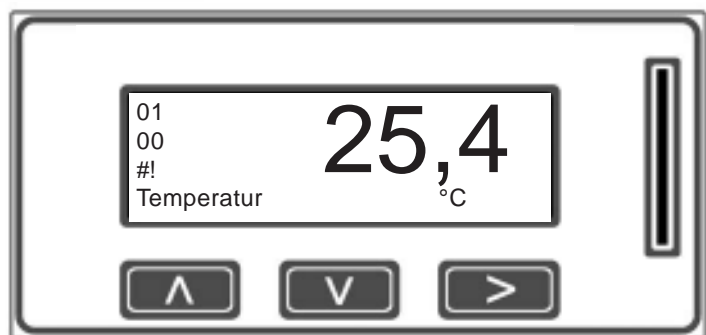


Instruction manual

S 341

Digital data logger
for Kuntze instruments with RS 485





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1. Your data logger S-341

is a digital data logger to collect measured data from instruments with Kuntze protocol via RS485.

S-341 can connect up to ten instruments and collect up to eight parameters from each instrument. Configuration is done via PC, the configuration file is stored on a memory card and can be loaded into any number of loggers.

Data is stored as daily files on the memory card. Using a maximum read-out frequency of 1/second, a 1GB memory card provides enough storage space for 180 days of continuous data collection.

The data files are in text format and can be opened with excel without further processing.

Apart from the storing function, the data logger provides a display for plain-text menu operation and display of the current data.

S-341 can be used for all Kuntze instruments with RS485. Different types of instruments and parameters can be combined at the same logger.

With the S-341 you have certainly made a good choice. On the following pages you will find out more about the S-341. If you have any further questions or if you are looking for complementing products such as instruments, sensors, and accessories, or if you want to know more about the various instrument series by Dr. A. Kuntze, please give us a call - we will be delighted to hear from you!

1.1 Features and technical data

Data collection

Instruments /parameters	up to 10 instruments, up to 8 parameters each
read-out frequency	adjustable in seconds, based on real-time clock
storage medium	SD memory card, max. 1 GB, formatted FAT 12/16
data file format	daily files, text format, with date and time measured values with adjustable decimal places and dimension

Data display

Display	Grafical LCD 122 x 32 pixels, background-illuminated display of current values with dimension and label textmenu operation of four lines
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Connections

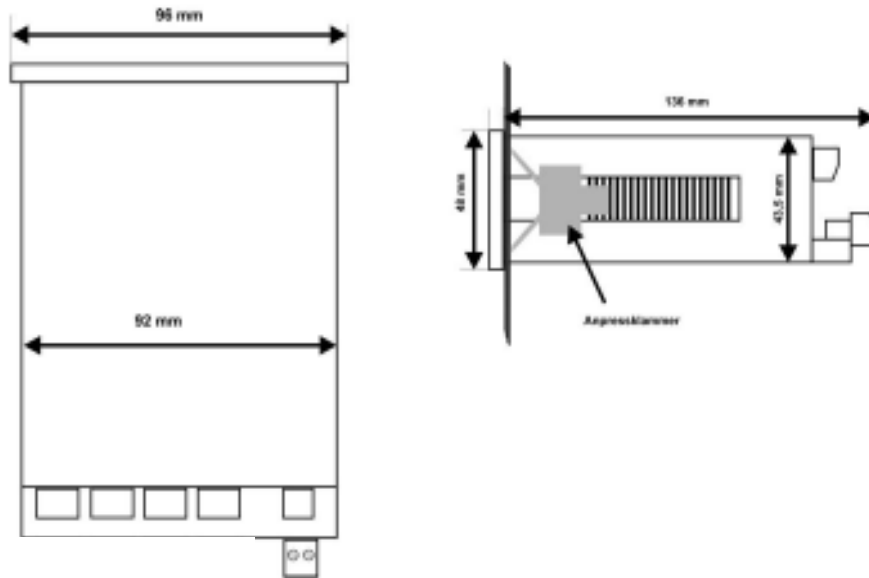
Digital interface	RS485, Baud rate 9600, data format 8Bit, 1Start and 1Stop bit, no parity, Kuntze protocol
power supply	20 ... 253 V DC or 50 .. 253 V AC
termination	121 Ohm 1%, can be activated via jumper
AD-UART	to load updates
SD slot	for SD memory cards, max. 1 GB

Technical data

Feature	description
Dimensions	91.5 x 43 x 131 mm (WxHxD)
Weight	0.3 kg
Connections	Plug-in terminals for cable max. 1.5mm ²
Protection class	IP20 (front, when installed)
Power supply	20 .. 253 V DC or 50 .. 253 V AC
Consumption	max. 1.2 Watt or 3 VA
Operation temperature	-10 .. +70°C
Storage temperature	-40 ...+85°C
Humidity	non-condensing

2. Installation and connections

Dimensions



Installation:

For installation you need to cut out an opening of 92x44mm. Insert the logger from the front side, and fix it with the two clamps that come with the logger.

