DataCollector*XP-R*

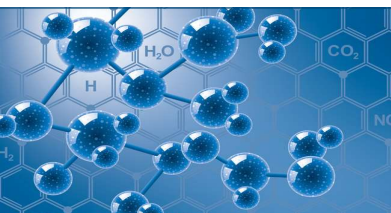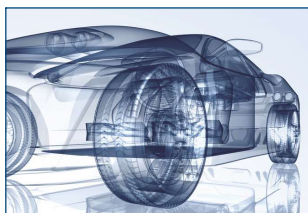## Multi-Channel Data Logger

Sciences | Research | Industries | Eco | HVAC

DataCollectorXP-R
Data Logger Series

The DCXP16-R with special female connectors is compatible with the Driesen+Kern rugged data loggers from the DK3XX and DK6XX series

Two DCXP-R models are available:
The DCXP8-R comes with 8 and the DCXP16-R with 16 input connectors which are arranged on the top of the device and allow connecting a variety of sensors and signals.
The inputs are suitable for standard signals (0..10V/4..20mA), for PT/100/PT1000 sensors, thermocouples and extra low voltage signals, e. g. from radiation sensors or strain gauges. Two of the 8/16 channels can be configured for pulse count.
Both models are available with a built-in GPRS modem.

Comprehensive Range of Probes

Driesen + Kern offers a variety of probes such as PT100/PT1000 temperature probes, strain gauges, combined humidity and temperature sensors as well as transducers for pressure, force, radiation and air velocity for connection with the DataCollectorXP-R.
In addition, it is possible to connect standardised analog output signals 0..1V/..5V/..10V/4...20mA and pulse signals using the DKC-I/DKC-U connection cables.
Combined humidity/temperature probes require only one input connector for their digital signal although providing two measured variables which gives you the opportunity to log 32 sensor readings with the DCXP-16-R.

Applications

■ Environmental Studies

■ Building restoration

■ Research and Development

■ Process Optimization

■ Monitoring of Environmental Parameters

■ Quality Assurance

Universal Inputs

DataCollectorXP-R by Driesen+Kern are multi-channel data loggers designed for long-term measurements. They combine flexible connectivity with high measurement resolution and accuracy making them the right solution for a wide range of applications.
The low current consumption allows batter-powered long-term measurements for several years.

ASCII Streaming Function

Easily integrate the DCXP into your data acquisition infrastructure by enabling the ASCII stream mode.
In ASCII stream mode you can access the logger and download readings with a terminal application (Windows/Linux). The data logging function is disabled in ASCII stream mode.
The USB driver emulates a virtual COM port working as a gateway to your custom software or downstream measuring system. This makes the DCXP more than "just" a data logger - and rather a interface to your comprehensive process measuring and control technology.

Remote Data Transmission

Data can be downloaded via USB or by removing the SD card from the logger. The GPRS model comes with a built-in radio modem which allows for GPRS upload of measurement data to server where the files can be accessed from anywhere at any time. Optionally, you can rent storage space on a Driesen + Kern server. In addition to regular scheduled uploads via FTP the DCXP-R can also send status or alarm messages via FTP or SMS (to up to 8 specified telephone numbers).


DCXP-16-R-GPRS Antenna

Features

DCXP-8/16-R with 8 or 16 easily adjustable sensor inputs
DCXP-8/16-R-GPRS with 8 or 16 easily adjustable sensor inputs and GPRS modem

- Analogue inputs for voltage, current, resistance, strain gauges, state

- Also programmable for PT100/PT1000 sensors, thermocouples and thermistors

- Suitable for combined digital humidity & temperature sensors
  (Each uses one slot so you can have 16/32 measured values)

- Two inputs configurable for pulse count

- Low current consumption allows battery-powered operation for several years,
   socket for power-supply unit built-in.

