
remes GmbH

DIGISKOP

Version 3.0

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rechnergestütztes Messen und Prüfen GmbH

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Table of contents

1. Introduction	5
2. Installing the software	5
3. Working with DIGISKOP	5
3.1. How to start DIGISKOP ?	5
3.2. First impression	5
3.3. How to edit in DIGISKOP ?	7
3.3.1. The online-help	7
3.3.2. Buttons and icons	7
3.3.3. The features of the Editors	8
3.4. How to achieve the first measuring values ?	9
3.4.1. Setup of the parameters	9
3.4.2. Starting measurement	11
3.5. What can I do with the measuring values ?	12
3.5.1. Analysis-parameter setup	13
3.5.2. The scroll menu	13
3.5.3. The cursor mode	14
3.5.4. The plot-/exportmenu	16
3.6. For advanced users	17
3.6.1. Measuring instruments catalogue	17
3.6.2. The calibration function	18
3.6.3. The trigger function	19
3.6.4. The comment mask	20
3.6.5. Recall of DIGISKOP with individual setup	21
Appendix A: Layouts	22

1. Introduction

DIGISKOP is a program that provides acquisition, evaluation and modification of measured values. DIGISKOP offers a continuous storage of data on harddisk, ramdisk or floppy disk with online display of the measured values. The max. recording frequency depends on the speed of the storage media. Using a ramdisk a frequency of 300 kHz and more (depending on the acquisition boards in use) can be achieved. Using a harddisk the acquisition frequency can be up to 160 kHz. This depends on the type of the harddisk. DIGISKOP also offers multiple kinds of triggering and evaluating modes..

2. Installing the software

If a previous version of DIGISKOP is already installed, so please make a backup of it before installing DIGISKOP 3. Put the 3½"-floppy disk in your floppy-drive. After this type:

```
<SOURCEDRIVE>:install <SOURCEDRIVE> <DESTINATIONDRIVE>  
eg. ( b:install b: c: )
```

After that DIGISKOP creates a subdirectory (eg. \SKOP30) on the harddisk and copies the necessary files to the subdirectory.

3. Working with DIGISKOP

3.1. How to start DIGISKOP ?

After the installation is completed, change to the subdirectory \SKOP30. Start DIGISKOP by typing: DIGISKOP <RETURN>.

3.2. First impression

The main menu with it's submenus will appear:

Measuring, Analysis, Installing, Tools, DOS

Note. Yet not all functions in the menus are supported.

Now a little overview of these menus:



DOS

Exit quits DIGISKOP and returns to DOS.

Shell leaves DIGISKOP temporarily. If DOS is activated temporarily, <EXIT> reactivates DIGISKOP.

Alt T

User Tools

In the file FREMDPGM.PAR other DOS programs requested, can be entered. Three lines are necessary per entry

- First line = Specification of the program. Any text describing the program is allowed.
 It will be offered in a pull-down menu
 e.g: "Text-editor"
- Second line = Name of the program including path
 e.g: "C:\DOS\EDIT.COM"
- Third line = Parameter for starting this program
 e.g: "MEINFILE.TXT"

Editing layouts:

The editor "SHOWLAY" is started

FFT/TERZ-Analysis

Direct call of the FFT/TERZ-analysis SIGNADIS (if installed) with the batch file "SIGNADIS.BAT" in the DIGISKOP subdirectory.

Alt I

Installing

You have the possibility to create a library to support various signal sources. Input of calibration factors for more than 200 different amplifiers, sensors or other measuring instruments is possible.

If there are filters installed, you can edit the base adress and the -3dB frequency (filter hardware) for each filter.

Alt A

Analysis

This menu enables you to evaluate, prepare and export your measured values. Adjusting parameters a certain measurement can be selected. Scrolling activates the last file in use.

Alt M

Measuring

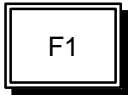
parameter setup; that is where you define your parameters (input-channels, aquisition board, measuring time, calibration, layout of the display, ...) for your measurement.

Choosing start measuring enables you to change directly to the measuring module. Now you can start your measurement with the last activated parameters.

3.3. How to edit in DIGISKOP ?

3.3.1. The online-help

DIGISKOP offers an online-help, which informs about the usage of the menus. Also the meaning of the hotkeys and icons will be explained. You can get some information about parameter-fields. Help will be provided, if you see the following hotkeys at the bottom of your screen.



