

MotoMon COMMUNICATOR

Installation and Operation Guide



GC 073 431 F

GSM, GPRS, GPS Communicator with driver identification
Tracking and monitoring of vehicles
Transmission of alarms from installed security devices

MotoMon
Global Vehicle Tracking

Dear customer,

Thank you for purchasing our GSM Communicator MotoMon GC 073 431. The MotoMon communicator is intended for easy installation into vehicles where it provides reception of GPS coordinates, inputs and outputs operation connected with car alarm system, saving measured data in the log memory and online communication with a server and integrator application via GSM/GPRS.

The main applications are vehicle localization, fleet management, electronic book of rides, vehicle and crew security.

Other features:

Transmission of alarms from vehicle security system to a mobile phone of the owner or to security agency dispatch center.

Exact localization of vehicle using the GPS coordinates, sent to mobile phone of the owner or to security agency.

The communicator fully supports SMS commands for parameter settings, setup of output values, localization and alarm transmissions.

System integrators can use the GC 073 Control Panel software that provides variety of options for changing configuration parameters of the unit and firmware upgrade using the USB cable connection, GSM data call or GPRS connection.

For optimal use of the MotoMon communicator, we recommend to read this user guide carefully. After getting to know the product operation, it is as simple as using a mobile phone. However, it is recommended to contact a installation company for installation of the device and putting it into operation.

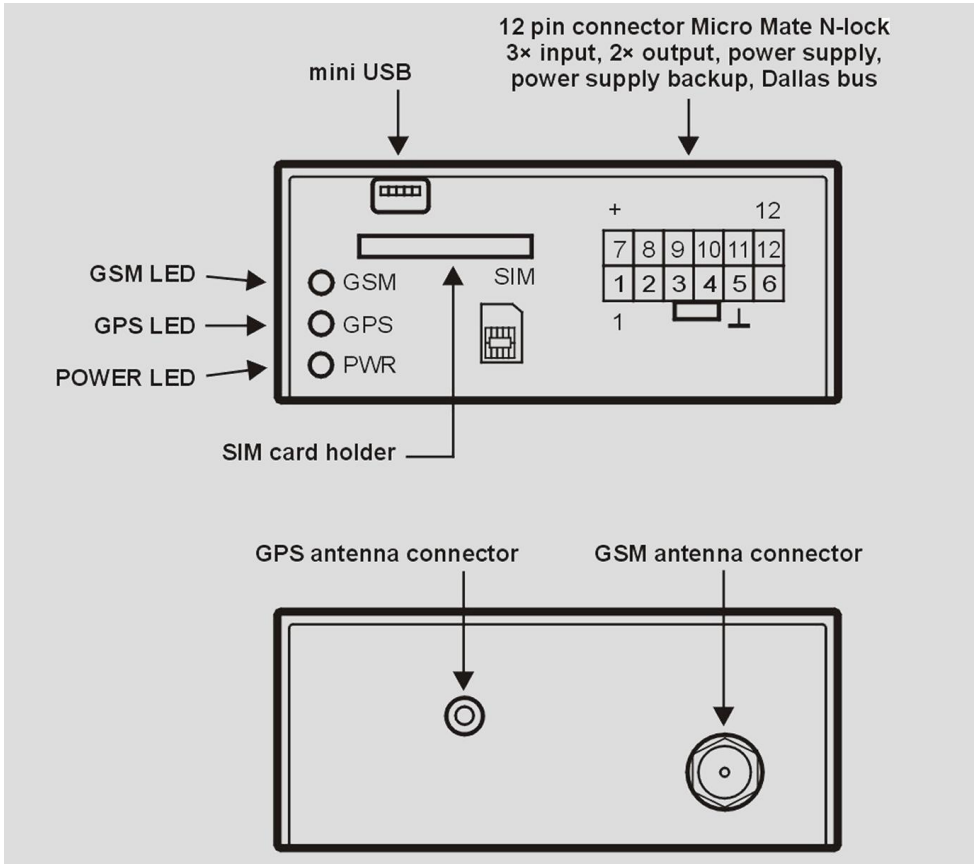
MotoMon Ltd.

