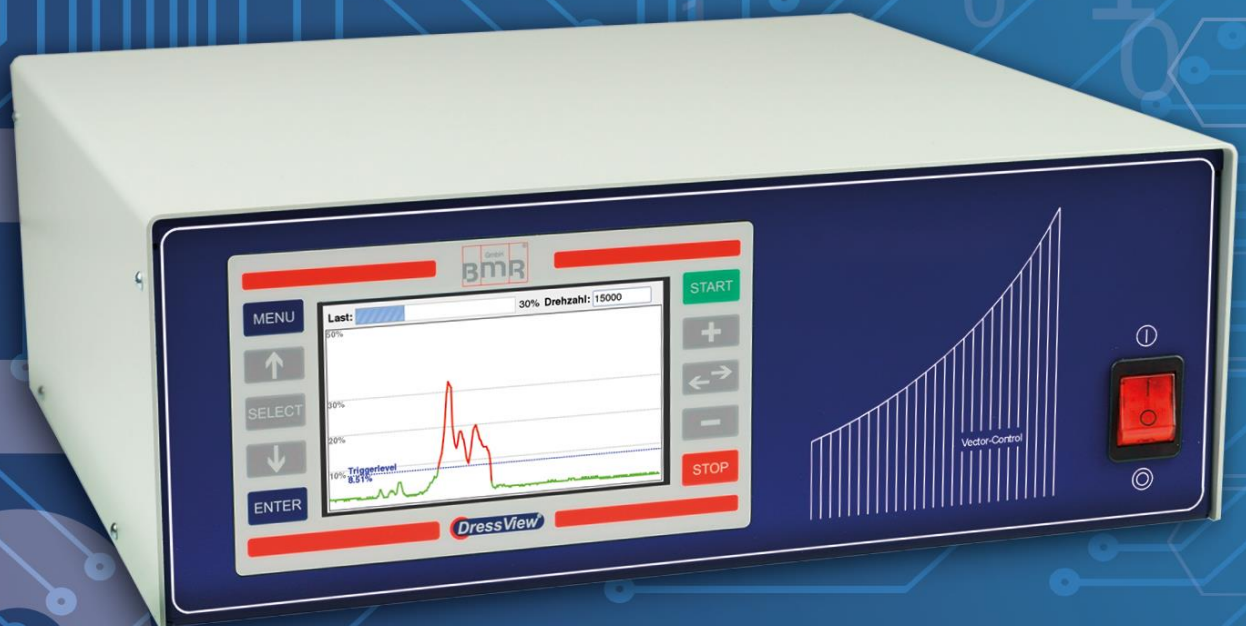


The Sign of Quality
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DressView®

Abrichtsysteme
Dressing Systems





HIGH QUALITY

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EXCELLENT SERVICE

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Issue February 2019

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1 Introduction - Overview

In the abrasive industry grinding tools are worn or dull after a certain process time and cannot thus guarantee the precision in machining. In this case, they must be brought in form or sharpened again, which is called "dressing".

This dressing is generally a very important feature because it is controlling directly the quality of the product but on the other hand a lot of process time is lost. The goal is to produce always the most accurate surface precision and simultaneously remove as little material as possible.

When dressing, there are two basic methods, first the use of stationary dressing tools and second the use of rotating tools.

For highest accuracy mostly the latter method is used, and is supported for reconsideration increasing the precision usually also through the use of sensor systems subject. In this case, sensors are installed in the spindle, that are connected to an additional electronic evaluation system.

The **DressView**[®] system is a completely new and innovative system and takes a different approach. It works without sensors and yet allows process precisions of 0.5 - 1 microns, and is thus in a similar capacity range as sensor-prone systems.

The **DressView**[®] system of BMR works together with frequency converters of BMR and dressing spindles in a mounting range from 33mm to 72mm and is available in two different versions and performance classes. For capacities up to 3 kW it is available as DressView-0303 and for lower power ratings up to 400VA as DressView-0200.

Moreover, both versions are also available in two versions either as a desktop unit or as cabinet solution.

The integrated solution in a desktop version includes the drive and the DressView system along with the LCD so it is immediately ready for connection.

The separate version as DressView-SSE is particularly suitable for use in control cabinets. Here the BMR drive and the DressView dock for **DressView**[®] is then installed. All signals from and to the PLC are wired here and DressView display can be mounted directly on the machine. Only a slim cable as "umbilical cord" is then connected with the docking station and the drive.

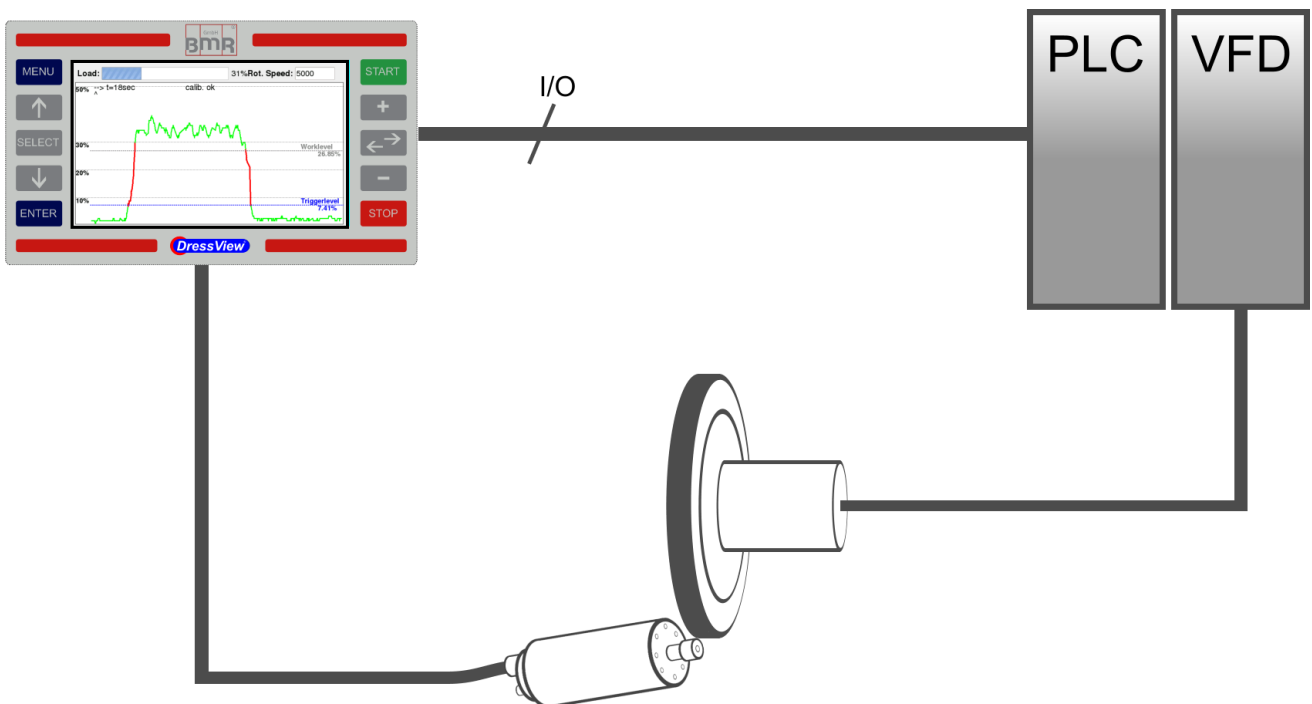
A characteristic control signal is derived, and graphically presented on a LCD display from the operation of the spindle. For signal output to the PLC in each case a limit value for signal detection and, in addition, a higher one can be set to a potential crash detection.

The DressView[®] system is easily operated and adjusted via laterally arranged membrane keys. Various settings can be made for the dressing process, such as the afterglow of last measurement processes as silhouettes and the time base or the

scaling of the display

For communication with the PLC 3 digital inputs, 3 digital outputs and one analog output are available. Using them the system can be started and the current status is indicated. The analog output is derived directly from the measurement signal of the dressing.

