OMNICOMM
FUEL DATA YOU CAN TRUST

DIAGNOSTIC INSTRUCTION FOR GPS-TRACKER

OMNICOMM

CONTENT

INTRODUCTION

This document is intended for conducting diagnostics of GPS-tracker Omnicomm and covers diagnostic methods as well as the sequence of steps for completing the Diagnostic Report.

Before performing diagnostics, the GPS-tracker Omnicomm must be inspected for the absence of mechanical damage and signs of chemical exposure. The casing, connecting wires, slots (SIM and memory card), and connectors must be free from damage and corrosion.

1. DIAGNOSTIC EQUIPMENT

For diagnostics of GPS-tracker Omnicomm, the following equipment is required:

- A multimeter (capable of measuring voltage, current, and resistance.
- A power supply (12 V, 1 A to 3 A DC) or a laboratory (adjustable) power supply (output voltage 0–30 V; current 0–3 A DC).

Each type of diagnostic equipment must have a certificate of conformity and a calibration certificate.

2. GENERAL RECOMMENDATIONS

Before performing diagnostics, it is recommended to carefully read the instructions and follow the provided information to prevent errors during measurements and avoid damage to the GPS-tracker Omnicomm.

Special control points during diagnostics:

1. The color coding of connecting wires varies for all types of GPS-trackers Omnicomm. To avoid connection errors during diagnostics, it is necessary to use the connecting wire from the GPS-tracker Omnicomm supply kit.
2. Do not allow bare connecting wires to come into contact with each other during diagnostics to prevent short circuits and damage to the GPS-tracker Omnicomm.
3. Unused connecting wires during diagnostics must be insulated to avoid short circuits and damage to the GPS-tracker Omnicomm.
4. To obtain accurate readings during measurements, ensure a reliable connection between the connecting wires and the diagnostic equipment.
5. When connecting and/or joining connecting wires, it is recommended to use electrical terminals (quick-connect types).
6. All measurements must be made relative to the white wire (power minus).
7. When measuring resistance, the power supply (plus) on the GPS-tracker Omnicomm must be turned off.

3. PURPOSE OF THE COLOR CODING IN THE GPS-TRACKERS OMNICOMM PROFI AND/OR PROFI WI-FI

The color coding of wires in the GPS-trackers Omnicomm Profi and Profi Wi-Fi is designed to identify the function and signal type of each wire for correct connection, diagnostics, and maintenance. Based on official Omnicomm documentation, the typical wire color assignments and their purposes are as follows:

Wire Color	Signal / Purpose	Description
White	Ground (negative)	Common ground for power and signals
Orange-white	RS-485 Line A	Data line A for RS-485 differential interface
Black-blue	RS-485 Line B	Data line B for RS-485 differential interface
Pink	RS-232 RX	Receive data line for RS-232 serial interface
Gray	RS-232 TX	Transmit data line for RS-232 serial interface
Blue-white	RS-485 LLS Line B	Secondary RS-485 line B (sometimes for LLS sensor)
Purple-orange	CAN High (CAN H)	High-speed CAN bus signal
Brown	Power (+)	Power supply plus line
Black-yellow	Universal Input 4	Programmable input line
Yellow-dark blue	Controlled Output 2	Programmable output line

Additional wires may include inputs like tachometer (dark blue), panic button (white-red), universal inputs, outputs, and microphone/speaker connections depending on the GPS-tracker variant.

Key points about this color coding system:

- The white wire is always the ground reference, used for making measurements and as the common return for signals.
- The RS-485 interface uses a differential pair of orange-white (A) and black-blue (B) for reliable bus communication.

- The RS-232 interface uses pink for RX and gray for TX, facilitating serial communication.
- Wires for power supply and CAN bus are distinctly colored to avoid confusion during installation or diagnostics.
- These color coding standards help reduce wiring errors in field installation and diagnostics.

This scheme aligns with the pin assignments and wire color designations presented in official GPS-trackers Omnicomm Profi manual excerpts and wiring diagrams.

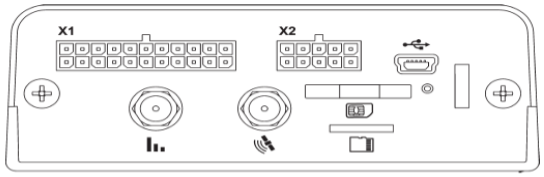

Figure 1. Terminal Omnicomm Profi

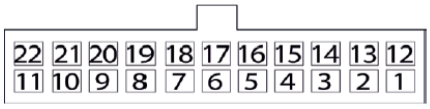

Figure 2. Connector X1

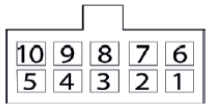

Figure 3. Connector X2

Connecting Omnicomm Terminal Profi

Table 4. Connector X1

No. of the contact	Name of the signal	Designation	Color of wire in the cable
1	Ground for power supply -	Ground (supply)	White
2	Ground for power supply -	Ground (supply)	White
3	Panic button	Panic button	White-Red
4	Universal input 2	Input 2	Black - White
5	Universal input 4	Input 4	Black -Yellow
6	Input «RPM»	Tachometer	Blue
7	Discrete output 2	Output 2	Yellow- Blue
8	Line RS-232 Rx	Rx RS-232	Pink
9	Line B RS-485 №2	B RS-485 №2	Black-Blue
10	Line B RS-485	B RS-485	Blue-White
11	CAN L	CAN L	Violet-White
12	Supply voltage	Supply	Red
13	Ignition key	IGN	Yellow
14	GSM call button	GSM	Green-Black
15	Universal input 1	Input 1	Black
16	Universal input 3	Input 3	Black-Red
17	iButton +	iButton +	Pink-Red
18	Discrete output 1	Output 1	Yellow-Red
19	Line RS-232 Tx	RS-232 Tx	Grey
20	Line A RS-485 №2	A RS-485 №2	White-Green
21	Line A RS-485	A RS-485	Orange-White
22	CAN H	CAN H	Violet - Orange

