



# MGI 196

**GSM modem**

**GSM 900-1800-1900 MHZ**

---

**User guide**

**Document reference : 9015309-01**



**If you have questions about the modem MGI196 or need assistance,  
contact ETIC Telecommunications at the following address :**

## **ETIC TELECOMMUNICATIONS**

**13 Chemin du vieux chêne  
38240 MEYLAN  
FRANCE**

**TEL : 33 4-76-04-20-05  
Fax : 33 4-76-04-20-01  
E-mail : [hotline@etictelecom.com](mailto:hotline@etictelecom.com)**

<b>EC SAFATEY AND CONFORMITY DECLARATIONS</b>	<b>1</b>
<b>PRODUCT OVERVIEW</b>	<b>3</b>
<b>INSTALLATION</b>	<b>7</b>
1 SUPPLY VOLTAGE .....	15
2 FUSE .....	15
3 DIP SWITCHES .....	15
4 GSM SUBSCRIPTION.....	17
5 ANTENNA .....	17
6 SIM CARD INSTALLATION.....	18
7 SERIAL INTERFACE .....	18
7.1. RS232C interface.....	19
7.2. RS485-RS422 interface .....	19
<b>CONFIGURATION</b>	
1 CONNECTING A PC TO THE MGI196 .....	21
2 CANCELING THE PIN CODE .....	21
3 INCOMING CALLS FILTERING .....	22
3.1. Principle .....	22
3.2. Storing authorized calling Nr .....	22
4 SETTING THE MGI196 TO SEND SMS WITH INPUTS 1 TO 3 .....	23
4.1. Principles .....	23
4.2. Storing an SMS message into the SMS directory .....	24
4.3. Sending an SMS message.....	24
5 SETTING THE MGI196 TO SET CALLS USING THE 3 INPUTS.....	25
5.1. Principles .....	25
5.2. Store a call number in the data call phone book .....	26
5.3. Setting up a data call using a digital input .....	27
5.4. Receiving an incoming call.....	27
6 USING AT COMMANDS TO CALL OR SEND SMS MESSAGES .....	27
 APPENDICES :	
1 AT commands	
2 S Registers	



## EC Safety and conformity declarations

<b>MANUFACTURER IDENTIFICATION</b>	
COMPANY NAME	ETIC TELECOMMUNICATIONS
ADDRESS	13 CHEMIN DU VIEUX CHÈNE 38240 MEYLAN FRANCE
TELEPHONE	04 76 04 20 00
FAX	04 76 04 20 01

<b>PRODUCT IDENTIFICATION</b>	
NATURE	900 - 1800-1900 MHz GSM MODEM
COMMERCIAL REFERENCES	MGI196

ETIC TELECOMMUNICATIONS declare under their entire responsibility that the products described above are in compliance with the following essential requirements :

The protection of the health and the safety of the user : EN60950 and EN41003.

The protection requirements with respect to electromagnetic compatibility : EN50082-2.

The GSM requirements ;

EN 301 419-1 Digital cellular telecommunications system (Phase 2);

Attachment requirements for global system for mobile communications (GSM); Part 1:

Mobile stations in the GSM 900 and DCS 1800 bands; Access V4.1.1 (04/2000)

EN 301 511 Global system for mobile communications (GSM); Harmonized standard for mobile stations in the GSM 900 and DCS 1800 bands covering essential requirements under Article 3(2) of the R&TTE Directive (1999/5/EC) V9.0.2 (03/2003)

---

This page is Intentionally blank

The MG196 GSM modem provides asynchronous data transmission over the GSM network. It is made for industrial applications.

It features,

the ability to transmit asynchronous data with another GSM modem;

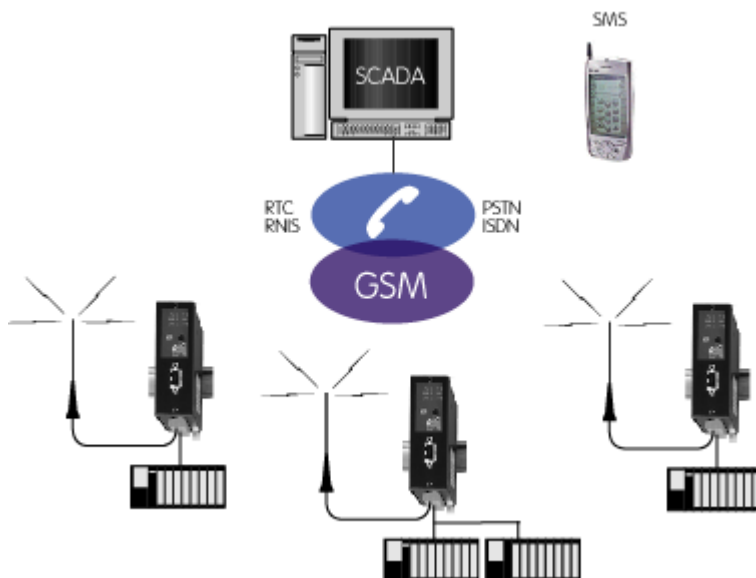
the ability to transmit asynchronous data with another PSTN or ISDN modem (these capabilities are GSM providers dependant function);

SMS transmission;

AT commands set to set up a call or transmit SMS messages;

3 digital inputs to set up calls or transmit SMS messages;

1 RS22-RS485-RS422 interface.



### **PLC compatibility**

The MGI196 has been designed to operate with the PLCs of most worldwide manufacturers.

