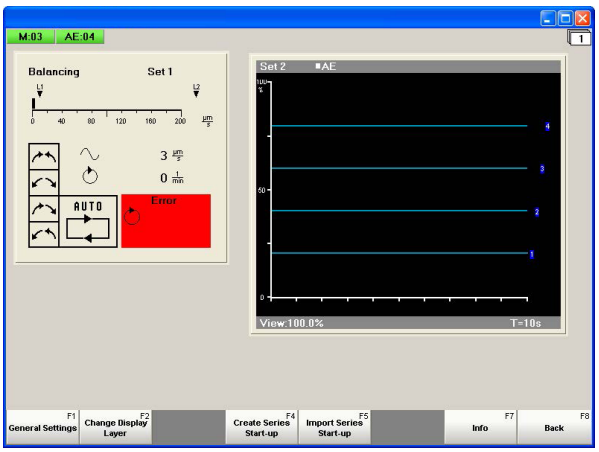
So if you press, for example, Function Key **Face Grinding** the screen changes into Display Layer 2, and the Process Monitoring Module **AE:04** gets active with Set number 3 (refer to the settings above).

11.5.3 *Series Start-up*

11.5.3.1 *Creating a Series Start-up File*

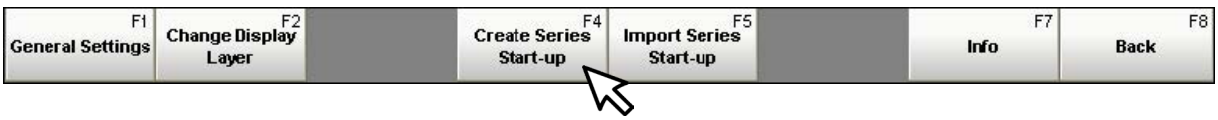
The DSCC Program gives you the opportunity to save all **stored** settings of all modules connected to the Automation System or Computer in a Series Start-up File, either as a backup file or to transfer it into other systems.

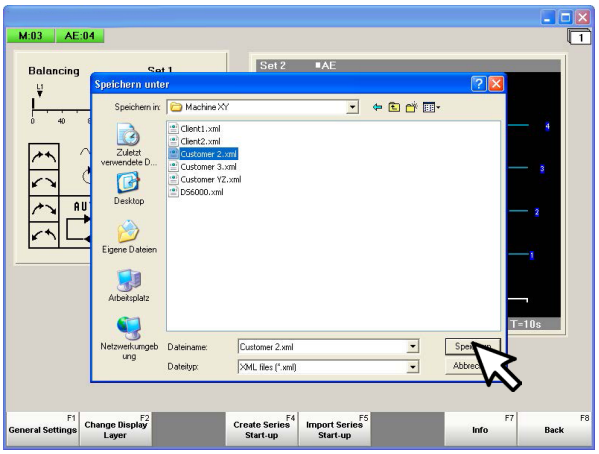
To create a Series Start-up File press or click on the key [Program Settings] or press the function key [F7].



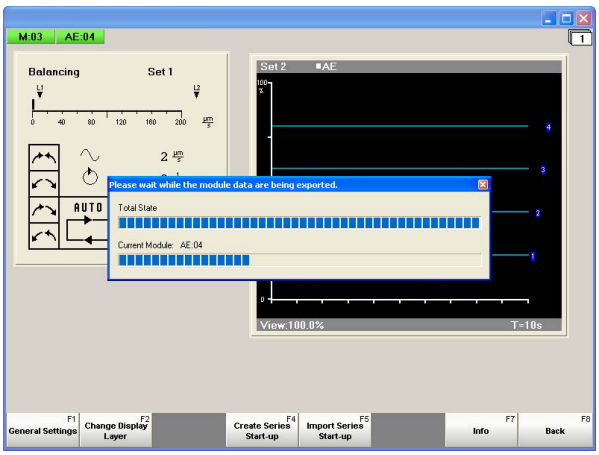
Example:
These settings like language, passwords, module views, display layers etc. should be transferred to a second or further machine(s).

Continue by pressing or clicking on key [Create Series Start-up] or press the function key [F4].





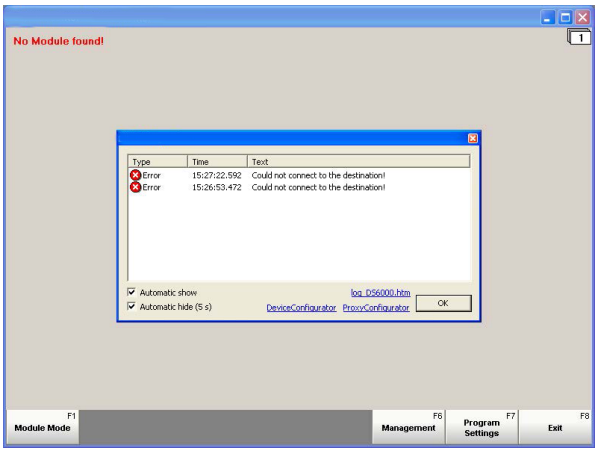
A Save as screen opens.
Open the directory **Save in** and click on **Network Environment** (when using a notebook), the disk drive or the folder in which the Series Start-up file shall be saved. Create a new folder if necessary.
Enter a suitable file name.
Click on **Save**.



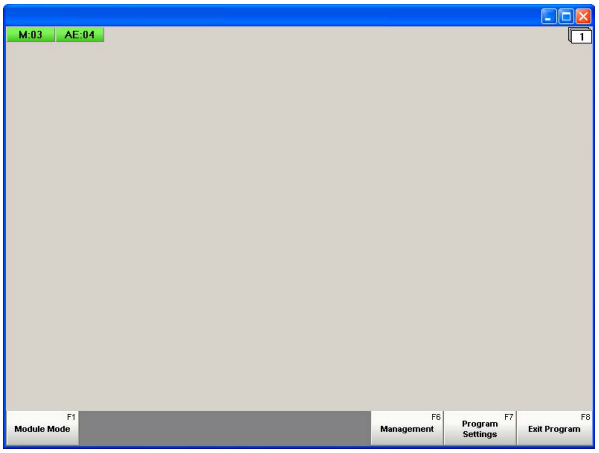
A *.xml file is created automatically. One by one the data of the Computer settings, the display layers and **stored** module settings are read out and stored.
Both the complete progress and the progress of the just current module are readable in an additional screen.
After a successful completion the additional screen closes.

11.5.3.2 *Importing the Series Start-up File*

Prerequisite:
• On your NEW computer or Automation System, the DSCC Software is installed and operational.
• All Modules are connected to the Computer or Automation System and operational (LED # 4 lights on each Module).
• The addresses of the respective Modules must be the same as in the case of the first machine (e.g. Balancing Module = M:03, Process Monitoring Module = AE:04).
Start the DSCC program on your computer or Automation System.
If necessary, put the data carrier with the Series Start-up file in the disk drive.



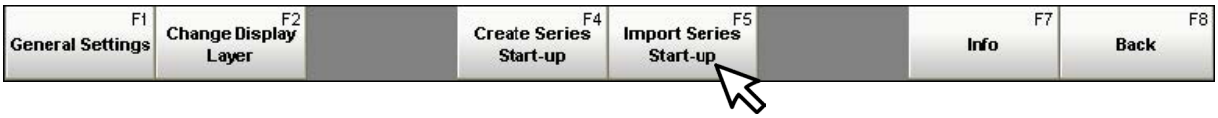
When starting the DSCC Program the very first time all messages will be in English.
If no Module is found by the Automation System or computer, for example due to wrong interface setting, the opposite screen will appear.
Confirm this message by clicking on the key [OK] or pressing the [Enter] key.

