GM-R700/ ST-K700

Bedienungsanleitung

EverMore Technology Inc.

EverMore Technology Inc.
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Inhalt

Einleitung

Überlick

- Evermores GPS Empfänger GM-R700/ ST-K700 ist ein hochsensibles GPS System mit niedrigem Stromverbrauch und kompakter Größe, dass durch seinen neusten 16-Kanal Chipsatz außerordentlich gute Datenqualität für Satellitennavigation bietet. Der 16-Kanal Nemerix Chipsatz aus dem Hause Trimble bietet einen sehr gutem Empfang und schnelle Updates. Er eignet sich für Strassennavigation, aber auch andere Navigationseinsätze auf dem Wasser und in der Luft.
- Das Global position system (GPS) ist vom amerikanischen Verteidigungsministerium entwickelt und unter deren Verantwortung. Genauigkeit und Erreichbarkeit ist abhängig vom Ministerium.
- Für ihre Sicherheit sollten sie die Navigationseinheit nicht während der Fahrt bedienen.
- Wenn Sie das Gerät in Gebäuden, Tunnel oder im Schatten großer Gebäude neben ihnen verwenden, so kann es zu Empfangsstörungen kommen.

Überblick

Der GM-R700 GPS Empfänger bietet die folgenden Features

- Integrierter High-Performance NEMERIX Chipsatz.
- Kaltstartzeit in nur 50 Sekunden
- Niedriger Stromverbrauch
- 16 Kanal parallel Satellitensuche
- Unterstützt Standard NMEA-0183 V3.0 Protokoll
- Optimale Fehlerkorrektur
- Eingebaute Patchantenne
- Eingebaute Batterie für langen Datenerhalt und schnellen Warmstart
- Kleine Bauart: 51mm x 42.5mm x 17.3mm (2.01”x1.67”x0.68”), bei einem Gewicht von nur 62 Gramm.

Lieferumfang

Bevor Sie die Anwendung benutzen, sollten sie sich davon überzeugen, dass alle aufgeführten Artikel in der Packung enthalten sind:

- GPS Kabelempfänger
- CD mit Bedienungsanleitung Englisch/ Deutsch
- Kabelsatz für KfZ oder Laptop

Start des GPS Empfängers

Start	Beschreibung
Kalt Start	Der Kaltstart benötigt beim ersten Start die längste Zeit. Bei der Erstinstallation sollten sie den GPS Empfänger auf jeden Fall im freien Gelände zum Einsatz bringen und für die Erstkonfiguration der 3-dimensionalen Position und Kalender Up-Dates bis zu 15 - 20 Minuten rechnen. Wenn sie (a) das System zum ersten Mal starten, (b) der Empfänger mehr als 3 Monate nicht im Gebrauch war oder er sich mehr als 500 KM entfernt vom letzten Einsatzort befindet oder (c) der interne Batteriespeicher eine Fehlfunktion hatte, verlängert sich die Set-up Zeit.
Warm Start	Warm Start bedeutet, dass der Empfänger Datums, Zeit und Positionsdaten von der letzten Anwendung noch im Speicher hat, er war zwischen 1 Woche und 2 Tagen nicht mehr im Betrieb. Die Zeit aktuelle Position zu fixieren ist weitaus kürzer als im Kaltstartbetrieb.
Heißstart	In diesem Szenario war der Empfänger weniger als 2 Stunden nicht mehr im Betrieb und frischt nur die Satellitenposition auf um zügige Navigation zu gewährleisten.
Reaktion	Reaktion bedeutet, die Zeit in der der Empfänger nach Störung durch z.B. ein Gebäude/ Straßenschlucht wieder Satelliten empfängt.

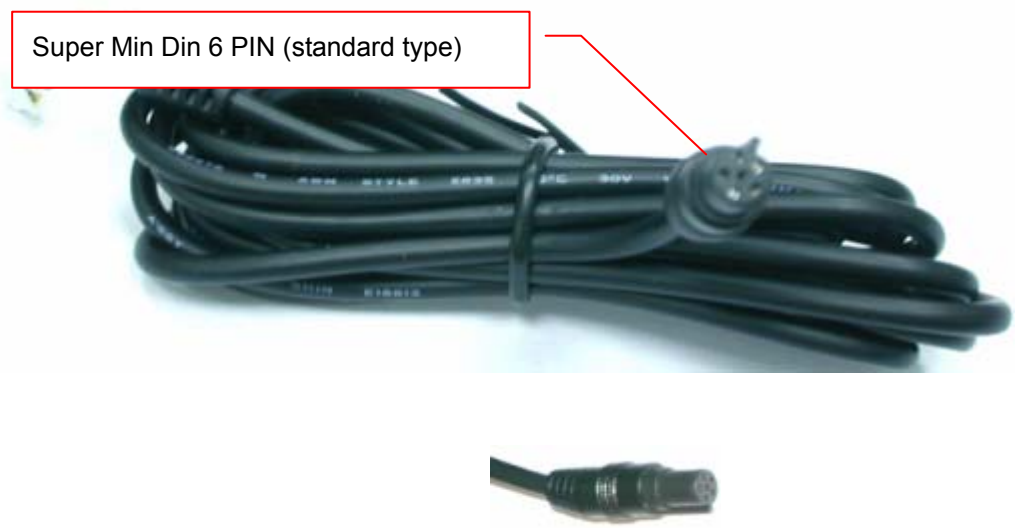
Technische Spezifikationen/ Technische Leistungsmerkmale