The corresponding configurations and the pinouts of required cables are available on demand; a particular function has been developed to make modbus transmission more reliable.

### **RS232, RS485 and RS422 serial interfaces**

The MGI196 is equipped with an RS232 serial interface (9-pin connector on the front panel) and with an RS485 and RS422 serial interface (10-pin screwblock at the bottom of the modem).

### **Digital inputs to set up call or send SMS messages**

The MGI196 provides 3 digital inputs ; each input can be configured either to set up a data call or to send an SMS message.

### **Digital output**

1 digital output indicates that the call has been successfully set up or that the SMS has been correctly sent to the GSM network.

### **DIP switches**

DIP switches help the configuration and make operations more reliable.

In particular, some of DIP switches set the RS232-RS485 -RS422 interface data rate and frame so that it cannot be changed with AT commands.

### **AT commands**

AT commands can be used to set calls or send SMS instead of using the digital inputs.

### **Security**

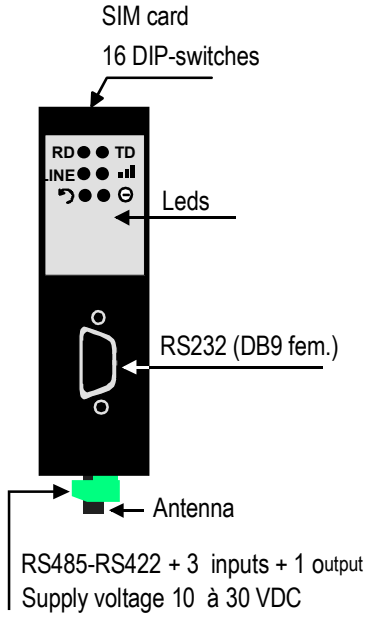
The MGI196 is able to reject incoming calls when the caller number does not belong to the phone book.



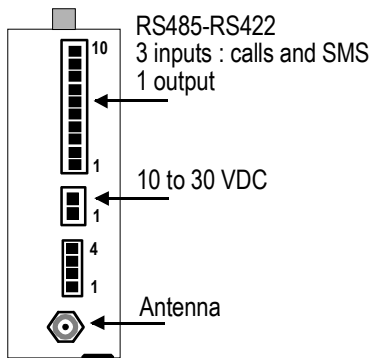
## CHARACTERISTICS





<b>Dimensions :</b>	H=128 x l=38 x P=107 mm
<b>Supply voltage :</b>	10 to 30 VDC
<b>Consumption :</b>	Off line 200 milli-A at 24 VDC On line: 350 milli-A at 24 VDC
<b>Operating T° :</b>	0°C to +60°C
<b>Asynchronous interface :</b>	RS232 - DB9 female RS422 & RS485 screw terminal
<b>Data rate and frame :</b>	300 – 600 – 1200 – 2400 – 9600 – 19200 – 38400 b/s 7 or 8 bits / parity none-even-odd 1 stop or 2 stops (except 8 bit + parity)
<b>Set-up commands</b>	AT 3 digital inputs
<b>Configuration</b>	DIP switches and AT commands
<b>Electrical safety :</b>	EN 60950, EN 41003, CEI950, CEI1131
<b>EMC :</b>	EN50082-2
<b>Lightning :</b>	EN61000-4-5

Front panel



Bottom



<b>TABLE 1 : Leds</b>	
<b>Voyant</b>	<b>Function</b>
<b>RD</b>	Characters received from the GSM network
<b>TD</b>	Characters transmitted to the GSM network
<b>LINE</b>	<p><b>ON</b> : The MGI196 is connected to another modem through the GSM network</p> <p><b>OFF</b> : The MGI196 is off line</p> <p><b>Blinking regularly</b>: When a digital input has been closed to set up a data call, or when an incoming call has been detected, The line led blinks regularly as long as the call has not been established.</p> <p><b>Blinking with a code</b> When a digital input has been closed to send an SMS, the LINE led blinks and is left ON during 3 seconds once the message has been correctly sent to the GSM network.</p> <p>Nota : If AT commands are used, the led line does not blink during the call.</p>
	<p>When the MGI196 is off- line, and if the SIM card is valid, that led flashes to indicate the GSM reception signal strength.</p> <p>The number of flashes indicates the level of the reception signal</p> <p>1 flash = The GSM signal is too low (&lt; -101 dBm):</p> <p>2 flashes = The GSM signal is faint (between -100 dBm &amp; -91 dBm)</p> <p>3 flashes = The GSM signal is correct (between -90 dBm &amp; -81 dBm)</p> <p>4 flashes = The GSM signal is excellent (&gt; -80 dBm)</p>
	<p><b>Transmission loop enabled</b></p> <p>The loop allowing to make a transmission test has been enabled with the microswitch 7 .</p> <p>The MGI196 sends back to the remote modem the data it receives from the remote modem.</p> <p>The data received from the remote modem are also transmitted to the local serial interface</p>
	<p>Supply voltage led</p> <p>OFF : Power OFF</p> <p>ON : Ready to use</p> <p>Blinking : The MGI is searching for the GSM network</p>
The 4 previous leds together	<p>The power, <b>LINE</b>, , <b>LOOP</b> blink <b>simultaneously and permanently</b> when the SIM card has not been detected or when it is protected by a password (PIN code)</p>

