

**CORRSYS**

**DATRON**

Sensorsysteme GmbH



## **EEP-6**

Compact On-board  
Data Acquisition System  
*for*  
*mobile vehicle instrumentation*

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# **USER MANUAL**

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## 1 Safety Instructions

### Please read carefully and note

The faultless and safe operation of the EEP 6 assumes adequate transportation and storage, competent installation and operation, as well as careful maintenance and use in accordance with specifications.

The EEP 6 should only be operated by trained, competent personnel who are familiar with the proper installation, operation, handling and maintenance of similar devices.

For signal connections via the EEP 6 D-Sub plug, shielded cables with a total length of 3 m or less are recommended. Longer cables may have an adverse effect on the EMV performance of the EEP 6.

In the event that information beyond the scope of this manual is required, please contact CORRSYS-DATRON Sensorsysteme GmbH.

## 2 Field of application and operating principle

The EEP 6 (Evaluation Equipment with Printer) is a compact, on-board vehicle data acquisition and evaluation system developed especially for standard tests such as acceleration, braking and fuel consumption.

The multi-function LED display shows speed, distance and acceleration or fuel consumption in metric or English units.

To stop or start a test, you can use speed-, distance- and time-dependent software switches, external switches (e.g. light barrier or brake switch), or manual triggering for a wide variety of applications.

### Brake test

The EEP 6 saves the start time and sums distance and time until test end. After test end, average deceleration and MFDD are calculated. One of the two results can then be displayed, per user selection.

### Acceleration or consumption test

During the test drive, speed, distance, time and current acceleration or fuel consumption are displayed.

At test end the average acceleration or average consumption rate will be displayed.

In addition, measured values can be printed to the optional external printer.

## Applications

- High-speed test
- Performance test
- Acceleration test
- Elasticity test
- Brake test
- Roll test
- Fuel consumption test
- Other applications

### 3 Scope of delivery

1	EEP 6
1	Supply cable, 4-pin BiBu / automotive plug, 2 m
1	RS 232 / 24 V cable, 9-pin D-Sub socket, 2 m
1	Safety fuse 1 A M
1	Safety fuse 0.63 A T
1	Safety fuse 4 A T
1	EEP 6 Operating Manual
1	EEP 6 Software

### 4 Technical details

#### LED display view ranges

Speed range	0 ... 400 km/h
Distance range	0 m ... 999 km
Time range	0 s ... 27.7 h
Travel resolution	1 cm

#### Inputs/Outputs

2 Frequency inputs	0 ... 40 khz Level TTL to 12 V
2 Switch inputs	Level TTL to 12 V e.g. for light barrier (incl. supply), brake switch or brake light switch
1 Printer	Connection via synchronous serial interface
1 RS 232 Interface	For software updates with PC
1 Analog output	For direct output of analog signal at signal input
1 Digital output	For direct output of digital signal at signal input

## Power Supply

Input	9 V ... 30 V DC < 2.5 A
2 Outputs	= in voltage (DC IN = DC OUT) automotive sockets for connection of external devices, e.g. printer; with connected sensor illu- mination. Use only in voltage range of 10.5 to 15 V DC
Safety	T 0.63 A, M 1 A, T 4 A
Dimensions	250 mm x 65 mm x 267 mm
Weight	2.8 kg
Temperature range	-25° C ... +65° C

## Options

- Housing with suction holder for removable LED display
- Printer
- Communication software for IBM compatible PCs

## 5 Installation and connection

The EEP 6 compact, on-board vehicle data acquisition and evaluation system is a single rack space computer in a varnished sheet metal housing.

A pivoted grip at the front of the unit provides for easy transport and mounting (lab operation).

The operation and display unit (BUA) can be removed by loosening two screws. It can also be rotated 180° if necessary.

The device connection panel can be placed on either the right or left side.

The BUA can also be removed from the main unit and used peripherally. Remote connection to the main unit is made with a standard 9-pin 24 V extension line.