Table 5. Connector X2

No. of the contact	Name of the signal	Designation	Color of wire in the cable
1	Microphone -	Microphone -	Green-Yellow
2	Speaker -	Speaker -	Grey-Yellow
3	Ground for power supply -	Ground (supply)	White
4	Universal input 5	Input 5	Green
5	Ground for power supply -	Ground (supply)	White
6	Microphone +	Microphone +	Green - Red
7	Speaker +	Speaker +	Grey - Red
8	iButton -	iButton -	Pink - Blue
9	Universal input 6	Input 6	Violet
10	Power supply for sensors +	PWR LLS	Brown

4. PURPOSE OF THE COLOR CODING IN THE GPS-TRACKER OMNICOMM OPTIM

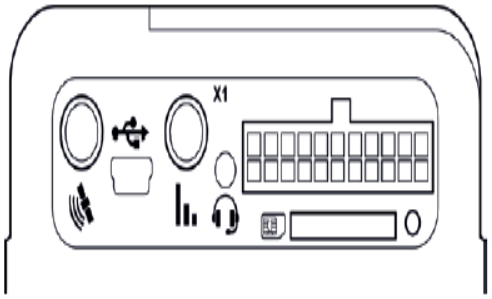

Figure 1. Terminal Omnicomm Optim

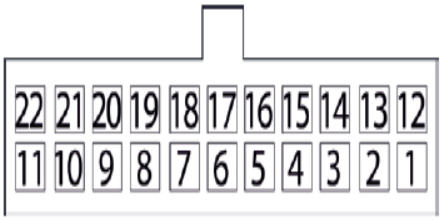

Figure 2. Connector X1

Table 4. Connector X1

No. of the contact	Name of the signal	Designation	Color of wire in the cable
1	Ground (minus) for power supply	Ground (signal)	White
2	Ground (minus) for power supply	Ground (supply)	White
3	Panic button	Panic button	White-Red
4	Universal input 2	Input 2	Black-White
5	Universal input 4	Input 4	Black -Yellow
6	Input «RPM»	Tachometer	Blue
7	Discrete output 2	Output 2	Yellow-Dark Blue
8	Line RX RS-232	RS-232 RX	Pink
9	Line B RS-485 №2	B RS-485 №2	Black-Blue
10	Line B RS-485 №1	B RS-485 №1	Blue-White
11	CAN L	CAN L	Violet-White
12	Supply voltage	Supply	Red
13	Ignition key	IGN	Yellow
14	GSM call button	GSM	Green-Black
15	Universal input 1	Input 1	Black
16	Universal input 3	Input 3	Black-Red
17	1wire / Ibutton	Ibutton+	Pink-Red
18	Discrete output 1	Output 1	Yellow-Red
19	Line TX RS-232	RS-232 TX	Grey
20	Line A RS-485 №2	A RS-485 №2	White-Green
21	Line A RS-485 №1	A RS-485 №1	Orange-White
22	CAN H	CAN H	Violet-Orange

5. PURPOSE OF THE COLOR CODING IN THE GPS-TRACKERS OMNICOMM SMART AND/OR LIGHT

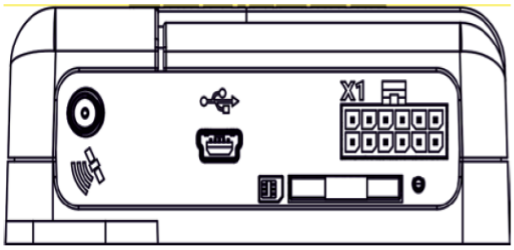

Figure 1. Terminal Omnicomm Light 3.2

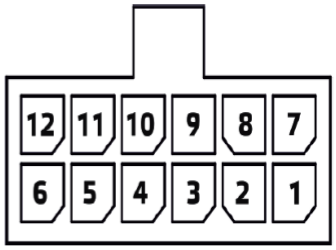

Figure 2. Connector X1

Table 4. Cables designation

Nr. of the contact	Name of the signal	Designation	Color of wire in the cable
1	Ground (minus) for power supply	Ground (supply)	White
2	Input «RPM»	Tachometer	Blue
3	Universal input 2	Input 2	Black-White
4	iButton+	iButton+	Pink-Red
5	Line B RS-485 LLS	B RS-485 LLS	Blue-White
6	CAN L	CAN L	Violet-White
7	Supply voltage (plus)	Supply	Red
8	Ignition key	IGN	Yellow
9	Universal input 1	Input 1	Black
10	Discrete output 1	Output 1	Yellow-Red
11	Line A RS-485 LLS	A RS-485 LLS	Orange-White
12	CAN H	CAN H	Violet-Orange

6. PURPOSE OF THE COLOR CODING IN THE GPS-TRACKERS OMNICOMM SMART 3.1 AND/OR LIGHT 3.1

Light 3.1

Table 4. Cables designation

Signal name	Designation	Cable color
Ground (minus) power supply	Ground (power supply)	Black
Input RPM	Tachometer	Yellow
Output under control	Output	Green
Not in use	NC	White
Line B RS-485	B RS-485	Brown
Line A RS-485	A RS-485	Pink
On-board power supply voltage	Power supply	Red
Ignition key	IGN	Violet
Universal input 1	Input 1	Blue
Universal input 2	Input 2	Grey
CAN H	CAN H	Orange
CAN L	CAN L	Yellow-green