Contents:

<u>1. Description</u>	<u>5</u>
<u>1.1. Description of the MotoMon Communicator</u>	<u>5</u>
<u>1.2. Standard Set of Accessories and Optional Accessories</u>	<u>6</u>
<u>1.3. Basic Operation Description</u>	<u>6</u>
<u>2. Operation</u>	<u>7</u>
<u>2.1. Trip type identification – private / work</u>	<u>7</u>
<u>2.2. Emergency button</u>	<u>7</u>
<u>2.3. Reading position using SMS</u>	<u>7</u>
<u>2.4. Reading position using a misscall</u>	<u>7</u>
<u>2.5. Vehicle shutdown</u>	<u>8</u>
<u>2.6. Transmission of alarm from installed security device</u>	<u>8</u>
<u>3. Installation</u>	<u>9</u>
<u>3.1. Definition of Usage, Safety</u>	<u>9</u>
<u>3.2. Connection drawing</u>	<u>10</u>
.....	<u>10</u>
<u>3.3. Instructions for Installation</u>	<u>11</u>
<u>3.4. LED signalling</u>	<u>12</u>
<u>3.5. Testing SMS</u>	<u>12</u>
<u>3.6. Checking Correct Function</u>	<u>13</u>
<u>4. Configuration</u>	<u>14</u>
<u>4.1. SIM, SMS, APN, server</u>	<u>14</u>
<u>4.2. Password, list of phone numbers, credit</u>	<u>15</u>
<u>5. Technical Parameters, Maintenance</u>	<u>16</u>
<u>5.1. Technical parameters</u>	<u>16</u>
<u>5.2. Maintenance</u>	<u>17</u>
<u>5.3. Troubleshooting</u>	<u>18</u>
<u>Warranty conditions</u>	<u>20</u>
<u>Warranty certificate</u>	<u>21</u>

1. Description

1.1. Description of the MotoMon Communicator



1.2. Standard Set of Accessories and Optional Accessories

Accessories delivered in the set F

GC 073 431	MotoMon Communicator
ED 001 006	GSM antenna
ED 002 002	GPS antenna active with SMB connector
CB 170 307	Electro-mounting set (12pin Micro Mate N-lock connector, cables 2m)
CB 161 001	Set of installation parts

Optional accessories

ED 060 601	Emergency button
ED 060 615	Switch of trip type (work – private)
ED 060 614	Vehicle relay (12V, 30 A, switching, in plastic case, Faston)
CB 170 020	Mini-USB PC cable
ED 060 613	Crash sensor

1.3. Basic Operation Description

When the vehicle ignition is switched on, the unit “wakes up” from the sleep mode with low power consumption, the unit gets connection to the internet via GPRS and starts sending packets with position data to the predefined server. At the same time the unit starts saving data about the ride into its memory. The position is saved in dependence on velocity and change of ride direction approximately once in a minute. Switching the ignition will stop saving the ride data and it will signalize to the server to start downloading the ride data from unit’s memory. After downloading data the unit switches back to sleep mode to save power consumption, stops sending the ID packets and the driver is logged-out.

2. Operation

2.1. Trip type identification – private / work

To identify the trip type use the switch ED 060 615. To indicate private trip, the switch must be in position marked with the dot. Switching during the ride will divide the trip into two. Private trips can be hidden – that is done by the supervision system – the information about private trip is still stored in the supervision system.

2.2. Emergency button

Press the emergency button ED 060 601 to send an alarm SMS with vehicle location to predefined phone numbers. It is possible to connect the crash sensor ED 060 613 to the emergency button input, this will send alarm SMS automatically in case of activation of the sensor.

