

M40097.V01-V03 torque measuring unit

V01: torque sensor T34; angle DUAL-Code

V02: torque sensor T4/T5; angle DUAL- or GRAY-Code

V03: torque sensor T34; angle GRAY-Code

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1. Functions

1.1 Measurement task

Examination of the torque of axial joints.

The following sizes are checked in detail at compliance with their tolerances:

- start torque
- torque MAX; $X_{avg}=(MAX+MIN)/2$; MAX-MIN
- angle swing

1.2 Representation of the results of measurement

The measured value of every tested feature is announced as a numerical value. In addition, the result of grouping is announced, therefore GOOD or NOT GOOD.

The signal response is represented as wave from torque via angle:

- diagram for the process start torque
- diagram for the process torque

To show the adjustments, the measuring windows are represented in the diagrams as flags. Between these flags the measurement values are taken.

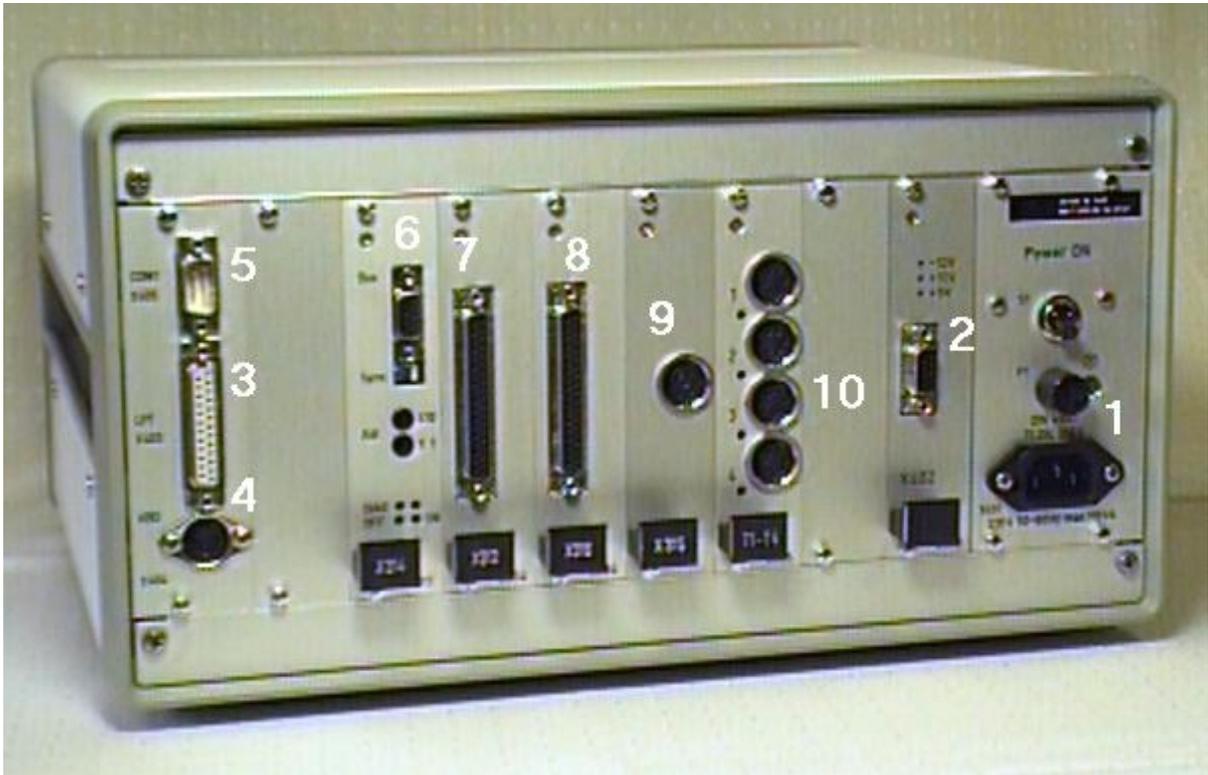
2. Construction

- Measuring computer QP300: 486DX/66; 4MB RAM; 540MB Harddisk;
3,5" Floppy-Disk 1,44MB
monochrome VGA Display
32 I/O Optocoupler
1x DMS measuring input
Num. Keyboard
- Case 2/3 19", 4HE



3. Connection and control elements

Reverse of the case:



- (1) X401 Europlug network interface 230V/50Hz
- (2) X402 9pol. socket MIN D test socket
- (3) X403 25pol. socket MIN D printer exit
- (4) X404 5pol. socket DIN keyboard entry
- (5) X405 9pol. socket MIN D serial interface
- (6) X314 9pol. socket MIN D profibus interface
- (7) X312 37pol. socket MIN D angle for measuring wave
- (8) X316 37pol. socket MIN D control inputs/outputs to A&V 4386
- (9) X315 6pol. socket 680: exit to the converter for the engine
- (10) T1-4/3 5pol. socket 680: input torque signal of A&V 4386

4. Programming

Turn on device. After loading the program, the device is in the operating mode AUTOMATIC and therefore ready to operate if the drive cover is closed. In order to be able to carry out inputs the lid must be opened. As a result, one changes to SETUP.