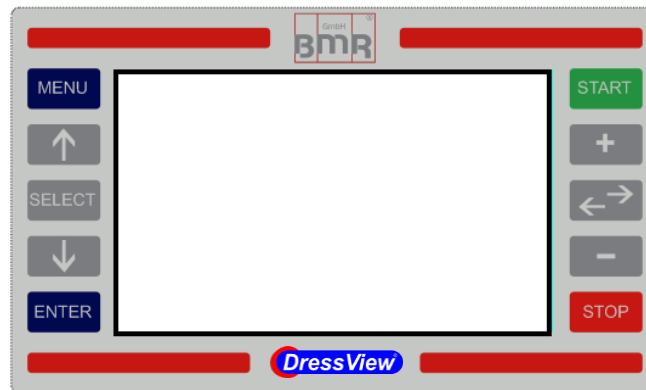
With this system BMR has succeeded in creating a bridge between the existing concepts and to combine the best of both worlds. It is a system with a very high resolution with modest cost and low follow-up costs because standard spindles can be used, because - the spindle is the sensor.



2 Key Functions

Display Control

1
2
3
4
5



Spindle Control

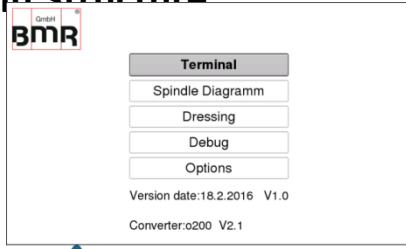
6
7
8
9
10

Number	Key	Function
1	MENU	jump one level ahead , back, Open menu
2	↑	Increase value or shifts up (graph menu)
3	SELECT	Jump to the next selectable item
4	↓	Reduce value or shifts down (graph menu)
5	ENTER	confirms a selection
6	START	Spindle Start
7	+	To increase speed of spindle
8	↔	Selects digit, where speed value is to be changed (100, 1.000 or 10.000 digit)
9	-	To reduce speed of spindle
10	STOP	Spindle Stop

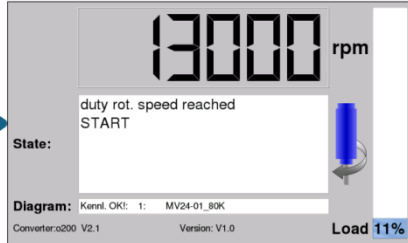
In case it is not selected the Terminal- or Dressing Menu, there is the possibility to jump back to the Terminal Menu with the keys of "Spindle Control" in order to start, stop the spindle or change it's rotational speed

3 Menu Structure

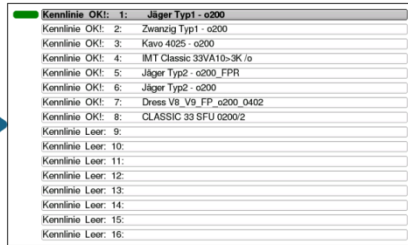
Main Menu



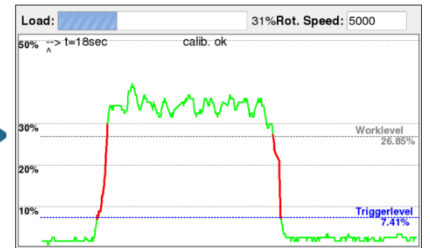
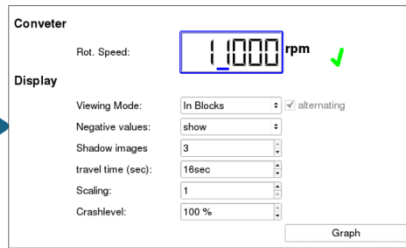
Terminal-Menu



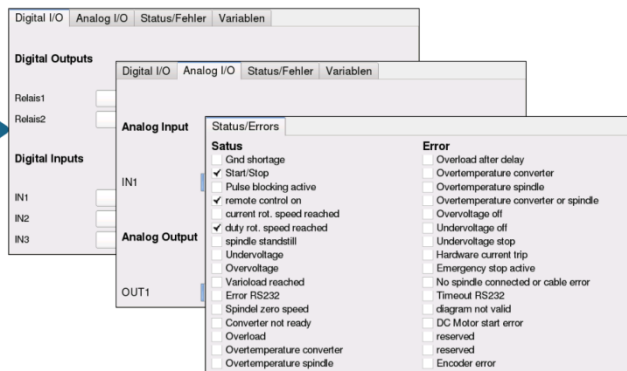
Spindle Characteristics



Dressing-Menu



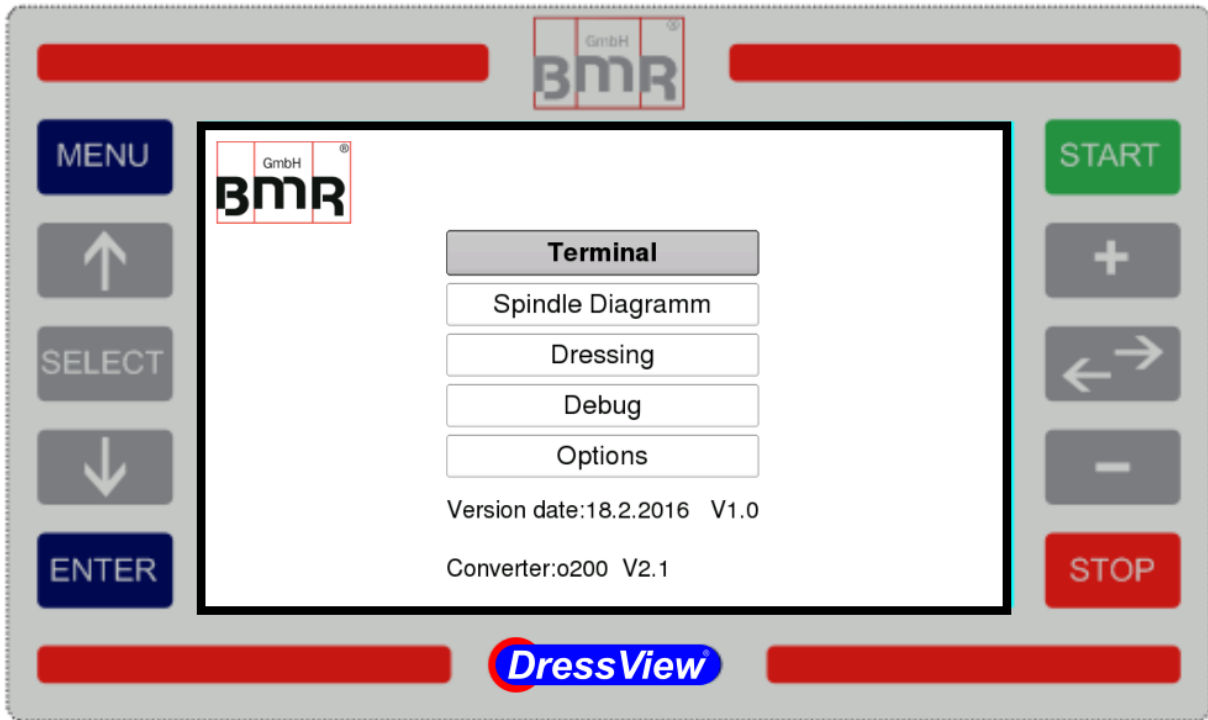
Debug-Menu



Setup-Menu



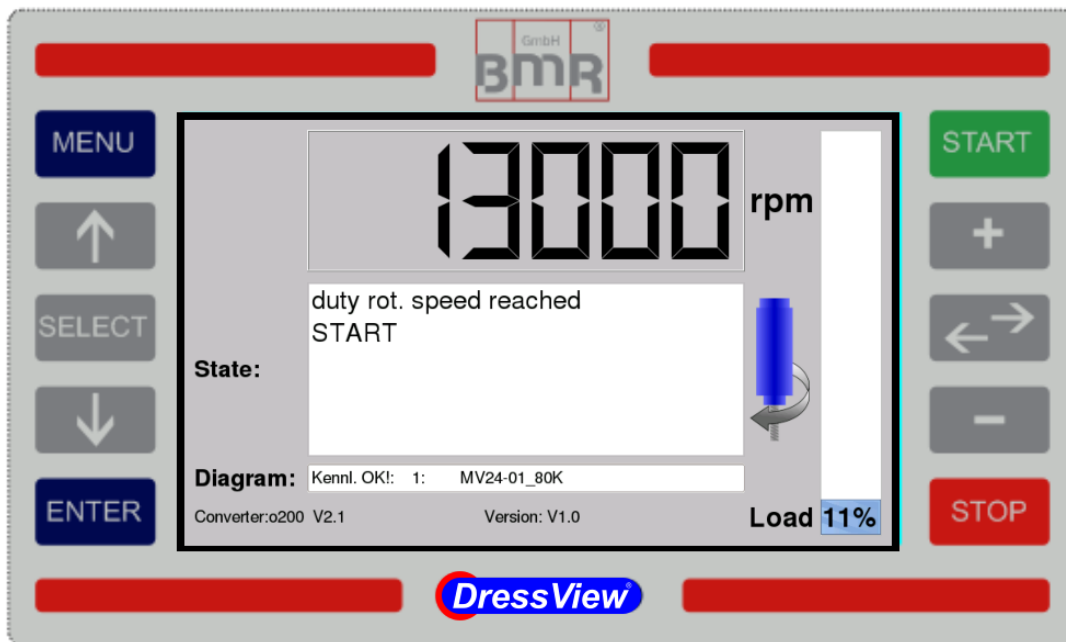
3.1 Main Menu



In the Main Menu all functions of the *DressView*[®]-system can be accessed. Moreover it shows the date and number of version, the type of converter being connected and it's number of firmware version.

