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**BAUMÜLLER**  
**TECHNOLOGY MODULE**  
**WINDER**

Technical Description and  
Operating Instructions

As of 12 November 1999

# BAUMÜLLER

## TECHNOLOGY MODULE WINDER

### Technical Description and Operating Instructions

As of: 12 November 1999

5.99064.02

**READ AND OBSERVE THE OPERATING INSTRUCTIONS  
AND  
SAFETY INFORMATION CAREFULLY PRIOR TO  
COMMISSIONING**

These operating instructions contain the information required for the application as directed of the products described herein. The document is intended for specially trained, skilled personnel who are well-versed in all warnings and maintenance activities. The units are manufactured using the state-of-the-art technology and are safe in operation. They can be installed safely and commissioned and function without problems if the safety information is observed.

Commissioning is prohibited until it has been established that the machine into which this component is installed, complies to the CE Machinery Directive.

With the handover of the this technical description and these operating instructions all previous descriptions of the products are no longer valid. Baumüller reserves the right in further developing its products, to modify the technical data and its handling of the products concerned.

No liability can be accepted concerning the correctness of the product information unless otherwise specified in the General Conditions of Sale and Delivery.

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**Country of origin** Germany

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# 1 SAFETY NOTES

## General information

These operating instructions contain the information required for the application as directed of the products described herein. The document is intended for specially trained, skilled personnel who are well-versed in all warnings and maintenance activities. The units are manufactured using the state-of-the-art technology and are safe in operation.

They can be installed safely and commissioned and function without problems if the safety information below is observed.



## DANGER

When operating this electrical unit, some parts of the equipment always carry dangerous voltage.

Ignoring these safety instructions and warnings may result in death, serious personal injury and/or damage to material assets.

Only qualified personnel who are familiar with the safety information, assembly, operation and maintenance instructions may carry out work on this unit.

## Danger information

One the one hand, the information below is for you own personal safety and on the other to prevent damage to the described products or to other connected units.

In the context of the operating instructions and the information on the products themselves, the terms used have the following meanings:



## DANGER

This means that **death, severe personal injury or considerable damage to material assets** will **occur**, unless appropriate safety measures are taken.



## WARNING

This means that **death, severe personal injury or considerable damage to material assets** may **occur**, unless appropriate safety measures are taken.



### NOTE

This draws your attention to **important information** about the product, handling of the product or to a particular section of the documentation.

#### Qualified personnel

Qualified personnel in the sense of the safety-relevant information in this document or on the products themselves, qualified personnel are considered to be persons who are familiar with setting up, assembling, commissioning and operating the product and who have qualifications appropriate to their activities.

- Trained or instructed or authorised to commission, ground and mark circuits and equipment in accordance with recognised safety standards.
- Trained or instructed in accordance with recognised safety standards in the care and use of appropriate safety equipment.

#### Application as directed



### WARNING

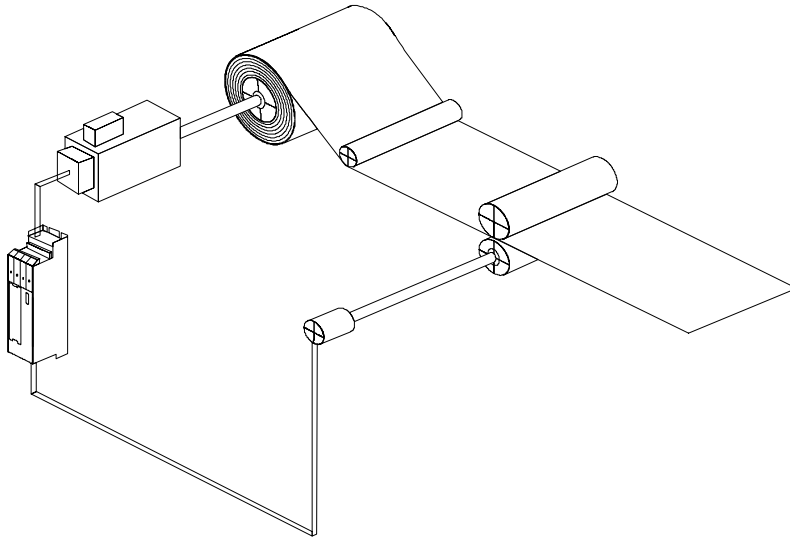
You may only use the unit/system for the purposes specified in the operating instructions and in conjunction with the third-party equipment and components recommended or authorised by BAUMÜLLER NÜRNBERG GmbH.

For safety reasons, you must not change or add components on/to the unit. The operator must report immediately any changes that occur which adversely affect the safety of the unit/system.

## 2 COMMISSIONING

### 2.1 Description of the winder technology module

The winder technology module from Baumüller offers a universal application as a core winder. The winder can be used to unwind or rewind paper, foil, film, or textiles. The winding diameter is continuously calculated during the winding process and the tension is controlled in dependence of the winding diameter.



The parameters of the winder technology module is set using the WinBASS user interface.

These are the basic functions of the winder technology module:

- Splicing to tighten the web prior to winding
- Winding with winding diameter calculation
- Tension control in the web depending on the winding diameter
- Limit monitoring of the current diameter
- Tension reduction when the machine is at standstill
- Automatic web break detection
- Triggering of the holding brake.

The winder technology module is available in two hardware versions, according to the corresponding application. You can select between configurable open- and closed-loop control boards  $\Omega$ mega-DriveLine und  $\mu$ - $\Omega$ mega. Both boards are installed together with the V-controller in the standard compartment of all Baumüller power units or power modules. This allows a wide selection among Baumüller drives and power units or power modules for the winding drive.

The current winding diameter is calculated from the current web speed and the speed of the winding drive shaft. The web speed can be detected in three different ways:

- Analog input
- Encoder input of the V-controller
- CANsync ( $\Omega$ mega-DriveLine)

Different winding modes can be used for the tension control:

# Commissioning

---

- **Constant tension**  
You can enter the setpoint tension steplessly via an analog input.
- **Adjustable tension characteristic**  
Tension characteristics allow a tension setting in dependence of the winding diameter. You can enter and administer four different tension characteristics using the WinBASS user interface.
- **Constant torque**  
You can enter the setpoint torque at the winding shaft steplessly via an analog input. The constant torque at the winding shaft causes the web tension to be reduced with increasing winding diameter.
- **Adjustable torque characteristic**  
Torque characteristics allow a torque setting in dependence of the winding diameter. You can enter and administer four different torque characteristics using the WinBASS user interface.

You can set the winder technology module such that a web break is detected and indicated within a few milliseconds. The winding motor will decelerate and stop immediately with the maximum torque. The operator can also indicate a web break by an external signal (control, switch, ...) and thus stop the winder.

The field weakening of the winder technology module allows a winding drive operation above the rated speed.



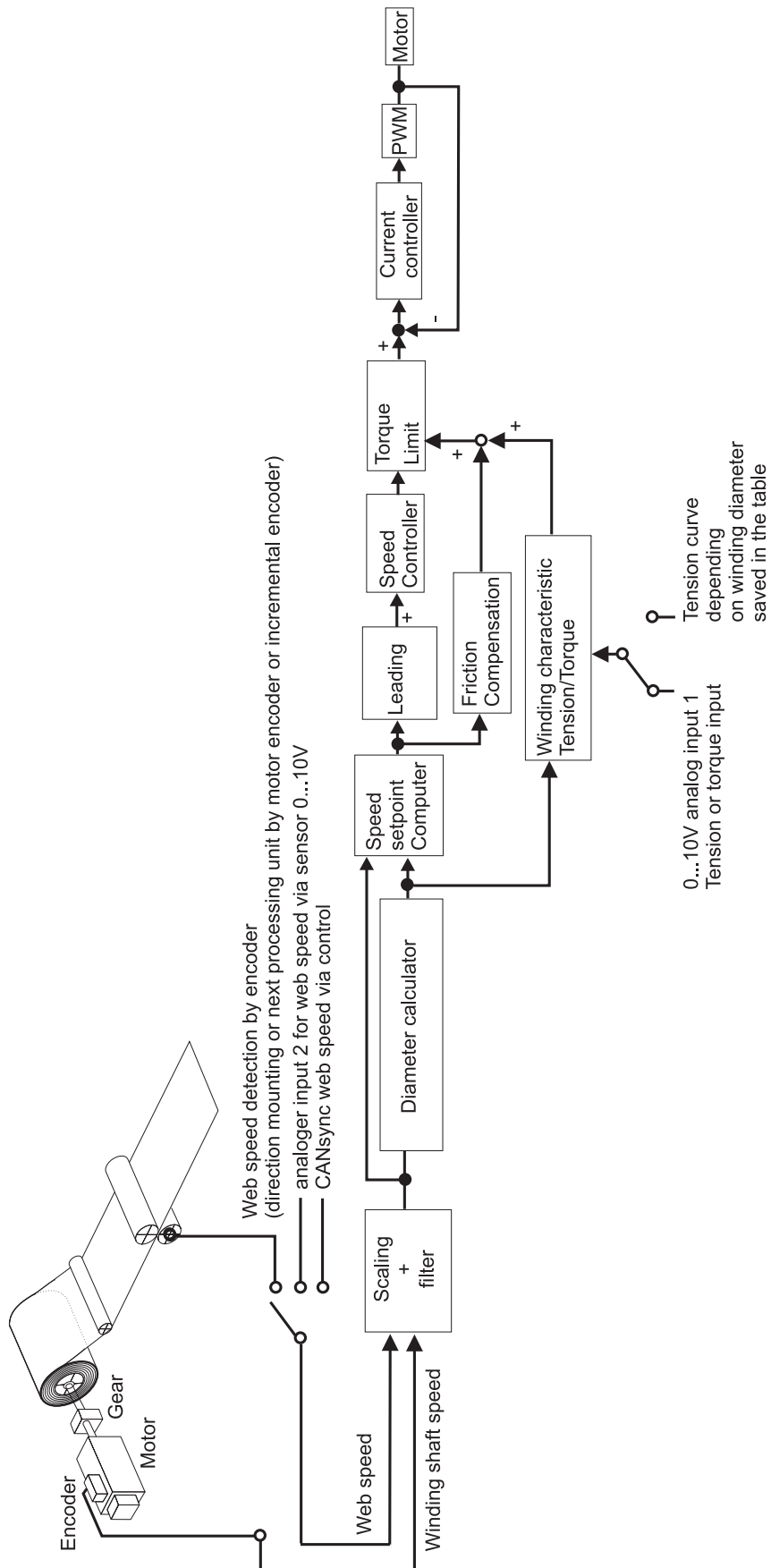
## NOTE

When the drive is operated above the rated speed (for asynchronous motors only) the rated torque can no longer be achieved.

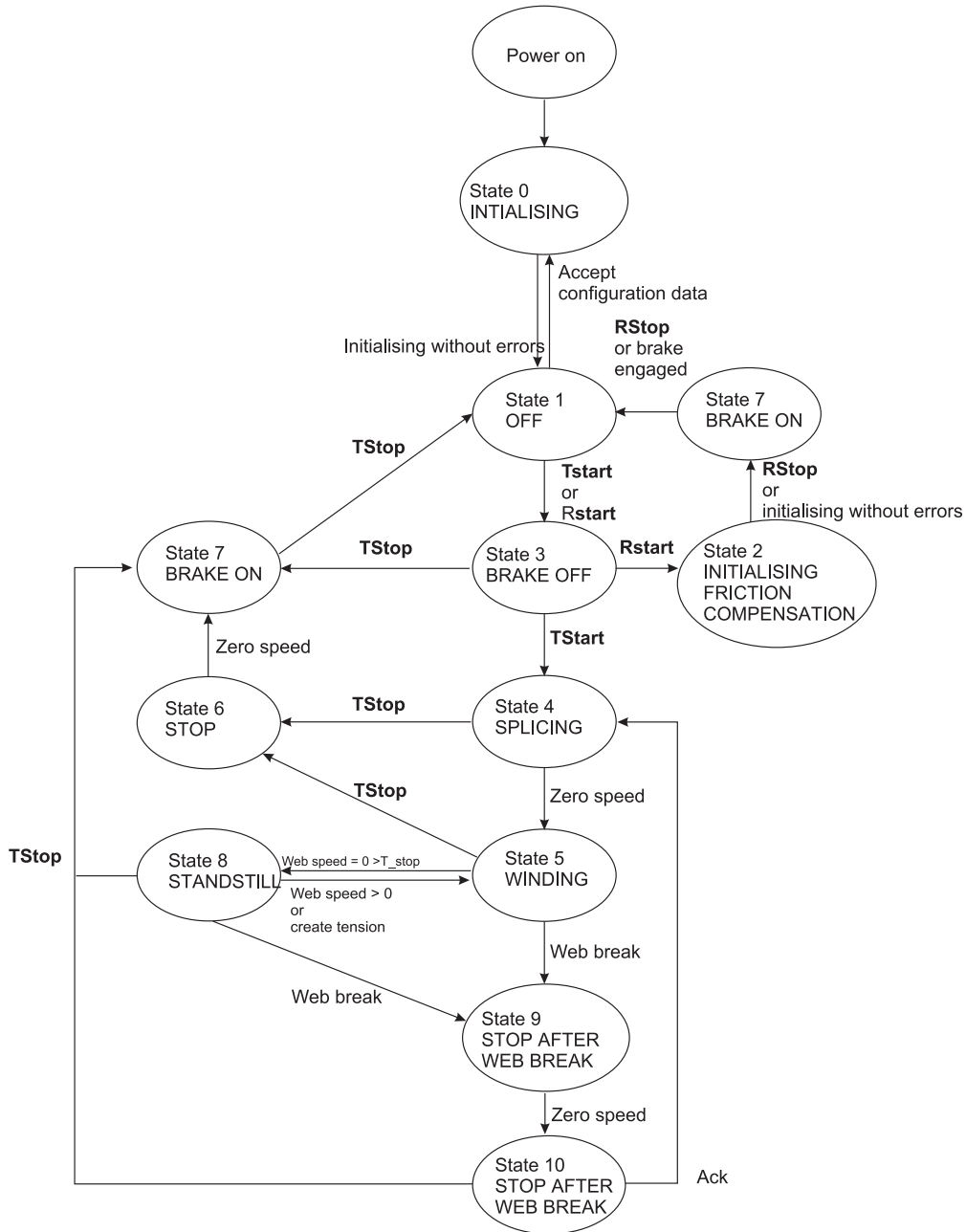
The winder technology module with **Omega-DriveLine** is controlled using CANsync. The **μ-Omega** allows a control of the winder technology module via digital inputs.



## 2.2 Structure



## 2.3 Sequence



### Winder state

#### State 0: INITIALISING

After mains connection, the winder is in the initialisation phase. After successful initialising, the winder changes to state 1. OFF.

#### State 1: OFF

The winder is not enabled. When the winder is enabled via **TStart** (Start technology module) or **RStart** (recording of the friction loss curve start), the drive changes to state 3. BRAKE OFF. After the configuration data have been accepted, the winder changes to state 0: INITIALISING

#### State 2: INITIALISING OF FRICTION COMPENSATION

The winder follows the profile for the recording of the friction loss curve according to the settings. After

completion or **RStop** (Stop of recording the friction loss curve), the winder changes to state 7. BRAKE ON.

**State 3: BRAKE OFF**

The brake triggering sets the digital output ( $\mu$ - $\Omega$ mega) or the corresponding bit in the status word ( $\Omega$ mega-DriveLine).

**State 4: SPLICING**

The web is prestressed with the set force **F\_min**. The drive changes to state 5 at zero speed after 50 ms: WINDING

**State 5: WINDING**

The drive winds according to the settings. After a web break has been detected, the winder changes to state 9: STOP AFTER WEB BREAK and in the case of winder **TStop** to state 6: STOP At web standstill the winder changes to state 8: STANDSTILL after the configurable time **T\_stop**.

**State 6: STOP**

The drive is decelerated. The drive changes to state 7 at zero speed. BRAKE ON.

**State 7: BRAKE ON**

The brake triggering sets the digital output ( $\mu$ - $\Omega$ mega) or the corresponding bit in the status word ( $\Omega$ mega-DriveLine). The winder changes to state 1: OFF.

**State 8: STANDSTILL**

The winder reduces the tension according to the setting **F\_stop**. When you have selected **Create tension**, the winder immediately changes to state 5. WINDING The web break detection is not active!

**State 9: STOP AFTER WEB BREAK**

The drive is decelerated at the torque limit. The drive changes to state 10 at zero speed. STOP AFTER WEB BREAK

**State 10: STOP AFTER WEB BREAK**

The winder changes to **TStop** to state 7: BRAKE ON or immediately to state 4: SPLICING after the error has been acknowledged.

## 2.4 Applicable documents

The software of the winder technology module is part of a drive package which consists of the following components:

- Motor
- Power unit
- Controller
- Control.

Technical descriptions/Operating instructions are supplied separately. It is assumed that you have previously read and understood these instructions and pay special attention to the warnings.