Help on menu level

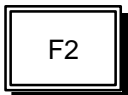
A window with a short information about the usage of the menu appears.

If you want to get some help about the hotkeys, you can press them and another window appears (help on function keys).



The escape-key closes the help on function keys . After that you can get informations about any other hotkey.

If you want to close the window help on menu level, then you have to press the escape-key two times after another.



help on input parameters

A window with information about the parameter-field, which is marked by the cursor, appears. This windows will also be closed by pressing the escape-key.

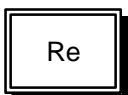
3.3.2. Buttons and icons

As an additional help the available hotkeys are displayed either as buttons on the bottom of your screen or as icons at the right margin of your screen. You can use a mouse or the keyboard to activate them. Due to the limited resolution of the screen some abbreviations for the hotkeys had to be defined:

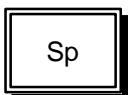
e.g.



Escape-key



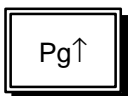
Return-key



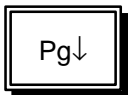
Space



Key-combination with Alt and F-key number #



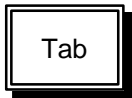
PgUp-key



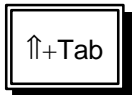
PgDown-key

3.3.3. The features of the Editors

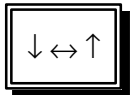
You can use following keys to handle the different masks in DIGISKOP:



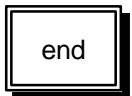
This key moves the cursor to the next parameter field.



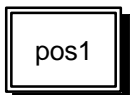
This key moves the cursor to the previous parameter field.



With these keys the cursor will be moved within a parameter field. You can use the keys to go to other parameter fields also.



This key moves the cursor to the end of a parameter field.



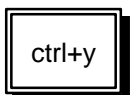
Moves the cursor to the beginning of a parameter field.



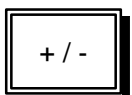
Toggles between insert mode and the overwrite mode



Deletes the next character.



Erases the entire field, marked by the cursor.



Switches the content of an inputfield with limited number of fixed inputstrings allowed (e.g. fields with yes/no).

Please note that the function of these keys only applies to editing inputfields. (eg. the arrowkeys change the signal sources on a channel while viewing data)

3.4. How to achieve the first measuring values ?

3.4.1. Setup of the parameters

Change to the menu measuring by pressing ALT M. After that press "p" or select the module parameter setup with the cursor keys. Now you can define your measuring parameters as there are measuring time, input channels, layout of the screen and others.

The window is divided in two regions. To get the meanings of the parameter fields (yellow background) type the following values into the input fields listed below.

posttrig [sec] : 20.000

This is the time for the measurement after the trigger has occurred (e.g. 20 seconds). The max. measuring time depends on the free space of the storage media (for further information press F2). The actual times for measuring and pretrigger will not be exactly the same as you defined here. Actually these times are longer, because the measuring data are saved as blocks and measuring stops after saving a whole block.

pretrig [sec]: 0.0000

This is the time recorded before the trigger point of measurement. Pretrigger events are indicated by data, always constantly memorized by DIGISKOP, to be supplied in case of trigger events (manual or automatic trigger). The amount of the measuring points depends on the pretrigger time and the adjusted overall measuring rate. When data exceeds the existing free ram, DIGISKOP will relocate some memory to the harddisk.

counter : 1

The counter indicates the number of measurement cycles that will be proceeded with the same parameters. Allowed are values between one and 99. The present measurement number will be appended to the file-name, e.g. the fourth measurement with the filename test will be the new filename test04.

Trigger : MANUELL

This means that you can start the measurement by pressing F1. The default is MANUELL, so that you don't have to fill this field. You also have the possibility to start your measurement depending on the trigger conditions of the input signals. To use this option you have to fill in a filename (by using F6) to the field titled trigger. For more information read chapter 3.6.3. The triggerfunctions.

layout : C:\SKOP30\Y2X0_Y.LAY

This is a layout with two Y/t-graphs in one window. The meaning of the other layouts is commented in Appendix A. You can use the following keys to load a layout file to your mask:



Opens a window for selecting a file. Please make sure that the cursor is in the parameter field layout !! Further keys are now available:



With this key you can select another drive.



With this key you can select another subdirectory.

