CS INSTRUMENTS GmbH

DS 500

NEW

Intelligent chart recorder for compressed air and gases

Measurement - control - indication - alarm - recording - evaluation

Advantages at a glance:

- **Clear layout:** 7" colour screen with touch panel…
- **Versatile:** Up to 12 optional sensors can be connected…
- **Easy:** Very easy operation, automatic sensor identification…
- **Reliable:** Stores all measured values reliably, 4 alarm relays for threshold exceedings...
- **Suitable for industrial applications:** Metal housing IP 65 or panel mounting…
- **Data available though world wide web:** Network-compatible and remote transmission via webserver
- **Intelligent:** Daily/weekly monthly reports…
- **… Saves time and costs during installation**

DS 500 — the intelligent chart recorder of the next generation

For more than 20 years CS Instruments has been developing, manufacturing and marketing measuring instruments for compressed air and gases. Our long-term practical experience in measurement and control technology was implemented in the new DS 500.
From recording of the measured data, automatic sensor identification, indication on a big colour screen, alerting, storage up to remote read-out via webserver … this is all possible with DS 500. By means of the CS Soft software alarms can be sent via SMS or e-mail. On the big 7" colour screen with touch panel all information are available at a glance. The operation is very easy.
All measured values, measured curves and threshold exceedings are indicated. The curve progressions from the beginning of the measurement can be viewed by an easy slide of the finger.

Daily/weekly/monthly reports with costs in € and counter reading in m³ for each consumption sensor are completing the sophisticated system concept.

The big difference to ordinary paperless chart recorders reveals in the easy initiation and in the evaluation of the measured data. All sensors are identified directly and powered by DS 500. Everything is matched and tuned.

No time consuming studying of the instruction manual **… this saves time.**
Internal voltage supply of all sensors, no wiring of external mains units
… this saves additional costs.

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DS 500

Intelligent chart recorder for compressed air and gases

Versatile:

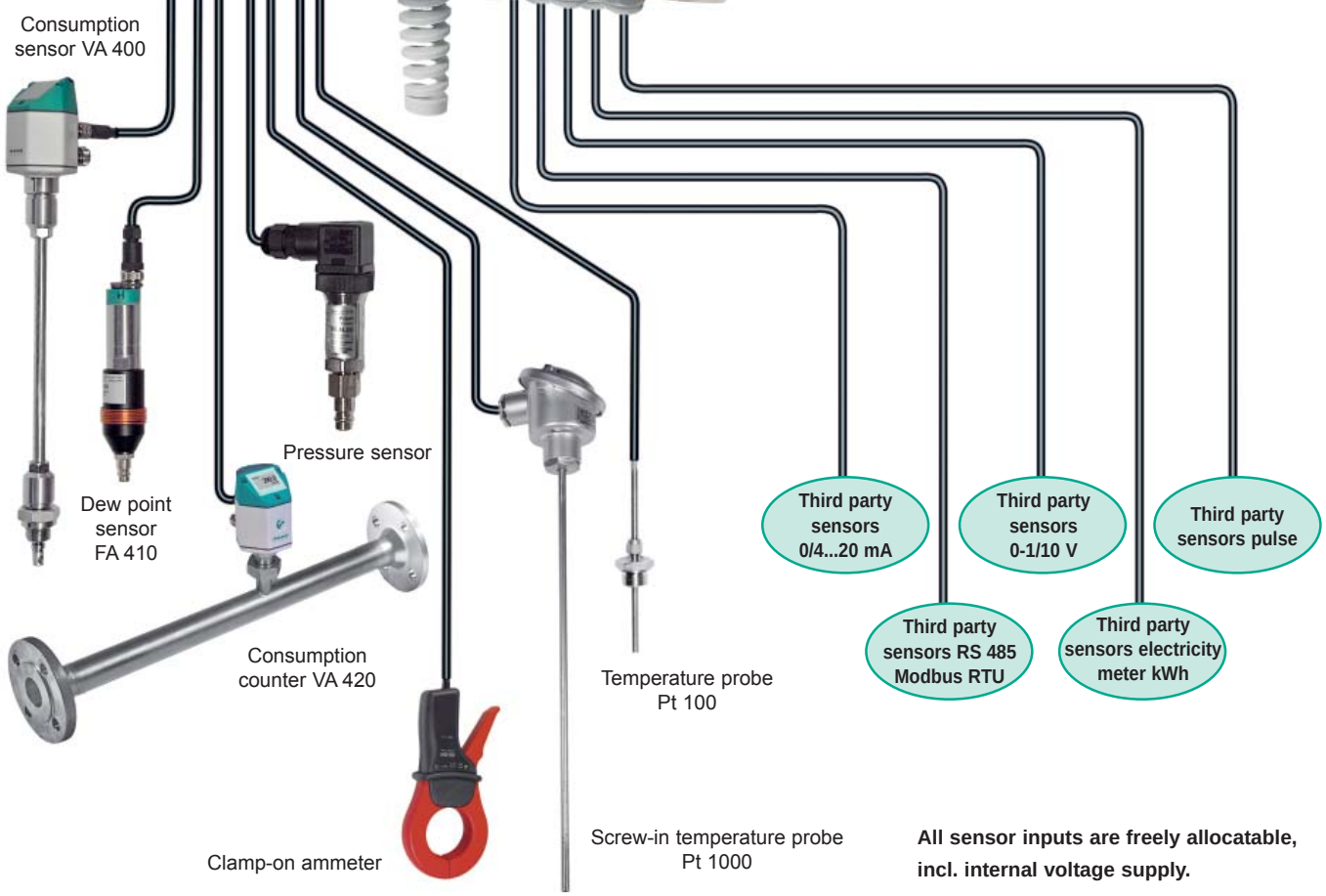
Up to 12 sensors, incl. all CS sensors (consumption, dew point, pressure, current, KTY, PT 100, PT 1000) are identified automatically by DS 500. Optional analogue sensors (0/4..20 mA, 0…1/10/30 V, pulse) can be configured easily and quickly. Digital sensors can be connected via RS 485, Modbus RTU and SDI.

Flexible:

Network-compatible and worldwide remote data transmission via Ethernet, integrated webserver.

Alarm relay/ fault indication:

Up to 32 threshold values can be configured freely and allocated to 4 different alarm relays. Collective alarms are possible.



All sensor inputs are freely allocatable, incl. internal voltage supply.

Consumption | Leakage | Dew point | Pressure | Current | Temperature

MULTIFUNCTION

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Suitable **probes** from the **CS Instruments** product range

Consumption sensors VA 400:	**Order no.**
VA 400 consumption sensor in basic version: Standard (92.7 m/s), sensor length 220 mm, without display	0695 4001
Option for VA 400:	
Max. version (185 m/s)	Z695 4003
HighSpeed version (224 m/s)	Z695 4002
Sensor length 120 mm	ZSL 0120
Sensor length 160 mm	ZSL 0160
Sensor length 300 mm	ZSL 0300
Sensor length 400 mm	ZSL 0400

Consumption

Consumption counters VA 420:	
Consumption counter VA 420 with integrated measuring section (R 1/4" DN 8)	0695 0420
Consumption counter VA 420 with integrated measuring section (R 1/2 DN 15)	0695 0421
Consumption counter VA 420 with integrated measuring section (R 3/4" DN 20)	0695 0422
Consumption counter VA 420 with integrated measuring section (R 1" DN 25)	0695 0423
Consumption counter VA 420 with integrated measuring section (R 1 1/4" DN 32)	0695 0426
Consumption counter VA 420 with integrated measuring section (R 1 1/2" DN 40)	0695 0424
Consumption counter VA 420 with integrated measuring section (R 2" DN 50)	0695 0425