<b>Description</b>	<b>German (part no.)</b>	<b>English (Part no.)</b>
V-controller 3.xx	242916	243131
μ-Ωmega	239091	247387
Ωmega-DriveLine	221617	238165

## 2.5 Installation requirements

### 2.5.1 WinBASS PC hardware and software

IBM compatible PC with

- pentium processor with at least 133 MHz (recommended: 200 MHz)
- at least 32 MB RAM (64 MB recommended)
- 60 MB free hard disk memory
- CD-ROM drive
- VGA monitor with colour settings: 256 colours or more. Resolution: 800 x 600 or higher
- free serial interface (COM1 to COM4)

Operating system: Windows<sup>®</sup> 95 or Windows<sup>®</sup> NT 4.0

### 2.5.2 Baumüller software

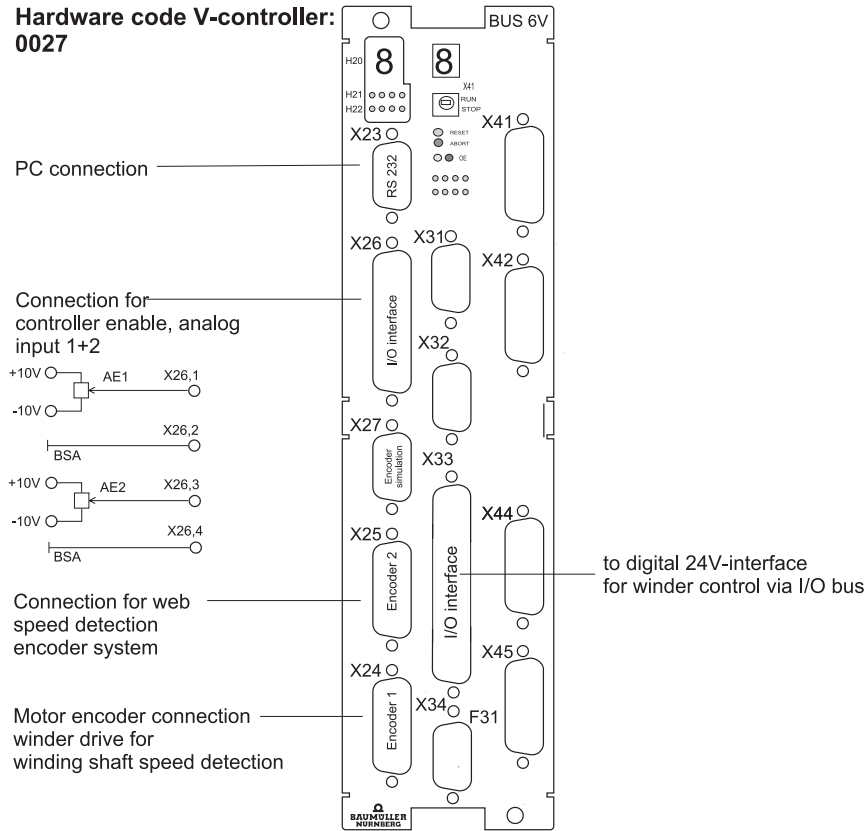
WinBASS V4.xx user interface

### 2.5.3 Baumüller hardware

V-controller in one of the two configurations shown below.

- $\mu$ -Omega for control via **digital interface 24V** of the V-controller

Hardware code V-controller:  
0027

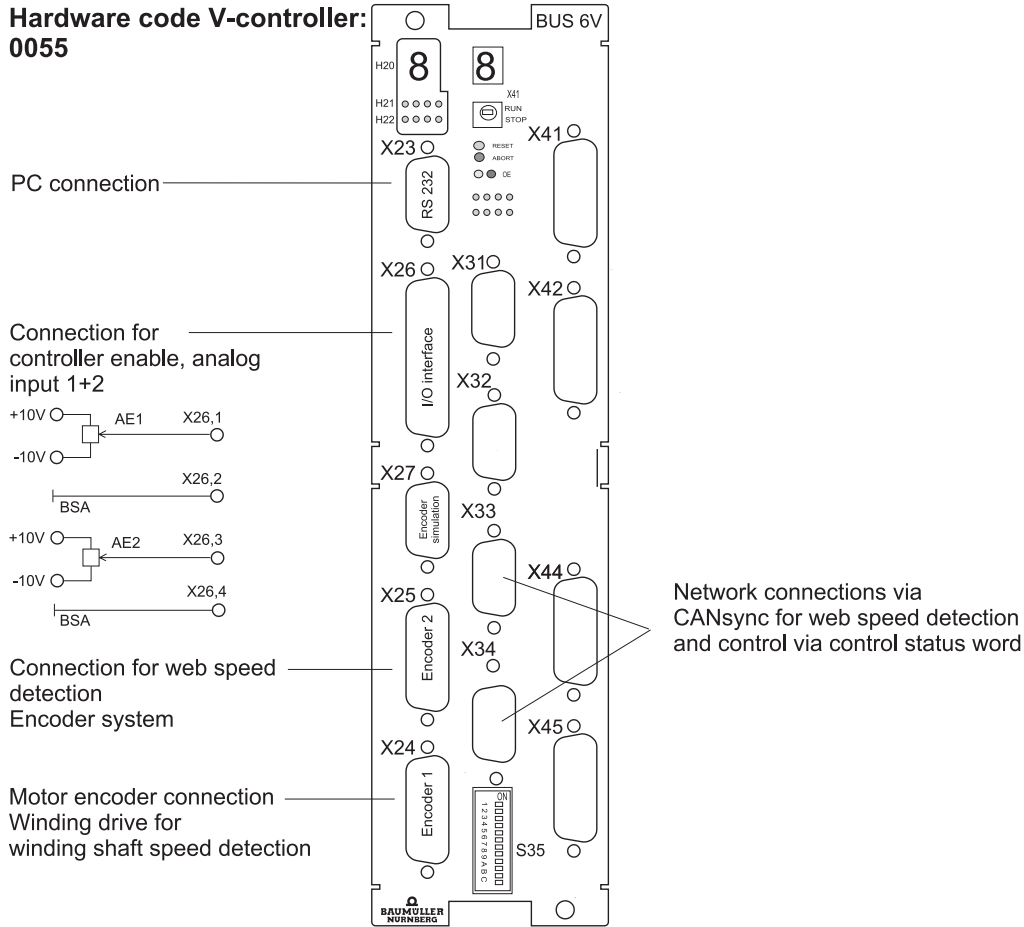


Web speed  
- via connection to encoder 2 or  
- via analog input 2 0...10V

Tension or torque setpoint  
- via analog input 1 0...10V or  
- via saved table  
Selection by I/O bus

- **Omega-DriveLine** for control via **CANsync**.

**Hardware code V-controller:**  
**0055**



Web speed  
 - via connection to encoder 2 or  
 - via CANsync connection or  
 - via analog input 2 0...10V

Tension or torque setpoint  
 - via analog input 1 0...10V or  
 - via saved table  
 Selection by CANsync.

## 2.6 Test technology module

### 2.6.1 Offline test technology module

The winder technology module can be offline configured and parameterised.

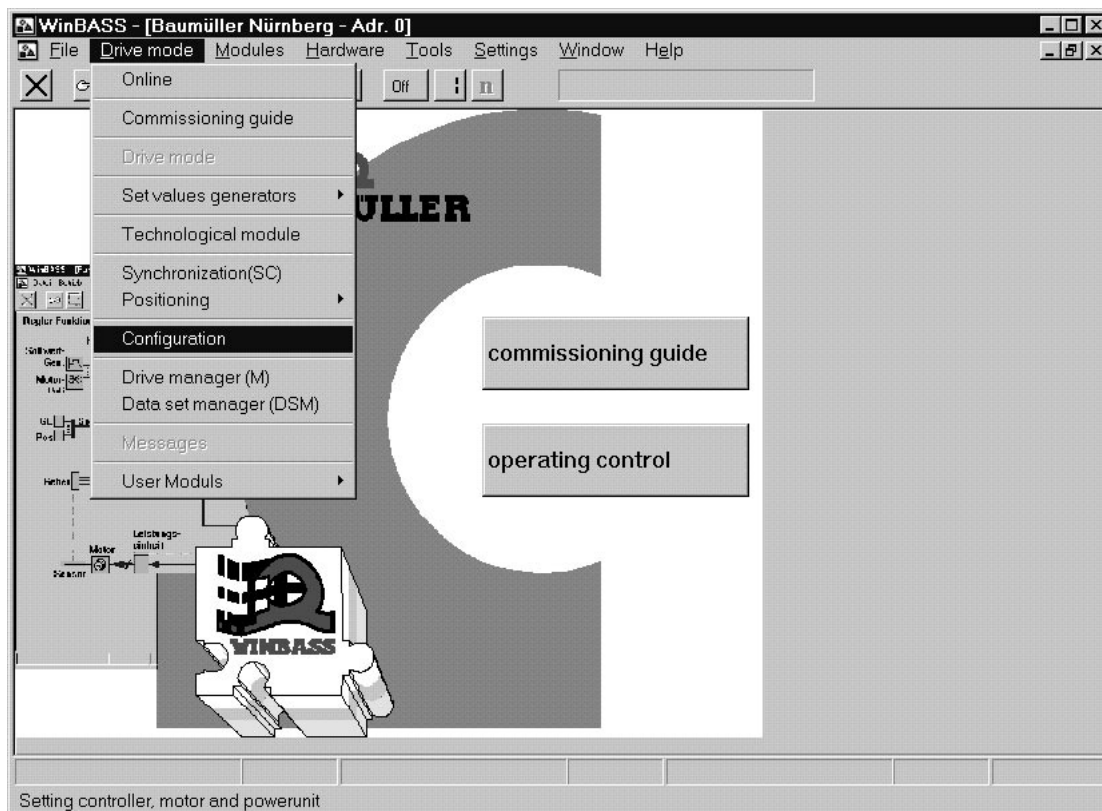
A more detailed test can only be performed with a drive and must be carried out with special care.

## 2.7 Commissioning instructions

In the following, we assume that the WinBASS software and the winder technology module are correctly installed on your computer. The commissioning of the drive e.g. using the WinBASS commissioning program must be completed successfully.

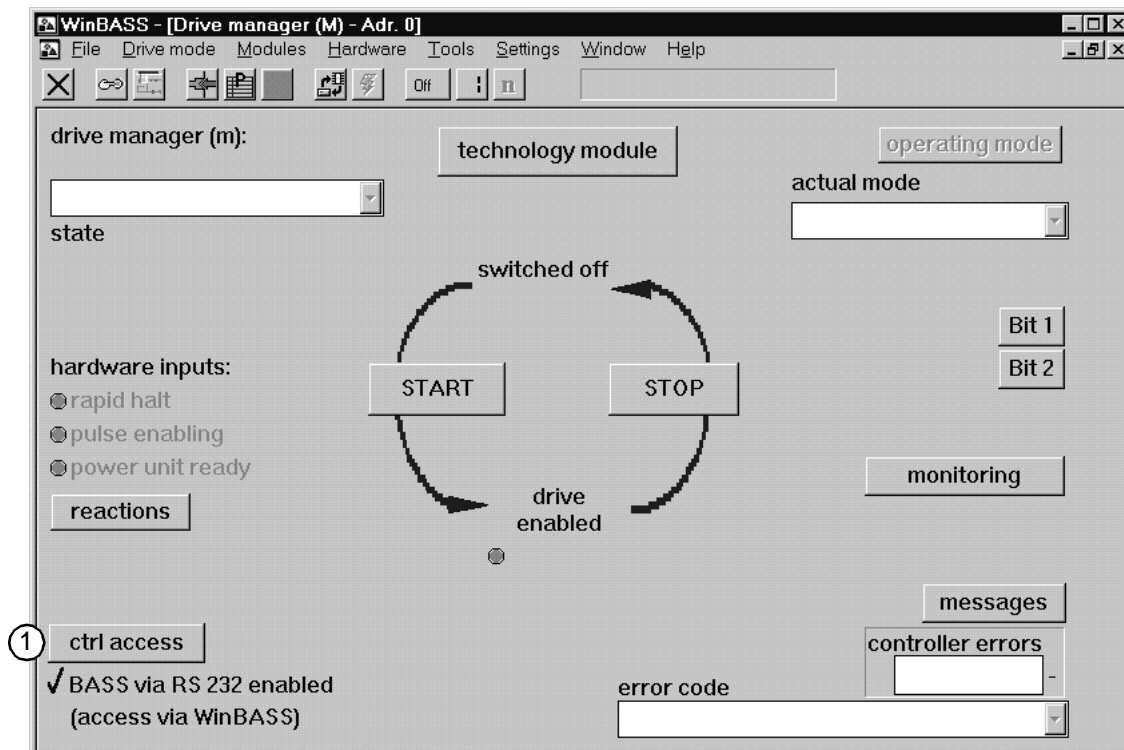
To commission the winder technology module, proceed as follows:

- Start WinBASS
- Select the **Drive manager** menu item in the window below:



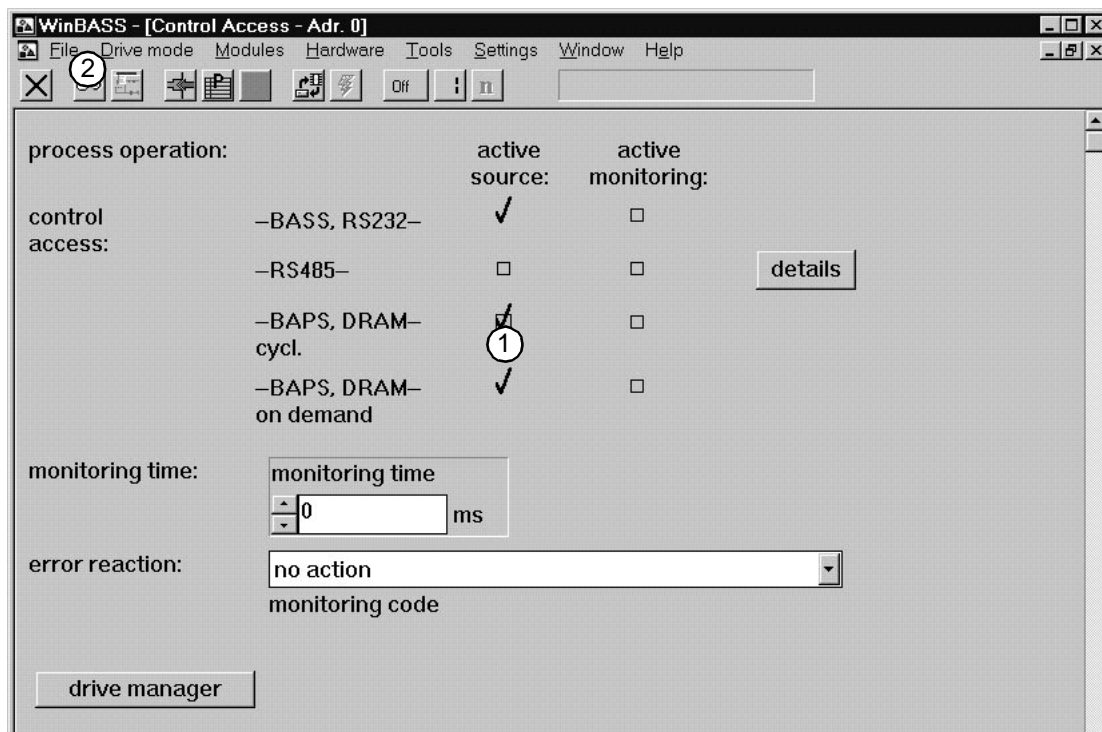
# Commissioning

The Drive manager window opens.



① select **Control access**.

The Control access window opens..

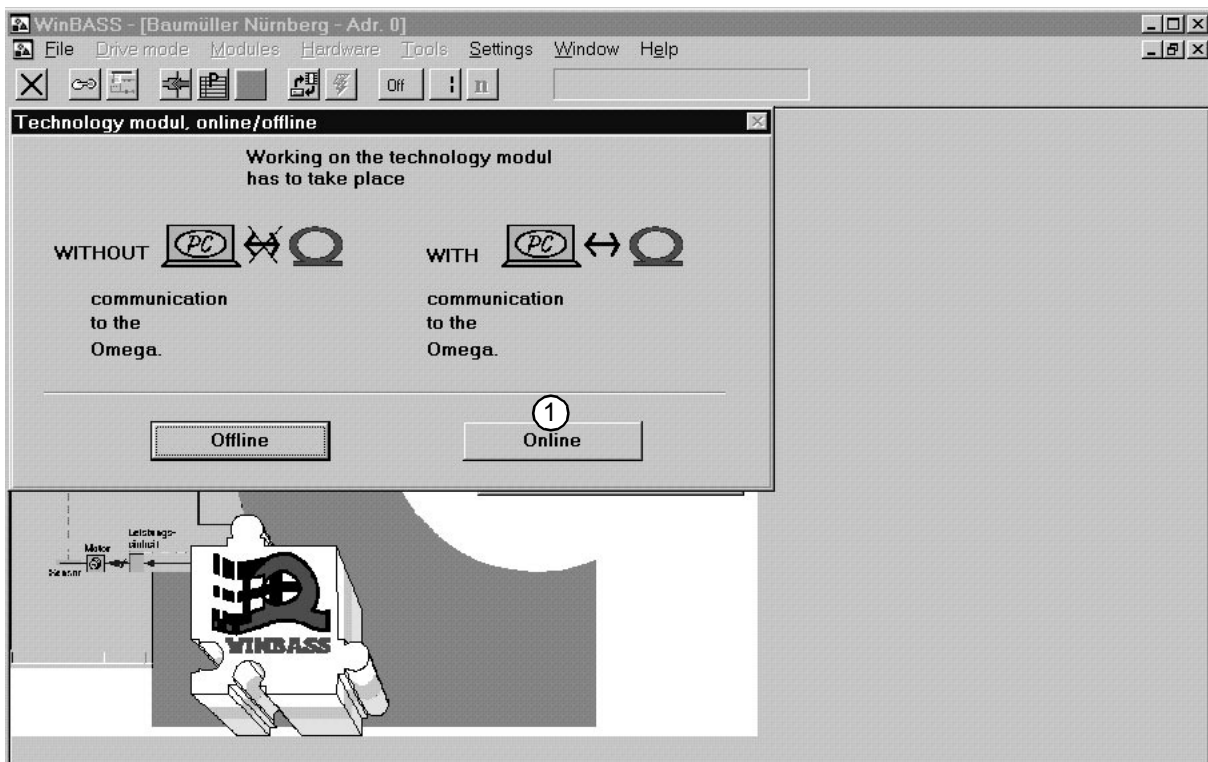


① select the two menu items **BAPS** (source active).