The filename can be inserted directly into the editing field layout.

filename : C:\SKOP30\test.DSP

The measuring parameter and the measured data will be stored with this filename.
Chose a new name with F6; make sure that the cursor is not in the fields trigger or layout.

com. : first measurement with DIGISKOP 3.0

You can fill in a short comment to your measurement. You also have the opportunity to use an additional mask for the extended comment:



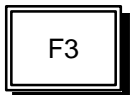
With this keys you open a window for an additional comment. Please read chapter 3.6.4. The comment mask for more information.

mes. freq./channel [Hz] : 100.00

Write the measuring frequency into this field. The multiplication of this value by the number of the activated channels must be below the value in the field (max. frequency).

If you want to load another measurement file, then press F6. Please make sure that the cursor is not in the fields layout or trigger .

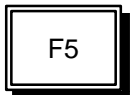
Now you have to define the channels to be used in the lower part of the window. Following keys are supported:



With this key you can add new channels to your list. You can choose e.g. channel A1 and A5 (<Return> selects/deselects a channel). Press F8 to confirm your choice.



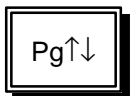
With this key you can import a signal source from the library (see 3.6.1) to the selected channel.



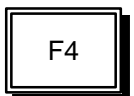
With this key you can delete the channel, which is indicated by the cursor, from the channel list.



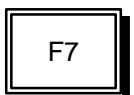
With this key you can add the parameters of the selected channel as a signal source to the library. Please read chapter 3.6.1 The signal library for more information.



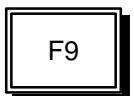
With this keys you can toggle between your installed aquisition boards. DIGISKOP allows you to measure with up to five boards at the same time.



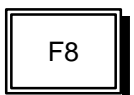
The input window for trigger conditions is opened when a valid file name is indicated in the field trigger.



Supports you on input or correction of calibration values. So you can choose between (base, base)- or (offset, gain)- default or call an online calibration function. For details see 3.6.2 the calibration function.



Storing the mask. The adjusted measuring parameters are stored under the selected file name. With this measuring parameter sets can be stored without measuring.



Start of measurement. With this key you enter the measuring module.

The highlighted fields, in your channel list, can be edited.

Chn	gr	name	ph.unit	ampl	InMin	InMax	PictMin	PictMax
A1	*	temperature	° C	1	20.0000	40.0000	20.0000	40.0000
A5	*	current	mA	1	0.00000	200.000	0.0000	200.000

gr *=will be shown in your layout
 -=will not be shown in your layout

name and ph. unit may have any text

PictMin, Pict Max are used for scaling the y-Axis

3.4.2. Starting measurement

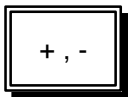
You can go to this module by pressing Alt M and s from the main menu or by pressing F8 from parameter setup menu. The measurement is organized in several levels. After measurement is started, DIGISKOP enters the "monitor-mode". In this mode data is sampled by the acquisition board and visualized but not stored to disk (data will only be written to disk if pretrigger data has to be buffered to disk).

Monitor mode will only be left, if either keys F1 or ESC are pressed.

In manual trigger operation mode data input is started, otherwise the trigger logic will be activated (see 3.6.3). The layout of this module depends on the selected layout file. We have two Y-t-channels in one diagram (Y2XO_Y.LAY). On the right margin you see the symbols for changing the scaling of the axes, in the lower margin of the screen you can see the hotkeys.

With the following keys you can adjust the graph without influencing the acquisition of the measuring values.

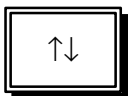
Only one channel at a time (indicated by framed name) can be changed .



With these keys can you change to the next/previous channel. The present channel is marked by a framed name.



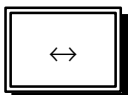
With these keys you can zoom/compress the amplitude of the present channel.



With these keys you can adjust the offset of the present channel.



With these keys you can decrease/increase the plotting frequency (for all channels).



With these keys you can change the source of the present graphics.



With this key you can freeze the display. The acquisition of the measuring values will be continued.

F4

If you have a layout with an x-y-graph, you can to change the source for the x-axis by pressing this key. Remember that the present channel (marked by framed name) must be in the x-y-graph!!

F1

With this key you can start the measurement (trigger =MANUELL), or you give the permission for the automatic trigger (trigger =...filename...).

After the measurement is done, the parameter setup appears again. It is possible to do the next measurement or go back to the main menu by pressing "ESCAPE".