2.3. Reading position using SMS

When the communication unit receives SMS inquiry for position from any mobile phone, it will respond with message with the current GPS coordinates to sender's number. Position of vehicle can be then displayed using internet map services such as maps.google.com, www.mapy.cz, etc. Reading of GPS coordinates might take up to 5 minutes, if it is not possible to read the position (GPS receiver does not have valid coordinates), last known position will be sent.

Reading GPS position	
SMS	password GPSD default password from production is: piccola
Reply	gpsd x y x= latitude in format: 50.402706 N y= longitude in format: 16.145190 E

2.4. Reading position using a misscall

Reading position of vehicle is also possible by calling the phone number of SIM card in the communication unit. The number should be predefined in the phone list of communicator on positions tel1 and tel2. Confirmation of receiving the command is done by rejecting the call by communicator.

Example of reply SMS:	
Reply	At maps.google.com type: 50.42035 N 16.16825 E, position saved before: 12:36 (h:m), GSM BTS code: 6787, GSM signal: 16 (32=max)

There are databases of BTS (Base Transceiver Station) of local mobile operators on the Internet (e.g. www.gsmweb.cz for operators in the Czech Republic) and it is possible to find out the position very roughly – and with no guarantee.

2.5. Vehicle shutdown

Safe shutdown of vehicle can be done by sending SMS command to the communication unit in vehicle – if this feature is installed and configured. The vehicle shutdown is launched only when the speed decreases under 10 km/h using the immobilization relay ED 060 614 that will disconnect the immobilization circuit of vehicle.

Vehicle shutdown	
SMS	password STOP default password from production is: piccola
Reply	SMS confirmation about action launching / not launching will be sent to phone numbers predefined in GC 073 phone list on positions tel1 and tel2.
- Confirmation	
- Launching	STOP.Run – action was launched (sent to sender for command SMS)
- Not launching	STOP AT POSITION: geographical position STOP NOT MADE! Speed of vehicle did not decrease under 10 km/h in the past 30 minutes (or the GPS receiver does not have valid data) and action was cancelled
Starting vehicle again	
SMS	password START
Confirmation	START.Run – enables the possibility to start ignition again

2.6. Transmission of alarm from installed security device

If the communicator unit is connected to the existing vehicle alarm system, it will work as SMS detector of alarm status. Activation of alarm input will send alarm SMS and ringing to predefined phone number. Inputs are blocked for one alarm message per minute.

3. Installation

3.1. Definition of Usage, Safety

Before installation, please make sure that using a mobile phone as well as GSM communicator is not prohibited in the particular type of vehicle!

