Multi-Function Meter

Content

Multi-Function Meter DS-01 for AC Current and Voltage

96 x 96 mm

DS 01	Technical Data
Application	Multi-function meter for measuring electrical values in three phase low and high voltage networks.
Voltage	0 … 600V AC
Current transformer primary	1/2,5/5/10/15/20/25/30/40/50/60/75/80/100/125/ 150/200/250/300/400/500/600/750/800/1000/1200/ 1250/1500/1600/1800/2000/2500/3000/4000 A
Current transformer secondary	X/ 1 A or x/5 A
Auxiliary power supply	400/100V AC; (between L1 and L2)
Voltage range	0,8 … 1,1 x nominal voltage
Frequency	50 / 60 Hz
Consumption	ca. 3VA
Input impedance	Voltage: 2MΩ Current (Shunts): 0,01 (0,05) Ω
Accuracy	Class 1
Temperature effect	< 0,01% / K
Operation temperature	+5 °C … +50 °C
Storage temperature	-20 °C … +70°C
Creep and airpaths	Group III per DIN VDE 0110-1 Pollution level 2
Protection rating	Front IP 20, terminals IP 00 per DIN VDE 0470-1 (11/92)
Display range	0 … 9999
Digits	14mm, 7 Segment LED, red
Anschlußart	Plug-in spring-clamp-connectors
Wire cross section	Fine stranded wire 2,5mm², max. 7mm stripped
Weight	ca. 330g
List price €	**DS 01 400 V/ 5 A** **209,70** **DS 01 400 V/ 1 A** **209,70** **DS 01 100 V for vt** **234,40** **DIN rail mounting EN 50022-35 x 7,5** **14,40** **Protection cover IP 65** **12,30**

Description

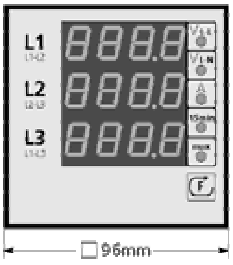
The DS-01 measures and displays line-neutral and line-line voltages. The instantaneous, 15-minute averaged, and peak values of the measured phase currents are displayed sequentially. The sequencing of displayed parameters is done either automatically or manually on demand. When the instrument is switched on, the same parameter is displayed as at the time it was switched off earlier. When stepping on to the next parameter display, the character "n" appears on the lower left of the display. If the "F" key-switch is kept pressed longer, after 2 seconds the character "r" is indicated and the display steps to the next sequenced parameter. Keeping the "F" key-switch pressed even longer, the character "c" is displayed and the peak and average values are re-set.

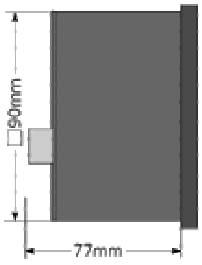
Standard current transformers can be connected directly to the DS-01, because the required shunts are already installed in the instrument. 35 standard current transformer ratios are pre-programmed.

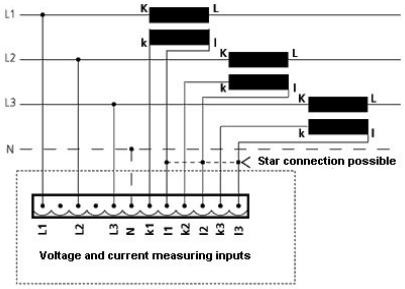
The peak values of measurements are also stored and displayed, similar in function to drag-pointer type peak value registration in analog meters. The DS-01 derives its operating power from the voltage measuring inputs, thereby keeping instrument wiring to a minimum. For medium voltage systems, 100 V versions of the instrument are available, which display the primary side voltage, with appropriate scaling.