3.5 What can I do with the measuring values ?

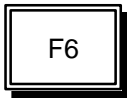
You can view the values and do such as following

- You can choose another display layout (x/y-graph and/or y/t-graph)
- You can scale the axes
- You can view a part of the values (cursor-mode)
- You can scroll the graph
- You can do statistic features (e.g. MIN/MAX/Average/standard deviation)
- You can export the values to various formats
- ...
-

3.5.1. Analysis-parameter setup

Pressing Alt A and p from the main menu loads you to the scrollmodul. In this modul you can select an other layout file. You can also change the comment, or the name of the measured channels.

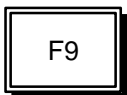
Following keys are supported:



With this key you can either load another measuring file or load another layout depending on the location of the cursor.



With these keys you can open a window for additional comment. See 3.6.4. The comment mask.



With this key you can save your parameters.



With this key you will get to the scroll menu, where you can view and edit your measuring values.



The complete file set of a measurement can be moved. Use this function e.g. to get space on your hard disk and save data to a moveable disk.



Erasing a complete data file set.



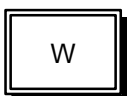
Copying a complete data file set.

3.5.2. The scroll menu

Pressing Alt A and s from the main menu or F8 from the parameter setup (analysis) brings you to the scrollmodul. Automatically the last processed data will be displayed on the screen and scrolling of data (space bar) or any other function can start immediately. If you look at the hotkeys, you will hardly see any differences to those in 3.4.2. starting the measurement, except that the key trigger is replaced by key comment and a help function has been added. This is also valid for the upper six icons on the right margin. The last four icons have following functions:



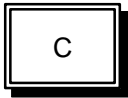
This key opens an input field for defining a new window of the graph. Simultaneously the adjustment parameters for the graphic viewport ranges can be changed.



Changes the direction of the scrolling.
(Forwards <--> backwards)



Decreases/increases the scrolling speed.



Enters cursor mode (see chapter 3.5.3. The cursor module)



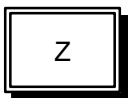
Stop/restart data scrolling in the selected direction.

3.5.3. The cursor mode

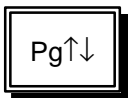
You can activate this module by pressing `c` in the scroll menu. Now some features like statistics and interpolation features are available. You can see a dashed line at the left margin of your screen. This line is the left cursor. This cursor can be moved with the cursor-keys to the left margin of the region you want to select. Following keys will be supported to handle your measured data.



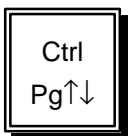
With this key the right cursor appears on the right margin. Mark the right margin of the region you want to select with it, press again and the left cursor is selected again.



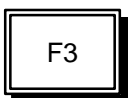
With this key you can zoom into the marked region.



With this key you can scroll graphics page by page



With this key you can turn graphics halfpagewise back and forth

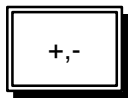


With this key you can activate both cursors at the same time and move them together equidistantly. Press again and one of the cursors is inactive again.

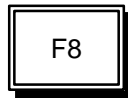


Press this key to execute a curve analysis (MIN, MAX, average, standard deviation)

In this submenu the following functions are available:



With this key you can change the contence of the editing fields from yes into no and the other way around.



With this key you can start the statistic.



With this key you can print your statistic list.



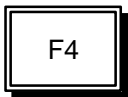
With this key you can save the statistic list as an ASCII-file.



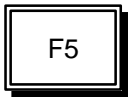
With this key you can open a window for making an interpolation. If you accept the given values, an interpolation between the two cursors will be made. Changing the given values you can define a third basepoint to which the two boarders are connected.



With this key you will exit the cursor mode.



With this key you can open a window for exporting your values (see chapter 3.5.4.The plot-/exportmenu)



With this key you can open a window for plotting/printing your values (see chapter 3.5.4.The plot-/exportmenu)



With this key you can switch the fixed distance between the cursors on/off. If this option is activated, the cursors cross bar is wider as in off postion. Starting this option has the effect that the cursors move on in the distance which existed when activating the option, whereas during option switched off the smallest possible steps (measuring cycle) are executed.