16 Kanal GPS Empfänger, Hersteller, Evermore Technology, Chipsatz Nemerix / Trimble

Generell	L1 1575.42MHz, C/A code 1.023 MHz chip rate
Empfang:	16 Kanal (max), parallel
Empfindlichkeit	-152 dBm
Genauigkeit	3,25m CEP (50%), 9m (90%) A
Geschwindigkeit	0.1 m/sec without S/A
Zeit	± 100ns synchronized to GPS time
Daten Akquisition	
- Kaltstart	< 50 Sek (typisch)
- Warmstart	< 38 Sek (typisch)
- Heißstart	< 17 Seek
Reaktionszeit	1sek
Betriebsumgebung:	
Höhe	18.000 Meter maximal
Geschwindigkeit	
- Horizontal	300km/Std
- Vertikal	36km/Std max
Beschleunigung	2g Max
Protokol	NMEA-0183, version 3.0 @ 9600 baud, 8-None-1, 9600 Baud
Datumsformat	WGS-84, andere können programmiert werden
NMEA Messages	GGA, GSA, GSV, RMC und VTG. 9600 baud rate
	8 bits data, 1 start, 1 stop, no parity. (Optionale baud rate: 4800,19200, 38400)
Strom	5V ± 0.5Vp-p DC input
Stromaufnahme	33 mAh
Betriebstemperatur	von -40oC bis +80oC
Lagertemperatur	von -50oC bis +90oC
Luftfeuchtigkeit	5% bis 90%
Interface Anschluß	Mini Din 6 Pin, USB
Abmessungen	51mm x 42mm x 17.3mm
Gewicht	78g
Kfz Kabelsatz	Input voltage: DC12V bis 24V, Output: 5V/2A

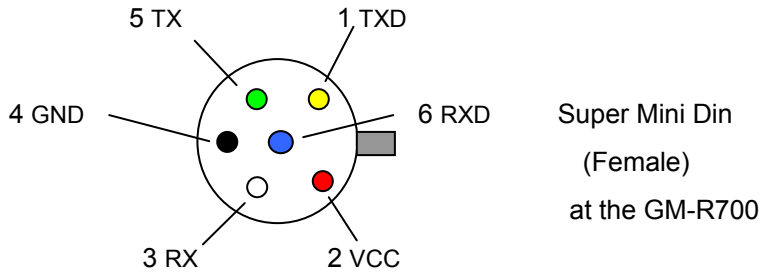
Hardware

Auslieferunszustand Super Mini Din 6 Pin Kabel:



SP6P Connector (Female)

Pin	Color	Function	Input/Output	Level
1	Yellow	TXD	Output	3.3V, LVTTL
2	Red	VCC	Power Supply	5V
3	White	RX	Input	12V, RS232
4	Black	GND		0V, Ground
5	Green	TX	Output	12V, RS232
6	Blue	RXD	Input	3.3V, LVTTL