The sub-operating modes appear in the menu bar:

- F1 inputs
- F2 store measured values on floppy disk
- F3 store diagnostic data on floppy disk
- F4 store program on floppy disk
- F5 install program from floppy disk
- F8 zeros

4.1 F1 inputs

torque measuring unit: settings

model-no. 1

tolerance limits

start-torque UL Nm 9.5

MAX UL Nm 9

MAX >UL Nm 9.3

Xavg LL Nm 0

MAX-MIN UL Nm 9

angle UL deg. 50

angle LL deg. 20

step control

zero-angle deg. 191

max.torque R/L Nm 12

stop angle centre 0

return angle L -15

return angle R 15

stop angle L/R 1

meas.window torque

angle beginning 10

angle ending 20

Class.: 0=Xavg 1=MIN 0

prog.: 0=normal 1=short 0

zeropoint

Offset angle deg. 0

Offset st.-torque 0

drawing no. 025.160.042.581

description ROTULE AXIALE

key * = Escape settings

Selection only possible after opening the concludable drive cover!

The parameters are entered in the input fields in sequence. The jump into the next field occurs by double pressing the press button ENTER.

If the respective value is set aside darkly, he can be retyped directly by input of the new value. If only ENTER is entered, the old value is maintained.

After all fields were processed, the input menu is left automatically again.

Meaning of the individual fields:

Model no: Number of the partial model of which the parameters are called. 32 models can be managed at the most.

In automatic mode, the model number is defaulted by the control of the machine.

Tolerance limits:

LB UL: upper tolerance limit for the start torque

MAX UL: upper tolerance limit for torque peak value

MAX >UL: upper tolerance limit for torque peak value is VERY LARGE (OPTION)

MIN LL: lower tolerance limit for torque minimum value. If the valuing mode Xavg was chosen in the progress- control instead of this appears:

Xavg LL: lower tolerance limit for torque $X_{avg} = (MAX + MIN) / 2$

MAX-MIN UL: upper tolerance limit for torque difference MAX-MIN

Angle UL: upper tolerance limit for the inclination angle

Angle LL: lower tolerance limit for the inclination angle

The following fields may only be modified during a change of the control process!

Process control:

Zero angle: Set point of the angle sensor for the zero adjustment of the measuring mechanics

Stop torque: At transgression of this value the motor will be stopped.

Brake angle middle: offset value for the brake control of the engine

Switching angle to the left: Direction changeover is LEFT

Switching angle to the right: Direction changeover is RIGHT

CAUTION: The switching angles are to be entered as a deviation from the zero angle.

It is usually the half value of the tolerance upper limit of the angle in each case.

Brake angle to the left/right: offset value for the brake control of the engine

Grouping: Selection between Xavg and MIN

Process: Selection between short and long motions process

short: Middle/ right/left/ middle long: Middle/ right/left/right/ middle

Measuring window torque:

start angle: Beginning of the measurement of the torque with the left-right measuring cycle (see too 5. AUTOMATIC). This value is to be entered to the extreme left-hand position as a difference!

stop angle: End of the measurement of the torque with the left-right measuring cycle (see too 5. AUTOMATIC). This value is to be entered to the extreme left-hand position as a difference!

Zero adjustment:

Offset angles: Adjustment value for the measured value of the angle. This value is subtracted from the measured value.

Offset LB: Adjustment value for the measured value of the start torque. This value is subtracted from the measured value.

Drawing number: Input for the dialed model number

Denotation: see above.

4.2 F2 store measured values on floppy disk

Selection only possible after opening the concludable drive cover!

Storage of the measured values occurs here in the PROCON format. The measured value floppy disk must contain a valid PROCON test flow chart.

The features are arranged as follows:

Channel	feature	-----
1	start torque	MAX-value
2	torque MAX	MAX-Value
3	torque average	MIN-Value
4	torque MAX-MIN	MAX-Value
5	angle	MAX-Value

4.3 F3 store diagnostic data on floppy disk

Selection only possible after opening the concludable drive cover!

In the case of technical problems, intern expiry dates can be transmitted to analysis on floppy disk.