The color of the cursor can be changed

3.5.4. The plot-/exportmenu

Printing / plotting :

If you are in the cursor mode, pressing F5 opens a window. Now you can enter the output parameters. The following parameter fields have below meanings:

base points

This is the amount of pixels for each channel to be printed. Default is always the amount of measuring points in the interval

device

Here you can indicate the letter for the device

B = screen

D = printer (in accordance with PRINTER.SYS)

P = plotter (in accordance with PRINTER.SYS)

file

When a valid file name is indicated here, output on file is started. Series of outputs are registered automatically on sequentially named files. The first name must end with one or more numbers which can be incremented automatically (e.g. FILE000 creates the next FILE001)

printing output parameters

Define your page setup (size, offset off paper border).

Export:

Pressing F4 during the cursormode opens a window for export parameter selection.

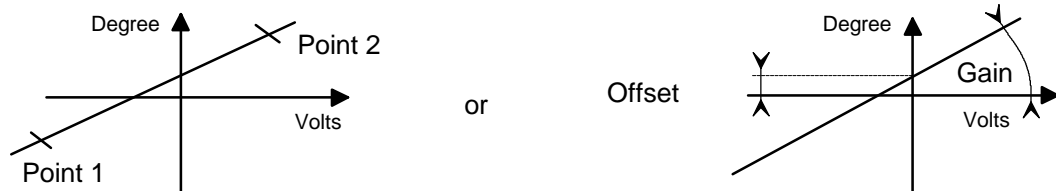
The selected part of the data file can be converted into a file with ASCII-, 2.0 ASCII-, T-ASCII, BINARY-, HPGL- or DIA-PC format. Selection of the modi via +,- keys. The 2.0ASCII format refers to ASCII-format version 2.0, T-ASCII is confirm with ASCII format, in addition the time channel is converted in the first column.

3.6. For advanced users

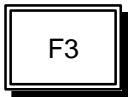
3.6.1. Measuring instruments catalogue

Wouldn't it be good to have the calibration values for those measuring instruments, which are used very often in a library? This option is already implemented in DIGISKOP.

For a manual definition of your calibration values, you must type Alt I from the main menu and then change into signal sources. Now you can define your measuring instruments either by defining two points (see left on picture) or by defining them by offset and gain (see right on picture).



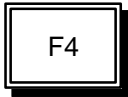
Following keys are now supported:



With this key you can insert a new line for adding a source. If you want to edit a source, you have to overwrite the default values.



With this key you can delete the source, which is indicated by the cursor from the list.



With this key you can toggle between the two methods for calibrating a source.



With this key you can print the source list to the printing device.



With this key you can confirm your changes and go back to the main menu.



With this key you can also go back to the main menu, but all changes will be ignored.

A little source list could look like this:

-----List of signal sources-----

name	unit	meas. V paar phy.		meas. V paar phy.	
		[V,Hz ..] I	value	[V,Hz ..]B II	value
Temperature I	° C	-10.000	20.0000	10.000	40.000
Current	mA	-10.000	000.000	10.000	200.00

You also have the possibility to copy the calibrated measuring instruments from the parameter setup (measuring) to the signal source list by pressing Alt F7. With this you can of course overwrite another source (see 3.4.1).

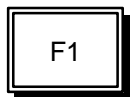
3.6.2. The calibration function

It is necessary to know the calibration values for the different measuring instruments. But how do you get these values ? DIGISKOP supports the calibration of the measuring instruments online. You can do this during parameter setup (measuring). Pressing F7 opens a window for calibrating the channel which is marked by the cursor. You will recognize that new hotkeys are available. F1 allows you to get some information about these new hotkeys.

There are two methodes of calibrating the instruments. The first one is the DC-calibration, which is normally used, if two static levels can be selected, e.g. min. and max. voltage.

Having an AC-voltage in order to calibrate the instrument, forces you to use the AC-calibration.

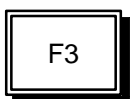
Following keys will be supported during the calibration:



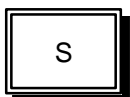
Menu sensitive help-window



Parameter sensitive help-window (only active in edit mode (F 10)).



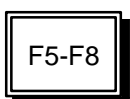
With this key you can toggle between the AC and DC calibration.



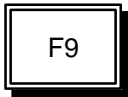
With this key you can enable/disable the storage of the min/max-values of the channel.



With this key you can reset the min/max-storage.



Select scanning frequency by dividing maximum scan frequency by 1, 10, 100, 1000



This key is not of interest during the DC-calibration. During AC-calibration, it activates the auto-scan frequency.