This menu can be accessed by actuating the **MENU**-key one or several times.

3.2 Terminal-Menu



The Terminal-Menu is the window where all basic functions of the converter can be controlled. With the Keys "**START**", "**STOP**", "+", "-" and "**double arrow**" it is possible, to start and stop the spindle and to set up it's rotational speed. Furthermore the current status messages of the converter are displayed, such as selected characteristic, direction of rotation and load status. If an error appears it will be displayed in the status area, whose background then turns red.

3.2.1 Adjusting the rotational speed of the spindle

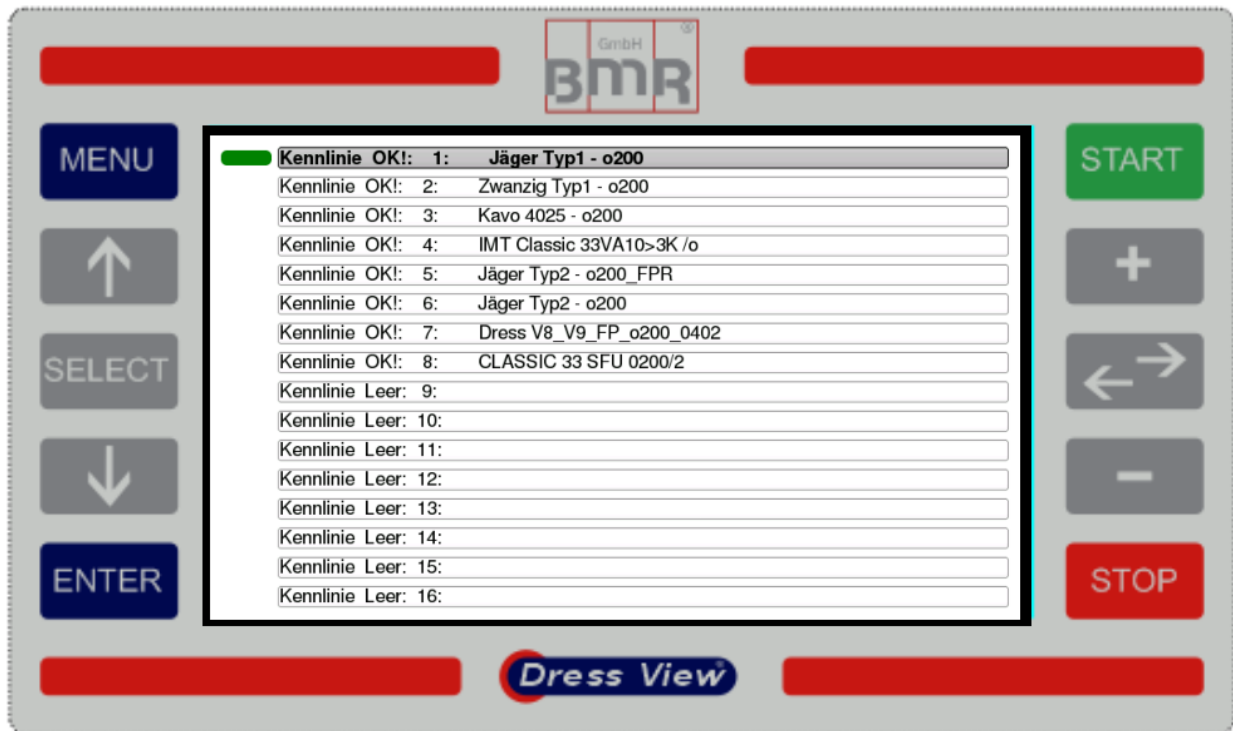
Adjusting the rotational speed is carried out with the "+" and "-" spindle control keys located to the right of the display. The speed will not change with the first hit, for safety reasons, but enables the function.

After that, the background colour of this field changes into white. Additionally the range of speed being possible with this spindle is displayed in the **Status**-field

With pressing on "+" or "-" the digit being indicated with a blue underscore can be adjusted. The selection of the according digit in the range of 100, 1.000 or 10.000 value can be carried out with the Double arrow-key.

Enter confirms this setting and applies the rotational speed

3.3 Characteristic-Menu



To change the current selected spindle characteristic or list all available characteristics, it has to be moved to the Main-Menu by pressing **MENU**. Being there, it has to be navigated with the **SELECT** or **Arrow Keys** to the point "**Characteristic Selection**" and confirmed with **ENTER**.

After that, a list of all characteristics being stored in the converter will be uploaded and displayed. The current selected characteristic is marked with a **green marker**.

3.3.1 Selection of a characteristic

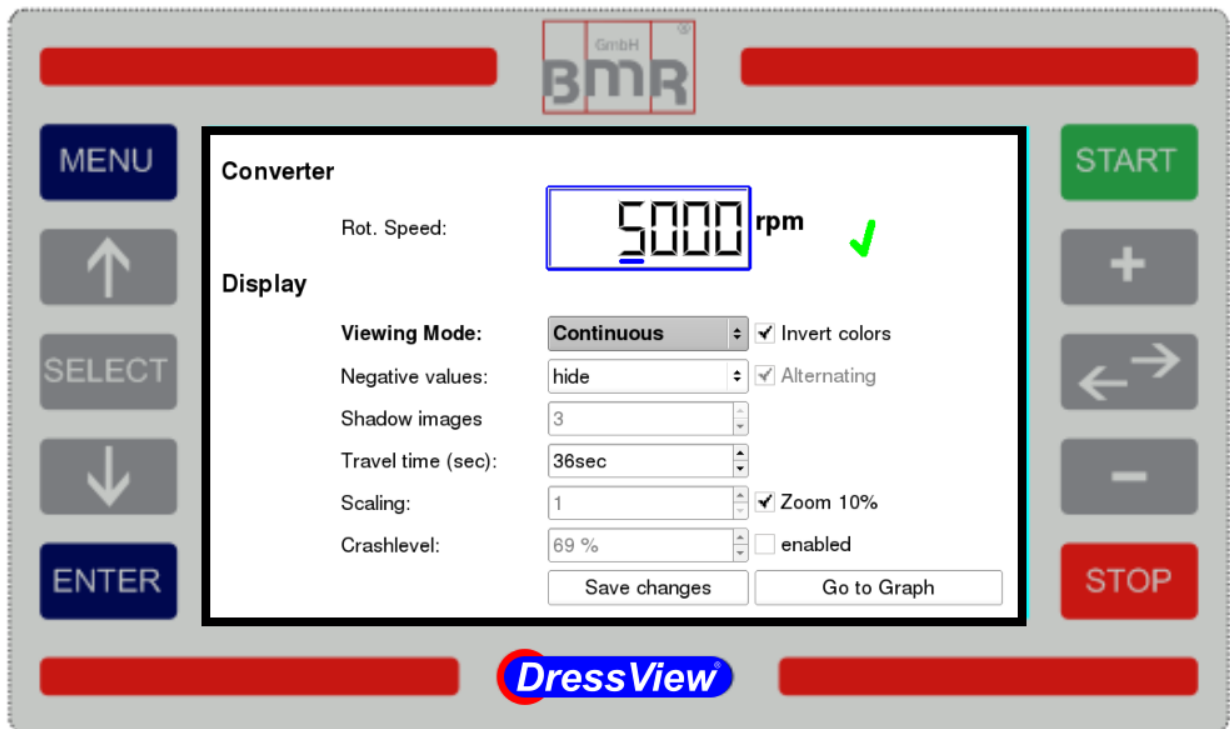
To select a certain characteristic to be used in the inverter, in the characteristics menu it has to be moved to the respective characteristic with the **Arrow** Keys and finally this selection has to be confirmed with **ENTER**.