4.4 F4 store program copy on floppy disk

Selection only possible after opening the concludable drive cover!

The current programme version and the parameter are transmitted onto floppy disk.

4.5 F5 load program from floppy disk

Selection only possible after opening the concludable drive cover!

The backup of the parameter and/or the installation of a new programme version occurs here. This becomes only effective during the new start of the computer.

4.6 F8 zeros

Selection only possible after opening the concludable drive cover!

The actual torque value is set to zero.

4.7 Calibration

Disburden torque measuring wave and with function key F8 set torque actual value for zero (see 4.6). Give up defined torque e.g. over emphasis with lever arm. If the announced actual value deviates from debit, a precision adjustment can be carried out on the entry socket T1-4/3 with the concealed unity plate (see 3. connection elements).

5. Operating mode

The measuring computer waits for the starting signal from the SPS.
The following sizes are announced:

Measured values and grouping of all features:

The measured value of the former measurement will be displayed.

STATUS: 0: Measure ready

Display torque N (Actual):

Instantaneous value of the torque measuring wave

Display angles degree(Actual):

Instantaneous value of the angle sender (absolute value)

Display angle degree:

Value of the field - 3 - in the diagram, torque:
Angle of the left- for the right stop of the hinge

Diagram start torque:

- 1 - is the field of the measuring window in which the peak value of the torque is registered and is stored as a start torque.

Starting point:

Centre position of the joint

End point (zero adjustment): internal fixed angle

Diagram torque:

- 2 - is the field of the measuring window, in which the maximum and minimum value of the torque is registered and stored.

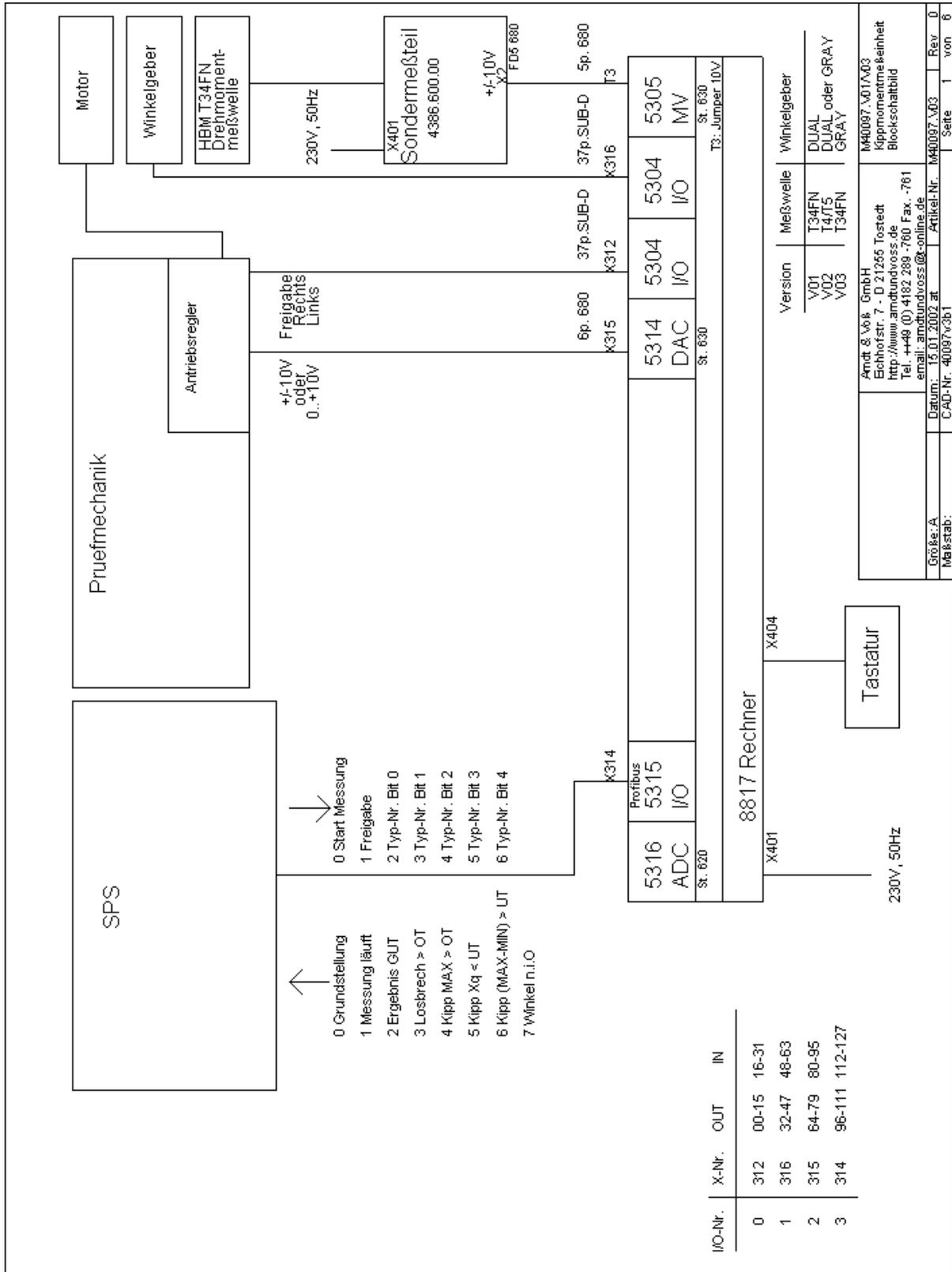
Starting point:

