



# SmartLnx Industrial Modem HE200CGM750

## Products Specifications and Installation Data

### 1 PRODUCT DESCRIPTION

The Industrial Modem (CGM750) is a rugged industrial telephone modem designed for operation in harsh environments. The modem supports all standard Hayes AT commands and S-registers; it can be set-up as an external modem on any PC. The CGM750 is compatible with any telecommunications or dial-up networking software. The board contains:

- Modem and DAA chip set
- RJ11 Jacks – Two AMP 520425-2 RJ11 jacks are provided. One jack is for Line and one is for Handset (Phone).
- RS-232 Port
- Switching DC to DC power supply

### 2 SPECIFICATIONS

<b>Table 1 – CGM750 Specifications</b>	
<b>Telephone Line</b>	
Max. Data Rate	14.4 kbps (V.32)
Compatibility	V.32bis, V.32, V.22bis, V.22, V.23, V.21, Bell 212A and Bell 103
Data Compression	V.42bis and MNP 5 (default = disabled)
Error Correction	V.42 LAPM and MNP 2-4 (default = disabled)
Ringer Equivalent	0.1
Line Jack	RJ11
Phone Jack	RJ11
<b>RS-232 Port</b>	
Max. RS232 Rate	115.2 kbps
RS232 Signal Support	TXD, RXD, CTS, RTS, DCD, DTR, DSR, RI, GND
RS232 Connector	DB9 female, RS232
Command Set	All standard AT and S register commands
<b>General Characteristics</b>	
Input Supply Voltage	8 – 30 VDC
Steady State Current	80mA @ 24VDC (typical)
Certification	FCC Part 68 US: HRNMD01AHE200CGM, and Industry Canada ICCS-03
Operating Temperature	0 to 60 degree C.
Storage Temperature	-40 to 85 degree C.
Humidity	5 to 95% RH (Non-condensing)
Mounting	DIN rail
Dimensions	6.25" (158.75mm) x 3.12" (79.25mm) x 1.61" (40.89mm)