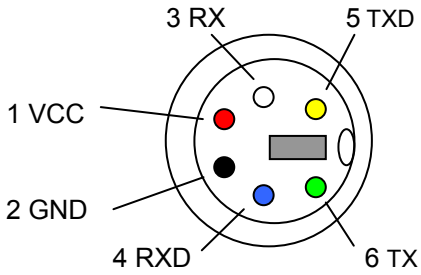
Stecker PIN Belegung

Weitere mögliche Kabel PS/2, weibl. Anschlusse

GM-R700 Real Picture

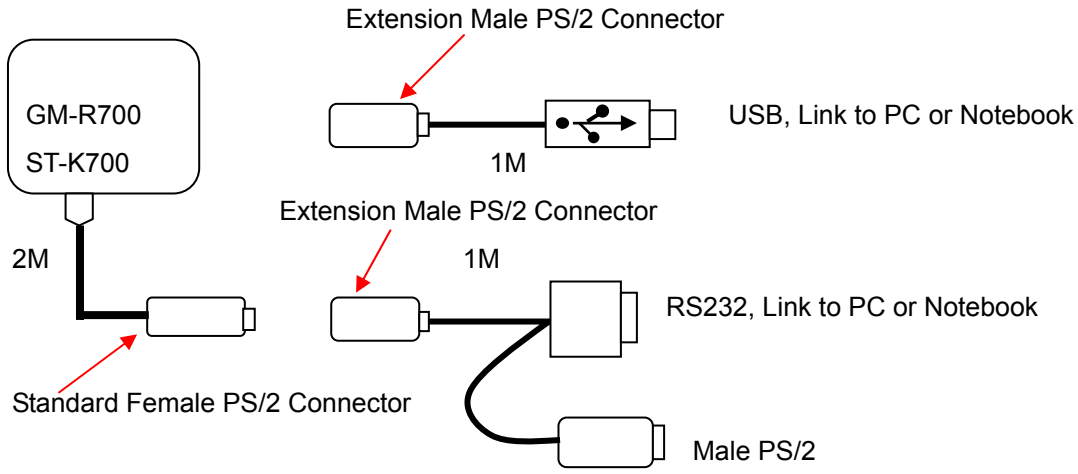
PS/2 Female Connector Pin Assignment

Pin	Function	Input/Output	Level
1	VCC	Power Supply	5V
2	GND		
3	RX	Input	12V, RS232
4	RXD	Input	3.3V, LVTTL
5	TXD	Output	3.3V, LVTTL
6	TX	Output	12V, RS232



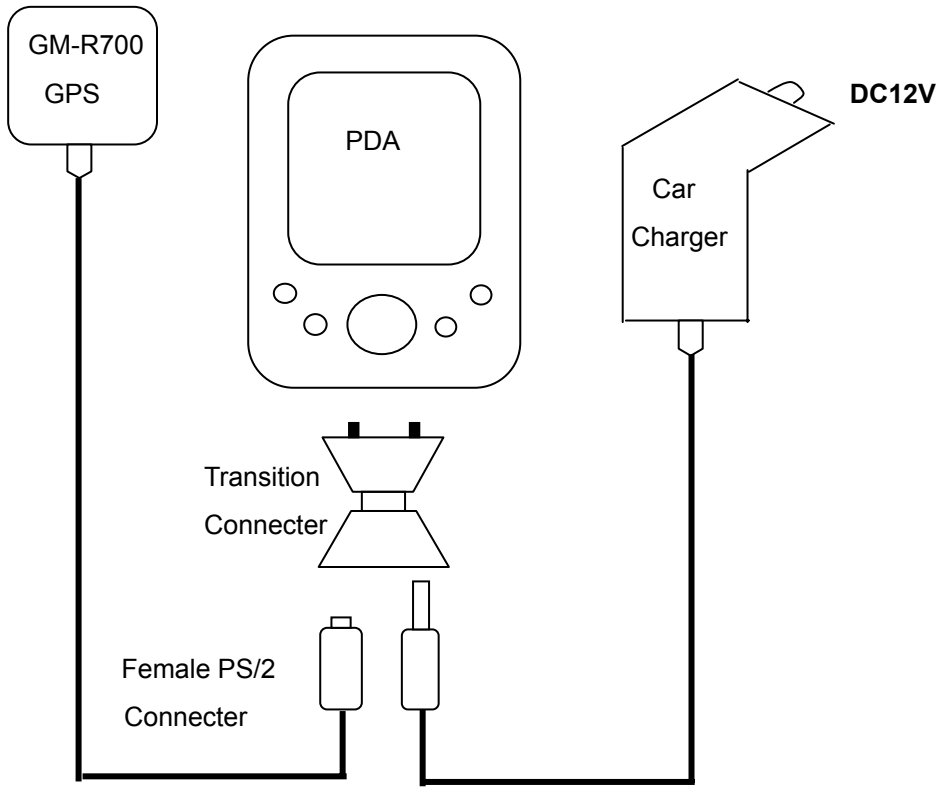
PS/2 (Female)
at the GM-R700

Systematische Darstellung bei PS/2 Interface



GM-R700 Link to Host Device Diagram

Am Beispiel mit Multstecker



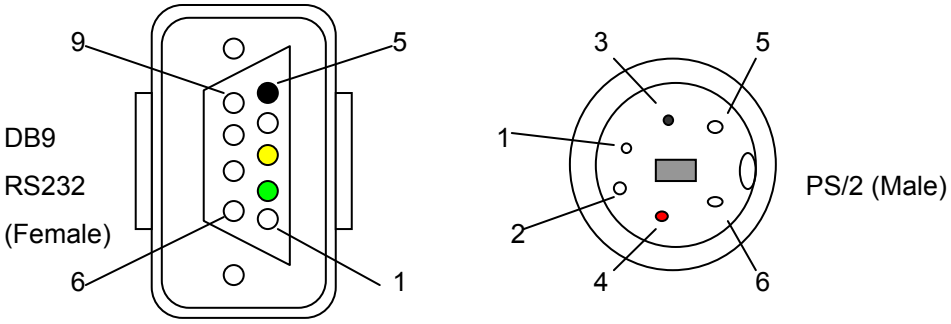
GM-R700 Link to PDA Diagram

Weitere mögliche GM-R700 Kabel

9 Pins Female and PS/2 Male Connector

DB9 Connector (Female)