② select the menu item **Drive mode> Technology module**

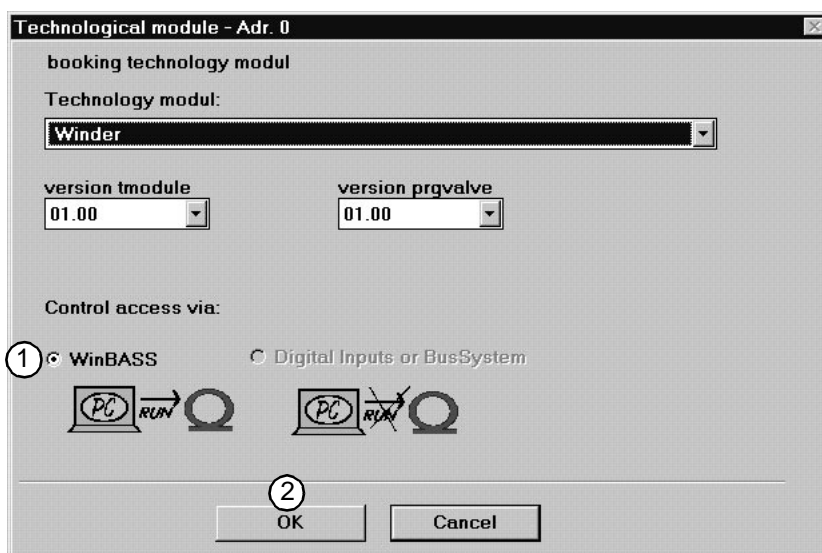


The window **Technology module online/offline** opens.



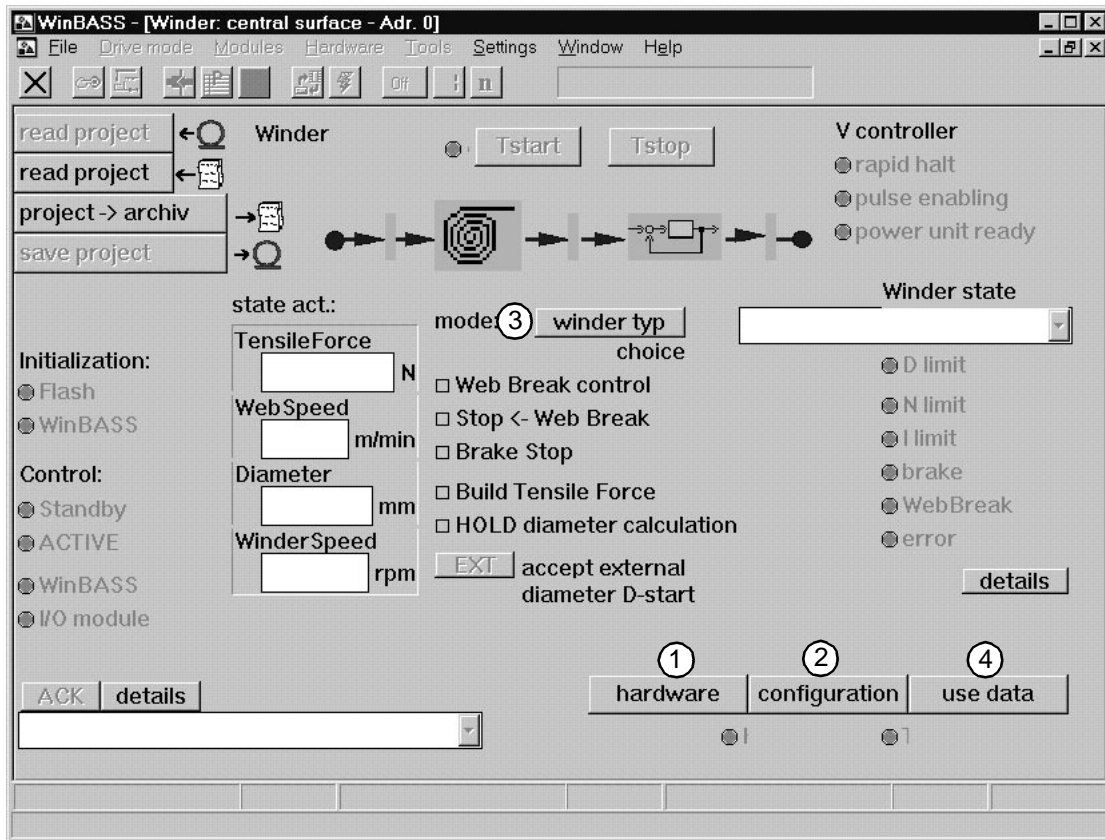
- ① Click on the **online** button when you want to establish a communication between the drive and WinBASS.

The window **Technology module – addr. 0** opens.



- ① Click on the **WinBASS** button for the operation via WinBASS.
- ② Confirm with **OK**.

The **Central user interface** window opens.



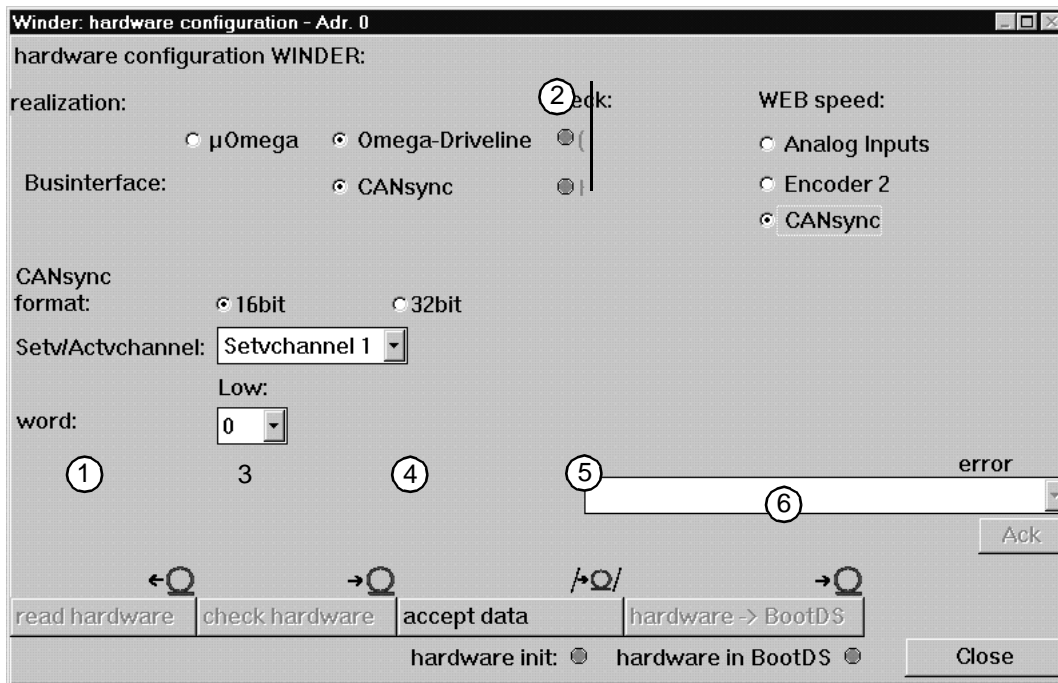
From the **central user interface** window you can branch to other windows in which you enter all settings required for commissioning. These four windows are:

- ① **Hardware configuration**
- ② **Function configuration**
- ③ **Winder mode selection**
- ④ **User data**

Please edit the input windows which are required for commissioning in the sequence as stated above.

On the following pages you are guided through the commissioning. In the explanation of the windows we do not describe every item. Parameter settings which are necessary for experts only are also omitted. For a description of all parameters and displays refer to chapter **Windows and parameters** on page 37 ff.

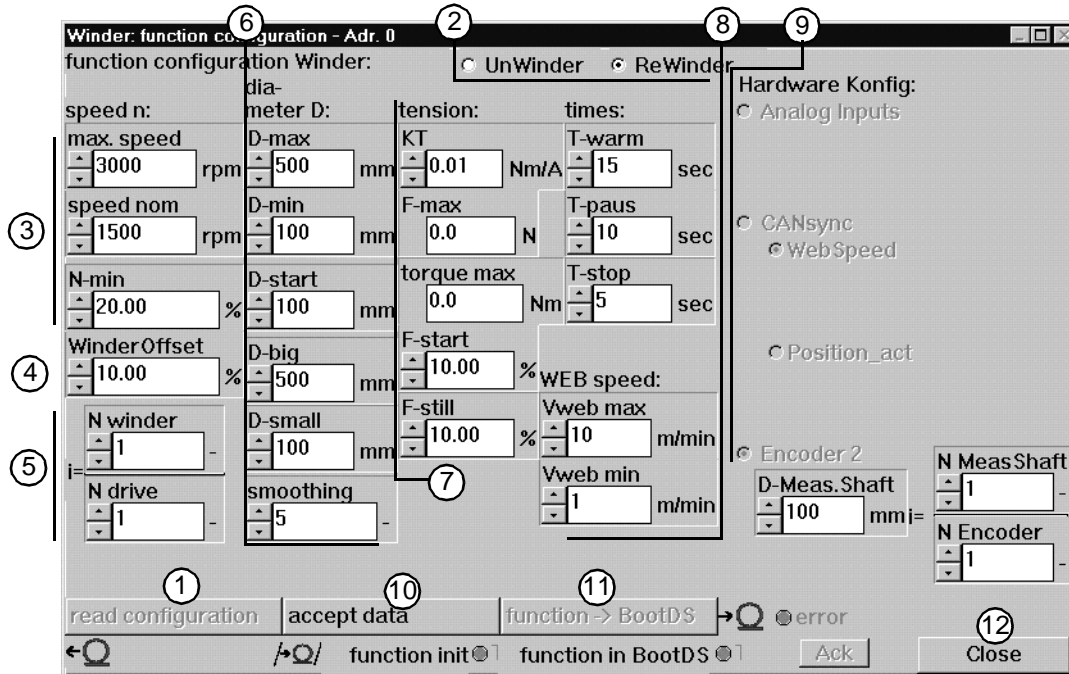
## 2.7.1 Hardware configuration



In this submenu you configure the hardware settings of your winder.

- ① The hardware configuration of the technology module is read from the controller. The display under WinBASS is updated.
- ② Enter in which input of the V-controller you provide the signal for the measured web speed. Select one of the following options:
  - Analog input 2 of the V-controller, X26 pin 3 and 4, 0...10V, e.g. the evaluation of a measuring sensor. The resolution of the input is set under **function configuration**.
  - Encoder input 2 of the V-controller, X25, e.g. actual speed of a connected motor, encoder or the incremental encoder simulation. The encoder module of encoder input 2 must be selected according to the encoder type used. The resolution of the input is set under **function configuration**.
  - CANsync bus interface, the CANsync format must be entered according to the CANsync setting, either from the setpoint channel or the actual value channel from slave 0.
- ③ Check the hardware to ensure that you components match (particularly when the hardware was configured offline). Should an error occur (e.g. no green LED after **Check**), see chapter **Troubleshooting** on page 57ff for further information.
- ④ Click on this button only when the hardware check has been completed without error messages! (green LED below **Check** "illuminated")  
Your settings are saved in the controller memory. The **Hardware Init** LED is illuminated.  
CAUTION: If the voltage is switched off, this data is deleted!
- ⑤ You save your settings from the RAM in the memory of the boot data record using this button. If the data is saved, the **Hardware in BootDR** LED is illuminated. The data is now saved non-volatile.
- ⑥ Close the **Hardware configuration** window.

## 2.7.2 Function configuration



The specific winding data is entered in the **Function configuration** submenu.

- ① The parameter settings saved in the controller are read. The display under WinBASS is updated.
- ② Specify whether the winder is to operate independently of the direction of rotation as rewinder or unwinder.
- ③ The motor-specific parameters **max speed** (maximum speed) and **speed nom** (nominal speed) which were found during the drive commissioning, are displayed in the first column. The parameter **N\_min** is a default value which normally does not have to be changed. For explanations on the parameter please refer to chapter **Windows and parameters** on page 37 ff.
- ④ The leading is specified in % of **max. speed** and is used to calculate the speed setpoint. For explanations on the parameter please refer to chapter **Windows and parameters** on page 37 ff.
- ⑤ If a gear is located between the drive and the winding shaft, enter the speed ratio between motor speed (**n drive**) and winding speed (**n winder**).
- ⑥ Enter all winder-specific parameters in the second column.

**D\_max:** Maximum winding diameter  
(internal scaling factor, no monitoring function!)

**D\_min:** Minimum winding diameter  
(internal scaling factor, no monitoring function!)

**D\_Start:** Initial winding diameter,  
unwinding normally **D\_start = D\_max**, rewinding **D\_start = D\_min**

**D\_large:** Monitoring threshold – if the winding diameter exceeds this value, a output signal (**D\_limit value**) is supplied.

**D\_small:** Monitoring threshold – if the winding diameter falls below this value, a output signal (**D\_limit value**) is supplied.

**Smoothing:** Smoothing of the input values web speed and winding shaft speed by continuous averaging of  $2^x$  values, default 5.

⑦ Enter the following parameters in the third column.

**KT:** Motor-dependent constant in Nm/A, value calculated from the nameplate data  $M_0$  and  $I_0$  to  $KT = M_0/I_0$ . It can also be obtained from the motor data sheet.

**F\_max:** The calculated maximum force for the maximum reel diameter. This force results from the previously entered configuration data.

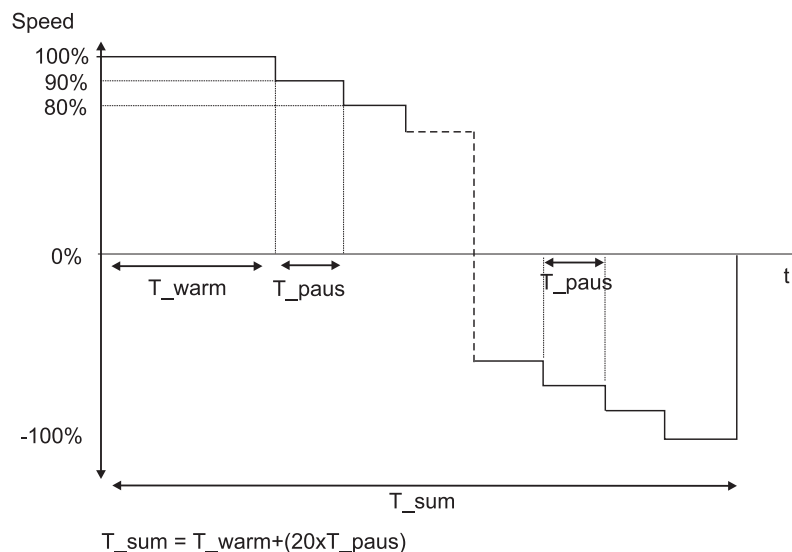
**Torque\_max:** The calculated maximum torque resulting from the previously entered configuration data.

**F\_Start:** The web tension is controlled to this value during splicing. The value is in % of **F\_max**.

**F\_stop:** When the web stops (web speed = 0), the web is tensioned to this value after the time **T\_stop** has elapsed. The value is in % of **F\_set**.

**T\_stop:** Time after which the web tension is reduced to **F\_stop** after a web stop has been detected.

⑧ The time parameters determine the recording sequence of the friction loss curve. The following illustration shows the profile of the friction loss curve.



**T\_warm:** Time during which the drive warms up with nominal speed. Select this time such that the machine has a warm operating state after this time has elapsed.

**T\_paus:** Time during which the drive holds the "new" speed. Select the time such that the drive is stable (stationary operation) when the internal relevant parameters are measured when this time has elapsed.

The specification of the web speed is used for scaling.

**V\_web\_max:** Value which corresponds 100% to the web speed.

**V\_web\_min:** Minimum web speed during which the diameter calculation is "frozen" (i.e. stopped) (default).

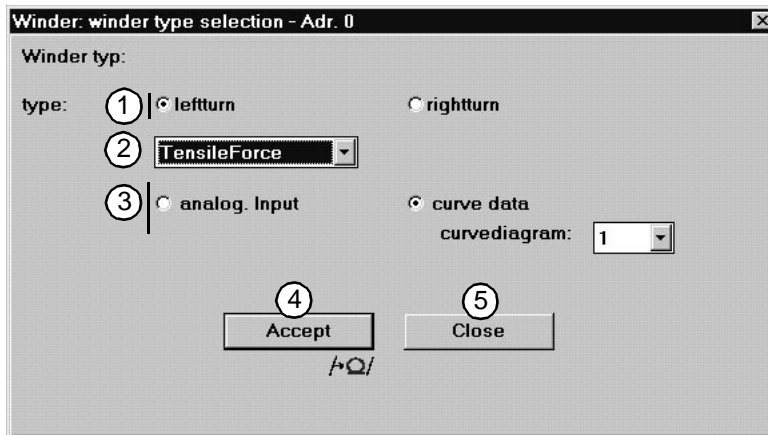
⑨ Enter the web speed resolution. The scaling of the web speed resolution depends on how the controller reads the web speed.

- Scaling of the analog input of the V-controller. The entered value corresponds to the voltage of the input for a web speed of 1 m/min.
- Scaling of the encoder input 2 used. Under **D\_Meas. Shaft** enter the diameter of the shaft on which the web is wound and on which the encoder is mounted. Under **N Meas. Shaft** and **N Encoder**, enter the speed ratio between the shaft on which the web is mounted and the detection,

if a gear is located in between. The actual speed of this gear must not exceed 199.9% of **max. speed** (P109) of the winding drive.