- Model with GPRS modem for FTP data upload, additional alarm and status notifications
  via SMS/GPRS

- Sampling interval: 2 Hz...8 Hz*, 1s...24hrs

- Includes SD card with capacity for 1000 million readings

- Icon on LCD and one switching output for alarms

- Triggered start of measurements on all channels

- Voltage supply for connected probes/sensors (sensor start-up time: 10 seconds)
  <5V & ≤1mA can be supplied in battery mode
  >5V & up to 24mA can be supplied in mains operation

- Analogue signal conversion to linear units and readings on touchscreen display.
  Comprehensive formula editor and functions available in InfraLog software.

- USB port (micro USB Type B)

- ASCII Streaming Function

*Analogue signals only
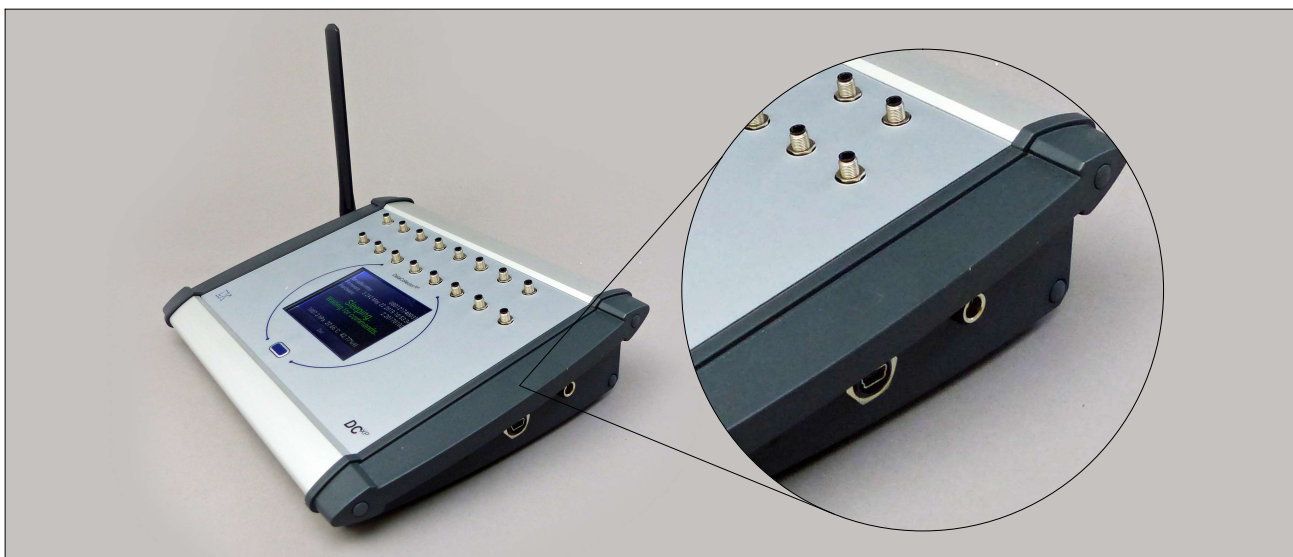
DCXP-16-R-GPRS with built-in GPRS modem

Specifications

General

Operating range:	-20...+70°C
Power supply (internal):	4x AA alkaline
Power supply (external):	power supply (included)
Battery life:	2 years @ 1 min 1/2 year @ 10 s 50 days @ 1 s
Sampling interval:	1s....24hrs
FastMode:	2...8Hz (analogue input only)
Memory capacity:	1000 million readings (SD card)
Dimensions:	245 x 194 x 63 mm
Enclosure material:	Aluminium