Smart 3.1

Table 4. Cables designation

Signal name	Designation	Cable color
Ground (minus) power supply	Ground (power supply)	Black
Input RPM	Tachometer	Yellow
Not in use	NC	Green
Not in use	NC	White
Line B RS-485	B RS-485	Brown
Line A RS-485	A RS-485	Pink
On-board power supply voltage	Power supply	Red
Ignition key	IGN	Violet
Universal input 1	Input 1	Blue
Not in use	NC	Grey
CAN H	CAN H	Orange
CAN L	CAN L	Yellow-green

7. MEASUREMENTS OF CONTROL POINTS OF THE GPS-TRACKER OMNICOMM

7.1 Checking the Power Supply Voltage of the GPS-tracker Omnicomm

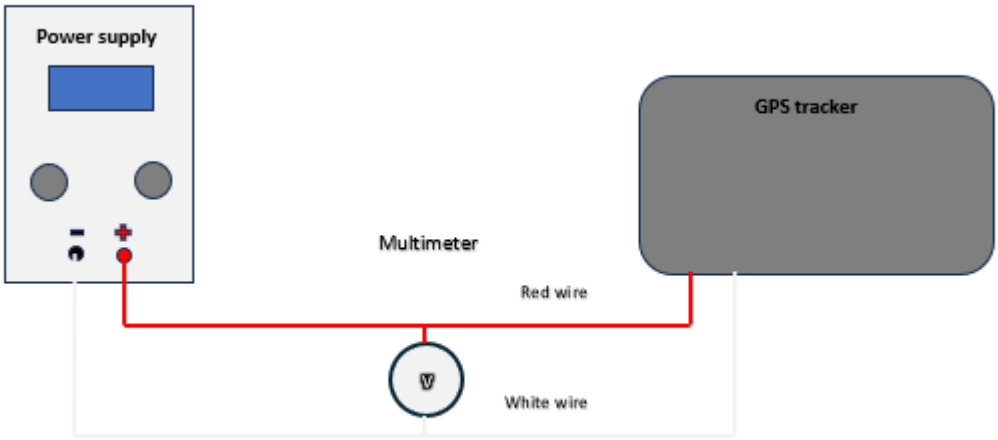

Fig. 1 Connection Diagram

1. Set the power supply voltage to 12 Volts.
2. Set the multimeter to voltage measurement mode (range 20 Volts).
3. Assemble the connection circuit according to "Fig. 1 Connection Diagram."
4. Connect the red wire (+ power supply) of the GPS-tracker Omnicomm to the positive GPS-tracker of the power source.
5. Connect the white wire (- power supply) of the GPS-tracker Omnicomm to the negative GPS-tracker of the power source.
6. Turn on the power supply.
7. Verify the presence of the GPS-tracker Omnicomm power supply voltage using the multimeter (the measured voltage should match the power supply setting).

This is a standard and safe method to verify that the GPS-tracker Omnicomm is receiving correct supply voltage before performing further diagnostics or operation. The white wire is always the ground (negative), and the red wire is the positive supply line, as per official Omnicomm wiring guidelines.

7.2 Checking the Current Consumption of the GPS-tracker Omnicomm

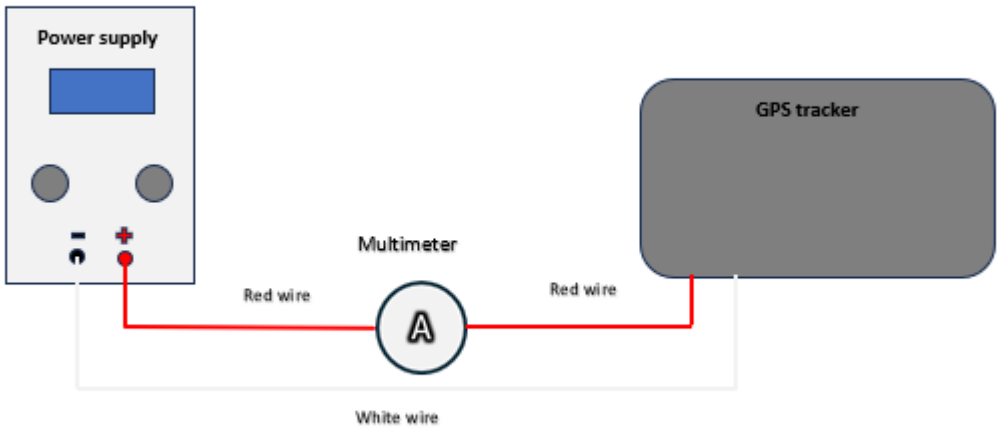

Fig. 2 Connection Diagram

1. Set the power supply voltage to 12 Volts.
2. Set the multimeter to the current measurement mode, range 10 Amperes.
3. Assemble the connection circuit according to "Fig. 2 Connection Diagram."
4. Connect the red wire (+ power supply) of the GPS-tracker Omnicomm to the positive of the power supply through the ammeter (multimeter).
5. Connect the white wire (- power supply) of the GPS-tracker Omnicomm to the negative of the power supply.
6. Turn on the power supply.
7. Using the multimeter reading, verify that there is no short circuit in the power supply circuit of the GPS-tracker Omnicomm.
8. Record the multimeter reading in the Diagnostic Report under the item: "Current Consumption at 12 V."