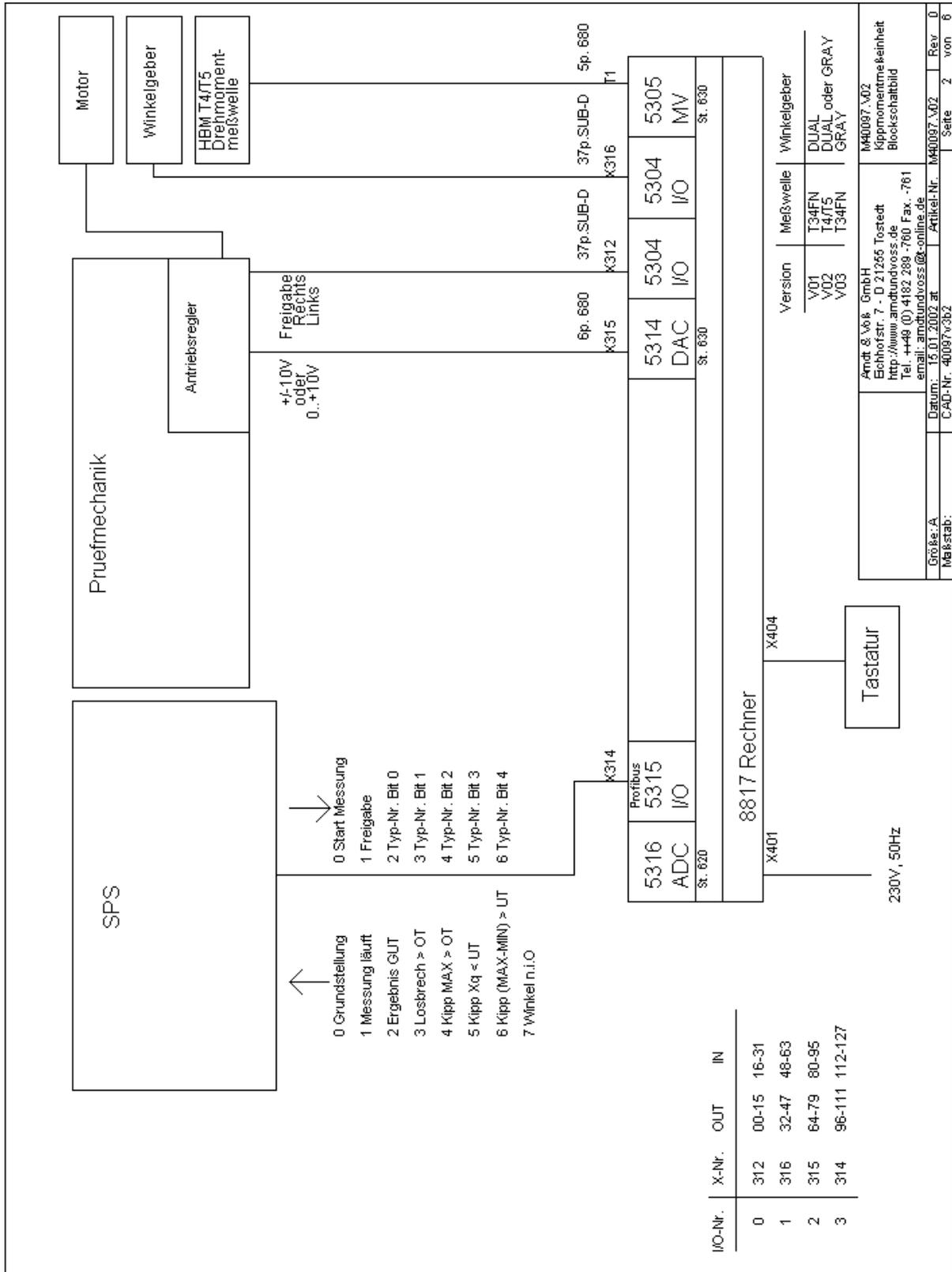
see 4.1 measuring window torque - original angle