Consumption

Dew point sensors:	
FA 410 dew point sensor, -80°...20°Ctd incl. inspection certificate	0699 0410
FA 415 dew point sensor, -20°...50°Ctd incl. inspection certificate	0699 0415
Standard measuring chamber for compressed air up to 16 bar	0699 3390
Connection cables for VA 400, VA 420, FA 410 and FA 415:	
Connection cables for consumption sensors / dew point sensors:	
Connection cable 5 m	0553 0104
Connection cable 10 m	0553 0105

Dew point

Pressure sensors:	
Standard pressure sensor CS 16, 0...16 bar, ± 1 % accuracy of full scale	0694 1886
Standard pressure sensor CS 40, 0...40 bar, ± 1 % accuracy of full scale	0694 0356
Standard pressure sensor CS 1,6 absolute, 0...1,6 bar abs., ± 1 % accuracy of full scale	0694 3551
Standard pressure sensor CS 100, 0...100 bar, ± 1 % accuracy of full scale	0694 3557
Standard pressure sensor CS 250, 0...250 bar, ± 1 % accuracy of full scale	0694 3558
Standard pressure sensor CS 400, 0...400 bar, ± 1 % accuracy of full scale.	0694 3559

Pressure

Temperature probes:	
Screw-in temperature probe Pt 100, class A, length 300 mm, Ø 6 mm, with measuring transducer 4...20 mA = -50...+500°C (2-wire-technology)	0693 0002
Temperature probe cable Pt 100, Class A, length 300 mm, Ø 6 mm, -50...+180°C, 5 m probe connection cable with open ends	0604 0102
Temperature probe cable Pt 100, Class A, length 150 mm, Ø 6 mm,, -50...+180°C, 5 m probe connection cable with open ends	0604 0100
Clamp screwing 6 mm, G1/2", VA clamping, pressure-tight up to 10 bar	0554 6004
Connection cables for pressure sensors / temperature probes:	
Connection cable 5 m	0553 0108
Connection cable 10 m	0553 0109

Temperature

Clamp-on ammeters:	
Clamp-on ammeter 0...1000 A TRMS incl. 5 m connection cable with open ends	0554 0507

Current

Optional third-party sensors 0/4...20 mA, 0...1/10/30 V, PT 100 / PT 1000, KTY, pulse, RS 485 Modbus connectable.

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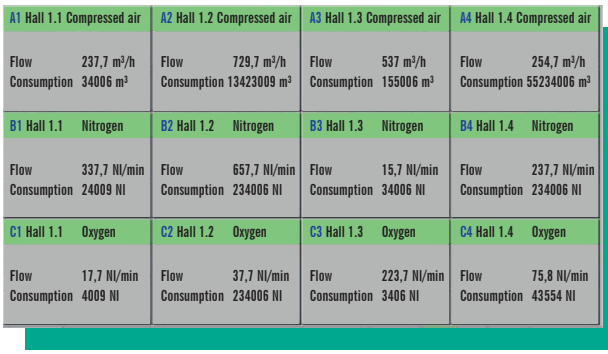
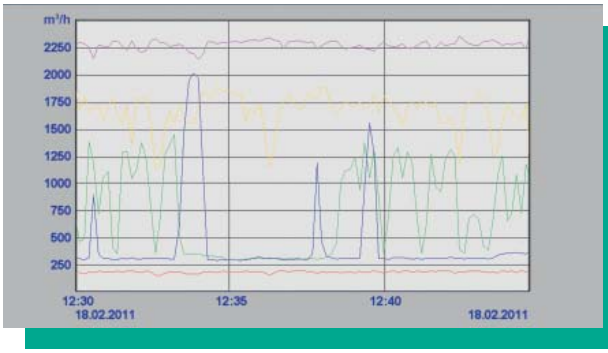
All important information at a glance:

Measured values, statistics, curves with the 7 inch colour screen touch panel



Real time measured values

All measured values can be seen at a glance. Threshold exceedings are indicated in red colour. A "measuring site name" can be allocated to each sensor.



Graphic display

This display replaces the former evaluation of ordinary paper chart recorders and offers lots of advantages. The time axis can be moved by a finger slide. The "zoom function by finger movement" which enables an analysis of peak values is unique.

