



# Flow Monitor

## B3100 Series Data Logging



DSY-UM-02260-EN-01 (April 2017)

# User Manual

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**NOTICE**

This User Manual is meant as a quick reference document and is an addendum to the documentation set that came with the B3100.

This User Manual assumes that the B3100 is installed in the field.

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## 1 General information

The B3100 is certified for use in the specified hazardous area as specified. The allowed use of the B3100 is determined by the applicable certification authority and is specified on the certification label which is attached to the housing.

### 1.1 About this User Manual

This User Manual is written with the use of the guidelines for Simplified Technical English, ASD-STE100. Simplified Technical English has an own set of grammar and a limited vocabulary which is expanded with the technical terms as used in the related industry.

This User Manual is a part of the documentation set, which comes with the B3100 Flow Monitor.

#### 1.1.1 Scope of the User Manual

The scope of this User Manual is to give a description and operation of the data log function of the B3100, Flow Monitor.

## 2 Technical specification

This chapter gives the technical specification of the data log function of the B3100, Flow Monitor.

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**NOTICE** The data log menu is accessed through the setup menu. As a result of different options installed the menu number can vary.

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### 2.1 Setup menu structure

MENU / MENU ITEM	SETTING
DATALOG	
LOG INT	Off; 5 min; 10 min; 15 min; 30 min; 1 hr; 2 hr, 4 hr; 6 hr; 8 hr.
DAILY LOG	Off; single, dual
DAILY 1	00:00
DAILY 2	00:00
TIME HMS	00:00:00
DATE YMD	00.00.00

### 2.2 Operational menu structure

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**NOTICE** The ---- in the menu name represents the sequence number of the record.

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MENU / MENU ITEM	SETTING
DATALOG	
INTERVAL	Empty or recorded interval data
----A	Rate
----B	Total
----C	Accumulated total
DAILY	Empty or recorded daily log data
----A	Rate
----B	Total
----C	Accumulated total
EVENTS	Empty or recorded events
----A	Event name
----B	(if applicable for the event) Modbus register number
----C	(if applicable for the event) Old setting of the Modbus register number
----D	(if applicable for the event) New setting of the Modbus register number

### 2.3 Communication

DESCRIPTION	SPECIFICATION
Communication	USB (option CU), Modbus (option CB or CH)
USB connector	USB-A mini
USB protocol	USB 2.0
USB power supply	Maximum 500 mA at 5 Vdc
Modbus protocol	RTU, ASCII

## 2.4 Hardware requirements

DESCRIPTION	SPECIFICATION
Free disk space	10 MB
Operation system	Windows XP or higher
Application	2 MB

## 2.5 Log data specifications

DESCRIPTION	SPECIFICATION
Interval log	1000 records
Daily log, single	1 record per day with a maximum of 1000 records (1000 days)
Daily log, dual	2 records per day with a maximum of 1000 records (500 days)
Event log	500 records

## 3 Description

### 3.1 Functional description

The function of the data log function is to record the performance of the B3100 and the amount of the medium that passed the sensor (e.g. flowmeter) with respect to the time and the date.

There are two different ways to program the data logging function. You can program the data logging function via the setup menu DATALOG or via the serial communication.

There are also two possibilities to review the logged data. You can review the logged data on the B3100 themselves or, if installed, via communication through the explosion proof installed USB-connector and the related PC application. The required USB cable is available as an accessory (ACE01: USB data logging and configuration cable). The PC application is available as a free program from our internet download pages.

The recorded data is accessible via the operator menu of the B3100 or via the PC based data log application and an USB connection up to USB standard 2.0.

### 3.2 Component information

The data log function is a software application that is a part of the software of the B3100. The datalog menu has:

- the interval records, to log the interval data;
- the daily records, to log the so called contract hour data;
- the event records, to log the B3100 related events.

#### 3.2.1 The interval records

The interval records are used to log the interval records (user defined).

Each interval record has:

- a sequence number;
- a date/time stamp;
- the flowrate;
- the total;
- the accumulated total.

### 3.2.2 The daily records

The daily records are used to log the daily records, also known as contract hours (user defined).