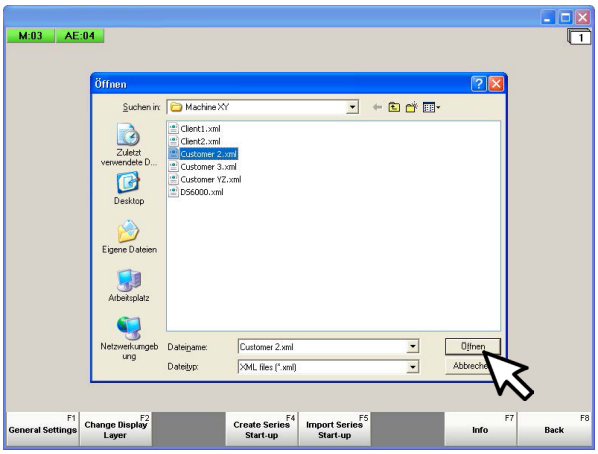


If the modules are recognized by the Automation System or Computer the opposite screen appears.

To get access to the Series Start-up File click or press the key [Program Settings] or the function key [F7].

Continue with pressing or clicking on key [Import Series Start-up] or the function key [F5].

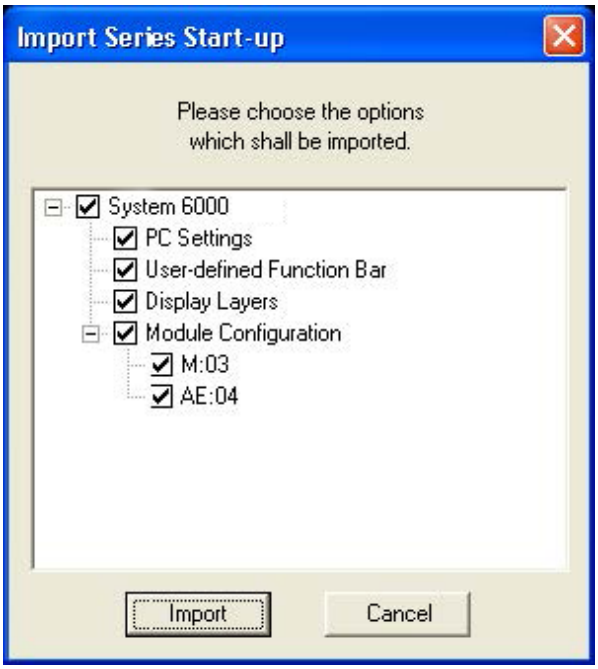




An additional screen opens.
Open the directory **Look in** and click on **Network Environment** (when using a notebook), the disk drive or the folder in which the Series Start-up File (*.xml) is contained.
Highlight the *.xml-file and then click on **Open**.

A new screen opens.

N.B.
If the Automation System or computer did NOT recognize the Modules, only the options **PC Settings**, **User-defined Function Bar** and **Display Layers** are available!

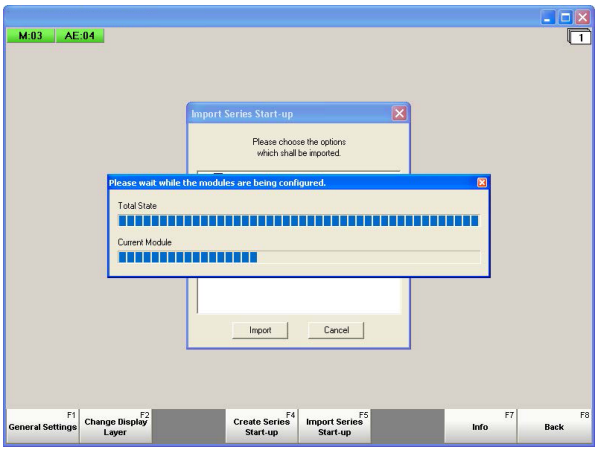


Click into the respective check box to activate or deactivate the desired options:

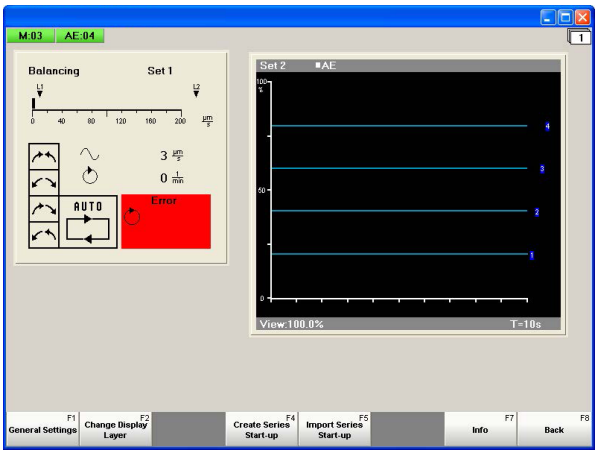
System 6000 UP	all shown options are activated, all stored settings are imported.
PC Settings	all PC/Automation System settings like language, interface and its setting, addresses etc are imported.
User-defined Function Bar	all user-defined Function Bars are imported.
Display Layers	all Display Layers are imported.
Module Configuration	the Module Configuration of all or only the selected Modules are imported.

N.B.
If the modules were **NOT** found by the Automation System or computer import only the **PC Settings** (and the **User-defined Function Bar** and **Display Layers**, if selected) by clicking on the key [Import] or pressing the [Enter] key. The PC settings are imported (see figure below). A screen with green module addresses should appear (see figure with green module addresses above). If not refer to Appendix B, Troubleshooting Guide.

Repeat the import of the Series Start-up file as described above. All options should now be available. Select the Module Configuration and click on the key [Import] or press the [Enter] key.



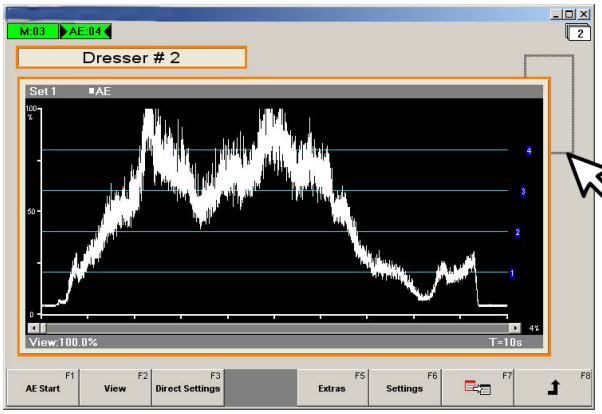
One by one the selected options are imported and saved.
Both the complete progress and the progress of the just current module are readable in an additional screen.
After a successful completion the additional screen closes.



This completes the import of the Series Start-up data.
All views including all stored settings of the DS6000 UP Modules correspond exactly to the first installation.

11.5.4 *Exporting AE Data*

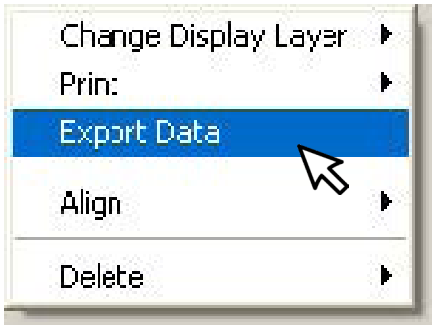
This function is used to save AE data for further or later evaluation. For this purpose, the AE data are saved in a MS Excel file.



