

**Videographic recorders
of the LINAX A300 family**

LINAX A310, A320, A330

Data recording simple, comfortable and safe



Recording, visualising, storing, evaluating

The videographic recorders of the LINAX A300 family are paperless recorders of the latest generation. Their modular structure permits them to be adapted to the most varied needs. Users have up to 36 analog universal inputs at their disposal which can be programmed individually to different input variables. If required, the recorders may be equipped with additional digital inputs and outputs, analog outputs with relay outputs or with a 2-wire transmitter power supply.

The screenshot shows a data recording interface with a table of events. The table has columns for 'Ereignis Bezeichnung', 'Datum', and 'Zeit'. A large fingerprint graphic is overlaid on the table. The table data is as follows:

	Ereignis Bezeichnung	Datum	Zeit
84	1.1B	31/05/01	11:43:10
85	1.4B	31/05/01	11:43:10
86	1.1B	31/05/01	11:45:06
87	1.4B	31/05/01	11:45:06
88	1.1B	31/05/01	11:45:55
89	1.4B	31/05/01	11:45:55
90	1.1A	31/05/01	11:46:14
91	1.1B	31/05/01	11:47:22
92	1.4B	31/05/01	11:47:22
93	1.1A	31/05/01	11:47:55
94	1.1A	31/05/01	11:49:40
95	1.1B	31/05/01	11:51:45

Guaranteed data integrity

All recorded data is stored in the internal memory of up to 8 MB according to the FIFO principle. Flash storage technology preserves data also in case of a power failure. The flash memory includes an algorithm for error detection and correction thus guaranteeing 100% safe storage of process data.



Safety for data and process

In many industries, e.g. the pharmaceutical industry, biotechnology, environmental instrumentation – just to mention a few, more and more plants requiring validation are employed which involves complete, unambiguous and comprehensive documentation. For this purpose, the American Food and Drug Administration (FDA) issued the 21 CFR Part 11 regulations. Complying with these guidelines puts electronic records and signatures legally on the same level as traditional documents and signatures. All LINAX videographic recorders correspond to the FDA 21 CFR Part 11 guidelines thus representing a very high standard in relation to data security. This is achieved by numerous measures, e.g.:

- Lockable memory drive
- Recorders can be secured by a seal
- Password protection is possible for all user levels
- Electronic logging of every recorder access
- Electronic safety signature for every data transmission to safeguard data integrity

LINAX videographic recorders are predestined to documenting processes and procedures for third parties (e.g. authorities) and comprehensively replace paper recorders.

Meticulous logging

Providing 3 history logs LINAX offers recorder functions not available in paper recorders. Time and date stamp permit complete and comprehensive verification of recorder and data.

- *Alarm log*
Alarms and operator messages
- *Totaliser log*
Counter readings, start/stop, reset
- *System/monitoring log*
Changes in configuration, power failure/recovery, memory slide-in/removal, system error, date/time changes, etc.

Linearising, calculating, linking, alerting

LINAX videographic recorders provide comprehensive possibilities for acquired data processing. The totaliser function permits totalising values of individual channels thus determining e.g. hours, daily or weekly values. Complex linking with input variables and mathematical functions do not present any problem, neither does logic linking and linearising.

Extensive alarm functions complete the package and facilitate monitoring and alerting in any situations.



Robust storage for industrial standard archiving

SmartMedia or CompactFlash cards are available for LINAX recorder archiving. These mechanically very robust and reliable storage media are suited to temperatures up to 50 °C and have, contrary to traditional electromagnetic disks (max. 40 °C), no mechanically moved wearing part.

Data may be comfortably read into a PC or laptop by a corresponding read-write device.