- Connect sensor to mounting plug, **SPEED**
- Power supply (0 ... 15 V DC) at **DC-IN**-socket (4-pin Binder) on connection panel at front of EEP 6
- Connect consumption-test device (if available) to **FLOW**-Input
- Start EEP 6 with the **POWER** key on the right

1. press = **ON**
2. press = **OFF**

Other key functions depend on operation modes. Secondary key assignments are accessed by holding the **SHIFT** key while pressing a desired key or simultaneous combinations of keys. In this manual, all key functions are shown in brackets. Combinations of keys to be pressed simultaneously are indicated with plus signs.

Upon power-up, the calibration factor is displayed, as well as current time and software version number.

Immediately after start-up, the EEP 6 emits an acoustic signal in monitor operation. This is the basic operating mode.

The dimension LED displays the selected unit of measurement (metric or english). Measurement unit is selected via menu 3.

The left display shows the current speed.

The lower display shows average consumption or current acceleration.

The distance and time fields display 0.

### LED mode

#### Middle display

The yellow LED indicates the measurement unit (metric or english).

#### Lower display

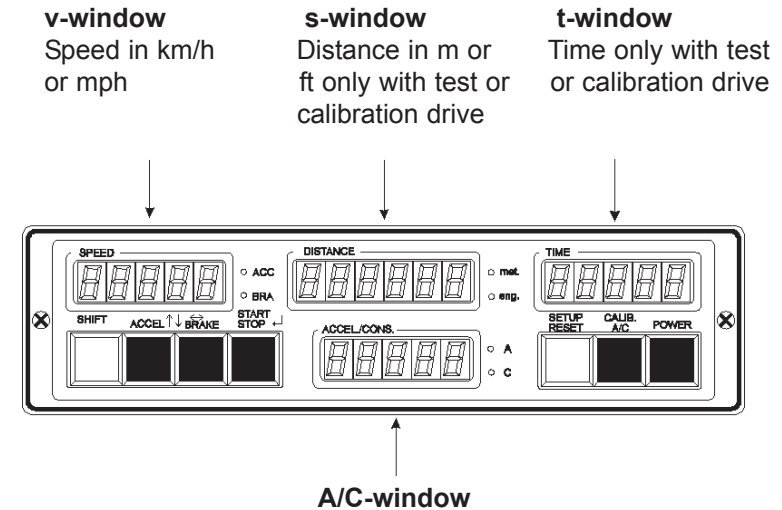
Indicates whether acceleration values (A) or fuel consumption values (C) are shown in the display.

#### Left display

Indicates whether an acceleration or brake test has been introduced. These LEDs blink continuously when waiting on start.

As soon as the test has been initiated by a start condition, the LEDs begin to blink slowly. Both LEDs blink sequentially during a calibration drive.

## 5.1 Front Panel



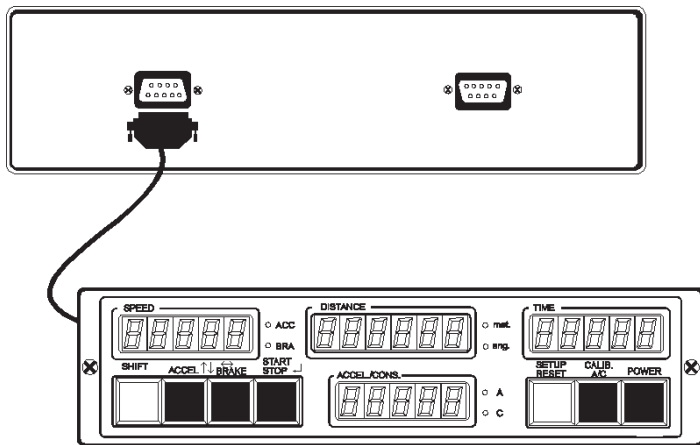
Acceleration (A) is shown in m/s/s, resp. ft/s/s. With connected fuel consumption test system, consumption (C) is shown in l/100 km or in gallons/100 miles, as standard. Consumption calculation can be set in the EEP 6 (setup menu 3, A/C window).

## 5.2 Front panel with decentralized BUA

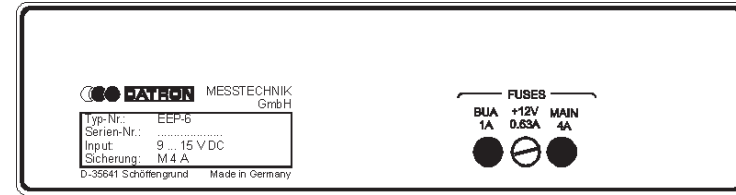
### EEP 6 operation with decentralized BUA

The BUA can also be removed from the main unit and used peripherally. To do so, loosen the two screws on either side of the display and remove the display from the housing.

