Product Manual

ABB i-bus® KNX
Data Logging Unit
BDB/S 1.1

Intelligent Installation Systems

This manual describes the function of the Data Logging Unit BDB/S 1.1.
Subject to changes and errors excepted.

Exclusion of liability:
Despite checking that the contents of this document match the hardware and software, deviations cannot be completely excluded. We therefore cannot accept any liability for this. Any necessary corrections will be inserted in new versions of the manual.
Please inform us of any suggested improvements.

Inhalt

Contents

Page

Contents i

1 General 3

1.1 Product and functional overview ... 4

2 Device technology 5

2.1 Technical data ... 5
2.2 Circuit diagram ... 7
2.3 Dimension drawing ... 8
2.4 Assembly and installation ... 9

3 Commissioning 11

3.1 Overview ... 11
3.2 Parameters ... 11
3.2.1 *General* parameter window ... 12
3.2.2 Parameter window *Channel designator* ... 15
3.2.3 Channel parameter settings *Individual for each channel* ... 16
3.2.4 Channel parameter settings *Same for all channels* ... 27
3.3 Communication objects ... 28
3.3.1 Channel 1 ... 28
3.3.2 Channel 2…35 ... 31
3.3.3 General ... 32

4 Planning and application 35

4.1 Application fields ... 35
4.1.1 Application 1 ... 35
4.1.2 Application 2 ... 35
4.1.3 Application 3 ... 35
4.1.4 Application 4 ... 35
4.2 Reaction on bus voltage failure ... 36
4.3 Reaction on bus voltage recovery ... 36

A Appendix 37

A.1 Scope of delivery ... 37
A.2 Ordering information ... 38
A.3 Notes ... 39
A.4 Notes ... 40

1 General

The Data Logging Unit BDB/S 1.1 is a KNX device for logging operational data (in hours) and counting operations on up to 35 channels.

Limit values are defined for the individual counter values which automatically initiate an alarm message on the ABB i-bus® if they are exceeded.

Data logging can be used for example, to co-ordinate the maintenance expenditure and to determine the operational life of different devices. Possible applications for use of the BDB/S 1.1 can be found for example in the fields of lighting, ventilation, pumps as well as transport systems.

This manual provides you with detailed technical information relating to the Data Logging Unit BDB/S 1.1 installation and programming, and explains the use of the device using examples.

This manual is divided into the following sections:

Chapter 1	General
Chapter 2	Device technology
Chapter 3	Commissioning
Chapter 4	Planning and application
Chapter A	Appendix

1.1 Product and functional overview

The Data Logging Unit BDB/S 1.1 is a modular installation device for fast installation in the distribution board with a module width of 2 space units.

The Data Logging Unit enables you to count the switching operations of switch actuator channels in an ABB i-bus® system. Furthermore, the operating hours of the connected loads can be recorded with a resolution of up to one second. 35 independent channels are available each with seven communication objects provided. The switching operations as well as the operating hours can be recorded on a channel basis, where the counting method from zero upwards or from a set value downwards can be selected. The operating data of every channel is derived from the state of the communication object *Channel X switch position – received*.

Via a communication object or parameter it is possible to define the corresponding start or limit value for each individual switch operation counter value. With a total value mode of counting, i.e. counting from zero up to a set limit value, an alarm message is generated if the limit value is exceeded. With a remaining value mode of counting, i.e. counting from an adjustable start value down to zero, an alarm message is generated if zero is reached.

Via a communication object or parameter it is possible to define the corresponding start or limit value for each individual operating hours counter value. With a total run time mode of counting, i.e. counting from zero up to set limit value, an alarm message is generated if the limit value is exceeded. With a remaining run time mode of counting, i.e. counting from adjustable start value down to zero, an alarm message is generated if the zero is reached.

The counter values and start or limit values can be changed via the bus. The values can only be modified after enabling via a communication object. Via the communications object *Delete all operating data - System* all operating data can be deleted in the Data Logging Unit.

Every state change adjustable via parameters increments the current counter value of the operations counter by one. The level to count the operating hours can be defined via a parameter. The Data Logging Unit can even be set to count permanently via the level setting. Counting is undertaken every second.

During a new start the switching states of the monitored switch actuator channels are read after a settable time. A pause can be programmed between the two corresponding telegrams. If a switch actuator channel does not respond, the telegram will be repeated twice.

On bus voltage failure all counter values and start or limit values are saved in the BDB/S 1.1 and restored when the bus voltage recovers. If the limit values are exceeded, the Data Logging Unit sends the respective alarm messages on the ABB i-bus®.

2 Device technology

2CDC 071 247 F0006

The Data Logging Unit BDB/S 1.1 is designed for installation in the distribution board. The device is used for detection of switching operations and operating hours on 35 channels. The BDB/S 1.1 is operational after connection of the bus voltage . The module is programmed directly via the application program ETS. The connection to the ABB i-bus® is established via the bus connection terminal at the front of the device.

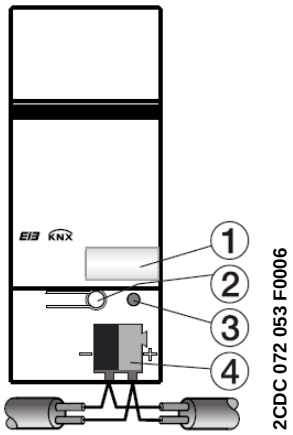
2.1 Technical data

Power supply	Bus voltage	21…32 V DC
	Current consumption, bus	< 12 mA
	Leakage loss, bus	Maximum 250 mW
Connections	KNX	Via bus connection terminal
Operating and display elements	Programming LED	For assignment of the physical address
	Programming button	For assignment of the physical address
Enclosure	IP 20	to DIN EN 60 529
Safety class	II	to DIN EN 61 140
Isolation category	Overvoltage category	III to DIN EN 60 664-1
	Pollution degree	2 to DIN EN 60 664-1
KNX safety extra low voltage	SELV 24 V DC	
Temperature range	Operation	-5 °C…+45 °C
	Storage	-25 °C…+55 °C
	Transport	-25 °C…+70 °C
Ambient conditions	Maximum humidity	93 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device, Pro*M*
	Dimensions	90 x 36 x 64.5 mm (H x W x D)
	Mounting width in space units	2 (2 modules at 18 mm)
	Mounting depth	64.5 mm
Installation	On 35 mm mounting rail	to DIN EN 60 715
Mounting position	as required	
Weight	0.1 kg	
Housing/colour	Plastic housing, grey	
Approvals	KNX to EN 50 090-1, -2	Certification
CE mark	Compliant to EMC guideline and low voltage guideline	

Application program	Maximum number of communication objects	Maximum number of group addresses	Maximum number of associations
Operating data recording/1	250	254	255