Real time measured values and graph

Additionally to the measurement curves the actual value is indicated as well.

Month Year	VA 400 No. 1				
	Monthly consumption	Costs	Min value	Max value	Average value
September 2010	15666 m³	157 Euro	15,2 m³/h	120,2 m³/h	37,3 m³/h
August 2010	15666 m³	157 Euro	15,2 m³/h	120,2 m³/h	37,3 m³/h
July 2010	15666 m³	157 Euro	15,2 m³/h	120,2 m³/h	37,3 m³/h
June 2010	17666 m³	177 Euro	15,2 m³/h	120,2 m³/h	37,3 m³/h
May 2010	17666 m³	177 Euro	14,9 m³/h	120,2 m³/h	37,3 m³/h
April 2010	17666 m³	177 Euro	14,9 m³/h	120,2 m³/h	37,3 m³/h
March 2010	17666 m³	177 Euro	14,92 m³/h	120,2 m³/h	37,3 m³/h
February 2010	17666 m³	177 Euro	8,5 m³/h	120,2 m³/h	37,3 m³/h
January 2010	17666 m³	177 Euro	8,5 m³/h	120,2 m³/h	37,3 m³/h
Sum 2010	152994 m³	1533 Euro	8,5 m³/h	120,2 m³/h	37,3 m³/h
December 2009	17666 m³	177 Euro	8,5 m³/h	120,2 m³/h	37,3 m³/h
November 2009	17666 m³	177 Euro	8,5 m³/h	120,2 m³/h	37,3 m³/h
October 2009	17666 m³	177 Euro	8,5 m³/h	120,2 m³/h	37,3 m³/h
September 2009	17666 m³	177 Euro	8,5 m³/h	120,2 m³/h	37,3 m³/h

Statistics and reports

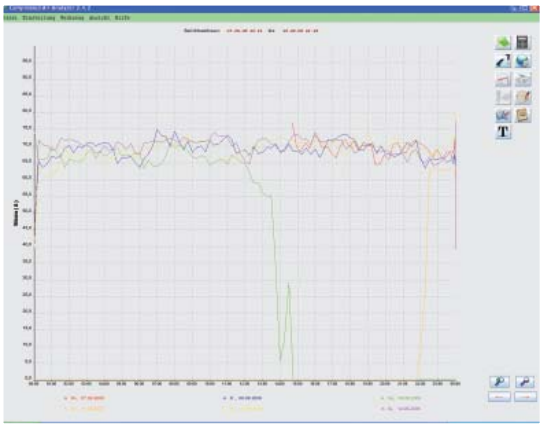
Different to ordinary chart recorders the DS 500 offers not only the recording of the measured data but also the evaluation of all consumption sensors optionally as daily/weekly/monthly report at the push of a button. It is no longer necessary to read-out the counter and transfer the values manually into a list. The reports can be imported to every PC into Excel® by means of a USB stick and after that they can be printed out without any additional software. This saves time and money and simplifies the evaluation enoumously.

Flexible data transfer for each application

1. Data transfer via USB stick or USB cable

If no Ethernet-/Bus connection is existing or if the installation would be too costly the recorded data can be stored onto a USB stick and transferred to the PC. DS 500 will automatically identify the USB stick.

The user will be guided through the menu "Read-out data".The data stored in the USB stick can be comfortably evaluated at the PC by means of the **CS Soft Professional software for DS 500**.

