

SOURCETRONIC – Quality electronics for service, lab and production

User Manual

RS36B-40/50/75/100 Ground Bond Tester



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1 Preliminary Notes

Check the delivery for completeness. Also pay attention to any smaller packages.

Check the shipment for possible transport damage, both visible and invisible (hidden). In the event of transport damage, notify the transport company immediately (report of facts)

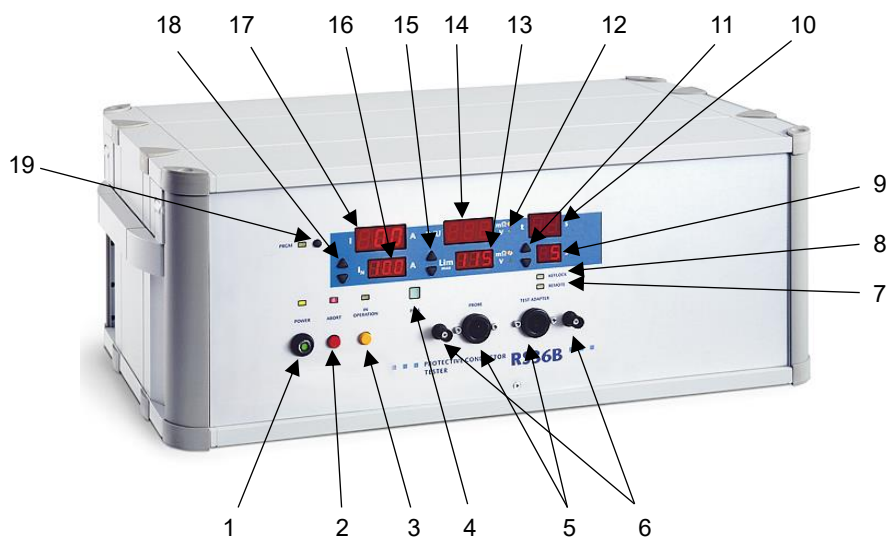
1.1 Warning



This symbol means that the relevant instructions must be observed for safe operation.

Failure to do so may result in damage to the appliance or injury to the user or other persons!

1.2 Front View



- 1 Mains switch
- 2 "ABORT" button with signal lamp
- 3 "IN OPERATION" button (measurement in progress) with signal lamp
- 4 Signal lamp "Test time elapsed – result OK" (PASS)
- 5 Socket for the 2x test leads, source contact (current path)
- 6 Socket for the 2x test leads, sense contact (voltage path)
- 7 Signal lamp "Remote control active" (REMOTE)
- 8 Signal lamp "Keyboard lock active" (KEYLOCK)
- 9 Estimated test time
- 10 Actual test time
- 11 Buttons ▲ or ▼ for setting the test time
- 12 Signal lamps – display value in mΩ or V
- 13 Estimated value of the resistance or voltage limit
- 14 Actual value of the resistance or voltage
- 15 Buttons ▲ or ▼ for setting the limit value
- 16 Estimated value of the test current
- 17 Actual value of the test current
- 18 Buttons ▲ or ▼ for setting the test current
- 19 Button "Test programs" (PRGM) with signal lamp

2 General Information

This test device has been built and tested in accordance with EN 61010-1 and has left the factory in a technically safe condition. To maintain this condition and ensure safe operation, the user must observe the instructions and warnings contained in these operating instructions and in EN 50191 (DIN VDE 0104).

Warning!	
	The RS36B-40/50/75/100 is intended for indoor use and may only be used for testing protective leads resistance.

3 Technical Data

Mains Connection: 230V; 50Hz ~ 60Hz

Current Consumption: max. 2.5A (RS36B-40/50)
max. 6A (RS36B-75)
max. 10A (RS36B-100)

Mains Cable: Included in the scope of delivery

Output Voltage	< 6V AC
Type of Current	AC current (nominal 10A AC ~ 100A AC)
Ammeter Display	LED 13mm, red
Measurement Range	RS36B40: 0A ~ 40A RS36B50: 0A ~ 50A RS36B75: 0A ~ 75A RS36B100: 0A ~ 100A
Resolution, Digit	0.1A
Measurement Accuracy	1% of the measured value $\pm$ 1 digit
Setpoint Display	LED 10mm, red
Measurement Range	0m Ω ~ 500m Ω (depending on variant)
Resolution, Digit	1 m Ω
Measurement Accuracy	1% of the measured value $\pm$ 1 digit
Limit Value Setting	1 m Ω ~ 500m Ω (maximum limit value depends on the selected test current)
Test Time Display	LED 13mm, red
Setting Range	1s ~ 15min
Duty Cycle in Short-Circuit Mode	Unlimited with max. duty cycle of 15min and 50% duty cycle
Manual Setting	Standard
PC-Controlled Setting via RS 232 Interface	Standard
Firmware Update via RS232 Interface	In conjunction with "SourcetricUpdate"
Measuring Method Using 4-Wire Technology	Standard