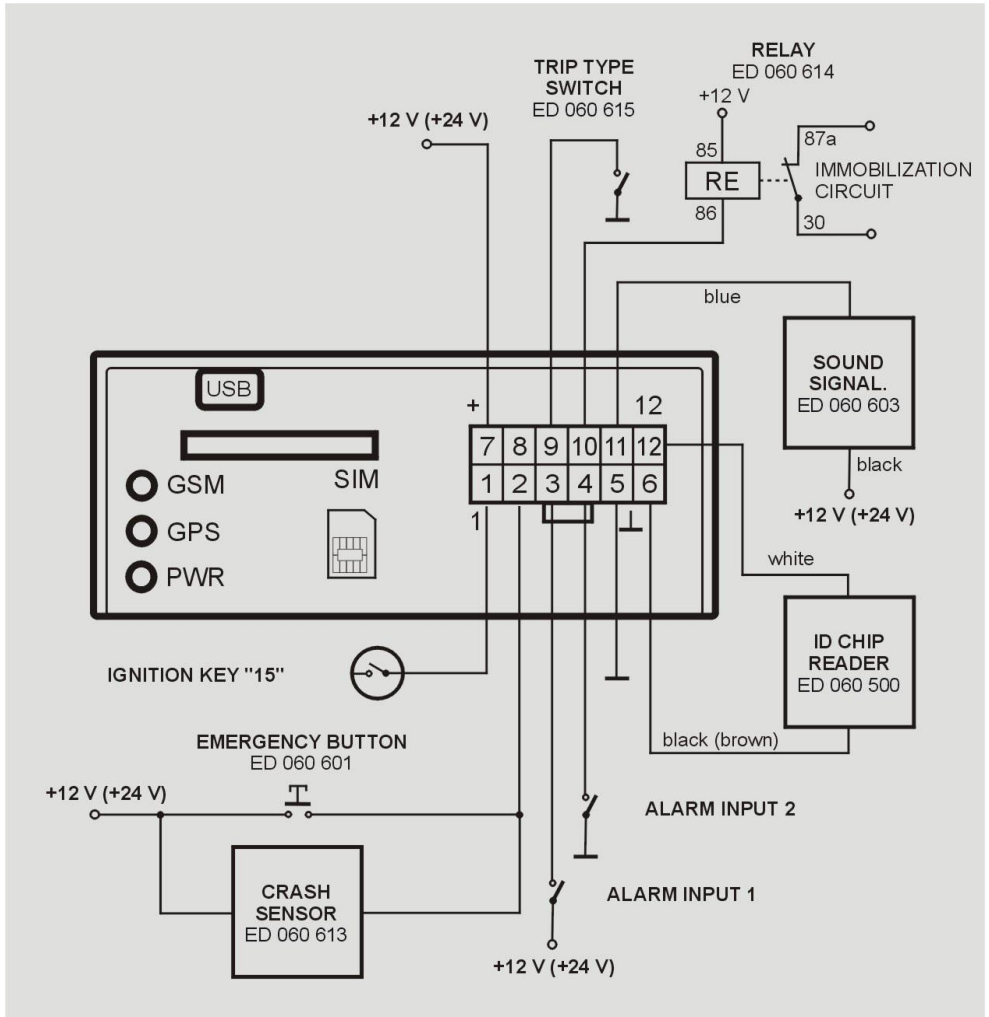
The communicator is designed for installation on a hidden, protected and dry place in the vehicle cabin or in the luggage or freight compartment of vehicle. The unit cannot be exposed to water or any other fluids. Communicator is intended for installation in vehicles with 12 V or 24 V power system and grounded minus. Connection to power supply must be protected by a 5 A safety fuse.

Before the installation, disconnect the negative supply pole of vehicle battery (pay attention to coded car radios). It is recommended to install the antennas and switches first and then to draw the cables towards the unit. Connect the newly installed cables to the original lines with a tape.

To connect the connector pins, use only special tools. In case you don't have such tools, use soldering.

Do not install the communicator in places with increased level of interfering electromagnetic radiation such as near a radio transmitter antenna. Avoid installation in extremely hot places.

3.2. Connection drawing



3.3. Instructions for Installation

Power supply

Provide constant power supply of 12 or 24 V DC. Peak current can reach up to 2 A, therefore make sure the power supply wires are connected perfectly. Contact resistance can cause reset of communication unit and subsequent data transmission failures.

ED 001 006 – GSM antenna

GSM antenna is installed directly into the jack on the communicator. GSM antenna connector in the sensitive tighten it to prevent its release during the journey.

ED 002 002 – GPS antenna

Install horizontally under the dashboard, under the plastic cover of cabin suction or in the plastic bumpers. Ensure the best view of the sky – there must be no metal objects in the view. Be aware of metal coating of glass in some cars – the GPS signal does not pass through such glass. The proper direction of the antenna towards the sky is marked on the antenna with an arrow or a notice “face to satellite”.

ED 060 601 – Emergency button

Install to a suitable place in reach of driver and front-seat passenger.

ED 060 613 – Crash sensor

Connect the sensor firmly to the vehicle body with the red arrow directed forward.

ED 060 615 – Trip type switch – private / work

Install to a suitable place within driver's reach. Switch indicates private trip when in position with the dot.

ED 060 614 – Immobilization relay

Immobilization relay provides vehicle shutdown – it disconnects the vehicle immobilization circuit after receiving command SMS. Select the immobilization circuit according to the vehicle type and connect it to the disconnect contact of ED 060 614.