Depending on the type of converter, it will be carried out a reset on the converter, which takes around 3s. Within this time no further setup is possible

3.4 Dressing-Menu

In case it is intended to carry out a dressing with the system, it has to be moved from the current window to the Main-Menu with the **MENU**-Key and the menu point **Dressing** to be selected. From there it is entered the **DressView®**-configuration menu.

3.4.1 DressView-Configuration menu



In the **DressView®**-Configuration menu all basic settings of the dressing window can be set up being required in advance for dressing operation. All settings will be saved and after reentering automatically reloaded.

3.4.1.1 Adjusting the rotational speed

With pressing on "+" or "-" the digit being indicated with a blue underscore can be adjusted. The selection of the according digit in the range of 100, 1.000 or 10.000 value can be carried out with the Double arrow-key.

START, **Save-Button** or leaving the window confirms this setting and applies the rotational speed

In case that the current setting is equal to the setting of the converter, along side of the speed field will be placed a **check symbol** in green and the READY output OUT1 is switched to LOW. Precondition for entering the Ready state again, is carrying out a calibration while the spindle is running with pressing on **SELECT** or by remote.

3.4.1.2 Display mode / changing the function

The display mode field can be entered with pressing on the **SELECT**-key. The respective setting between "Continuous", "In Blocks" or "Controlled" can be selected with ↑ and ↓

Display Mode	Behaviour	Use
Continuous	The display runs continuously. In case the graph exceeds the trigger level, it is output on OUT3	Manual operation
In Blocks	The display runs continuously. As soon as the graph reaches the display border, it restarts and continues. Possibility for enabling shadow lines for the last 3 graphs. Output function same as with Continuous mode.	Semi automatized procedure with fixed time base and constant feed
Controlled	Similar to "InBlocks". Display starts if a start signal is detected at IN3. As soon as a further signal is detected, the graph runs back or restarts, even if the display border is not reached, yet.(siehe 2.4.1.3)	Full automatized operation

3.4.1.3 Alternating

This option is only available in "Controlled" Mode.

In case it is selected, the graph runs from left to right and reverses the direction with reaching the display border or with repetition of the start signal.

It is displayed the direction of movement and if display is active or in a wait state. (see 2.4.2).

3.4.1.4 Invert colors

This checkbox inverts the colors of the dressing window. The background color changes to black respectively dark grey and the text color to white.

3.4.1.5 Negative values

This Option could set to "show" and "hide".

At counter direction dressing the option "hide" should be chosen, because only positive values occur. If the values falls below 0% (through omission of a coolant jet or prolonged running of the spindle), the line is limited to 0%.

At synchronous dressing, the option "show" can be selected, as there only negative values can occur during the dressing process. Important here is zeroing at idle, but with restricting factors such as Coolant jets. (see 3.4.2.1)

3.4.1.6 Shadow or Ghost images

This function is only available in the display modes "In Blocks" and "Controlled"

Up to 3 previous graphs can be displayed as gray lines behind the current colored one. With reaching the number of lines being setup, the oldest line is deleted.

3.4.1.7 Time base

This is the setting of the time which the regulation value takes to run on the display once (see 2.4.2) equally to the feed rate of the dressing spindle across the grinding tool. The default value is 10s and can be adjusted between 3 to 60s.

3.4.1.8 Automatic scaling the time base

The system has the possibility, to adjust the time base of the display according to the feed rate across the work space of the workpiece.

To achieve this, the "Controlled" mode has to be selected and the work space has to be covered in the teach-in mode one time.

The teach-in mode is activated with applying a HI-signal to the inputs IN1 and IN2 simultaneously, and as start point is defined the left border of the display.

As soon as this signal is switched to LO, it marks the end of the work space and defines the elapsed time as right hand border.

Now the width of the display is calibrated according to the elapsed time of feeding across the work space.

3.4.1.9 Scaling

With this setting it is possible, to expand the display range of the dressing display.
By default this value is 1, representing a display range of 0-100%

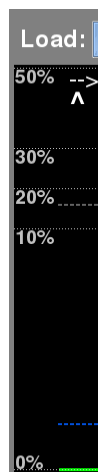
Scaling	Value
1	0 - 100 %
2	0 - 50 %
3	0 - 35 %
4	0 - 25 %
5	0 - 20 %
6	0 - 15 %

Important: The accuracy is not affected by the scaling factor, but the display area is expanded accordingly.

Higher values of scaling give the opportunity to setup the trigger level with a finer grade

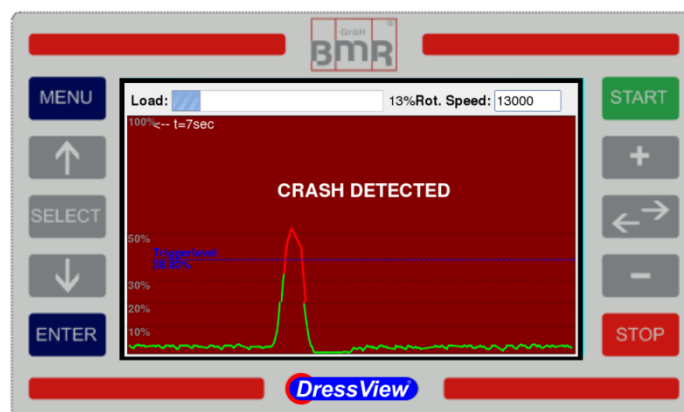
3.4.1.10 Zoom 10%

If Zoom 10% is selected, the scaling option is set to 1 automatically and its setup menu is disabled.
In this setting a display range up to 50% is possible, where the area up to 10% is expanded highly. This makes possible a very sensitive detection besides a capability to display signals up to 50%, equally.
This setup is especially useful for a sensitive and quick contact detection with a following firm dressing process. Additionally it could be useful for a work process with highly changing load conditions, either.



3.4.1.11 Crash level

The Crash level is the value where the **DressView**® system detects a crash event because of machine or operating failures.



This value can be adjusted in the range from 0 to 100% of the measure value
This function is not activated at once with moving to the dressing window (see 2.4.1.9), but only after having carried out a calibration (see 2.4.2.1).

As soon as the system has detected that the measure value has exceeded the crash level, the display will be colored into red and the message "Crash detected" is displayed.

Additionally the **READY-** output **OUT1** is switched to LOW

Acknowledging of the event

The error message can be acknowledged by several possibilities:

1. Stopping the spindle with **STOP**-Key or applying a signal on input **IN3**
2. Actuating the **ENTER**-Key

Important

With acknowledging the error message with the **ENTER**-Key the **READY-** output **OUT1** is switched immediately on HIGH. A recalibration is not necessary

In difference to acknowledging with **STOP** or via **IN3**, where the spindle stops, it has to be carried out a calibration as usual after a restart.

3.4.1.12 enabled

Activates or deactivates the crash detection.

3.4.1.13 Save changes

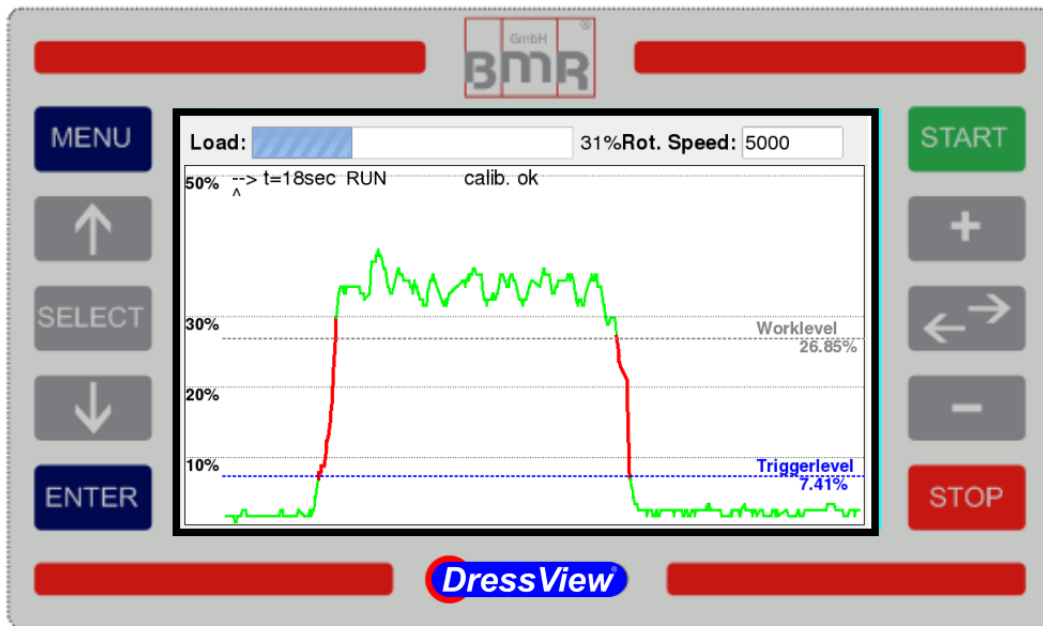
As soon as a value was changed, the "Save changes" button appears. When selecting the button with SELEC and activate it with ENTER, all data will be stored in the device and will be available after power off. The data will also be saved, if you leave this window.