This procedure is a standard way to measure the load current to ensure the GPS-tracker Omnicomm does not have a short or abnormal current draw before normal operation. According to available data, GPS-tracker Omnicomm typically have a nominal current consumption under normal conditions in the range of about 100–150 mA and maximum up to around 1.25 A including sensors and heating elements depending on the model and operating mode.

7.3 Measuring the Resistance of the GPS-tracker Omnicomm Power Supply Circuit

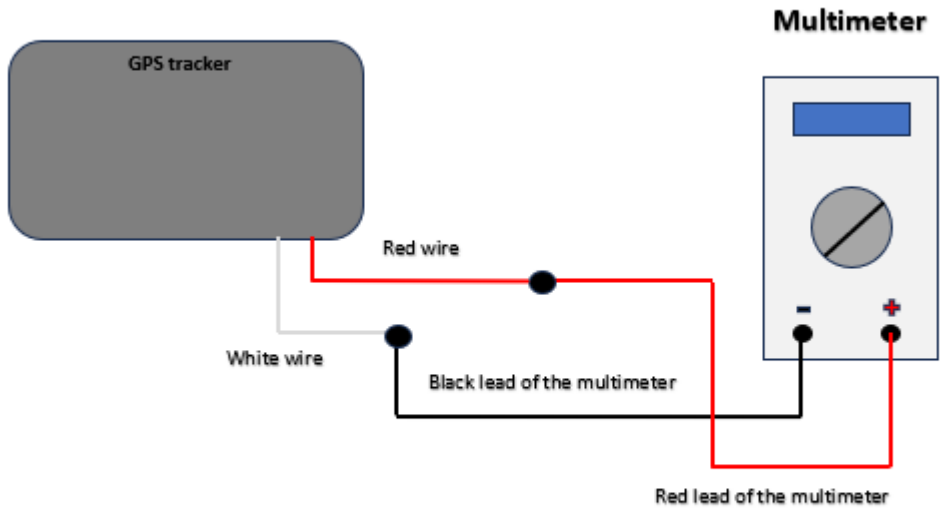

Fig. 3 Connection Diagram

1. Set the multimeter to resistance measurement mode (range 10 milliohms).
2. Assemble the connection circuit according to "Fig. 3 Connection Diagram."
3. Connect the red wire of the GPS-tracker Omnicomm to the red (positive) lead of the multimeter.
4. Connect the white wire of the GPS-tracker Omnicomm to the black (negative) lead of the multimeter.
5. Record the multimeter reading in the Diagnostic Report under the item: "Power Supply Plus" (positive).

This procedure is aimed at measuring the resistance of the positive power supply line to check for continuity issues, contact resistance, or wiring faults in the GPS-tracker Omnicomm power circuit. It is essential to ensure the power supply line is intact and has low resistance to prevent operational problems.

7.4 Measuring the Resistance of the RS-485A Interface Line of the GPS-tracker Omnicomm

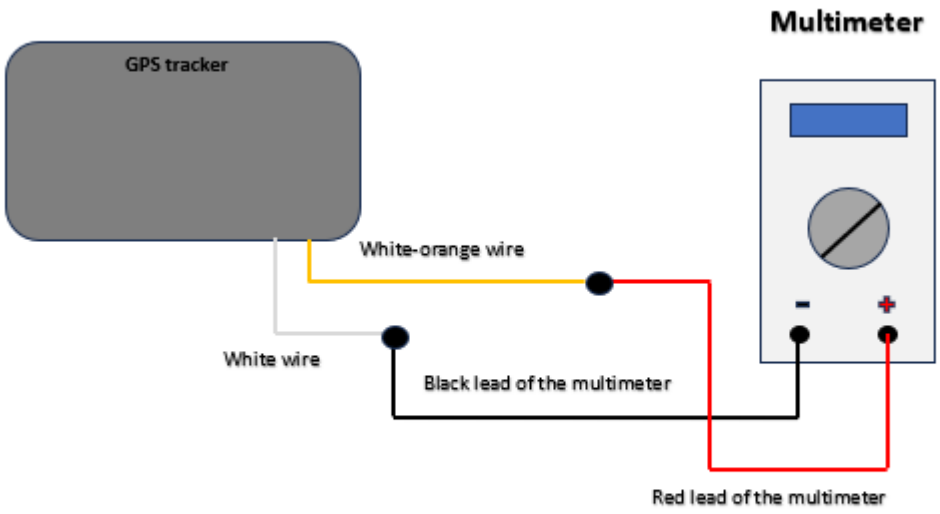

Fig. 4 Connection Diagram

1. Set the multimeter to resistance measurement mode (range 10 milliohms).
2. Assemble the connection circuit according to "Fig. 4 Connection Diagram."
3. Connect the white-orange wire of the GPS-tracker Omnicomm to the red (positive) lead of the multimeter.
4. Connect the white wire of the GPS-tracker Omnicomm to the black (negative) lead of the multimeter.
5. Record the multimeter reading in the Diagnostic Report under the item: "RS 485A."

This procedure is designed to measure the resistance of the RS-485-line A (differential data line) for integrity and connection quality.