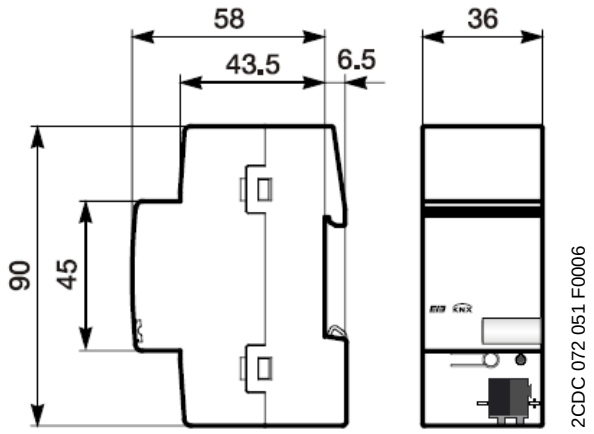
Note
ETS is required for programming. If ETS3 is used, a “*.VD3” type file or higher must be imported. The application program is available in the ETS3 under ABB/Surveillance/Controller. The device does not support the closing function of a project or the KNX device in the ETS. If you inhibit access to all devices of the project with a *BCU code*, it has no effect on this device. Data can still be read and programmed.

2.2 Circuit diagram



1 Label carrier
2 Programming button
3 Programming LED
4 Bus connection terminal

2.3 Dimension drawing



2.4 Assembly and installation

The Data Logging Unit is a modular installation device for installation in the distribution board on 35 mm mounting rails to DIN EN 60 715.

The connection to the bus is implemented using the supplied bus connection terminal.

The device is ready for operation after connection to the bus voltage.

Accessibility of the devices for the purpose of operation, testing, visual inspection, maintenance and repair must be provided (compliant to DIN VDE 0100-520).

Commissioning requirements

In order to commission the Data Logging Unit, a PC with ETS and a connection to the ABB i-bus®, e.g. via an RS232 interface or a USB port is necessary.

The device is ready for operation after connection to the bus voltage.

The installation and commissioning may only be carried out by electrical specialists. The appropriate norms, guidelines, regulations and specifications should be observed when planning and setting up electrical installations.

- The device should be protected from damp, dirt and damage during transport, storage and operation.
- The device should not be operated outside the range of the specified technical data!
- The device should only be operated in an enclosed housing (distribution board)!

Supplied state

The Data Logging Unit is supplied with the physical address 15.15.255. The application program is pre-installed. Hence, only group addresses and parameters must be loaded during commissioning. The entire application can be reloaded as required. A longer downtime may result if the application program is changed or after a discharge.

Assignment of the physical address

The assignment and programming of the physical addresses, group addresses and parameters is undertaken in the ETS.

Cleaning

If devices become dirty, they can be cleaned using a dry cloth. Should a dry cloth not remove the dirt, they can be cleaned using a slightly damp cloth and soap solution. Corrosive materials or solutions should never be used.

Maintenance

The device is maintenance-free. No repairs should be carried out by unauthorised personnel if damage occurs (e.g. during transport or storage). The warranty expires if the device is opened.

3 Commissioning

3.1 Overview

For the Data Logging Unit BDB/S 1.1, a high-performance application program *Data Logging/1* is available. Programming requires the KNX Software Tool (ETS). When ETS3 is used, the product files with the file extension *.VD3 must be imported.

Maximum number of communication objects	250
Maximum number of group addresses	254
Maximum number of associations	255

3.2 Parameters

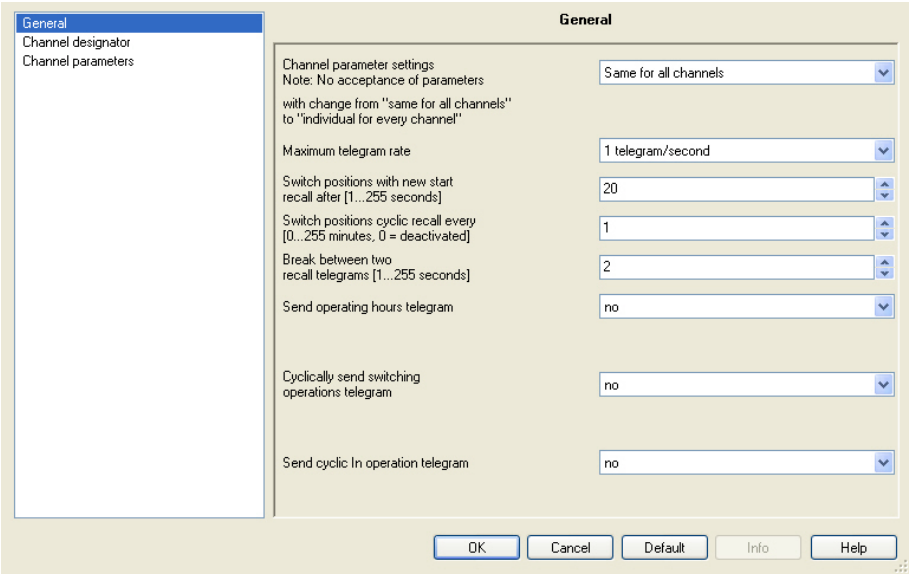
This chapter describes the parameters of the BDB/S 1.1 using parameter windows. The parameter window features a dynamic structure so that further parameters, or even whole parameter windows may be enabled depending on the parameterisation and the function of the outputs.

The default values of the parameters are underlined, e.g.:

Option: yes
<u>no</u>

3.2.1 *General* parameter window

In this parameter window general settings for the BDB/S are undertaken.



Channel parameter settings

Note
No acceptance of parameters with change from *Same for all channels* to *Individual for each channel*

Options: Individual for each channel
Same for all channels

This parameter sets if the channels are set individually for each of the 35 channels or set the same for all channels.

- *Individual for each channel:* The option enables the individual setting of each channel separately.
- *Same for all channels:* The settings under the parameter window *Channel parameters* apply for all channels.

Note
Please note that the values which are set to the same values for all channels, when converted individually for each channel, are not transferred to each individual channel. The individual setting must be repeated for each channel.

Maximum telegram rate

Options: 1/2/3/5/10/20 telegrams/second

To control the bus load, it is possible to limit the *Maximum telegram rate per second* with this parameter.

Example
With the setting *5 telegrams/second* a maximum of 5 telegrams will be sent in a second.

Switch positions with new start recall after [1…255 seconds]

Options: 1…20…255 seconds

Using this parameter, the time interval is set at which the switch positions can be recalled on the monitored channels after a new start.

Example
If the Data Logging Unit is restarted and the setting is set to *2 seconds*, after 2 seconds it will commence to recall all the switch positions of the parameterised channels.