**TABLE 2 : DIP switches**

DIP SWITCHES	1	2	3	4	5	6	7	8
38400 b/s	ON	ON	ON					
19200 b/s	OFF	ON	ON					
9600 b/s	ON	OFF	ON					
4800 b/s	OFF	OFF	ON					
2400 b/s	ON	ON	OFF					
1200 b/s	OFF	ON	OFF					
600 b/s	ON	OFF	OFF					
300 b/s	OFF	OFF	OFF					
8O1				ON	ON	OFF		
8E1				OFF	ON	OFF		
8N1				ON	OFF	OFF		
8N2				OFF	OFF	OFF		
7O1				ON	ON	ON		
7E1				OFF	ON	ON		
7O2				ON	OFF	ON		
7E2				OFF	OFF	ON		
Loop enable							ON	
Loop disable							OFF	
Incoming call filtering enable								ON
Incoming call filtering disable								OFF

DIP SWITCHES	9	10	11	12	13	14	15	16
SMS 1 when input 1 is closed	ON							
Call 1 when input 1 is closed	OFF							
SMS 2 when input 1 is closed		ON						
Call 2 when input 1 is closed		OFF						
SMS 3 when input 1 is closed			ON					
Call 3 when input 1 is closed			OFF					
AT commands not allowed				ON				
AT command allowed				OFF				
Modbus assembler enabled					ON			
Modbus assembler disabled					OFF			
Réserved						OFF		
Réserved							OFF	
Factory configuration enabled								ON
User configuration								OFF

TABLE 3 : RS232				
Pin Nr	Circuits		Designation	Terminal- Modem
1	CD	109	Carrier detect	←
2	RX	104	Data reception	←
3	TX	103	Data transmission	⇒
4	DTR	108	Data terminal ready And call command	⇒
5	SG	102	Signal ground	
6	DSR	107	Data set ready	←
7	RTS	105	Request to send	⇒
8	CTS	106	Clear to send	←
9	RI	125	Incoming call (RING)	←

TABLE 4 : 10 pins screw terminal RS485 & RS422, digital inputs & output		
Br.	Signal	Fonction
1	V+	Supply voltage for the digital inputs (3,3 V – 100 mA)
2	I1	Digital input 1
3	I2	Digital input 2
4	I3	Digital input 3
5	O-	Digital output polarity – (50 V DC max / 500 mA max.)
6	O+	Digital output polarity +
RS485 & RS422		
7	RS422 B'	RS422 emission polarity B (from the data terminal to the MGI196)
8	RS422 A'	RS422 emission polarity A (from the data terminal to the MGI196)
9	RS485 B	Réception RS422 polarity B (From the MGI196 to the data terminal) or RS485 polarity B
10	RS485 A	Réception RS422 polarity (From the MGI196 to the data terminal) or RS485 polarity A

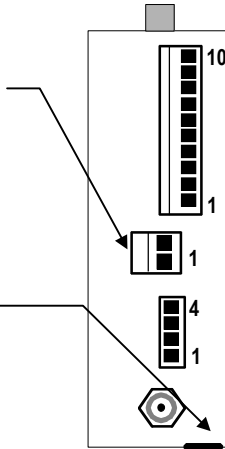
TABLE 5 : Audio The audio interface is not managed to-day		
Br.	Signal	Fonction
1		Loudspeaker
2		Loudspeaker
3		Microphone
4		Microphone



## 1 Supply voltage

Pin Nr	Signal
1	V+ 10 to 30 VDC
2	V-

Protective earth connection



Off line consumption 200 mA  
On line consumption 350 mA

200 milli-A at 24 VDC  
350 milli-A at 24 VDC

## 2 Fuse

The electronic boards includes a fuse.

To replace the fuse located near the screw terminal , disconnect the product from the power supply, open the box and use the replacement fuse available on the board near the RS232 connector.

## 3 DIP switches

**DIP switches 1 to 3 : To set the RS232-RS485-RS422 data rate.**

**DIP switches 4 to 6 : To set the bytes frame**

**Microswitch 7 : To set a transmission loop**

When this DIP switch 7 is set ON, the MGI196 sends back to the remote modem the data it receives from the GSM network. Data received from the GSM network are also transmitted to the serial interface. That function allows to check the transmission quality using the ModemView software provided by ETIC. When the DIP switch 7 is set OFF, the MGI196 is ready for normal operations.