Audible Error Message	Standard
Visual Error Message	Standard
RS232 Interface	Standard
Control Interface Control	Standard
Self-Test	Standard
Programming Function (Up to 9 Programs)	Standard
Mains Supply	230V; 50Hz ~ 60Hz
Dimensions	205mm × 560mm × 420mm (W × H × D)
Weight	RS36B-40/50: approx. 27 kg RS36B-75/100: approx. 38 kg

Fuses:

A miniature fuse is located in the IEC connector on the rear of the RS36B-40/50/75/100:

- (5mm × 20mm) 3.15A inert for RS36B-40/50
- (5mm × 20mm) 6.3A inert for RS36B-75
- (5mm × 20mm) 10A inert for RS36B-100

For Devices with Built-In Printer: (5mm × 20mm) 6.3A slow for RS36B-40/50.

Warning!	
	Only use an equivalent fuse as a replacement! Do not repair defective fuses!

Environment:

Temperature: 5°C ~ 40°C
Relative Humidity: 80% non-condensing
Altitude: max. 2000m above sea level

4 Notes for Safe Operation

- A visual inspection must be carried out every day before starting the test work to ensure that the mains supply cable is in perfect condition. **Do not start up the device if there are any visible defects or damage!**
- Faulty parts must be replaced or taken out of service.
- The device may only be opened and repaired by Sourcetric authorized workshops! There are no user-replaceable parts inside the device.
- The RS36B-40/50/75/100 is a protection class I device.
- The protective leads connection to the mains cable and the mains socket used must be faultless. A protective leads breakage can cause the machine to become dangerous. Therefore this sort of damage is inadmissible.

5 Maintenance

Regular maintenance increases the availability and maintains the safety of your test station (and is also required by EN 50191). We recommend that you document the maintenance. Please refer to the table below for all maintenance work and intervals.

Maintenance	Interval	Implementation
Faultless condition of the mains supply cable and the test object connection cables	Before Starting the Test	Visual inspection
Error detection function	Rec. Daily	Proper function can be checked with a so-called defect sample (test object with built-in defect).
Calibration	Rec. Annually	Please contact our customer service to arrange an appointment.
Safety instruction of the test personnel	Annually	As detailed in EN 50191 (DIN VDE 0104)
Cleaning	As Required	<ul style="list-style-type: none"> • Pull out the mains plug for cleaning. • Clean the appliance with a damp but not too wet cloth. Make sure that no water or other cleaning agents get inside the appliance! • Risk of electric shock from mains voltage! • Never use abrasive cleaners, solvents or cleaning agents that scratch or dissolve the plastic surface!

6 Connection of the Test Device

6.1 Mains Connection

Please use a protected contact socket 230V, 50Hz for the mains connection. Connect the device to the mains using the mains cable included in the scope of delivery.

6.2 Test Leads

Four sockets are available on the front of the RS36B-40/50/75/100 for connecting the test leads. The high-current sockets are used for connecting the source lines, the BNC sockets are used for connecting the sense lines.

At the customer's request, the plug connectors for connecting the test object can also be led out at the rear of the device.

Warning!	
	Do not supply any external voltage to the device via the test contacts!

6.3 Ports

The ports for the CAN bus, RS232 and Control are located on the rear of the device. They are described in more detail in the appendix.

7 Testing with the RS36B-40/50/75/100

The RS36B-40/50/75/100 is a ground bond tester that fulfils all test specifications with a minimum test current of 10A AC at a maximum open-circuit voltage of 6V AC. The device operates using four-wire measurement technology in which the test voltage is measured as close as possible to the test object. This method means that the internal resistance of the device and the lead resistance of the test leads are not taken into account during the measurement. The measured value displayed therefore corresponds to the actual protective leads resistance of the test object.

Important Note: If one or more buttons do not function, check whether the keylock function is active. You can recognize this by the fact that the LED "KEYLOCK" (8) lights up. If this is the case, please contact the person in charge of your test device or read the section "Unlocking the Keypad" in this manual.

7.1 Switch On

Turn on the mains switch (1). The green "POWER" signal lamp above the mains switch serves as an operating indicator. If the signal lamp above the red button (3) lights up, the RS36B-40/50/75/100 is ready to switch on.

The previously set test parameters appear in the displays after the firmware version is shown. Previously selected test program parameters are not restored.

7.2 Set Test Current

With the RS36B-40/50/75/100, the test current is selected using the buttons ▲ or ▼ (18).