3.4.1.14 Graph-Button

After entering the Graph-Button (see Pic. 2.4.1) and pressing **ENTER** the Dressing-Menu is opened, where the **DressView**[®] regulation value is displayed as graphic.

With leaving the DressView configuration menu, all settings are stored.

3.4.2 Dressing



The Dressing window shows:

Load: Displaying the current load of the converter

Rotational speed: current setting of the rotational speed

(--> / <--): Feed direction via the screen.

(^ / v): Arrow direction indicates if the values are within positive (^) or the negative (v) area. Negative values might come up during synchronous dressing, since there the dressing spindle can be accelerated.

t: Time base of the display representing the feed time (see 2.4.1.4) Additionally displaying the feed direction and the indication of "RUN" or "STOP" state (in "Controlled mode, only)

Spindle state: "Standstill"
"Starting"/"Stopping"
"rpm OK"

Calibration status: "calib. ok" or "not calib." indicates whether the system has been zeroed/calibrated or not.

Work level: Threshold above which the dressing process takes place

Trigger level: Level which represents contact detection (see 2.4.2.1)
Graphic: Graph, which draws the regulation value of the converter as measure of its load state

3.4.2.1 Basics

Before starting the dressing operation the items below have to be regarded:

1. **Starting the spindle**
After a long time of standstill of the spindle, it has to be carried out a warm up and run in procedure according its specifications (min. 10 Min)
2. **System calibration (Zeroing) with SELECT or IN2**
Important: This has to be carried out after every change of speed and in advance of feeding across the grinding wheel to be dressed, by using the **SELECT**-key or input **IN2**. If coolant is sprayed onto the dressing spindle while dressing, this must also be calibrated out.
3. Adjusting the **Trigger- and Work level** according to the required value with **↑** and **↓** keys

If the dressing spindle is strained (comes into contact with the grinding wheel), the regulation value of the converter increases accordingly. In case the load increases further, it may exceed the **Trigger level**.

The **Trigger level** represents a threshold, where the system detects a cutting event and the **Work level** which helps to qualify the dressing result. This level has to be adjusted and setup by the operator according to the application.

As soon as the **Trigger level** is exceeded, the graph of the **regulation value** beyond the limit changes the colour from green to red or from grey to black in case of shadow images are activated.

3.4.2.2 Additional display functions

Additional display functions are available in the dressing window which can be activated with key combinations using ENTER (ENTER must always be pressed first):

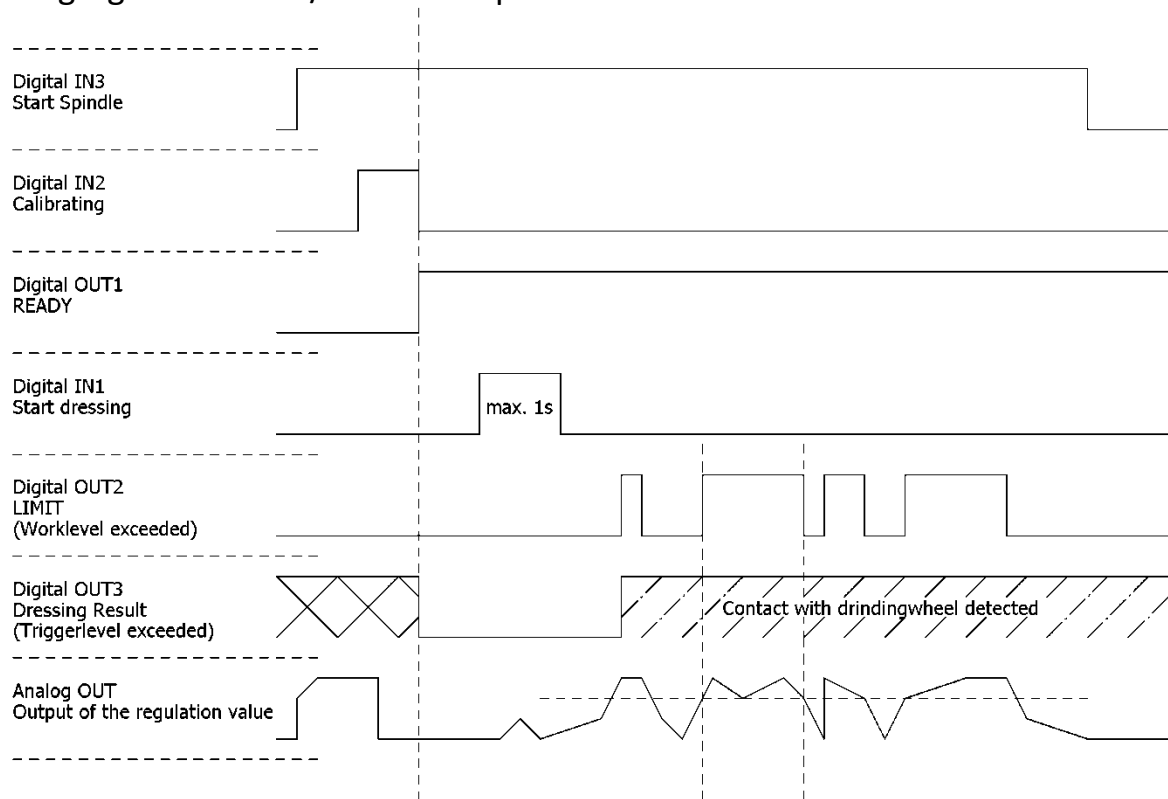
ENTER + STOP Stops the display. Thus, work results can be viewed in peace.

ENTER + START Restarts the display.

ENTER + SELECT Creates a shadow image of the current screen

3.4.2.3 Behaviour of the inputs and outputs

In case the system is operated in the "Controlled" mode, it needs and delivers the following signals on the I/Os after a spindle start via **START**-button or via **IN1**:



After the duty speed is confirmed, this is indicated with a green check-symbol in the speed field of the configuration-window.

With the **SELECT**-key or by remote via **IN2** the system is calibrated (zeroed). By this also the output **OUT3** is resetted, which might has been set by a previous dressing cycle.

After that, the system is ready for a dressing cycle, which is indicated at the output **OUT1** as a LOW state.

With applying a HI to **IN1**, the system starts drawing the regulation value. The display continues drawing, even if **IN3** is reset, but as soon as the border of the display is reached, it will stop.

If **IN1** is set again while drawing is active, it restarts drawing or it changes the direction of drawing in case the **Alternating** mode is selected (see 2.4.1.3).

As soon as the Trigger-level is exceeded, **OUT2** is set and at the first time of this event **OUT3** is set additionally.

Hint:

In the operating modes "**Continuously**" and "**In Blocks**", there will be no output signal for "**Dressing result**" on **OUT3**, because the system cannot detect if a new dressing cycle is initiated. Additionally input signals at input **IN1** "**Dressing start**" will be ignored. All other functions will work as described previously.