The BUA can then be remotely connected to the main unit with a standard 9-pin 24 V extension line.



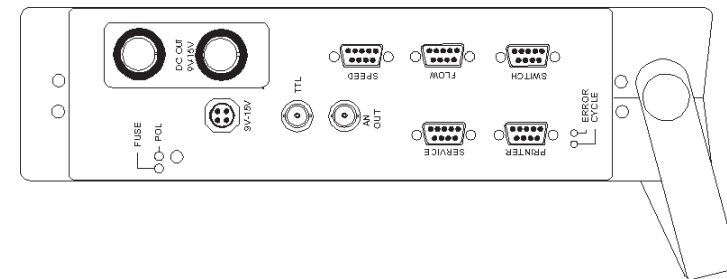
## 5.3 Device back



### Safety

- SI1: M 1 A safety fuse BUA power supply
- SI2: M 0.63 A safety fuse for sensor supply
- SI3: M 4 A main safety fuse Ue

## 5.4 Connection panel



### Inputs/outputs at connection panel

DC IN	9 V ... 15 V DC power supply
	1 Ue+
	2 Ue-
DC OUT	= DC IN

### Display elements

FUSE (red)	DC IN safety fuse defect
FUSE POL. (yellow)	Ue pole, DC IN fuse
CYCLE (green)	function display, blinks in seconds interval during operation
ERROR (red)	internal voltage fuse defect

### Serial interfaces

#### SERVICE, PRINTER, 9-pole D-Sub plug

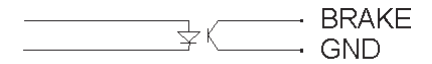
Pin	Signal	Direction
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Signal Ground
6	DSR	Data Set Ready
7	TRTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator

There is, unfortunately, no standardized pin assignment for the serial interface (RS 232/V24). Although most manufacturers use the listed assignments, deviations may be possible.

### Pin assignment

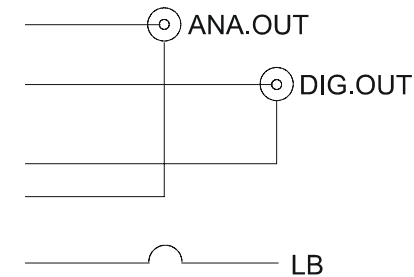
#### Switch, 9-pin D-Sub plug

Pin 1				
Pin 2				
Pin 3	⇒	NC	⇒	NC
Pin 4	⇒	+ 12 C	⇒	OUT
Pin 5	⇒	GND	⇒	GND
Pin 6	⇒	SW 3	⇒	BRAKE
Pin 7	⇒	+ 5 V	⇒	NC
Pin 8	⇒	SW 4	⇒	LB
Pin 9	⇒	shield	⇒	shield



#### SPEED SENSOR, 9-pin D-Sub plug

Pin 1	⇒	V (analog)	⇒	IN
Pin 2	⇒	NC	⇒	NC
Pin 3	⇒	/IN 1	⇒	IN
Pin 4	⇒	+ 12 V	⇒	OUT
Pin 5	⇒	GND	⇒	GND
Pin 6	⇒	AGND	⇒	AGND
Pin 7	⇒	+ 5 V	⇒	+ 5 V
Pin 8	⇒	LB	⇒	
Pin 9	⇒	shield	⇒	shield



#### FLOW, 9-pin D-Sub plug

Pin 1	⇒	IN
Pin 2	⇒	NC
Pin 3	⇒	NC
Pin 4	⇒	+ 12 V
Pin 5	⇒	GND
Pin 6	⇒	NC
Pin 7	⇒	NC
Pin 8	⇒	NC
Pin 9	⇒	shield

## 6 EEP 6 monitor operation

The **v**-window displays the current speed.

The windows for **s** and **t** display **0**, or the result of the last test.