Features

- Three-line digital display simultaneously shows measurements of all 3 phases
- Displays 15-minute averaged measurements (bimetallic function)
- Peak value storage and display (drag-pointer function)
- User selectable standard current transformer ratios
- Automatic sequencing of displayed parameters automatically at 10 second intervals, or manually
- Large 3-line, 4-digit, 7-segment red LED digital display
- Measurement mode indicated by LED's
- Easy to install and operate
- Plug-in spring clamp connectors
- Compact: 65 mm depth
- Peak value storage and display
- 15-minute averaged measurements
- (bimetallic function)
- Reduces installation and wiring costs







Multi-Function Meter
Diris A20/A40/A41

96 x 96 mm

DIRIS A20/ A40/ A41	Technical Data
Application	Multi-function meter for measuring electrical values in single, two and three phase low and high voltage networks.
Function	All the parameters can be configured and displayed on its front panel display and
Display	Backlit (blue) LCD display
Keys	6 direct access keys
Dimensions H x W x D	96 x 96 x 60mm (without plug-in modules) 96 x 96 x 80mm (with plug-in modules)
Protection rating	IP 52 front, IP 30 case
Terminals	Current connection section 0.5 … 6 mm² Voltage connection section 0.5 … 6 mm² 1 to 5 plug-in module terminals
Weight	400g
Measurement	
Current (isolated input terminals)	Consumption: 0,1 VA
- Current transformer	1 .. 10.000 A / 1 A or /5 A
Voltage	
- direct	50 … 700 VAC L/L
- voltage transformer, primary	up to 500 kV
- voltage transformer, secondary	60, 100, 110, 173 und 190 V
Frequency	45 … 65 Hz
Auxiliary power supply	110 … 400 VAC ± 10% 50/60 Hz
(AC & DC)	120 … 350 VDC / 24 .. 48 V ± 20%
Accuracy	
Current (I)	0,2%
Voltage (U)	0,2%
Power (P)	0.5%
Energy	Active power: IEC 61036 class 0.5
	Reactive power: IEC 61268 class 2
Inputs (Option)	2 .. 6 optocouplers 10 … 30 VDC
Output pulses (Option)	2 relays 100 VDC - 0,5 A - 10 VA
Output alarms / control (Option)	2 relays 250 VAC - 6 A - 1600 VA
Output analogs (Option)	2 … 4 isolated 0/4-20 mA / 600 Ohm
Operating temperature	-10 … + 55 °C
List price €	**DIRIS A20 225,00** **DIRIS A40 273,00** **DIRIS A41 585,00**
	Module 1 : Energy (kWh) 54,20 **Module 2 : Energy + Harmonics 90,50** **Module 3 : Communication RS 485 90,50** **Module 4 : Analogue Output 97,80** **Module 5 : Alarms, control 80,00** **Module 6 : Profibus (2 modules) 275,90**

Description

Measurement in real effective values (TRMS) of:

- Current per phase and instantaneous neutral, average and maximum values over a programable period
- Phase-to-neutral and phase-to-phase voltages
- Frequency
- Active, reactive and apparent power on 4 quadrants (+/-) per phase and total in instantaneous, average and maximum values over a programmable period
- Power factor (PF) per phase and total with inductive and capacitive indication.
- Harmonic distortion rate (thd) up to 49 on the phase to neutral and phase to phase voltages and the currents (thd 3U, thd 3V, thd 3I, thd In)

Meter

- Active, reactive and apparent power meter +/
- Hours run meter 1/100th of an hour for duration of operation

The **Diris A20** will display only total power values of active, reactive, apparent power, frequency, power factor (PF) .

The **Diris A40** will display also the phase values of apparent power, frequency power factor (PF) .
The **Diris A41** contains a integrated current transformer for high accuracy harmonic measurement in neutral lead.

Functions	A20	A40/41
Instantaneous TRMS-Values		
Current 3 Phase, neutral	•	•
Neutral harmonics		A41
Voltage L-L and L-N	•	•
Frequency	•	•
active, reactive, apparent power (total values)	•	
active, reactive, apparent power (total values + phase values)		•
Power factor (total)	•	
Power factor (total + 3 phase)		•
Average and maximum values		
Current 3 phase, neutral	•	•
Active power	•	
Active, reactive, apparent power		•
Power quality		
Harmonics U +I, THD		•
Energy	•	•
KWh + KVArh, 4 quadrants	•	
KWh + KVArh + KVAh, 4 quadrants		•

Optional plug & display modules
Easy integration of extra functions (max. 4) by means of modules that the user can snap in at the back of the device at any time.