Pin	Function	Input/Output	Level
1	NC		
2	TX	Output	RS232
3	RX	Input	RS232
4	NC		
5	GND	Ground	0V
6	NC		
7	NC		
8	NC		
9	NC		



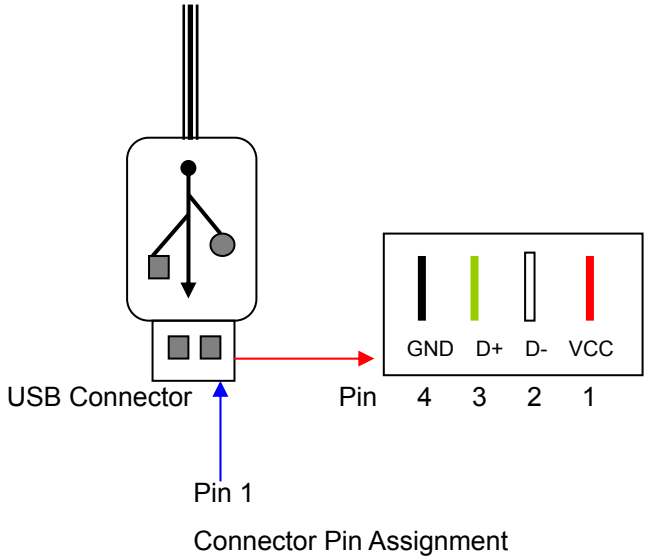
Connector Pin Assignment

PS/2 Connector (Male)