### **DIP switch 8 : Incoming calls filtering**

When this DIP switch 8 is set ON, incoming calls are filtered; to be accepted the calling Nr must have been previously stored in one of the lines 10 to 20 of the telephone book.

When this DIP switch 7 is set OFF, the MGI196 accepts all incoming calls.

### **DIP switches 9 to 11 : Digital inputs function**

DIP switches 9 to 11 allow to set the function of each digital input : The DIP switch 9 refers to input 1, the DIP switch 10 to input 2, the DIP switch 11 to input 3.

If the DIP switch is set ON, a stored SMS message will be sent each time the digital input will be closed.

If the DIP switch is set OFF, a data call will be set up each time the digital input will be closed.

See chapter configuration for detailed operations

### **DIP switch 12 : AT commands**

When this DIP switch 12 is set ON, using AT commands is impossible.

### **DIP switch 13 : Modbus transmission**

As the GSM introduces silences between characters, the error rate can be important when the modbus protocol is used over the GSM network.

The MGI196 features a function which improves drastically the error rate when modbus is used over the GSM.

When the DIP switch 13 is set ON, the MGI196 detects the modbus frame, eliminate silences inside each frame and checks the CRC before sending the modbus frame to the serial interface

### **DIP switch 16 : Additional parameters**

When the DIP switch 16 is set ON, factory parameters are selected in addition to the ones set with the DIP switches (data rate and byte frame).

When the DIP switch 16 is set OFF, additional parameters must be set with AT commands.



---

## **4 GSM subscription**

---

A SIM card is necessary to use the MGI196 GSM modem.

It is provided by the GSM service provider; make sure the subscription is appropriate for the function you wish :

The subscription must enable the data service.

If you wish to filter the incoming calls, the caller identification function must be enabled by the GSM service provider.

If the MGI196 GSM modem has to communicate with a PSTN modem or ISDN, make sure that this service is available (incoming and outgoing calls).

---

## **5 Antenna**

---

The antenna is provided separately by ETIC; you can select either a quadri-band magnet mount antenna (ANT200) or an antenna (ANT207) which has to be fastened with a nut through a metal sheet which can be for instance de top a cabinet.

Ensure the supply voltage is disconnected from the modem before connecting the antenna.

Before installing the modem and its cabinet, you have to make sure the antenna is located at a place where the GSM signal strength is sufficient.

This can be achieved with the  led.

The signal strength is high enough if It flashes 3 or 4 times shortly.

If it flashes 1 time periodically, the signal strength will not be sufficient.

If it flashes 2 times periodically, the signal is faint; transmission tests have to be done using the ModemView software.

The signal strength can also be measured using the AT+CSQ command; the result must be greater than 10 (better than -90dBm).

## 6 SIM card installation

---

A micro SIM card is necessary to use the MGI196 GSM modem.

It is provided by the GSM service provider.

Before inserting the SIM card, the PIN code has to be cancelled; if you don't wish to cancel the PIN code, make sure it will be transmitted by the data terminal after each power-up of the modem with the AT+CPIN command.

To delete the PIN code, you can use a mobile phone if it accepts the SIM card of your GSM data transmission provider.

If you cannot delete the PIN code with your mobile, install the SIM card in the MGI196 as described below and delete the PIN CODE as described further in the chapter CONFIGURATION.

### To install the SIM card

Disconnect the product from the power supply.

Push the small push-button to release the SIM card holder

Remove the SIM card holder,

Insert the SIM card into the SIM card holder (electronic IC must be visible),

Insert the SIM card holder into the opening.

If the 4 leds of the front panel blink simultaneously, it means that the SIM card is locked by the PIN code or that it cannot be read by the MGI196.

Check it has correctly been placed; and cancel the PIN code : See Chapter CONFIGURATION.

---

## 7 Serial interface

---

The MGI196 provides the serial interfaces listed below :

RS232 on the DB9 female connector,  
RS485 (2 wires) on the screw terminal,  
RS485 (4 wires) on the screw terminal,

**Only one interface can be used at the same time : RS232 or RS485 or RS422**

Using 2 interfaces at the same time will not damage the product but will prevent normal operation.

## 7.1. RS232C interface

If the data terminal must be connected to the modem MGI196 through the RS232 serial interface, the distance between them must not be longer than 10 meters.

RS232				
Pin Nr	Circuits		Designation	Terminal- Modem
1	CD	109	Carrier detect	←
2	RX	104	Data reception	←
3	TX	103	Data transmission	⇒
4	DTR	108	Data terminal ready And call command	⇒
5	SG	102	Signal ground	
6	DSR	107	Data set ready	←
7	RTS	105	Request to send	⇒
8	CTS	106	Clear to send	←
9	RI	125	Incoming call (RING)	←

The **DTR signal** enables the terminal to clear the call or to inform the modem that it is connected (see AT&D2 command at appendix 1).

The **DTR signal** also permits to set a call to a number stored in the modem phone book line 10.

The **DSR signal** indicates that both modems are connected.

The **CD signal** indicates that the modem has detected the carrier.

The **RI signal** indicates an incoming call.