The Diris A20 can only support one energy module with one pulse output and the RS485 communication module.

Multi-Function Meter
DIRIS Am

DIN rail mounting

DIRIS Am	Technical Data		
Apllication	Multi-function meter for measuring electrical values in single, two and three phase low and high voltage networks.		
Keys	6 direct access keys		
Dimensions H x W x D	126 x 110 x 63 mm		
Mounting	DIN-Rail		
Protection rating	IP 52 front, IP 20 case		
Terminals	Terminal block		
Cable connection	Flexible cable : 1 … 6 mm² Rigid cable : 1,5 … 10 mm²		
Weight	640 g		
Measurement			
Current (isolated input terminals) - Current transformer	Consumption: 0,1 VA 1 .. 10.000 A / 1 A or /5 A		
Voltage - direct - voltage transformer, primary - voltage transformer, secondary	 50 … 700 VAC L/L up to 400 kV 60, 100, 110, 173 und 190 V		
Frequency	45 … 65 Hz		
Auxiliary power supply (AC & DC)	110 … 400 VAC ± 10% 50/60 Hz 120 … 350 VDC ± 20%		
Accuracy			
Current (I)	0,5%		
Voltage (U)	0,5%		
Power (P)	1%		
Energy	active power: IEC 61036 class 1 Reactive power: IEC 61268 class 2		
Output pulses (Option)	Relay 100 VDC - 0,5 A - 10 VA		
Operating temperature	-10 … + 55 °C		
List price €	**DIRIS Am**		**284,80**
	DIRIS Am with energy output		**353,30**
	DIRIS Am with communication RS 485 - MOD-BUS		**394,60**
	DIRIS Am with energy + RS 485		**440,00**

Description

Using electrical parameters can mean using several analogue or digital single-function products such as ammeters, voltmeters and wattmeters. Diris Am, with its six direct access keys and LCD display, help you use all the parameters in an LV and HV installation. These parameters can be centralized on a PC or a PLC through an RS 485 link using JBUS/ MOSBUS protocol. The Diris Am is easy to install and can be DIN rail mounted.

Measurement in real effective values (TRMS) of:

- Current per phase and instantaneous neutral, average and maximum values over a programable period
- Phase-to-neutral and phase-to-phase voltages
- Frequency
- Active, reactive and apparent power on 4 quadrants (+/-) per phase and total in instantaneous, average and maximum values over a programmable period
- Power factor (PF) per phase and total with inductive and capacitive indication.

Meter

- Active, reactive and apparent power meter +/ Hours run meter 1/100th of an hour for duration of operation

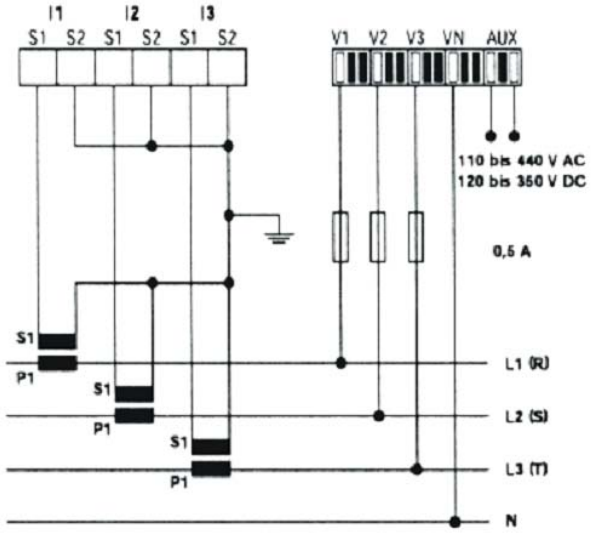
Options

Die Diris Am is available with the following options (not plug-in modules):