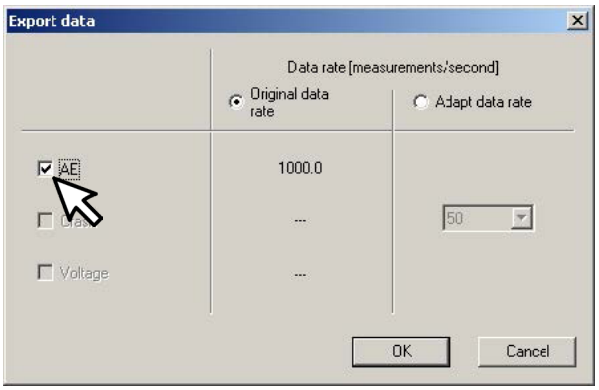
To export the data of an recorded AE signal the AE Standard Module View must be highlighted.
To do this move the mouse cursor outside the Module View, press and hold the LEFT mouse button. Drag a frame into the Module View and release the mouse button. The Module View is highlighted.

N.B.
All recorded AE data from ‚Start' to ‚Stop' are exported not only those visible on the screen.

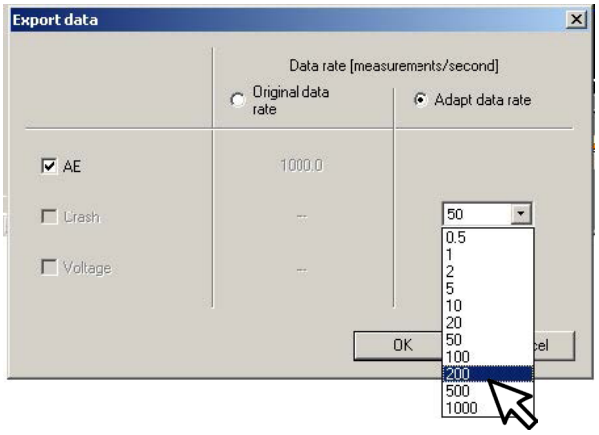
To export the data move the mouse cursor outside the Module View and press the RIGHT mouse button. A context menu opens.



Click on the line ‘Export Data’.

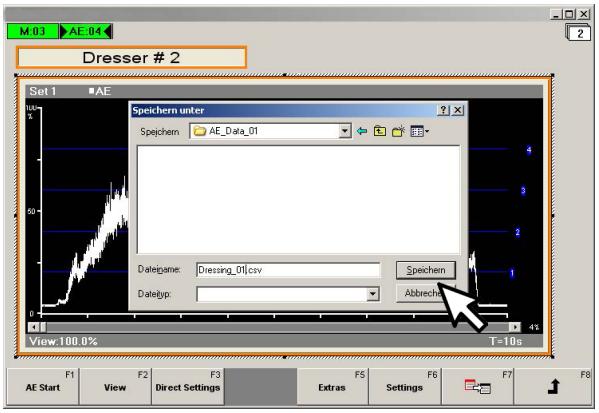


In the following screen you can decide:
Left column: Export all available signals or only one? Select with a mouse click.
Middle column: Shall the original data rate be kept? This setting is only recommended with one signal since with different signals and different data rates the graphs in

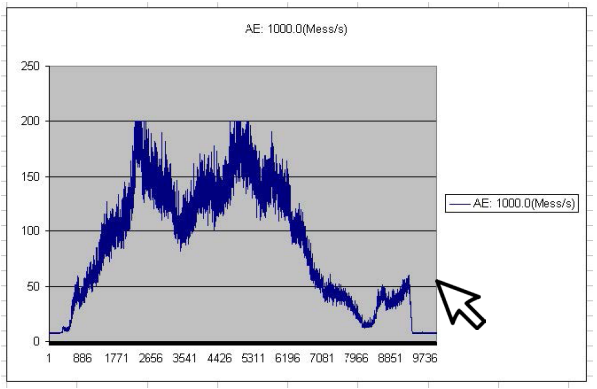


Right column: The setting ‚Adapt Data Rate' is recommended for more than one signal with originally different data rates. The different data rates are converted to a uniform data rate.

Confirm your decisions by clicking on [OK].



Save your data under a suitable name in a *.csv MS Excel file.



To view the signal(s) start the program MS Excel. Open your *.csv file. With the Diagram-Assistant - ‘Line' create the curve(s) recorded before.

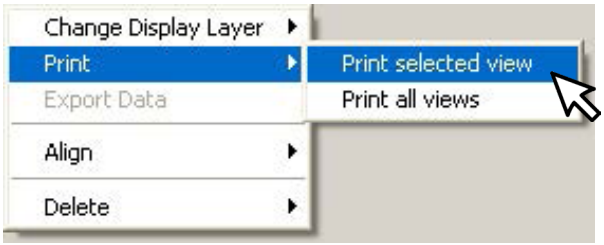
Result:

View of the AE signal out of the stored MS Excel Table.

11.5.5 *Hardcopy of the AE Screen*

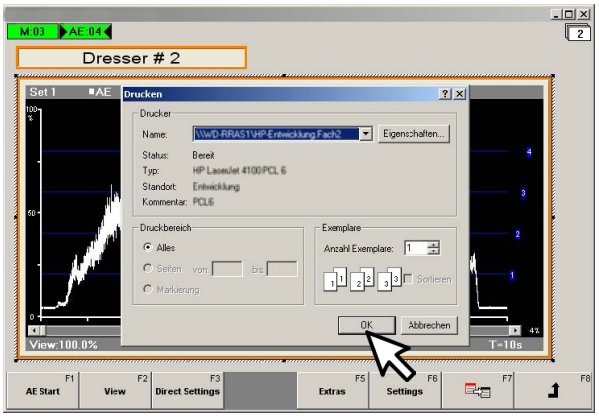
For documentation or evaluation the Module View or Display Layer can also be printed. A suitable printer must be connected and installed on your Automation System or Computer.

To print the Display Layer or a part of it move the mouse cursor outside a Module View and press the RIGHT mouse button. Select ‚**Print**' and a context menu opens:



Print selected view For that the Module View must be highlighted, see paragraph “9.2.3 Module View – highlighting, positioning and scaling” on page 72. The curves are printed on a white background including grid and Limit-lines.

Print all views The print complies with the screen view except the softkey bar.

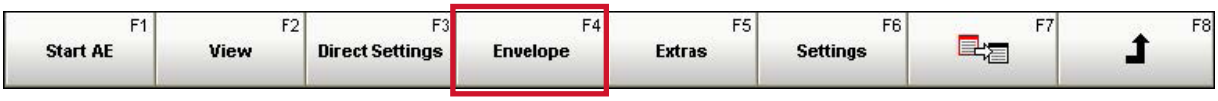


The dialog box **Print** opens.
Print as usual.

11.6 *Activating Licensed Features*

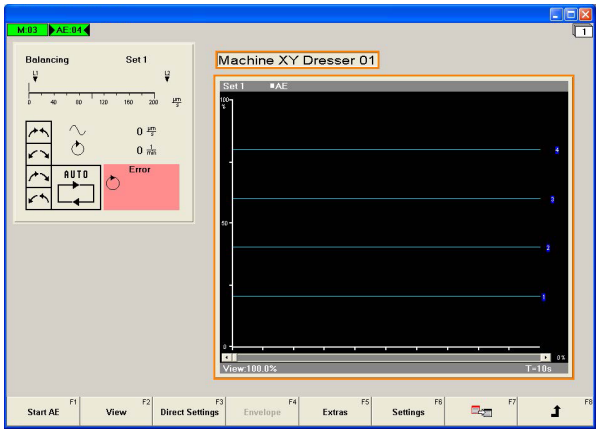
N.B.
Temporary (maximum 250 hours) or permanent activation of additional licensed features happens in the respective DS6000 UP Module. This means a separate License of its own must be applied or ordered for each module, which shall get an additional feature.