### 3 INSTALLATION

#### 3.1 Dimensions

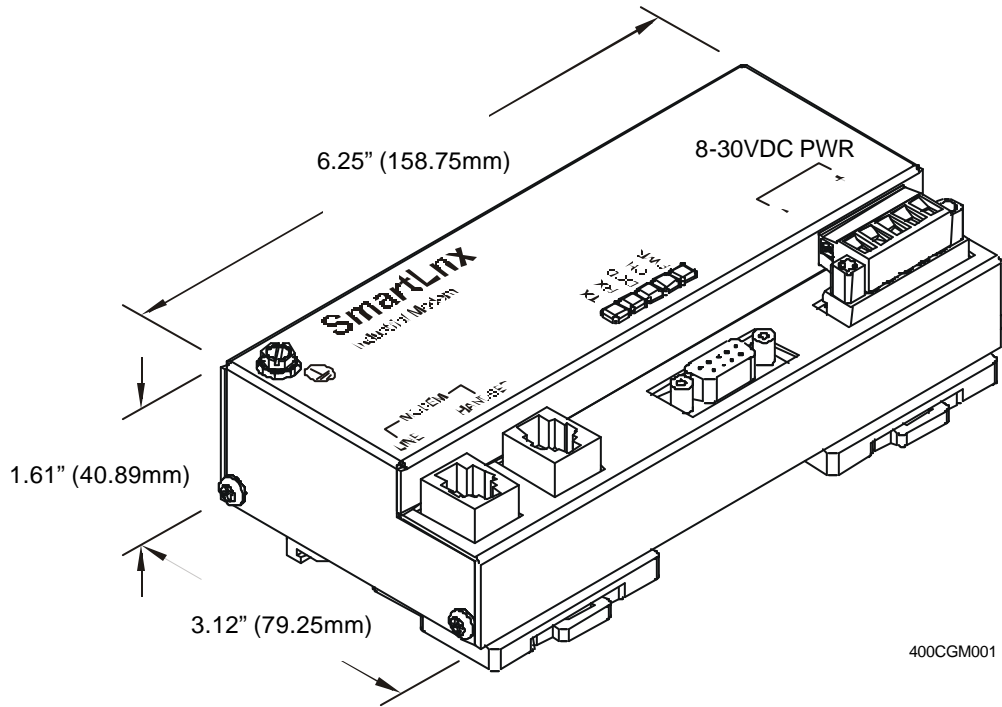


Figure 1 – CGM750 Dimensions

3.2 Connectors , Wiring, and Ports

a. Connectors

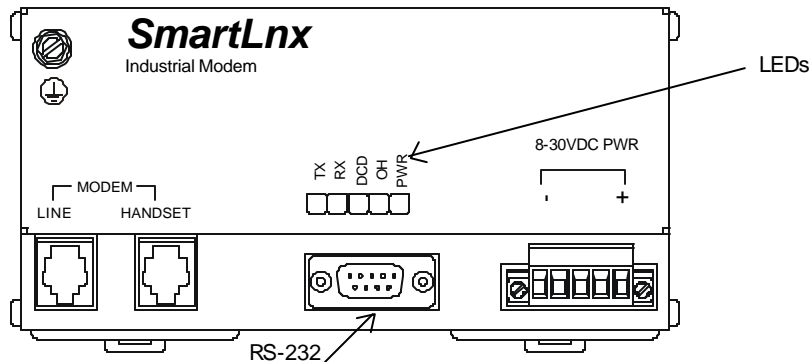


Figure 2 – CGM750 Connectors and Ports

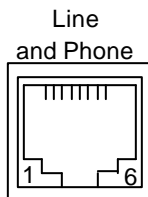


Figure 3 – Line and Phone Jack Connectors

Pin	Signal
1	NC
2	NC
3	RING
4	TIP
5	NC
6	NC

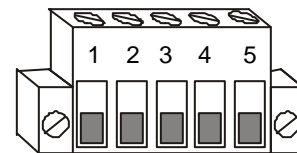


Figure 4 – Power Connector

Pin	Signal	Description
1	V-	Input power supply ground
2	NC	No Connect
3	NC	
4	NC	
5	V+	Input power supply voltage

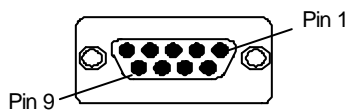


Figure 5 – RS-232

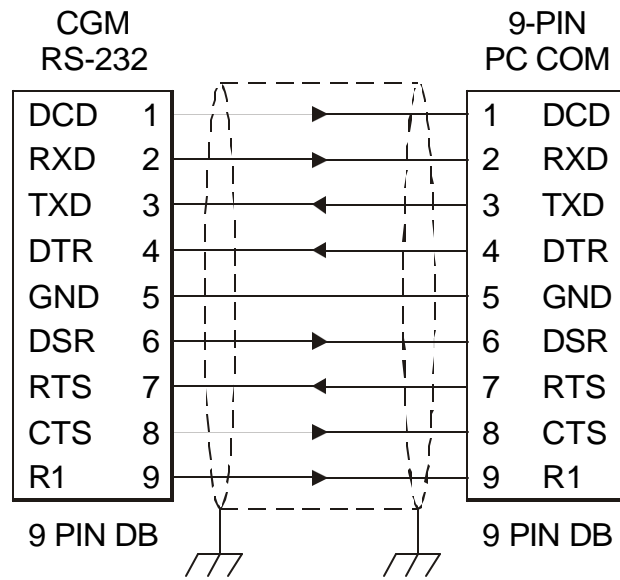
Pin	Signal	Description	Direction
1	DCD	Data Carrier Detect	Out
2	RXD	Received Data	Out
3	TXD	Transmitted Data	In
4	DTR	Data Terminal Ready	In
5	GND	Ground	-
6	DSR	Data Set Ready	Out
7	RTS	Request to Send	In
8	CTS	Clear to Send	Out
9	RI	Ring Indicate	Out



Figure 6 – LEDs

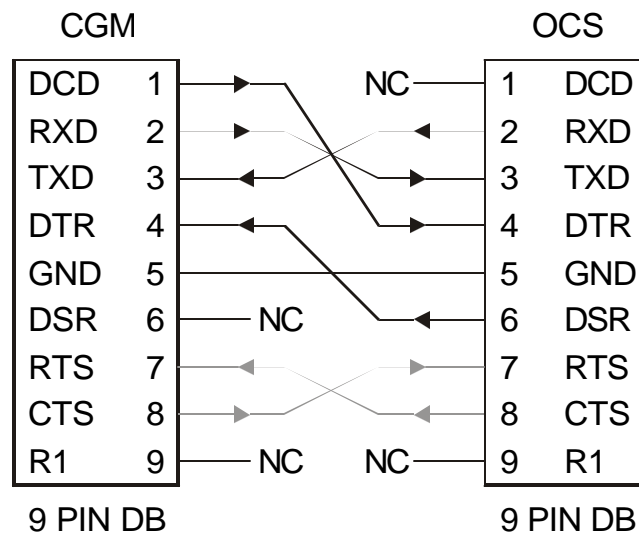
DCD	Data Carrier Detect – Modem has detected carrier on phone line
OH	Off Hook Indicator – Phone line is engaged
RX	Receive Data – Flashes as data is received from the phone line
TX	Transmit Data – Flashes as data is sent out the phone line
PWR	Power – On when power is present