Sensors and inputs

Inputs:	DCXP-8-R 8x inputs DCXP-16-R 16x inputs
Input configuration:	Voltage, current, strain gauge, temperature (PT100/PT1000 Thermocouple Types K,T,J,B,E,N,R,S) state, 2 channels for pulse count
Integrated barometric pressure sensor:	Measuring range: 10...1300hPa Resolution: 0.1hPa Accuracy: ±1.5hPa
Trigger input:	Triggered measurement run upon threshold exceedance or status query Configurable on every channel
Alarm output:	Relay 60V/1A
Power supply for connected sensors: <5V & ≤1mA >5V & up to 24mA	Voltage supply for connected sensors/probes (sensor start-up time 10 seconds) can be supplied in battery mode can be supplied in mains operation Sensors with two-wire current loop can also be powered this way.
Communication:	USB interface (galvanically isolated) SD card (download with card reader) GPRS upload via FTP

Order Code

Data logger with...

DCXP-8-R	8 input channels
DCXP-16-R	16 input channels
DCXP-8-R-GPRS	8 input channels and GPRS modem
DCXP-16-R-GRPS	16 input channels and GPRS modem

Voltage/Current:

Several options are available for connecting external voltage or current signals:

Connecting Transmitters/Sensors
If you want to employ transmitters with voltage outpouts you can connect a 0...1V voltage signal with the DKC-S cable.
Signals up to 0...10V can be connected with the DKC-U cable (other voltages up to 24V max. upon request).
Current signals require the DKC-I cable (24mA max.).

DKC-S-2000-4 2m cable for 0...1V
DKC-U-2000-4 2m cable for 0...10V
DKC-I-2000-4 cable for 0...24mA

Galvanically Isolated Measurements
We offer galvanically isolated connector modules for measurements in facilities, electric cabinets or on PCBs which require the highest degree of precision and safety.
The DKC-UG can be used for potential-free measurements of voltage signals up to 10V (signals up to 50V on request).
The DKC-IG is used for galvanically isolated measurements of current signals from 0...24mA.
An external shunt can be integrated for measurements with higher Ampére levels. Maximum voltage is also 50V.
(Article code DCXP0178)

Single-ended Voltage Signals

Range (mV):	0..10	0..20	0..50	0..100	0..1V	0..2.5V	0..5V	0..10V
Resolution (µV)[1]:	0.58	0.58	0.76	1.54	15.54	38.9	76.9	154
Input Impe-dance (MOhm):	2.5	2.5	2.5	2.5	2.5	0.1	0.1	0.1
Accuracy:	0.05% of chosen measurement range							

[2] Single-ended signals can be sampled at a maximum of 8 Hz. In this case resolution increases by ten times compared to the values specified above.

High Impedance Mode (Voltage Signals)

Range (mV):	±5	±10	±20	±50	±100	±1000
Resolution (µV)[2]:	0.15	0.3	0.6	0.8	1.5	15
Input Impedance:	1 GΩ					
Accuracy:	0.05% of chosen measurement range					

[2] Maximum sampling rate is 1 Hz. This input range is used mostly for measuring electrochemical reactions.

Current

Range (mA):	0...24mA
Resolution (µA):	0.36µA
Input Impedance:	10Ω
Resolution:	0.05% of chosen measurement range

Measuring Resistance

Range:	0...1MΩ
Resolution:	0.0015% of chosen measurement range
Accuracy:	0.05% of measurement ranges 0...1000Ω, 0...10KΩ, 0...100KΩ, 0...1MΩ

Pulse Count:
Two of the inputs can also be configured for pulse count. These potential-free signals with a low level <0.5 VDC and a high level between 2 and 3 VDC can be connected using the DKC-S standard cable. Higher pulse signals (24V max) need to be connected via DKC-P cables.

State:
Any of the inputs can be used for state logging (0 or 1) and can also be set to trigger logging at the same time.
In this mode the logger checks whether the state has changed every 8 seconds.

Trigger Input:
The DataCollector XP has trigger inputs which can be used to start logging.
You can use the standad **alarm function** on any of the input channels to program a threshold value for your sensors whose exceedance initiates logging.
Furthermore you can select "**State**" on these channels and connect it to a switch contact (make contact element) to start the logger.