The test current is adjustable from 10A to xxx A. (depending on the device type) and is dependent on the set resistance limit value. Brief fluctuations in the mains voltage and/or the contact resistances to the test object can cause the test current to exceed/fall below minimum values for a short time. As the RS36B-40/50/75/100 monitors the test current, this can lead to an error (actual current display flashes). The maximum permissible undershoot of the test current can be defined in the system menu 0

7.3 Set Limit Values

The limit values of the resistance can be set using the buttons ▲ and ▼ (15). The limit value depends on the preselected test current.

RS36B-40:

20A	1 mΩ ~ 500mΩ
25A	1 mΩ ~ 400mΩ
33.3A	1 mΩ ~ 300mΩ
40A	1 mΩ ~ 250mΩ

RS36B-50:

20A	1 mΩ ~ 500mΩ
25A	1 mΩ ~ 400mΩ
33.3A	1 mΩ ~ 300mΩ
50A	1 mΩ ~ 200mΩ

RS36B-75:

22.5A	1mΩ ~ 500mΩ
28.1A	1mΩ ~ 400mΩ
37.5A	1mΩ ~ 300mΩ
56.2A	1mΩ ~ 200mΩ
75A	1mΩ ~ 150mΩ

RS36B-100:

40A	1mΩ ~ 500mΩ
50A	1mΩ ~ 400mΩ
66.6A	1mΩ ~ 300mΩ
100A	1mΩ ~ 200mΩ

RS36B-200:

80A	1mΩ ~ 500mΩ
100A	1mΩ ~ 400mΩ
133A	1mΩ ~ 300mΩ
200A	1mΩ ~ 200mΩ

7.4 Set Test Time

The test time visible on display 9 and can be configured using the buttons ▲ or ▼ (11). You can set a time between 1s ~ 15min. If a test without a test time is required, select the infinite "--" setting on the display. If the test time is set to infinite "--", the tester automatically terminates the test after 15min.

7.5 Test Programs

The RS36B-40/50/75/100 can save up to 9 test programs. This makes it possible to quickly switch between different test parameter sets. Saving, editing and deleting the programs is described in the system appendix.

7.5.1 Select a Saved Test Program

A saved test program can be selected by pressing the "PRGM" button (19): Tapping the button calls up the first saved program; each subsequent press of the button calls up the next saved program (e.g. Pr1 → Pr3 → Pr9).

The program number is visible on display 17 and the test parameters associated with this program are visible on displays 9, 13 and 16.

7.5.2 Exit a Test Program

Changing any test parameter (buttons ▲ or ▼) exits the test program, but the saved program settings remain unchanged.

7.6 Starting a Test

There are a number of different ways to start a test, such as:

- A change from Low to High at the "Control" input
- Pressing the yellow button (3) on the front panel

There are three different start modes to logically link the start conditions (see point A.5.9). Start mode 0 is set by default. Regardless of the set start mode, a test can be started at any time using the yellow button (3).

7.7 Concluding a Test

As with the start of a test, the end or termination of a test is dependent on the start mode setting. Generally, though, a test can be stopped at any time by pressing the red button (2). The conditions that can lead to the end or termination of a test are:

- The expiry of the test time (for test time ≥ 1 s)
- Pressing the red "ABORT" button (2)
- A change from High to Low at the "Control" input

7.8 Procedure for a Test with Test Time

- 1) Set the test parameters as described in the chapters above or select a test program. The test time must be ≥ 1 s.
- 2) Make contact with the test object.
- 3) Start the test.
- 4) The present current is shown on display 17.
- 5) The resistance value of the protective lead or the voltage across the protective lead is shown on display 14.
- 6) The elapsed test time is shown on display 10.
- 7) When the test time is concluded, there is a short acoustic signal, after which the test button can be released and the maximum measured value is shown on the measured value display 14.

7.9 Procedure for a Test Without Test Time

- 1) Settings and procedure as in point 6.9, except that the test time must be set to infinite "--".
- 2) Make contact with the test object.
- 3) Start the test.
- 4) The present current is shown on display 17.
- 5) The resistance value of the protective lead or the voltage across the protective lead is shown on display 14.
- 6) "--" appears on the test time display 10.
- 7) The end of the test is determined by the test person or an external control unit and the maximum measured value is shown on the measured value display 14.
- 8) The test ends automatically after 15 minutes at the latest.

7.10 Result and Error Display After a Test

7.10.1 Test OK "PASS"

If the maximum measured resistance or voltage value is below the limit value, the result display (4) shows "PASS".

7.10.2 Test Not OK "FAIL"

Limit Value Error:

If the resistance or voltage exceeds the set limit value, the measured value display (14) flashes. If the measured value exceeds the measuring range of the device, a flashing "1" (overload) is shown in display 14.

Time Error:

If the test is canceled before the test time has elapsed (see 7.7 Concluding a Test), the actual time display (10) flashes.