Pin	Function	Pin	Function	Pin	Function
1	NC	3	GND	5	NC
2	NC	4	VCC	6	NC

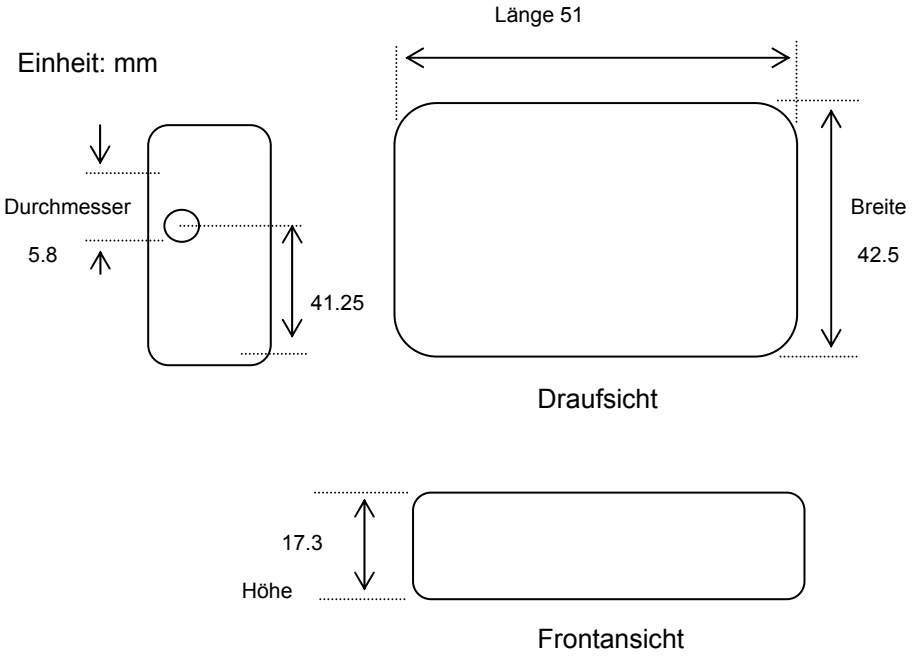
USB Connector

Pin	Function	Color
1	VCC, 5V	Red
2	D-	White
3	D+	Green
4	GND	Black

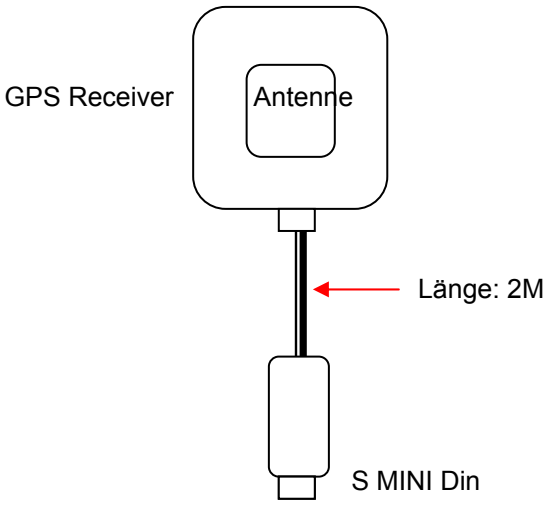


Connector Pin Assignment

GM-R700 Dimension



Technische Darstellung

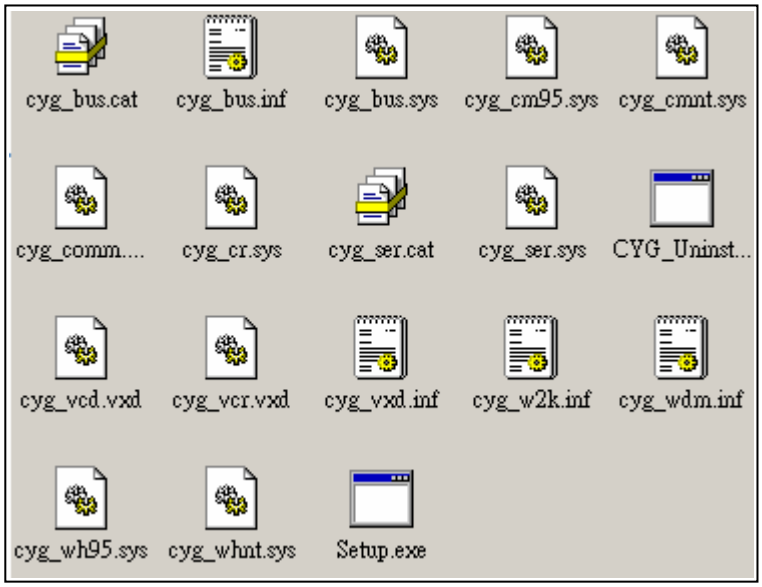


GM-R700

USB Treiber Installation

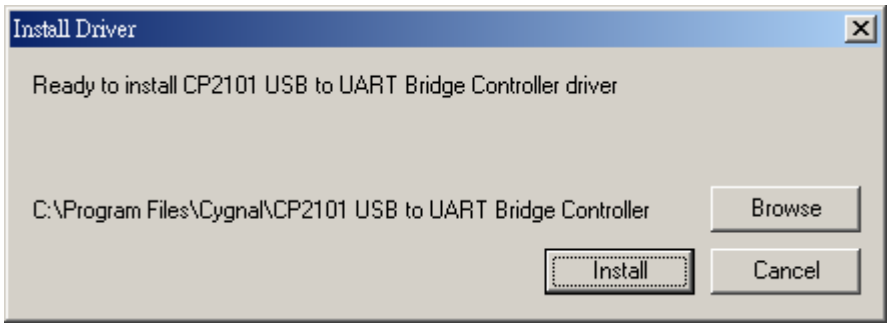
USB Treiberinstallation – auf der beigelegten CD finden die den **"GPS USB Driver Setup.pdf ".**

Step 1: Copy entire USB driver folder from CD to hard disk



Step 2: Double click the " Setup.exe " icon

Step 3: Press "Install" button



Step 4: Press "OK" button

Step 5: Restart PC system

Step 6: Plug-in GPS to PC USB port

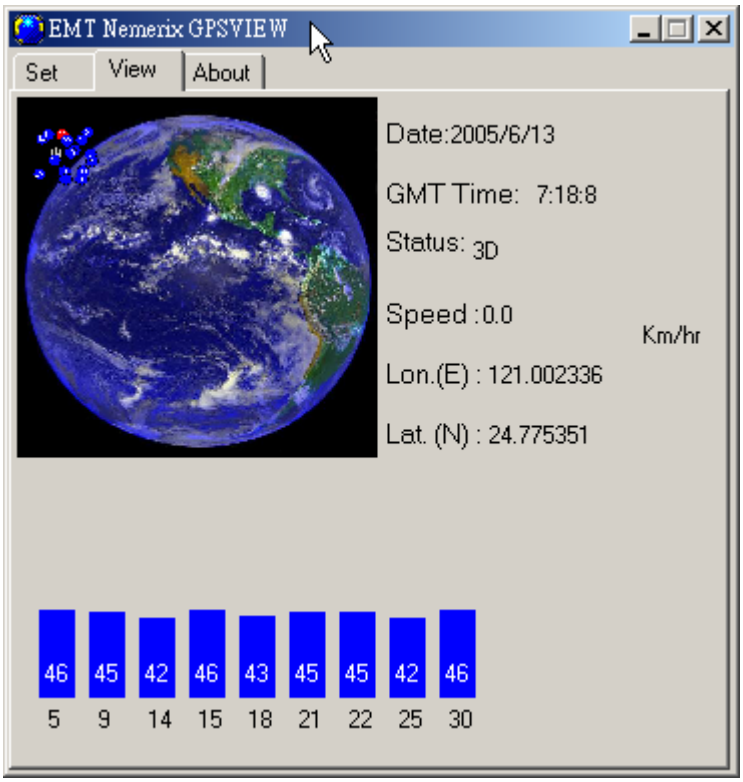
Step 7 Check enable COM port number

Betrieb und Test

Sie können das Dtaenprotokoll und die Kommunikation, Baudrate ändern. Die Software und das Manual stehen zum Download von unserer Seite bereit.