b. RS-232 Cable Wiring



004CGM004

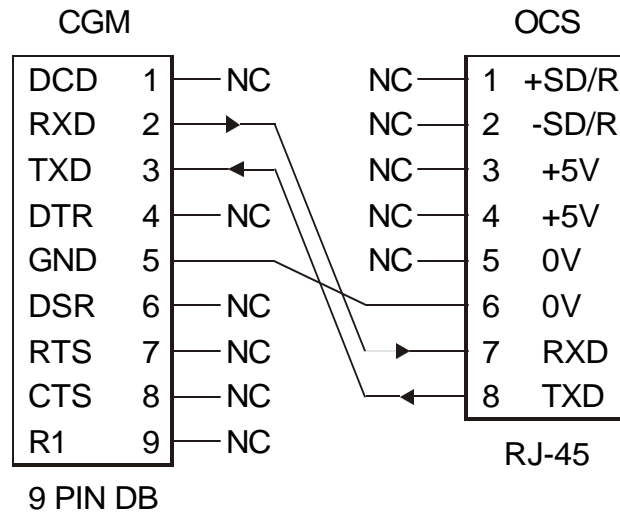
Figure 7- Modem to PC Cable



004CGM003

Figure 8 - Modem to OCS

c. RJ-45 Cable Wiring



004CGM005

Figure 9 - Modem to OCS RJ-45

d. Phone/Line RJ11 Jacks

Connect analog phone lines to the RJ-11 jacks as appropriate. One RJ-11 jack is provided to connect directly to a telephone (optional), and the second RJ-11 jack functions as the connection to the telephone network.

**Note:** For optimum noise immunity, it is recommended that the telephone line be carefully routed away from higher voltage and electrically noisy cables and devices.

## 4 MODEM CONFIGURATION

a. Default Configuration

The CGM750 modem is pre-configured at the factory to automatically receive calls, and communicate locally with many common automation devices (PLCs, etc.).

For this reason, the default factory modem init string is AT&D0&K0S0=1Q1, which causes the modem to ignore its DTR input, turn off handshaking flow control, enable auto-answer after one ring, and turn off result codes.

**b. Using the CGM750 with an OCS for programming (Default Configuration)**

The CGM750 modem is pre-configured at the factory for connection to an OCS programming port, so the OCS can answer calls received from a remote PC running the Cscape programming software.

For this reason, the default factory modem init string is AT&D0&K0S0=1Q1, which causes the modem to ignore its DTR input, turn off handshaking flow control, enable auto-answer after one ring, and turn off result codes.

If these default configuration settings are incorrect for your application, they can be modified using any terminal program. Simply type in the appropriate modem commands to modify the modem settings as required. For example, to enable result codes, type ATQ0 into the terminal program. When the modem has been reprogrammed as desired, type AT&W0 into the terminal program to store the settings in retentive memory. The CGM750 supports the standard AT modem command set. Contact Technical Support for full details on the AT modem command set.

**c. Using the CGM750 with an OCS for real-time data exchange**

The default settings will not work if OCS modem INIT, DIAL or ANSWER ladder function blocks are used to initialize, dial out or to answer a call from another OCS. If the OCS is using the modem in this way, modem result codes must be enabled (via the ATQ0 modem command).

When a positive edge occurs at the power flow input to an OCS modem INIT, DIAL or ANSWER function block, first the +++ escape sequence is sent to the modem to force it into command mode, then the ATE0S0=0V0X0&C1&D2 init string is sent to the modem, followed by the appropriate additional INIT, DIAL or ANSWER modem command, as programmed into the function block.

The ATE0S0=0V0X0&C1&D2 init string tells the modem: don't echo, don't auto-answer, produce numeric / simple result codes, indicate connection by activating the DCD output, and hang up if the DTR input becomes inactive. Unfortunately, the V0X0 portion of the init string does not override the default Q1 setting, so the user must either pre-configure the modem with ATQ0 or must employ a SEND function block in ladder to send the ATQ0 string to the modem, prior to activating any modem function blocks.

**Note: When using a SEND function block to send commands to the modem, AT commands must end with a carriage return character, which has a decimal value of 13.**

**d. Using the CGM750 with an OCS for both programming and real-time data exchange**

If the OCS is connected to a CGM750 for programming, and also needs to periodically exchange real-time data with another OCS (or other device) using the same port, the OCS ladder program should perform the following in ladder. (Also, refer to Items b and c for additional informal.)

1. Activate an OPEN function block to open the serial port in the desired mode.
2. Activate a SEND function block to send ATQ0 to the modem.
3. Activate INIT, DIAL and/or ANSWER modem function blocks to establish a connection with another device for data exchange.
4. Exchange data via SEND, RECV and/or MODBUS function blocks.
5. De-activate the DIAL or ANSWER modem function block to hang up the phone.
6. Activate a SEND function block to send ATQ1S0=1 to the modem.
7. Activate a CLOSE function block to close the serial port.
8. The serial port and modem are again ready to receive calls from Cscape.

## 5 SAFETY

All applicable codes and standards need to be followed in the installation of this product.

## 6 TECHNICAL ASSISTANCE

For assistance, contact Technical Support at the following locations:

**North America:**  
(317) 916-4274  
[www.heapg.com](http://www.heapg.com)

**Europe:**  
(+) 353-21-4321-266  
[www.horner-apg.com](http://www.horner-apg.com)

NOTES