ATTENTION Install the instrument in a place where it is not put under mechanical or chemical strain!

Mind the protection class: IP20 (front)

Make sure that the connections at the back cannot come into contact with anything.

Connections:

A connection diagram is shown on the next page.

Beachten Sie die auf dem Typenschild angegebene Versorgungsspannung.

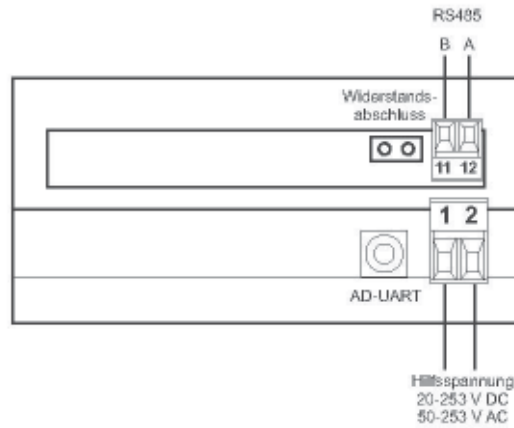
Before connecting the power supply check the information on the instrument label!

ATTENTION Input, output and control lines must be installed separate from each other and separate from power lines!

For the bus connection use a screened two-wire cable and connect the screen on one side only. If you connect several instruments, connect them in a row, not in a star. In case of long cables, activate the termination both on the last instrument in line and at the logger with the jumpers.

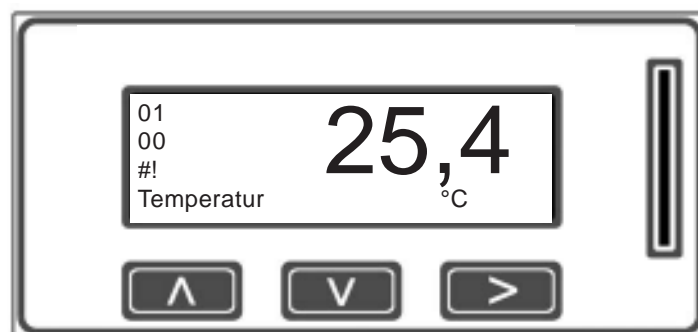
CAUTION Switch off the power supply for installation and maintenance!

2.1 Connection diagram and front



Connection	terminals	Notes
Power supply	1 + 2	20 ... 253 V DC or 50 .. 253 V AC
RS 485	11 + 12	11 = B; 12 = A

Insert the SD memory card into the lot on the front side, so that the metal contacts of the card face towards the display.



With keys ▲ and ▼ you can scroll up and down, adjust numbers, and change settings.

With key ► you select menus and functions, store, and leave the menu.

3. Three steps to collect data

To collect data requires three steps:

Step 1:

Insert the SD card into your PC and adapt the configuration file - this is described in more detail on the following page.

Step 2:

Remove the SD card from the PC and insert it in the slot on the data logger's front, so that the metal contacts face towards the display.

Connect the RS 485 terminals of your Kuntze instrument with those of the logger, using a two-wire screened cable. A connection diagram is shown in chapter 2.

Turn on the power supply for the data logger. The logger starts with an automatic check and ends with the display „configuration?“

Press key ▶. The logger loads the configuration file and starts collecting data.

Step 3:

To remove the SD card from the logger, eject it via menu, so as not to damage or lose data. Press key ▶ for more than 2 seconds to enter the menu, then set the cursor to „remove memory card“ and press key ▶.

Remove the SD card and insert it in your PC.

The data is stored as daily files in excel format.

During the data logging you can view the measured values on the display of the S-341. Since a copy of the configuration file is stored in the logger, it even goes on displaying data when the SD card is removed. However, without the SD card, the data cannot be stored.