Below list GM-R700 software tools

For example double click 700_SeriesGPSTest.exe to test GM-R700



Software Specification

GM-R700 NMEA Protocol

The GM-R700 software is capable of supporting the following NMEA message formats

NMEA Message Prefix	Format	Direction
$GPGGA(1)*	GPS fix data.	Out
$GPGLL	Geographic position Latitude / Longitude.	Out
$GPGSA(3)*	GNSS DOP and actives satellites	Out
$GPGSV(3)*	Satellites in view.	Out
$GPRMC(1)*	Recommended minimum specific GNSS data.	Out
$GPVTG(1)*	Velocity and track over ground.	Out
$GPZDA	Date and time.	Out

*: (1): 1sec output 1msg , (3): 3sec output 1msg , 9600 baud rate (Standard output)

General NMEA Format

The general NMEA format consists of an ASCII string commencing with a '$' character and terminating with a <CR><LF> sequence. NMEA standard messages commence with 'GP' then a 3-letter message identifier. The message header is followed by a comma delimited list of fields optionally terminated with a checksum consisting of an asterix '*' and a 2 digit hex value representing the checksum. There is no comma preceding the checksum field. When present, the checksum is calculated as a bitwise exclusive of the characters between the '$' and '*'. As an ASCII representation, the number of digits in each number will vary depending on the number and precision, hence the record length will vary. Certain fields may be omitted if they are not used, in which case the field position is reserved using commas to ensure correct interpretation of subsequent fields.

The tables below indicate the maximum and minimum widths of the fields to allow for buffer size allocation.

$GPGGA

This message transfers global positioning system fix data. The $GPGGA message structure is shown below:

Field	Format	Min chars	Max chars	Notes
Message ID	$GPGGA	6	6	GGA protocol header.
UTC Time	hhmmss.sss	2,2,2.3	2,2,2.3	Fix time to 1ms accuracy.
Latitude	float	3,2.4	3,2.4	Degrees * 100 + minutes.
N/S Indicator	char	1	1	N=north or S=south
Longitude	float	3,2.4	3,2.4	Degree * 100 + minutes.
E/W indicator	Char	1	1	E=east or W=west
Position Fix Indictor	Int	1	1	0: Fix not available or invalid. 1: GPS SPS mode. Fix available.
Satellites Used	Int	2	2	Number of satellites used to calculate fix.
HDOP	Float	1.1	3.1	Horizontal Dilution of Precision.
MSL Altitude	Float	1.1	5.1	Altitude above mean seal level
Units	Char	1	1	M Stands for “meters”.
Geoid Separation	Int	(0) 1	4	Separation from Geoids can be blank.
Units	Char	1	1	M Stands for “meters”.
Age of Differential Corrections	int	(0) 1	5	Age in seconds Blank (Null) fields when DGPS is not used.
Diff Reference Corrections	int	4	4	0000.
Checksum	*xx	(0) 3	3	2 digits.
Message terminator	<CR> <LF>	2	2	ASCII 13, ASCII 10.

$GPGLL

This message transfers Geographic position, Latitude, Longitude, and time. The $GPGLL message structure is shown below:

Field	Format	Min chars	Max chars	Notes
Message ID	$GPGLL	6	6	GLL protocol header.
Latitude	Float	1,2.1	3,2.4	Degree * 100 + minutes.
N/S Indicator	Char	1	1	N=north or S=south.
Longitude	Float	1,2.1	3,2.4	Degree * 100 + minutes.
E/W indicator	Character	1	1	E=east or W=west.
UTC Time	hhmmss.sss	1,2,2.1	2,2,2.3	Fix time to 1ms accuracy.
Status	Char	1	1	A Data Valid. V Data invalid.
Mode Indicator	Char	1	1	A Autonomous
Checksum	*xx	(0) 3	3	2 digits.
Message terminator	<CR><LF>	2	2	ASCII 13, ASCII 10.

$GPGSA

This message transfers DOP and active satellites information. The $GPGSA message structure is shown below:

Field	Format	Min chars	Max chars	Notes
Message ID	$GPGSA	6	6	GSA protocol header.
Mode	Char	1	1	M➔ Manual, forced to operate in selected mode. A➔ Automatic switching between modes.
Mode	Int	1	1	1➔.Fix not available. 2➔2D position fix. 3➔3D position fix.
Satellites Used	Int	2	2	SV on channel 1.
Satellites Used	Int	2	2	SV on channel 2.
…	.	..	..	..
Satellites Used	Int	2	2	SV on channel 12.
PDOP	Float	1.1	3.1	
HDOP	Float	1.1	3.1	
VDOP	Float	1.1	3.1	
Checksum	*xx	0	3	2 digits
Message terminator	<CR> <LF>	2	2	ASCII 13, ASCII 10

$GPGSV

This message transfers information about satellites in view. The $GPGSV message structure is shown below. Each record contains the information for up to 4 channels, allowing up to 12 satellites in view. In the final record of the sequence the unused channel fields are left blank with commas to indicate that a field has been omitted.