Current Error:

If the test current was below the set value during the test, the actual current display (17) flashes.

If the test result is not OK ("FAIL"), the reason for the error always flashes on the display and the internal buzzer sounds for approximately one second.

Note: Error messages can be acknowledged and deleted with button 2 (without switching on the test voltage) or with button 3 (when the test voltage is switched on again).

8 Keyboard Lock

The system administrator can completely or partially lock the input buttons to prevent any accidental changes. To deactivate the keylock, please see A.5.2.3 or contact your system administrator.

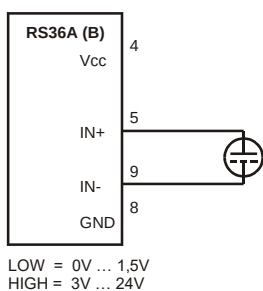
Appendix A Notes for System Administrators

Functions required for everyday operation are described in the previous sections. In addition, the RS36B-40/50/75/100 offers further functions that are generally only required when setting up the test station. This section is therefore aimed at the people who set up and maintain the test station.

A.1 "Control" Socket

The RS36B-40/50/75/100 can be operated via an external control unit. For this purpose, the "Control" connector is available on the rear of the device as a 9-pin D-sub connector. Three output signals and one input signal are routed via this connector.

A.1.1 Start the Test Cycle with "Control-Start"

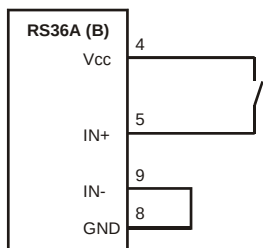


A.1.1.1 Control with External Control Voltage

Apply an external control voltage + 5 ~ 24V DC to pin 5 (+) and pin 9 (-). The input current is max. 30mA.

If a sufficient (> 1.5V to max. 24V) control voltage is present, this corresponds to a start signal.

If the control voltage falls below 1.5V, this corresponds to a stop signal.



A.1.1.2 Control with External Potential-Free Relay Contact

External potential-free relay contact between pin 4 and pin 5

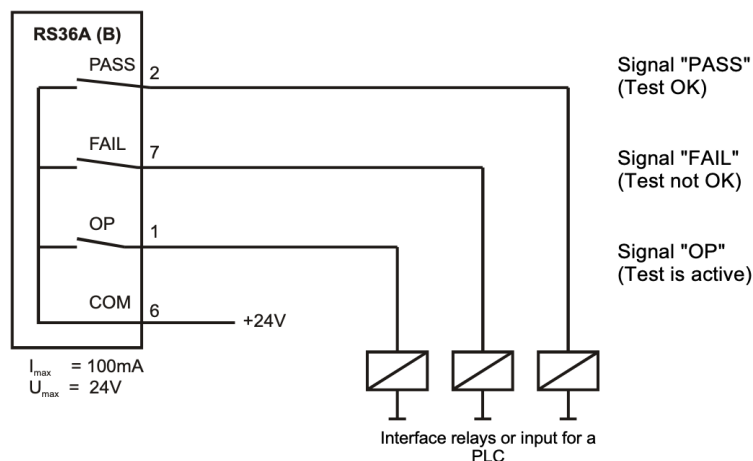
Contact load 5V; min. 20mA.

Jumper pin 8 to pin 9 required.

The test can only be started if the start conditions for the individual start modes (seeA.5.9) are met.

A.2 Result Output

The signal output is via the potential-free contacts of reed relays. The maximum input voltage is 24V with a maximum current of 100mA.



Output "PASS":

After the test time has elapsed, this output is active (contact closed) if no error occurred during the test (→ analogous to signal lamp 4).

Output "FAIL":

After the test time has elapsed, this output is active (contact closed) if at least one error (e.g. limit value, time or current error) occurred during the test.

Output "OP":

This output is active (contact closed) when the test voltage is switched on (→ analogous to signal lamp 3).

If a measurement is started without a test time, the "PASS" and "FAIL" outputs are active from the start of the test, depending on the measured values.

The signal outputs can be reset by pressing the red button (2).

A.3 Program Mode

Note: If no button is pressed for approx. 8s in programming mode, this mode is exited automatically and any settings that have not been saved are lost. This prevents data from being saved unintentionally.

A.3.1 Adding a New Test Program

- 1) Press and hold the "PRGM" button (19) for approx. 3s until the "Pr" display flashes.
- 2) Press the button (19) briefly several times to select the desired program number (Pr1 to Pr9).
- 3) Set the limit value using the buttons ▲ or ▼ (15).
- 4) Set the test time using the buttons ▲ or ▼ (11).
- 5) Set the test current using the buttons ▲ or ▼ (18).
- 6) Save the program (seeA.3.3).

