MICROCOM

Simply More

HERMES TCR200+

GSM remote control module

Product manual

Rev 2

"Perfection is achieved, not when there is nothing more to add,
but when there is nothing left to take away."
- Antoine de Saint-Exupéry

Warning

1. This system has been developed to be installed by qualified personnel, not final users. If you have any queries regarding technical aspects, please contact our experts.

2. Our efforts to innovate in the development of software and hardware are continuous. Despite paying close attention to documenting our products properly, discrepancies may occur between a product and some of its specifications. If you have any queries or comments in this regard, please contact us by email at microcom@microcom.es.

3. GSM network-based communications are extraordinarily reliable. We do, however, advise against using our devices in critical systems that have no form of redundancy in relation to their communication networks, since, under exceptional circumstances, the service may become unavailable.

4. Life-support systems: This unit is not designed to be used in systems on which human life depends. That is, in devices whose malfunction could endanger human life.

5. Our liability in connection with the device shall be limited to its repair or replacement in accordance with the terms of the warranty.

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1 Introduction

The Hermes TCR200+ is a robust remote control and telemetry device with communication via mobile networks (GSM/GPRS/3G/4G) which enables a simple and efficient monitoring of remote stations and unattended sites.

Operation of the Hermes TCR200+ comprises measurement and recording of remote signals, simple automation tasks, uploading of historical data to a web server and transmission of alarms directly to mobile phones. Alarms can warn of any deviation in the operation of the equipment in real time so that the appropriate maintenance actions or on-site checks can be carried out.

The unit has 8 opto-coupled digital inputs, 4 analogue inputs for 4/20 mA and 0-10 V, 4 digital relay outputs and MODBUS RTU communication over RS-485. It is suitable for monitoring critical equipment in industrial environments, such as: drinking water wells, wastewater pumping, reservoirs, tanks, server rooms, cold rooms, technical rooms, air-conditioning or heating systems, etc.

The Hermes TCR200+ is an upgrade of the Hermes TCR200 and shares the same form factor and terminal layout. The Hermes TCR200+ improves on its predecessor in the following aspects:

- The radio modem chipset now supports more mobile networks: GSM, GPRS, 3G and 4G
- Switching between 0-10 V and 4/20 mA of the analogue inputs does not require physical manipulation of jumpers.
- The USB connector is located on the front to provide better accessibility.
- MicroPLC compatible for the programming of simple automated actions.
- Manage up to 128 MODBUS channels.

The acquisition of your Hermes system entitles you to **free use of the ZEUSweb monitoring website.** Register your device and enjoy the convenience of monitoring your station through the Internet or Android and iOS applications.

This equipment **is user programmable**. Programming is done using MICROCONF universal configuration software. This software, the user manual and video tutorials with programming examples are available for download at the following web link:

https://www.microcom.es/start

2 Product description

2.1 Components

1	Status LEDs. Information on the status of the modem, digital inputs and outputs.
2	SMA antenna connector
3	Screw terminals
4	USB Type B Female port
5	Removable front cover. Access to SIM card tray.

2.2 Status LEDs Description

	LED	Description
INPUTS	0 1 2 3 4 5 6 7	Status of each digital input On=activated, Off=deactivated
OUTPUTS	0 1 2 3	Status of each digital output On=activated, Off=deactivated
STATUS	GSM	GSM signal quality (see following section)
	ERR	Operating errors (see following section)
MODBUS	TX/RX	MODBUS communication status.

2.3 Interpretation of GSM and ERR status LEDs

LED GSM flashes		LED ERR	Meaning
Red	Green	Flashes	
1	0	0	GSM MODEM not registered.
1	1	0	GSM MODEM registered, insufficient field strength.
1	2	0	GSM MODEM registered, sufficient field strength.
1	3	0	GSM MODEM registered, good field strength.
1	4	0	GSM MODEM registered, excellent field strength.
1	5	0	GSM MODEM registered, excellent field strength.
1	0	1	Hardware failure.
1	0	2	SIM card not present.
1	0	3	SIM card locked by PIN or PUK.