Pulse (potential-free), 2 Inputs Only

Range:	0...65,000 pulses per interval	0...100Hz
Resolution:	1 pulse / 1Hz	1 pulse / 1Hz
Accuracy:	1 pulse / 1Hz	1 pulse / 1Hz

Pulse (Voltage Pulse, max. 24V), 2 Inputs Only

Range:	0...65,000 pulses per interval	0...1,300Hz
Resolution:	1 pulse / 1Hz	1 pulse / 1Hz
Accuracy:	1 pulse / 1Hz	1 pulse / 1Hz

Strain Gauges (Wheatstone)
(for bridges with 60...700 Ohm)

The DataCollector XP is able to measure wheatstone bridges (60-700 Ohm). It can supply the nescessary stabilised current of 1mA. Ranges from ±5mV to ±100mV may be selected with a resolution of 150nV (at ±5mV range). The signal can be logged with up to 32Hz. Standard DKC-S cables may be used to connect strain gauges.

Range (mV):	±5	±10	±20	±50	±100
Resolution (µV)[3]:	0.15	0.3	0.6	0.8	1.5
Input Impedance:	2.5MΩ				
Accuracy:	0.1% of chosen measurement range				

[3] At a sampling rate of 8 HZ the resolution is ten times compared to the specified values.

Humidity Sensors

Humidity (internal/external)	Range	Resolution	Accuracy
	0...100%RH	0.04%RH	see Graph A

If you connect digital humidity & temperature probes, these will use only one slot for each combined probe.

Calculated values:
In addition to relative humidity you may also retrieve calculated values such as absolute humidity, dewpoint, wet bulb temperature, aW-Value, mixing-ratio, norm humidity, enthalpy, TH70/80-value.

The humidity sensor can be used in a range of 0...100%RH. It may not be wetted excessively and is not to be used in an environment of extremely high humidity and high temperature at the same time. The graph shows the limitations of use.
If used ouside the normal conditions the humidity reading may temporarily offset by up to 3%. After returning to normal conditions it will slowly return to calibration state by itself.
Operation outside the maximum conditions is not recommended.

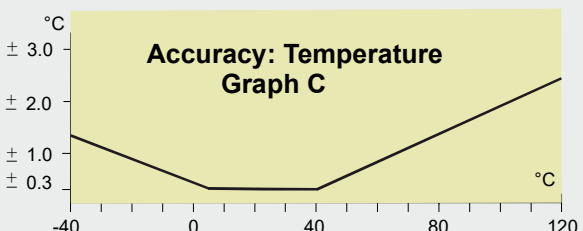| **Temperature**	Range**	Resolution	Accuracy
PT100, PT1000*	-100...+250°C	0.01 K	see Graph B
Thermistor	-40...+120°C	0.01 K	see Graph B
Thermocouple***			
TypeK	-200...+1400°C	0.05 K	
TypeJ	-210...+1200°C	0.05 K	
TypeT	-200...+400°C	0.05 K	
TypeB	-250...+1820°C	0.05 K	acc. TC-
TypeE	-200...+1000°C	0.05 K	Class I/II
TypeN	-200...+1300°C	0.05 K	
TypeR	-50...+1750°C	0.05 K	
TypeS	-50...+1770°C	0.05 K	
Temperature in combined humidity-/temperature Sensors	-40...+120°C	0.01 K	ref.Graph C

* All standard temperature probes use a precise PT1000-sensor
** Values can also be converted to K (Kelvin) or F (Fahrenheit).
*** Thermocouple probes with Mini ISA connector can be connected using the DKC-TC-0 cable.