Each daily record has:

- a sequence number;
- a date/time stamp;
- the flowrate;
- the total;
- the accumulated total.

### 3.2.3 The event records

The event records are used to log the B3100 related events. These events have a manufacturer defined content.

Each event record has:

- a sequence number;
- a date/time stamp;
- (as applicable) an event type number;
- (as applicable) an event content description.

The event records are used to log events that happen during operation. The logging is done at the moment an event happens.

## 4 Operation

The data log function records the performance of the B3100 and the measured medium that passed the sensor (e.g. flowmeter) with respect to the time and the date. The interval and daily records are logged as programmed in the setup menu DATALOG.

### 4.1.1 The interval log

This log is made to record the data once at every user defined moment in time.

The B3100 makes one record, as a snapshot, per programmed interval. When the maximum amount of records is made, the eldest record is overwritten by the newest record.

### 4.1.2 The daily log

This log is used to record the data at a pre-determined time in the day, e.g. before or at the end of a so called contract hour. This function is meant to determine, by hand, the total of the previous contract hour or to trend the total over a certain period of time. When the maximum amount of records is made, the eldest record is overwritten by the newest record.

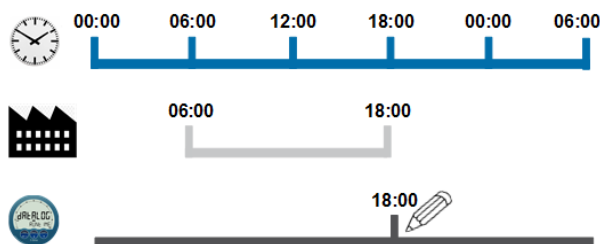


Figure 1: Single daily log (typical)

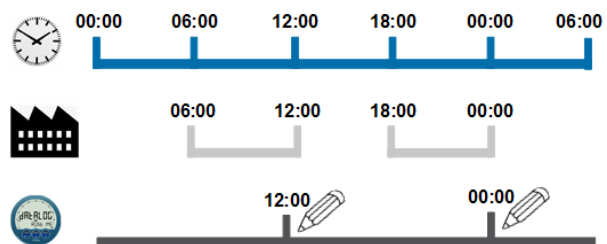


Figure 2: Dual daily log (typical)



## 4.1.3 The event records

This log is used to record the events. These events have a generic or a specific content (manufacturer defined). The B3100 makes one record every time an event occurs. When the maximum amount of records is made, the eldest record is overwritten by the newest record.

## 5 Program the data logging function

### 5.1 Program the interval log

ACTION	RESULT	REMARK
1. Press the PROG button for at least 7 seconds.	<ul style="list-style-type: none"> <li>• The SETUP indicator comes on continuously.</li> <li>• The setup menu TOTAL shows.</li> </ul>	To enter the setup menu.
2. Press the ► button to find the DATALOG menu.	<ul style="list-style-type: none"> <li>• The SETUP indicator stays on continuously.</li> <li>• The setup menu DATALOG shows.</li> </ul>	Press the ► button as many times as applicable.
3. Press the ▲ button to find the LOG INT menu item.	<ul style="list-style-type: none"> <li>• The LOG INT menu item shows</li> </ul>	Press the ▲ button as many times as applicable.
4. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>• The PROG indicator blinks continuously.</li> </ul>	If you wait too long, the program mode goes off and changes are not saved, this is normal behavior.
5. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> <li>• The PROG indicator blinks continuously.</li> <li>• You can set the interval time.</li> </ul>	The interval time defines the time between two records.
6. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>• The PROG indicator goes off.</li> <li>• The selection is saved.</li> <li>• The selection shows.</li> </ul>	If you do not press the PROG button to confirm, your selection is not saved.
7. Press and hold the PROG button for at least 3 seconds.	<ul style="list-style-type: none"> <li>• The SETUP indicator goes off.</li> <li>• The operator menu shows.</li> </ul>	The B3100 is ready for daily use.