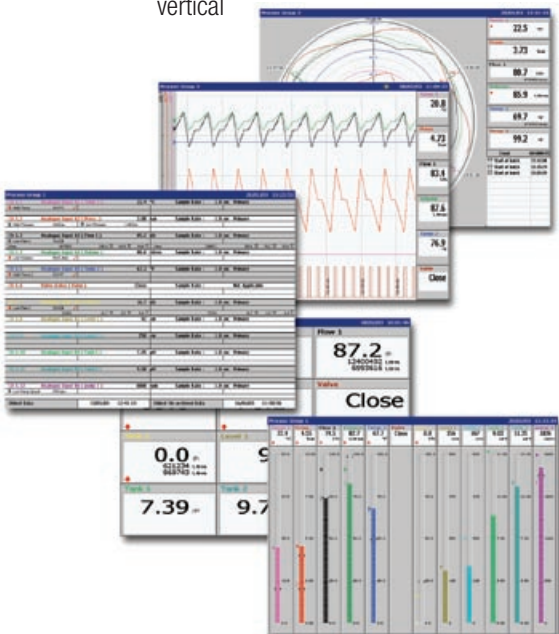
Unsurpassed device protection

Being a unique feature of this product type LINAX videographic recorder offers unsurpassed protection according to IP/NEMA 4X with a completely sealed and lockable memory card slot. LINAX recorders can thus be installed in places requiring frequent water splashing without any further protective measures.

Operator views

LINAX recorders offer you the possibility of representing your process data freely and setting up different operator views individually. The following views are available among others:

- Chart view
Vertical (waterfall), Horizontal (trend)
- Circular view
- Digital indicator view
- Process view
- Bargraph view
horizontal/
vertical



Very simple operation in Windows style

LINAX videographic recorders are operated via keys with clearly allocated functions. A320 offers, in addition, direct entry via touch-screen. Operating and configuring of recorders is menu-guided and designed in close dependence on Windows which allows for intuitive operation. The videographic recorders may also be configured comfortably at the PC using the emulation software supplied free of charge.

Low total cost of ownership and high security level

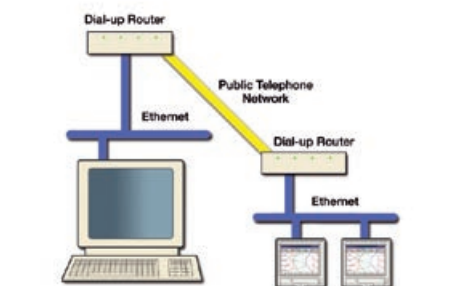
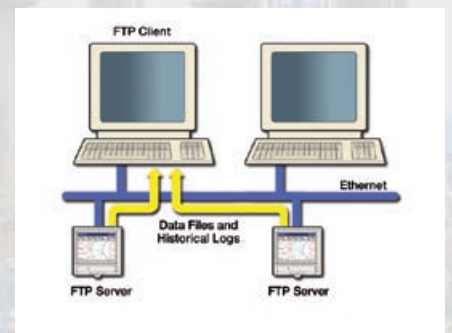
The large capacity of the memory cards used in LINAX recorders ensures that operators have to interfere much less than previously required to transmit data regularly to the PC. The disk technology used by many manufacturers of graphic recorders embodies a considerably limited storage capacity which is sometimes even on a level below that of a traditional paper recorder.

You save money with LINAX recorders:

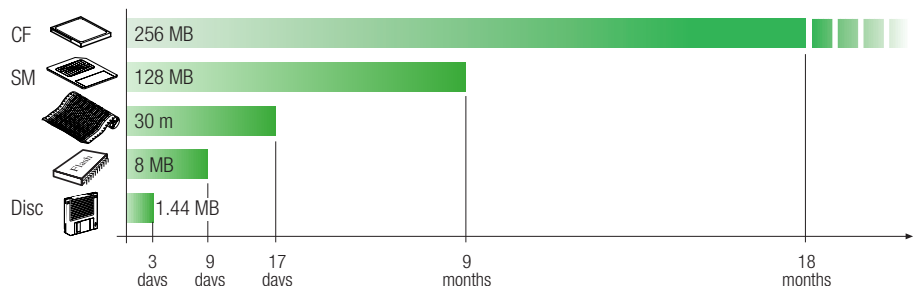
- No pens and paper
- Simple operation
- Fast and simple replacement of paper recorders
- No paper jams
- No dried up pens

System integration/communication

LINAX videographic recorders feature an RS485 (Modbus) or Ethernet interface for system integration. The Ethernet interface facilitates simple connection to the internal Intranet or Internet. All measured data may be made available in the world wide web by a web server integrated in the LINAX recorder. Recorder data is viewed, downloaded and processed via FTP. Alarm messages can be sent directly via e-mail to your mailbox or your mobile phone. In this way, you are permanently and world-wide „in the picture“ as far as your process is concerned.