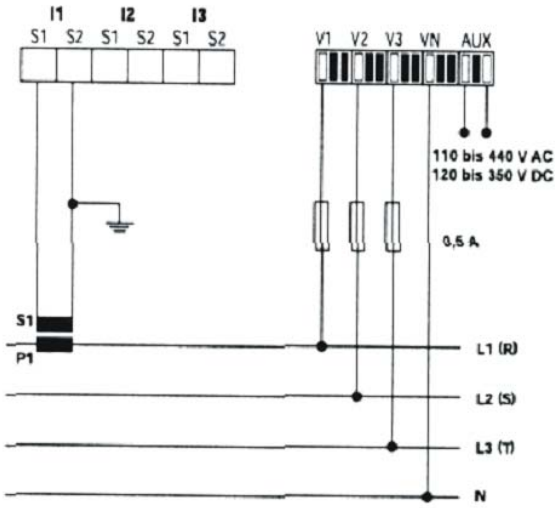
- **Energy metering**
  2 programmable pulse outputs for energy metering (+/- kWh, +/- kvarh and KVAh)
- **Communication RS485**
  RS485 with 2 or 3 wires with JBUS/Modbus protocol and a transmission speed of up to 38400 bauds

Connections DIRIS Ap & DIRIS Am

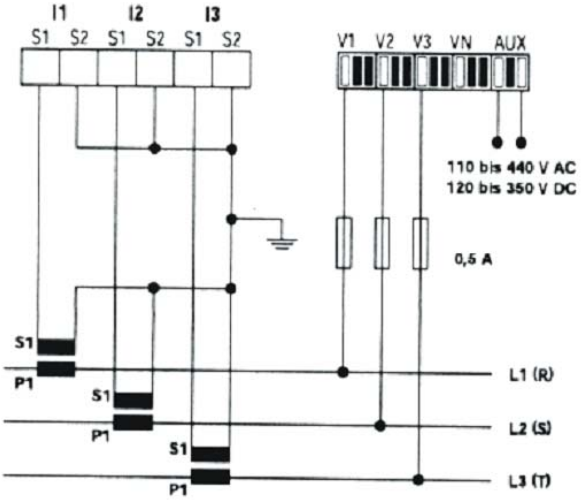
3 phase unbalanced 4 wires with 3 CTs



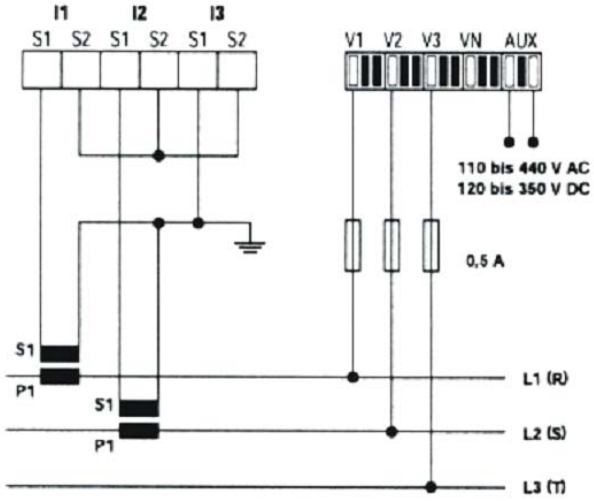
3 phase balanced 4 wires with 1 CTs



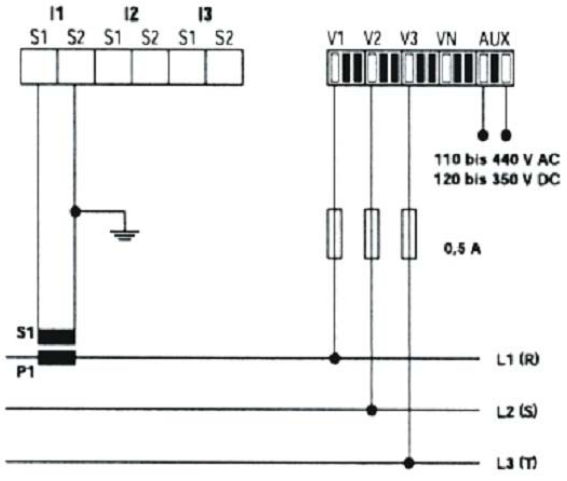
3 phase unbalanced 3 wires with 3 CTs



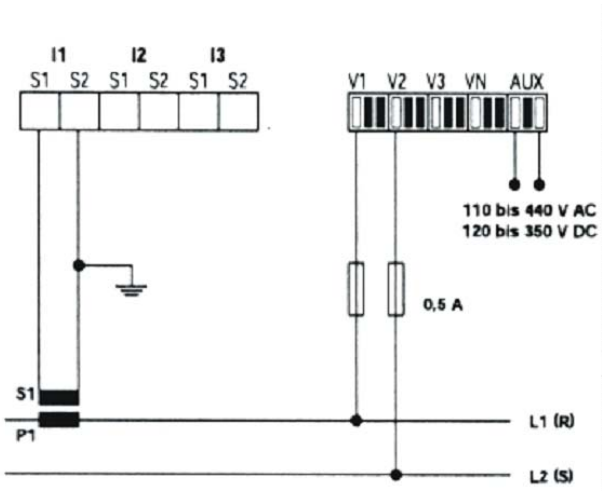
3 phase unbalanced 3 wires with 2 CTs



3 phase balanced 3 wires with 1 CTs



2 phase net

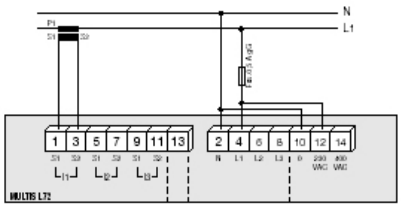


Multi-Function Meter
Multis L72

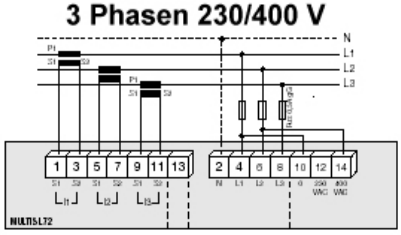
72 x72 mm

DIRIS Multis L72	Technical Data	Description
Display	3 line LED, 4 digits, 7 segments, 10 mm	
Keys	2 push buttons	The Multi L72 is digital low voltage three phase measurement device for current, voltage and frequency. It displays three phase instantaneous, average and maximum values of current and voltage. In addition the frequency and