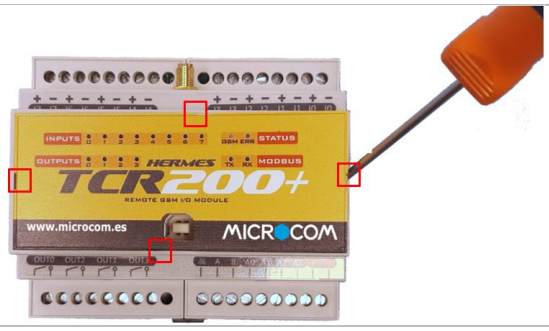
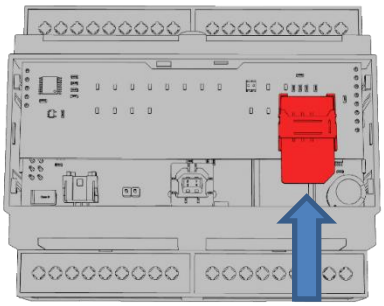
2.4 Terminal designation

	Interface	Description
I0-	Digital input 0 -	Voltage activated between 5 and 30 VDC
I0+	Digital input 0 +	Voltage activated between 5 and 30 VDC
I1-	Digital input 1 -	Voltage activated between 5 and 30 VDC
I1+	Digital input 1 +	Voltage activated between 5 and 30 VDC
I2-	Digital input 2 -	Voltage activated between 5 and 30 VDC
I2+	Digital input 2 +	Voltage activated between 5 and 30 VDC
I3-	Digital input 3 -	Voltage activated between 5 and 30 VDC
I3+	Digital input 3 +	Voltage activated between 5 and 30 VDC
I4-	Digital input 4 -	Voltage activated between 5 and 30 VDC
I4+	Digital input 4 +	Voltage activated between 5 and 30 VDC
I5-	Digital input 5 -	Voltage activated between 5 and 30 VDC
I5+	Digital input 5 +	Voltage activated between 5 and 30 VDC
I6-	Digital input 6 -	Voltage activated between 5 and 30 VDC
I6+	Digital input 6 +	Voltage activated between 5 and 30 VDC
I7-	Digital input 7 -	Voltage activated between 5 and 30 VDC
I7+	Digital input 7 +	Voltage activated between 5 and 30 VDC

	Interface	Description
OUT0	Digital output 0	Dry contact relay output. Maximum value 250 VAC / 3 A
OUT1	Digital output 1	Dry contact relay output. Maximum value 250 VAC / 3 A
OUT2	Digital output 2	Dry contact relay output. Maximum value 250 VAC / 3 A
OUT3	Digital output 3	Dry contact relay output. Maximum value 250 VAC /3 A
ISO GND	RS485 (GND Isolated)	GND signal for MODBUS communication Maximum voltage to main GND ±50 V
A	RS485 (+)	Signal A(+) for MODBUS communication
B	RS485 (-)	Signal B(-) for MODBUS communication
A0	Analogue input 0	0-10 VDC or 4/20 mA
A1	Analogue input 1	0-10 VDC or 4/20 mA
A2	Analogue input 2	0-10 VDC or 4/20 mA
A3	Analogue input 3	0-10 VDC or 4/20 mA
9-30v (+)	Power supply positive	9-30 VDC
9-30v (-)	Power supply negative	0 VDC

3 Device installation

3.1 Installing the SIM card

	Remove the front panel using a small flathead screwdriver. Insert the tip of the screwdriver into the four slots indicated in the image and pry off.
	Insert the SIM card as shown in the image. Compatible SIM card format: 2FF **CAUTION:** The SIM card's PIN code request must be disabled.
	To replace the cover, place it over the opening and press with your fingers until it clicks into place

3.2 Antenna

Connect the antenna to the device and check that the GSM LED is blinking green to indicate good signal strength (see point 2.3 Interpretation of GSM and ERR status LEDs). If necessary, place the antenna in a better position, e.g. near a window or door. The antenna should not be placed inside a metal cabinet as this would greatly weaken the radio frequency signal.

For cases in which the GSM signal in very poor at the installation site, Microcom offers different high-gain antenna models which can satisfactorily resolve most communication problems.

4 Wiring

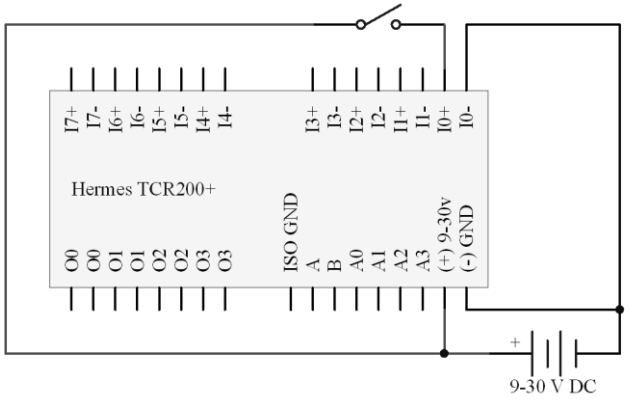
To wire the Hermes TCR200+ use a flat screwdriver with a 3 mm. wide blade. Conductors with cross-sections of up to 2.5 mm can be used for the terminals.