7.5 Measuring the Resistance of the RS-485B Interface Line of the GPS-tracker Omnicomm

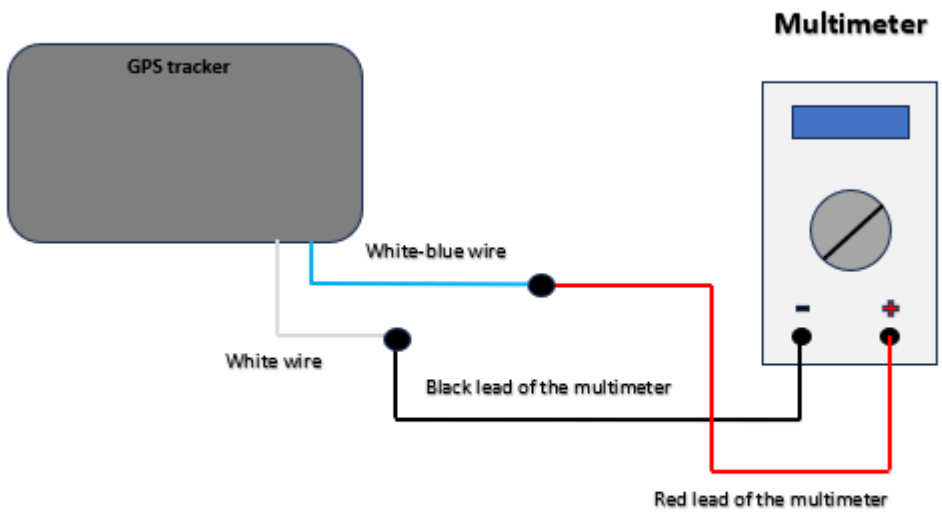

Fig. 5 Connection Diagram

1. Set the multimeter to resistance measurement mode (range 10 milliohms).
2. Assemble the connection circuit according to "Fig. 5 Connection Diagram."
3. Connect the white-blue wire of the GPS-tracker Omnicomm to the red (positive) lead of the multimeter.
4. Connect the white wire of the GPS-tracker Omnicomm to the black (negative) lead of the multimeter.
5. Record the multimeter reading in the Diagnostic Report under the item: "RS 485B."

This procedure is intended to check the integrity and continuity of the RS-485-line B (the second differential data line) by measuring its resistance.

7.6 Measuring the Resistance of the RS-485A №2 Interface Line in the GPS-tracker Omnicomm Profi and/or Optim

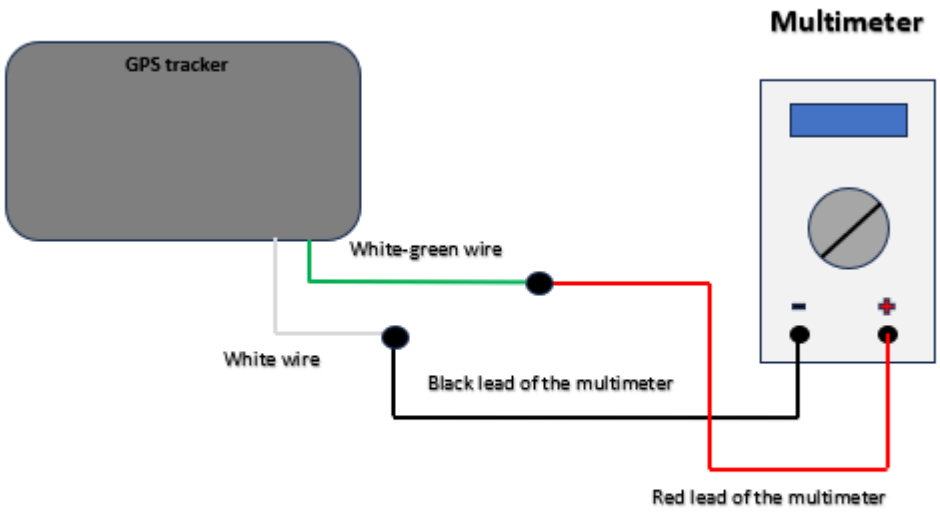

Fig. 6 Connection Diagram

1. Set the multimeter to resistance measurement mode (range 10 milliohms).
2. Assemble the connection circuit according to "Fig. 6 Connection Diagram."
3. Connect the white-green wire of the GPS-tracker Omnicomm Profi and/or Optim to the red (positive) lead of the multimeter.
4. Connect the white wire of the GPS-tracker Omnicomm Profi and/or Optim to the black (negative) lead of the multimeter.
5. Record the multimeter reading in the Diagnostic Report under the item: "RS 485A №2."

Additional context on wires:

- The white-green wire corresponds to RS-485 Line A №2 signal line.
- The white wire is used as common ground (- power supply reference) for measurement.

This follows the official GPS-tracker Omnicomm wiring pinouts for the Profi and Optim, where pin 20 with white-green wire is RS-485 A line for the second RS-485 interface, and white wire (pin 1 or 2) is the ground.