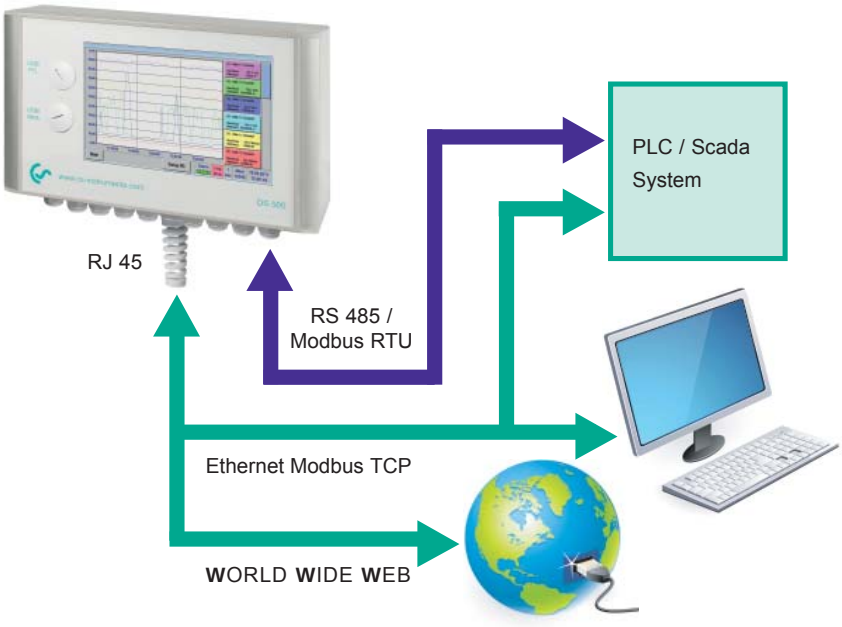


CS Soft Professional software for DS 500

2. Data transfer, remote maintenance and consumption analysis via webserver and integrated Ethernet interface, Modbus, RS 485…

The current measured data and the stored measured data can be transferred via Ethernet or RS 485 (Modbus).

The integrated webserver enables the user to read out the measured data via internet. For the evaluation of the data at the PC the user can dispose of the comfortable and versatile CS Soft Professional software for DS 500, which leaves nothing to be desired. Threshold exceedings can be sent via SMS and e-mail.



DS 500 can be connected via Ethernet/ RS 485 to customers' own systems (PLC, Scada).

By means of the CS Soft Professional software for DS 500 the data can be evaluated comfortably.

As an alternative the web server in DS 500 can be addressed via any web browser. Current measured values and consumption statistics can be transferred via the web server.

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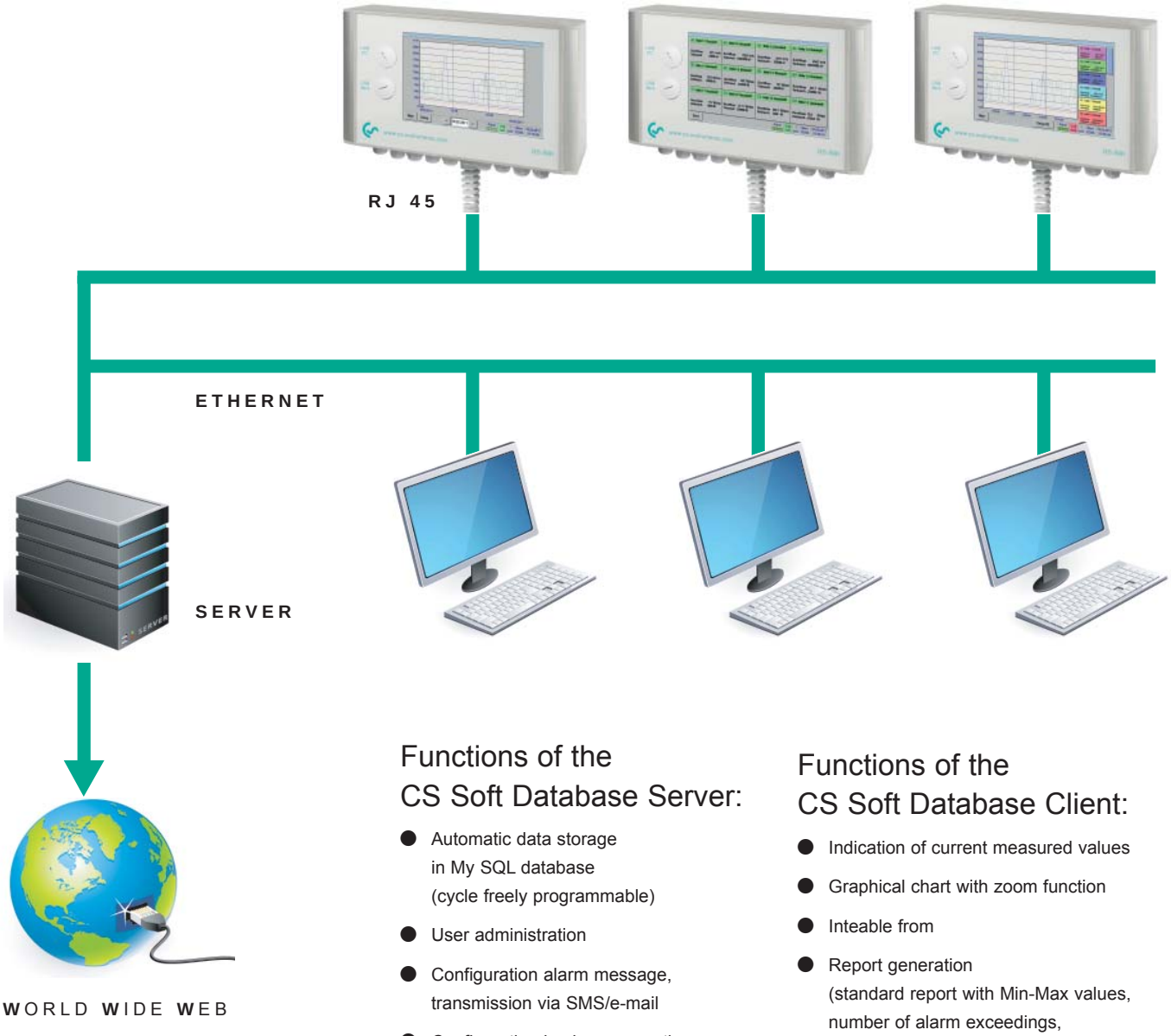
Transparent measurement data any time at any PC

