MESSZEIT Program Description

The program MESSZEIT is for the computer-controlled measurement with measuring instruments that have an IEC-bus, HPIB or GPIB computer interface connection. The original version of the program was written for HP 9000 computers; it runs on series 200 and 300 computers under the operating system HP-BASIC-WS as well as on computers of the 300 and 700 series under the operating system HP-UX and the run time environment HP-BASIC-HP-BASIC-UX. It runs in the same way under the HP-BASIC-UX successor TAMS BASIC on LINUX computers. It can also be used on PCs under the development and run time environment HT-BASIC. A version compiled and stored under HT-BASIC is necessary.

MESSZEIT provides the following functions:

- Make measurements with up to 15 GPIB measuring instruments with adjustable interval and cycle times. Store the measuring data from each measuring instrument (measuring channel) as a function of the time in their own file. Produce diagrams of the measurement results as a function of time (time dependent measurement),

- Make measurements with up to 14 GPIB devices as a function of the measured stimulating variable generated by the first GPIB device (parameter measurement) that is gradually changed. The measuring data is stored as a function of the stimulating data in files and the appropriate diagrams are produced.

- Reading a complete data record from a GPIB measuring instrument with screen memory, e.g. oscilloscope/transient recorder/spectrum analyser/network analyser or equipment with internal data memory in a file. The appropriate diagram is produced.

- Repeated reading from devices with screen memory or internal memory with adjustable cycle times and direct storage in sequential files.

- Diagram, conversion and manipulation of the stored files with the sub-program HPGRAFIK that is available as independent program.

Operation of the program

The program MESSZEIT consists of the parts

1 Measurement with IEC-bus devices

2 Evaluation of stored data.

Part 1 contains the actual measuring program and part 2 is more or less identical to the program “HPGRAFIK” and is not described any further. The individual parts can be loaded with LOAD “/MESSPROGRAMME/MESSZEIT” or on an HP-9000 with SRM network connection LOAD “/MESSPROGRAMME/MESSZEIT: REMOTE” and started with RUN.

Part 1 (called MESSZEIT in the following text) first requests the input of the table of contents for data (complete path) and the hard drive letter for data.

A list of all supported IEC-bus devices is displayed. Since the list is longer than a page it must be scrolled as necessary with the up and down arrow keys. All of the devices to be used for these measurements are selected. More devices than used during the current measurement can be selected because a following menu offers a subset that can be switched on or off by devices.

The selection is done with registering the unit numbers, with separating commas, into the input line. The sequence of the numbers determines the order in which the devices are addressed later during the measurement.

Only the device driver programs for these devices are loaded. If it turns out that further measurement devices are needed or the sequence of the operation of the devices must be changed then jump back to the program menu and call this program again

To access the list of device driver programs the selection menu "MessAnwendung" [Measuring Applications] appears with the default "allgemeine Messungen" [general measurements]. Selecting a "spezielle Messanwendung" [special measurement] application (>0) it is possible, at a later stage, to define a user-specified list of numbers and text in a table to be used before the start of each measurement so that they are stored together with the measurement results. For general measurements the table remains empty.

Main menu

1) EIN/AUS-Schalten [switch on/off] of the measuring instruments

At the start of the program a certain number of measuring instruments will have been chosen. The device drivers are loaded for these measuring instruments and the program must switch them on separately.

More measuring instruments than are currently needed can be loaded but the program must switch on all needed devices.

Moving the marker onto the line for the selected equipment and pressing the "E" key switches the device on. Devices are switched off by pressing the "A" key. If all necessary devices are switched on, the procedure finalised by pressing the "X" key. Then the computer checks that all switched on devices are attached.

If devices are not attached, this is displayed. Pressuring the "RETURN" key goes back to the switch on menu and after correcting the errors an new switch on can be started by pressing the "X" key. Pressing "A" or "Q" stops the procedure and returns to the calling menu.

2) Einstellen der Messgeräte [Adjustment of the measuring instruments]

In this menu option the measuring instruments that are switch on can be adjusted or queried using the keyboard of the control computer. The following actions are possible:

- Hand-Einstellung [Manual Adjustment] of a measuring instrument using a screen menu

- Protocol of a measuring instrument control (displayed on screen or indicators)

- RESET for all attached and switched on devices

- LOCAL release front panel control attitude for all switched on devices

3) Zeitabhängige Messung [Time-dependent measurement] with IEC-bus devices

This menu option defines the measurement interval and measurement cycle time for the switched on devices. In addition entries are made in several tables.