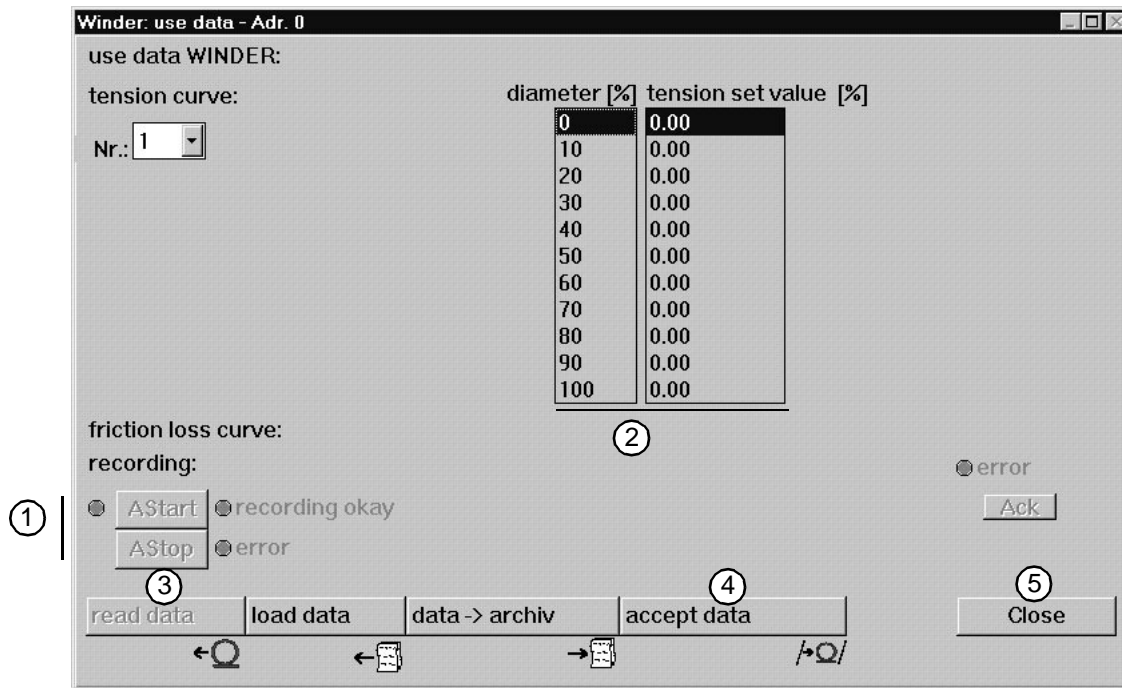
- Scaling via CANsync. Enter the web speed by specifying the number of increments for a web speed of 1 m/min. When you enter the actual position, specify the maximum change within 2 ms.
- ⑩ Having entered the parameters by **Accept data** (observe LED), load the parameters in the controller memory.
  - ⑪ Save the parameters of the controller memory to the boot data record of the controller by **Function**→**BootDR** (observe LED).
  - ⑫ Close the **Function configuration** window.

### 2.7.3 Winding mode selection



- ① Selection of the winder direction of rotation (clockwise or counterclockwise)
- ② Selection of the winding mode:
  - **Tension**  
The winder is controlled by the tension.  
For torque control, the technology module controls the tension by the calculation of the momentary diameter. When you enter a constant tension, the winding torque increases proportionally to the increase of the winding diameter.
  - **Tension**  
The winder is controlled by the torque.  
If you enter a constant torque, the tension reduces proportionally to the increase of the winding diameter.
- ③ Selection of the setpoint source:
  - Analog input  
The setpoint is read via analog input 1 of the V-controller, X26, pin 1 and 2, 0 to 10 V.
  - Curve data  
Setpoint is read from a saved curve. Select one of four possible curves under **Shape**. For the input of shapes see **User data** on page 24.
- ④ All settings in this window are saved in the controller memory. This information is saved even after a controller restart, unless another setting was selected by the input assignment of the 24V-interface or via CANsync. Depending on the winding mode, 10V correspond to the value **F\_max** (tension control) or **torque max** (torque control) entered in the function configuration.
- ⑤ Close the **Winding mode selection** window.

## 2.7.4 User data



- ① The winder technology module is equipped with a friction loss compensation. To initialise this compensation, you must determine and record the friction loss of your drive using an empty winding shaft. The shaft will rotate according to the values set in the function configuration (see also **profile of the friction loss curve** on Page 21)..



### DANGER

When you click on **RStart**, the drive immediately accelerates to its maximum speed. Before clicking on the **RStart** button, make sure that

- no persons are in the danger area!
- clockwise as well as counterclockwise rotation of the drive is possible without causing danger.

Start the recording of the friction loss curve by **RStart**. When the drive has completed the friction loss curve, stop the drive by **RStop**.

- ② Here, you edit the four tension curves. Select the number of the curve which you want to edit (when you edit the curve for the first time, zero is entered everywhere) and edit the column **Setpoint tension** according to your specifications. An input field for the new setpoint opens by a doubleclick on the corresponding row.  
In the submenu **Winding mode selection**, you can set the curve which you want to use, or you can select it via the I/Os or CANsync.
- ③ When you have already saved curves, have the data "read". Data from the controller is read and displayed.
- ④ The data is written to the controller.
- ⑤ Close the **User data** window.



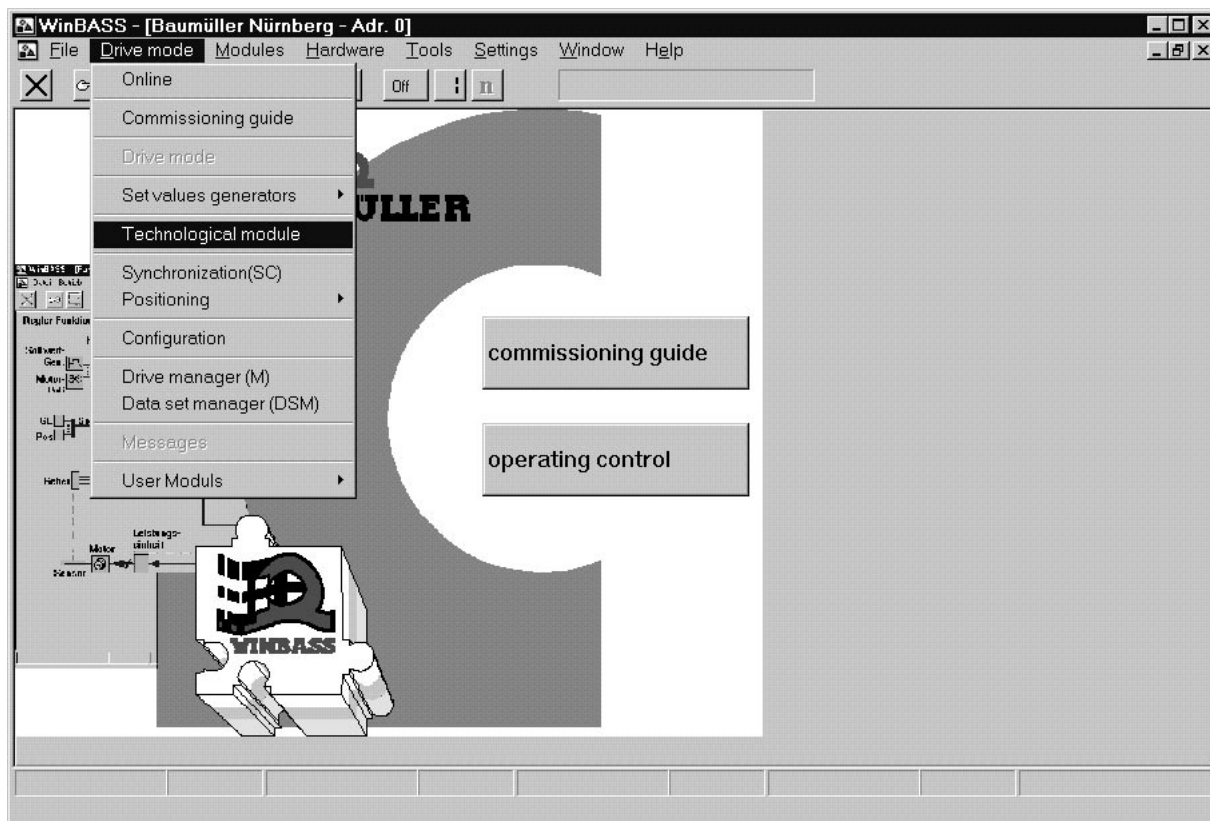
### 3 OPERATION

The drive/controller with the winder technology module can be controlled in three different ways:

- Control via digital 24-V interface (only  $\mu$ -Omega).  
The digital 24 Volt interface (I/O interface) is used to control the drive by means of digital signals.
- Control via bus system (only Omega-DriveLine).  
CANsync is available as a bus system. Using the bus system, the drive can be controlled via control word and status word.
- Control via WinBASS  
WinBASS is used for commissioning, modification and monitoring of the drive.

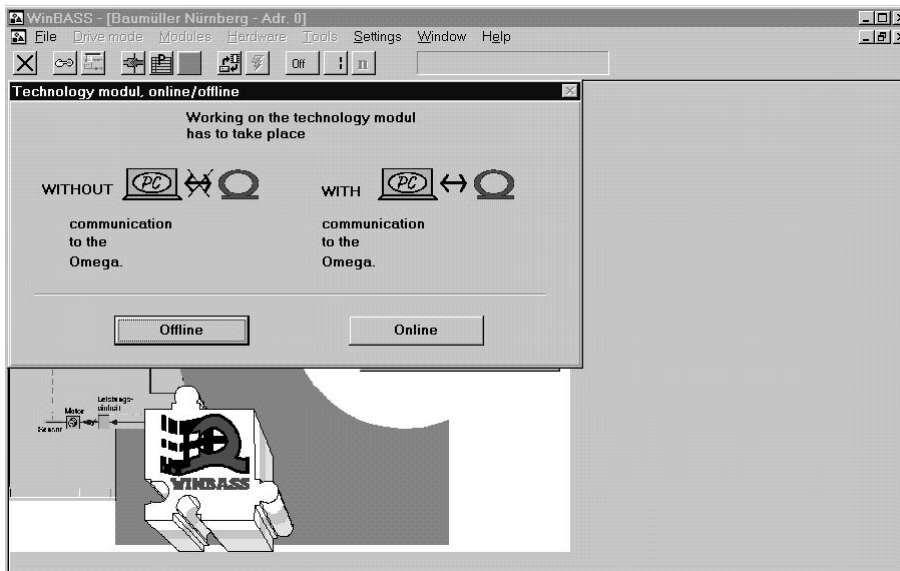
#### 3.1 Setting the operating modes

The operating mode is set under WinBASS. For this, connect the PC (COM1 ... COM4) to the controller (X23), start WinBASS and select the **Technology module** menu item under Drive mode.

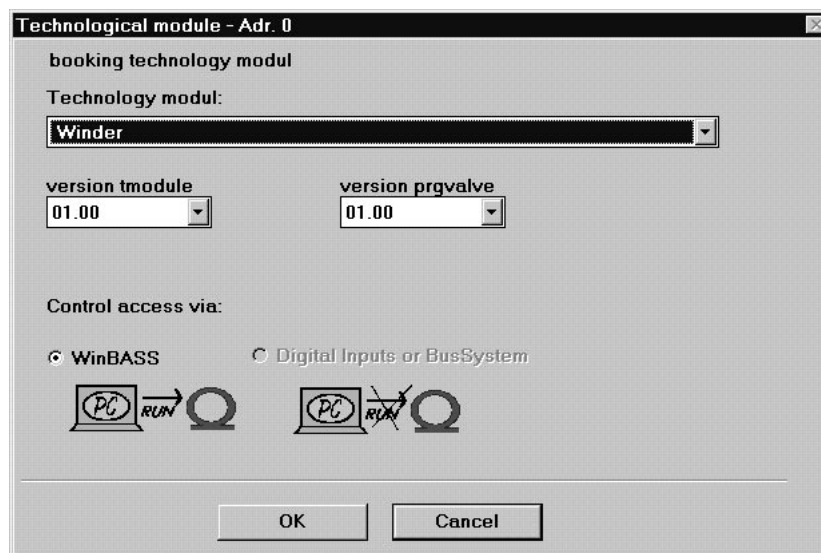


#### NOTE

When you are in the Technology module under WinBASS and then make a connection to the drive or change to another drive, quit the Technology module and select again.



Then select, whether you want to configure in the online or offline mode. In the online mode, the set data is sent directly to the controller. In the offline mode, you can edit the settings in the PC without changing anything in the controller. You cannot toggle between the online and offline mode within the technology module.



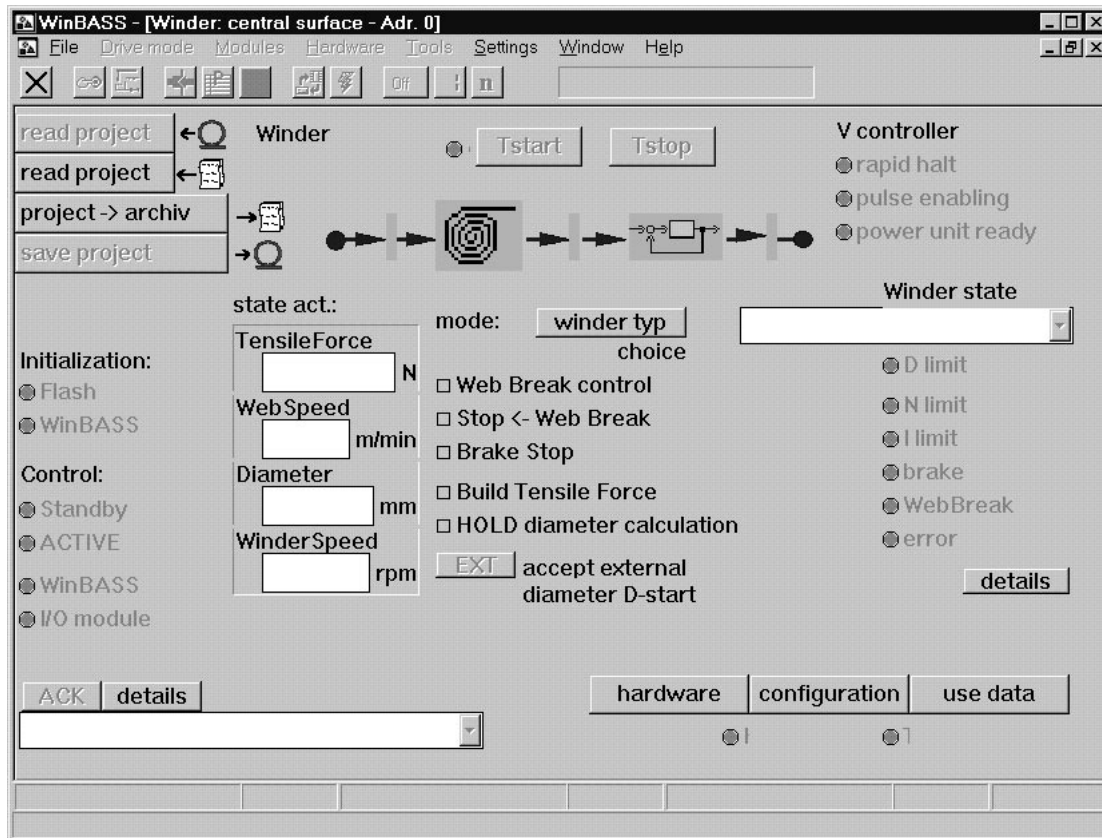
Under **Log in technology module** in the offline mode, you can select the technology module which you want to edit.

In the online mode, the technology module with the version number of the controller is selected. The control access determines the way of operating the technology module.

When you select **WinBASS**, the drive is controlled via WinBASS. You can select either drive control via **digital inputs** or **bus system**, depending on whether the controller provides digital inputs (24-Volt interface) ( $\mu$ -Omega) or the CANsync bus (Omega-DriveLine). In this case, you can watch the technology module via WinBASS.

### 3.1.1 Operation via WinBASS

After you have selected **WinBASS** under **Log in technology module** (see **Setting the operating modes** on page 25) the **central user interface** is displayed



If the communication is interrupted or WinBASS is quit, the technology module recognises a timeout. You can acknowledge this timeout via the CANSync control word or the digital I/Os.



#### NOTE

For information for the initial commissioning please refer to **Commissioning** on page 7 ff.



#### NOTE

The functions of the individual screens are described in Chapter **Windows and parameters** on page 37 ff.

## 3.1.2 Operation via 24-V interface

For the operation via the 24-V interface, the  $\mu$ - $\Omega$ mega hardware is used. The 24-V interface is connector X33 (see figure **m-Omega for control via digital interface 24V of the V-controller** on page 13).

### Digital inputs

Connection X 33, PIN no.	Input no.	Meaning
1	1	Winder Start [1] / Stop [0]
2	2	Create tension with zero web speed
3	3	Error acknowledgement [1]
4	4	Recording friction loss curve Start [1] / Stop [0]
5	-	Ground digital input 1-4, 9-12
7	5	Freeze diameter calculation [1]
8	6	Accept start diameter [1]
9	7	External web break message [1]
10	8	Clockwise [1] / Counterclockwise [0]
20	9	Winding mode selection Tension [0] / Torque [1]
21	10	Setpoint source selection for winding mode Table [0] / analog input [1]
22	11	Table number selection Table number bit 0
23	12	Table number selection Table number bit 1
25	13	Web break monitoring [1 on] / [0 off]
26	14	Break triggering [1 on] / [0 off]
27	15	reserved
28	16	reserved
29	-	Ground digital input 5-8, 13-16

#### Input no. 1: Winder start / stop

The winding drive is started when this input changes from low to high level (24 Volt). The winding drive is set to zero speed when the level changes from high to low (0 Volt).

#### Input no. 2: Create tension with zero web speed

The tension is held to the entered setpoint at zero web speed when a high level (24 Volt) is applied to this input. When a low level (0 Volt) is applied to this input, the winding tension at zero speed is controlled to **F\_stop** after the time **T\_stop** has elapsed. The values for **F\_stop** and **T\_stop** are entered in the **Function configuration** window when the drive is commissioned.

### Input no. 3: Error acknowledgement

When a high level (24 Volt) is applied to this input, all errors are acknowledged.

### Input no. 4: Recording of friction loss curve Start / Stop

When a high level (24 Volt) is applied to this input, the winding drive is started for the recording of the friction loss curve. The winding drive runs at nominal speed (100%) for the time **T\_warm**. This is reduced in steps of 10% until –100% nominal speed is reached. The individual speeds are maintained for the time **T\_paus**. Select **T\_warm** such that the drive has warmed up after this time. Select **T\_paus** such that the drive is stable (stationary) after this time. The winding drive is stopped when the level changes from high to low (0 Volt). The values for **T\_warm** and **T\_paus** are entered in the **Function configuration** window when the drive is commissioned. (see also diagram **Profile** on Page 21).