4.1 Power supply

The Hermes TCR200+ requires a supply voltage in the range of 9 to 30 volts DC and providing at least 10 watts. This equipment is compatible with UPS 1212 and UPS 2415 uninterruptible power supplies. Please contact us if you have any questions.

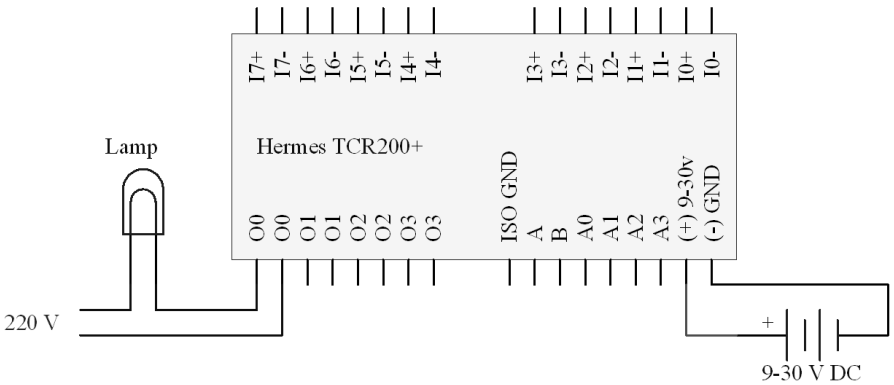
4.2 Digital inputs. Connection example

The Hermes TCR200+ has 8 opto-coupled digital inputs that are voltage activated in the range of 5 to 30 volts. The sampling frequency is 100 Hertz, meaning the smallest pulse that the equipment is guaranteed to detect is 10 milliseconds. The inputs can be used as alarm signals, pulse counters/totalisers and flow meters.



4.3 Digital outputs. Connection example

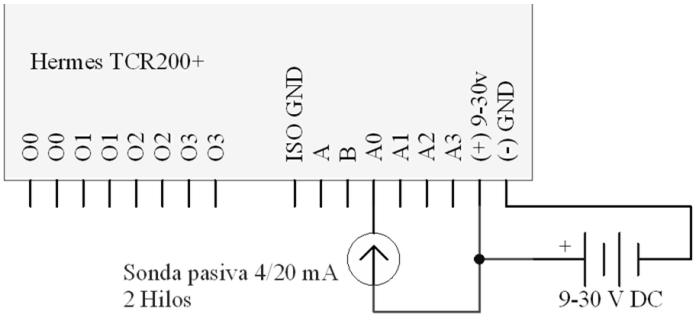
The Hermes TCR200+ has 4 relay outputs capable of handling up to 250 volts and 3 amps. The figure shows an example of use where a relay output is used to switch on a light bulb.



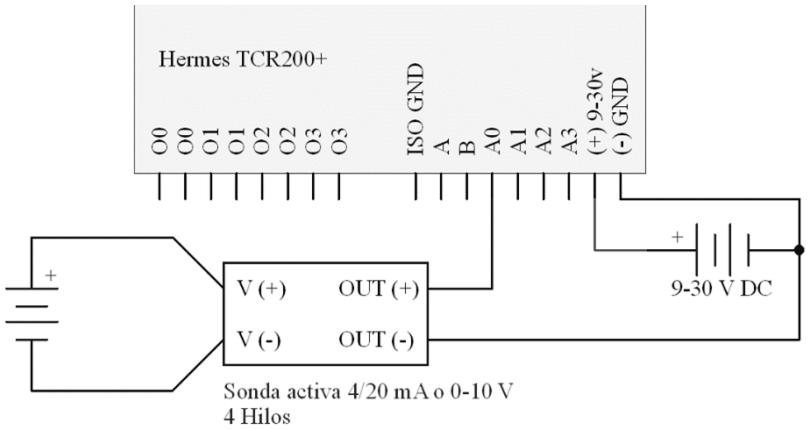
4.4 Analogue inputs. Connection example

All analogue inputs are referenced to the supply ground (GND).