hours run will be monitored. Current transformer ratio and integration time can be programmed with setup functions. The 3 line LED display allows the simultaneously control of all three phases. The connection is possible with one, two and three – phase nets.
Dimensions H x W x D	72 x 72 x 83 mm	
Protection rating	Front IP 54, Case IP 20	
Terminals	Terminal block	
Cable connection	Flexible cable : until 2.5 mm² Rigid cable : until 2.5 mm²	
Weight	250 g	
Measurement		**Measurement of True-RMS Values** • instantaneous, average and maximum values of current • Phase voltage • Frequency (Hz)
current (non isolated Inputs)	consumption: < 0,5 VA	
- ct primary	5 ... 8.000 A	
- ct secondary	5 A	
Voltage		**Counter** Hours run with 0.1 h resolution if U_{12} > 35 V
Range	35 ... 480 V L-L	
Frequenz	40.0 … 80.0 Hz	
Hours run	Max. value 999999.9 Counts if U_{12} > 35 V	
Auxiliary power supply	230 or 400 VAC / +/- 20%, 2.5 VA	
Accuracy		
Current	0,5% +/- 1 Digit	
Voltage	0,5% +/- 1 Digit	
Frequency	+/- 0,2 Hz	
Operating conditions		
Operation temperature	-15 … + 50 °C	
Storage temperature	-20 … + 70 °C	
List price €	**Multis L72** **188,00**	