Switch positions cyclic recall every [0…255 minutes, 0 = deactivated]

Options: 0…1…255 minutes
0 = function deactivated

The time interval is set after which the switch positions are recalled on a cyclic basis with this parameter.

Note
The set cycle time applies for all channels. The function can be enabled or inhibited for each channel. If the switch positions are recalled cyclically, ensure that on the recalling device, e.g. a switch actuator channel, the R flag is set in the communication object to be recalled. Otherwise the Data Logging Unit cannot recall the switch position.

Break between two recall telegrams [1…255 seconds]

Options: 1…2…255 seconds

In order to allow co-ordinated recall of the individual switch positions, a pause is set between two recall telegrams.

Note
If a switch actuator channel does not respond, the telegram will be repeated twice.

Send operating hours telegram

Options: no
<u>cyclically</u>
after a change

- *no:* An operating hours telegram is not sent.
- *cyclically:* Operating hours telegrams are sent *cyclically*.
- *after a change:* Operating hours telegrams are sent after each change.

If the option *cyclically* is selected, the following parameters are displayed:

Cycle time [1…255 hours]

Options: <u>1</u>…255 hours

The cycle time is thus set here. After this time all the operating hours telegrams are sent.

Cyclically send switching operations telegram

Options: <u>no</u>
yes

- *no:* A switching operations telegram is not sent.
- *yes:* A switching operations telegram are sent cyclically.

If the option *yes* is selected, the following parameters are displayed:

Cycle time [1…255 hours]

Options: <u>1</u>…255 hours

The cycle time is thus set here. After this time the switching operations telegrams are sent.

Send cyclic In operation telegram

Options: <u>no</u>
yes

- *no:* The cyclic In operation telegram is not sent.
- *yes:* Cyclic In operation telegram is sent, additionally the communication object *In operation – System* appears.

If the option *yes* is selected, the following parameters are displayed:

Send interval for In operation telegram

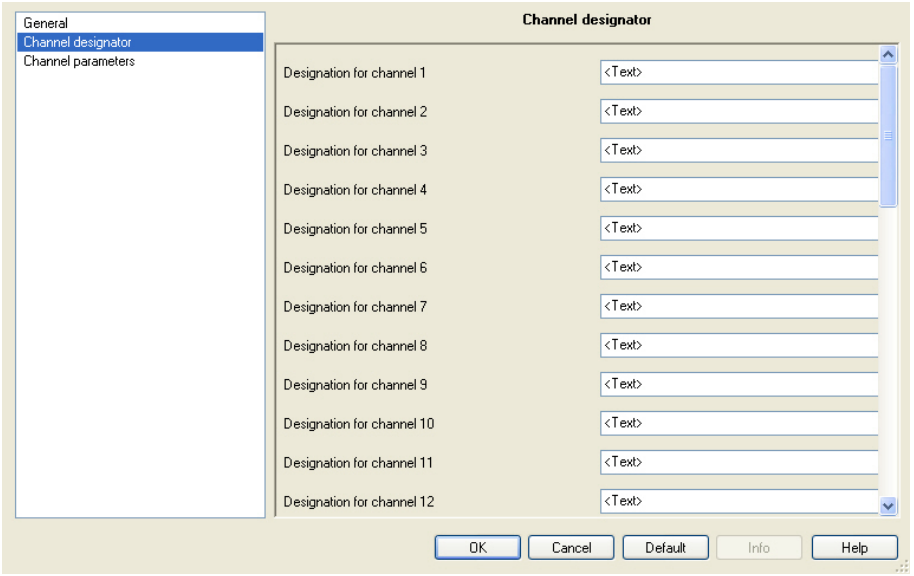
Options: <u>10 min</u>/30 min/1 h/3 h/6 h/12 h/24 h

The communication object *In operation – System* is sent cyclically on the bus after the set interval. The telegram value is always 1.

This can be used to monitor the Data Logging Unit.

3.2.2 Parameter window *Channel designator*

In this parameter window the designations for the channels are entered.



Designation for channel X

Options: <Text>

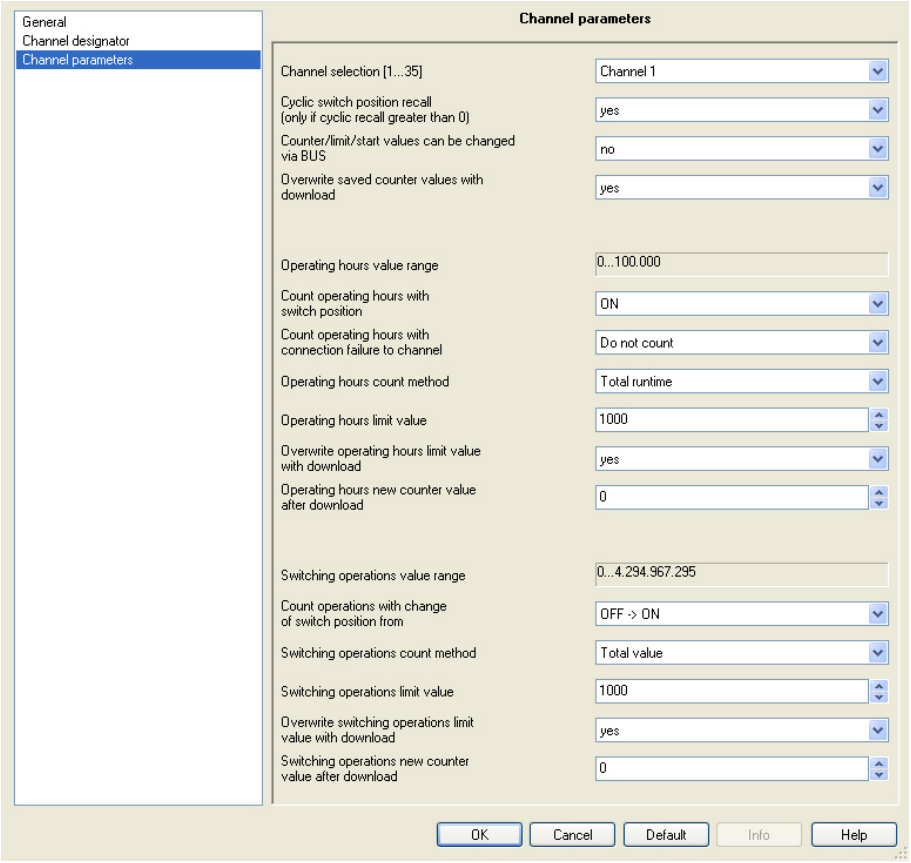
With this parameter it is possible to enter a text of up to 40 characters in length for identification in the ETS.

Note
The text which is entered is used to offer help, in order to provide an overview of the channels when they are fully assigned and to indicate the function assigned to the channel. The text is purely for informative purposes and has no further function.