CS Soft Database Client/Server Solution

By means of the CS Soft Database Client/Server Solution an optional number of DS 500/DS 300 instruments can be evaluated via Ethernet. The software stores the measured data of all DS 500/DS 300 cyclically (cycle freely adjustable) in a SQL database on the server. In case of an exceeding of the stored alarm values the software automatically sends an SMS or an e-mail. Furthermore, different user levels can be defined in the server software so that single staff members only can access the measured data of certain DS 500/DS 300.
The evalulation of the measured data can be carried out by means of the client software from each PC within the company.



Functions of the CS Soft Database Server:

- Automatic data storage in My SQL database (cycle freely programmable)
- User administration
- Configuration alarm message, transmission via SMS/e-mail
- Configuration backup generation

Functions of the CS Soft Database Client:

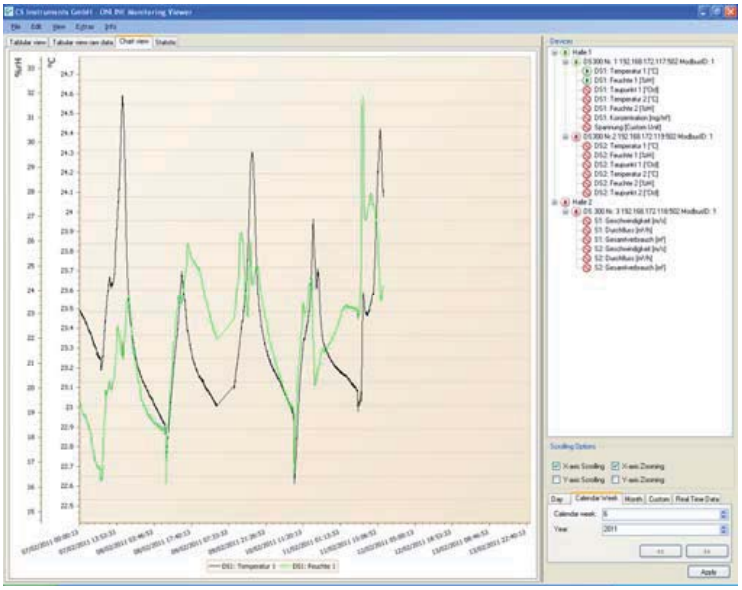
- Indication of current measured values
- Graphical chart with zoom function
- Inteable from
- Report generation (standard report with Min-Max values, number of alarm exceedings, moment of alarm exceeding)
- Automatic consumption report