DS6000 UP supports additional Licensed Features. For example, when you order a Process Monitoring Module AE6000 UP together with the “Envelope” function, the module will be normally provided together with the license key to be activated.
The already activated licenses are anyway visible into the software interface.

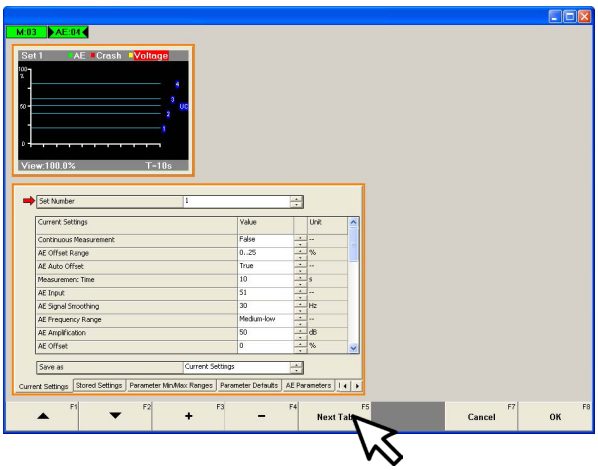


A temporary or permanent activation of licensed features afterwards is possible at every time. Order to the Sales Department of Marposs may be done by Mail, Telephone, or E-mail.
To order the activation of licensed features the following data are required:

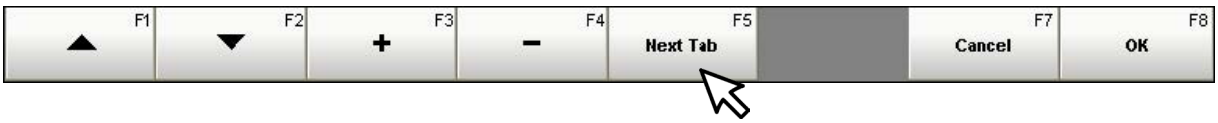
- Description of the required licensed feature (e.g. Single-Plane Balancing, Envelope, etc.)
- Article Number of the Module (see in one of the figure below)
- Serial Number of the Module (see in one of the figure below)
- Operating Hours (only required for temporary activation, see in one of the figure below).

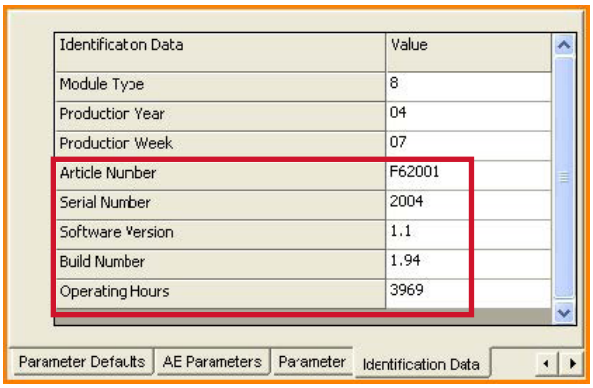


You obtain the data required (except Operating Hours) from the Module’s type label. When the type label is not accessible, then operate the Module, which should get the additional feature, in the Module Mode.
Click on the [Settings] key or press the [Settings] softkey.



Open the Tab ‘Identification Data’ by clicking on the [Next Tab] key or click directly with the computer mouse on tab ‘Identification Data’.

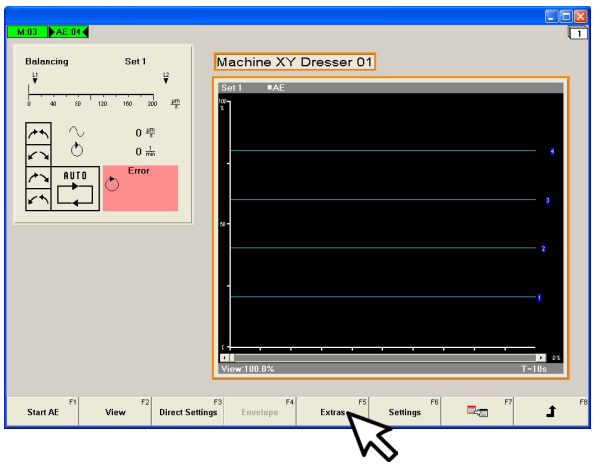




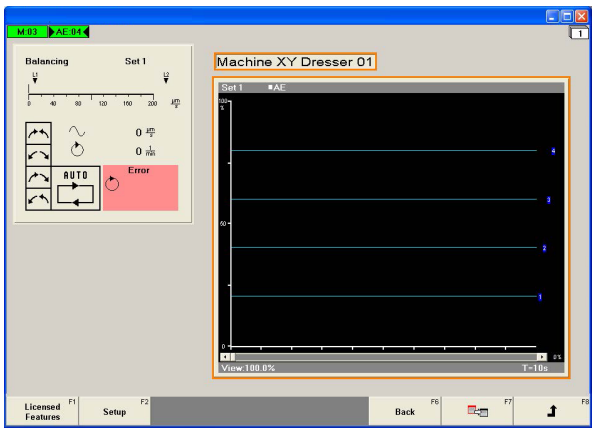
Note down
- Article Number,
- Serial Number,
- Operating Hours (required for temporary activation),

and send it together with your order.
Without these data, Marposs cannot generate a License Key or Licence File.

After you have ordered the licensed feature(s) you will get from the Marposs Sales Department a **License Key** by phone, or mail or a **License File** by E-Mail.

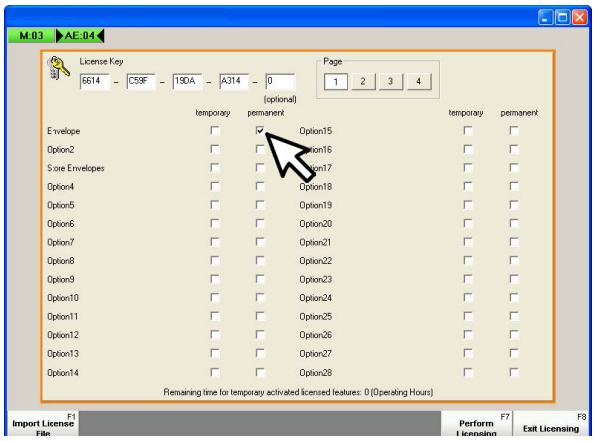


To enter the License Key or the License File operate the Module, which should get the additional feature, in the Module Mode. Click on the [Extras] key or press the [Extras] softkey.

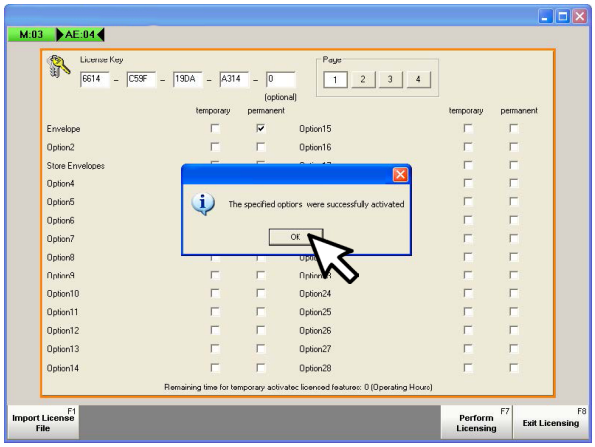


Click now on the [Licensed Features] key or press the [Licensed Features] softkey.