7.7 Measuring the Resistance of the RS-485B №2 Interface Line in the GPS-tracker Omnicomm Profi and/or Optim

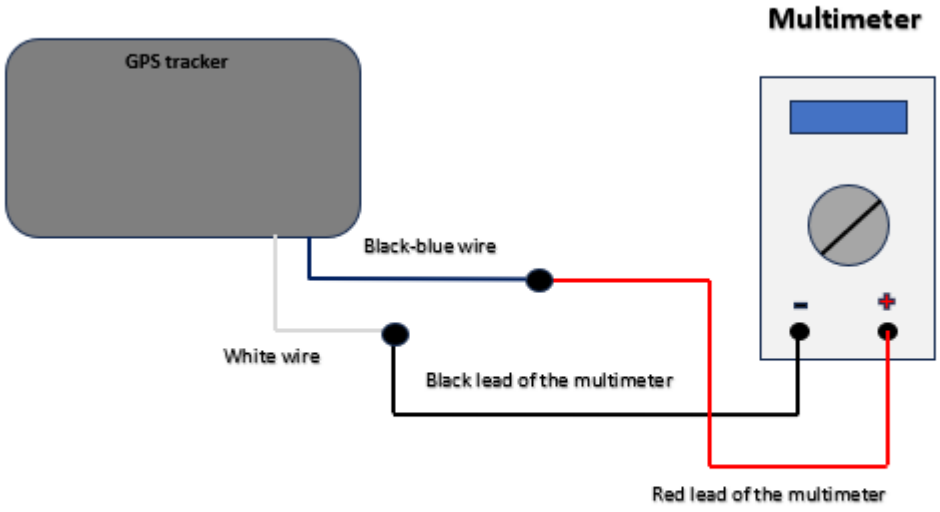

Fig. 7 Connection Diagram

1. Set the multimeter to resistance measurement mode (range 10 milliohms).
2. Assemble the connection circuit according to "Fig. 7 Connection Diagram."
3. Connect the black-blue wire of the GPS-tracker Omnicomm Profi and/or Optim to the red (positive) lead of the multimeter.
4. Connect the white wire of the GPS-tracker Omnicomm Profi and/or Optim to the black (negative) lead of the multimeter.
5. Record the multimeter reading in the Diagnostic Report under the item: "RS 485B №2."

Additional details from Omnicomm wiring documentation:

- The black-blue wire corresponds to RS-485 Line B №2 (differential data line B for the second RS-485 interface) on pins 9 on connector X1 of the GPS-tracker.
- The white wire is used as the common ground (negative reference) for measurements.
- This measurement checks the integrity and continuity of the second RS-485 B line, which is crucial to ensure proper communication via the RS-485 interface.

- Ensure no power is applied and that connections are secure and insulated during the measurement to avoid damage or incorrect readings.

If you want, I can assist with safety tips, expected resistance values for a good connection, or explain the exact wiring diagram for "Fig.7" from official GPS-tracker Omnicomm manuals.

This procedure aligns with the consistent wiring and testing approach seen in prior steps of RS-485 and power line resistance checks for Omnicomm Profi and Optim GPS-tracker

7.8 Measuring the Resistance of the RS-232 Tx Interface Line of the GPS-tracker Omnicomm

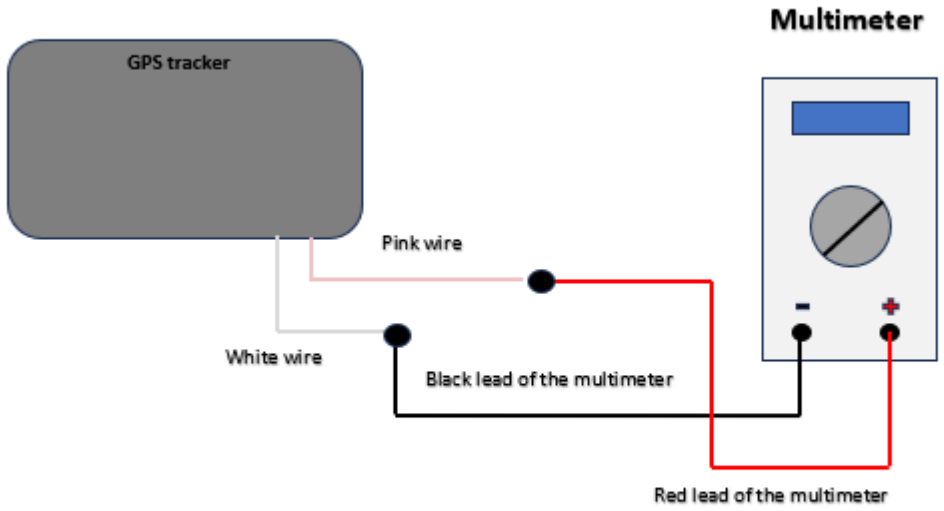

Fig. 8 Connection Diagram

1. Set the multimeter to resistance measurement mode (range 10 milliohms).
2. Assemble the connection circuit according to "Fig. 8 Connection Diagram."
3. Connect the pink wire of the GPS-tracker Omnicomm to the red (positive) lead of the multimeter.
4. Connect the white wire of the GPS-tracker Omnicomm to the black (negative) lead of the multimeter.
5. Record the multimeter reading in the Diagnostic Report under the item: "RS 232Tx."

Additional context from Omnicomm documentation:

- The pink wire is typically used for the RS-232 Rx (Receive) line in GPS-tracker Omnicomm Profi and Optim (Pin 8 on X1 connector for Profi/Optim). For GPS-tracker Omnicomm Profi and Profi Wi-Fi models specifically, the gray wire is designated for the Tx (Transmit) RS-232 line (Pin 19 on X1 connector).
- The white wire serves as the common ground (negative reference) for measurements.
- This measurement checks the integrity and continuity of the RS-232 transmit line, which is crucial for proper serial communication with external devices like sensors or diagnostic tools.

Given that the pink wire is generally for RX, and the gray wire is for TX, you might want to double-check the specific wiring diagram for your GPS-tracker Omnicomm model ("Рис.8") to ensure you are testing the correct wire for "RS 232Tx". If the pink wire is indeed connected to the Tx line in your specific model or diagram, then the procedure is correct for that setup.