Accuracy: Relative Humidity Graph A

Operating Range — Maximum range — Normal range
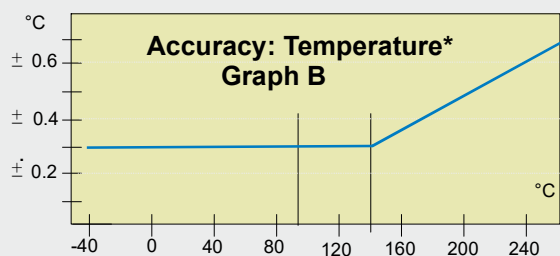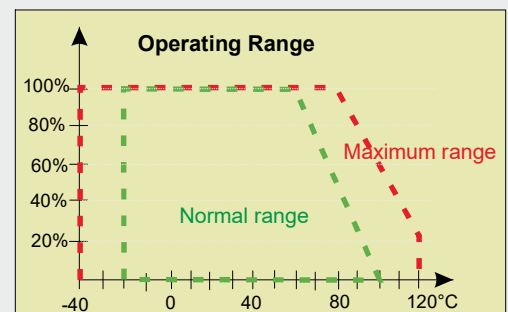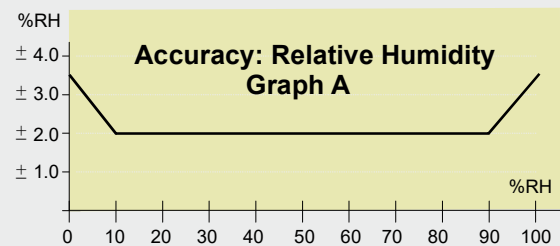
Accuracy: Temperature* Graph B
* Custom calibration for ±0.1°C on request

Accuracy: Temperature Graph C

Specifications - Sample Rate / Interval

The interval in which the readings are taken is user-configurable. The following table shows the maximum sample rate as a function of the selected sensor. The configurable rate has to comply with the sensor which has the lowest sample rate.

Sensor	max. Sample rate	Sensor	max. Sample rate
PT1000, Pt100	32 Hz	Voltage (DVM)	32 Hz
Thermistor	32 Hz	Voltage (HighImp)	4 Hz
Thermocouple	4 Hz	Pulse	1 Hz
HumidityTemp.	4 Hz	Frequency	1 Hz
Condensation	32 Hz	Status	32 Hz
Waterdetector	1 Hz	Light	1 Hz
Soil moisture	1 Hz	CO2	1 Min
Resistance	32 Hz	Pressure, baro	4 Hz
Strain gauge	32 Hz	Pressure, analogue	32 Hz
Current	32 Hz	Differential pressure	8 Hz

Accessories for the DataCollectorXP-R

DCXP00090
Hard protective case. Fits logger and accessories plus several sensors.
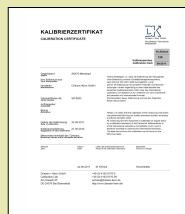
Upon request, we provide a certificate of calibration for the logger and the sensors.

InfraLog Light or Enhanced
Single-user licence, with charts and analysis tools for your measurement data

DCXP0195
PSU (15V/1.5A, low-noise) supplies DCXP and connected sensors up to max. 100mA per channel and 1.5A in total

DCXP0178 DKC-IG / DKC-UG
Galvanically isolated module for measuring **Current/Voltage** in plants/circuitry.

DCXP0800 / DCXP0850
Protective enclosure for outdoor use with 8/16 robust connection sockets.

Connectionc ables:
DKC-S-2000-4 (length 2m, 0...1V)
DKC-S-5000-4 (length 5m, 0...1V)
DKC-U-2000-4 (length 2m, 0...10V)
DKC-U-5000-4 (length 5m, 0...10V)
DKC-I-2000-4 (length 2m, 0...24mA)
DKC-I-5000-4 (length 5m, 0...24mA)
DKC-P-2000-4 (length 2m, pulse)
DKC-P-5000-4 (length 5m, pulse)
Other lengths and ranges upon request
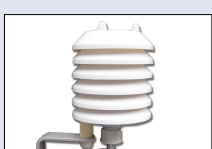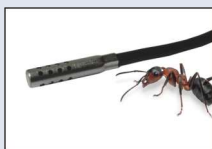
Suitable Probes and Accessories

for the DCXP-R Data Logger

Driesen + Kern manufactures a range of reasonably priced standard temperature probes suitable for the rugged data logger series DK3XX and 6XX. See the separate product data sheet for our wide choice of available probes.