Alarm inputs

Input 3 is activated by positive pulses from existing vehicle alarm system.

Input 4 is activated by negative pulses se from existing vehicle alarm system.

3.4. LED signalling

GSM – yellow LED	
0,5 s / 0,5 s	No GSM signal or no SIM inserted
1× short	GSM connected to network
2× short	GSM module + GPRS context connected
GPS – red LED	
0,5 s / 0,5 s	GPS module without signal
1× short	GPS module working correctly but without valid data
No light	GPS module has valid data (only in normal operation mode)
POWER – green LED	
2× short / 5 s	Normal operation mode
1× short / 10s	Low power consumption mode (sleep mode)

3.5. Testing SMS

Test whether the installation was done correctly by sending a testing SMS. After the communicator unit was installed, make a short ride, press the emergency button and switch the trip type switch. Send the following SMS to the phone number of SIM card in communicator:

Testing SMS	
SMS	password TEST default password from production is: picola
Reply	TEST ignition: 0/1 - ignition input vibr.sens.: 0/1 - vibration sensor emerg.: 0/1 - emergency button priv.: 0/1 - trip type switch private/work GPS: 0/1 - GPS receiver does not / does have valid data GSM: 0...32 - GSM signal strength in range from 0 to 32* 0 = input or device is not functional 1 = input or device is functional * GSM signal weaker than 5 is not usable, find better spot for GSM antenna

3.6. Checking Correct Function

Proper operation of all functions of the communicator can be checked by SMS.

Checking power supply

SMS inquiry	picola POWER
Response	Power ExtPwr x, y
Value x	x = value of external power supply
Value y	y = value of external backed-up power supply

Power supply can be checked using the signalization LED on the unit – as described in chapter LED signalization.

Checking GSM signal

SMS inquiry	Picola GSM
Response	GSM_x_Credit_y_CellId_z_Signal_q
Value x	Name of connected GSM network
Value y	Balance of prepaid credit on SIM card
Value z	Name of connected GSM cell
Value q	Signal strength (0 – 32, 32 = maximum)

GSM signal lower than 5 is not usable, it is necessary to find better place for the GSM antenna. GSM signal can be checked using the signalization LED on the unit – as described in chapter LED signalization.

Checking GPS

SMS inquiry	picola GGA
Response	\$GPGGA,t,x,y,q,n,r
Value t	Time hhmmss.sss h-hours, m-minutes, s-seconds
Value x	Latitude coordinates ddmm.mmmm (e.g. 5025.223400,N)
Value y	Longitude coordinates ddmm.mmmm (e.g. 01610.090300,E)
Value q	Validity of GPS data, 0 = invalid data, 1 = valid data
Value n	Number of satellites
Value r	Other GPS data

After connecting the power supply of communicator, take the vehicle to a place with good view of sky, switch the ignition key on and wait for about 5 minutes to get valid GPS data. Status of GPS can be checked using the signalization LED on the unit. GPS can be considered fully working when it has valid data and at least 3 satellites.

4. Configuration

4.1. SIM, SMS, APN, server

Insert the SIM card in the slot on the front side of the communicator. Eject the SIM by repeated pressing of SIM. SIM card must not be blocked by PIN, must have enough credit, erased SMS and activated GPRS data services from the GSM operator.

Basic settings and operation of the unit is done via SMS messages sent to the phone number inserted in the communication unit in vehicle.

PASSWORD command1 parameter1 command2 parameter2 command3 parameter3 ...

PASSWORD Up to 8 characters a-z and 0-9. Default password is "picola".
space
COMMAND Name of command for required configuration
space
PARAMETER Value, ? for inquiry or . (dot) – to erase value

One SMS message can contain up to 4 commands with parameters. Communicator confirm executing all commands by confirmation SMS. Small and capital letter make no difference.