Example of storage times of a recorder with 6 channels and a scanning interval of 10 sec.:



LINAX A310

The cost-effective all-round solution



Acquiring signals safely and reliably

LINAX A310 is the cost-effective solution for state-of-the-art acquisition and safe storage of data. It offers up to 12 universal analog inputs for currents, voltages, thermo elements and resistance thermometers. Depending on required levels LINAX A310 can be supplemented with digital inputs and outputs, analog outputs and relay outputs. Power failure, user interference are also safely collected and logged.

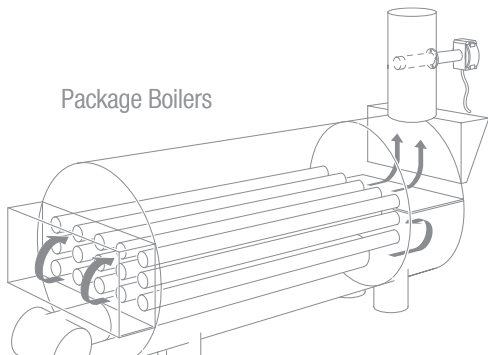
Ideal replacement for paper recorders

Paper jams, time-consuming paper changes, dried-up pens and lost data are a matter of the past with LINAX videographic recorder. The installation dimensions of 144 x 144mm facilitate an easy exchange of old paper recorders by LINAX videographic recorders. From now on, data security and operating comfort take priority. Of course, LINAX A310 corresponds as all other LINAX videographic recorders to the FDA CFR Part 11 guidelines. Class IP66/Nema 4X is also standard for all devices. You do not have to watch out for the recorder when cleaning your plant.

Viewing recorded data

All recorded data may be viewed directly at the recorder. You either „scroll back“ the display step by step or use the comfortable „go to“ function and access directly a certain date. Recording continues, of course, while historic data is being displayed. All data can be managed and viewed by the DataManager software on the PC in a safe and comfortable manner.