7.9 Measuring the Resistance of the RS-232 Rx Interface Line of the GPS-tracker Omnicomm

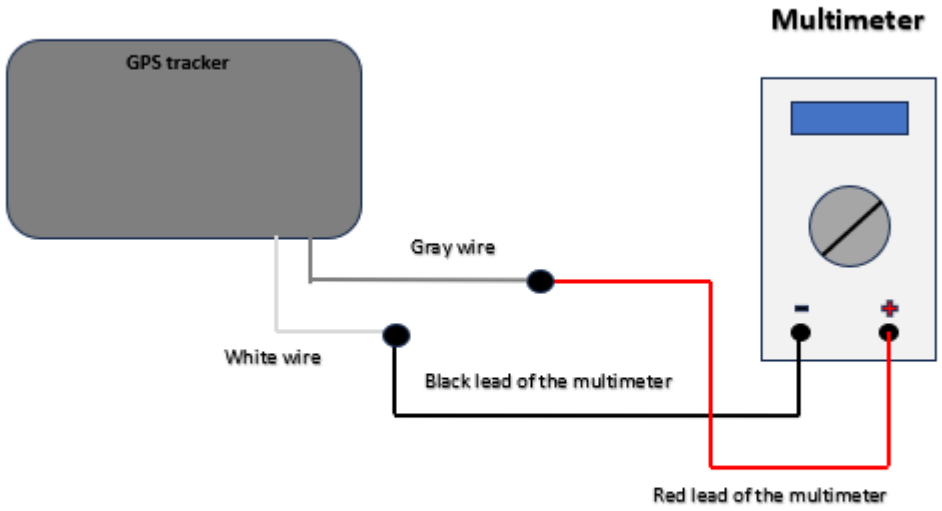

Fig. 9 Connection Diagram

1. Set the multimeter to resistance measurement mode (range 10 milliohms).
2. Assemble the connection circuit according to "Fig. 9 Connection Diagram."
3. Connect the gray wire of the GPS-tracker Omnicomm to the red (positive) lead of the multimeter.
4. Connect the white wire of the GPS-tracker Omnicomm to the black (negative) lead of the multimeter.
5. Record the multimeter reading in the Diagnostic Report under the item: "RS 232Rx."

Additional context:

- The gray wire is typically used for the RS-232 Tx (Transmit) line, and the pink wire for the RS-232 Rx (Receive) line in many Omnicomm models; however, your diagram or GPS-tracker Omnicomm version indicates that gray is connected/used for RS-232 Rx in this case, which you should confirm from your official wiring diagram.
- The white wire is the common ground (negative reference) for measurements.
- This procedure ensures the continuity and quality of the RS-232 receive line signal.

7.10 Measuring the Resistance of the CAN L Line in the GPS-trackers Omnicomm Profi, Optim, and/or Light

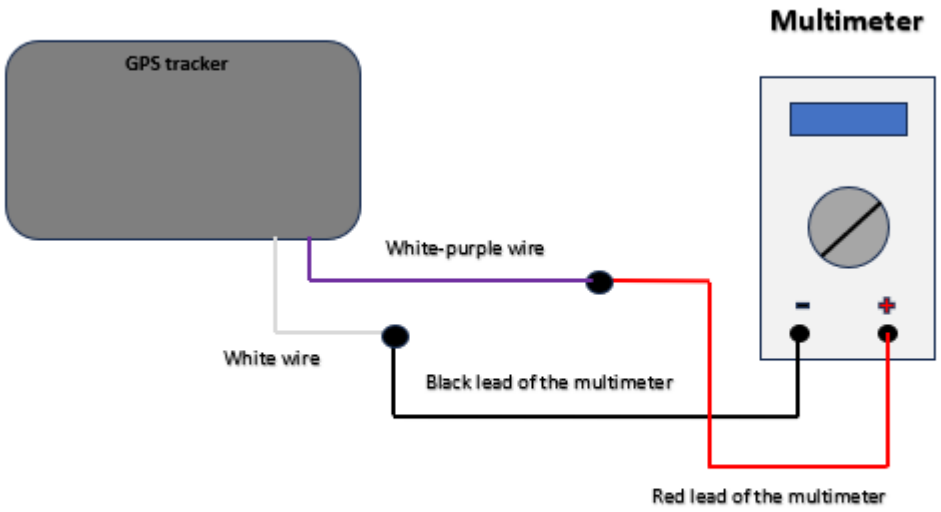

Fig. 10 Connection Diagram

1. Set the multimeter to resistance measurement mode (range 10 milliohms).
2. Assemble the connection circuit according to "Fig. 10 Connection Diagram."
3. Connect the white-purple wire of the GPS-tracker Omnicomm Profi, Optim, and/or Light to the red (positive) lead of the multimeter.
4. Connect the white wire of the GPS-tracker Omnicomm to the black (negative) lead of the multimeter as a ground reference.
5. Record the multimeter reading in the Diagnostic Report under the item: "CAN L."

Additional explanation based on official Omnicomm wiring documentation:

- The white-purple wire is designated as the CAN L (CAN Low) signal line.
- The white wire serves as the common ground (negative) reference for the measurement.
- The CAN bus is a differential communication interface commonly used for vehicle data communication. CAN L and CAN H (CAN High) lines are complementary signals.
- Measuring the resistance on CAN L (white-purple wire) relative to ground helps verify the cable integrity and detect possible wiring faults or shorts.