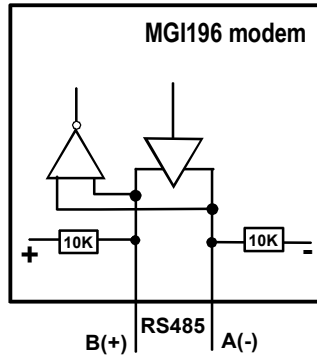
## 7.2. RS485-RS422 interface

The RS485 and RS422 interface is available on the 10 positions screw terminal.

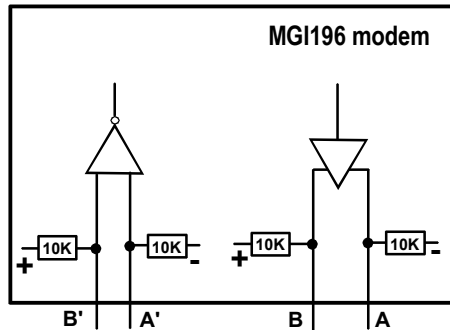
The serial interface is polarized with a 1Kohm resistor wired inside the MGI196.

A 120 Ohm external termination resistor must to be wired between the 2 wires of the RS485 bus but only if the line is very long and the data rate at 38400 b/s.

RS485 line polarisation resistors



RS422 line polarisation resistors



---

## **1 Connecting a PC to the MGI196**

---

To configure advanced functions, ensure communications can be set and check the error rate, we advise to use a PC.

Check the DIP switch 12 has been set OFF to authorize AT commands.

Use a Windows PC and install the ModemView software provided by ETIC; otherwise, use the hyperterminal Windows software

Connect the PC COM port to the MGI196 with a straight cable (CAB01).

Launch and configure the ModemView software :

Com port number,  
Data rate and byte frame in accordance with the MGI196 DIP switches position,

Use the abstract of the AT commands or the full set of commands attached in the CD delivered with the product.

Once a setting modification has been done, don't forget to save it into the user profile with the AT&W command.

---

## **2 Canceling the PIN code**

---

The PIN code must be either transmitted by the DTE at each power-up or cancelled.

To check if the PIN code is expected by th SIM card, enter AT+CPIN?

If the response is READY, it means that the SIM card is unlocked and ready for configuration and operations.

If the response is SIM PIN, it means that the SIM card is locked and waiting for the PIN code.

If the MGI is waiting for a PIN code, enter the PIN code to unlock access to the SIM card : AT+CPIN="XX..X" ; the MGI196 returns OK.

Nota : the PIN code XX..X has to be entered between comas as indicated above.

To cancel the PIN code enter the **PIN code cancel command**

AT+CLCK="SC",0,"XX..X" ; the MGI196 returns OK.  
 !! XX..X is the PIN code previously stored in the SIM card.

### 3 Incoming calls filtering

#### 3.1. Principle

To improve security, incoming calls can be filtered : The authorized calling modems have to be stored in the phone book from line 10 to 20.

When an incoming call occurs, it will be accepted only if it comes from one number stored in the phone book (line 10 to 20)  
 All other incoming calls will be rejected.

**Setting the DIP switch 8 in position ON will enable that function.**

#### 3.2. Storing authorized calling Nr

Store a Nr in the phone book	
Command	Example : AT+CPBW=N,4476411294,145,"ETIC" N is the phone book line Nr (10 to 20) 33476411294 (example) is the Nr of the calling line 145 indicating the telephone NR is an international Nr ETIC is a free description which has to be entered between 2 comas.  Nota : the calling Nr must begin with the national code (44 for the UK, 49 for Germany etc...
Return	OK
List the authorized Numbers (Lignes 10 à 20 du répertoire)	
Command	AT+CPBR=10,20
Return	+CPBR: 10,"+4476411294",145,"ETIC" +CPBR: 11,"+44673687043",145,"ETIC" etc...
Delete a Nr	
Command	AT+CPBW=N
Return	OK

## 4 Setting the MGI196 to send SMS with inputs 1 to 3

### 4.1. Principles

Each digital input can be used either to send SMS message or to set a data call. One digital input can be used to set a data call while another one will be used to send an SMS.

DIP switch 9 (respectively 10 and 11) must be set ON to provoke an SMS to be sent when the input 1 (respectively 2 and 3) will be closed.

DIP-SWITCHES	9	10	11
The SMS message stored in line 1 of the SMS directory will be sent when the input 1 will be closed during 500 ms at least.	ON		
The MGI196 will dial the number stored in line 1 of the phone book when the input 1 is left closed	OFF		
The SMS message stored in line 2 of the SMS directory will be sent when the input 2 will be closed during 500 ms at least.		ON	
The MGI196 will dial the number stored in line 2 of the phone book when the input 2 is left closed		OFF	
The SMS message stored in line 3 of the SMS directory will be sent when the input 3 will be closed during 500 ms at least.			ON
The MGI196 will dial the number stored in line 3 of the phone book when the input 3 is left closed			OFF

Once the DIP switches have been set, the SMS directory has to be filled out (see next paragraph for details).