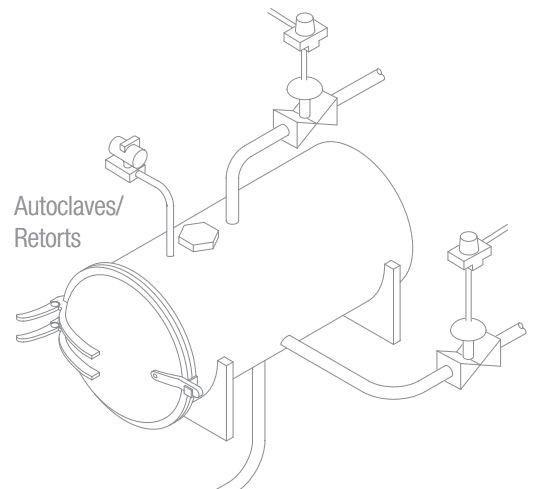
Package Boilers



Tank Farms

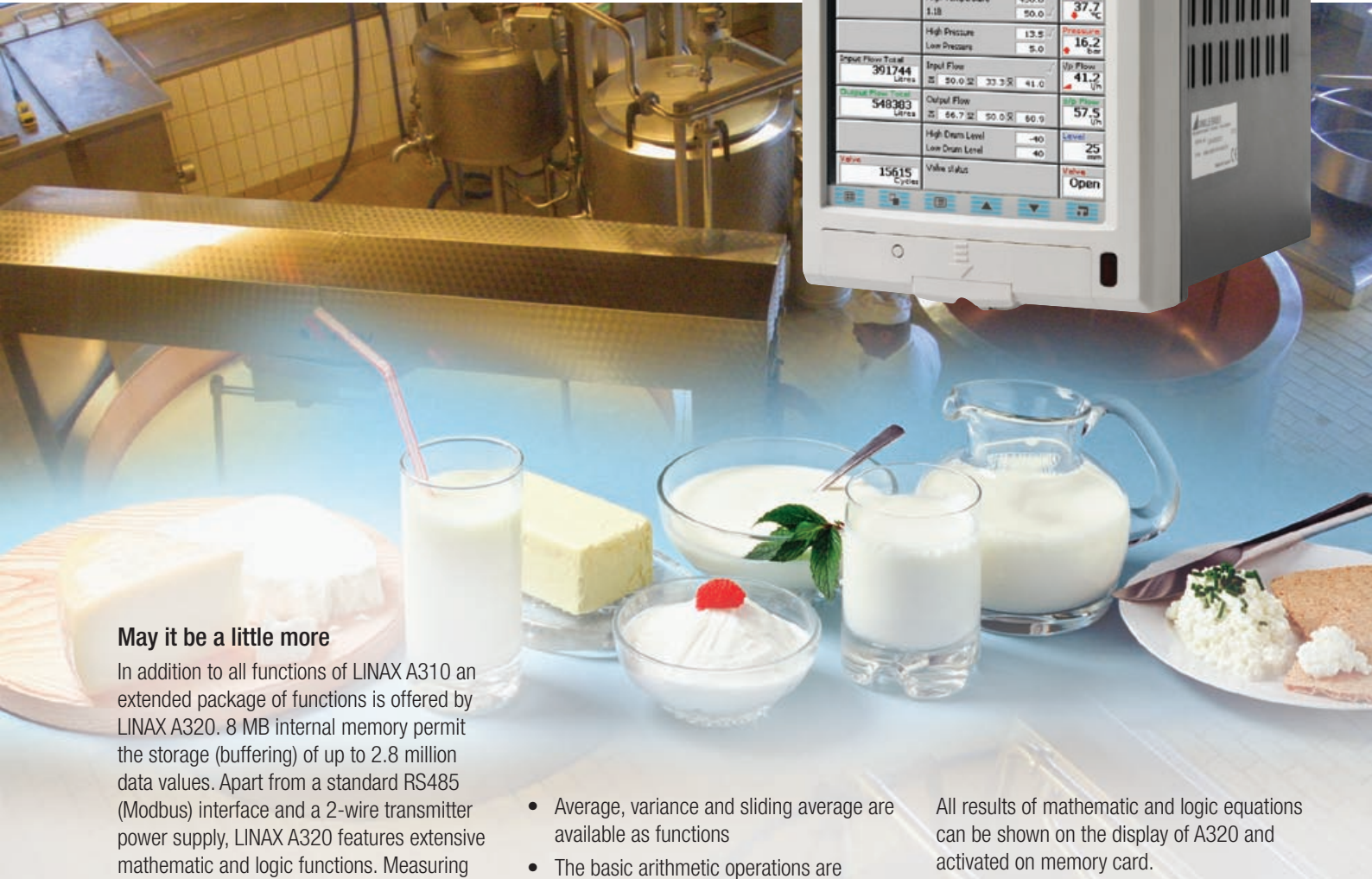


Autoclaves/
Retorts



LINAX A320

The multitalented device in a handy format



May it be a little more

In addition to all functions of LINAX A310 an extended package of functions is offered by LINAX A320. 8 MB internal memory permit the storage (buffering) of up to 2.8 million data values. Apart from a standard RS485 (Modbus) interface and a 2-wire transmitter power supply, LINAX A320 features extensive mathematic and logic functions. Measuring points, constants, variables and results may be linked to each other and calculated.

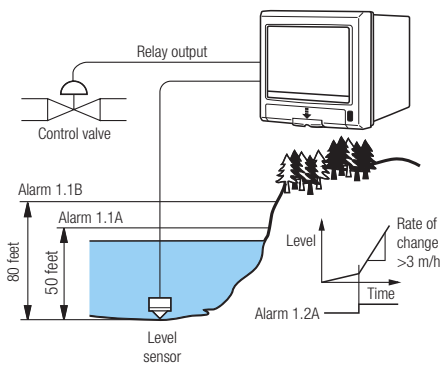
- Average, variance and sliding average are available as functions
- The basic arithmetic operations are supplemented by log, ln, square root, power, sine, cosine, tangent and absolute functions
- Switching of process signals may be effected via signal selection (high/low/medium) and via multiplex functions
- Equations for the calculation of F_0 and relative humidity have already been predefined
- The operands AND, NOT-AND, OR, NOT-OR, EXCLUSIVE OR and NOT are available for logic equations

All results of mathematic and logic equations can be shown on the display of A320 and activated on memory card.