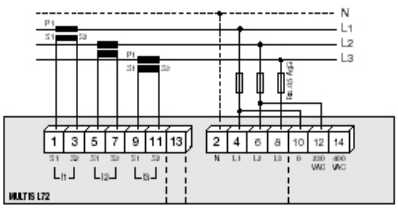
1 Phase 230 V



3 Phasen 230/400 V



3 Phasen 135/230 V



Software Control Vision

Functions

DIRIS VISION is the visualization software for DIRIS Am and Ap ranges. It operates in a Windows environment 98, NT4 (pack6), Millenium, 2000 or XP with a minimum PC configuration of: Pentium II, 64 Mb RAM, hard disk space of at least 200 Mb, one or more RS232 or RS485 serial ports, a 17" VGA 1024x768 screen.

General characteristics

The DIRIS VISION software allows you to visualization of:

- all of the electrical measurements in instantaneously
- alarms, harmonics, the energies and the index (DIRIS Ap input)

Allows you to export to EXCEL, for each Diris, the historical table.

- immediate measurements,
- of the energies and the index, the harmonics
- The visualization of the immediate device values can be in an analogue or digital format.

The DIRIS VISION software is available in a multilingual version with the following languages

- English
- French
- German
- Italian

The software provides the following functions:
Instantaneous visualization for each device:

- Digital display of:
  - current by phase
  - average of the 3 phase current
  - voltage (U, V) by phase
  - average of the 3 phase voltage (U, V)
  - frequency
  - power (active, reactive and apparent)
  - power factor by phase and total
  - energy (active +/-, reactive +/- and apparent)
  - impulse metering input (DIRIS Ap)
  - THD current and voltage by phase (DIRIS Ap)
- Analogue display of:
  - current by phase
  - voltage by phase
  - frequency
  - total active power
  - total power factor
  - active energy
  - hour metering
- Spectral form
  - harmonics tram rows 3 to 15 current and voltage per phase

Displaying ot the general readings ot a/l the DIRIS connected to the network:

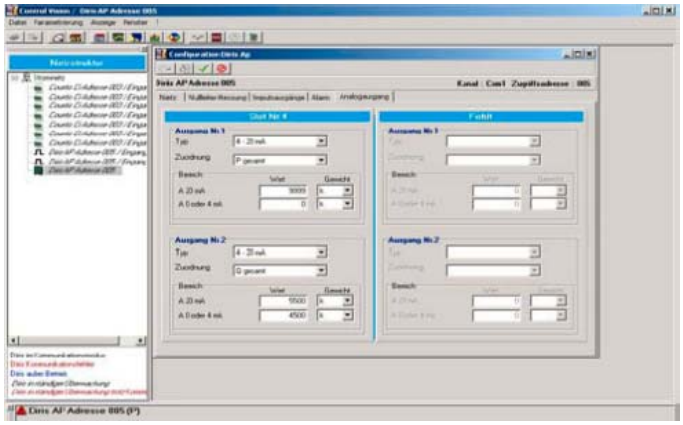
- Reading of immediate measurements and alarms (DIRIS Ap)
- THD current and voltage per phase
- Reading of the energy meters (active, reactive and apparent) and impulse meter input index (DIRIS Ap)

The Software will be stored on the disk of a PC. To connect the RS485 bus system with a PC running Control Vision a Converter USB > RS485 is required. It is also possible to connect the RS485 bus system to a Ethernet network. In this case TCP/IP Masters and Slaves are required.