## DANGER

When you click on **Input no. 4**, the drive immediately accelerates to its maximum speed.

Before clicking on the **Input no. 4** button, make sure that

- no persons are in the danger area!
- clockwise as well as counterclockwise rotation of the drive is possible without causing danger.

### Input no. 5: Freeze diameter calculation

When a high level (24 Volt) is applied to this input, the momentary internal diameter calculation is frozen. This avoids a faulty diameter calculation when the machine is set up at very low speeds. In normal operation, activate the diameter calculation with a low level (0 Volt).

### Input no. 6: Accept start diameter

When a high level (24 Volt) is applied to this input, the momentary internal diameter calculation is used a start value **D\_Start**. The value for **D\_start** is entered in the **Function configuration** window during commissioning.

### Input no. 7: External web break message

A web break can be indicated from a higher-level control or a sensor using this input. If a high level (24 Volt) is applied to this input, the winding drive is stopped because of a probable web break.

### Input no. 8: Clockwise / Counterclockwise

When a high level (24 Volt) is applied to this input, the winding drive rotates in clockwise direction, when the low level is applied, the winder rotates in counterclockwise direction.

## Input no. 9: Winding mode selection

When a high level (24 Volt) is applied to this input, the winding drive is controlled by the torque. When a low level (0 Volt) is applied to this input, the winding drive is controlled by the tension.

## Input no. 10: Setpoint source selection for winding mode

When a high level (24 Volt) is applied to this input, the analog input 1 is selected as setpoint source for the tension/torque control. When a low level (0 Volt) is applied to this input, the values from the table which has been selected via the inputs 11 and 12 are taken as a setpoint source for the tension/torque control. These values have been entered during commissioning.

## Input no. 11 + 12: Table number selection

If you want to use these table values as setpoint source via input no. 10 **Setpoint source selection for winding mode**, the selected table number is defined by the inputs 11 and 12 as follows:

Level input 12	Level input 11	selected table
0	0	1
0	1	2
1	0	3
1	1	4

## Input no. 13: Web break monitoring

When a high level (24 Volt) is applied to this input, the internal web break monitoring of the technology module is activated. When a low level (0 Volt) is applied to this input, the web break monitoring is deactivated.

## Input no. 14: Brake triggering

The brake triggering can be activated or deactivated by a higher-level control. When a high level (24 Volt) is applied to this input, the brake triggering via the technology module is inactive, output no. 2 for the brake has always a low level (0 Volt). When a low level (0 Volt) is applied to this input, the brake is triggered by the technology module.

## Digital outputs

Connection X 33, PIN no.	Output, no.	Meaning
12	1	Diameter limit reached [1] (D_limit)
13	2	Brake triggering [0 released]
14	3	Web break [1]
15	4	Error occurred [1]
16 - 19	5 - 8	Status display

## Output no. 1: Diameter limit reached

A high level (24 Volt) is applied to this output, when the value of the internally calculated winding diameter is equal to the limits **D\_small**, **D\_large** set during commissioning. The internally calculated winding diameter is compared to **D\_large** when rewinding and to **D\_small** when unwinding.

## Output no. 2: Brake triggering

A brake can be triggering using this output. When the drive is stopped and no torque is applied (states WINDER OFF and INITIALISING), the output is set and the brake engages. In the other states, the brake is released (low level (0 Volt)). The brake triggering can be activated and deactivated via input no. 14.

## Output no. 3: Web break

This output is set to high level (24 Volt), when the internal web break monitoring has detected a web break. The monitoring can be activated/deactivated using the digital input 13. When the monitoring is activated and a web break has been detected, the winding drive is stopped automatically by the technology module.

## Output no. 4: Error occurred

When an error has occurred within the technology module, this output is set to high level (24 Volt). The error is acknowledged by input no. 3.

## Output 5-8: Status display

The status of the winder technology module is output as a binary code.

Output 8	Output 7	Output 6	Output 5	Meaning
0	0	0	0	State 0: INITIALISING
0	0	0	1	State 1: OFF
0	0	1	0	State 2: INITIALISING OF FRICTION COMPENSATION
0	0	1	1	State 3: BRAKE OFF
0	1	0	0	State 4: SPLICING
0	1	0	1	State 5: WINDING
0	1	1	0	State 6: STOP
0	1	1	1	State 7: BRAKE ON
1	0	0	0	State 8: STANDSTILL
1	0	0	1	State 9: STOP AFTER WEB BREAK
1	0	1	0	State 10: STOP AFTER WEB BREAK

## 3.1.3 Operation via CANsync

The following control and status words are available for the operation of the technology module via CANsync.

### Bit assignment control word (Parameter 1000)

Bit	Meaning
1	Winder Start [1] / Stop [0]
2	Create tension with zero web speed
3	Error acknowledgement [1]
4	Recording friction loss curve Start [1] / Stop [0]
5	Freeze diameter calculation [1]
6	Accept start diameter [1]
7	External web break message [1]
8	Clockwise [1] / Counterclockwise [0]
9	Winding mode selection Tension [0] / Torque [1]
10	Setpoint source selection for winding mode Table [0] / analog input [1]
11	Table number selection Table number bit 0
12	Table number selection Table number bit 1
13	Web break monitoring [1 on] / [0 off]
14	Break triggering [1 on] / [0 off]
15	reserved
16	reserved

#### Bit 1: Winder start / stop

When this bit changes from 0 to 1, the winding drive is started. When this bit is reset from 1 to 0, the winding drive is set to zero speed.

#### Bit 2: Create tension with zero web speed

When this bit is set to 1, the winding tension at zero web speed is held to the entered setpoint. When this bit is set to 0, the winding tension at zero speed is controlled to **F\_stop** after the time **T\_stop** has elapsed. The values for **F\_stop** and **T\_stop** are entered in the **Function configuration** window when the drive is commissioned.

#### Bit 3: Error acknowledgement

When this bit is set to 1, all errors are acknowledged.



## Bit 4: Recording of friction loss curve Start / Stop

When this bit is set to 1, the recording of the friction loss curve for the winding drive is started. The winding drive runs at nominal speed (100%) for the time **T\_warm**. This is reduced in steps of 10% until –100% nominal speed is reached. The individual speeds are maintained for the time **T\_paus**. Select **T\_warm** such that the drive has warmed up after this time. Select **T\_paus** such that the drive is stable (stationary) after this time. When this bit is set to 0, the winding drive is stopped. The values for **T\_warm** and **T\_paus** are entered in the **Function configuration** window when the drive is commissioned (see also diagram **Profile** on Page 21).



## DANGER

When you set **bit 4 to 1**, the drive immediately accelerates to its maximum speed.

Before setting **bit 4 to 1** button, make sure that

- no persons are in the danger area!
- clockwise as well as counterclockwise rotation of the drive is possible without causing danger.

## Bit 5: Freeze diameter calculation

When this bit is set to 1, the momentary internal diameter calculation is frozen. This avoids a faulty diameter calculation when the machine is set up at very low speeds. In normal operation, you can activate the diameter calculation by setting this bit to 0.

## Bit 6: Accept start diameter

When this bit is set to 1, the momentary internal diameter calculation is taken as a start value **D\_Start**. The value for **D\_start** is entered in the **Function configuration** window during commissioning.

## Bit 7: External web break message

A higher-level control can indicate a web break by this input. When this bit is set to 1, the winding drive is stopped because of a probable web break.

## Bit 8: Clockwise / Counterclockwise

When this bit is set to 1, the winding drive rotates in clockwise direction, when the bit is set to 0, the winder rotates in counterclockwise direction.

## Bit 9: Winding mode selection

When this bit is set to 1, the winding drive is controlled by the torque. When this bit is set to 0, the winding drive is controlled by the tension.

## Bit 10: Setpoint source selection for winding mode

When this bit is set to 1, the analog input 1 is selected as setpoint source for the tension/torque control. When this bit is set to 0, the values from the table which has been selected via the bits 11 and 12 are taken as a setpoint source for the tension/torque control. These values have been entered during commissioning.

## Bit 11 + 12: Table number selection

Depending on bit 10, you can determine by bit 11 (**Setpoint source selection of winding mode**) whether you want to use table values as setpoint source (which were entered during commissioning).

Select the table using bits 11 and 12.

Bit 12	Bit 11	selected table
0	0	1
0	1	2
1	0	3
1	1	4

## Bit 13: Web break monitoring

When this bit is set to 1, the internal web break monitoring of the technology module is activated. When this bit is set to 0, the web break monitoring is deactivated.

## Bit 14: Brake triggering

The brake triggering can be activated or deactivated by a higher-level control. When this bit is set to 1, the brake triggering via the technology module is inactive. The bit for the brake control is always set to 0. When bit 14 is set to 0, the bit for the brake control (output bit 4) is accepted by the technology module.

## Bit assignment status word (Parameter 1002)

Bit	Meaning
1	Current limit reached [1]
2	Speed limit reached [1]
3	Diameter limit reached [1] (D_limit)
4	Brake triggering [0 released]
5	Web break [1]
6	Error occurred [1]
7-10	Status display

### Bit 1: Current limit reached

This bit is set to 1, when the drive operates at the current limit (maximum torque).

### Bit 2: Speed limit reached

This bit is set to 1, when the drive operates at the speed limit.

### Bit 3: Diameter limit reached

This bit is set to 1, when the value of the internally calculated winding diameter is equal to the limits **D\_small**, **D\_large** set during commissioning. The internally calculated winding diameter is compared to **D\_large** when rewinding and to **D\_small** when unwinding.

### Bit 4: Brake triggering

A brake can be triggered using this bit. When the drive is stopped and no torque is applied (states WINDER OFF and INITIALISING), the bit is set and the brake engages. In the other states, this bit is set to 0. The brake triggering can be activated and deactivated via bit 14 of the control word (brake triggering).

### Bit 5: Web break

This bit is set to 1, when the internal web break monitoring has detected a web break. The monitoring can be activated/deactivated using bit 13. When the monitoring is activated and a web break has been detected, the winding drive is stopped automatically by the technology module.

### Bit 6: Error occurred

When an error has occurred within the technology module, this bit is set to 1. The error is acknowledged by input bit no. 3.

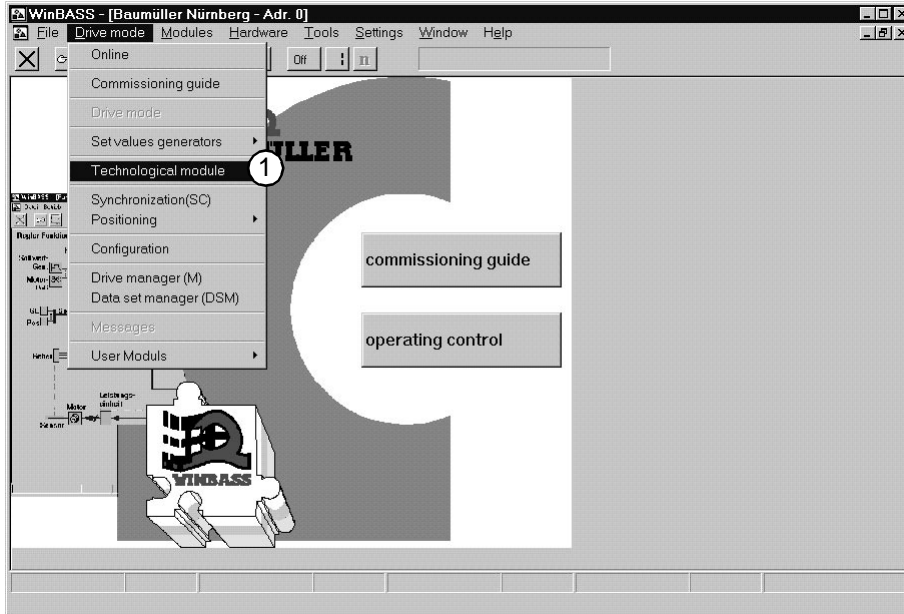
## Bit 7 -10: Status display

The status of the winder technology module is output as a binary code (see also **Sequence** on page 10).

Bit 10	Bit 9	Bit 8	Bit 7	Meaning
0	0	0	0	State 0: INITIALISING
0	0	0	1	State 1: OFF
0	0	1	0	State 2: INITIALISING OF FRICTION COMPENSATION
0	0	1	1	State 3: BRAKE OFF
0	1	0	0	State 4: SPLICING
0	1	0	1	State 5: WINDING
0	1	1	0	State 6: STOP
0	1	1	1	State 7: BRAKE ON
1	0	0	0	State 8: STANDSTILL
1	0	0	1	State 9: STOP AFTER WEB BREAK
1	0	1	0	State 10: STOP AFTER WEB BREAK

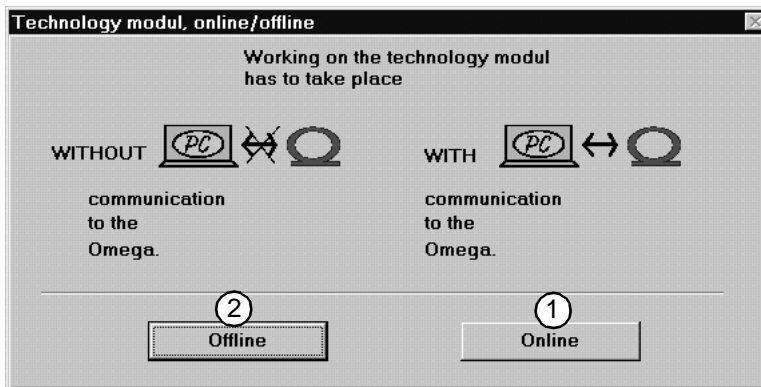
## 4 WINDOWS AND PARAMETERS

### 4.1 "WinBASS" window



① Starting the technology module

### 4.2 "Technology module, online/offline" window



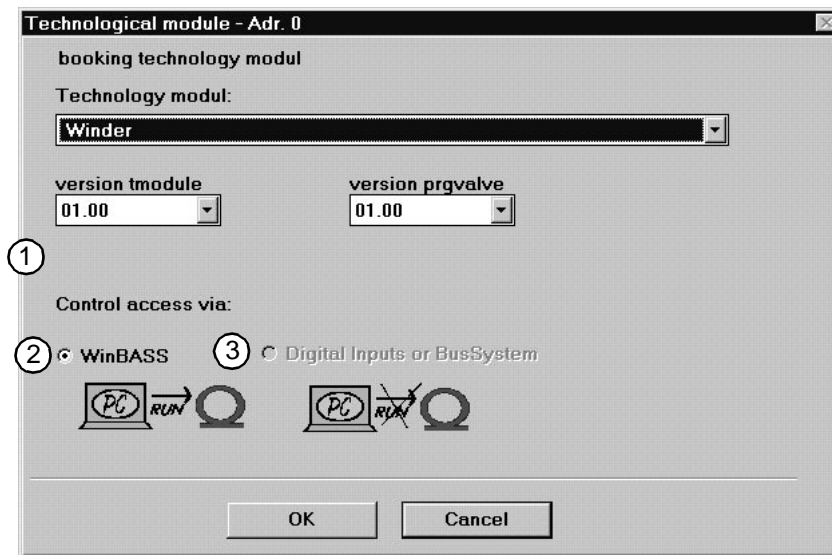
Each time the technology module is started, you are asked whether you want to work online or offline.

① **Online mode:** direct connection between PC (serial interface COM1 ... COM4) and drive (X23 connector).

② **Offline-mode:** no connection between PC and drive.

Unlike other WinBASS program parts, you cannot toggle between the modes when you work on the technology module. Quit the technology module before changing the connection to another drive. Otherwise, the program sequence of the technology module may be interfered.