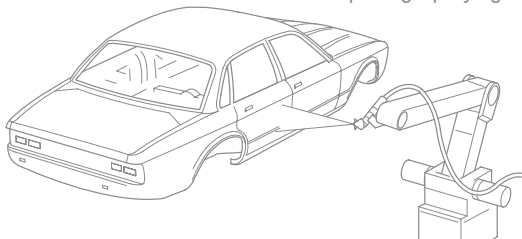
In addition, detailed diagnosis functions are available for mathematic and logic equations.

Fast and comfortable operation

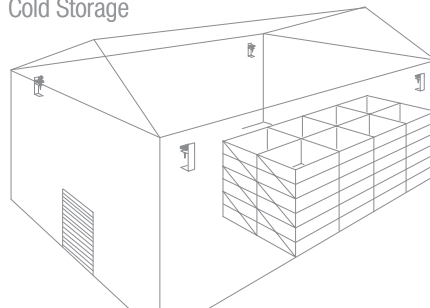
LINAX A320 has a very high-contrast active TFT display with touch-screen functionality. The touch-screen facilitates very fast and comfortable entry in the configuration mode.



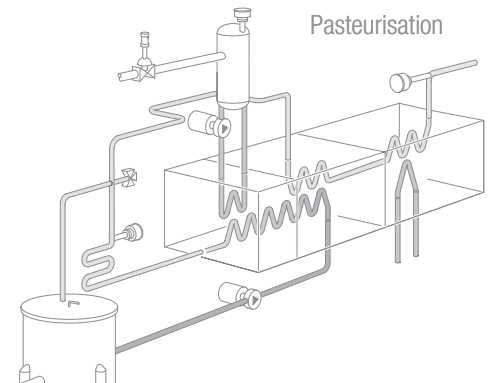
Lacquering/Spraying



Cold Storage



Pasteurisation



LINAX A330

The high-performance videographic recorder



Process Group 1						19/01/03 13:40:40					
Temp. 1 50.6 °C	Flow 1 298 L/h 1700 Litres	Press. 1 12.0 bar	Level 1 180 cm	Tank 2 11.7 pH	Valve Open 6 Cycles	Temp. 3 100.0 °C	Temp. 4 26.6 °C	Temp. 5 79.9 °C	Press. 2 27 psi	Pump On 6 Starts	Temp. 6 26.6 °C
Temp. 11 52.8 °C	Flow 11 298 L/h 170 Litres	Press. 1 10.0 bar	Level 1 181 cm	Tank 1 11.7 pH	Temp. 12 60.8 °C	Flow 12 208 L/h 176 Litres	Press. 1 10.0 bar	Level 13 182 cm	Tank 11 11.0 pH	Temp. 2 100.0 °C	Valve Open 6 Cycles
Level 1 181 cm	Tank 1 11.7 pH	Temp. 15 80.8 °C	Temp. On 5 Starts	Flow 290 L/h 179 Litres	Press. 12 10.8 bar	Press. 2 27 psi	Pump On 6 Starts	Flow 13 278 L/h 176 Litres	Press. 11 19.0 bar	Level 1 181 cm	Tank 12 18.7 pH

36 channels at a glance

Having installation dimensions of 288 x 288 mm LINAX A330 shows already by its optical appearance that is the „greatest“ member of the LINAX family.

Up to 36 universal analog inputs, digital inputs and calculations can be recorded and displayed in numerous operator views.

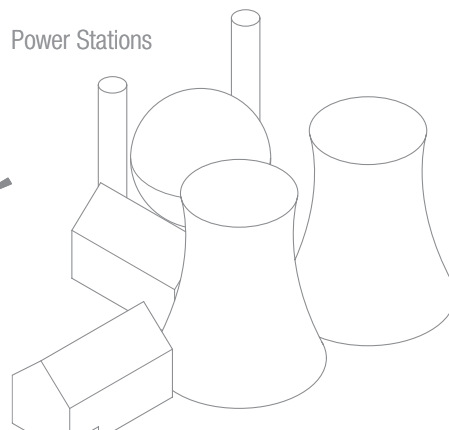
LINAX A330 is able to display all 36 measured variables simultaneously on its light, high-contrast and well readable, 31 cm TFT screen (12.1 inch).

Up to 144 alarms may be freely defined for safe process monitoring.