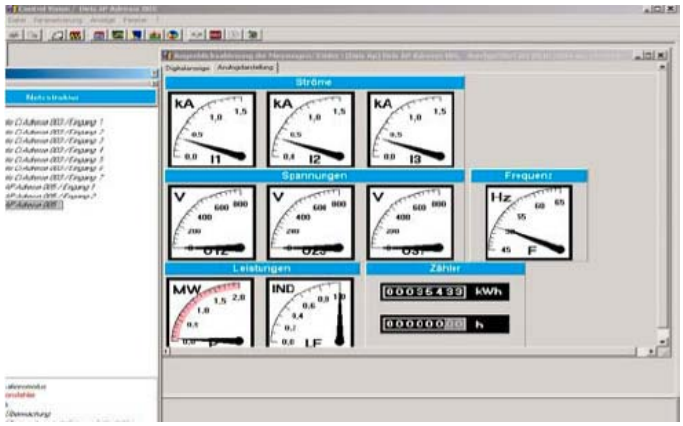
		List price €
Software Control Vision	1 .. 256 devices	**1010,00**
	> 257 devices	**On request**
USB / RS485 converter		**198,40**
Master Gateway RS232 / TCP/IP 48990017		**925,00**
Slave Gateway TCP/IP / RS485 48990016		**925,00**

Software Control Vision

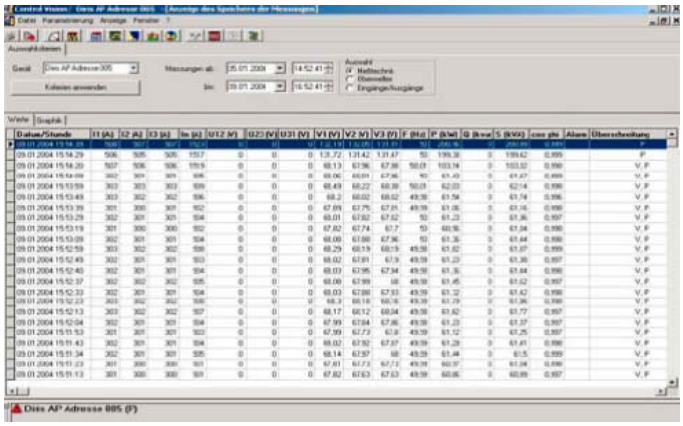
Configuration of a Diris Ap



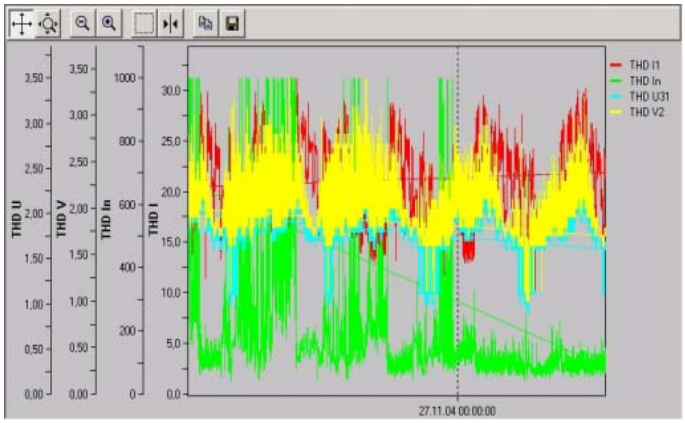
Analogue statement of the instantaneous measurement