3.2.3 Channel parameter settings *Individual for each channel*

If the option *Individual for each channel* is selected in the parameter *Channel parameter settings* in the parameter window *General*, on page 11, the following parameter window appears:

3.2.3.1 Parameter window *Channel parameters*



Channel selection

Options: Channel 1…Channel 35

With this parameter you define which channels are to be programmed.

Cyclic switch position recall
(only if cyclic recall greater than 0)

Options: no
yes

- *no:* do not recall switch position.
- *yes:* recall switch position.

With this parameter recall of the switch position is activated.

Note
The cycle time for this purpose is set in the parameter *Switch positions cyclic recall every [0…255 hours, 0 = deactivated]* in the parameter window *General*. If the switch positions are recalled cyclically, ensure that on the recalling device, e.g. a switch actuator channel, the R flag is set in the communication object to be recalled. Otherwise the Data Logging Unit cannot recall the switch position.

Counter/limit/start values can be changed via BUS

Options: no
yes

- *no:* Counter/limit/start values can not be changed via the bus.
- *yes:* Counter/limit/start values can be changed via the bus.

Note
The communication objects *Channel 1 operating hours start/limit value – Change/read* and *Channel 1 switching operations start/limit value – Change/read* are always visible.

How can the counter/limit/start values be changed?

Before the counters, start and limit values can be changed, 1 must be received on the communications object *Enable delete/overwrite - System*.

If a 1 is received the enable to delete/overwrite of the operating data is issued and a time window of ten seconds is activated. The time window closes automatically ten seconds after the last change and the communications object value is reset to 0 and sent on the bus.

The time window remains active for at least ten seconds after the last close command.

What is the counter value?

The counter value signifies the current operating hours and switching operations in the Data Logging Unit.

What is the limit value?

The limit value is only relevant when counting upwards. A limit value can be defined by a parameter. The limit value can also be modified via the bus. If the limit value is reached, the communication object *Channel 1 operating hours - Alarm* sends a 1.

Note
The communication objects *Channel 1 operating hours start/limit value – Change/read* and *Channel 1 switching operations start/limit value – Change/read* are always visible.

What is the start value?

The start value is only relevant when counting downwards. A start value can be defined by a parameter. The start value can also be modified via the bus. Counting down to zero starts at the start value. If the value 0 is reached, the communication object *Channel 1 operating hours - Alarm* sends a 1.

Note
The counter stops at zero.

Overwrite saved counter values with download

Options: no
yes

- *no:* saved counter values are not overwritten.
- *yes:* saved counter values are overwritten, and the following parameters appear.

Note
The counter value can also be modified via the bus.

If the option *yes* is selected, the following parameters are displayed:

Hinweis
Both parameters are not displayed directly underneath as is generally the case, but rather each as the last parameter in the operating hours and switching operations areas.

Operating hours new counter value after download

Options: 0…100,000

With this parameter a new counter value is set for the operating hours after download.

Note
If the operating hours are counting as a remaining run time (downwards counter), a plausibility test is undertaken.

Example
If a start value of 2,500 is set and the new counter value is set to 3,500, the new counter value is automatically corrected to 2,500, as the new counter value cannot be greater than the start value.

Switching operations new counter value after download

Options: 0…4,294,967,295

With this parameter a new counter value is set for the switching operations after download.

Note
If the operating hours are counting as a remaining run time (downwards counter), a plausibility test is undertaken.

Example
If a start value of 2,500 is set and the new counter value is set to 3,500, the new counter value is automatically corrected to 2,500, as the new counter value can not be greater than the start value.

3.2.3.2 Parameters of *Operating hours*

Operating hours value range

This parameter serves as a note or remark.

The value range is between 0 and 100,000.

Count operating hours with switch position

Options: ON
OFF
ON and OFF (always)

With this parameter you set the switch state at which the operating hours are to be counted.

- *ON:* counting is undertaken at a communication object value of 1, i.e. at a communication object value of 1 the operating hours counter is started and the counting stops at a value of 0.
- *OFF:* counting is undertaken at a communication object value of 0, i.e. at a communication object value of 0 the operating hours counter is started and the counting stops at a value of 1.
- *ON and OFF (always):* counting is undertaken at a communication object value of 0 and 1. After the Data Logging Unit is powered up the operating hours counter will run permanently.

Thus for example, the total connection time of equipment in the ABB i-bus® system can be measured.

Note
Internally the Data Logging Unit counts exactly to the second, the output of the operating hours telegram occurs for example at a full 60 minutes, 120 minutes etc.

Count operating hours with connection failure to channel

Options: Count
Do not count
Dependent on last switch position

- *Count:* the operating hours continue to be counted.
- *Do not count:* the operating hours are not counted, i.e., as soon as a connection is re-established to the channel counting will continue.
- *Dependent on last switch position:* counting will continue or cease depending on the last communication object value.

Note
Connection failures can now only be determined on channels which are cyclically recalled, i.e. reaction only according to the options, otherwise counting continues.

How does counting continue?

It is dependent on the parameter setting at *Count operating hours with switch position*.

Operating hours count method

Options: Total runtime
Remaining runtime

- *Total runtime:* counting upwards (incremental counter) beginning at 0.
- *Remaining runtime:* counting downwards (decrementing counter) beginning at the start value.

Note
All details stated in hours.

If the option *Total runtime* is selected, the following parameters appear:

Operating hours limit value

Options: 0…1,000…100,000

The limit value for the operating hours is set with this parameter.
If this value is reached the communication object *Channel 1 operating hours - Alarm* sends a 1.

Note
Thereafter counting will continue up to the end value of 100,000. The counter value stops at 100,000.

Overwrite operating hours limit value with download

Options: no
yes

- *no:* Operating hours limit value will not be overwritten.
- *yes:* Operating hours limit value will be overwritten.

Note
Changes of the limit value via the bus with a download is not taken into consideration. The parameterised value is set as a limit value.

Operating hours new counter value after download

Options: 0…100,000

With this parameter a new counter value is set for the operating hours after download.

Note
This parameter appears if the parameter *Overwrite saved counter values with download* has been programmed with *yes*. If the operating hours are counting as a remaining run time (downwards counter), a plausibility test is undertaken.

Example
If a start value of 2,500 is set and the new counter value is set to 3,500, the new counter value is automatically corrected to 2,500, as the new counter value cannot be greater than the start value.

If the option *Remaining runtime* is selected, the following parameters appear:

Operating hours start value

Options: 0…1,000…100,000

The start value for the operating hours is set with this parameter. Counting down to zero starts at the start value. If the value 0 is reached the communication object *Channel 1 operating hours - Alarm* sends a 1.

Note
The counter stops at zero.

Overwrite operating hours start value with download

Options: no
yes

- *no:* Operating hours start value will not be overwritten.
- *yes:* Operating hours start value will be overwritten.