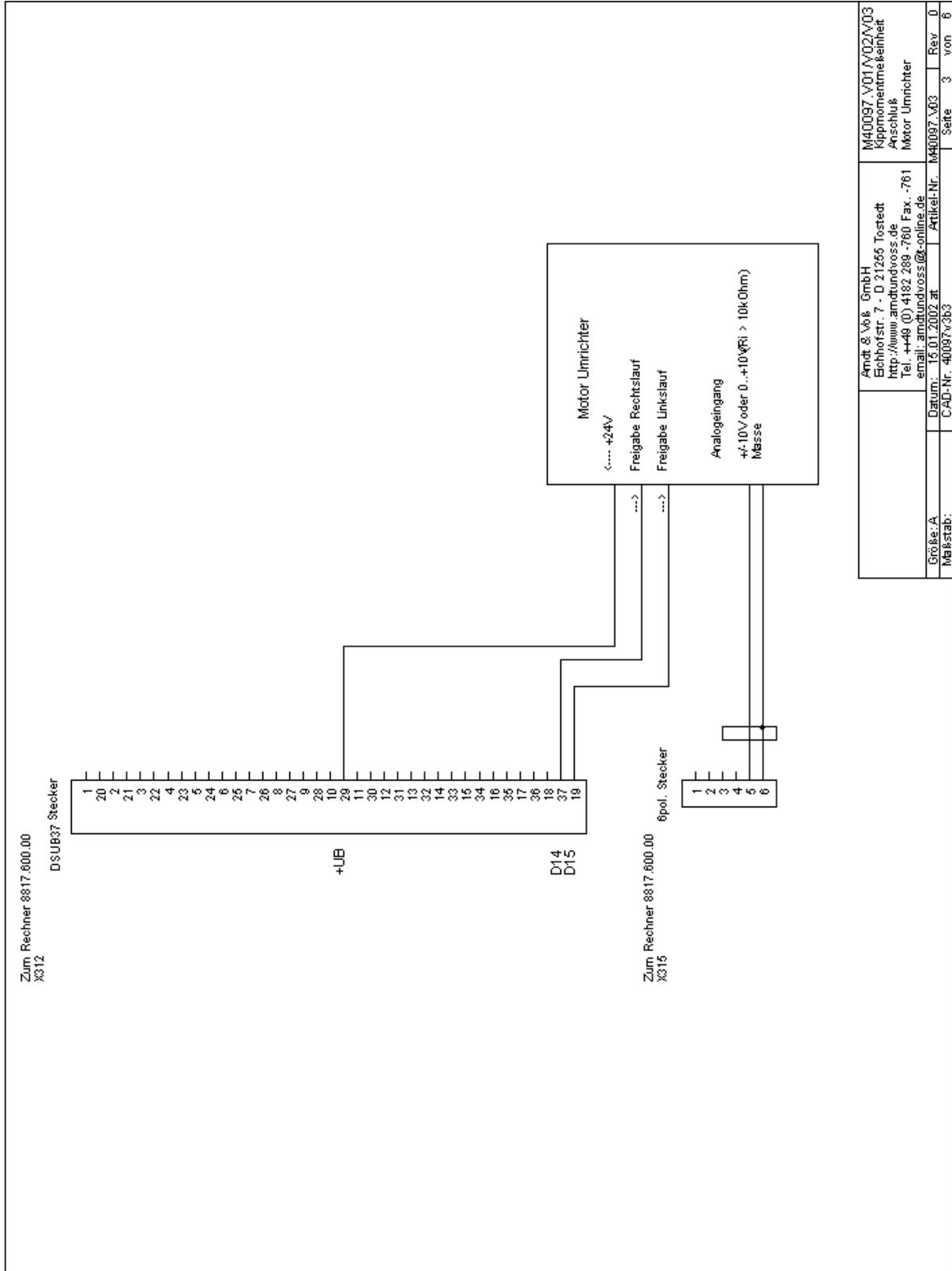
End point:

measuring window torque s. 4.1 - final angle

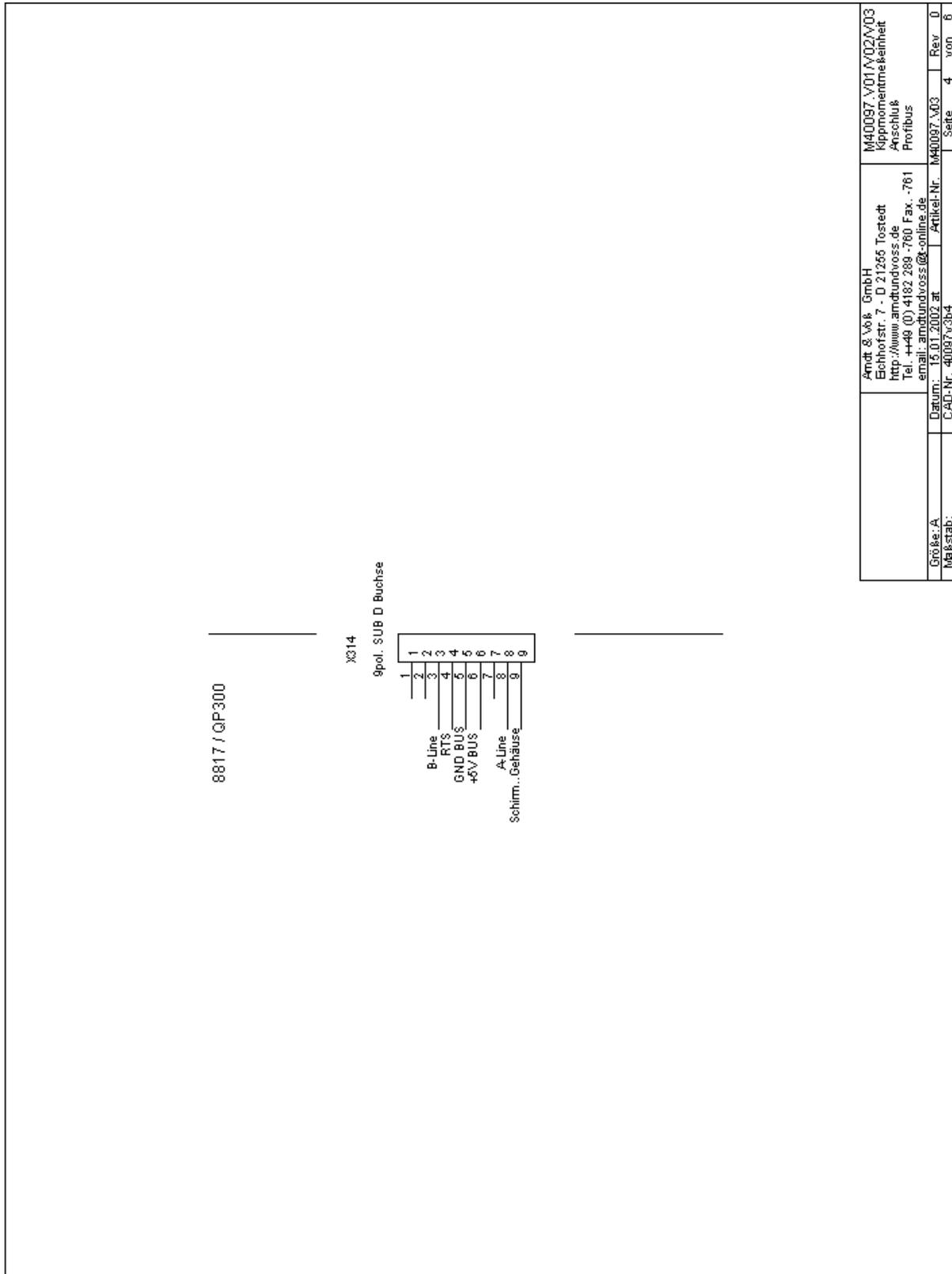
6. Connection diagrams



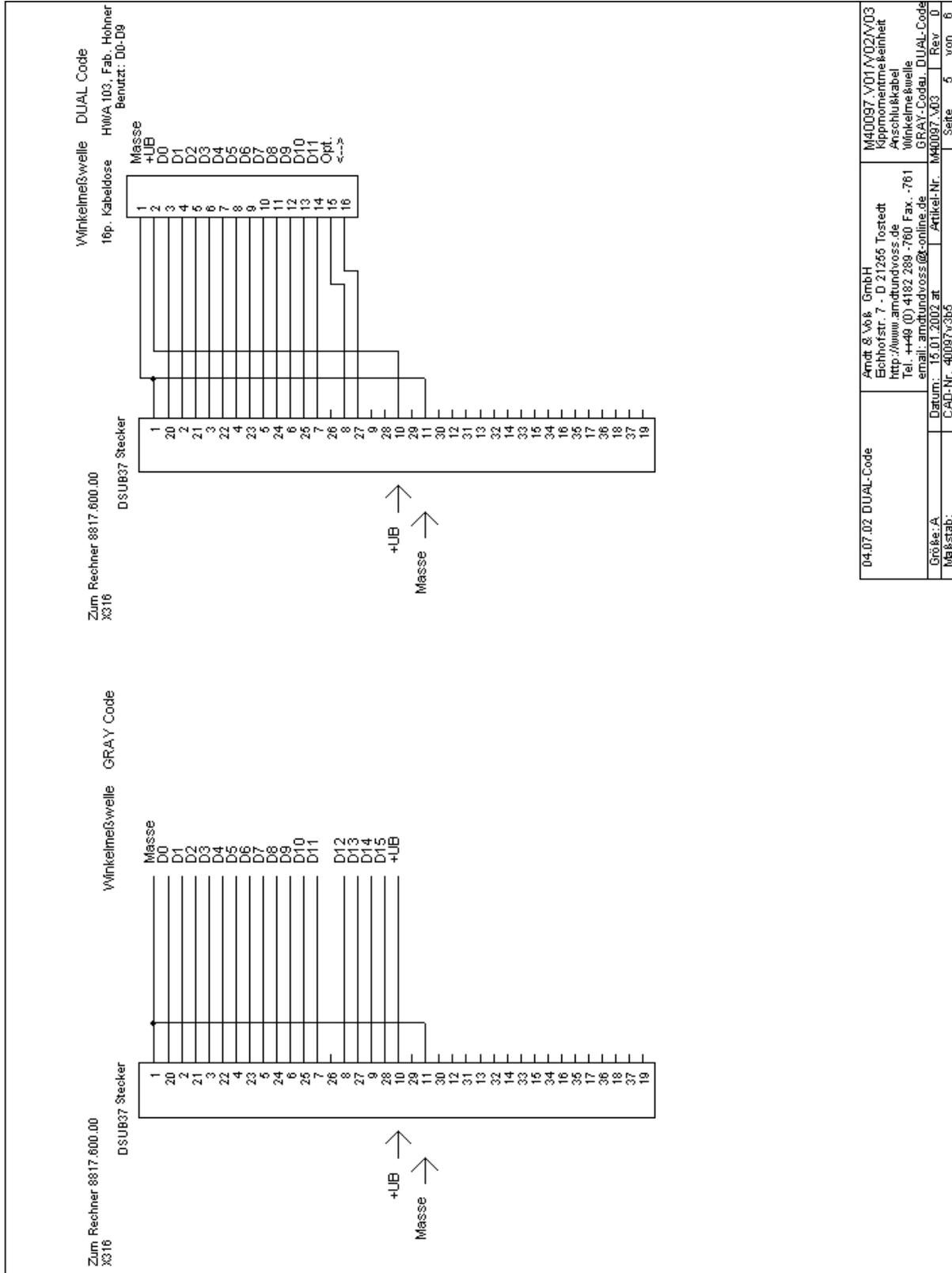




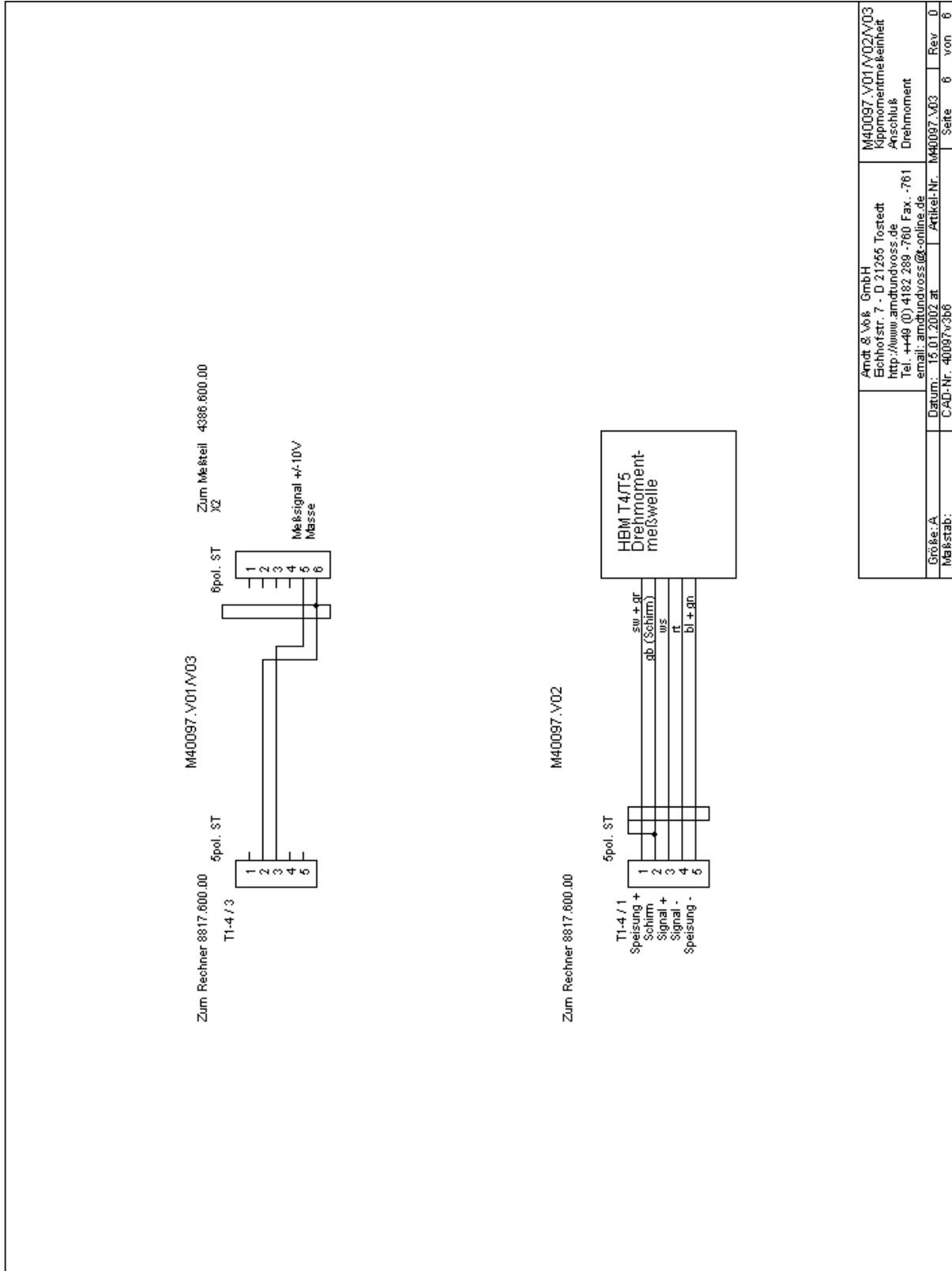
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Größe: A	Datum: 15.01.2002 at	Artikel-Nr. M40097.V03	Rev. 0
Maßstab:	CAD-Nr. 40097v3b3	Seite 3	von 6



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04.07.02 DUAL-Code	Arndt & Voß GmbH Eichhofstr. 7 - D 21255 Tostedt http://www.arndtundvoss.de Tel. ++49 (0) 4182 289 -760 Fax. -761 email: arndtundvoss@t-online.de	M40097.V01/V02/V03 Kippmomentmeßeinheit Anschlusskabel Winkelmeßeinheit GRAY-Code, DUAL-Code
Größe: A	Datum: 15.01.2002 at	Artikel-Nr. M40097.V03
MeiBstab:	CAD-Nr. 40097v3b5	Seite 5 von 6



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Meißstab:	CAD-Nr. 40097v3b6	Seite 6	von 6