Field	Format	Min chars	Max chars	Notes
Message ID	$GPGSV	6	6	GSA protocol header.
Number of messages	Int	1	1	Number of messages in the message sequence from 1 to 3.
Message number	Int	1	1	Sequence number of this message in current sequence, form 1 to 3.
Satellites in view	Int	1	2	Number of satellites currently in view.
Satellite Id	Int	2	2	Satellite vehicle 1.
Elevation	Int	1	3	Elevation of satellite in degrees.
Azimuth	Int	1	3	Azimuth of satellite in degrees.
SNR	Int	(0) 1	2	Signal to noise ration in dBHz, null if the sv is not in tracking.
Satellite Id	Int	2	2	Satellite vehicle 2.
Elevation	Int	1	3	Elevation of satellite in degrees.
Azimuth	Int	1	3	Azimuth of satellite in degrees.
SNR	Int	(0) 1	2	Signal to noise ration in dBHz, null if the sv is not in tracking.
Satellite Id	Int	2	2	Satellite vehicle 3.
Elevation	Int	1	3	Elevation of satellite in degrees.
Azimuth	Int	1	3	Azimuth of satellite in degrees.
SNR	Int	(0) 1	2	Signal to noise ration in dBHz, null if the sv is not in tracking.
Satellite Id	Int	2	2	Satellite vehicle 4.
Elevation	Int	1	3	Elevation of satellite in degrees.
Azimuth	Int	1	3	Azimuth of satellite in degrees.
SNR	Int	(0) 1	2	Signal to noise ration in dBHz, null if the sv is not in tracking.
Checksum	*xx	(0) 3	3	2 digits.
Message terminator	<CR> <LF>	2	2	ASCII 13, ASCII 10.

$GPRMC

This message transfers recommended minimum specific GNSS data. The $GPRMC message format is shown below.

Field	Format	Min chars	Max chars	Notes
Message ID	$GPRMC	6	6	RMC protocol header.
UTC Time	hhmmss.sss	1,2,2.1	2,2,2.3	Fix time to 1ms accuracy.
Status	char	1	1	A Data Valid. V Data invalid.
Latitude	Float	1,2.1	3,2.4	Degrees * 100 + minutes.
N/S Indicator	Char	1	1	N=north or S=south.
Longitude	Float	1,2.1	3,2.4	Degrees * 100 + minutes.
E/W indicator	Char	1	1	E=east or W=west.
Speed over ground	Float	1,1	5.3	Speed over ground in knots.
Course over ground	Float	1.1	3.2	Course over ground in degrees.
Date	ddmmyy	2,2,2	2,2,2	Current date.
Magnetic variation	Blank	(0)	(0)	Not used.
E/W indicator	Blank	(0)	(0)	Not used.
Mode	Char	1	1	A Autonomous
Checksum	*xx	(0) 3	3	2 digits.
Message terminator	<CR> <LF>	2	2	ASCII 13, ASCII 10.

$GPVTG

This message transfers Velocity, course over ground, and ground speed. The $GPVTG message format is shown below.

Field	Format	Min chars	Max chars	Notes
Message ID	$GPVTG	6	6	VTG protocol header.
Course (true)	Float	1.1	3.2	Measured heading in degrees.
Reference	Char	1	1	T = true heading.
Course (magnetic)	Float	1.1	3.2	Measured heading (blank).
Reference	Char	1	1	M = magnetic heading.
Speed	Float	1.1	4.2	Speed in knots.
Units	Char	1	1	N = knots.
Speed	Float	1.1	4.2	Speed
units	Char	1	1	K = Km/h.
Mode	Char	1	1	A Autonomous
Checksum	*xx	(0) 3	3	2 digits.
Message terminator	<CR> <LF>	2	2	ASCII 13, ASCII 10.

$GPZDA

This message transfers UTC Time and Date. Since the latency of preparing and transferring the message is variable, and the time does not refer to a particular position fix, the second precision is reduced to 2 decimal places. The $GPZGA message format is shown below.

Field	Format	Min chars	Max chars	Notes
Message ID	$GPZDA	6	6	ZDA protocol header.
UTC time	hhmmss.ss	2,2,2.2	2,2,2.2	00000000.00 to 235959.99
UTC day	dd	2	2	01 to 31, day of month.
UTC month	mm	2	2	01 to 12.
UTC Year	yyyy	4	4	1989-9999.
Local zone hours	Int	(-)2	(-)2	Offset of local time zone (-13) to 13.
Local zone minutes	Unsigned	2	2	
Checksum	*xx	(0) 3	3	2 digits.
Message terminator	<CR> <LF>	2	2	ASCII 13, ASCII 10.