Once configured, set the DIP switch 12 ON to forbid AT commands.

To send a message, one digital input has to be closed during 500 ms and opened again (see next paragraph for details).

## 4.2. Storing an SMS message into the SMS directory

<b>Store a message in line 1 of the SMS directory</b>	
<b>Step 1 Select and delete line 1 content</b>	
Command	AT+CMGD=1
Answer	OK
<b>Step 2 : Enter the mobile Nr 0673867029 and the message ALARM1</b>	
Command	AT+CMGW=0676687029,129 or AT+CMGW=+33676687029,145 (national tel code)
Answer	>
Enter	ALARM1
Enter	Ctrl Z
<b>Following steps :</b> <b>You can use the sema procedure to store messages in lines 2 and 3</b>	
<b>Last step ; Read the SMS directory content</b>	
Command	AT+CMGL=ALL
Answer	+CMGL: 1,"STO UNSENT","0673687029", ALARM 1 +CMGL: 2,"STO UNSENT","0673687029", ALARM 2 +CMGL: 3,"STO UNSENT","0673687029", ALARM 3

## 4.3. Sending an SMS message

### Step 1 : Connect a relay contact to the digital input 1 or 2 or 3

Digital input 1 : Connect a relay contact between positions 2 and 1 (3,3 V).

Digital input 2 : Connect a relay contact between positions 3 and 1 (3,3 V).

Digital input 3 : Connect a relay contact between positions 4 and 1 (3,3 V).

### Step 2 : To send the SMS message 1 or 2 or 3, close the relay contact at least 500 ms and open it again.

Once the message has successfully be transmitted to the GSM network, **the LINE led is left lit during 3 seconds** and the digital output I (positions 5 and 6) is left closed during 3 seconds.

Wait at least 10 seconds before sending a new message.



## 5 Setting the MGI196 to set calls using the 3 inputs

### 5.1. Principles

Each digital input can be used either to send SMS message or to set a data call; 1 digital input can be used to set a data call while another one will be used to send an SMS.

The digital output informs the data terminal that the outgoing call has been established or that an incoming call has been detected.

DIP switch 9 (respectively 10 and 11) must be set OFF to provoke a data call to be set up when the digital input 1 (respectively 2 and 3) is closed.

DIP-SWITCHES	9	10	11
The SMS message stored in line 1 of the SMS directory will be sent when the input 1 will be closed during 500 ms at least.	ON		
The MGI196 will dial the number stored in line 1 of the phone book when the input 1 is left closed	OFF		
The SMS message stored in line 2 of the SMS directory will be sent when the input 2 will be closed during 500 ms at least.		ON	
The MGI196 will dial the number stored in line 2 of the phone book when the input 2 is left closed		OFF	
The SMS message stored in line 3 of the SMS directory will be sent when the input 3 will be closed during 500 ms at least.			ON
The MGI196 will dial the number stored in line 3 of the phone book when the input 3 is left closed			OFF

Set the DIP switch 16 ON to select default additional parameters valid for data transmission.

Fill out the phone book as indicated below (see §5.2)

Once the phone book will have been filled out, before putting the MGI196 into service, don't forget to set the DIP switch 12 ON to forbid AT commands.

## 5.2. Store a call number in the data call phone book

Delete the data call phone book line N content (N = 1 or 2 or 3)	
Command	AT+CPBW=N
Answer	OK
Store a number to dial in line N of the data call phone book	
Command	AT+CPBW=N,+33476411294,145,"ETIC" N is the data call phone book line Number (1 or 2 or 3)
Answer	33476411294 is the number to dial (with the national code) 145 is the code which indicate that the Nr to dial has been entered with the national code ETIC is the free text; it is a label describing the Nr to dial.
Answer	OK
Control the data call phone book content	
Command	AT+CPBR=1,3
Answer	+CPBR: 1,"+33476411294",145,"ETIC1" +CPBR: 2,"+33673687043",145,"ETIC2" +CPBR: 3,"+33TT....T",145,"ETIC3"

### **5.3. Setting up a data call using a digital input**

To set a data call, close the relay contact connected to the digital input 1 or 2 or 3.

The relay contact must be left closed during the call set up and during the data transmission.

While the MGI196 sets up the call, the LINE led will blink.

When the call will be established, the “I” digital output will be set closed.

**Step 3 : To clear the call, open the relay contact.**

### **5.4. Receiving an incoming call**

As the DIP switch 16 is set ON, the value of the parameter S2 is 2, it is why the MGI196 will answer automatically after 2 rings.

Take care that, if the DIP switch 8 has been set ON, the incoming calls are filtered; to be accepted, an incoming call must come from a number stored in the data call phone book lines 10 to 20. Other calls are rejected.

When an incoming call is detected and accepted, the communication with the calling party is established after 2 rings.

The digital output “I” is left closed as long as the modem will be on line.

---

## **6 Using AT commands to call or send SMS messages**

---

Set the DIP switch 12 OFF to authorize AT commands.

Set the DIP switch 16 OFF.

See appendix 1 for AT commands list (abstract).