Note
Changes of the start value via the bus with a download is not taken into consideration. The parameterised value is set as a start value.

Operating hours new counter value after download

Options: 0…100,000

With this parameter a new counter value is set for the operating hours after download.

Note
This parameter appears if the parameter *Overwrite saved counter values with download* has been programmed with *yes*. If the operating hours are counting as a remaining run time (downwards counter), a plausibility test is undertaken.

Example
If a start value of 2,500 is set and the new counter value is set to 3,500, the new counter value is automatically corrected to 2,500, as the new counter value cannot be greater than the start value.

3.2.3.3 Parameters of *Switching operations*

Switching operations value range

This parameter serves as a note or remark.

The value range is between 0 and 4,294,967,295.

Count operations with change of switch position from

Options: ON -> OFF
OFF -> ON

With this parameter the switch operations are defined.

- *ON -> OFF:* A switch operation is counted if switching occurs from an ON telegram to an OFF telegram.
- *OFF -> ON:* A switch operation is counted if switching occurs from an OFF telegram to an ON telegram.

Switching operations count method

Options: Total value
Remaining value

- *Total value:* Counting upwards beginning at 0.
- *Remaining value:* Counting downwards beginning at the start value.

Note
A 1 = 1 switching operation.

If the option *Total value* is selected, the following two parameters appear:

Switching operations limit value

Options: 0…1,000…4,294,967,295

The limit value for the switching operations is set with this parameter. If this value is reached the communication object *Channel 1 switching operations - Alarm* sends a 1.

Note
Thereafter counting will continue up to the end value of 4,294,967,295. The counter value stops at 4,294,967,295.

Overwrite switching operations limit value with download

Options: no
yes

- *no:* Switching operations limit value will not be overwritten.
- *yes:* Switching operations limit value will be overwritten.

Note
Changes of the limit value via the bus with a download are not taken into consideration. The parameterised value is set as a limit value.

Switching operations new counter value after download

Options: 0…4,294,967,295

With this parameter a new counter value is set for the switching operations after download.

Note
This parameter appears if the parameter *Overwrite saved counter values with download* has been programmed with *yes*. If the operating hours are counting as a remaining run time (downwards counter), a plausibility test is undertaken.

Example
If a start value of 2,500 is set and the new counter value is set to 3,500, the new counter value is automatically corrected to 2,500, as the new counter value can not be greater than the start value.

If the option *Remaining value* is selected, the following two parameters appear:

Switching operations start value

Options: 4,294,967,295…1,000…0

The start value for the switching operations is set with this parameter. Counting down to zero starts at the start value. If the value 0 is reached the communication object *Channel 1 switching operations - Alarm* sends a 1.

Note
The counter stops at zero.

Overwrite switching operations start value with download

Options: no
yes

- *no:* Switching operations start value will not be overwritten.
- *yes:* = Switching operations start value will be overwritten.

Note
A change of the start value via the bus with a download is not taken into consideration. The parameterised value is set as a start value.

Switching operations new counter value after download

Options: 0…4,294,967,295

With this parameter a new counter value is set for the switching operations after download.

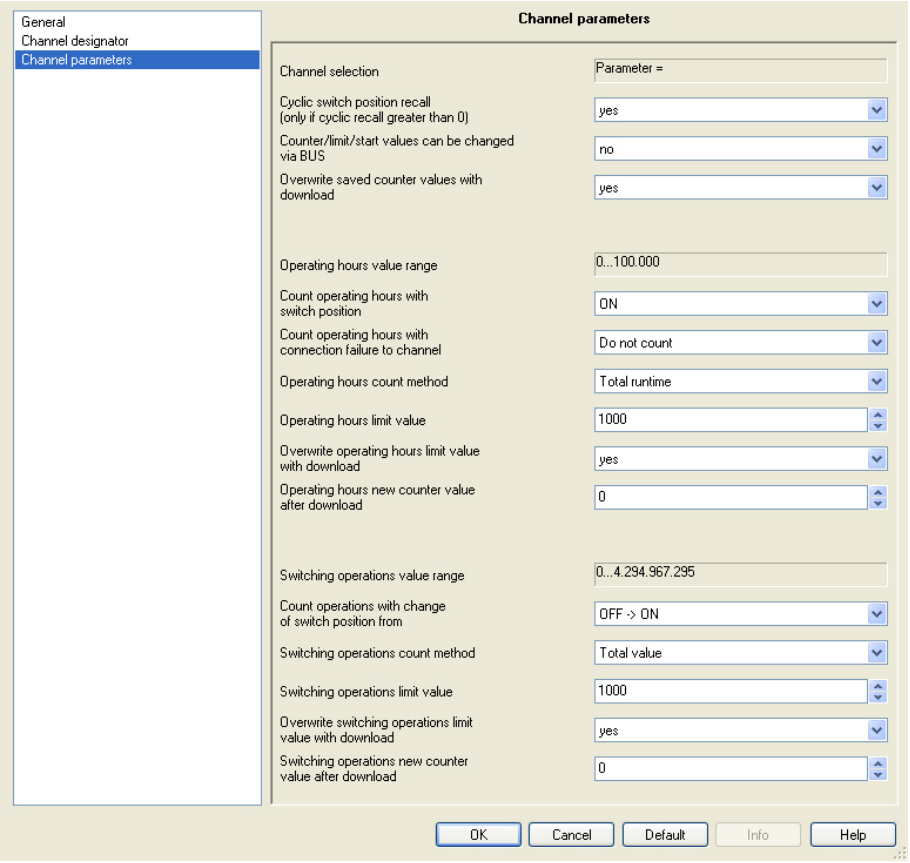
Note
This parameter appears if the parameter *Overwrite saved counter values with download* has been programmed with *yes*. If the operating hours are counting as a remaining run time (downwards counter), a plausibility test is undertaken.

Example
If a start value of 2,500 is set and the new counter value is set to 3,500, the new counter value is automatically corrected to 2,500, as the new counter value can not be greater than the start value.

3.2.4 Channel parameter settings *Same for all channels*

If the option *Same for all channels* is selected in the parameter *Channel parameter settings* in the parameter window *General*, page 11, the following parameter window appears:

3.2.4.1 Parameter window *Channel parameters*



Channel selection

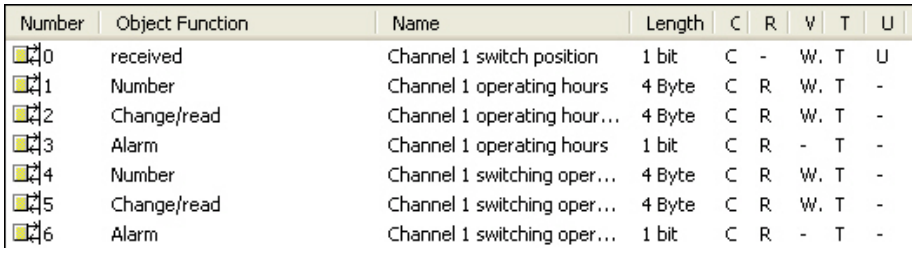
This parameter serves as a note or remark.