Temperature sensors for the DCXP-R Data Logger

DS Standard probe
D=4mm, L=100mm

CM Standard probe
D=4mm, L=50mm

CO Air probe
D=4mm, L=17mm
extra fast response time

EU Surface probe
L=20mm, W=10mm

EUM Surface probe with magnet L=25mm, W=14mm

MT Sheathed Thermocouple
D=3mm, L=200mm
high temperature up to 1 200°C
(see separate data sheet for more thermocouple probes)

Humidity/Temperature Sensors for the DCXP-R Data Logger

RFT - Probe for measuring humidity and temperature. Operates at -20... +80°C and up to -40/+120°C with PTFE-cable (G) type G. Dimensions: D=8x35mm

TR351 Radiation/Rain Shield suitable for probes RFT-325 and DKRF300-325. Minimizes the impact of sunlight and rain. (D=77mm/H=108mm)

DKRF300 - Probe for measuring humidity and temperature. Op. conditions: -20... +80°C Dimensions: D=8x101mm

RFTXXS - Special probe with extra small dimensions (D=4mm, L=20mm), Cable length: 2m, Operating conditions:-40...+80°C -40.+120°C with PTFE-cable (G)

RFTO - Special probe for humidity/temp measurements in walls and boundary layers between -20...+80°C. D=30mm x H=10mm

RFTW - Special probe for measurements in boundary layers such as walls or intermediate spaces Dimensions: L=45mm,B=20mm

DKRF370 - Humidity/temperature probe for compressed air up to 100 bar, G3/8" thread, L=100mm, D=13mm, Operating conditions: -20...+80°C.

SHSW - Special probe for detection of wetting and water ingress. Probe sends signal 1 when detecting water and 0 when the monitored area is dry. Dimension: 60 x 10mm

Connecting Cables for Temperature/Humidity Probes

Standard probes are fitted with Type V PVC cables and can be used under conditions from -20...+80°C. Special Teflon® (Type G) cables allow operation within the range of -75...+250°C. Operating conditions of probes RFT-325 and RFTXXS-325 with the Teflon® cable are -40°C...+120°C. Order identifier paradigm: **DS-325-V-2000** stands for standard probe with 2m PVC cable; **DS-325-G-2000** is the standard probe with 2m Teflon® cable.

Suitable Probes and Accessories

for the DCXP-R Data Logger

Driesen + Kern offers a range of sensors that can be connected to the DCXP-R Data Logger. Below is a selection of our products. Of course, you can also equip the device with another product if you do not find a suitable model among the listed sensors. Please don't hesitate to contact us for advice on how to choose the right sensor.

Current Clamps, Linear Position Sensors, Force Sensors, Weather sensors

Current Clamp MN-89
Range: 0.5..240A
Max. conductor D=20mm

Transducer
Model Uw: Umax= 650V (AC)
(no aux. voltage required)
Model UgT: Umax= 600V (DC)
Model IgT: Imax = 5A (DC)

LP-50F Linear Position Sensor
Detects displacements
Total length: L=129mm
Electrical stroke max. 50mm

K25 Load Cell
For tension and compression
force measurements
Range: 0.02...50 kN
Accuracy: 0.1%/0.2%

SKYE Light Sensors
We offer a variety of sensors,
e. g. Pyranometers for total
sunlight, UV and PAR sensors

DKMS40 Soil Moisture Sensor
Special probe for measurements
of volumetric soil moisture

MA60/6 Micro/Mini/Macro Air Velocity Sensors*
Measuring range: 0.2..40m/s
Micro (11x15mm)
Mini (22x28mm)
Macro (85x80mm)