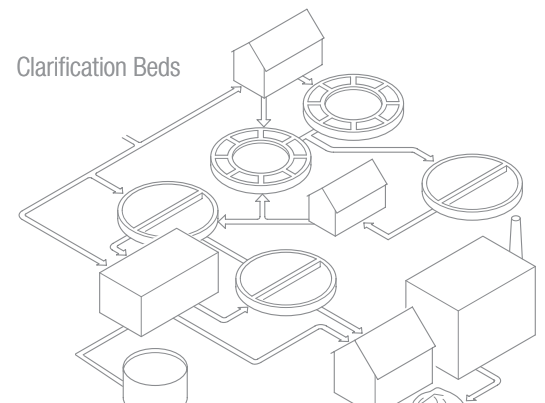
Ethernet communication

Standard LINAX A330 has a 10 base T Ethernet communication interface with a RJ45 norm connection. TCP/IP, FTP and http standard protocols facilitate easy integration into existing PC networks.

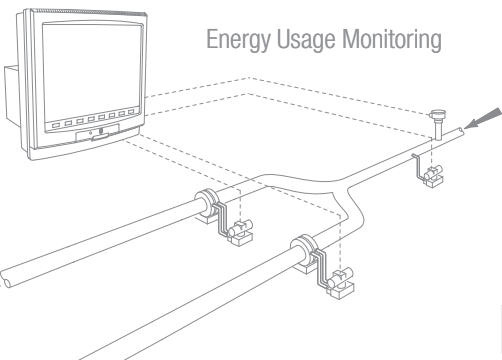
Power Stations



Clarification Beds

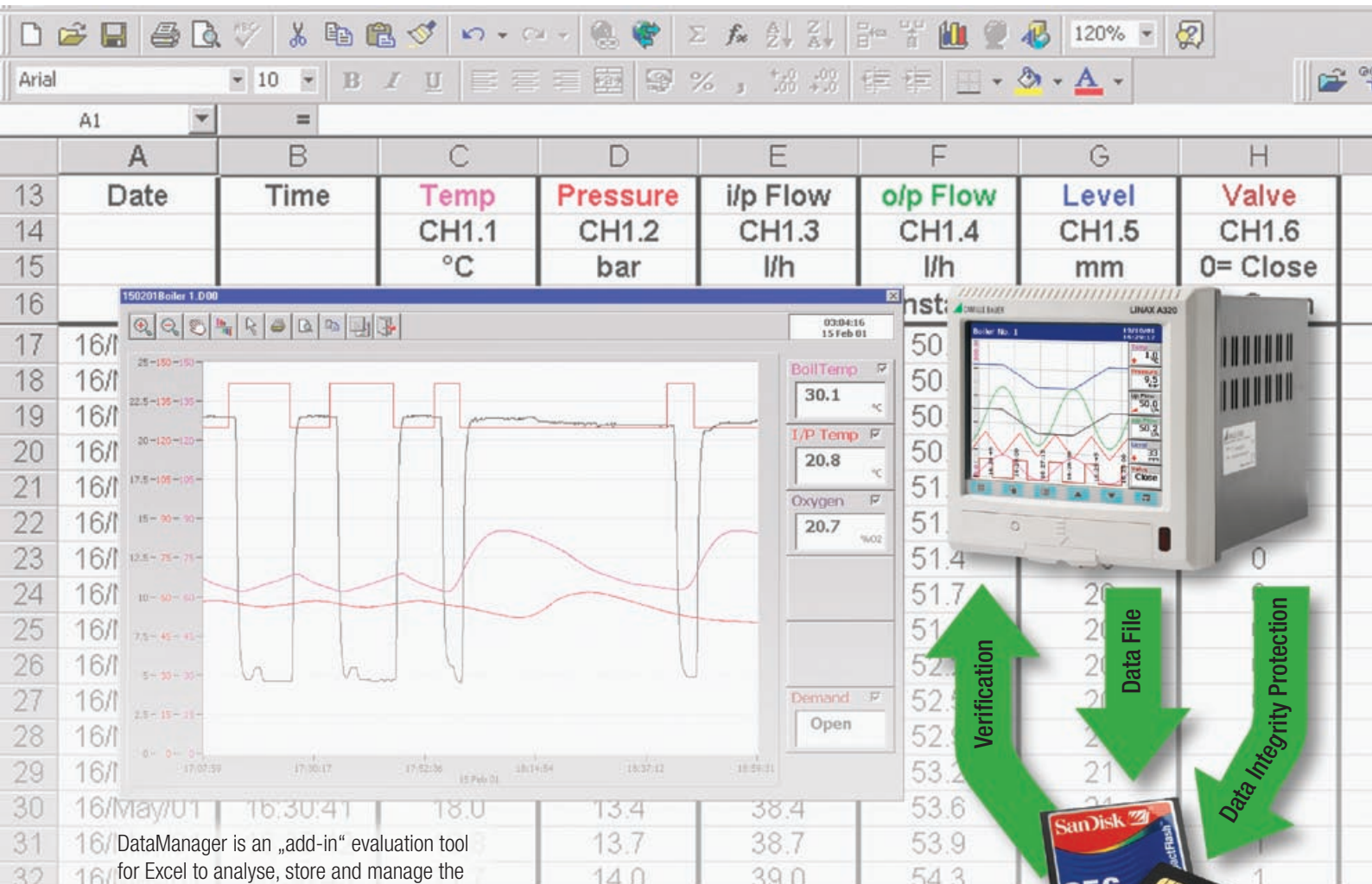


Energy Usage Monitoring



DataManager

Validation and detailed analysis of data archives of LINAX videographic recorders



DataManager is an „add-in“ evaluation tool for Excel to analyse, store and manage the data of the LINAX videographic recorder.

DataManager offers the possibility of displaying archived data in form of a table or chart. Alarm, totaliser and monitoring log can also be viewed and managed.

DataManager also verifies the integrity of data archives thus safeguarding the validity of their process data.

Advantages at a glance:

Data security from process to PC

- Completion of the data security chain of the LINAX videographic recorder series
- Complies with the Standard 21 CFR Part 11 requirements

Automatic verification of archived data

- Clear indication of the integrity of data files

Graphic representation of process data

- Horizontal trend display including analysis aid

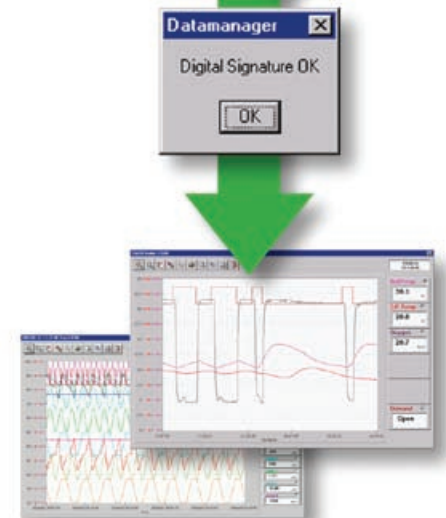
A package which is easily operated and with which users are immediately familiar

- Designed as an „add-in“ for Microsoft Excel™