### 4.2.1 "Technology module – addr. 0" window

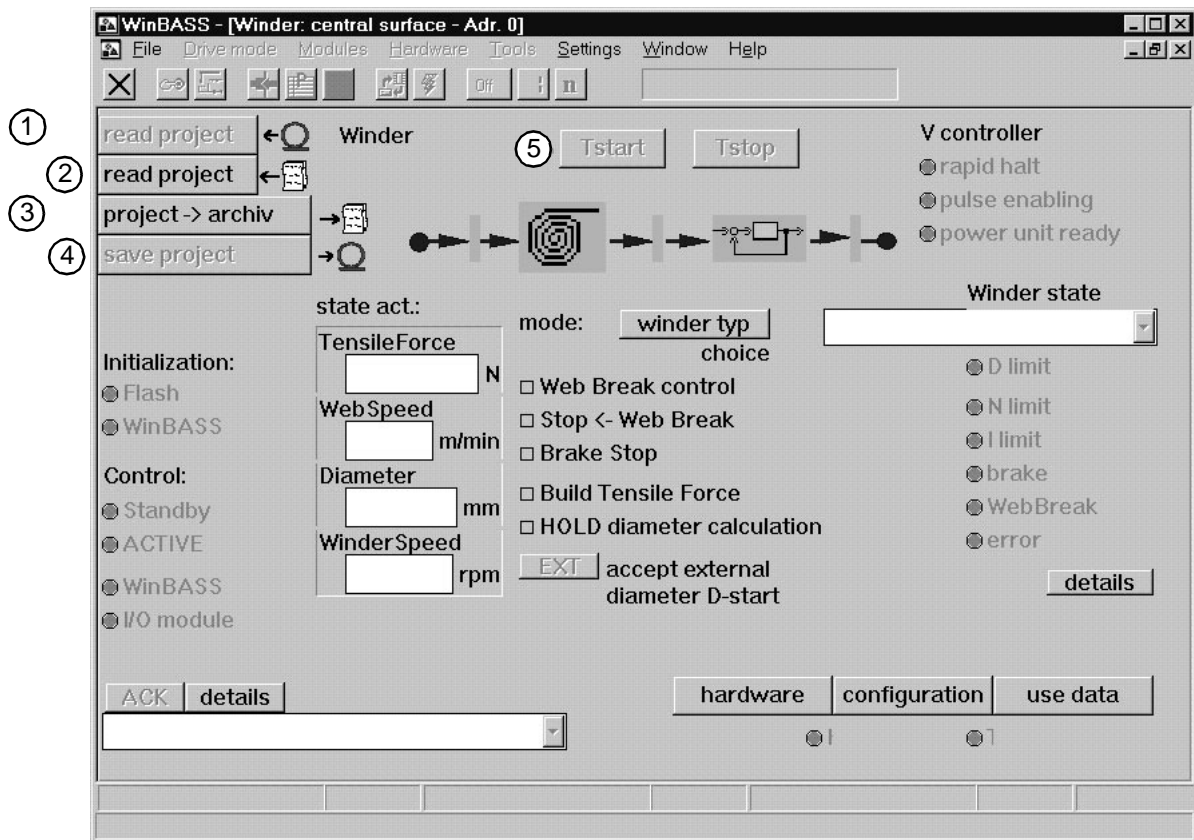


Under **Log in technology module** in the offline mode, you can select the **technology module** which you want to edit

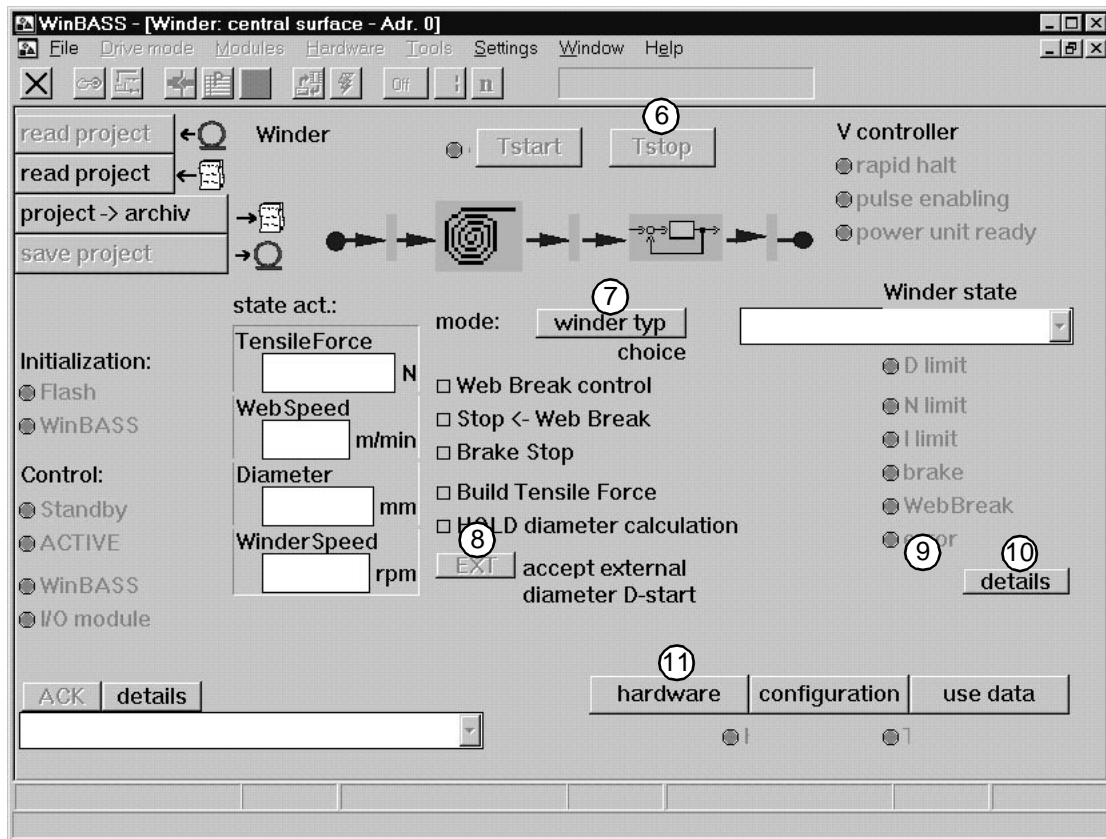
In the online mode, WinBASS requests and displays the technology module of the controller. The control access determines the way of operating the technology module.

- ① When the technology module was selected via **Read project** and **Start**, the current project data are read from the technology module after log-in (online only).
- ② The drive is controlled via WinBASS.
- ③ The drive will controlled, via digital inputs (24-Volt interface) [ $\mu$ - $\Omega$ mega] or CANsync bus [ $\Omega$ mega-DriveLine], depending on the controller hardware. In this case, you can watch the technology module via WinBASS.

## 4.2.2 "Central user interface" window

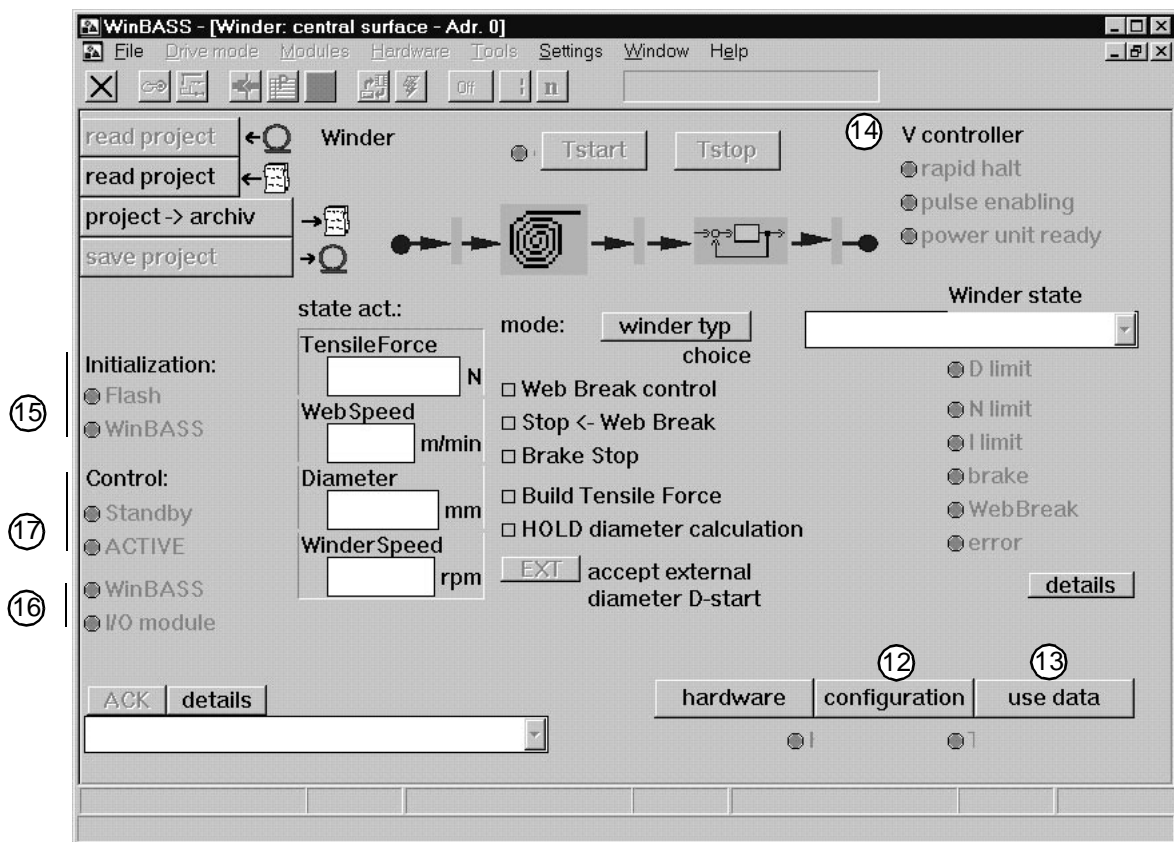


- ① The current settings of the technology modules are read and the WinBASS display is updated. The configuration data, the hardware data and the winding mode settings are updated. The table values of the individual tables in the **User data** menu option are not updated. If necessary, update these values separately under **User data Read data**. It is always recommended to update the WinBASS display to the data set in the controller using **Read project** in the technology module as a first step.
- ② A technology module setting saved on a data carrier of the PC is loaded. The **Load technology project** window follows.
- ③ The current settings of the technology module are saved on a data carrier of the PC. The **Save technology project** window follows.
- ④ The current technology module setting which is displayed in WinBASS is saved in the drive. Click on the **Hardware**, **Konfiguration** and **User data** to accept the data in the boot data record of the controller.
- ⑤ The winding drive is started and rotates according to the settings, provided that the power stage is ready, the pulse enable at the X26 connection of the controller is activated and the quick stop is deactivated.

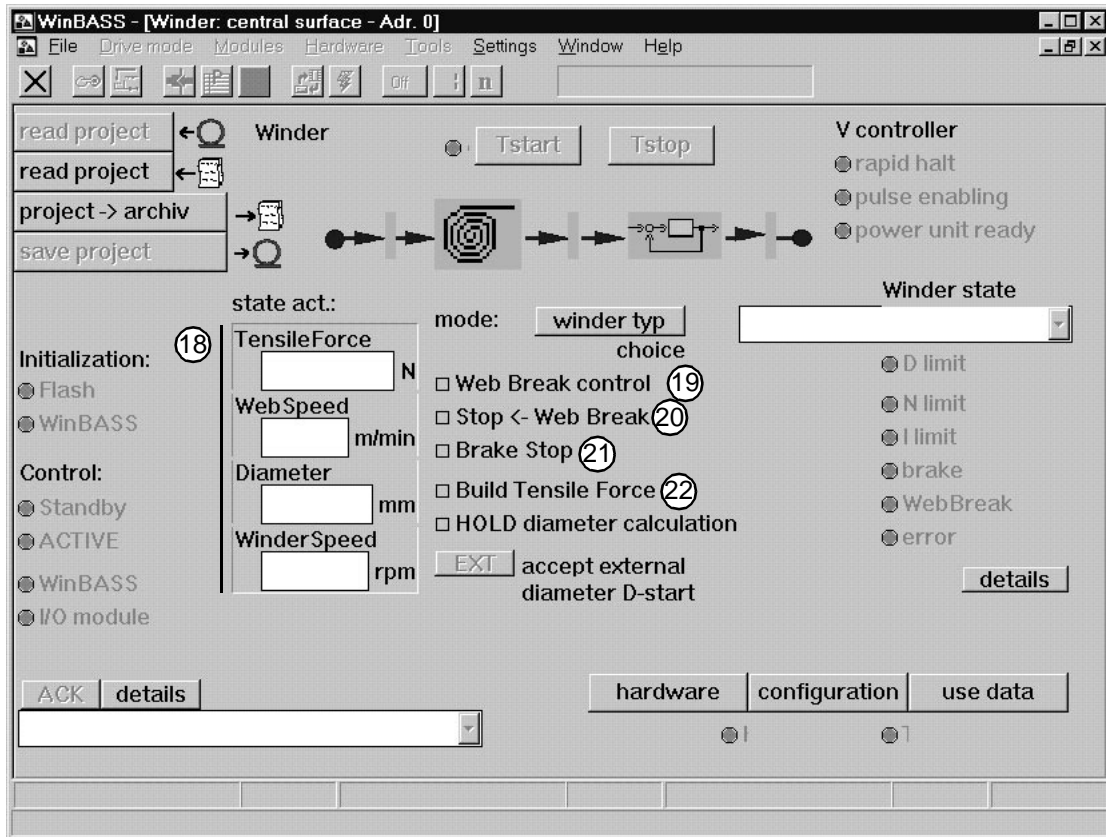


- ⑥ The winding drive is stopped. When the winding speed is zero, the brake is activated and the drive has no torque, as configured in the settings.
- ⑦ The direction of rotation, the control mode, the tension or torque control and the setpoint source (either the saved table with fixed setpoint input depending on the winding diameter or analog input) are determined here. The **Winding mode selection** window follows.
- ⑧ When you click on this button, the **D\_Start** value specified in the configuration is set as a start value for the internal calculation of the reel diameter. Example: **D\_Start** corresponds to the value of an empty reel. When a full reel is replaced by an empty one, the internal calculation of the reel diameter is set to the correct start value.
- ⑨ The technology module is reset after the fault has been eliminated.
- ⑩ A list of all possible interferences is displayed. The momentary interference is marked.
- ⑪ The setting of the hardware used ( $\Omega$ mega-DriveLine,  $\mu$ - $\Omega$ mega) and the source of the web speed input can be read, checked, accepted, written to the boot data record and edited. The **Hardware configuration** window follows.

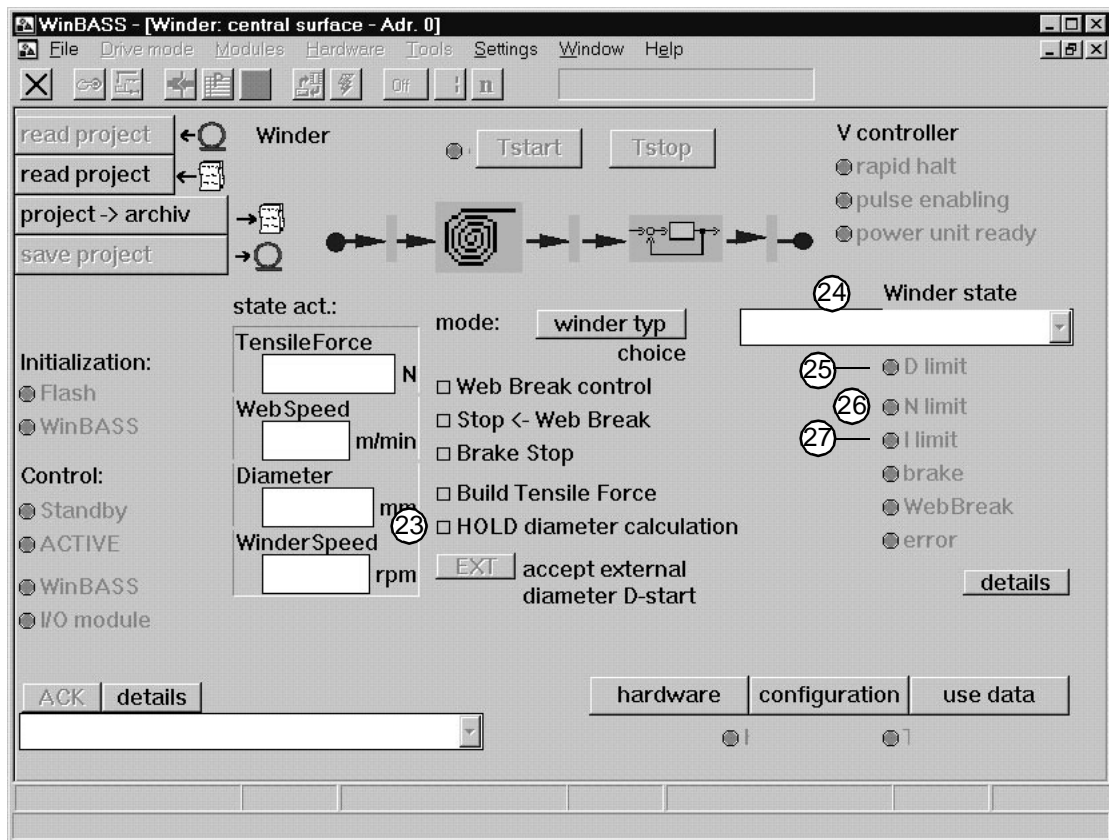




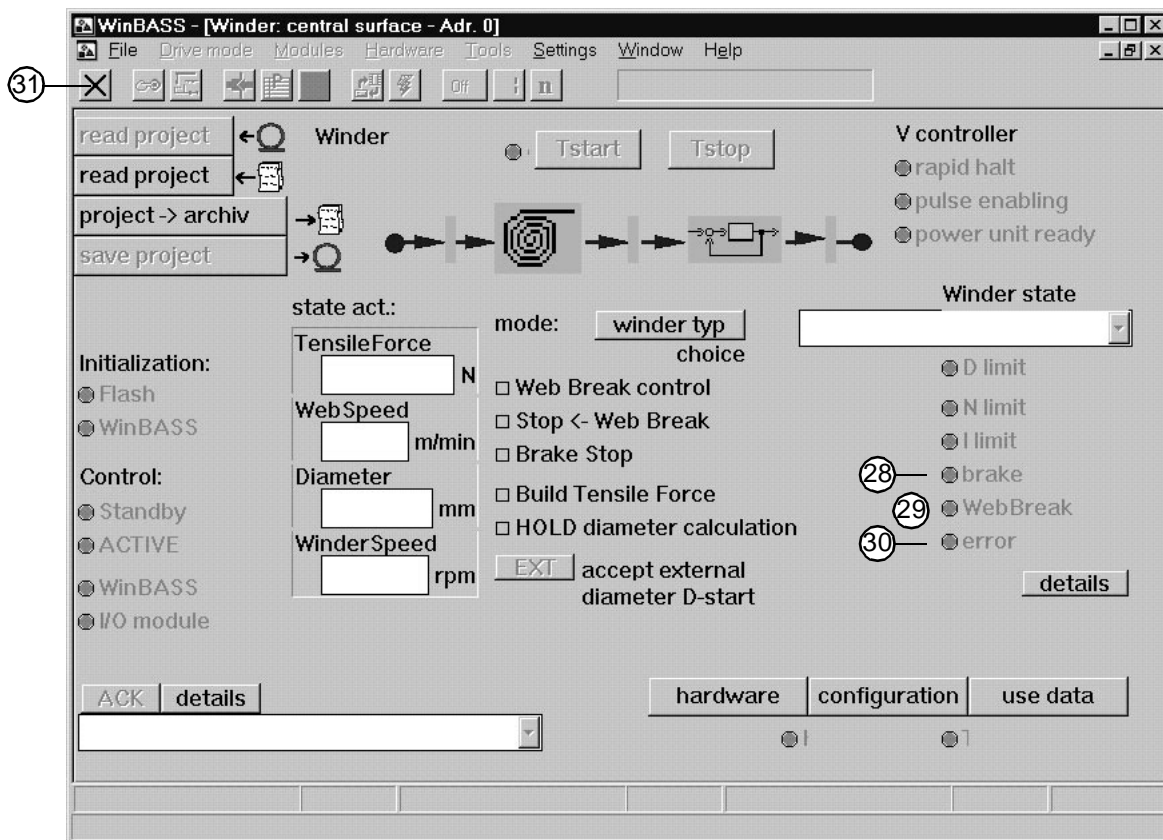
- ⑫ The setting: Unwinder or rewinder, drive-specific data and web speed source are entered here. The **Function configuration** window follows.
- ⑬ The recording of the friction loss curve and the table input for the setpoint provision depending on the diameter are set here. The **User data** window follows.
- ⑭ The status of the V-controller is displayed. The LED indicates the activity of the state. For the functionality and the connection of the quick stop and pulse enable inputs refer to the Technical Description of the V-controller.
- ⑮ When the Flash LED is "illuminated", no controller settings were changed when the technology module was edited via the user interface. When the WinBASS LED is "illuminated", the previous controller setting was changed via WinBASS when the technology module was edited.
- ⑯ The WinBASS LED indicates that the drive is controlled by WinBASS. If **I/O module** is "illuminated" the technology module is controlled via the 24-Volt interface or the CANsync bus, depending on the hardware and setting.
- ⑰ The momentary state of the technology module is displayed. **ACTIVE** shows that the drive is enabled and operates according to the technology module settings.