The **A/C**-window displays either the current acceleration, resp. deceleration with changing speed, or consumption, per user setting.

### Display windows

upper left	<b>v-window</b> (speed in km/h or mph)
upper middle	<b>s-window</b> (distance in m or ft only with test or calibration drive)
upper right	<b>t-window</b> (time only with test or calibration drive)
below	<b>A/C window</b> Acceleration (A) is displayed in m/s/s, or in ft/s/s. Consumption (C) is displayed in L/100 km, or in gallons/100. With connected consumption test unit, as standard. Consumption calculation, however, is to be set in the EEP 6 (setup menu 3, A/C window)

## 6.1 Key assignment

**<ACCEL>** or **<BRAKE>**

Set EEP 6 to test ready state  
(repeated strike turns off)

**<START/STOP>**

Manual test start and stop - press **ACCEL** key before.

**<RESET>**

Reset distance and time display to 0.  
Return to monitor operation from any operation mode.

**<SHIFT> + <SETUP>**

Call up menu 1

**<CLIB A/C>**

Switch between acceleration and consumption display in lower window.

**<SHIFT> + <CALIB>**

Introduce calibration drive.

## 6.2 Test drive

Pressing **<ACCEL>** or **<BRAKE>** sets the EEP 6 to the test ready state.

Either the **ACC** or the **BRA** light diode will blink, indicating selection.

The difference between the acceleration and the brake test lies only in the start condition treatment **vStart** and **vEnd**.

The acceleration test starts when the pre-selected **vStart** speed value is exceeded, and ends when the pre-selected **vEnd** speed value is reached, assuming both criteria are fulfilled. Speed, distance and time remain frozen in the display until confirmation by **<RESET>** key.

The brake test starts when the condition **vStart** is reached as the result of speed falling below a pre-selected value. The test is stopped when speed reaches the pre-selected **vEnd** value. Start speed will be frozen and will be displayed until the **<RESET>** key is pressed in the **v-window**. Distance and time counter runs to **v = 0**.

### Creating a test protocol

With the **<START/STOP>** key it is possible to print out a protocol of the most recent test results via interface with the **PRINTER** in monitor operation.

Connecting a serial printer or computer in fixed format:

9600 Baud  
8 bit  
No Parity  
No Handshake

The format is similar to the metal paper printer standard with other EEP devices.

### Paper output

Test No.: 55

06/17/99 08:33

S	Speed km/h	Dist. m	Time s
---	---------------	------------	-----------

W	100.0	0.0	0.00	⇒start line start by <b>vStart</b> (100 km/h)
---	-------	-----	------	--

X	0.0	66.5	5.03	⇒endline Test end by <b>vEnd</b> (0 km/h)
---	-----	------	------	--

Total values:

TOTAL s: 66.52 m

TOTAL t: 5 s

TOTAL C: 0.000 L

⇒value irrelevant with no  
connected flow test device  
(FLOW)

Average Consumption:

Avg. Cs: 9.90 L/100 K

Avg. Sc: 10.10 km/L

Avg. Ct: 5.26 L/h

⇒Output only with connected  
flow test device

Average acceleration:

f(V, t) = 5.53 m/s/s

f(V, s) = 5.80 m/s/s

f(s, t) = 5.79 m/s/s

mfdd = 6.06 m/s/s

vo = 80 km/h

vu = 10 km/h

⇒upper speed threshold

⇒lower speed threshold

EEP 6 2.8

⇒software version, e.g. 2.8

## 6.3 Start and stop conditions

To place the EEP 6 in test ready state, select a test by pressing either **<ACCEL>** or **<BRAKE>**. Constant blinking of one of the two test LEDs indicates which test has been selected. The test then begins automatically when the pre-selected start condition becomes true.

The start ready state can be cancelled at any time by pressing **<RESET>**. Start conditions may be external as well as internal.

### External start conditions

#### **<START/STOP>**

The user can start or stop a test manually using the **<START/STOP>** key on the EEP 6 BUA. The **<START/STOP>** key can also be used to cancel a test at any time, and is always active.

#### **LB input, brake switch**

These two conditions enable test start and stop via switch signals. Switch inputs are located on the EEP 6 connection panel. Switch signals for test start and test stop must be enabled in setup mode prior to operation.