A.3.2 Editing an Existing Test Program

- 1) Select the program to be edited using the "PRGM" button (19).
- 2) Then press the "PRGM" button (19) for approx. 3s. When the "PR?" display flashes, the device is in programming mode.
- 3) Set the test parameters (seeA.3.1).
- 4) Save the changed program.

A.3.3 Saving a Test Program

- 1) If you press and hold the "PRGM" button (19) again for approx. 3s, the settings for this program number are saved.
- 2) During the saving process, the letter "P" flashes on the display (17).
- 3) When the program has been saved successfully, "P" stops flashing and there is an acoustic signal.

A.3.4 Deleting a Test Program

- 1) Select the program to be deleted using the "PRGM" button (19).
- 2) Then press the "PRGM" button (19) for approx. 3s.

- 3) Set the test current to < 10A using the button ▼ (18). "del" appears on the display.
- 4) Press and hold the "PRGM" button for approx. 3s; the settings for this program number are now deleted.

Note: The program numbers of any other existing programs remain unchanged.

Example: If you have saved test parameters as program no. 1, 2, 3 and 4 and now delete program no. 2, programs no. 1, 3 and 4 will remain.

A.4 Serial Interfaces

A.4.1 RS232 Interface

In addition to connecting the report printer, the serial interface can also be used to connect to a standard personal computer. This can receive the test data instead of a log printer.

In addition, this interface offers the option of saving test parameter sets on the computer and downloading them to the RS36B-40/50/75/100 if required.

The Keyword Protocol 2000 (KWP 2000) is used to ensure particularly secure and interference-free data transmission. Suitable drivers (LabView, Active-X-Automation, DLL) and the complete data management system Sourcetronic DataView are available and described in the manual.

A.4.1.1 Connection of a Log Printer

A serial report printer, e.g. the type CBM-910 dot matrix printer with 24 characters per line, can also be connected to the "RS232" serial interface. This printer is used to document the test data for each individual test.

The language in which the log is created can be set; you can find more information at A.5 System Settings.

Note: There is no printout for a PE conductor test without a test time specification!

When using a **built-in printer**, plug in the connection cable from RS232 to RS232 Printer. (Please only use the cable supplied!)

A.4.1.2 Connection to Personal Computer

Plug Connector:

Sub-D:	9-pin, Socket
Rxd:	Pin 2
Txd:	Pin 3
Ground:	Pin 5

Protocol:

Baud Rate:	9600
Parity:	No
Data Bit:	8
Stop Bit:	1
Handshake:	No
Data:	Pure ASCII

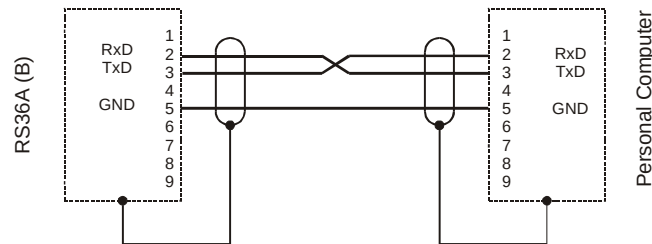
A.4.1.3 Sourcetronic DataView Data Management System

The Sourcetronic DataView PC program enables the saving of any number of test parameter sets, with several test steps and thus with different test parameters and programming, including visual inspection with test instructions for the user.

Furthermore, all test results are automatically documented, including the date, time, test location and test person.

A.4.1.4 RS232 Connection Cable

Null modem cable with 9-pin D-sub plug and 9-pin D-sub socket.



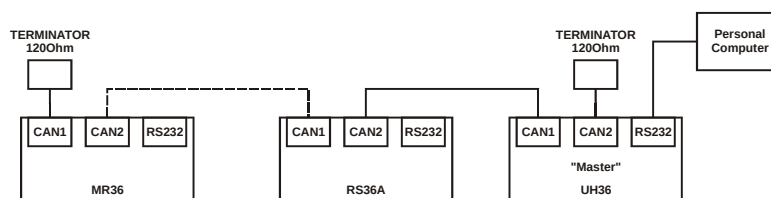
A.4.2 The Sourcetronic CAN Bus

This bus is used when several test devices from the 36 device series, e.g. an UH36 and an RS36B-40/50/75/100, are to be controlled together. This can be done either via the Sourcetronic DataView PC program or in stand-alone mode.

To do this, the devices (maximum 255 units) must be connected with a special CAN cable. This cable is available as an accessory with the corresponding terminating resistors. It does not matter which CAN socket on the back of the device (CAN1 and CAN2) the cable or terminator is plugged into.

If several similar test devices, e.g. three RS36B-40/50/75/100, are connected via CAN, an index must first be assigned to each device.

With the Sourcetronic DataView program, a self-created test plan can now be downloaded to the "master". The test system is therefore able to run the test sequence without a connected PC.