- ⑱ The following values are displayed:  
 The current status values of the tension (when the drive is controlled by the torque, the tension is calculated using the momentary diameter)  
 The web speed read  
 The current value of the internally calculated diameter  
 The currently calculated winder speed (not motor speed), considering the gear.
- ⑲ Clicking here activates the internal web break monitoring. The technology module calculates the required winding drive speed from the web speed and the internally calculated winder diameter. The leading which increases the calculated required speed setpoint ensures that the torque control always uses the internally calculated and set torque limit, depending on the process. The drive thus never reaches its speed setpoint increased by the leading. Should the missing counter-torque of the web tension cause the actual speed of the winding drive to reach the speed setpoint increased by the leading, the web break is recognised and the error **Web break** is set.
- ⑳ When you click on this item, the winder is immediately stopped. This corresponds to the external message of a web break.
- ㉑ When you click on this item, the internal brake triggering of the technology module is switched off.
- ㉒ When this mark is set, the drive controls to the set tension when the web speed is zero. When this mark is not set, the web tension is reduced to the tension **F\_stop** which was set in the configuration data when the web speed is zero and the configurable time **T\_stop** has elapsed.

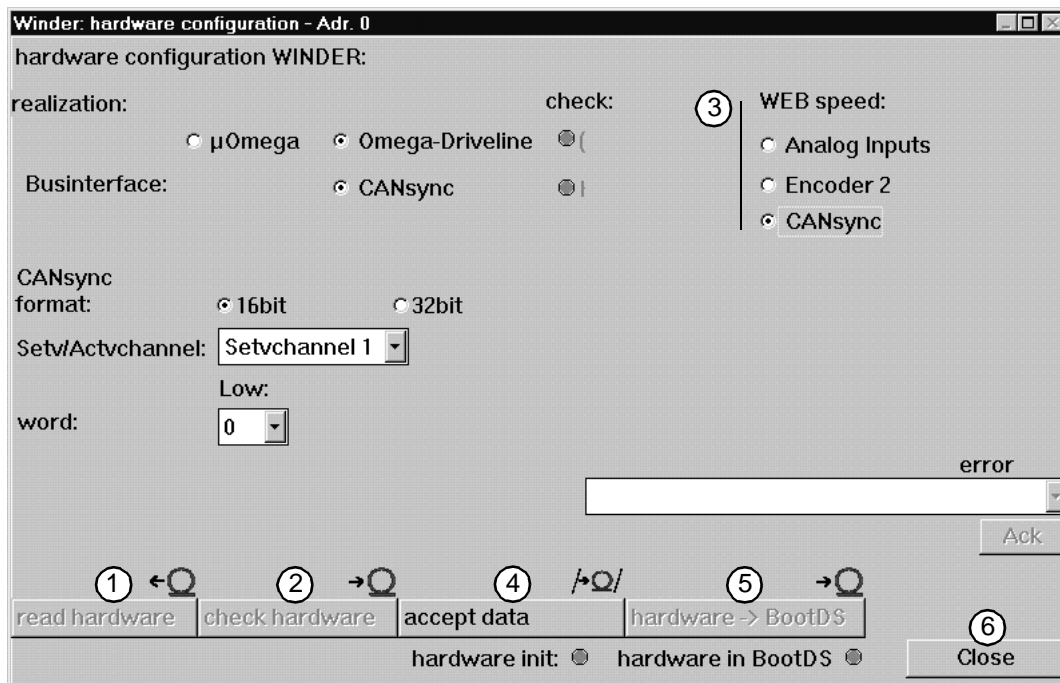


- ②③ When this mark is set, the current internal diameter calculation is frozen. This avoids a faulty diameter calculation when the machine is set up at very low speeds. The diameter calculation is activated in normal operation.
- ②④ The winder state is displayed here (see also diagram **Sequence** on Page 10).
- ②⑤ This item displays that the drive has reached the diameter limit. The digital output ( $\mu$ -Omega) or the corresponding bit in the status word (Omega-DriveLine) is set according to the hardware. This display is activated, when the value of the internally calculated winding diameter is equal to the limits **D\_small**, **D\_large** set during commissioning. The internally calculated winding diameter is compared to **D\_large** when rewinding and to **D\_small** when unwinding.
- ②⑥ This item displays that the drive has reached the speed limit. The relevant bit in the status word (Omega-DriveLine) is set.
- ②⑦ This item displays that the drive has reached the maximum configurable current limit (torque limit). The relevant bit in the status word (Omega-DriveLine) is set.



- ②8 The LED displays the state of the brake triggering. The LED is "illuminated" when the drive is at standstill and free of torque (status WINDER OFF and INITIALISING). The digital output ( $\mu\Omega$ mega) or the corresponding bit in the status word ( $\Omega$ mega-DriveLine) is set according to the hardware.
- ②9 The LED displays whether a web break was detected. When the LED is "illuminated", a web break was detected. The digital output ( $\mu\Omega$ mega) or the corresponding bit in the status word ( $\Omega$ mega-DriveLine) is set according to the hardware.
- ③0 When a fault has occurred in the technology module, this LED is "illuminated". The relevant digital output ( $\mu\Omega$ mega) or the relevant bit in the status word ( $\Omega$ mega-DriveLine) is set depending on the hardware.
- ③1 Close the window. The technology module must always be quit clicking on **X**. When the technology module is quit under WinBASS, the control is changed automatically to control via the digital 24-V interface, depending on the hardware ( $\mu\Omega$ mega) oder CANSync-Bus ( $\Omega$ mega-DriveLine).

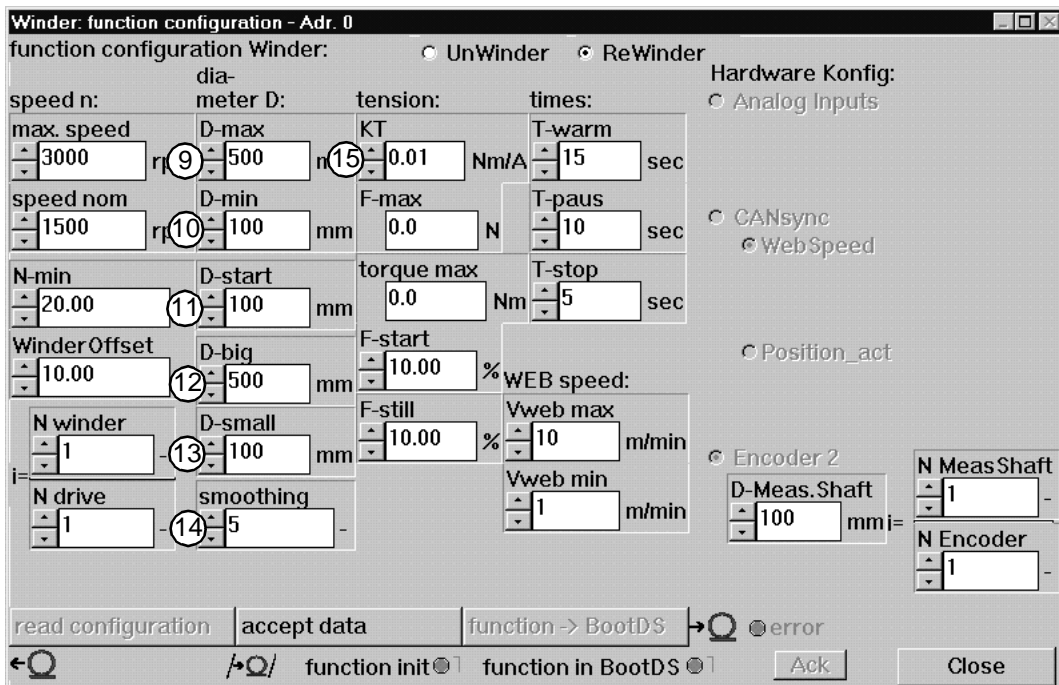
## 4.2.3 "Hardware configuration" window



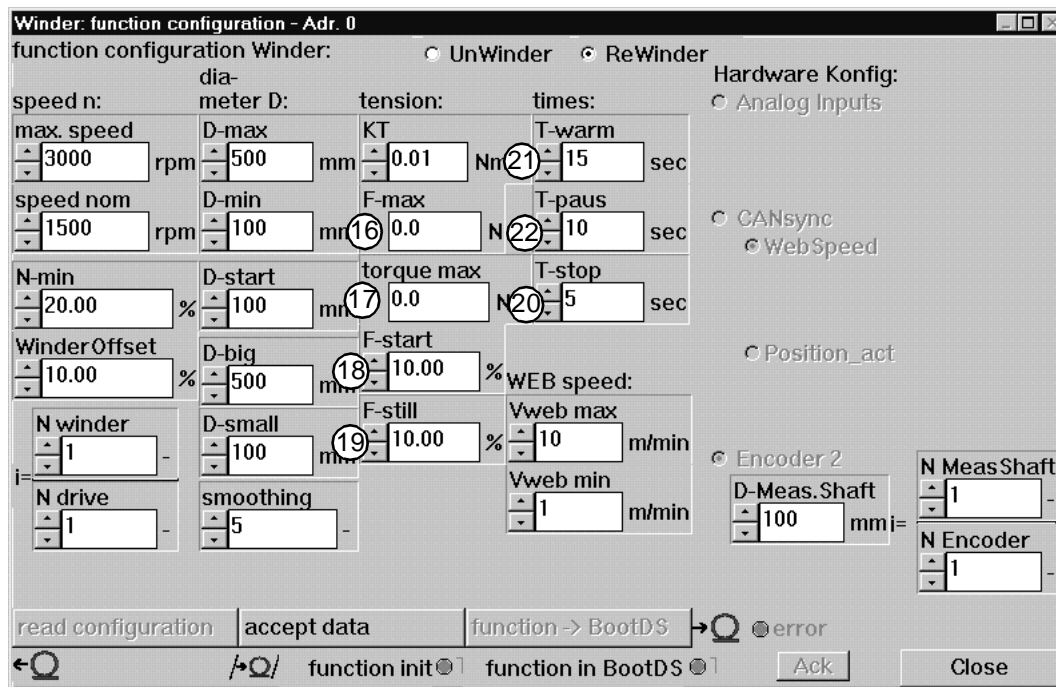
- ① The hardware configuration is read from the controller.
- ② Check the hardware to ensure that you components match (particularly when the hardware was configured offline). Should any errors occur, the hardware configuration must be modified.
- ③ Enter in which input of the V-controller you provide the signal for the measured web speed. Select one of the following options:
  - Analog input 2 of the V-controller, X26 pin 3 and 4, 0...10V, e.g. the evaluation of a measuring sensor. The resolution of the input is set under **function configuration** (see "**Function configuration**" window on page 46).
  - Encoder input 2 of the V-controller, X25, e.g. actual speed of a connected motor, encoder or the incremental encoder simulation of the V-controller. The encoder module of encoder input 2 must be selected according to the encoder type used. The resolution of the input is set under **function configuration** (see "**Function configuration**" window on page 46).
  - CANsync fieldbus, the CANsync format must be set according to the CANsync master setting.
- ④ Click on this button only if the hardware check has been completed without error messages! Your settings are saved in the controller memory. The **Hardware Init** LED is "illuminated". CAUTION: If the voltage is switched off, this data is deleted!
- ⑤ Here you save the data which you have entered from the controller to the RAM. If the data is saved, the **Hardware in BootDR** LED is illuminated. The data is now saved non-volatile.
- ⑥ The **Hardware configuration** window is closed.

### 4.2.4 "Function configuration" window

- ① The configuration saved in the controller is read from the drive. The display under WinBASS is updated.
- ② Specify here whether the winder is to operate independently of the direction of rotation as rewinder or unwinder.
- ③ The motor-specific parameters **max speed** of the drive which has been found during commissioning, is displayed.
- ④ The motor-specific parameters **speed nom** of the drive which has been found during commissioning, is displayed.
- ⑤ The calculation of the diameter in the technology module is set below this motor speed. This avoids faulty diameter calculations within small speeds and during set-up. The approximate value is 10%.
- ⑥ The leading ensures that the torque control always uses the set torque limit. It refers to the value set under ③.  
For rewinding, the setpoint speed results from the web speed and the current diameter. The leading is added to this setpoint speed and this new setpoint speed is transmitted to the technology module. For unwinding, the leading is output as a setpoint speed opposed to the web direction of rotation. For the setting of the leading observe that the winder can achieve this speed value in the **splicing** state. If the web break monitoring is inactive, the reel accelerates to its setpoint speed which results from the leading in the event of a web break.
- ⑦ When a gear is used, the gear factor is calculated. Enter the integer number of motor revolutions, which the motor achieves for the winder revolutions set under **N winder**.
- ⑧ When a gear is used, the gear factor is calculated. Enter the integer number of winder revolutions, which the winder achieves for the motor revolutions set under **N drive**.

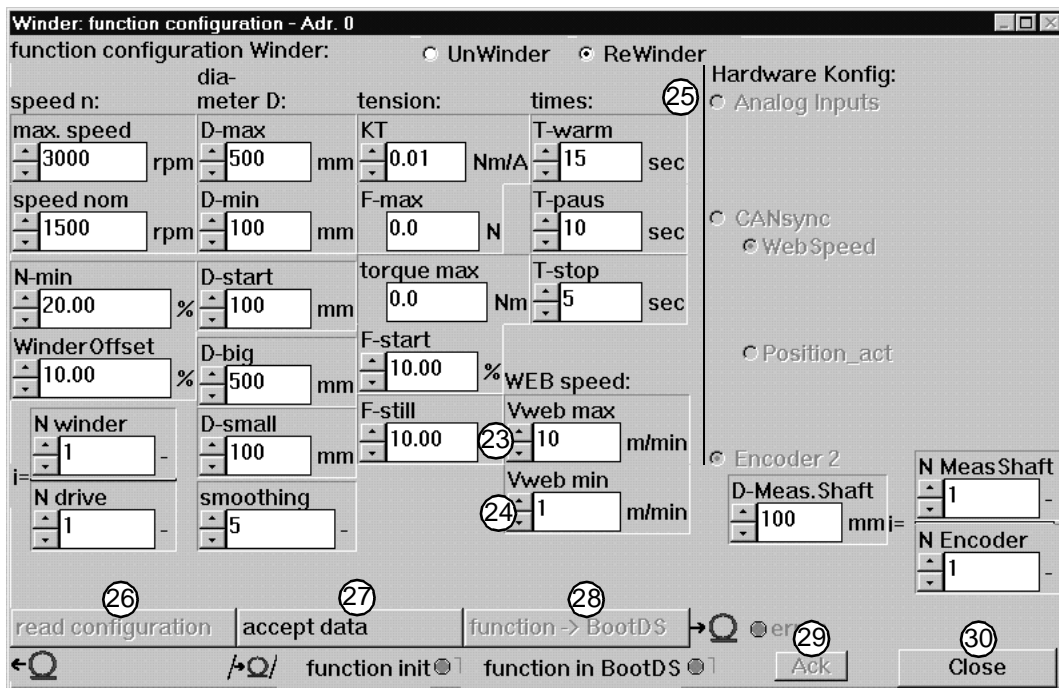


- ⑨ Maximum reel diameter. This value is used for the internal scaling of the diameter calculation and not for monitoring functions.
- ⑩ Minimum reel diameter This value is used for the internal scaling of the diameter calculation and not for monitoring functions.
- ⑪ This reel diameter is used as a start value for the internal calculation of the reel diameter. Example: When a full reel is replaced by an empty one, the internal diameter calculation is adapted to the machine situation by accepting the value as a start value via WinBASS, 24-V interface or CANsync bus. For unwinding, **D\_Start** is normally **D\_max** and for rewinding **D\_Start** = **D\_min**.
- ⑫ When this value is exceeded by the calculated reel diameter, the relevant digital output ( $\mu\Omega$ mega) or the relevant bit in the status word ( $\Omega$ mega-DriveLine) is set depending on the hardware.
- ⑬ When this value is less than the calculated reel diameter, the relevant digital output ( $\mu\Omega$ mega) or the relevant bit in the status word ( $\Omega$ mega-DriveLine) is set depending on the hardware.
- ⑭ Smoothing of the input values web speed and winding shaft speed by continuous averaging of  $2^x$  values, default 5.
- ⑮ The motor-dependent KT value for the winding drive in Nm/A must be entered here. The value is calculated from the nameplate data  $M_0$  and  $I_0$  to  $KT = M_0/I_0$ . It can also be obtained from the motor data sheet.