### Internal start/stop conditions

#### **Start signal vStart**

When using **vStart** in an acceleration test, the test is started when speed exceeds a threshold point defined in setup.

In brake tests, the defined start value must be a speed higher than the speed defined as the test stop value.

This condition can be blocked in setup by entering a value of 0.0. The selection of a value unequal to 0 can be executed in the defined EEP 6 unit (metric/english). Actual measurement values remain the constant regardless of the measurement unit

selected. This property applies to all values expressed in units.

#### **Stop signal vEnd**

The test stop signal in an acceleration test is triggered when the speed value exceeds the defined **vEnd** value. In the brake test, a speed value less than the defined **vEnd** value will end the test. The relevant value herein is 0.1 km/h. It is also possible to block this condition in setup with the reset button.

#### **Stop signal sEnd**

Here, a total distance can be defined in **m** or **ft**. The test stops automatically when this value is exceeded. This condition can be blocked by entering **0** as the test stop value.

#### **Stop signal tEnd**

As with distance, a stop time can serve as criterion for a test end. This condition can be blocked by entering **0** as the test stop value.

### **CAUTION!**

Before powering-up the EEP 6, conditions should be checked to avoid an accidental test start or test end before the defined time.

For example, if a test is ended with **sEnd** not reached, the **<RESET>** key must be pressed to start a new test. Otherwise, the stop condition will block the start condition.

## 7 Sensor calibration

The calibration drive is a special form of test operation and serves to measure and save the distance calibration factor. For this, a test course of a known distance is required. The test drive can be cancelled at any time by pressing **<RESET>**. EEP 6 will then return to monitor operation.

The key combination **<SHIFT> + <CALIB>** starts the calibration drive. After this, the **ACC-** and **BRA-LEDs** will begin to blink continuously.

For example, the display might read as follows:

**Dist 01000**

This is the relevant calibration course. This value can be changed with the arrow keys, as well as in setup operation. If the display value shows the distance of the selected test course, the EEP 6 can be made ready to start with **<START/STOP>**. If you wish to select a certain test course as standard, this can be entered in the setup menu 4 **s**-window.

Start and stop of the calibration drive can only be executed either by light barrier, or **<START/STOP>** key. No other start conditions will be considered, even if they are enabled in the setup menus.

After the start signal, during the test drive, the LEDs for **ACC** and **BRA** will blink sequentially to indicate that the unit is not in standard test mode. All other displays are the same as with standard test drives.

At the end of the drive the display may read, for example:

**CAL 1009.5 08915**

A new calibration factor of 8915 is now taken from the measured distance of 1009.5 m. If desired, the new calibration factor can be confirmed by pressing the **<START/STOP>** key. This saves the new factor permanently. Values may also be edited in accordance with previously measured values. In this case, the same key combinations used in setup are valid. Exiting the calibration drive with **<RESET>** causes the newly defined factor to be erased.

### 7.1 Software update

The EEP 6 is equipped with a changeable flash memory. An IBM compatible PC XT/AT computer and a 9-pin 24 V cross cable (Laplink) are required.

- Connect the EEP 6 service socket with the COM1 interface of the XT/AT compatible PC using the cross cable (Laplink).
- With EEP 6 power up, press and hold the **<SHIFT>** and **<START>** keys. A blinking minus sign will appear in the first position of the BUA.
- Set computer drive with update disk (e.g.: A:)
- Enter **Update** and press **<ENTER>**. The program automatically creates a link to the EEP 6 and installs the update. Upon completion of the update, the new program will be executed and the device gives a ready state message, indicated by the current software version in the **ACCEL./CONS.** window.

## 8 Test setups

By key combination

**<SHIFT>** + **<SETUP>**

allows entry to the EEP 6 setup menu.

All entries are permanently saved and will not be lost with power down.

Each setup menu contains up to four parameters. For better handling, there is a view of active setup numbers in the left display.

In addition, there are abbreviations for the parameters with some items for a better overview.

A user-defined value will only be saved if valid. Invalid entries will be answered with a warning signal.

Exiting a setup via **<RESET>** or **<SHIFT>** + **<RESET>** saves all valid values.