- Messzeiten [Interval time]

This line indicates how long the measurement will last and the time between measurements

e.g. "120,5" means for a total interval time of 120s measurements will be taken every 5 seconds (cycle time).

In further lines other intervals of different length can be specified with different cycle. 36 entries can be made in the first table with more in a second table. The different entry options are explained in the next menu.

- Messbefehle [Measuring instructions] There is a table for each switched on measuring instrument where each line specifies a measuring instruction or a measuring action. The lines correspond to the lines in the Interval Time table. Thus a specified action takes place within an interval time at each cycle time. In the following lines different actions for this measuring instrument can be specified. Altogether 36 intervals can be defined and 36 more in a second table. Details of the entries are explained in the next menu. Each table represents a measuring channel, which can be graphically represented or stored later.

- Mess-Vorbereitung, Mess-Abschluss [Measuring preparation, measuring conclusion]

For each piece of equipment a table of actions can be set up for actions taken before measurements begin and another table for actions taken after measurements are competed. These actions are not shown and are not stored.

- Messung [Measurement]

The measurement is introduced and started with this menu option using the function keys. After execution of the measurement the result becomes available for diagrams and storing. Each measuring channel has its own file for storage.

4) Parameter-Messungen [Parameter measurement] with IEC-bus devices

This menu option makes measurements with the second and further measuring instruments possible as a function of the values of first device (typically a source device). Thus measurements are possible as a function of a variable voltage, frequency or amplitude of the first device. The diagram and the file of a measuring channel can be stored to show the values of the second or further measuring instrument as a function of the values of the first (source) device. The source device must be defined in the first place of the equipment list.

- Mess –Parameter [Input parameter measurement]

A sub menu is used to enter the start and stop values of the source device (device 1) as well as the dimensions of the signal and the increment value. The device is measuring channel 1 and the measuring instructions for measuring channel 1 are registered automatically (the measuring instructions for channel 1 are visible and should not be changed in the menu).

- Mess –Befehle [Measuring instructions]

For each switched on measuring instrument a table is set up with a line containing a measuring instruction or a measuring action. The action is taken with each step of the first (source) device. Each table represents a measuring channel that can be graphically represented or to be stored later.

- Mess-Vorbereitung, Mess-Abschluss [Measuring preparation, measuring conclusion]

For each piece of equipment a table of actions can be set up for actions taken before measurements begin and another table for actions taken after measurements are competed. These actions are not shown and are not stored.

The actions of the first (source) device are set up by the menu therefore no input is required and the pre-defined information should not be changed

- Messung [Measurement]

The measurement is introduced and started with this menu option using the function keys. After execution of the measurement the result becomes available for diagrams and storing. Each measuring channel has its own file for storage. The first measuring channel contains the same values in Y and X axis for the source device, normally this does not need to be displayed and stored. It is in the file and can be useful for later difference calculations.

5) Spezialprogramme [Special programs]

In this menu option special programs can be loaded as additional subroutines to MESSZEIT that other subroutines of MESSZEIT can use.

6) Programm-Konfiguration [Program configuration]

Under this menu option printers can be selected and adjusted, files for storing tables of contents or for storage of data defined, subroutines define, device drivers defined etc. Further (new) measuring application can be defined here.

Under "Planung einer Messung" [planning a measurement] enties can be made into all tables for time-dependent measurements without the measuring instruments physically attached. The operation takes place in the same way as menu 3.

7) Laden einer Mess-Konfigurations-Datei [Load a measurement configuration file] under this menu option a configuration file (CNFxxx) can be loaded. This holds the details of an earlier measurement and contains the time tables, measuring command tables and possibly the parameter list and the paths for the device driver programs and the GER_LISTE.

8) Abspeichem der momentanen Mess-Konfiguration [Store the momentary measuring configuration] in a CNF file

Under this menu option a configuration, consisting of device numbers, contents of the time tables, measuring command tables and possibly the parameter list and the paths for the device driver programs and the GER_LISTE are stored in a CNF file.