A.5 System Settings

System settings should only be made by the system administrator and can therefore only be accessed via a hidden menu.

Warning!	
	It is your responsibility to decide who you make the information about access to the system menu available to!

A.5.1 Access to the System Menu

This will take you to the hidden menu for the system settings:

- 1) Switch off at the power switch (1). Press and hold both buttons ▲ and ▼ (11) simultaneously while switching on again with the power switch (1). Now release both buttons (11).

2) Use the buttons ▲ and ▼ (18) to select the corresponding menu:

Loc	System Setting <i>Keyboard Lock</i>
ASC	System Setting <i>ASCII Protocol</i>
LoG	System Setting <i>Data Logger</i>
I	System Setting <i>Test Current Range</i>
Cst	System Setting <i>Control Start Mode</i>
EF	System Setting <i>EndFail</i>
EP	System Setting <i>EndPass</i>
BU	System Setting <i>Buzzer Mode</i>
StA	System Setting <i>Start Mode Operating Mode</i>
LA_n	System Setting <i>Language and Mode Selection for ext. Printer</i>
LEd	System Setting <i>Brightness of the Display Elements</i>

Note: If no button is pressed, the RS36B-40/50/75/100 automatically exits the system settings menu after approx. 8s.

A.5.2 "Loc": Keypad Lock Menu

In terms of process reliability, it makes sense to prevent accidental adjustment of the test parameters. This can be reliably achieved using the selective keypad lock

A.5.2.1 Activate Keyboard Lock

Prerequisite: You are in the "System Settings – Loc" menu, see A.5.1.

Use the buttons ▲ and ▼ (15) to select the desired keypad lock keylock code 0 to 15. Save this setting by pressing the "PRGM" button (19) (press and hold for at least 3s – until "P" stops flashing).

Important: As soon as your setting has been saved, the device emits an acoustic signal and the "P" on the display (17) stops flashing. When the keypad lock is activated, the "Keylock" signal lamp (8) lights up.

Two examples of frequently used keylock codes are explained below.

Example 1: Keylock Code 0

Testing with only one preset limit value and one test time. Changing any parameters is blocked.

Example 2: Keylock Code 2

It is possible to select the preset test parameter sets using the "PRGM" button (19) (see 7.5.1 Select a Saved Test Program and A.3 Program Mode). Changing and saving any parameters is disabled.

Note: To program test parameter sets, no buttons may be disabled; to enable all buttons, see A.5.2.3

A.5.2.2 Keylock Codes Table

To enable buttons to be locked as individually as possible, 3 keypads or functions can be locked independently of each other to prevent accidental access:

Adjustment Keypad	Keys 11, 15, 18
Select Test Program Function	Button 19 (short press)
Programming Function	Button 19 (long press)

Use the keypad (15) to select the desired keylock code. To do this, take the decimal or binary values from the following table.

Note: The keylock code as a decimal value is visible on display field 13, the corresponding binary value is shown on displays 10 and 14.

Setting Values		Keypads and Functions			
Binary	Dec.	---	Setpoint Adjustment	Program Selection	Programming
0000	0	X	X	X	X
0001	1	X	X	X	active
0010	2	X	X	active	X
0011	3	X	X	active	active
0100	4	X	active	X	X
0101	5	X	active	X	active
0110	6	X	active	active	X
0111	7	X	active	active	active
1111	15	active	active	active	active

X – the respective button / function is locked

active – the respective button / function is enabled for the user

A.5.2.3 Unlocking the Keyboard

Prerequisite: You are in the "System Settings – Loc" menu, see A.5.1.

Keylock Code 7 and 15: All buttons / functions are enabled.

A.5.3 "ASC": ASCII Protocol Menu

Prerequisite: You are in the "System Settings – ASC" menu, see A.5.1.

Use the buttons ▲ and ▼ (15) to activate/deactivate the ASCII function. Save this setting by pressing the "PRGM" button (19) (press and hold for at least 3s – until "P" no longer flashes).

0 = Standard (Function Deactivated)

A firmware update and remote control via the DataView software or communication via drivers is only possible in this setting.

1 = ASCII (ASCII Protocol Activated)

For communication via standard Windows terminal programs or PLC. A separate command set is available for this function.

A.5.4 "IoG": Data Logger Menu

The data logger mode is set to 0 in the factory setting and is therefore switched off. This mode enables the test results to be written out line by line via the serial interface, e.g. to record results via a terminal program or via Sourcetronic SerialLogger and to process them later in EXCEL.

Prerequisite: You are in the "System Settings – IoG" menu, see A.5.1

Use the buttons ▲ and ▼ (15) to select the desired data logger mode. Save this setting by pressing the "PRGM" button (19) (press and hold for at least 3s – until "P" no longer flashes).