Settings of APN of the GSM operator		
Settings	SMS Response Picola Value x Set to x	picola APN x APN „x“ Default password from production APN of the GSM operator Internet
Settings of APN login name – only with some operators		
Settings	SMS Response Value x Set to x	password GPRSNAME x gprsname „x“ Login name for APN -
Settings of APN password – only at some operators		
Settings	SMS Response Value x Set to x	password GPRSPSW x gprpspw „x“ Password for APN -
Settings of server for sending data		
Settings	SMS Response Value x Value y Value z Set to x Set to y Set to z	password SERVER @x,y,udp,z Server.number „@x,y,udp,z“ IP address of server Port number 0 = disabled in roaming, 1 = enabled 84.233.161.4 32769 0

4.2. Password, list of phone numbers, credit

Change of PASSWORD		
Settings	SMS Response Value x Set to x	password PSW x psw x Up to 8 characters a-z and 0-9 picola

Any modification of password must be reported to the administrator of supervision system. Password is the same for SMS communication as well as communication between the communicator and the server.

List of phone numbers		
Settings	SMS Response Value x Value y Inquiry Erasure of nr.	password TELx y Telx.number "y" 1 - Phone number to send alarm SMS from alarm input 1 2 - Phone number to send alarm call from alarm input 1 3 - Phone number to send alarm SMS from alarm input 2 4 - Phone number to send alarm call from alarm input 2 5 - Phone number to send alarm SMS from emergency button 6 - Phone number to send alarm call from emergency button 7 - Phone number to send information SMS Phone number in international format Password TELx ? Password TELx .

Settings of USSD code for prepaid credit amount		
Settings	SMS Response Value x Set to x	password CREDITCMD x Creditcmd_"x" - -

Settings of low limit of credit		
Settings	SMS Response Value x Set to x	Password CREDITLOW x creditlow „x“ Low limit of prepaid credit 0

5. Technical Parameters, Maintenance

5.1. Technical parameters

GSM	Siemens MC55i (850 / 900 / 1800 / 1900 MHz) SIM card Plug-in 3 V GSM antenna connector FME – m FCC approved
Communication	Call, SMS, GSM Data, GPRS
SMS	Alarm SMS SMS inquiry / response Change of configuration via SMS Launching action by name of action in SMS SMS with measured parameters Up to 4 parameters in one SMS
GSM Data Modem connection	Configuration editing Reading of measured values Reading of events- memory log Output control Firmware upgrade
GPRS connection	Class 10 Support of static and dynamic IP and VPN network UDP protocol Transmission protection by 128bits encryption All features like in GSM data
GPS	16 channels Antaris® LH highly sensitive Accuracy 2,5m CEP Antenna connector SMB – f
Log file memory	EEProm 256 kB i.e. 4000 positions (10k when compressed)
Power supply	10 to 24 V Power consumption with active GSM and GPS <70mA at 12V Power consumption in sleep mode <10mA at 12V
5 inputs 2 outputs	Input max. 24 V Output current max. 0,5 A
Pin 1	Input from ignition key +12 V (+24 V)
Pin 2	Input from emergency button Reacts to connection with +12 V (+24 V)
Pin 3	Alarm input 1 Reacts to connection with +12 V (+24 V)
Pin 4	Alarm input 2 Reacts to connection with ground
Pin 5	Ground
Pin 6	Not used
Pin 7	Power supply +12 V (+24 V)
Pin 8	+12 V backed-up (not charged from the unit)

Pin 9	Trip type switch Disconnected = work trip Connected with ground = private trip
Pin 10	Output 1 for external immobilization relay Output current max. 0,5 A at 12 V
Pin 11	Output 2 for sound signalization Output current max. 0,5 A at 12 V
Pin 12	Not used
USB	Connection to PC Configuration, firmware upgrade
Real time clock RTC	Date and time backed up by battery Synchronization of time with GPS
Protection class	IP 20
Dimensions	69 x 70 x 32 mm
Weight	50 g
Case	Plastic
Temperature range	Operation temperatures for GSM module: -20 to +55 °C Operation temperatures for unit: -40 to +85 °C

5.2. Maintenance

The GC 073 MotoMon Communicator requires no special maintenance. We recommend regular check of external battery at least once a year (just in case the battery is installed).