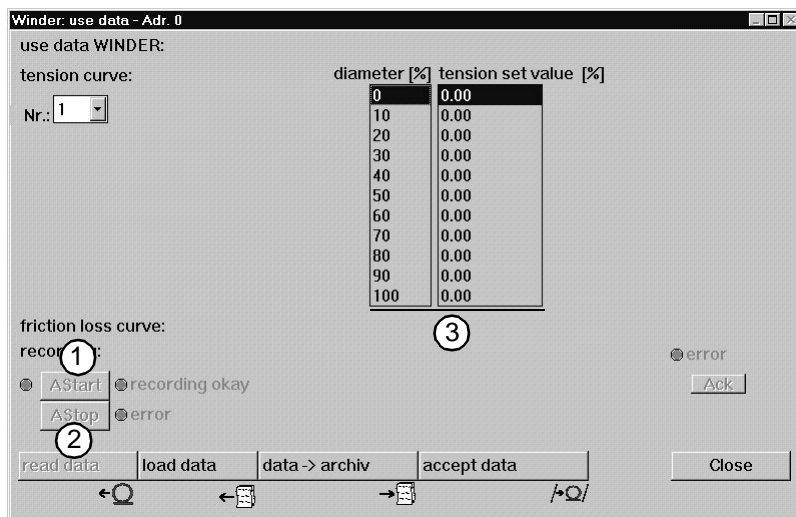
- ⑩⑥ The maximum possible tension is displayed here. It results from the diameter, gear and motor data entered.
- ⑩⑦ The maximum torque is displayed. It results from the diameter, gear and motor data entered.
- ⑩⑧ The web tension is controlled to this value during SPLICING. The value is in % of **F\_max**.
- ⑩⑨ When the web stops (web speed = 0), the web is tensioned to this value after the time **T\_stop** has elapsed. The value is in % of **F\_set**.
- ⑩⑩ Time after which the web tension is reduced to **F\_stop** after a web stop has been detected.
- ⑩⑪ This value determines how long the drive warms up before the friction loss curve is recorded. Select this time such that a warm operating state can be assumed. The speed is then reduced in steps of 10% until -100% nominal speed is reached. The individual speeds are maintained for the time **T\_paus**. (see also diagram **Profile** on Page 21).
- ⑩⑫ This value determines how long the drive maintains the individual speeds after the warm-up time **T\_heat** for the recording of the friction loss curve. At the end of this time the speed parameters which are relevant for this friction loss curve, are measured. Select this time such that the drive has reached the stationary state after this time has elapsed.





- ②③ This value is used for internal scaling. The set value corresponds to 100% web speed.
- ②④ When this value for the minimum web speed is reached, the reel diameter calculation is frozen. This avoids faulty diameter calculations for small web speeds and during set-up. The approximate value is 10% of the value **Vweb\_max**.
- ②⑤ The web speed can be read from three possible sources. The source is selected in the **Hardware configuration** window.
  - **Analog input 1.** Enter the scaling of the analog input of the V-controller. The entered value corresponds to the voltage of the input for a web speed of 1 m/min.
  - **Encoder input 2.** Enter the scaling of encoder input 2. Under **D MeasShaft** enter the diameter of the web shaft on which the encoder is mounted. Under **N Meas.Shaft** and **N Encoder**, enter the speed ratio between the shaft on which the web is mounted and the detection, if a gear is located in between.
  - **CANsync bus.** Enter the scaling via CANsync. Enter the web speed by specifying the number of increments for a web speed of 1 m/min. When you enter the actual position, specify the maximum change within 2 ms.
- ②⑥ The WinBASS display is updated with the settings saved in the controller.
- ②⑦ The data is written to the controller RAM.  
CAUTION: If the voltage is switched off, this data is deleted!
- ②⑧ Here you save the data in the RAM. The data is now saved non-volatile.
- ②⑨ Should an error occur while the **Function configuration** window is entered, it can be cleared using **Ack**.
- ③⑩ The **Function configuration** window is closed.

## 4.2.5 "User data – addr. 0" window

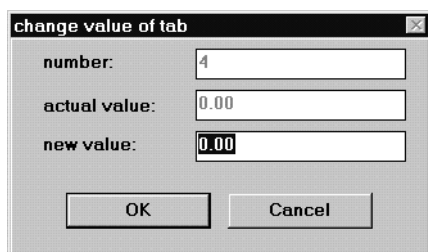


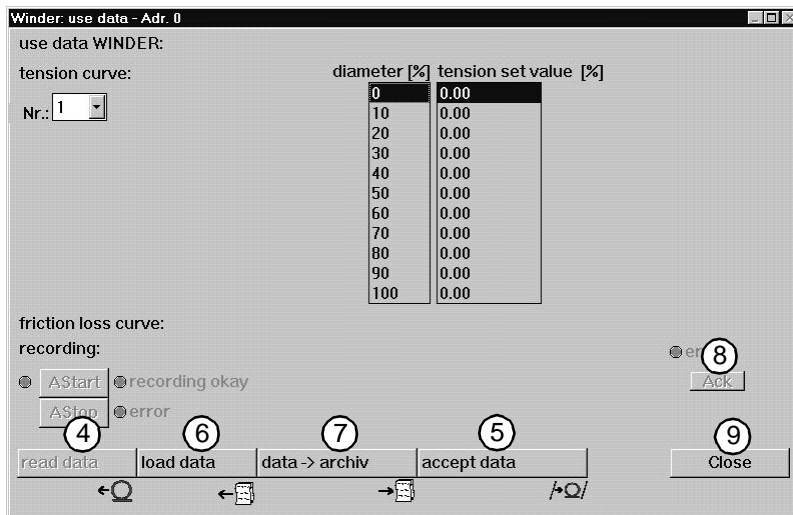
### DANGER

When you click on **RStart**, the drive immediately accelerates to its maximum speed. Before clicking on the **RStart** button, make sure that

- no persons are in the danger area!
- clockwise as well as counterclockwise rotation of the drive is possible without causing danger.

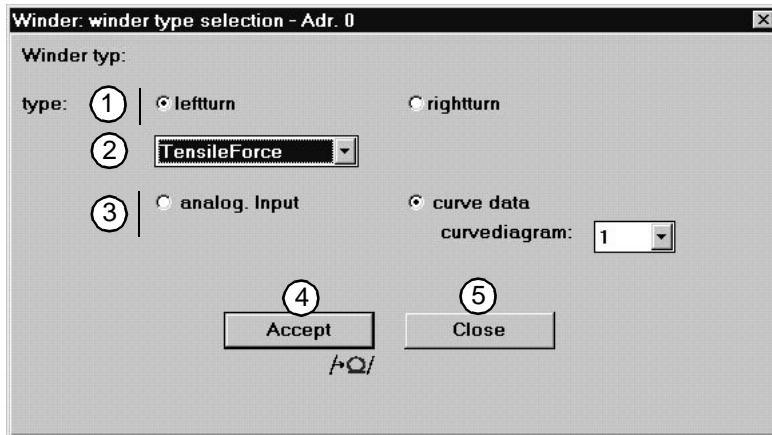
- ① The friction loss curve of the winding drive is recorded during commissioning. This recording is started using **Rstart**. The winding drive must be without load (empty reel, no web tension) for this. Make sure that the drive can rotate freely in both directions. The winding drive runs according to the values set in the configuration (see also diagram **Profile** on Page 21).
- ② The recording of the friction loss curve is stopped and completed by clicking on **RStop**. The winder is then in the OFF state.
- ③ Assign a reel diameter (in % of **D\_max**) a setpoint for the control in the table. If you have selected the tension or torque curves from curve data in the **Winder mode selection** submenu, the setpoints are set according to the currently calculated reel diameter to the specified setpoint. The specification in % refers to **F\_max** (see configuration data). Open the **Change table value** window opens by a doubleclick and enter the new value. You can assign setpoints to the 11 fixed diameter values (0%, 10%, ..., 100%).





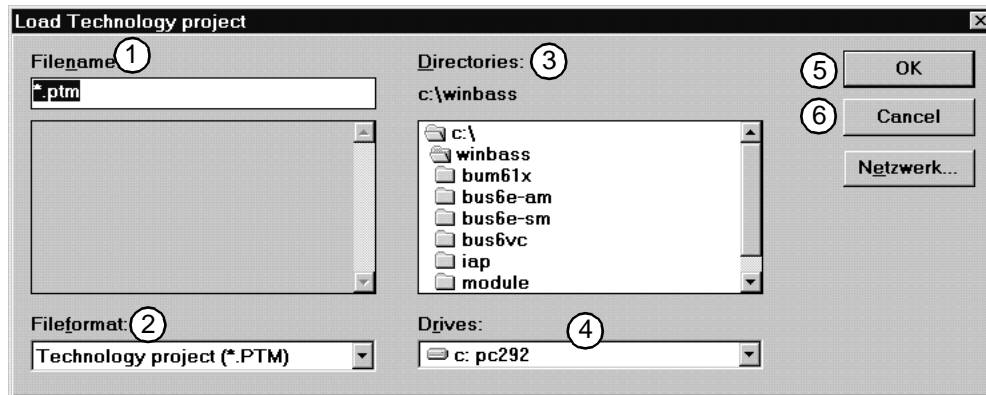
- ④ The curves saved in the controller are read and the WinBASS display is updated. They can then be edited.
- ⑤ The table values displayed in WinBASS are written to the controller memory. This data is saved non-volatile.
- ⑥ A table configuration for table number 1-4 saved in a memory of the PC is loaded. The **Load technology table** window follows.
- ⑦ The current setting of the table values for table numbers 1-4 is saved on a PC data carrier. The **Save technology table** window follows.
- ⑧ Should an error occur while the **Function configuration** window is entered, it can be cleared using **Ack**.
- ⑨ The **User data** window is closed.

### 4.2.6 "Winder mode selection – addr. 0" window



- ① Selection of the winder direction of rotation
- ② Selection of the winding mode  
**Tension** The winder is controlled by the tension.  
For tension control, the technology module controls the torque by the calculation of the momentary diameter. When you enter a constant tension, the winding torque increases proportionally to the increase of the winding diameter.  
**Torque** The winder is controlled by the torque.  
In case of torque control, the technology modules controls the motor torque. If you enter a constant winding torque, the tension reduces proportionally to the increase of the winding diameter.
- ③ Selection of the setpoint source  
**analog input** The setpoint for the torque or tension control (depending on the winding mode) is read via analog input 1 of the V-controller, X26 pin 1 and 2, 0 ... 10V.  
**Curve data** The setpoint for the torque or tension control (depending on selected winding mode) is called via one of four curves saved.  
Select the valid curve under **Curve shape**.
- ④ All settings in this window are saved in the controller memory by clicking on **Accept**. This information is saved even after a controller restart, unless another setting was selected by the input assignment of the 24V-interface or via CANsync.
- ⑤ The window is closed.

## 4.2.7 "Load technology project" window



- ① Enter the file name of the project to be loaded here.
- ② The file format for a technology project is PTM.
- ③ Set the directory from which you want to load the technology project.
- ④ Set the disk drive from which you want to load the technology project.
- ⑤ The technology project is loaded according to the settings.
- ⑥ The window is quit without action.

### 4.2.8 "Save technology project" window



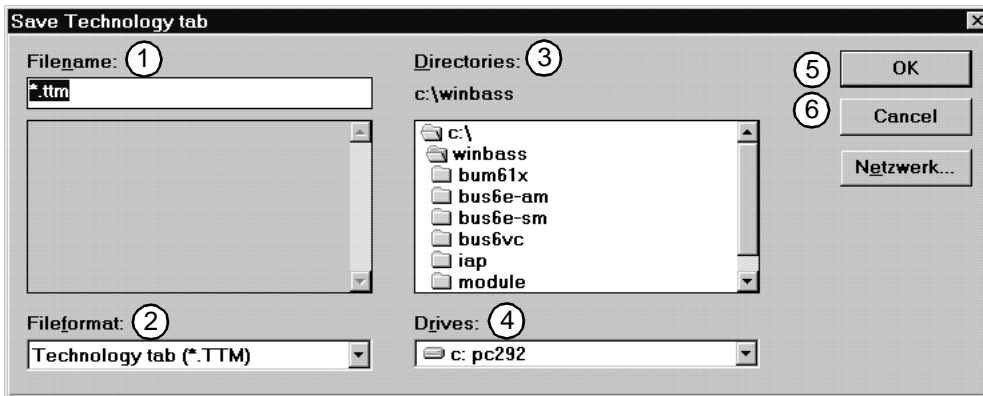
- ① Enter the file name of the project to be saved here.
- ② The file format for a technology project is PTM.
- ③ Set the directory in which you want to save the technology project.
- ④ Set the disk drive in which you want to save the technology project.
- ⑤ The technology project is saved according to the settings.
- ⑥ The window is quit without action.

## 4.2.9 "Load technology table" window



- ① Enter the file name of the technology table to be loaded here.
- ② The file format for a technology table is TTM.
- ③ Set the directory from which you want to load the technology table.
- ④ Set the disk drive from which you want to load the technology table.
- ⑤ The technology table is loaded according to the settings.
- ⑥ The window is quit without action.

### 4.2.10 "Save technology table" window

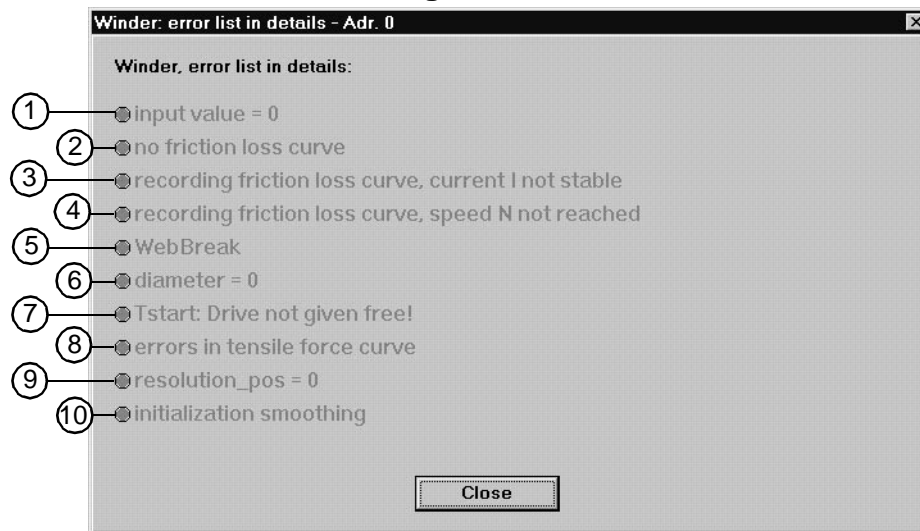


- ① Enter the file name of the technology table to be saved here.
- ② The file format for a technology table is TTM.
- ③ Set the directory in which you want to save the technology table.
- ④ Set the disk drive in which you want to save the technology table.
- ⑤ The technology table is saved according to the settings.
- ⑥ The window is quit without action.



## 5 TROUBLESHOOTING

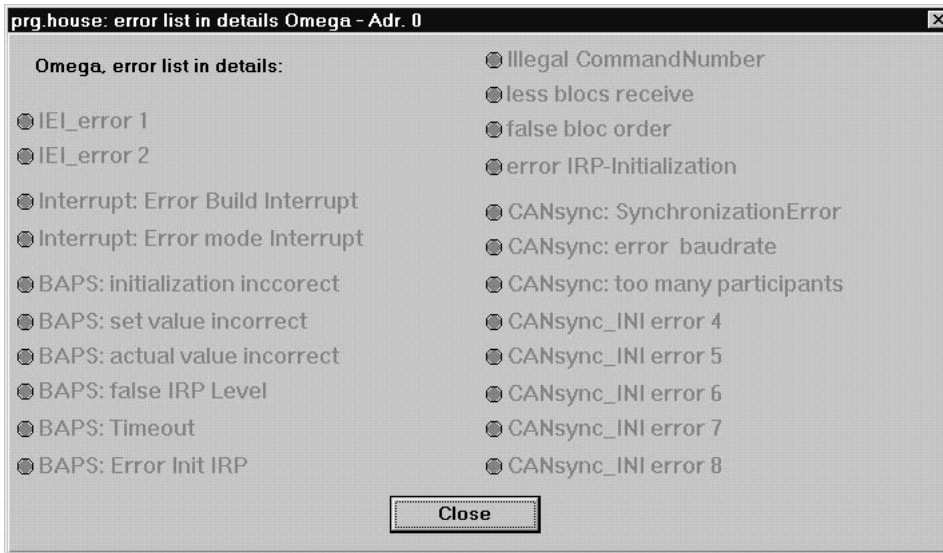
### 5.0.1 "Error detail list Omega – addr. 0" window



The technology module generates these error messages if the conditions for the technology module or the **Winding process** are not fulfilled.

- ① One or more configuration data are out of the valid range.  
Remedy: Read the configuration data in the **Configuration** window from the drive and change them. The valid range is displayed by a doubleclick on the input template of the value.
- ② No friction loss curve for the winding drive available  
Remedy: Record the friction loss curve subsequently, see **User data** on page 24.
- ③ The friction loss curve could not be recorded because the current was unstable during the recording.  
Remedy: Check whether the drive can only be operated with an empty reel in idle running. Increase the time **T\_paus**.
- ④ The friction loss curve could not be recorded because the maximum speed was not achieved.  
Remedy: Check whether the drive can only be operated with an empty reel in idle running. Increase the time **T\_heat**. Check all connections.
- ⑤ The technology module has recognised a web break.  
Remedy: Eliminate web break, check the external control signal "web break".
- ⑥ Negative values have occurred in the diameter calculation.  
Remedy: Check the configuration data for the diameter calculation (**D\_start**, **D\_min**, etc.)
- ⑦ The technology module was started, but the drive was not enabled.  
Remedy: Enable drive.
- ⑧ The technology module has recognised an error in the tension curve.  
Remedy: Check current tension curve and send again.
- ⑨ The resolution of the actual position for the input via CANsync bus has been set to 0.  
Remedy: Change the value under **Function configuration**.
- ⑩ The smoothing value set in the **Configuration menu option** is out of the valid range. Remedy: Set the smoothing value in the **Configuration** menu option to an integer number between 1 and 20.

## 5.0.2 "Prog-shell" window: "Error detail list -Omega - addr. 0" window



System errors are software errors which cannot be accessed by the user. It may be useful to restart the systems (controller + WinBASS) or – if applicable – a check of the CANsync settings and bus connections.

## 6 APPENDIX

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