## 5.2 Program the daily log

ACTION	RESULT	REMARK
1. Press the PROG button for at least 7 seconds.	<ul style="list-style-type: none"> <li>• The SETUP indicator comes on continuously.</li> <li>• The setup menu TOTAL shows.</li> </ul>	To enter the setup menu.
2. Press the ► button to find the DATALOG menu.	<ul style="list-style-type: none"> <li>• The SETUP indicator stays on continuously.</li> <li>• The setup menu DATALOG shows.</li> </ul>	Press the ► button as many times as applicable.
3. Press the ▲ button to find the DAILYLOG menu item.	<ul style="list-style-type: none"> <li>• The DAILYLOG menu item shows</li> </ul>	Press the ▲ button as many times as applicable.
4. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>• The PROG indicator blinks continuously.</li> </ul>	If you wait too long, the program mode goes off and changes are not saved, this is normal behavior
5. Press the ▲ button to make the required selection.	<ul style="list-style-type: none"> <li>• The PROG indicator blinks continuously.</li> <li>• You can make the required selection.</li> </ul>	Select SINGLE for one record per day or DUAL for two separate records per day. Select OFF if this log function is not required.
6. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>• The PROG indicator goes off.</li> <li>• The selection is saved.</li> <li>• The selection shows.</li> </ul>	If you do not press the PROG button to confirm, your selection is not saved.
7. Press the ▲ button to find the DAILY 1 menu item.	<ul style="list-style-type: none"> <li>• The DAILY 1 menu item shows</li> </ul>	In this menu item, the time for the creation of the record is set.
8. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>• The PROG indicator blinks continuously.</li> <li>• The first digit of the time blinks.</li> </ul>	If you wait too long, the program mode goes off and changes are not saved, this is normal behavior
9. Press the ▲ and the ► button to change the time.	<ul style="list-style-type: none"> <li>• The selected time shows.</li> </ul>	Only the digit that blinks can be changed. Use the ► button to scroll between the digits.
10. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>• The PROG indicator goes off.</li> <li>• The selection is saved.</li> <li>• The selection shows.</li> </ul>	If you do not press the PROG button to confirm, your selection is not saved.

**NOTICE** The next steps are only applicable and operational when the DAILYLOG is set to DUAL. If the Daily 1 and Daily 2 time are the same, only the Daily 1 log is recorded.

11. Press the ▲ button to find the DAILY 2 menu item.	<ul style="list-style-type: none"> <li>• The DAILY 2 menu item shows</li> </ul>	In this menu item, the time for the creation of the second record is set.
12. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>• The PROG indicator blinks continuously.</li> <li>• The first digit of the time blinks.</li> </ul>	If you wait too long, the program mode goes off and changes are not saved, this is normal behavior.

ACTION	RESULT	REMARK
13. Press the ▲ and the ► button to change the time.	<ul style="list-style-type: none"> <li>The selected time shows.</li> </ul>	Only the digit that blinks can be changed. Use the ► button to scroll between the digits.
14. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>The PROG indicator goes off.</li> <li>The selection is saved.</li> <li>The selection shows.</li> </ul>	If you do not press the PROG button to confirm, your selection is not saved.

**NOTICE** The next step is applicable for all selections.

15. Press and hold the PROG button for at least 3 seconds.	<ul style="list-style-type: none"> <li>The SETUP indicator goes off.</li> <li>The operator menu shows.</li> </ul>	The B3100 is ready for daily use.
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### 5.3 Program the events log

It is not possible to program the event records.

The event records are manufacturer defined.