3.5 Debug-Menu

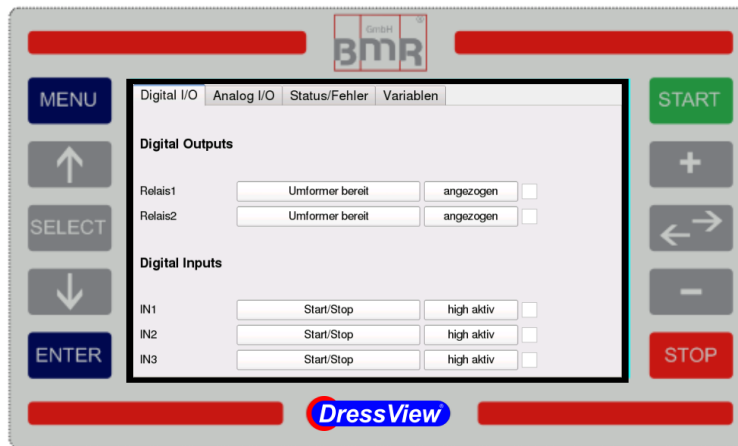
The debug menu gives the opportunity to read out and check several parameters of the spindle controlling converter. This is helpful in case of troubleshooting or checking a connected PLC.

The parameters are:

1. Digital inputs and outputs
2. Analog inputs and outputs
3. Status- and error messages

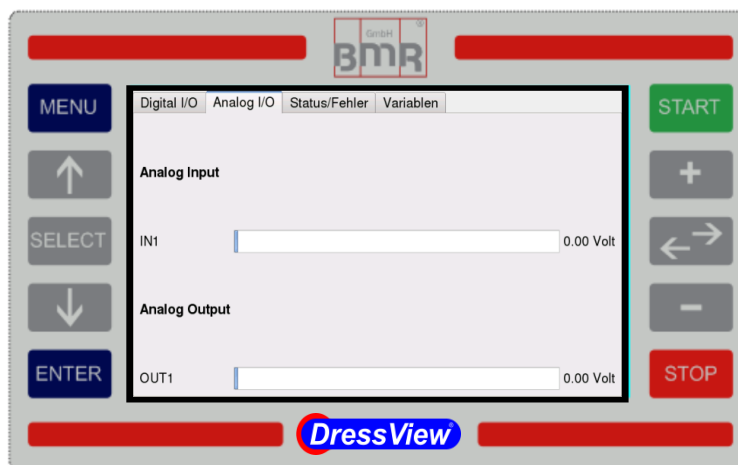
With the **SELECT**-key it can be switched between the 3 tabs alternately.

3.5.1 Digital inputs and outputs (not yet implemented)



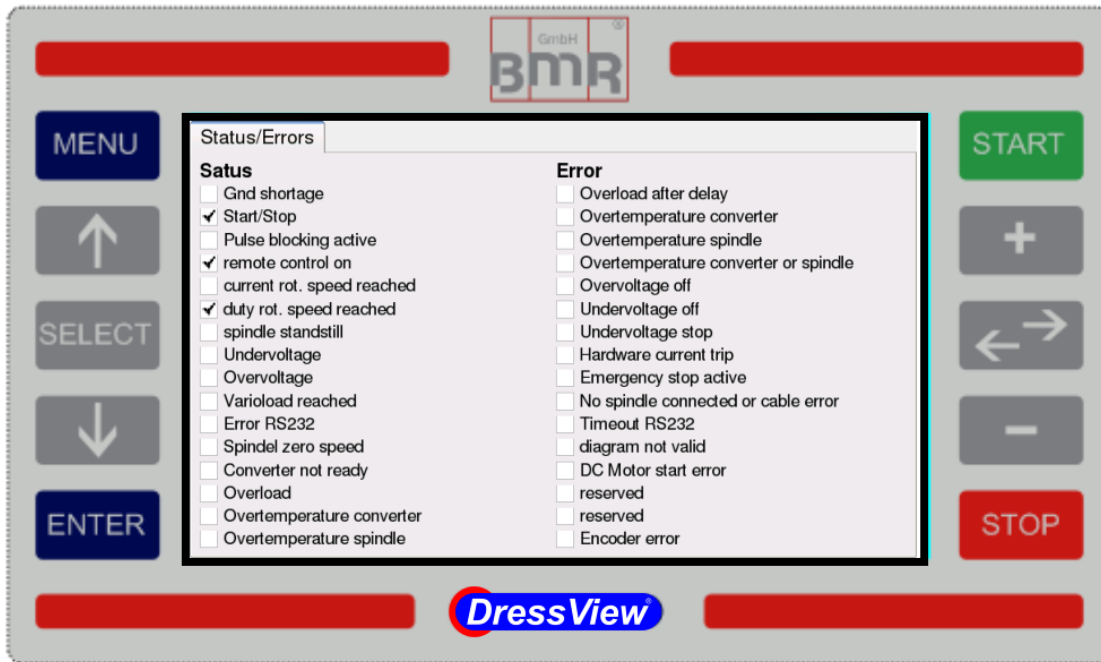
This window displays all digital I/Os of the converter, with it's function and it's current state.

3.5.2 Analogue inputs and outputs (not yet implemented)



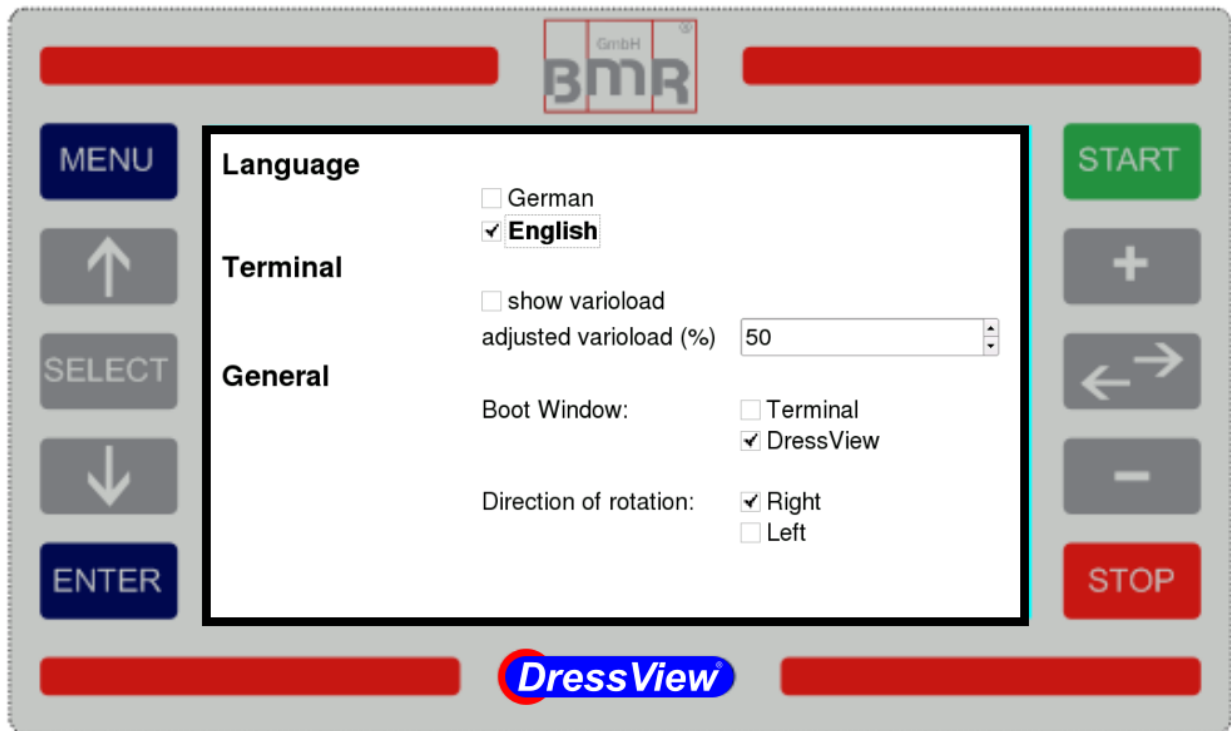
This window displays all analogue I/Os of the converter with it's function and it's current state as bargraph and numerical with it's voltage.

3.5.3 Status- and error messages



This window displays a list of status and error flags

3.6 Setup menu



In this window all basic settings can be made, such as system language and the setup and display of the Vario-load function of the converter and the Boot window.

3.6.1 System language

For changing the system language, the desired language has to be selected with the **SELECT**-key. After confirming with **ENTER**, the system reboots and jumps directly into the selected start window. (see 2.6.3)

3.6.2 Settings for the Terminal menu

3.6.2.1 Display of Vario-load

In the status window of the Terminal menu it can be displayed the "Varioload reached" event. Because this is not relevant for the normal operation, it is possible to activate or deactivate it.