Pressure Probe PSense650
Various models as waterlevel
or screw-in probes with ranges
from 1 bar up to 100 bar

ARG100 Rain Gauge
Well-priced tipping bucket rain gauge
Collector surface: 506.7cm²
Sensitivity: 0.2mm

Young 52202/52203 Rain Gauge
Heatable tipping bucket rain gauge,
recommended by the WMO
Collector surface: 200cm²
Resolution: 0.1mm

WG3400 Reasonably Priced Air Velocity Transducer
Range: 0.5-35m/s
Accuracy: 0.5m/s i. e. 5%
(no aux. supply needed)

WR3124 Well-priced Weather Vane (Potentiometer)
Resolution: 0.5°
(requires no additional power supply)

* = M60 with impulse output (max. 2 connectable)
   M6 with voltage output (only with mains operation)

Software *InfraLog* for Windows V5
for DataCollectorXP - Data Logger

InfraLog V5

Basic-Version
**L**ight-Version
Enhanced-Version

The software InfraLog provides EASY, SECURE & CONVENIENT control for all Driesen+Kern products. After establishing a connection between your logger and PC, InfraLog automatically detects the device.
InfraLog V5 offers a multitude of features for the **DCXP** -series.
InfraLog is available in three versions: Basic (included in delivery), Light and Enhanced (both optionally available) each with a different number of features, inluding password protection and language options. It may be installed on all modern Windows-versions using a PC, notebook or windows-based tablet.

INFRALOG FEATURES	BASIC	LIGHT	ENHANCED (Professional)
Automatic device detection	x	x	x
Conversion from base units of measurement into customizable physical values	x	x	x
Load/save device settings	x	x	x
Upgrade device firmware via USB	x	x	x
Save readings to your PC's hard drive or network storage	x	x	x
Customize InfraLog's appearance	x	x	x
Symbols and Icons indicate logger status (logging/alarm/battery)	x	x	x
Total control (settings, start, stop, download etc.)	x	x	x
Measurement input configuration	x	x	x
Download data without stopping the logger	x	x	x
Online readings	x	x	x
Export to Excel (fast conversion)	x	x	x
Calculate absolute humidity, dewpoint etc.	x	x	x
Supports USB 2.0 for download rates of 1 Mbit (100 000 readings in 20 s)	x	x	x
Menu languages (German, English, Spanish, French)	x	x	x
Compatible with Windows 7, 8 & 10	x	x	x
Formula compiler calculates any measured variable		x	x
y/t charts (readings over time)		x	x
Three scalable axes		x	x
Zooming function		x	x
Meter readings at the cursor		x	x
Display as spreadsheets		x	x
Combine a series of measurement in one chart		x	x
Definition of thresholds		x	x
Statistics (min, max and average values)		x	x
y/x charts (values over values)			x
Generate daily, weekly, monthly and annual reports			x
Specify beginning and end of analized period			x
Input of analysis interval			x
Print settings			x

Well-arranged charts with overview and up to three Y-axes
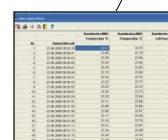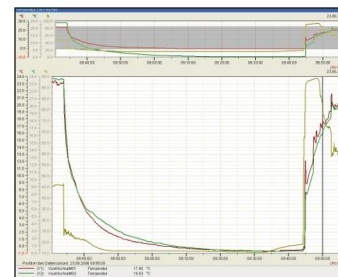
Meter-reading at the cursor
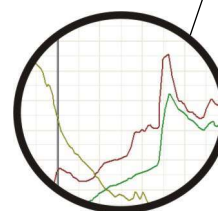
Zooming function

Driesen + Kern GmbH

Am Hasselt 25
D-24576 Bad Bramstedt

Tel.: +49 4192 8170-0
Fax: +49 4192 8170-99

info@driesen-kern.de
www.driesen-kern.de

CE