Database management of archived data

- Automatic storage and recalling of process data

Since DataManager has been designed as an „add-in“ for Microsoft Excel™ the user is immediately familiar with the program which is, therefore, extremely easy to operate. In addition, users have the full scope of Microsoft Excel™ for their own, specific processing of data at their disposal.



LINAX A310, A320, A330

At a glance

Features	LINAX A310	LINAX A320	LINAX A330
Display	12.5 cm (5 inch) LCD	14 cm (5.7 inch) TFT	31 cm (12.1 inch) TFT
Front panel	144 x 144 mm	144 x 144 mm	288 x 288 mm
Installation depth	195 mm	195 mm	195 mm
Operating keys	6 keys	6 keys/touch-screen	8 keys
Channels	12	12	36
Internal memory	1 MB	8 MB	8 MB
RS485 communication	Optional	Standard	Optional
Ethernet communication	Optional	Optional	Standard
Power supply for 2-wire instruments	12 loops optional	2 loops standard 12 loops optional	2 loops standard 12 loops optional
Totaliser	12 optional	12 standard	72 standard
Process alarms	24	24	144
Process groups	2	2	6
Mathematic and logic functions	Not available	Optional	Optional
FDA 21 CFR PART 11	Standard	Standard	Standard
Housing protection class IP66 / Nema 4x	Standard	Standard	Standard
Data Sheet No.	153619	153627	153635

Data Sheet No. DataManager: 153651

Detailed data sheets, operating instructions and software may be downloaded under „www.camillebauer.com“.



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