3.6.2.2 Value of Vario-load

In this window the threshold of the vario-load can be defined in percent of the load value.

3.6.3 General settings

3.6.3.1 Boot window

specifies into which start window should be booted after power on.

- Terminal - window: For manual operation
- DressView - window: is suitable, in case if the device is operated in the controlled mode and it should be used with same settings as before. By this an automatic operation with a PLC is possible.

3.6.3.2 Direction of rotation

Here it is determined the direction of rotation of the spindle. If the rotational direction is set via a digital input, the direction which is selected in this window is overridden.

3.6.3.3 Update

When choosing "Update" the software reboots itself and searches for an attached update-qualified USB stick which contains a firmware newer than the device itself.

If an update-qualified USB stick is detected, a message box appears, which shows the version date of the newer firmware as well as the version date of the device. Now there is the option to cancel this message box with pressing "ENTER" or choosing "OK" with pressing "SELECT", "Arrow up" or "Arrow down". As soon as "OK" is chosen and "ENTER" is pressed, the update process starts. After having finished. the software immediately restarts with the newer firmware.

Update-qualified USB stick and Firmware

A preconfigured and update-qualified USB stick with the latest firmware can be ordered by BMR on a charge.

As a second option there is the possibility to create an own update-qualified USB stick. This stick has to fulfill the following criteria:

Name: BMR

File format: ext2, ext3, ext4 or MS-DOS-FAT

In general, the latest firmware is available by BMR on request. It can be downloaded and copied on an USB stick, which can plugged into the USB jack on the back of the desktop device or direct at the **DressView** Operating Terminal.

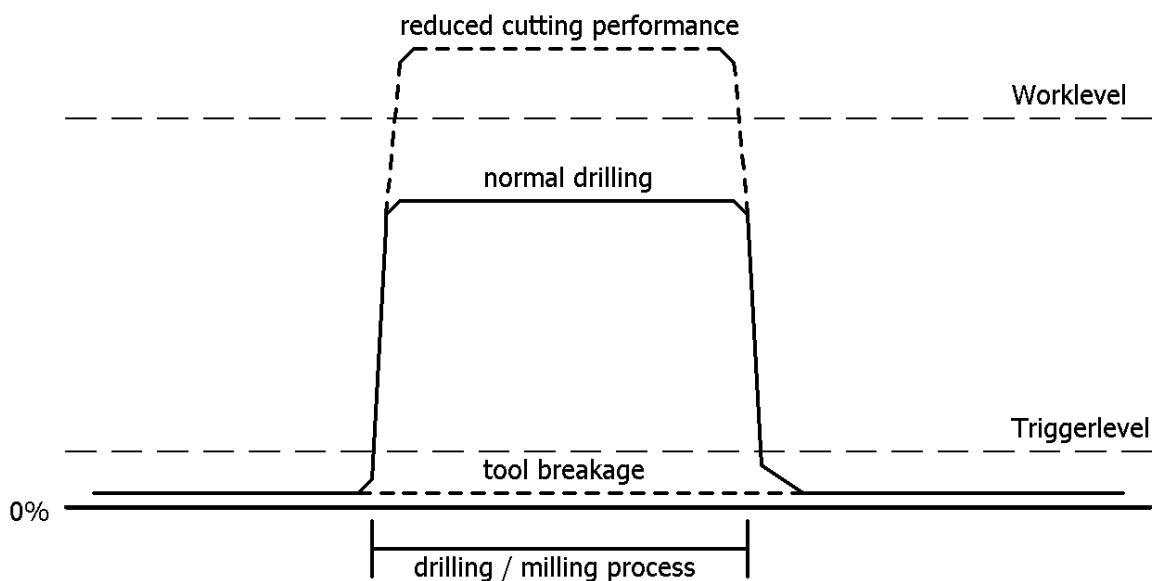
4 Use of the system in the drilling / milling

Additionally to dressing applications, the system can also be used very easily in other applications, such as automated drilling and milling. The resulting benefits are, that the current signal of the regulation value can steadily be compared to a nominal value.

So, for example, the **detection of tools getting dull** or having reduced sharpness can be detected very early. This would result in an increase of the regulation value in comparison to the value of the sharp state. This gives the chance to notify the operator to change the tool before the quality of the surface gets too bad or the tool breaks.

Another possibility is the **detection of broken tool**, because here is the value significantly low during operation. So in this case the automated process can be interrupted immediately, and it is not wasted time while working without tool.

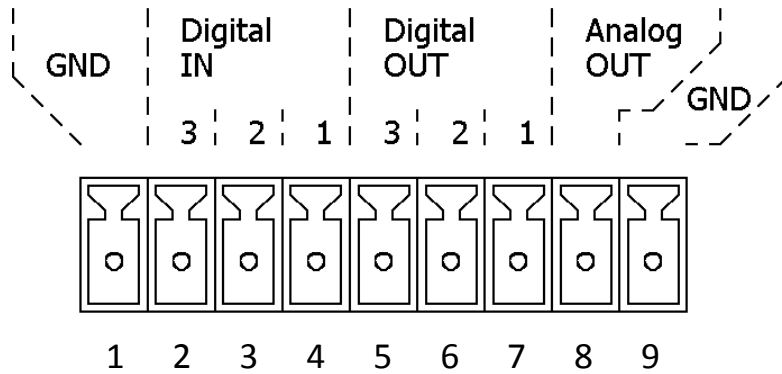
For this purpose also the dressing menu must be called and the "in blocks" or "controlled" display mode can be set.



5 DressView®-specific inputs and outputs

The **DressView**® specific interface is located on the back panel of **DressView 0200** or **DressView 0303** and on the front panel of **DressView SSE**.

It is realized with a pluggable screw terminal. It's functions are described in 2.4.2.2



PIN	Function	Description	Type
GND		Ground	
Digital IN 1	Dressing start	starts drawing the regulation value into the dressing graph in "Controlled" mode	0-24V
Digital IN 2	Zeroing	Zeroing or Calibration of the system	0-24V
Digital IN 3	Spindle start	Start spindle in Dressing menu	0-24V
Digital OUT 3	Dressing result	delivers depending on usage a result for cutting detection or for dressing	Logic "0" = 0V Logic "1" = 24V / 25mA
Digital OUT 2	Limit	Delivers a HI-signal when exceeding the trigger level during activated dressing	Logic "0" = 0V Logic "1" = 24V / 25mA
Digital OUT 1	Ready	Indicates, if the system is ready or if it is on error	Logic "0" = 0V Logic "1" = 24V / 25mA
Analog OUT	Regulation value	Analogue value, corresponding to the graph line in the dressing window	0...10V
GND / Uh		Ground or auxiliary voltage on option	12V / 20mA

- ✓ Switch level of digital inputs: "0" = 0...7V / "1" = 13...24V PLC Standard Level
- ✓ Voltage range analogue output: 0...10V

Important:

When the spindle is started via the digital input IN3, it is no longer possible to stop the spindle via the slide keys. A stop can then only be triggered by a corresponding level change to IN 3.

6 USB-Interface

Each DressView device (SSE or Desktop) always includes an USB Interface. By this the built-in or connected inverter can be configured directly by PC (SFU-Terminal).

If a PC is connected via USB, the following message appears on the display of DressView:

"PC-connection detected. DressView is not active while a PC is connected."

As long as this connection exists, the dressing system is inactive. After disconnection, all functions are available, immediately.

7 Connection

The sketch shown in section 3.4.2.2 may be used as an example for connecting.

7.1 Connecting the SSE-System

Besides the integrated desktop versions, the system is available as separated solution for cabinet mounting, also. It consists of the **DressView** SSE unit and the Operating Terminal, which have to be connected with a specific cable which carries all data signals and the power supply. The DressView SSE acts as the communication interface between the machine, BMR converter and DressView Operating Terminal.

SFU I/O: looped through digital and analog In- and outputs of the connected SFU0200. RS232 is no longer available. To connect a PC to the SFU0200 you have to use the USB-interface.

SFU 0200: Connection port to SFU0200

SFU 0303: RS232 Connection plug for connecting the SFU0303

DressView OT: Plug for the connection cable to the DressView Operating Terminal

I/O Interface: Interface as specified in section 5.

USB: Communication interface to BMR-frequency converter for configuration with SFU-Terminal on PC.