See appendix 2 for S register list.



## **Appendix 1 : AT commands**

## **Appendix 2 : S registers**

<b>APPENDIX 1 : AT COMMANDS</b>
---------------------------------

<b>ATA</b>	<b>Instructs the modem to answer an incoming call</b> (Voir S0) When an incoming call is detected, and if the value of the register S0 is 0 (zero), the modem will send the indication " RING" and wait for the ATA command to accept the call.

<b>ATIQ</b>	<b>Selects the flow control</b>
<b>ATIQ0</b>	Turns off the flow control
<b>ATIQ1</b>	XON/XOFF
<b>ATIQ2</b>	The modem is ready when CTS is closed. RTS is not taken into account
<b>ATIQ3</b>	RTS/CTS flow control

<b>ATD TT..T</b>	<b>Dial command to the Nr TT...T</b>
------------------	--------------------------------------

<b>ATE</b>	<b>Turns the echo feature ON or OFF</b>
<b>E0</b>	The modem does not send echo characters of the AT commands
<b>E1</b>	The modem sends echo characters of the AT commands

<b>ATH</b>	<b>Causes the modem to hang up</b>
	That hanf up command can only be understood by the modem if it is on-line and once it has been turned into the command mode after receiving the escape sequence  The escape sequence is made of 1 silence (duration 1 s), three Escape character and 1 silence : <b>(pause 1 sec.) +++ (pause 1 sec.)</b> The Escape character can be selected and stored in the S2 register. The default Escape character is +. To clear a call, it is then possible to send the sequence hereafter to the modem : <b>(pause 1 sec.) +++ (pause 1 sec.) ATH0</b>

<b>ATO</b>	<b>Switches the modem to the on-line mode</b> When the modem is on-line and if it has been switched to the command mode after receiving the Escape sequence, the ATO commands switches the modem back to the on-line mode.
------------	---

<b>ATQn</b>	<b>Suppresses result codes</b>
<b>ATQ0</b>	The modem returns a result code to a command (ex: busy, carrier detect ....) The result code can be made of numeric figures or of characters; see ATV. The content of the result code can be changed; see ATX.
<b>ATQ1</b>	The modem is quiet.

<b>ATV</b>	<b>Sets result code form</b>
<b>ATV0</b>	Numeric
<b>ATV1</b>	Words

<b>ATXn</b>	<b>Result code content</b>
<b>ATX0</b>	Returns OK to AT commands Returns CONNECT
<b>ATX1</b>	Returns OK to AT commands Returns CONNECT + extensions
<b>ATX2</b>	Returns OK to AT commands Returns CONNECT + extensions Returns GSM tone indication;
<b>ATX3</b>	Returns OK to AT commands Returns CONNECT + extensions Returns called party busy state indications
<b>ATX4</b>	Returns OK to AT commands Returns CONNECT + extensions Returns GSM tone and called party busy state indications

<b>ATZ</b>	<b>Software reset</b>

<b>AT&amp;Cn</b>	<b>CD signal</b>
<b>&amp;C0</b>	CD is permanently left closed
<b>&amp;C1</b>	CD indicates the true state of the carrier of the remote modem.



<b>AT&amp;D</b>	<b>Controls DTR signal transitions</b>
<b>&amp;D0</b>	The modems ignores the state of the DTR signal. The call must be cleared remotely or using the +++ ATH command
<b>&amp;D1</b>	Setting DTR off switches the modem to command mode
<b>&amp;D2</b>	Setting DTR off causes the modem to clear the call.  An Incoming call will not be accepted as long as DTR will remain off even if S0 is different of 0. An incoming call will be accepted when DTR will be set ON..

<b>AT&amp;F</b>	<b>Restores the factory profile</b>
-----------------	-------------------------------------

<b>AT&amp;Sn</b>	<b>DSR status</b>
<b>AT&amp;S0</b>	DSR is permanently left closed
<b>AT&amp;S1</b>	DSR indicates the true state of the carrier of the remote modem.

<b>AT&amp;V</b>	<b>Causes the modem to display the current settings</b>
-----------------	---

<b>AT&amp;W</b>	<b>Stores the current settings to the user profile</b>
-----------------	--

<b>AT+GSN</b>	<b>Request the serial number identification</b> The modem returns IMEI code (International mobile station equipment identity)
---------------	--



AT+CLCK	Facility lock command
AT+CLCK="SC",0,"XX...X"	<p>AT+CLCK="SC",&lt;fac&gt;,&lt;pin&gt;</p> <p>&lt;fac&gt; parameter</p> <p><b>fac = 0</b> The PIN code will not be requested after power up Response : OK or error</p> <p><b>fac = 1</b> The PIN code will be requested after power up Response : OK or error</p> <p>&lt;pin&gt; = current PIN code example : AT+CLCK="SC",0,"XX...X" : The pin code will not be requested after power up (XY...Z is the current pin code)</p>

AT+CLIP	Enables or disables the presentation of the calling line identification
AT+CLIP=0	Disables the presentation Response OK
AT+CLIP=1	Enables the presentation Response OK