11.6.1 *When you have received a License Key by phone or e-mail*



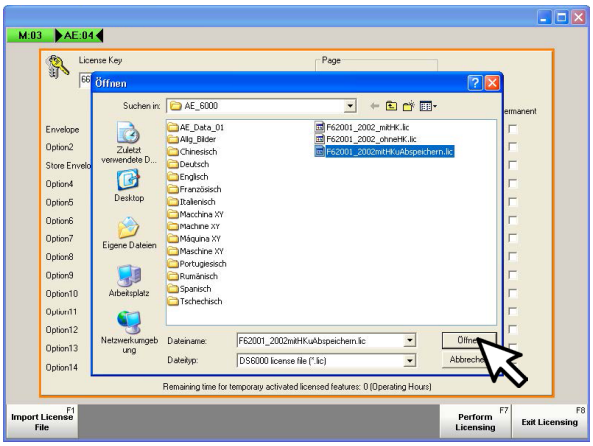
Click into the first screen and enter the complete License Key.
Highlight the licensed feature and the period of activation you have ordered.
Click on the [Perform Licensing] key or press the [Perform Licensing] softkey.



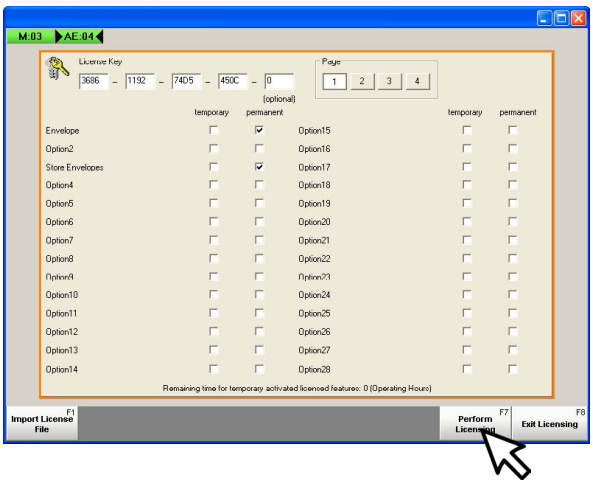
The message “The specified options were successfully activated” is shown.
Confirm the message.
Finally click or press the key [Exit Licensing].

11.6.2 *When you have received a License File by E-Mail*

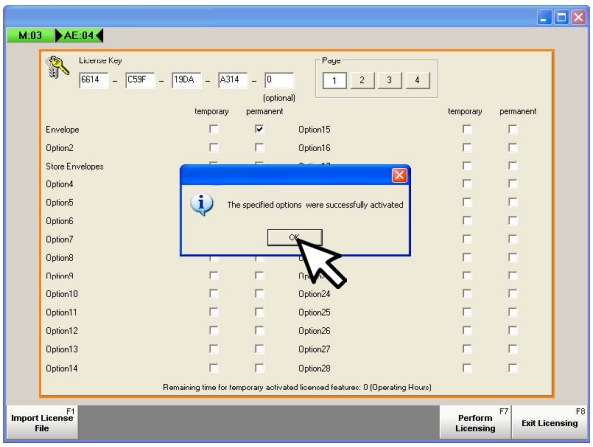
Save the License File (*.lic) under a suitable file name on a notebook or disk.
Click or press on key [Import License File], an additional screen opens.



Open the directory **Look** in and click on **Network Environment** (when using a notebook), the disk drive or the folder in which the License File (*.lic) is contained.
Highlight the *.lic-file and then click on **Open**.



The complete License Key and the feature(s) together with the period of activation you have ordered should be entered in the corresponding screens or boxes.
Click on the [Perform Licensing] key or press the [Perform Licensing] softkey.



The message “The specified options were successfully activated” is shown.
Confirm the message.
Finally click or press the key [Exit Licensing].

Appendix A – MHIS SOFTWARE - MARPOSS HUMAN INTERFACE SW

A.1 Integration of MARPOSS MHIS Software

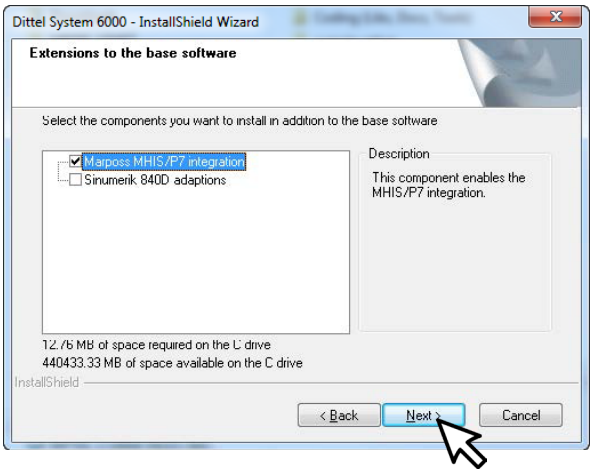
The purpose of the MHIS <-> DSCC integration is to have one single view for both software. This is realised by integrating the ActiveX control of the other application.
Starting from version 3.60 of the DSCC software, it is possible to integrate the MARPOSS software MHIS for the P7 in the DSCC software.

A.1.1 Requirement

The MARPOSS software MHIS (starting from 5.2G or 5.3C) must be installed on your Windows® computer or Automation System SINUMERIK©. However, the MARPOSS software can also be installed after the DSCC software.

A.1.2 DSCC Software Installation

During the DSCC installation process, there is an option to enable or disable the MHIS/P7 integration.

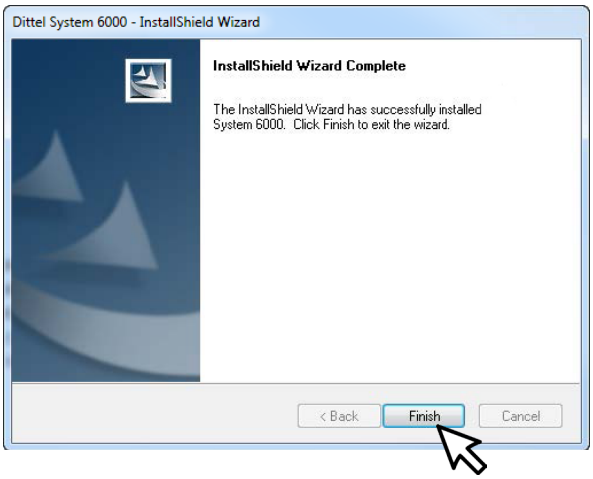


Additionally to the base software the following extensions may be installed:

- Marposs MHIS/P7 integration With this option the Marposs software MHIS is integrated and enabled.
- Sinumerik 840D adaptions

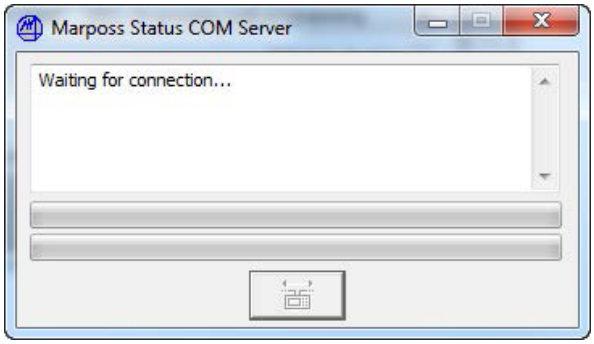
N.B.
Windows®-Installation:
The option **Sinumerik 840D adaptions** should **NOT** be selected when a standard Windows® installation is running.
SINUMERIK 840D Installation:
Make sure that the option **Sinumerik 840D adaptions** is selected!