0 = Data Logger OFF

1 = Data Logger ON

Attention: This setting changes the output format on the serial interface. The results are then no longer output in a format suitable for an external ASCII printer, but line by line (please also refer to A.5.10).

The data logger function can only be used with a set test time!

A.5.5 "I": Test Current Range Menu

Brief fluctuations in the mains voltage and / or the contact resistances to the test object can cause the test current to exceed / fall below minimum values for a short time. As the RS36B-40/50/75/100 monitors the test current, this can lead to an error (actual current display flashes). The maximum permissible undershoot of the test current can be defined here.

Prerequisite: You are in the "System Settings – I" menu, see A.5.1

Use the buttons ▲ and ▼ (15) to select the maximum permissible shortfall of the test current. Save this setting with the "PRGM" button (19) (press and hold for at least 3s – until "P" stops flashing). The factory setting is 20 (2A).

Value on the Display (13)	Permissible Delta of the Test Current (A)
0	0
1	0.1
2	0.2
...	...
50	5.0

A.5.6 "Cst": Control Start Mode Menu

Prerequisite: You are in the "System Settings – Cst" menu, see A.5.1

Use the buttons ▲ and ▼ (15) to select the control start mode. Save this setting by pressing the "PRGM" button (19) (press and hold for at least 3s – until "P" no longer flashes).

CST = 0

The device starts and stops analogously to the external digital signal, e.g. from a PLC. This means that the "Control Start" signal must be **constantly** present during the test. If, for example, the foot switch is released before the test time has elapsed, this results in a time error (display 10 flashes) and the test is invalid (FAIL).

CST = 1

This is the default setting on delivery. The device then behaves as follows: as soon as a pulse occurs, the device starts and ends after the set test time has elapsed and not after the digital signal has been removed. The target time setting "----" means infinite, the target time setting "2" means 2s test time. The "Control Start" signal **does not** need to be **constantly** present. At the start of a test, the control signal must be "High" for at least 30ms.

A.5.7 "EP" and "EF": EndPass and EndFail Settings Menu

Prerequisite: You are in the "System Settings – EF" / "System Settings – EP" menu, see A.5.1

Use the buttons ▲ and ▼ (15) to select the desired EndFail or EndPass code. Save this setting by pressing the "PRGM" button (19) (hold down for at least 3s – until "P" no longer flashes).

Setting Options:

0	The "PASS" and "FAIL" outputs are deactivated.
1	The outputs are active in the same way as the result after the end of the test.
2	If "Control Start" is "low" after the end of the test, the outputs are reset.
3	After the time set in the test time display (9) using the buttons (11)▲ and ▼ has elapsed, the outputs are reset.

A.5.8 "BU": Buzzer Mode Menu

The RS36B-40/50/75/100 has various modes that control the internal buzzer. Currently installed are buzzer modes 0, 1 and 2; mode 1 is the default setting on delivery.

A.5.8.1 Setting the Buzzer Mode

Prerequisite: You are in the "System Settings – BU" menu, see A.5.1

Use the buttons ▲ and ▼ (15) to select the desired buzzer mode. Save this setting with the "PRGM" button (19) (press and hold for at least 3s – until "P" stops flashing).

Buzzer Mode = 0

The buzzer is deactivated (there is only a short beep when programming).

Buzzer Mode = 1

The start and end of the measurement are acknowledged with a short beep (for "PASS" result). The RS36B-40/50/75/100 also acknowledges the successful programming of programs and settings with a short beep.

The device triggers a long beep at the end of the measurement with a "FAIL" error.

Buzzer Mode = 2

The buzzer is activated if the measured value is below the limit value (continuity tester) or if there is no other error. There is no acoustic start or stop signal. A short beep is only emitted during programming.

Note: It is not possible to set a test time in buzzer mode 2!

A.5.9 "StA": Start Mode Menu

Different applications require that the response of the RS36B-40/50/75/100 to the control input (see A.5.6 or A.1.1) can be adapted to the respective application. Start modes 0, 1 and 2 are currently installed; mode 0 is the default setting on delivery.

Warning!	
	Only change the start mode if you are certain!

A.5.9.1 Setting the Start Mode

Prerequisite: You are in the "System Settings – StA" menu, see A.5.1

Use the buttons ▲ and ▼ (15) to select the desired start mode. Save this setting with the "PRGM" button (19) (press and hold for at least 3s – until "P" stops flashing).

Start Mode = 0

A test is started either by closing the test button on the test probe or by a high signal at "Control-Start" (see A.1.1)

Note: The start condition (test button pressed or "Control start" active) that starts a test in this mode can also end it. If a test is started with the test button, for example, it cannot be ended by a low signal at the "Control" connector. The test ends when the test time expires or an error occurs. The same applies to starting a measurement with "Control start".