All entries with a unit will be executed in the defined unit. They are unaffected by the set-sensor calibration factor.

The current edit display is indicated by a blinking number. This is the current edit spot, as well. The key functions, listed below, refer to this.

### Setup key assignment

<b>&lt;↑↓&gt;</b>	increase of blinking display spot
<b>&lt;SHIFT&gt;</b> + <b>&lt;↑↓&gt;</b>	decrease of blinking display spots
<b>&lt;-&gt;</b>	next right edit character
<b>&lt;SHIFT&gt;</b> + <b>&lt;-&gt;</b>	next left display spot
<b>&lt;ENTER&gt;</b>	next parameter. Previous parameter is saved, if valid.
<b>&lt;SHIFT&gt;</b> + <b>&lt;ENTER&gt;</b>	previous parameter. The last changed parameter is saved, if valid.
<b>&lt;RESET&gt;</b>	end setup, return to monitor operation
<b>&lt;SHIFT&gt;</b> + <b>&lt;RESET&gt;</b>	next setup menu
<b>&lt;SHIFT&gt;</b> + <b>&lt;CALIB&gt;</b>	zero of current edit parameter. For example, serves to block start conditions quickly.
<b>&lt;SHIFT&gt;</b> + <b>&lt;SETUP&gt;</b>	with power up All setup definitions are set to <b>DFAULT</b> (for service personnel only).

## 8.1 Acceleration test

<u>Display areas</u>	<u>v-window</u>	<u>s-window</u>	<u>t-window</u>	<u>A/C-window</u>
Setup	vStart [km/h] e.g. 0	sEND [m] -	tEND [s] -	vEND [km/h] 100
Test values	vEND = 100	315.6	12.4	6.5 m/s <sup>2</sup>

- Key **<ACCEL>** sets the EEP 6 to test ready state
- **ACC**-LED starts blinking
- When start condition value is reached, **vStart** the test will start automatically
- Distance and time counter active
- End condition **vEnd** displays distance, time and the active acceleration at end condition (100km/h).

## 8.2 Brake test

<u>Display areas</u>	<u>v-window</u>	<u>s-window</u>	<u>t-window</u>	<u>A/C-window</u>
Setup	vStart [km/h] e.g. 80	sEND [m] -	tEND [s] -	vEND [km/h] 0
Test values	vEND = 80	66.5	5.2	A -4.3 m/s <sup>2</sup>

- The key **<BRAKE>** sets the EEP 6 to test ready state
- **BRA** LED blinks continuously

- Brake test starts automatically when the start condition **vStart** is reached from a higher speed.
- Test ends when speed reaches the **vEnd** value (usually  $v = 0$ ).
- Braking time and distance are displayed, as well as active acceleration.

## 8.3 Brake test with brake switch

- Connect brake switch
- Check in setup menu 2 (chap. 9.2), if brake switch is enabled.
- **<BRAKE>** sets EEP 6 to test ready state.
- Blinking **BRA** LED shows test ready state.
- The active brake switch starts the test, as in chap. 8.2

## 8.4 Brake test with brake light switch

- Connect brake light switch
- Check in setup menu 2 (chap. 9.2), if brake light switch is enabled.
- **<BRAKE>** sets EEP 6 to test ready state.
- Blinking **BRA** LED shows test ready state.
- The active brake light switch starts the test, as in chap. 8.2

## 8.5 Elasticity test

Display areas	v-window	s-window	t-window	A/C-window
Setup	vStart [km/h] e.g. 10	sEND [m] -	tEND [s] -	vEND [km/h] 80
Test values	vEND = 80	512.3	16.3	A 3.8 m/s <sup>2</sup>

## 8.6 Consumption test

- In menu 2 (chap. 9.2), enter calibration factor of relevant flow-test device in **pulse/ccm**.
- Select desired unit in menu 3 (chap. 9.3), e.g. **l/100 km**.
- Confirm with key B.

### CAUTION!

Selecting the unit **l/100 km** with car at a standstill will lead to absurdly high values. Selecting the unit **liter** display begins when test starts.