Click on [Next >] to confirm the extension(s) and continue installation.

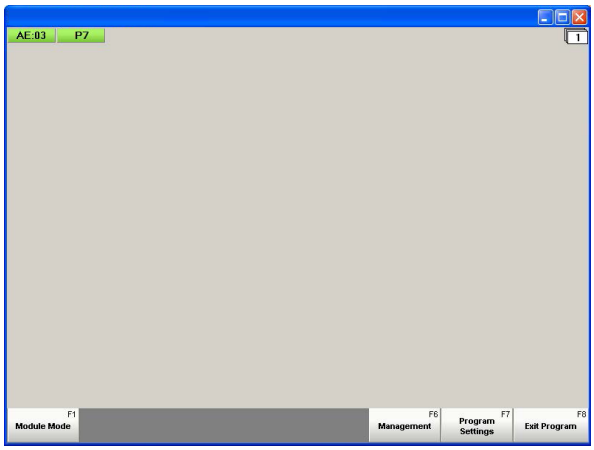


After successful installation the opposite screen is displayed:
Click on [Finish] to complete the installation of the DSCC Software together with Marposs MHIS/P7 integration.

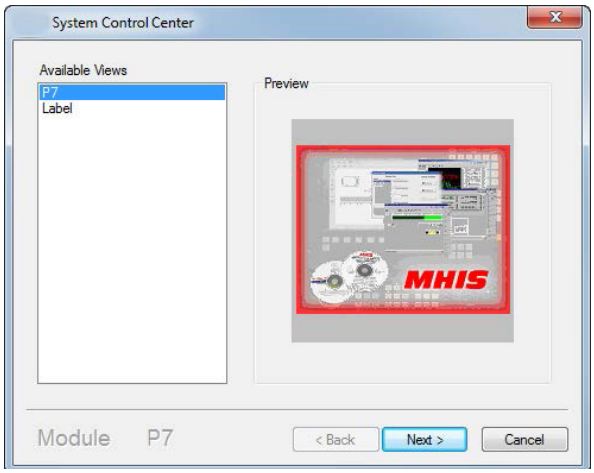
A.1.3 *Starting the Program*

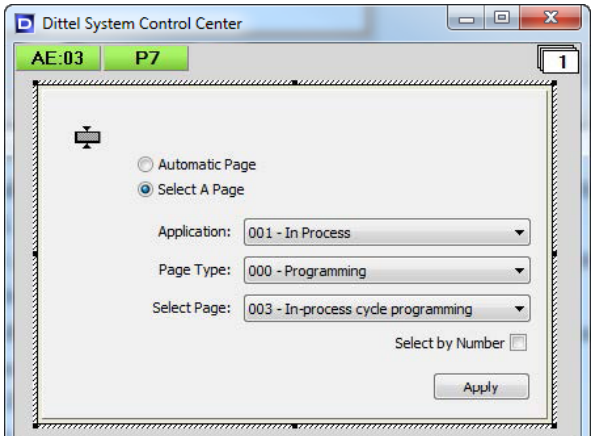


When the integration is enabled, on DSCC startup the “Marposs Status COM Server” dialog is shown and a green “P7” key is present on top of DSCC regardless of the connection between P7 and MHIS.



Double-clicking the P7 key opens a dialog where P7 views are listed that can be added to the DSCC user interface. Now a MHIS/P7 page can be selected.
It is possible to add multiple P7 widgets.





The opposite screenshot is the result of choosing the P7 view.
To continue refer to documentation regarding MARPOSS MHIS software and MARPOSS P7 hardware.

Appendix B – TROUBLESHOOTING GUIDE

B.1 Hardware Troubleshooting

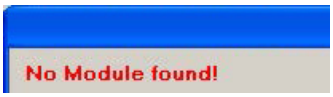
The following errors are only displayed on the screen when the view '**AE Standard**' is set; they may appear as single failure or in any combination.

A System Control failure however is always indicated
• by a RED lighting System Control LED # 7!
• In every view the sensor failures ,**AE' and ,Crash**' are given as LOW signal to pin 2 of connector # 2, or PROFIBUS and PROFINET interface connector # 13.
• In every view the sensor failure ,**Voltage**' is given as LOW signal to pin 3 of connector # 2, or PROFIBUS and PROFINET interface connector # 13.

Failure AE sensor: The name '**AE**' in the view 'AE Standard' is highlighted red.
SOLUTION:
Plug an AE sensor into one of the AE Inputs # 21, # 22, # 23 or # 24!
Adjust the used AE Input in the active Set Number! Example: If the AE sensor is connected at AE input # 22, set the 'AE Input' to 'S2' in the wanted set number. See Figure "AE Auto Offset (related: Voltage Auto Offset)".
Check the AE sensor and/or connection cable!

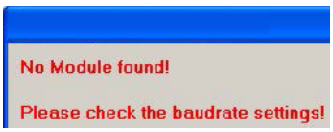
Failure Crash sensor: The name '**Crash**' in the view 'AE Standard' is highlighted red.
NOTICE: For monitoring AE and Crash, the same sensor is used!
SOLUTION:
Plug an AE sensor into one of the AE Inputs # 21, # 22, # 23 or # 24!
Adjust the used AE Input in the active Set Number! Example: If the AE sensor is connected at AE input # 21, set the 'AE Input' to 'S1' in the wanted set number. See Figure "AE Auto Offset (related: Voltage Auto Offset)".
Check the AE sensor and/or connection cable!

Failure Voltage Input: The name '**Voltage**' in the view ,AE Standard' is highlighted red. Indicates an open or overdriven Voltage input!
SOLUTION:
Connect a voltage source at Voltage input pins 22 and 25 of connector # 2.
Reduce the voltage across pin 22 and pin 25 (less than 14 Vdc for all voltage ranges)!
Check the connection cable!



No Module found!
Error message after starting the DSCC Program.
SOLUTION:
Check power supply of the module(s) (fuse).
Check connection to the Automation System or Computer (# 5).
Check settings of the COM-Port used.
After correction, the DSCC Program should recognize the connected module(s) automatically.

No Module found!
Please check the serial plug connection!
Error message after starting the DSCCProgram.
SOLUTION:
Check the power supply of the module(s) (fuse).
Check the serial interface cable from connector # 5 of the module to the computer or Automation System. Does the interface cable correspond to our specifications (see paragraph "Connector # 5 (only for AE6000 UP Modules with RS-232 Interface)".



No Module found!
Please check the Baud Rate setting!
Error message short time after starting the DSCC Program.
SOLUTION:
The RS-232 Baud Rate of the module and the Automation System or Computer, which are connected together via RS-232, must be equal..

Respective Module does not answer:
Error message **AFTER** first recognition of the Module by the program.
SOLUTION:
Check power supply of the respective Module (fuse, lights LED # 4?).
Check connection to other Modules (Connector # 9 and # 10).
Check connection to Automation System or Computer (connector # 5).
After successful troubleshooting, the respective module symbol gets green again!
For Ethernet Interface, refer to Supplementary Document "Ethernet Interface".

The Module AE6000 UP is not operable via keyboard of the Automation System or PC; no module related softkey is available.

SOLUTION:
Clear static HIGH Signal on connector # 2, pin 14, or via PROFIBUS and PROFINET, connector # 13.
Check actual **Access Level**.