View:
Current measurement values

- Load background image
- Place/fix window with measurement values
- Red measurement values in case of alarm exceeding

Graphical chart
with zoom function

- Selection of the measuring channels to be indicated
- Easy zoom in and zoom out
- Up to 8 y-axis
- Quick access to day, week, month view



			Unit		Jan 10	Feb 10	Mar 10	Apr 10	May 10	Jun 10	Jul 10	Aug 10	Sep 10	Oct 10	Nov 10	Dec 10	Sum 2010
Hall 1	DS 500	Channel A1	m³	Counter beginning	9.560	18.440	26.550	34.502	43.201	50.458	59.988	67.313	75.412	83.254	89.421	98.451	
		Machine 1	m³	Counter end	18.440	26.550	34.502	43.201	50.458	59.988	67.313	75.412	83.254	89.421	98.451	107.513	
			m³	**Monthly consumption**	**8.880**	**8.110**	**7.952**	**8.699**	**7.257**	**9.530**	**7.325**	**8.099**	**7.842**	**6.167**	**9.030**	**9.062**	**97.953**
			m³/h	Average consumption	17,6	16,1	15,8	17,3	15,8	18,9	14,5	16,1	15,6	12,2	17,9	18,0	16,2
			m³/h	Min. value	3,5	3,5	3,7	3,7	3,7	3,8	3,9	3,9	3,9	3,9	3,9	3,9	
			m³/h	Max. value	37,7	38,0	38,5	35,1	35,8	36,1	37,2	37,1	36,8	37,3	37,5	37,5	
			€	**Costs**	**133**	**122**	**119**	**130**	**109**	**143**	**110**	**121**	**118**	**93**	**135**	**136**	**1.469 €**
		Channel A2	m³	Counter beginning	24.750	57.002	87.541	113.245	113.245	138.451	167.865	195.354	219.874	248.798	279.477	312.313	
		Machine 2	m³	Counter end	57.002	87.541	113.245	113.245	138.451	167.865	195.354	219.874	248.798	279.477	312.313	345.554	
			m³	**Monthly consumption**	**32.252**	**30.539**	**25.704**	**0**	**25.206**	**29.414**	**27.489**	**24.520**	**28.924**	**30.679**	**32.836**	33.241	**320.804**
			m³/h	Average consumption	64,0	60,6	51,0	0,0	50,0	58,4	54,5	48,7	57,4	60,9	65,2	66,0	
			m³/h	Min. value	11,4	11,5	11,5	0,0	11,6	11,7	14,7	14,7	14,8	14,8	14,8	14,8	
			m³/h	Max. value	97,4	94,2	95,5	94,5	94,2	95,6	95,6	95,8	100,7	97,4	95,2	96,2	
			€	**Costs**	**484**	**458**	**386**	**0**	**378**	**441**	**412**	**368**	**434**	**460**	**493**	**499**	**4.812 €**
Sum Hall 1			m³	Monthly consumption	41.132	38.649	33.656	8.699	32.463	38.944	34.814	32.619	36.766	36.846	41.866	42.303	418.757
			€	**Costs**	**617**	**580**	**505**	**130**	**487**	**584**	**522**	**489**	**551**	**553**	**628**	**635**	**6.281**
			m³/h	Average consumption	81,6	76,6	66,8	17,3	64,4	77,3	69,1	64,7	72,9	73,1	83,1	83,9	

Consumption analysis (in connection with option "consumption report")