3.1 Step 1 - configuration

The configuration file looks like this:

[1];	Bus adress of the first instrument
!=inlet;	measuring point, 11 characters
?=1;	read-out frequency in seconds
\$\$=00;%=2;&=mg/l;@=Chlorine;	first measured value
\$\$=01;%=2;&=pH;@=pH value;	second measured value
\$\$=02;%=1;&=°C;@=Temperature;	third measured value...
[2];	Bus adress of the second instrument
!=outlet;	measuring point, 11 characters
?=1;	read-out frequency in seconds
\$\$=00;%=2;&=mg/l;@=Chlorine;	first measured value
\$\$=02;%=2;&=pH;@=pH value;	second measured value
**	end of file

Notes:

- \$= register number, decimal
- %= decimal places
- &= dimension, max. 5 characters
- @= name of the measured value, max. 13 characters

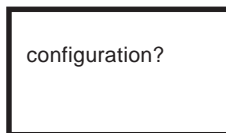
If you want to read out data from only one instrument, the double star (**) follows after the last measured value of the first instrument. If you want to read out data from more instruments, just repeat the few lines for each bus adress.

The syntax shown must be followed without fail. But instrument type and number of parameters can vary within the logger's specifications.

In chapter 5 you will find lists of register numbers for various Kuntze instruments. These contain all values that are available via RS 485 with their register number, decimal places, and dimension.

3.2 Step 2 - load configuration

Take the SD card with the updated configuration file, and insert it in the slot of the logger's front, so that the metal contacts face towards the display. The logger starts with an automated check and then shows



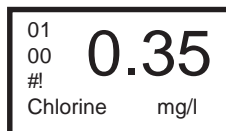
configuration?

Press key ▶. The logger loads the configuration file:



configuration

After that it starts collecting data:



01
00
0.35
Chlorine mg/l

The display shows one measured value in large. The left side shows the bus address of the instrument, the register number, a „#“ sign that turns on with every communication, a „!“ sign indicating that an SD card is inserted, and in the bottom line the name of the measured value and its dimension.

With key ▼ you can scroll through the various measured values of the current instrument. With key ▶ you can switch from one instrument to the next.

NOTE **If the data logger has been configured before, it starts collecting data according to the previous configuration when the power has been turned on. In that case press key ▶ for more than 2 seconds to enter the menu, then select „configuration“ and press key ▶ to load the new configuration file.**

3.3 Step 3 - view collected data

Before you remove the SD card, use the eject function of the menu. Otherwise data might be lost or the card damaged. Press key ▶ for more than 2 seconds to enter the menu.

```
Parameters 1/2
>configuration
  functions
    remove memory card
```

Press key ▼ until the cursor (>) points to „remove memory card“. Press key ▶ . Now you can remove the card.

The S-341 has set up a file structure on the card. In the folder BUxxxxxx data is stored as daily files in excel format.

The files are labeled YYMMDD00.xls (Y = year, M=month, D = day) and can be opened with excel. They contain in the first column date and time, and in the subsequent columns the parameters and their values.

4. Useful features

Apart from the mere data collection, you can adjust the following parameters:

Password:

With a 5-character numerical code you can ensure that no settings can be changed, nor the configuration. All settings are still visible, even without password.

Language:

You have the choice between English, German, and French.

Display:

You can select the auto-switch off, which turns off the background illumination 3 minutes after the last operation, or permanent illumination. And you can adjust the contrast of the display in %.

An Autoscroll function displays all parameters of the selected instrument in an endless rotation. You can adjust the rotation frequency in a range of 1 .. 31 seconds. Start the Autoscroll from the main display by pressing key ▲ or ▼ for more than 2 seconds, and stop it by pressing the same key again for less than 2 seconds.

Full memory card - and now?

You can select between „stop“ (data collection stops here) and „rotating“ (the oldest data is replaced with new data).

You can also clear the memory card. CAUTION: This will also erase the configuration file.

Clock:

You can view and set the time of the internal clock. The S-341 provides automatic recognition of summertime settings for Europe at wish.

4.1 Menu overview

To enter the menu, press key \blacktriangleright for more than 2 seconds.