B.2 *Software Troubleshooting*

B.2.1 *General*

Message «New hardware found (serial mouse)»

When a DS6000 UP hardware is connected to the computer or automation system and you start your Windows® 7 / 10 the first time, the message «New hardware found (serial mouse)» appears.
CAUSE
Windows® recognizes the new hardware incorrect as a serial mouse.
SOLUTION
Open the file c:\boot.ini and add at the end of the start command the following option:
/NoSerialMouse:COMx (x = COM-Port used).

Message «Could not connect to the destination»

After a program start the message «Could not connect to the destination» appears.
CAUSE
Another device driver (e.g. mouse driver) or another application uses the selected serial interface.
SOLUTION
Select a free COM port or make sure that another device driver or another application does not use this COM port.

Windows® 7 / 10 Management of Rights

In principle, the installation of the software must be carried out with administrator rights (see paragraph "7 DSCC Software" on page 41).
Under Windows® 7 / 10 the software needs at least Power User rights. If the software, which runs under Windows® 7 / 10, shall also be used by a "normal" user, then the access rights must be changed as follows:
FILE PERMISSION
Permit "fully access" for the user or for all users ("Everyone") on the contents directory (default: C:\ProgramData\Dittel [Windows® 7 / 10].The software needs these rights to be able to access the databases and the configuration files.

B.2.2 *SINUMERIK®*

Pressing the softkey does not start the software, or when starting, an error message appears:

CAUSE
Various causes possible!
SOLUTION
Start the SINUMERIK® in the Service Mode (refer to paragraph “7.2.2 SINUMERIK® 840D” on page 45).
Check the installation path and the entries (path information) in file regie.ini (SINUMERIK® HMI Advanced) or systemconfiguration.ini (SINUMERIK Operate).
If the problem could not be solved in that way proceed as follows:
Create a safety copy of the file oemframe.ini.
Open the file oemframe.ini.
Delete the following sections:

```
[sccviewer]
hOEMFrameWnd=30456
hOEMFrameTask=04E4
hOEMAppWnd=304BC
hOEMAppTask=0
hOEMAppWndRelatedOEMAppTask=01F8
hOEMAppThread=0001
[scc]
hOEMFrameWnd=604C0
hOEMFrameTask=061C
hOEMAppWnd=304CA
hOEMAppTask=0
hOEMAppWndRelatedOEMAppTask=0698
hOEMAppThread=0001
```

If you still have problems with the operation or function despite the instructions mentioned above, please consult your local MARPOSS service centre for assistance (see paragraph “1.3 Requesting technical assistance and maintenance” on page 8).

Appendix C – CLEANING, MAINTENANCE, ENVIRONMENTAL PROTECTION

C.1 Cleaning

Clean the outside surface - primarily the blue front panel - as soon as spots, grease or dirt are visible. Using a clean, lint-free cloth lightly moistened with a solution of standard household washing-up liquid, remove all foreign matter from the case and front panel. Make sure, that no solution is dripping into the housing or remains in the proximity of plugs or gaps. Wipe dry using a clean, lint-free cloth.

N.B.
Certain chemicals and its vapours can damage the front panel and its lettering. Therefore, avoid the use of aggressive cleaning agents, solvents and other chemicals.

C.2 Maintenance

Since the inside of the AE6000 UP is largely insensitive against dirt and dust, the necessity for cleaning is only during repair. Isopropyl alcohol (75 Vol. %) is the only recommendable cleaning agent for printed circuit boards and the components. Apply the alcohol sparingly with a stiff, not metallic, short bristly brush. Wash the solved dirt to the edges. For quicker drying or removing dust from inaccessible areas a hand controlled dry air jet may be used. Take care to prevent damage by the air blast.

N.B.
The compressed air must be free of water, oil and other foreign matter and may not have any higher pressure than 15 psi/1 bar.
Use always fresh Isopropyl alcohol and a clean container to clean the printed circuit boards.

Appendix D – ABSTRACT PROFIBUS/PROFINET INTERFACE AE6000 UP

D.1 Data Format

N.B.
Project with “DS6000 UP 2 Byte In, 2 Byte Out” or “DS6000 UP 1 Word In, 1 Word Out”.

D.1.1 Automation System to Module AE6000 UP (Inputs)

Pos. Word.Bit	Pos. Byte.Bit	Function	Signal/Action
0.0	1.0	Monitoring AE / CR / U Start / Stop	Static Signal from 0 to 1: AE / CR / U Monitoring START Static Signal from 1 to 0: AE / CR / U Monitoring STOP
0.1	1.1	reserved for Envelope	Static 0
0.2	1.2	Keyboard Operation inhibit	Static 1: Operator keyboard actions on the PC or Automation System are disabled
0.3	1.3	Selects Set Number 1	see Truth Table E.1.3
0.4	1.4	Selects Set Number 2	see Truth Table E.1.3
0.5	1.5	Selects Set Number 3	see Truth Table E.1.3
0.6	1.6	Selects Set Number 4	see Truth Table E.1.3
0.7	1.7	Selects Set Number 5	see Truth Table E.1.3
0.8	0.0	AE / U Auto Offset	Static 1: AE / U Auto Offset ON
0.9	0.1	reserved	Static 0
0.10	0.2	reserved	Static 0
0.11	0.3	reserved	Static 0
0.12	0.4	reserved	Static 0
0.13	0.5	reserved	Static 0
0.14	0.6	reserved	Static 0
0.15	0.7	reserved	Static 0

Parallel Operation PROFIBUS/PROFINET with the Hardwire Interface, connector # 2
In principle, parallel operation of the PROFIBUS/PROFINET interface with the Hardwire interface is possible. In this case, the last change is executed, both on the Hardwire Interface and on PROFIBUS/PROFINET word 0.
Exceptions are the signals ‘Keyboard Operation inhibit’ and ‘AE / U Auto Offset’. Both Signals of each function are connected by logical OR.

D.1.2 Module AE6000 UP (Outputs) to Automation System

Pos. Word.Bit	Pos. Byte.Bit	Function	Signal/Action
0.0	1.0	Status	AE / CR / U monitoring in progress: 1
0.1	1.1	Monitoring AE / Crash sensor	AE / Crash sensor OK: 1
0.2	1.2	Monitoring Voltage input	Voltage input OK: 1 Voltage input open or overdriven: 0
0.3	1.3	Monitoring AE Limit 1	Signal below AE Limit 1: 1 Signal above AE Limit 1: 0
0.4	1.4	Monitoring AE Limit 2	Signal below AE Limit 2: 1 Signal above AE Limit 2: 0
0.5	1.5	Monitoring AE Limit 3	Signal below AE Limit 3: 1 Signal above AE Limit 3: 0

Pos. Word.Bit	Pos. Byte.Bit	Function	Signal/Action
0.6	1.6	Monitoring AE Limit 4	Signal below AE Limit 4: 1 Signal above AE Limit 4: 0
0.7	1.7	Monitoring Voltage Limit U	Voltage below Limit U: 1 Voltage above Limit U: 0
0.8	0.0	Monitoring Crash Limit C	Signal below Crash Limit C: 1 Signal above Crash Limit C: 0
0.9	0.1	reserved for Envelope	
0.10	0.2	reserved	
0.11	0.3	Confirms Set Number 1	see Truth Table E.1.3
0.12	0.4	Confirms Set Number 2	see Truth Table E.1.3
0.13	0.5	Confirms Set Number 3	see Truth Table E.1.3
0.14	0.6	Confirms Set Number 4	see Truth Table E.1.3
0.15	0.7	Confirms Set Number 5	see Truth Table E.1.3

D.1.3 *Truth Table to select or confirm the appropriate Memory Sets*

N.B.
During Process Monitoring NO change of the Set Number is permitted. A change of the Set Number is not recognized by the unit or not possible!