This indicates in the parameter window *General* in the parameter *Channel parameter settings* that the option *Same for all channels* has been selected.

Note
All further parameters can be taken from the description in the chapter channel parameter settings *Individual for each channel*, page 16.

3.3 Communication objects

3.3.1 Channel 1



Number	Object Function	Name	Length	C	R	W	T	U
0	received	Channel 1 switch position	1 bit	C	-	W.	T	U
1	Number	Channel 1 operating hours	4 Byte	C	R	W.	T	-
2	Change/read	Channel 1 operating hour...	4 Byte	C	R	W.	T	-
3	Alarm	Channel 1 operating hours	1 bit	C	R	-	T	-
4	Number	Channel 1 switching oper...	4 Byte	C	R	W.	T	-
5	Change/read	Channel 1 switching oper...	4 Byte	C	R	W.	T	-
6	Alarm	Channel 1 switching oper...	1 bit	C	R	-	T	-

No.	Function	Object name	Data type	Flags
0	**Received**	**Channel 1 switch position**	**EIS 1, 1 bit** **DTP 1.001**	**C, W, T, U**

Receives the current 1-bit switching telegram of the channel to be recorded, e.g. from a switching actuator.
If the switch positions are recalled cyclically, ensure that on the recalling device, e.g. a switch actuator channel, the R flag is set in the communication object to be recalled. Otherwise the Data Logging Unit cannot recall the switch position.

1	**Number**	**Channel 1 operating hours**	**EIS 11, 4 bytes** **DTP 12.001**	**C, R, W, T**

Contains the current number (= counter value) of operating hours.

With a bus voltage failure the current counter value is saved in the BDB/S.

Via the parameter *Overwrite saved counter values with download* and the option *yes* a further parameter *Operating hours new counter value after download* opens
A new counter value can be defined with this.

The counter value can also be modified via the bus.
Before the current values can be changed, the communication object *Enable delete/overwrite - System* must receive a 1.

With a change via the bus and the count method *Remaining runtime* the new operating hour's value must be greater than 0 and less than the current start value. If an attempt is made via the bus to set an operating hours (remaining runtime) value, which is greater than the start value, it will be rejected and the enable for deleting and programming is discontinued. A 0 is sent to the communication object *Enable delete/overwrite - System*.

No.	Function	Object name	Data type	Flags
2	**Change/read**	**Channel 1 operating hours start/limit value**	**EIS 11, 4 bytes DTP 12.001**	**C, R, W, T**
The operating hours start or limit value can be changed via the bus. The communication object is always visible. On a bus voltage failure the modified operating hours start or limit value is saved in BDB/S. Only after a renewed download of the application program is the start or limit value - if set - is overwritten. Before the start or limit values are changed a 1 must be received on the communications object *Enable delete/overwrite - System*. With a change via the bus and using the *Remaining runtime* method of counting, the new start value must be greater than the operating hours time completed up to this point. This results from the difference between the old start value and the current operating hour's value (remaining value). Here is an example: Old start value = 1000 Operating hours (remaining value) = 800 This results in a value for the completed operating hours = 1000 - 800 = 200 i.e., the new start value must be greater than 200 If an attempt is made to set a smaller start value, it will be rejected and the enable for deleting and programming is discontinued. A 0 is sent to the communication object *Enable delete/overwrite - System*.				
3	**Alarm**	**Channel 1 operating hours**	**EIS 1, 1 bit DTP 1.001**	**C, R, T**
Sends a 1, as soon as the set operating hours limit value is reached when counting upwards. When counting downwards a 1 is sent as soon as zero is reached. As soon as the communication object 248 *Send all operating data - System* receives a 1, the communication object *Channel 1 operating hours - Alarm* is sent. Telegram value: 1 = limit value reached. 0 = limit value not reached.				

No.	Function	Object name	Data type	Flags
4	**Number**	**Channel 1 switching operations**	**EIS 11, 4 bytes** **DTP 12.001**	**C, R, W, T**
Contains the current number (= counter value) of switching operations With a bus voltage failure the current counter value is saved in the BDB/S. Via the parameter *Overwrite saved counter values with download* and the option *yes*, a further parameter *Switching operations new counter value after download* opens. A new counter value can be defined with this. The counter value can also be modified via the bus. Before the current values can be changed, the communication object *Enable delete/overwrite - System* must receive a 1. With a change via the bus and the count method *Remaining runtime* the new switching operations value must be greater than 0 and less than the current start value. If an attempt is made via the bus to set a switching operations value (remaining runtime) value, which is greater than the start value, it will be rejected and the enable for deleting and programming is discontinued. A 0 is sent to the communication object *Enable delete/overwrite - System*.				
5	**Change/read**	**Channel 1 switching operations start/limit value**	**EIS 11, 4 bytes** **DTP 12.001**	**C, R, W, T**
The switching operation start or limit value can be changed via the bus. The communication object is always visible. With bus voltage failure the modified switching operation start or limit value is saved. Only after a renewed download of the application program is the start or limit value - if set - overwritten. Before the start or limit values are changed, a 1 must be received on the communications object *Enable delete/overwrite - System*. With a change via the bus and using the *Remaining value* method of counting; the new start value must be greater than the detected switching operations completed up to now. This results from the difference between the old start value and the current switching operations value (remaining value). Here is an example: Old start value = 5000 Switching operations (remaining value) = 1200 This results in a value for the actually completed switching operations = 5000 - 1200 = 3800 i.e., the new start value must be greater than 3800. If an attempt is made to set a smaller start value, it will be rejected and the enable for deleting and programming is discontinued. A 0 is sent to the communication object *Enable delete/overwrite - System.*				
6	**Alarm**	**Channel 1 switching operations**	**EIS 1, 1 bit** **DTP 1.001**	**C, R, T**
Sends a 1, as soon as the set switching operations limit value is reached when counting upwards. When counting downwards a 1 is sent as soon as zero is reached. As soon as the communication object 248 *Send all operating data - System* receives a 1, the communication object *Channel 1 switching operations - Alarm* is sent. Telegram value: 1 = limit value reached. 0 = limit value not reached.				