7.11 Measuring the Resistance of the CAN H Line in the GPS-trackers Omnicomm Profi, Optim, and/or Light

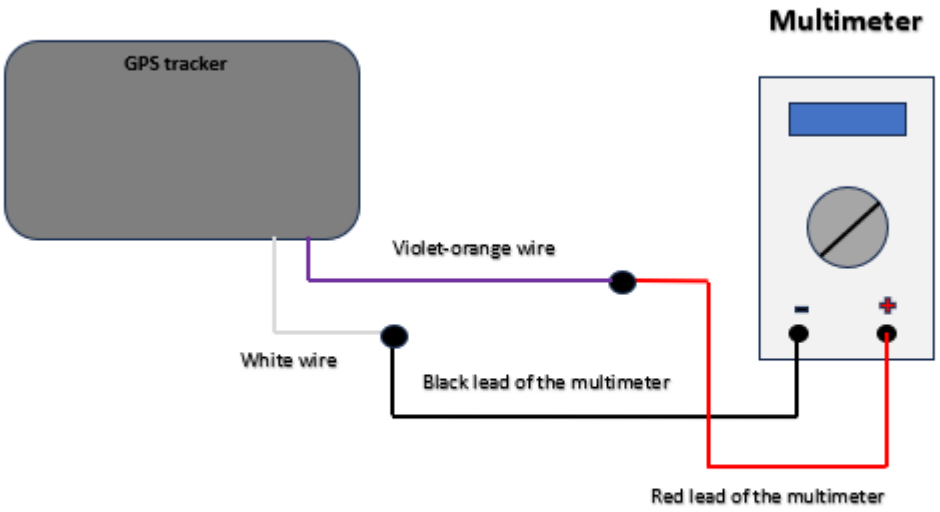

Fig. 11 Connection Diagram

1. Set the multimeter to resistance measurement mode (range 10 milliohms).
2. Assemble the connection circuit according to "Fig. 11 Connection Diagram."
3. Connect the violet-orange (purple-orange) wire of the Omnicomm Profi, Optim, and/or Light GPS-tracker to the red (positive) lead of the multimeter.
4. Connect the white wire of the GPS-tracker to the black (negative) lead of the multimeter (ground reference).
5. Record the multimeter reading in the Diagnostic Report under the item: "CAN H."

Additional notes for safety and interpretation:

- The purple-orange wire corresponds to the CAN H (CAN High) signal line on the GPS-tracker Omnicomm.
- The white wire is used as the common ground (negative reference) for all measurements.
- Measuring resistance on the CAN H line to ground checks the wiring integrity and can identify opens, shorts, or degraded connections on the CAN bus.

- The typical resistance values vary depending on circuit configuration, but normal values should be consistent with the CAN bus termination setup (usually about 60Ω total on the bus when device and termination resistors are measured collectively).

  Measuring directly from CAN H to ground alone may show a high resistance or open reading unless a termination resistor is connected.
- Always ensure the GPS-tracker Omnicomm power is off and connections are secure before performing this measurement to avoid equipment damage or incorrect readings.
- Insulate any unused wires to prevent accidental short circuits during testing.

7.12 Measuring the Resistance of the "iButton+" Line in the GPS-tracker Omnicomm Profi and/or Optim

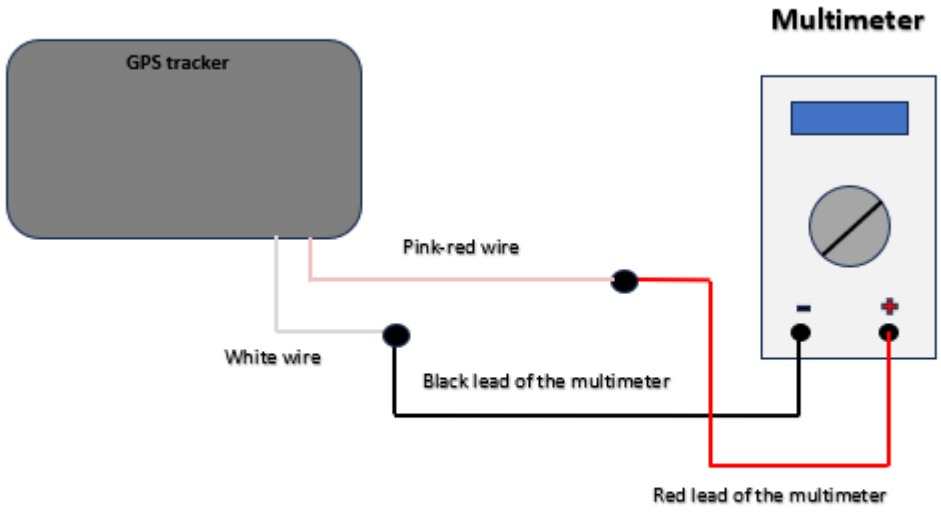

Fig. 12 Connection Diagram

1. Set the multimeter to resistance measurement mode (range 10 milliohms).
2. Assemble the connection circuit according to "Fig. 12 Connection Diagram."
3. Connect the pink-red wire of the GPS-tracker Omnicomm Profi and/or Optim to the red (positive) lead of the multimeter.
4. Connect the white wire of the GPS-tracker Omnicomm Profi and/or Optim to the black (negative) lead of the multimeter.
5. Record the multimeter reading in the Diagnostic Report under the item: "iButton+."

Additional notes:

- The pink-red wire corresponds to the iButton+ signal line used for interfacing with iButton devices.
- The white wire is the common ground (negative reference) for measurement.
- This procedure tests the continuity and resistance of the iButton+ line to ensure proper connection and signal integrity.
- Make sure the GPS-tracker Omnicomm power is turned off before measuring to prevent damage and get accurate readings.
- Ensure connections are secure and insulated during measurement.