Power supply: 24VDC 2.5A



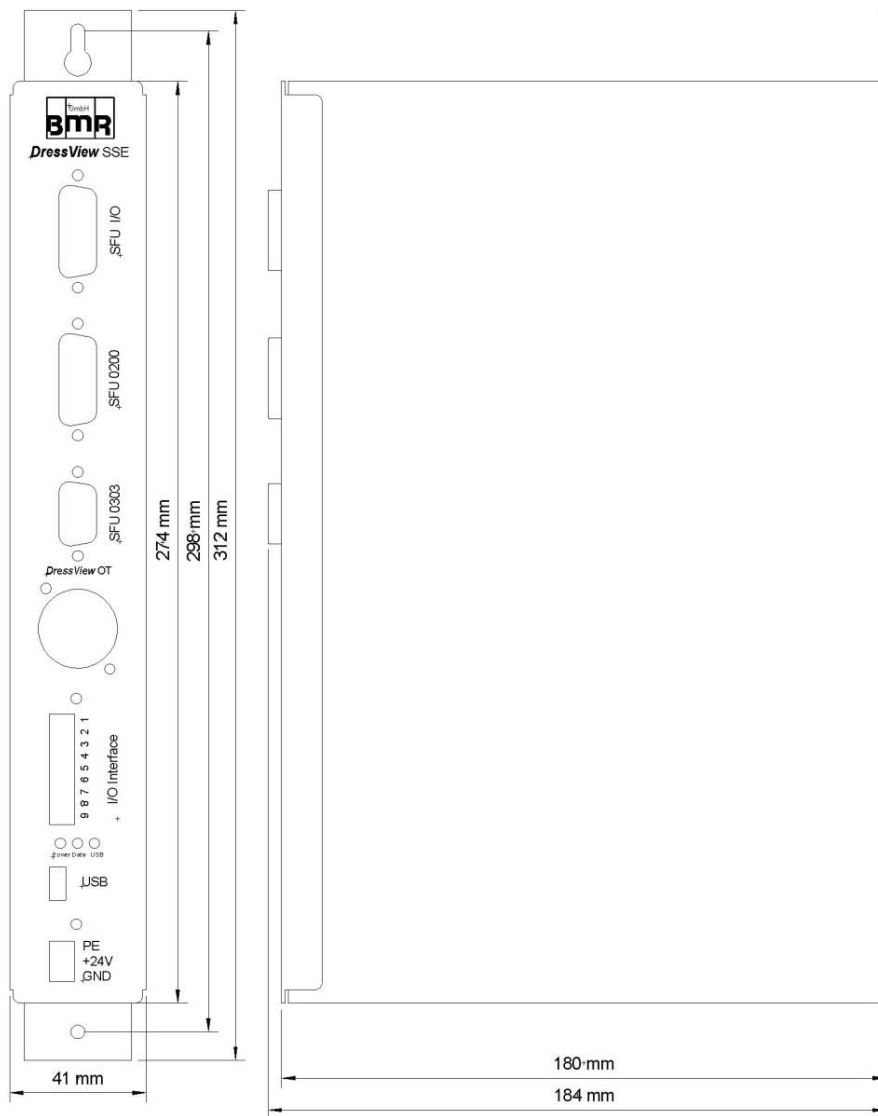
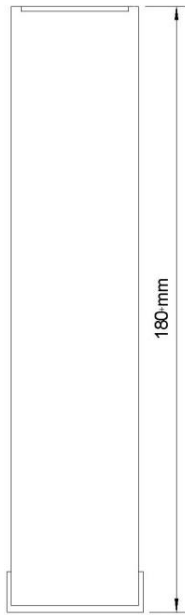
8 Delivery contents

The DressView® system from BMR works only with frequency converters from BMR and dressing spindles in a mounting range from 33mm to 72mm.

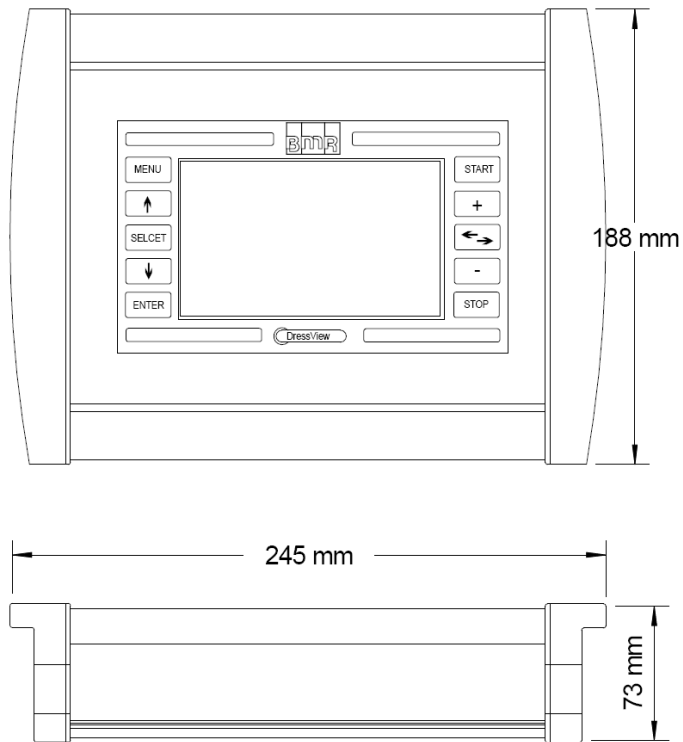
It is always supplied as a unit consisting of the DressView unit and a dressing spindle. For that reason it is necessary to specify the desired spindle size and also the type of dressing tool with an order.

9 Dimensions and Mounting

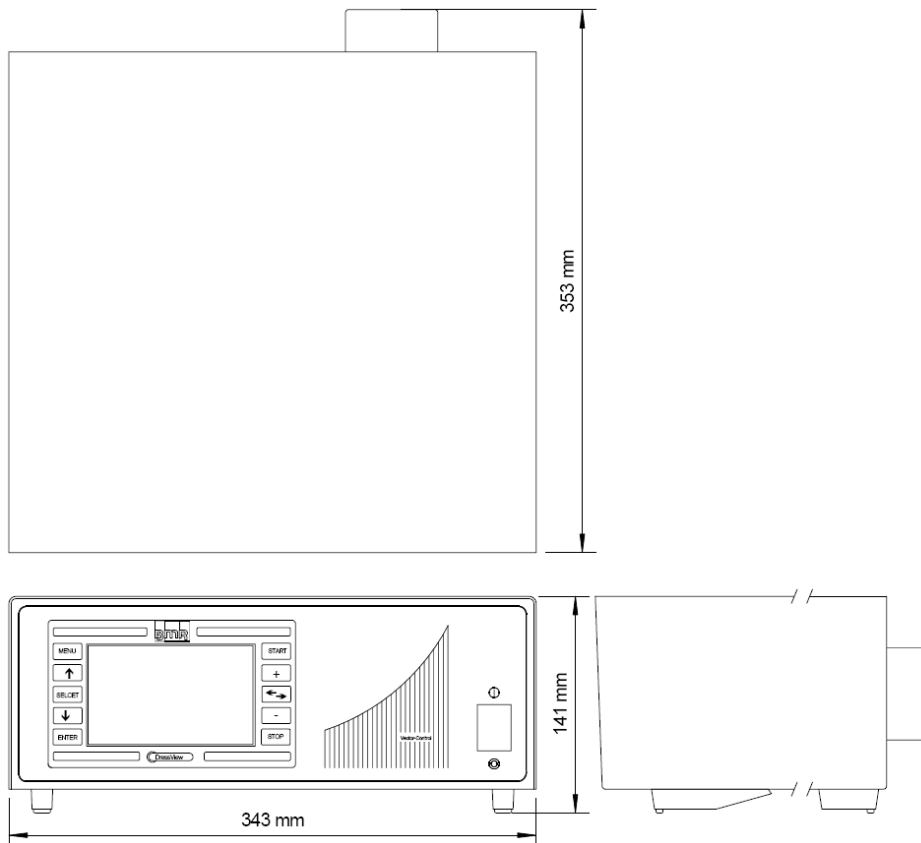
SSE



Operating Terminal



Desktop



OUR QUALITY COMMITMENT

100%	„Made in Germany“
100%	precision
100%	reliability
100%	support
100%	flexibility



**Subject to technical alterations.
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