3.3.2 Channel 2…35

No.	Function	Object name	Data type	Flags
7…13	**See communication object 0…6**	**Channel 2**		
No.	Function	Object name	Data type	Flags
14…20	**See communication object 0…6**	**Channel 3**		
No.	Function	Object name	Data type	Flags
21…27	**See communication object 0…6**	**Channel 4**		
No.	Function	Object name	Data type	Flags
28…34	**See communication object 0…6**	**Channel 5**		
No.	Function	Object name	Data type	Flags
35…41	**See communication object 0…6**	**Channel 6**		
No.	Function	Object name	Data type	Flags
42…48	**See communication object 0…6**	**Channel 7**		
No.	Function	Object name	Data type	Flags
49…55	**See communication object 0…6**	**Channel 8**		
No.	Function	Object name	Data type	Flags
56…62	**See communication object 0…6**	**Channel 9**		
No.	Function	Object name	Data type	Flags
68…74	**See communication object 0…6**	**Channel 10**		
…	**etc.**	**etc.**		

3.3.3 General

Number	Object Function	Name	Length	C	R	W	T	U
245	Recall all switch positions	System	1 bit	C	-	W.	-	-
246	Send all operating data	System	1 bit	C	-	W.	-	-
247	Enable delete/overwrite	System	1 bit	C	-	W.	T	-
248	Delete all operating data	System	1 bit	C	-	W.	-	-
249	In operation	System	1 bit	C	R	-	T	-

No.	Function	Object name	Data type	Flags
245	**Recall all switch positions**	**System**	**EIS 1, 1 bit** **DTP 1.001**	**C, W**

A recall of all switch positions of the monitored channels is started.

Telegram value: 1 = recall

0 = do not recall

Note
Channels are only recalled if: - the input object of the channel is assigned to a group address. - the channe*l parameter Cyclic switch position recall in the parameter window Channel parameters is set to yes.* Reason: Only channels that do not send a spontaneous message when their operating state is changed should be recalled. In order to avoid an unnecessary bus load you can set on the channel if the input object of the channel is recalled or not recalled. This applies both for cyclic recall as well as for recall via object 245. However, all channels are recalled during a new start irrespective of the channel parameter *Cyclic switch position recall.* Reason: At a new start all channels must be recalled as otherwise the BDB/S will not be aware of the operating state and then will not be able to count the operating duration.

246	**Send all operating data**	**System**	**EIS 1, 1 bit** **DTP 1.001**	**C, W**

Send the current operating data via the communication objects

Channel X switching operations - Number,

Channel X operating hours - Number

Channel X switching operations - Alarm and

Channel X operating hours - Alarm

Telegram value: 1 = send

0 = do not send

No.	Function	Object name	Data type	Flags
247	**Enable delete/overwrite**	**System**	**EIS1, 1 bit DTP 1.001**	**C, W**
If a 1 is received the enable to delete/overwrite of the operating data is issued and a time window of ten seconds is activated. The time window closes automatically ten seconds after the last change and the communications object value is reset to 0 and sent on the bus. Via the communications object *Delete all operating data - System*, all operating data can be deleted in the Data Logging Unit. When counting upwards the counter value is set to zero. When counting downwards the counter value is set to start value. The operating hours counter, start and limit values, the switching operations counter, start and limit values can be modified via the respective communication objects via the bus. Telegram value: 1 = time window active 0 = time window not active				
No.	Function	Object name	Data type	Flags
248	**Delete all operating data**	**System**	**EIS 1, 1 bit DTP 1.001**	**C, W**
Deleting of the operating data switching operations and operating hours. Deleting applies for all channels. If a 1 is received the values of the communication objects *Channel X switching operations - Number and* *Channel X operating hours - Number* are set to zero counting up and set to the start value when counting down. Before the operating data is deleted a 1 must be received on the communications object *Enable delete/overwrite - System*. Telegram value: 1 = delete 0 = do not delete				
249	**In operation**	**System**	**EIS1, 1 bit DTP 1.003**	**C, R, T**
This communication object is only active if *yes* has been selected for the parameter Send cyclic *In operation* telegram. As long as the communication object is activated it sends an *In operation* telegram. Telegram value: 1 = system in operation				

4 Planning and application

In this section you will find some tips for practical use of the Data Logging Unit.

4.1 Application fields

4.1.1 Application 1

This module can be used for example, in an office complex in order to record the operating life of fluorescent tubes.

For example when a reference office in the office complex is taken and from this data the switch on duration and switching operations are recorded.

Based on these values it is possible to determine what the service life of the fluorescent tubes will be. This will allow you to make assumption with regard to the maintenance expenditure and effort in the office complex.

4.1.2 Application 2

The module can be used for example in a functional building to record the switch on times of pumps in the heating system.

The service life of the pumps can be derived from the switch on time.
This enables co-ordination of prompt pump maintenance.

4.1.3 Application 3

This module can be used for example in a department store to record the operating duration of the motors in the escalators.

A maintenance plan can be created based on the recorded use.
The plan can be co-ordinated so that the operations in the department store are not affected.

4.1.4 Application 4

The module can be used for example in a hotel to record the operating life of filters in the air conditioning.

A maintenance plan can be created using this data.

4.2 Reaction on bus voltage failure

With bus voltage failure the Data Logging Unit permanently saves the operating hours and switching operations.

4.3 Reaction on bus voltage recovery

Recall of the current counter states and update of the communication objects.