Start Mode = 1

The test can only be started if the button on the VP36C compound test probe is pressed and a high signal is present at the "Control-Start" input.

Start Mode = 2

The test is only started by the "control start" (e.g. foot switch).

Note for All Start Modes: The start conditions (high signal at "Control-Start") must be continuously present during the test. If, for example, the foot switch is opened before the test time has elapsed, this results in a time error (display 10 flashes) and the test is invalid (n.i.O.).

A.5.9.2 Table of Different Use Cases

Start Mode	Use Case	Start the Test	End the Test
0 (Default)	The test object is contacted. <i>Test time 2seconds</i>	Press the yellow button on the front panel	<ul style="list-style-type: none"> Expiry of the test time (regular) Red button (cancel) <i>Control input cannot end the test.</i>
0 (Default)	The test object is contacted. <i>No test time</i>	High signal at the control input	<ul style="list-style-type: none"> Red button (regular) Low signal to control (regular) <i>The check button has no effect.</i>
2	The test object is permanently connected; a test button is not available. <i>Test time 2seconds</i>	High signal at the control input	<ul style="list-style-type: none"> Expiry of the test time (regular) Red button (cancel) Low signal to control (regular)
1	The test object is contacted; no test time is set on the RS36B. <i>The test time is specified via an external control unit.</i>	Pressing the test probe button <u>AND</u> High signal at the control input	<ul style="list-style-type: none"> Red button (cancel) Release the test probe button (abort) Low signal to control (regular)
2	The test object is permanently connected; a test button is not available. <i>No test time</i>	High signal at the control input	<ol style="list-style-type: none"> Red button (regular) Low signal to control (regular)

A.5.10 "LAn": Language and Mode Selection Menu for External Printer

Prerequisite: You are in the "System Settings – LAn" menu, see A.5.1

Use the buttons ▲ and ▼ (15) to select the desired language version and save this setting by pressing the "PRGM" button (19) (hold down for at least 3s – until "P" stops flashing).

The following languages and printout modes can currently be selected:

0	English
1	German
2	Italian
3	Spanish
4	French
5	Dutch
6	Portuguese
7	Swedish

0	There is no printout
1	It is always printed after a check
2	Printout only with "PASS" test result
3	Printout only with test result "FAIL"

A.5.10.1 Use of Built-In Printers

When using a built-in printer, plug in the connection cable from RS232 to RS232 Printer. (Please only use the cable supplied).

A.5.11 "LEd": Brightness of the Display Elements Menu

Prerequisite: You are in the "System Settings – LEd" menu, see A.5.1

Use the buttons ▲ and ▼ (15) to select the desired brightness. And save this setting with the "PRGM" button (19) (press and hold for at least 3s – until "P" stops flashing).

A.6 Download Device Software

All Series 36 devices have a modern processor architecture that enables the device software (firmware) to be updated. The devices are supplied with the latest version of the firmware. However, it may be necessary to introduce new or specific firmware into the device as a result of further development or customer requests. Thanks to the integrated flash EPROM, it is now possible to update the firmware without the hassle of replacing the EPROM. This requires a PC, an RS232 null modem cable (see chapter A.4.1.4) and the SourcetricUpdate program.

Install the SourcetricUpdate program on a PC and complete the following steps:

- 1) Switch off the device.
- 2) Use the RS232 cable to establish the connection between the device (RS232 socket on the rear panel) and the PC (e.g. COM1).
- 3) Start the "SourcetricUpdate" program.
- 4) Select the interface in the "SourcetricUpdate" window.
- 5) Click on the "Search" field in the "SourcetricUpdate" window.
- 6) A new window will open – select the HEX file with the new firmware in the desired path and click on "Open".
- 7) Switch on the device.
- 8) Press "Start" in the "SourcetricUpdate" window.
- 9) A new window opens (the progress is displayed in the "Update in %" field).
- 10) The download starts and the LED display on the device goes out.
- 11) After the download, the buzzer sounds briefly, the "SourcetricUpdate" window closes automatically and the new program status is displayed on the device
- 12) The download is finished.

Appendix B Extension Modules/Packages (Optional)

B.1 Log Printer Module PDM36

The built-in protocol printer is installed in the front of the tester, depending on the configuration. The printer can be activated or deactivated via pushbuttons. A printout is made immediately after the end of the test. The connection to the test device is made at the rear of the device via a cable connection. This means that additional test devices can be connected to the same report printer. A changeover switch is therefore not required if the tests are carried out one after the other.

To control the printer, a cable connector is plugged from the standard RS232 interface (9-pin SUB-D / RS232) to an additional attached interface (also 9-pin SUB-D / PRINTER) as mentioned above.

Attention: For operation with the DataView data management program, the plug must be disconnected from the standard RS232 interface! Parallel operation is not possible!





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