## 9 Menu description

### 9.1 Menu 1

Internal START/STOP conditions

<b>v-windows</b>	parameter	vStart
	function range	start conditions for test start m: 0.1 ... 399.9 km/h e: 0.1 ... 248.5 mph 0 blocks condition start at v> = vStart start at v< = vStart
<b>s-window</b>	parameter	sEnd
	function range	test end condition m: 0.1 ... 300000 m e: 0.1 ... 984 252 ft blocks condition
<b>t-window</b>	parameter	tEnd
	function range tEnd	test end condition 0.1 ... 99999 s 0 blocks condition
<b>A/C-window</b>	parameter	vEnd
	function range	test end condition m: 0.1 ... 399.9 km/h e: 0.1 ... 248.5 mph 0 blocks condition end at v> = vEnd end at v< = vEnd
	vEnd with ACCEL with BRAKE	

## 9.2 Menu 2

Calibration factors, enable external events

<b>v</b> -window	parameter range with LB	light barrier release 0/1 = 0 light barrier input ignored
<b>s</b> -window	parameter unit range standard	flow calibrator pulse/ccm 100.00 ... 9999.99 162.10
<b>t</b> -window	parameter formula range standard	sensor calibrator $\frac{9000}{400} \times \text{number of}$ pulses of sensor (pulses/m) 100 ... 30000 9000
<b>A/C</b> window	parameter range range 0 range 1 range 2	brake switch release 0 ... 2 no reaction to brake switch brake switch active brake light switch active

## 9.3 Menu 3

Unit, clock, consumption display

<b>v</b> -window	parameter range with E	metrical/english 0/1 = 1 all values with dimensions are dis- played in english units
<b>s</b> -window	parameter	date
<b>t</b> -window	parameter	time There is always a second reset with clock setting

**A/C** window

Change with key <**CALIB/AC**> from **C** to **A**

Parameter	Consumption display unit
range	0 ... 3
value	metrical      english
Co 0	liter/h      gallons/h
Co 1	liter/100 km      gallons/100 miles
Co 2	liter      gallons (test only)
Co 3	km/l      miles/gallons
standard	1

Parameter	Acceleration mode
AC 0	a= f (v, t)
AC 1	a= f (s, t)
AC 2	a= f (v, s)
AC 3	MFDD

With english units, all outputs are executed in the corresponding dimensions. In the case of a faulty calculation, a value of 99999 will be displayed in the MFDD, indicating the calculation was not possible in this test.

## 9.4 Menu 4

### Calibration distance

<b>v</b> -window	parameter	buzz setting (bu)
	range	buzz volume adjustable
		0 ... 9
		(buzz off at 0)
<b>s</b> -window	parameter	calibration distance (d)
	range	m: 500 m ... 10 km
		e: 1640 ... 32808 ft
		parameter shows the value displayed at calibration drive start
<b>t</b> -window	parameter	upper speed threshold
	range	1 ... 99% of start speed
<b>A/C</b> window	parameter	lower speed threshold
	range	1 ... 99% of start speed

There is no MFDD calculation with  $V_0 < = V_u$ , value will be displayed as unvalid (99999).

## 9.5 Menu 5

<b>A/C window</b>	parameter	number of characters behind the comma in monitor operation
	1. character	v-window
	2. character	s-window
	3. character	t-window
	4. character	A/C window
	Value	0 = no character behind comma 1 = one character behind comma 2 = two characters behind comma

## 10 Warranty/service

### Limited warranty

Datron warrants that physical disks and physical documentation provided are free of defects in material and workmanship, assuming normal use, for a period of sixty (60) days from the date of purchase.

The programs contained in this package are provided "as is" without warranty of any kind, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose. In no way will Datron be liable for direct, indirect, special, or consequential damages including but not limited to loss of business, interruption of service, loss of profits, inability to use the product, or to the inability of the product to operate with or in conjunction with other products.

### Service

All units as well as the software are produced and checked with great care and accuracy according to the latest technical standards.

If you still have reasons for reclamation using our products, please contact our service or our company in your country. In the case of complaints that are caused by inappropriate usage, warranty claims will be forfeited.

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## 11 Datron software license contract

Contract conditions effective upon purchase of enclosed software.