Security comments according to VDE 0411

General technical

time for warming up	20 minutes
temperature	0...+40 Grd C
atmospheric humidity	on to 75% rel.
frequency	50/60 Hz
power supply voltage	230V +/-10%
security	according to VDE 0411, protection class 1

This unit is built and checked under DIN 57411 part 1/VDE 0411 part 1 and left the factory in a safe and perfect condition. To preserve this condition and to guarantee a safe working the user has to follow the comments and warnings which are given in this instructions.

Before turning on the power you have to make sure, that the voltage of operation and the mains voltage correspond.

The mains plug may only be inserted into a socket with ground contact. The safety effect may not be abolished by an extension lead without ground connection.

The opening of covers or removing of components, except if it is possible to do by hand, might uncover parts or connections under dangerous voltage.

Racks may only be used inside a cover.

If an adjustment, a maintenance or a repair at the opened unit under voltage is unavoidable, it may be done only by a qualified employee, who is well acquainted with the dangers involved.

ATTENTION:

After the end of those works, the unit has to be checked according to VDE 0411, part 1.

You have to make sure, that only fuses of the given type and values are taken for replacement. The use of mended fuses or short-circuiting them is inadmissible.

If it is presumed, that a safe work is not possible, you have to take this unit out of work. A safe work may not be possible, if

- there are visible damages at the unit.
- the unit doesn't work.
- after longer storage under unfavourable circumstances.
- after heavy stress of transport.