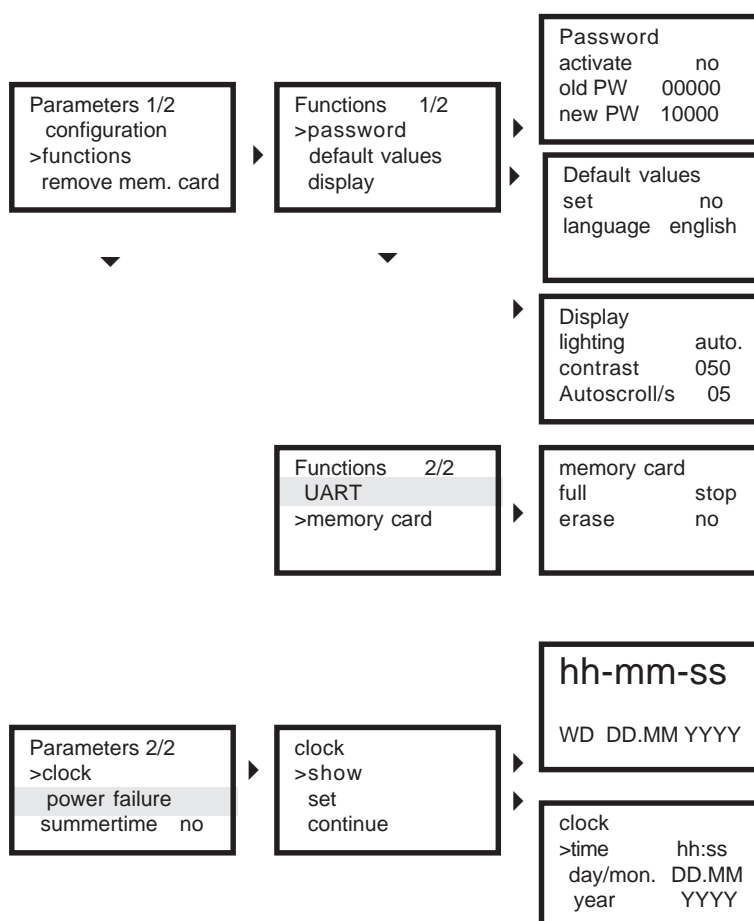
With keys \blacktriangle and \blacktriangledown you scroll through the menu.

With key \blacktriangleright you select menus or settings.

Change the settings or numbers with keys \blacktriangle and \blacktriangledown .

Store the changes with key \blacktriangleright .

Press key \blacktriangleright for more than 2 seconds to leave the menu.



Those functions that are marked with a grey background are not described here, because they are of interest only under special circumstances, e.g. for updates etc.

5. Register numbers

The measured values are always at the top of the register:

Register number	description
00	meas. value 1. input
01	meas. value 2. input
02	meas. value 3. input
...	

Apart from the measured values, a variety of other functions are available via interface.

Since different instrument series provide different functions, those register numbers differ somewhat. However, with instruments of the same series the register numbers are as similar as could be realised for the various parameters.

On the following pages you find registers for the instrument series K 100 (type K 100 PR, as pH-meter) and dialog (type dialog W 2 CI2 PR R).

Register numbers K 100

Revision date: November 2006

Register		Description	Scale factor	Decimal places
Decimal	Hex			
00	0h	Meas. value pH [0 .. 14.00 pH]	100	##.##
01	1h	Meas. value temperature [-30.0 ..140.0°C]	1	####
07	7h	Meas. Value temperature [-30.0 ..140.0°C]	10	###.#
Product data				
16	10h	instrument number	1	####
17	11h	Software date	100	MM.YY
18	12h	Date of production	100	MM.YY
Bus address and code				
23	17h	Bus address (RS 485)	1	###
26	1Ah	Code	1	###
Correction value PT100				
24	18h	Correction value PT [°C]	10	###.#
25	19h	Manual temperature setting [°C]	10	###.#
Settings controller				
27	1Bh	Set point 1 [0..14.00 pH]	100	##.##
28	1Ch	Set point 2 [0..14.00 pH]	100	##.##
29	1Dh	P range set point 1 [0..14.00 pH]	100	##.##
30	1Eh	Integral time set point 1 [s]	1	####
60	3Ch	P range set point 2 [0..14.00 pH]	100	##.##
61	3Dh	Integral time set point 2 [s]	1	####
34	22h	Pulse pause time [s]	1	##
35	23h	Min. pulse [s]	10	##
36	24h	Hysteresis [0.. 14.00pH]	100	##.##
37	25h	Pulse frequency set point 1 [pulses * 100/h]	1	##
38	26h	Pulse frequency set point 2 [pulses * 100/h]	1	##
Settings alarm				
31	1Fh	Alarm value 1 (max) [0..14.00 pH]	100	##.##
32	20h	Alarm value 2 (min) [0..14.00 pH]	100	##.##
33	21h	Alarm delay [s]	1	###
Settings analog outputs				
42	2Ah	Start analog output 1 [0..14.00 pH]	100	##.##
43	2Bh	End analog output 1 [0..14.00 pH]	100	##.##
Calibration				
49	31h	Sensor slope [mV/pH]	10	##.#
52	34h	Sensor zero [mV]	1	####
53	35h	Buffer solution 1 [0 .. 14.00 pH]	100	##.##
54	36h	Buffer solution 2 [0 .. 14.00 pH]	100	##.##
67	43h	Internal buffer [0 .. 14.00 pH]	100	##.##
55	37h	Measured mV in buffer solution 1 [mV]	1	####
56	38h	Measured mV in buffer solution 2 [mV]	1	####
Controller outputs				
58	3Ah	Controller output set point 1[%]	1	###
59	3Bh	Controller output set point 2[%]	1	###