Opening this package constitutes acceptance of and agreement to the following terms and conditions. If you as ultimate consumer (or "licensee") do not agree with these conditions, you will not be permitted to open the packaging of the data medium (floppy disks, hard disks, CD-ROM, etc.). In this case, return the unopened package of the data medium, as well as all other parts of the product (including all written material, delivered hardware and packaging) immediately to the place of purchase; you will be reimbursed for the full purchase amount.

### Conditions

Subject matter of this contract includes the PC program, the program description, and the operating manual, recorded on the data medium (e.g. floppy disk), as well as any other accompanying material. This subject matter will be further referred to as "software".

The software delivered by the Datron company can be applied in fields defined in company publications. It must be emphasized that in accordance with technical development it is not possible to create a PC software package in such a way as to guarantee faultless operation in all applications and combinations.

For the life of the contract the Datron company grants the single, not exclusive and personal right (further referred to as "license") to use the delivered software with a single PC at one place only. If this PC system is used by several people, the right of use will be valid for all system users.

The licensee is allowed to transfer the delivered software in physical form from one PC to another PC, yet, under the condition that the software is never used on more than one PC at a time. Other usage is prohibited.

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The licensee is restrained from

- giving the delivered software or the accompanying written material to a third party or giving a third party access to it, without prior agreement of the Datron company in writing.
- transferring the software from one PC via network or data transfer channel to another PC.
- changing the delivered software, or to translate it, to redevelop it, to decompile, or to disassemble it.
- creating products or works deriving from the delivered software, or to reproduce the written material.

The physical data medium of the delivered software remains the property of the Datron company until the complete purchase price is paid in full. Herein the purchase of software rights is not included. Datron particularly reserves the publication right, the right of reproduction, the right of processing, and the utilization right for the software. The Datron company owns the copyright of the software and the accompanying written material.

The licensee does not have the right of reproduction. The only exception is software without overwrite protection. Making a backup copy of this software for safety purposes is allowed. The licensee is particularly liable to attach or record a copyright sign on each physical backup copy made. The copyright sign on the software, as well as the recorded registration number must not be removed. Furthermore, it is explicitly prohibited to copy or to reproduce the software, or the written material, either in full or in part completely in original or altered form. Only the ultimate user - and for his own purposes - is allowed to combine and to mix the software with other software to an extent described in the manual.

It is explicitly prohibited to give the software to other persons, to rent it, or to hire it. It is also not allowed to transfer the

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utilization right to other persons without the prior agreement of the Datron company in writing.

Software delivered by the Datron company in source text, may be changed to meet owner application purposes. The licensee is not allowed to give or to sell programs altered in this way to a third party without the prior agreement of Datron in writing. The delivered example software serves to display certain principles. The licensee is allowed to change those programs at will. To sell or to give the programs to a third party is strictly forbidden. The creation of routines to be used within programs for the purpose of sale is allowed, as long as the software crucially differs from the example software in outward appearance and function, and as long as the programs show a copyright sign, clearly visible to the user.

The Datron company reserves the right to update the software at its own discretion. The licensee does not have any legitimate claim to receive any updated software version automatically, unless he agrees to send another signed registration card or agrees by paying an update version fee.

The Datron company has the right to demand damages in the case of violation of the above stated duties.

The Datron company warrants that the software packages to be free of defaults at the time of delivery, with regard to normal operational conditions, normal maintenance, and usual usage. Paragraph 2 of this contract condition is, however, emphasized.

If the data medium or the delivered software is faulty, the licensee is allowed to demand delivery of compensation within the period of warranty of six months, beginning with the day of delivery. The licensee, however, is liable to return the faulty data medium, together with the possible backup copy, any written material, and an invoice copy to the Datron company. If the compensation delivery, demanded within the period of warranty, is not executed within four weeks, the licensee will be permitted to submit claim for reduction or convertible bonds. Further warranty claims will be forfeited. The Datron company

is not responsible for damages (damages caused by defects) that result from the application of the software, unless damages are caused by Datron either with premeditation, or with gross negligence. There will be also no responsibility for gross negligence in commercial interactions. Responsibility of promised features remains untouched.

Place of performance in commercial interaction is the CORRSYS-DATRON Sensorsysteme GmbH place of business. Any disputes arising hereunder will be settled before a competent Wetzlar court of law.