AT+CPBW	Write a telephone book entry
	<p>AT+CPBW= &lt;index&gt; &lt;number&gt; &lt;type&gt; &lt;text&gt; N,+33476411294,145,"ETIC"</p> <p>&lt;index&gt; : Location number at which the entry is written &lt;number&gt; Telephone number &lt;type&gt; = 145 is the tel number is preceded with the national code 129 otherwise. &lt;Text&gt; Text corresponding to the telephone number</p> <p><b>Example : AT+CPBW= &lt;index&gt; &lt;number&gt; &lt;type&gt; &lt;text&gt; N,+33476411294,145,"ETIC"</b></p>

AT+CPBW=N	Deletes the data call phone book content line N Answer OK
-----------	--

AT+CPBR=N	List the phone book entries AT+CPBR=<location N><location P> Example : AT+CPBR=N,P Response ; +CPBR: N,"+33476411294",145,"ETIC" etc... +CPBR: P,"+33673687043",145,"ETIC"
-----------	---

AT+CPIN	Enter PIN code
AT+CPIN?	<b>Response :</b> READY : No pin code is awaited SIM PIN : Waiting for a pin code SIM PUK : Waiting for SIM PUK
AT+CPIN=<pin>	<b>If the response is SIM PIN, the PIN CODE has to be entered.</b> <b>Unlocking the SIM card : AT+CPIN=&lt;pin&gt;</b> <b>Changing the Pin code : AT+CPIN=&lt;pin&gt; &lt;newpin&gt;</b> pin = current PIN code newpin = new pin code Example : Unlocking the SIM card : AT+CPIN="XX..X" !! The pin code has to be entered between commas.
AT+CPIN=<puk>	<b>If the response is SIM PUK, it means that a false PIN code has been entered; in that case, the PUK has to be entered</b> <b>AT+CPIN=&lt;puk&gt;</b> !! The PUK code has to be entered between commas.

AT+CMGD= N	Delete SMS entry line N
------------	-------------------------

AT+CMGL= ALL	Read the whole SMS directory <b>Response :</b> +CMGL: 1,"STO UNSENT","0673687029", alarme 1 +CMGL: 2,"STO UNSENT","0673687029", alarme 2 +CMGL: 3,"STO UNSENT","0673687029", alarme 3 etc...
--------------	---

<b>APPENDIX 2 : S REGISTERS</b>	
<b>The underlined values are the default value</b>	
N°	Function
<b>ATS0</b>	<b>Number of ring before accepting an incoming call (<u>000</u> à 255)</b>
	If S0=0, the DTE has to send ATA to the modem when it receives the RING sequence indicating an incoming call
<b>ATS0=N</b>	Response : OK
<b>ATS0?</b>	<XXX> OK
<b>ATS3</b>	<b>Write command line termination character (<u>000-013-127</u>)</b>
	This parameter setting determines the character recognized by TA to terminate an incoming command line. (013)
<b>ATS3=XXX</b>	Response : OK
<b>ATS3?</b>	<XXX> OK
<b>ATS4</b>	<b>Set response formatting character (<u>000-010-127</u>)</b>
	This parameter setting determines the character generated by the TA for result code and information text. Don't modify the default value (010)
<b>ATS4=XXX</b>	Response : OK
<b>ATS4?</b>	<XXX> OK
<b>ATS5</b>	<b>Write command line editing character (<u>000-008-127</u>)</b>
	This parameter setting determines the character recognized by TA as a request to delete the immediately preceding character from the command. Don't modify the default value (008)
<b>ATS5=XXX</b>	Response : OK
<b>ATS5?</b>	<XXX> OK
<b>ATS7</b>	<b>Set number of seconds to wait for connection completion (<u>000</u> à <u>060</u>)</b>
	Specifies the number of seconds the TA will wait for the completion setup when answering or originating a data call. Also referred "timeout". To put it plainly, this is the time to wait for the carrier signal. signal is received within the specified time, the TA hangs up.
<b>ATS7=XXX</b>	Response : OK
<b>ATS7?</b>	<XXX> OK

<b>ATS10</b>	<b>Set disconnect delay after indicating the absence of data carrier (000-002-254)</b>
	This parameter setting determines the amount of time, that the TA remains connected in absence of a data carrier. If the data carrier is detected before disconnect, the TA remains connected.
<b>ATS10=XXX</b>	Response : OK
<b>ATS10?</b>	<XXX> OK

Ro unlock a SIM card which has been locked :

AT+CPIN=<PUK>,<NEWPIN>



Distribué par :



Contact :  
hvssystem@hvssystem.com

Tél : 0326824929  
Fax : 0326851908

Siège social :  
2 rue René Laennec  
51500 Taissy  
France

**[www.hvssystem.com](http://www.hvssystem.com)**



13, Chemin du Vieux Chêne

38240 Meylan France

Tel : 33 4 76 04 20 00

Fax : 33 4 76 04 20 01

E-mail : [contact@etictelecom.com](mailto:contact@etictelecom.com)

**Web : [www.etictelecom.com](http://www.etictelecom.com)**