A Appendix

A.1 Scope of delivery

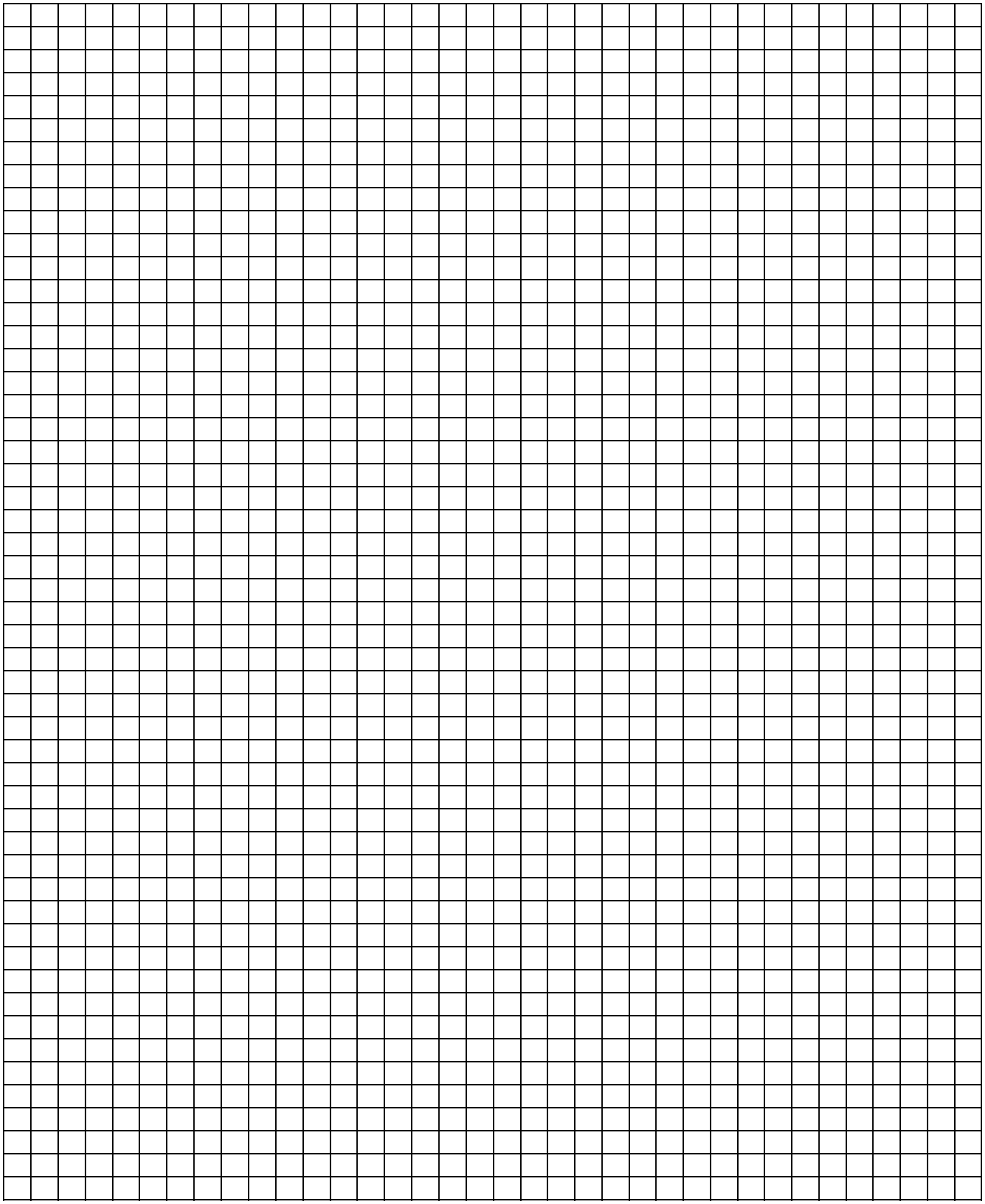
The Data Logging Unit is supplied with the following parts.
Please check the items received using the following list.

- 1 pc. BDB/S 1.1 Data Logging Unit, MDRC
- 1 pc. installation and operating instructions
- 1 pc. bus connection terminal (red/black)

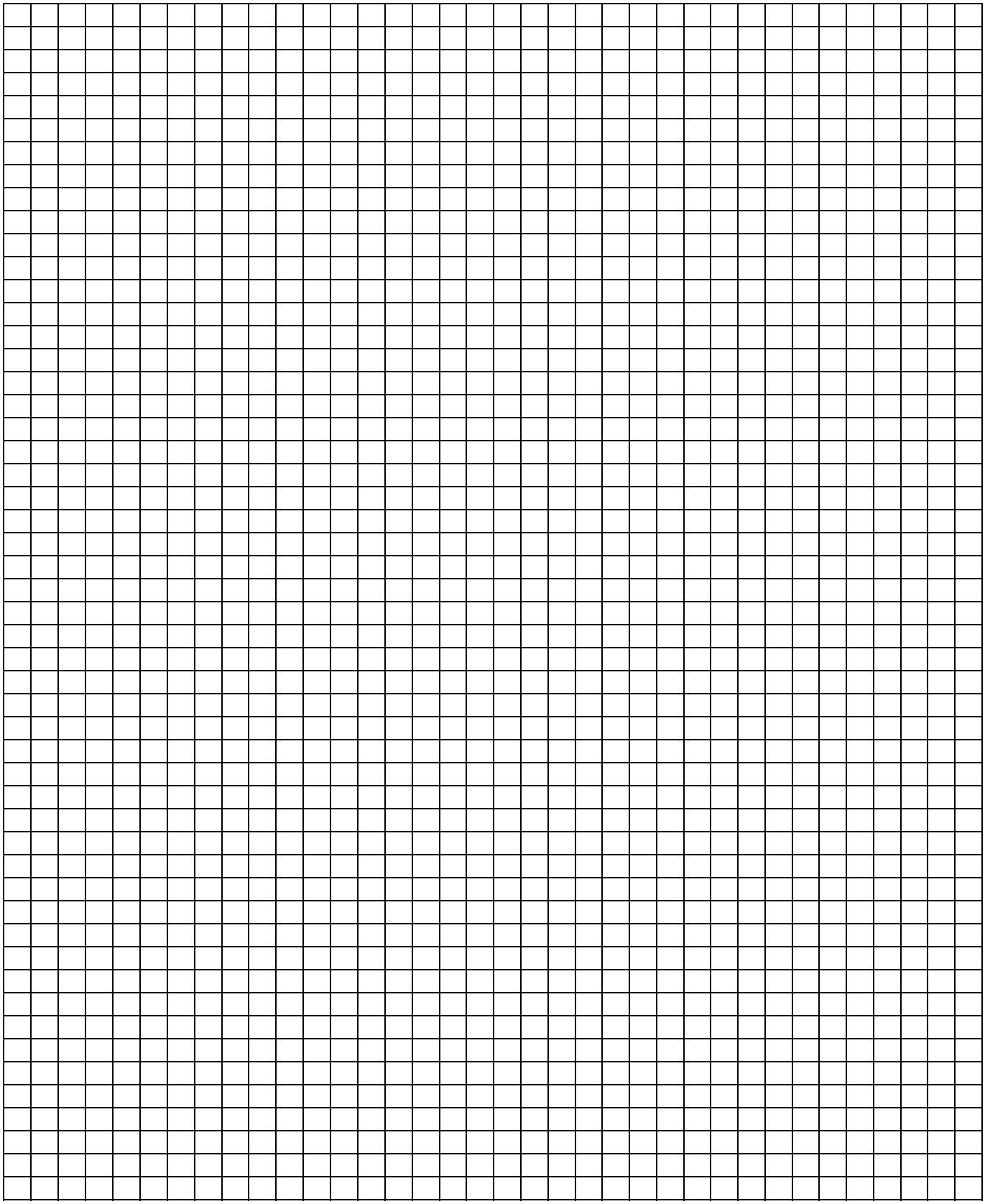
A.2 Ordering information

Short description	Designation	Order No.	**bbn 40 16779 EAN**	Price group	Unit weight 1 pc.[kg]	Pack unit [Pcs]
BDB/S 1.1	Data Logging Unit, MDRC	2CDG 110 067 R0011	**657 53 2**	26	0.1	1

A.3 Notes



A.4 Notes



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