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Technical data DS 500

Dimensions of housing	280 x 170 x 90 mm, IP 65
Connections	18 x PG 12 for sensors and supply, alarm relays 1 x RJ 45 Ethernet connection
Version panel mounting	Cutout panel 250 x 156 mm
Weight	7.3 kg
Material	Die cast metal, front screen polyester
Sensor inputs	4/8/12 sensor inputs for analogue and digital sensors freely allocatable. See options Digital CS sensors for dew point and consumption with SDI interface FA/VA 400 Series, Digital third-party sensors RS 485 / Modbus RTU, other Bus systems realizable on request Analogue CS sensors for pressure, temperature, clamp-on ammeters preconfigured Analogue third-party sensors 0/4 ..20 mA, 0..1/10/30V, pulse, Pt 100 / Pt 1000, KTY
Power supply for sensors	24 VDC, max. 130 mA per sensor, integrated mains unit max. 24 VDC, 25 W in case of version 8/12 sensor inputs 2 integrated mains units each max.24 VDC, 25 Watt
Interfaces	USB stick, USB cable, Ethernet / RS 485 Modbus RTU / TCP, SDI other bus systems on request, WEB server optionally
Outputs	4 relays (changeover contact 230 VAC, 6 A), alarm management, relays freely programmable, collective alarm Analogue output, pulse in case of sensors with own signal output looped, like e. g. VA/FA Series
Memory card	Memory size 2 GB SD memory card standard, optionally up to 4 GB
Power supply	100...240 VAC / 50-60 Hz, special version 24 VDC
Colour screen	7" touch panel TFT transmissive, graphics, curves, statistics
Accuracy	see sensor specifications
Operating temperature	0...50°C
Storage temperature	-20...70°C
Optionally	Web server
Optionally	Quick measurement with 10 ms sampling rate for analogue sensors, Max/Min indication per second
Optionally	Option "consumption report" statistics, daily/weekly/monthly report

Description	**Order no.**
DS 500 - intelligent chart recorder in basic version (4 sensor inputs)	0500 5000
Option 4 additional sensor inputs for DS 500	Z500 5001
Option 8 additional sensor inputs for DS 500	Z500 5002
Option Integrated webserver	Z500.5003
Option "consumption report" statistics, daily/weekly/monthly report	Z500.5004
Option "quick measurement with 10 msec sampling rate" for analogue sensors	Z500.5005
Option version for panel mounting	Z500.5006
Option power supply 24VDC (instead of 100...240 VAC)	Z500.5007
CS Soft Professional software for DS 500 - data evaluation in graphic and table form, reading out of the measured data of one DS 500 via USB or Ethernet	0554.7040
CS Soft Database Client/Server Solution (up to 5 DS 500) - database (MySQL) to Server - data evaluation via Client-Software	0554.7041
CS Soft Database Client/Server Solution (up to 10 DS 500) - database (MySQL) to Server - data evaluation via Client-Software	0554.7042
CS Soft Database Client/Server Solution (up to 20 DS 500) - database (MySQL) to Server - data evaluation via Client-Software	0554.7043
CS Soft Database Client/Server Solution (> 20 DS 500) - database (MySQL) to Server - data evaluation via Client-Software	0554.7044

Input signals

Current signal (0...20mA/4...20mA)
internal or external power supply

Measuring range	0…20 mA
Resolution	0.0001 mA
Accuracy	± 0.003 mA ± 0.05 %
Input resistance	50 Ω

Voltage signal (0...1 V)

Measuring range	0…1 V
Resolution	0.05 mV
Accuracy	± 0.2 mV ± 0.05 %
Input resistance	100 kΩ

Voltage signal (0...10 V / 30 V)

Measuring range	0…10 V
Resolution	0.5 mV
Accuracy	± 2 mV ± 0.05 %
Input resistance	1 MΩ

RTD Pt 100

Measuring range	-200…850° C
Resolution	0.1° C
Accuracy	± 0.2°C (-100...400°C) ± 0.3°C (further range)

RTD Pt 1000

Measuring range	-200…850° C
Resolution	0.1° C
Accuracy	± 0.2° (-100...400°C)

Pulse

Measuring range	min pulse length 100 µs frequency 0...1 kHz max. 30 VDC

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