Selects Set-No. / confirms Set-No	Binary coded Set-Numbers				
	5	**4**	**3**	**2**	**1**
No change	0	0	0	0	0
1	0	0	0	0	1
2	0	0	0	1	0
3	0	0	0	1	1
4	0	0	1	0	0
5	0	0	1	0	1
6	0	0	1	1	0
7	0	0	1	1	1
8	0	1	0	0	0
9	0	1	0	0	1
10	0	1	0	1	0
11	0	1	0	1	1
12	0	1	1	0	0
13	0	1	1	0	1
14	0	1	1	1	0
15	0	1	1	1	1
16	1	0	0	0	0
17	1	0	0	0	1
18	1	0	0	1	0
19	1	0	0	1	1
20	1	0	1	0	0
21	1	0	1	0	1
22	1	0	1	1	0

Selects Set-No. / confirms Set-No	Binary coded Set-Numbers				
	5	4	3	2	1
23	1	0	1	1	1
24	1	1	0	0	0
25	1	1	0	0	1
26	1	1	0	1	0
27	1	1	0	1	1
28	1	1	1	0	0
29	1	1	1	0	1
30	1	1	1	1	0
31	1	1	1	1	1

Appendix E – GLOSSARY – ABBREVIATIONS

E.1 Data Format

Access rights	Programs and other files are protected by a 5-level system of access restrictions: Five password levels for Service, Administrator, Expert, Operator and Observer.
Acoustic Emission	AE is defined as the spontaneous release of localized strain energy in a stressed material resulting, for example, from touching a workpiece by a grinding wheel. It can be recorded by transducers (sensors) on the surface. AE analysis is a useful method for the investigation of local “damage” in materials.
Baud	Baud is a unit of computer etc. signalling speed. The speed in Baud is the number of discrete conditions or signal elements per second. If each signal event represents only one bit condition, then Baud is the same as bits per second. Baud does not equal bits per second.
CENELEC	Abbreviation of Comité Européen de Normalisation Electrotechnique, CENELEC is the European committee for electrical standardization.
CNC	Computerized Numerical Control for machine tools (for example SINUMERIK®, Siemens AG).
ETHERNET	A local-area network (LAN) architecture developed by Xerox Corporation in cooperation with DEC and Intel in 1976. Ethernet uses a bus or star topology and supports data transfer rates of 10 Mbps. The Ethernet specification served as the basis for the IEEE 802.3 standard, which specifies the physical and lower software layers. Ethernet uses the CSMA/CD access method to handle simultaneous demands. It is one of the most widely implemented LAN standards.
IP Address	An identifier for a computer or device on a TCP/IP network. Networks using the TCP/IP protocol route messages based on the IP address of the destination. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255. For example, 138.57.7.27 could be an IP address.
PROFIBUS®	Process Field Bus is a fast, open field bus system widely used in automation technology. It is internationally standardised.
PROFINET®	PROFINET (Process Field Network) is the open industrial Ethernet standard for automation published by PROFIBUS & PROFINET International (PI). PROFINET uses TCP/IP and IT standards, is real-time Ethernet-compliant and allows the integration of field bus systems.
RS-232 Interface	Short for Recommended Standard-232C, a standard interface approved by the Electronic Industries Alliance (EIA) for connecting serial devices. In 1987, the EIA released a new version of the standard and changed the name to EIA-232-D. And in 1991, the EIA teamed up with Telecommunications Industry Association (TIA) and issued a new version of the standard called EIA/TIA-232-E. Many people, however, still refer to the standard as RS-232C, or just RS 232. The EIA-232 standard supports two types of connectors - a 25-pin D type connector (DB-25) and a 9-pin D-type connector (DB-9). The type of serial communications used by PCs requires only 9 pins so either type of connector will work equally well.
RS-422 Interface	Standard interface approved by the Electronic Industries Alliance (EIA) for connecting serial devices. The RS-422 standard is designed to replace the older RS-232 standard because it supports higher data rates and greater immunity to electrical interference. This standard is backward compatible so that RS-232 devices can connect to an RS 422 port.
SINUMERIK®	SINUMERIK® is a Computerized Numerical Control for Processing Machines, e.g. Machine Tools, made by Siemens AG.
Softkey	A key whose name appears on an area of the screen. The choice of softkeys displayed is adapted dynamically to the operating situation. Freely assignable function keys (softkeys) are assigned to functions defined in the software.
TCP/IP	Abbreviation of Transmission Control Protocol/Internet Protocol, and pronounced as separate letters. TCP is one of the main protocols in TCP/IP networks. Whereas the IP protocol deals only with packets, TCP enables two hosts to establish a connection and exchange streams of data. TCP guarantees delivery of data and also guarantees that packets will be delivered in the same order in which they were sent.
Termination	Electrical termination of a signal involves providing a terminator at the end of a wire or cable to prevent an RF signal from being reflected back from the end, causing interference. The terminator is placed at the end of a transmission line or daisy chain bus, designed to match impedance and hence minimize signal reflections.

E.2 *Abbreviations*

1/min	Speed, revolutions per minute
AE	Acoustic Emission
A/N	Article Number MARPOSS
AWG	Wire gauge (US)
CAN	Controller Area Network
CAN-H	Data Line CAN
CAN-L	Data Line CAN
CNC	Computerized Numerical Control
CNTR-P	Data Line PROFIBUS
CR	Crash, sudden, very high increase of the acoustic emission signal due to wheel break etc.
CSV	Short for comma-separated values, another name for the comma-delimited format of data representation
Ctrl	Control Key (keyboard)
CTS	Clear To Send (serial Interface)
DCD	Data Carrier Detected (serial Interface)
DGND	Digital Ground PROFIBUS
DIP	Dual In-Line Package
DSCC	Dittel System Control Center
DSR	Dataset Ready (serial Interface)
DTR	Data Terminal Ready (serial Interface)
EIA	Electronic Industries Association (US)
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
ESD	ElectroStatic Discharge
GND	Ground
HMI	Human Machine Interface: SINUMERIK® operator functionality for operation, programming and simulation: HMI has the same meaning as MMC
LED	Light Emitting Diode
MHIS	MARPOSS Human Interface Software
MMC	Man Machine Communication: see HMI
nm	Displacement in Nanometre
OLE	Object Linking and Embedding
OPC	OLE for Process Control
RS-232	Standard of a serial Interface
RS-422	Standard of a serial Interface
RTS	Request To Send (serial Interface)
RxD	Receive Data (serial Interface)
RxD/TxD-N	Data Line PROFIBUS
RxD/TxD-P	Data Line PROFIBUS
SELV	Safety Extra Low Voltage, SELV circuits are isolated from the input voltage (line voltage) by double insulation or reinforced insulation. The voltage must not exceed 60 VDC (or 42.4 VAC)
TxD	Transmit Data (serial Interface)
U	Voltage
USB	Universal Serial Bus; serial bus system to connect peripheral equipment to the computer
Vdc	Voltage, direct current
VP	Supply voltage of the terminator (5 V), PROFIBUS
XML	Extensible Markup Language, is a W3C recommendation for creating special-purpose markup languages

MARPOSS

End of Installation, User and Programming Manual

AE6000 UP