Register numbers dialog

Revision date November 2006

Register		Description	Scaling factor	Decimal places
Decimal	Hex			
00	0h	Meas. value Chlorine [0.. 4.00mg/l]	100	###
01	1h	Meas. value pH [0... 14.00 pH]	100	##.##
02	2h	Meas. value ORP [-1500..+1500 mV]	1	#####
03	3h	Meas. value temperature [-30.0 ..140.0°C]	10	##.#
Product data				
11	0Bh	Instrument number	1	#####
12	0Ch	Software date	100	MM.YY
13	0Dh	Date of production	100	MM.YY
Bus address				
10	0Ah	Bus address (RS 485)		
Correction values PT100				
129	81h	Correction value PT [°C]	10	##.#
60	3Ch	Manual temperature setting [°C]	10	##.#
Code				
61	3Dh	Code	1	#####
Settings controller Cl2				
62	3Eh	Set point 1 [0..4.00mg/l] controller Cl2	100	###
63	3Fh	Set point 2 [0..4.00mg/l] controller Cl2	100	###
64	40h	P range [0..4.00mg/l] controller Cl2	100	###
65	41h	Integral time [s] controller Cl2	1	#####
66	42h	Derivative time [s] controller Cl2	1	#####
Settings controller pH				
79	4Fh	Set point 1 [0..14.00pH] controller pH	100	##.##
82	52h	Set point 2 [0..14.00pH] controller pH	100	##.##
83	53h	P range [0..14.00pH] controller pH	100	##.##
84	54h	Integral time [s] controller pH	1	###
85	55h	Derivative time [s] controller pH	1	#####
Settings Alarm Cl2				
67	43h	Alarm value 1 (max) [0..4.00mg/l]	100	###
68	44h	Alarm value 2 (min) [0..4.00mg/l]	100	###
69	45h	Alarm delay [s]	1	###
Settings alarm pH				
86	56h	Alarm value 1 (max) [0..14.00pH]	100	###
87	57h	Alarm value 2 (min) [0..14.00pH]	100	###
88	58h	Alarm delay [s]	1	###
Basic settings controller CL2				
73	49h	Pulse frequency [pulses * 100/h]	1	##
72	48h	Hysteresis [0..4.00mg/l]	100	##.##
70	46h	Pulse pause time [s]	1	##
71	47h	Min. pulse [s]	10	##.#
74	4Ah	Motor run time [s]	1	#####
104	68h	Dosage check [s]	1	#####

Register numbers dialog

Revision date November 2006

Basic settings controller pH				
92	5Ch	Pulse frequency [pulses * 100/h]	1	##
91	5Bh	Hysteresis [0..14.00pH]	100	##.##
89	59h	Pulse pause time [s]	1	##
90	5Ah	Min. pulse [s]	10	#. #
98	62h	Motor run time [s]	1	####
105	69h	Dosage check [s]	1	####
Start delay				
103	67h	Start delay [s]	1	####
Analog outputs				
14	0E4h	Start analog output 1 (range depends on	1	####
15	0Fh	End analog output 1 (selected parameter)	1	####
16	10h	Start analog output 2	1	####
17	11h	End analog output 2	1	####
18	12h	Start analog output 3	1	####
19	13h	End analog output 3	1	####
Calibration data pH				
122	7Ah	Buffer solution 1 [0..14.00pH]	100	##.##
123	7Bh	Buffer solution 2 [0..14.00pH]	100	##.##
124	7Ch	Internal buffer [0..14.00pH]	100	##.##
Calibration Cl2				
42	2Ah	Sensor slope [mV per 0.1mg/l]	10	###.#
Calibration pH				
48	30h	Sensor slope [mV per pH]	1	####
49	31h	Sensor zero [mV]	1	####
Controller output				
58	3Ah	Output controller 1 set point 1 [%]	1	###
59	3Bh	Output controller 1 set point 2 [%]	1	###
99	63h	Output controller 2 set point 1 [%]	1	###
100	64h	Output controller 2 set point 2 [%]	1	###

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