This key interrupts the measurement and measured values can be edited. Depending on your selection of gain-/offset- or fulcrum calibration, you insert either values for gain and offset, or 2 values (measuring value, physical value) out of which the program will find out the calibration. You can also ask for the minimal and maximal measuring value within a measurement and then add the corresponding physical values. With <RETURN> the edit mode will be left, and the routine automatically calculates the calibration values.



Leave menu and ignore changes

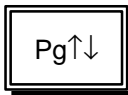


Leave menu and save changes

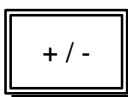
3.6.3. The trigger function

DIGISKOP has a feature to observe the measuring signals exceeding given limits. The trigger function provides 15 triggering levels. Each level may have max. ten channels, which can be combined by a logical AND or a logical OR.

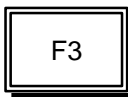
The combined trigger function will be used if the name of a triggerfile is inserted to the triggerfield (parameter setup for measuring). Push F4 during the parameter setup (measuring) to change to the trigger mask. Following keys are now supported:



With these keys you can switch to the next/previous trigger level. The trigger levels are linked serial. A former level can switch the next level.



With these keys you can either change the acquisition board, the channel combination (AND, OR) or the compare operator (<, >), depending on the location of the cursor.



This key selects the channels on which trigger conditions will occur.



This key deletes the channel which is marked by the cursor.



With this key you exit the mask without accepting the changes.



With this key you exit the mask, changes will be saved.

If the channel combination is an OR, the next trigger level will be activated, if at least one channel achieves its trigger condition, e.g. if the signal at channel A1 is greater than 35 physical units (see table).

If the channel combination is an AND, the next trigger level will be activated, if all channels achieve their trigger condition, e.g. if the signal on A1 is greater then 35 and the signal on A2 is greater than 150.

No	PIN	channel	OP	value
01)	A1	analog 1	>	35
02)	A2	analog 2	>	150

3.6.4. The comment mask

In addition to the comment line in parameter setup a variable comment mask is available in DIGISKOP. The mask is activated by pressing Alt F1. Following keys are available:



This key makes an output of the whole comment to the printer.



Inserts a default comment to the mask. This comment is located in the file DEFAULT.BEM and can be edited with ASCII-Editor (such as EDLIN, EDIT...)



This key exits the mask and accepts the changes.



This key exits the mask and ignores the changes.

The layout for the comment mask is defined in the file BEMERK.MSK. This file can be edited with any ASCII editor. It is located in the same directory where DIGISKOP is located as well.

3.6.5 Recall of DIGISKOP with individual setup

If more than 1 person is working with DIGISKOP (even more than 1 team!), we strongly suggest to purchase sufficient DIGISKOP licences.

If this is not possible presently, setup files on individual subdirectories can be administered.

Before activating DIGISKOP those files must be copied into the DIGISKOP subdirectory and after leaving DIGISKOP they must be copied back to the individual subdirectory.

The files which can be considered for this action are:

- DIGAUSW.DEF indicator on
- DIGMESS.DEF last processed file

- BEMERK.MSK parameterfile for
- DEFAULT.BEM comment editor

- GEBER.LIB source list

- HARDWARE.CGF parameter files
- CARDPAR.00X for hardware
- MESSKANX.MSK configuration

The included batch-file RUNSKOP.BAT, is an example how to copy the various parameter files from a selected or other subdirectory to the working directory of DIGISKOP. Then DIGISKOP is started and finally the changed parameter files are recopied into the selected subdirectory.

Call parameter for "RUNSKOP":

```
RUNSKOP [FROM,(from) [Source subdirectory]] (TO,(to) (DIGISKOP directory))
```

Examples:

RUNSKOP:

The requested files from the selected subdirectory are copied into the DEFAULT DIGISKOP directory (\SKOP30) and there DIGISKOP will be started.

RUNSKOP FROM \USER1

From the subdirectory \USER1 the parameter files are copied into the DEFAULT DIGISKOP directory and again DIGISKOP will be started.

RUNSKOP TO \SKOP

Parameter file from the selected directory are copied into DIGISKOP directory \SKOP and from there DIGISKOP will be started.

RUNSKOP FROM \USER1 TO \SKOP

The parameter files are copied from the directory \USER1 into the DIGISKOP directory \SKOP. From there DIGISKOP will be started.

Appendix A

Review on predefined layouts

The delivery of DIGISKOP includes also several layouts (see next pages), Moreover SHOWLAY enables you to create as many additional layouts as desired.