### 5.4 Program the internal clock

ACTION	RESULT	REMARK
1. Press the PROG button for at least 7 seconds.	<ul style="list-style-type: none"> <li>The SETUP indicator comes on continuously.</li> <li>The setup menu TOTAL shows.</li> </ul>	To enter the setup menu.
2. Press the ► button to find the DATALOG menu.	<ul style="list-style-type: none"> <li>The SETUP indicator stays on continuously.</li> <li>The setup menu DATALOG shows.</li> </ul>	Press the ► button as many times as applicable.
3. Press the ▲ button to find the TIME HMS menu item.	<ul style="list-style-type: none"> <li>The TIME HMS menu item shows</li> </ul>	Press the ▲ button as many times as applicable.
4. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>The PROG indicator blinks continuously.</li> <li>The first digit of the time blinks.</li> </ul>	If you wait too long, the program mode goes off and changes are not saved, this is normal behavior
5. Press the ▲ and the ► button to change the time.	<ul style="list-style-type: none"> <li>The selected time shows.</li> </ul>	Only the digit that blinks can be changed. Use the ► button to scroll between the digits.
6. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>The PROG indicator goes off.</li> <li>The selection is saved.</li> <li>The selection shows.</li> </ul>	If you do not press the PROG button to confirm, your selection is not saved.
7. Press the ▲ button to find the DATE YMD menu item.	<ul style="list-style-type: none"> <li>The DATE YMD menu item shows</li> </ul>	Press the ▲ button as many times as applicable.

ACTION	RESULT	REMARK
8. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>The PROG indicator blinks continuously.</li> <li>The first digit of the date blinks.</li> </ul>	If you wait too long, the program mode goes off and changes are not saved, this is normal behavior
9. Press the ▲ and the ► button to change the date.	<ul style="list-style-type: none"> <li>The selected date shows.</li> </ul>	Only the digit that blinks can be changed. Use the ► button to scroll between the digits.
10. Press the PROG button momentarily.	<ul style="list-style-type: none"> <li>The PROG indicator goes off.</li> <li>The selection is saved.</li> <li>The selection shows.</li> </ul>	If you do not press the PROG button to confirm, your selection is not saved.
11. Press and hold the PROG button for at least 3 seconds.	<ul style="list-style-type: none"> <li>The SETUP indicator goes off.</li> <li>The operator menu shows.</li> </ul>	The B3100 is ready for daily use.

## 6 Read-out the log data

### 6.1 Read-out the interval log

**NOTICE** This procedure assumes that the B3100 shows the operator menu.

ACTION	RESULT	REMARK
1. Press and hold the ► button until the DATALOG menu shows.	<ul style="list-style-type: none"> <li>The RUN indicator stays on.</li> <li>The LOG indicator comes on.</li> </ul>	In the background, the B3100 stays operational.
2. Press the ▲ button to find the INTERVAL log.	<ul style="list-style-type: none"> <li>The INTERVAL log shows.</li> </ul>	Press the ▲ button as many times as applicable.
3. Press the PROG button momentarily to view the INTERVAL log.	<ul style="list-style-type: none"> <li>The trend down indicator comes on.</li> <li>The latest interval record shows with the date, the sequence number and the time.</li> </ul>	The trend down indicator indicates that the latest record is shown. Press the ► button to view the earlier records.
4. Press the PROG button momentarily to find the rate record.	<ul style="list-style-type: none"> <li>The interval-rate record shows with the flowrate, the sequence number and the measurement unit/time unit.</li> </ul>	
5. Press the ▲ button momentarily to find the total record.	<ul style="list-style-type: none"> <li>The interval-total record shows with the total, the sequence number and the measurement unit.</li> </ul>	
6. Press the ▲ button momentarily to find the accumulated total record.	<ul style="list-style-type: none"> <li>The interval-accumulated total record shows with the accumulated total, the sequence number and the measurement unit.</li> </ul>	
7. Press the PROG button momentarily to exit the interval records.	<ul style="list-style-type: none"> <li>The interval-log shows.</li> </ul>	Use the ▲ button and the ► button to view other the interval records.

ACTION	RESULT	REMARK
8. Press and hold the PROG button for at least 3 seconds.	<ul style="list-style-type: none"> <li>• The LOG indicator goes off.</li> <li>• The operator menu shows.</li> </ul>	

## 6.2 .Read-out the daily log

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**NOTICE** This procedure assumes that the B3100 shows the operator menu.

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**NOTICE** When the daily log is set to dual, there are two time stamps. One time stamp relates to the daily 1 record and the other time stamp to the daily 2 record.