General reading of the Diris measurement

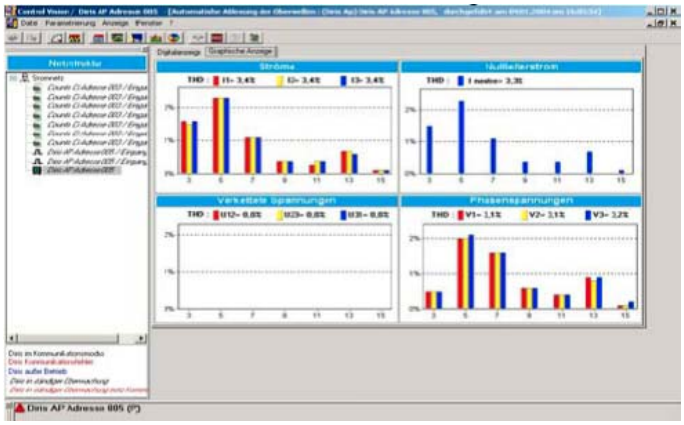


Measurement curve

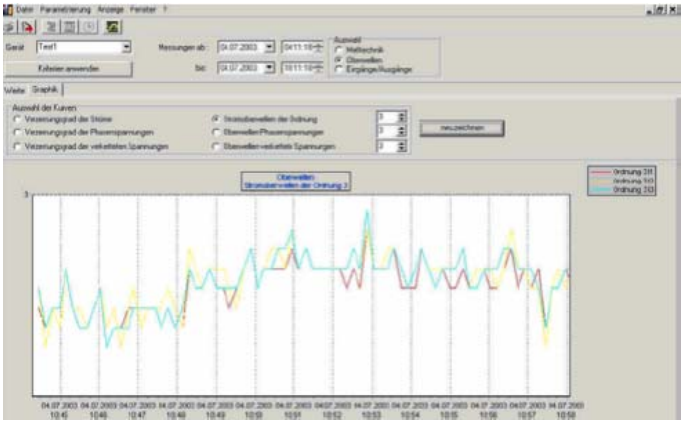


Software Control Vision

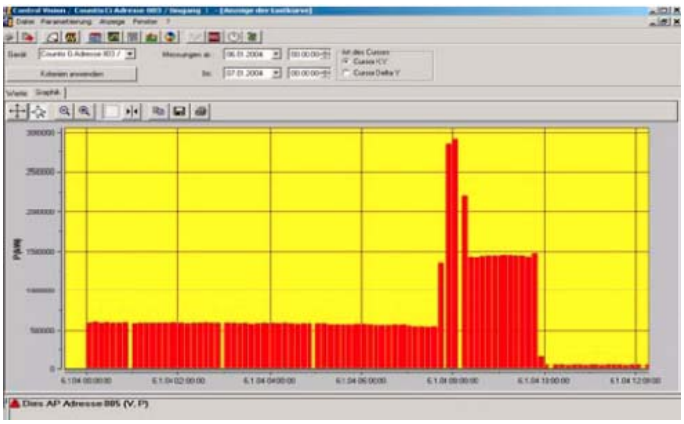
General harmonics reading



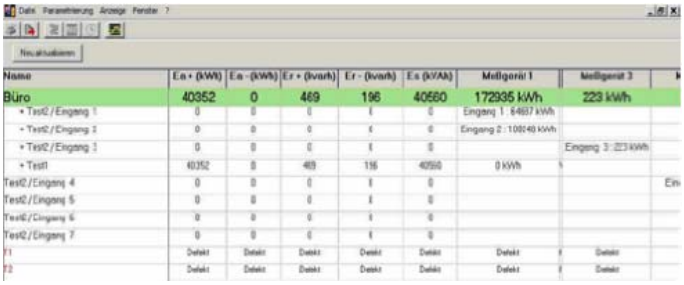
Measurement curve of harmonics



Load curve



General meter reading



Name	Ea + (kWh)	Ea - (kWh)	Er + (kvarh)	Er - (kvarh)	Es (kVAh)	Meßgerät 1	Meßgerät 3
Büro	40352	0	469	196	40560	172935 kWh	223 kWh
+ Test2 / Eingang 1	0	0	0	1	0	Eingang 1 : 64687 kWh	
+ Test2 / Eingang 2	0	0	0	1	0	Eingang 2 : 108048 kWh	
+ Test2 / Eingang 3	0	0	0	1	0		Eingang 3 : [illegible] kWh
+ Test1	40352	0	469	196	40560	0 kWh	
Test2 / Eingang 4	0	0	0	1	0		
Test2 / Eingang 5	0	0	0	1	0		
Test2 / Eingang 6	0	0	0	1	0		
Test2 / Eingang 7	0	0	0	1	0		
T1	Defekt	Defekt	Defekt	Defekt	Defekt	Defekt	Defekt
T2	Defekt	Defekt	Defekt	Defekt	Defekt	Defekt	Defekt

Energy-Management-System with Control Vision