5.3. Troubleshooting

Problem	Solution
Power supply	<ol style="list-style-type: none">1. Check that GC 073 is connected to power and LED PWR blinks as described in table – chapter 4.2.2. Check that GC 073 is connected to constant power source (not being disconnected – for example when ignition is switched off)3. Check that power supply is strong at least 1A /12V4. Check that connectors are not oxidized.5. Check the connections of wires that there is no voltage drop caused by contact resistance there.
SIM card	<ol style="list-style-type: none">6. Check that SIM card is inserted correctly in GC 0737. Check that SIM card is connected into the GSM network – LED GSM blinking as described in table in chapter 4.2.8. Check PIN in SIM – it must be disabled or set to 12349. Check that SIM card has enough of prepaid credit (if it is a pre-paid SIM card)10. Check that GPRS data transmissions are enabled for the SIM card11. Check settings of APN by SMS – see table in chapter 4.1.
GPS	<ol style="list-style-type: none">12. Check the GPS antenna position – side marked “face to satellite” or with arrow on the side must be directed towards the sky and must not be covered by any metal objects13. Find an open-area space with good view of the sky and switch GC 073 into the regular operation mode (turn ignition on), GPS should receive valid data of position within two minutes – see LED GPS in chapter 4.2.14. Other information about GPS signal can be received by SMS – see chapter 3.6.

Warranty conditions

The manufacturer provides 24 months of warranty, starting from date of sale.

Warranty repair will be done within 10 working days after delivery of faulty unit to MotoMon provided all spare parts are in stock. If not, the customer will be offered an alternative solution.

Warranty repairs will be carried out in the manufacturer facility and the warranty repair is prolonged by the time of repair duration. Shipping back is determined by a service technician.

Warranty cannot be provided in case of loss or replacement of warranty certificate, when product is damaged by natural disaster, during transportation, unsuitable placement, improper use, using product in unfit conditions and also by breaking or removal of warranty seal.

The warranty does not cover the expendable supplies – batteries, coloring tape, etc. The warranty does not cover faults caused by installed software or its impact. The company does not bear liability for losses caused to user by device fault.

The warranty does not apply to faults caused by changing external conditions, such as legislature changes, GSM network modifications, changes of power supply conditions, etc.

Warranty must be claimed by presentation of completely filled-in warranty certificate and device for repair including accessories.

Duplicate of warranty certificate cannot be issued, the customer is responsible for its correctness and origin.

Warranty certificate

Product name :	Type :
Serial number :	Date of sale :

Distributor :

Address, telephone, stamp :

Signature :

Accepted for repair	Date of sending	Problem description
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Declaration of Conformity:

Complies with the essential requirements of GSM module: FCC identifier QIPMC55i
IC: 267W-MC55i granted to Siemens AG.

SIEMENS

Industry

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Subject: Request for Confidentiality
FCC ID: QIPMC55i

To Whom It May Concern:

In accordance with §0.459 of CFR 47, **Siemens AG, Wireless Modules** requests confidentiality for the following items

1. Block Diagram (Exhibit 4)
2. Schematic Diagram (Exhibit 5)
3. User Guide / Installation Manual (Exhibit 8)
4. Part List/Tune up procedure (Exhibit 10)
5. Operational Description (Exhibit 11).


These items contain detailed system and equipment description and related information about the product which Siemens AG considers to be proprietary, confidential and a custom design which otherwise would not be released to the general public. Since this design is a basis from which future technological products will evolve, Siemens AG also feels that this information would be of benefit to its competitors, and that the disclosure of the information in these exhibits would give our competitors an unfair advantage in the market.

The Installation Manual contains detailed information to integrate the Product (Module) into a end Application and is only for system integrators and not intended for End users.

Uwe Dummann
Head of technology & Innovation

Berlin

January, 08th 2008



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