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ACTION	RESULT	REMARK
1. Press and hold the ► button until the DATALOG menu shows.	<ul style="list-style-type: none"> <li>• The RUN indicator stays on.</li> <li>• The LOG indicator comes on.</li> </ul>	In the background, the B3100 stays operational.
2. Press the ▲ button to find the DAILY log.	<ul style="list-style-type: none"> <li>• The DAILY log shows.</li> </ul>	Press the ▲ button as many times as applicable.
3. Press the PROG button momentarily to view the DAILY log.	<ul style="list-style-type: none"> <li>• The trend down indicator comes on.</li> <li>• The latest daily record shows with the date, the sequence number and the time.</li> </ul>	The trend down indicator indicates that the latest record is shown. Press the ► button to view the earlier records.
4. Press the PROG button momentarily to find the rate record.	<ul style="list-style-type: none"> <li>• The daily-rate record shows with the flowrate, the sequence number and the measurement unit/time unit.</li> </ul>	
5. Press the ▲ button momentarily to find the total record.	<ul style="list-style-type: none"> <li>• The daily-total record shows with the total, the sequence number and the measurement unit.</li> </ul>	
6. Press the ▲ button momentarily to find the accumulated total record.	<ul style="list-style-type: none"> <li>• The daily-accumulated total record shows with the accumulated total, the sequence number and the measurement unit.</li> </ul>	
7. Press the PROG button momentarily to exit the daily records.	<ul style="list-style-type: none"> <li>• The daily-log shows.</li> </ul>	Use the ▲ button and the ► button to view other the daily records.
8. Press and hold the PROG button for at least 3 seconds.	<ul style="list-style-type: none"> <li>• The LOG indicator goes off.</li> <li>• The operator menu shows.</li> </ul>	

## 6.3 Read-out the events log

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**NOTICE** This procedure assumes that the B3100 shows the operator menu.

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ACTION	RESULT	REMARK
1. Press and hold the ► button until the DATALOG menu shows.	<ul style="list-style-type: none"> <li>• The RUN indicator stays on.</li> <li>• The LOG indicator comes on.</li> </ul>	In the background, the B3100 stays operational.
2. Press the ▲ button to find the EVENTS log.	<ul style="list-style-type: none"> <li>• The EVENTS log shows.</li> </ul>	Press the ▲ button as many times as applicable.
3. Press the PROG button momentarily to view the EVENTS log.	<ul style="list-style-type: none"> <li>• The trend down indicator comes on.</li> <li>• The latest events record shows with the date, the sequence number and the time.</li> </ul>	The trend down indicator indicates that the latest record is shown. Press the ► button to view the earlier records.
4. Press the PROG button momentarily to find the content of the event record.	<ul style="list-style-type: none"> <li>• The event record shows the content of the event.</li> </ul>	

**NOTICE** The next steps are only applicable for the setup menu related events. Each setup menu-item has a Modbus address. Other events, e.g. clear total do not have a Modbus address and therefore the next records cannot be generated.

5. Press the ▲ button momentarily to find the Modbus register number record.	<ul style="list-style-type: none"> <li>• The Modbus register number (REGNO) shows the register number of the related event.</li> </ul>	The explanation of the register number is explained in the user guide that came with the B3100.
6. Press the ▲ button momentarily to find the previous data.	<ul style="list-style-type: none"> <li>• The OLD record shows the content of the previous setting.</li> </ul>	The explanation of the register content is explained in the user guide that came with the B3100.
7. Press the ▲ button momentarily to find the current data.	<ul style="list-style-type: none"> <li>• The NEW record shows the content of the current setting.</li> </ul>	The explanation of the register content is explained in the user guide that came with the B3100.
8. Press and hold the PROG button for at least 3 seconds.	<ul style="list-style-type: none"> <li>• The LOG indicator goes off.</li> <li>• The operator menu shows.</li> </ul>	

## 7 Job close up

1. Remove any USB connections.
2. Close the USB connection port in a Ex d safe manner.
3. Remove all tools, materials and equipment from the work area.
4. Make sure, the work area is clean.
5. Dispose of the (electronic) waste in accordance with the (inter)national, the manufacturer's and the plant owner's standards and regulations.
6. For future reference, make a note in the maintenance log of the installation.
7. Ask the safety officer for permission to return the B3100 into service.
8. Return the B3100 into service.

## Control. Manage. Optimize.

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