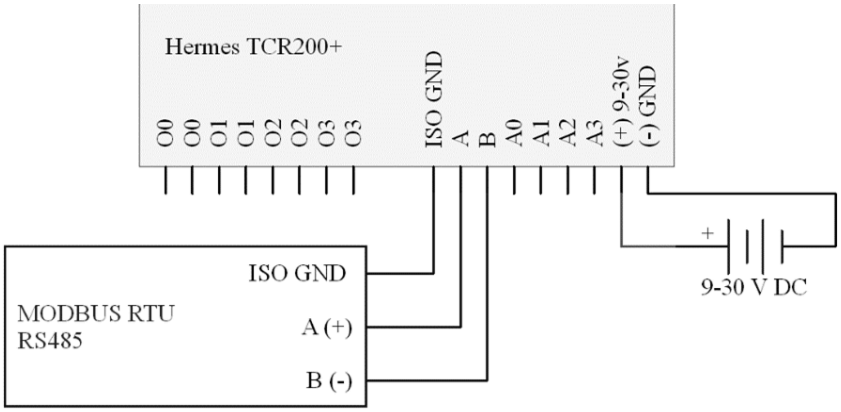
Connection of a passive sensor



Connection of an active sensor



4.5 MODBUS RTU (RS485). Connection example



5 Troubleshooting common problems

The GSM status LED does not flash green. The equipment receives coverage.

- Check that the GSM antenna is properly connected.
- Reposition the antenna or install a higher gain antenna.

The status LED blinks green, but the equipment does not send SMS messages.

- Check that the SIM card has balance.
- Check that the SMS service centre is correctly configured.
- Check that the authorised telephone list is correct.

The equipment reports alarms but does not respond to queries or commands sent by SMS.

- Check that the SIM cards have short numbers (corporate numbers), which have to be entered in the authorised telephone list. If the cards have standard numbers, check that the authorised numbers have been entered in international format (with +34 in front of the Spanish numbers).

6 Technical specifications

GENERAL	
Power supply	9-30 VDC
Consumption	Standby: 40 mA at 12 V Maximum: 500 mA at 12 V
Operating temperature	-10 ºC to +75 ºC
Radio modem	2G/3G/4G
Real-time clock	High accuracy, ±2 ppm
Internal memory	>90,000 records
Dimensions	106 x 90 x 58 mm
Weight	250 grams approx.
Mounting type	35 mm DIN Rail Mount
Outer materials	Polycarbonate: UL94-V0

DIGITAL INPUTS	
Number	8
Type	Opto-coupled
Activation voltage	Voltage activation between 5 and 30 volts.
Impedance	2000 Ohm
Sampling frequency	100 Hz

ANALOG INPUTS	
Number	4
Type	Configurable. Current loop 4/20 mA or 0-10 V
Impedance	Mode 0-10 V: 1 MOhm Mode 4/20 mA: 125 Ohm
Resolution	16 bits
Accuracy	0.1%

RELAY OUTPUTS	
Number	4
Type	Potential-free contact. Normally opened
Maximum voltage	250 VAC
Maximum current	3 A

COMMUNICATION BUS	
Interface	RS 485
Protocol	MODBUS RTU
Available channels	128

7 Warranty

1. MICROCOM guarantees that this product is free from defects in materials and workmanship for five (5) years. MICROCOM's sole obligation under this warranty is to repair or replace without charge any device part whose materials or workmanship are deemed to be faulty after an examination has been performed by MICROCOM, and only under the conditions listed below.

a) MICROCOM has been informed of the fault in writing within five (5) years of the date of purchase of the device.

b) The device has not been maintained, repaired or altered by any person who has not been previously approved or authorised by MICROCOM.

c) The device has been used properly and normally, and has not been altered or misused, broken by accident or damaged by an act of God or other similar catastrophic incident.

d) The purchaser, either the DISTRIBUTOR or the DISTRIBUTOR's customer, packs and sends, or delivers, the device to MICROCOM's factory in Irún, Spain, within a maximum of 30 days after MICROCOM receives written notification of the fault. The cost of sending the device to MICROCOM shall be borne by MICROCOM if sent from within Spanish territory.

e) MICROCOM's liability is limited to repairing or replacing any of the device's parts without charge, provided that the examination performed by MICROCOM reveals that the part is faulty due to a defect in materials or workmanship.

1.1. The DISTRIBUTOR or the DISTRIBUTOR's customers may send the device directly to MICROCOM if the DISTRIBUTOR is unable to repair the device, even if it has been approved to do so, and the DISTRIBUTOR has agreed with the customer to have the repairs performed as covered by this limited warranty.

1.2. In the event that a product needs to be returned to MICROCOM for repair under the warranty, the DISTRIBUTOR must contact MICROCOM prior to sending in order to receive a Return Materials Authorisation number (RMA).

Disposal of waste electrical and electronic equipment (applicable in the European Union and other countries with separate collection). This symbol on the product or on its packaging indicates that this product must not be disposed of with other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local Civic Office, your household waste disposal service or the shop where you purchased the product.