Limited Warranty

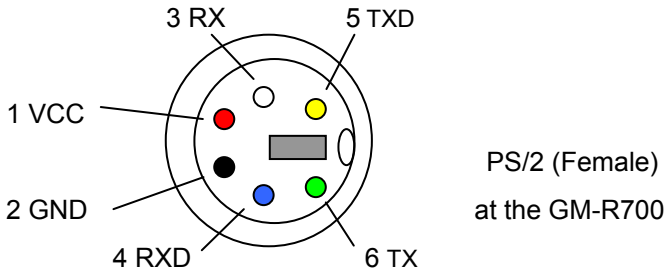
The GM-R700 is warranted to be free from defects in material and functions for one year from the date of purchase. Any failure of this product within this period under normal conditions will be replaced at no charge to the customers

Bestellinformationen

Standard Type Cable (Female PS/2)

PS/2 Female Connector Pin Assignment

Pin	Function	Input/Output	Level
1	VCC	Power Supply	5V
2	GND		
3	RX	Input	12V, RS232
4	RXD	Input	3.3V, LVTTL
5	TXD	Output	3.3V, LVTTL
6	TX	Output	12V, RS232



Female PS/2 Connectors Pin Assignment

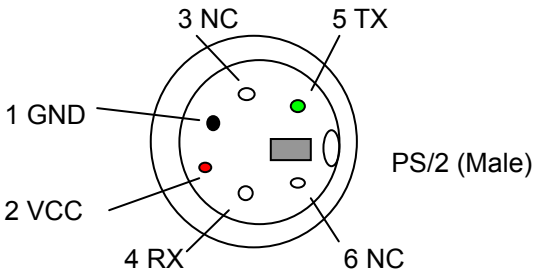
Optional Kabeltypen

Male PS/2 Cable

For all kind definition

PS/2 Connector (Male)

Pin	Function	Input/Output	Level
1	GND	Ground	0V
2	VCC	Power Supply	5V
3	RXD	Input	3.3V, LVTTL
4	RX	Input	RS232
5	TX	Output	RS232
6	TXD	Output	3.3V, LVTTL



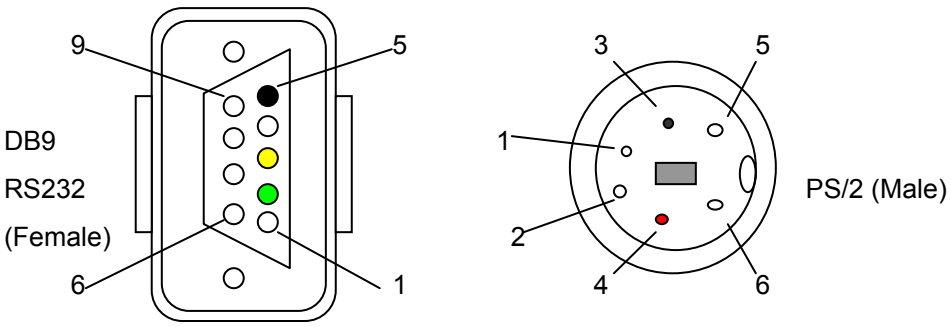
Male PS/2 Connectors Pin Assignment

RS-232 Cable (DB9 9 Pins Female + PS/2 Male)

For all kind definition

DB9 Connector (Female)

Pin	Function	Input/Output	Level
1	NC		
2	TX	Output	RS232
3	RX	Input	RS232
4	NC		
5	GND	Ground	0V
6	NC		
7	NC		
8	NC		
9	NC		



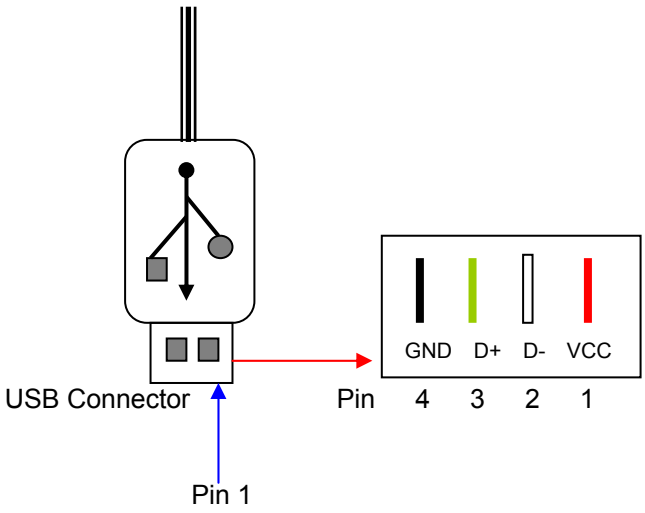
Connector Pin Assignment

PS/2 Connector (Male)

Pin	Function	Pin	Function	Pin	Function
1	NC	3	GND	5	NC
2	NC	4	VCC	6	NC

USB Cable (With USB Bridge Controller IC)

Pin	Function	Color
1	VCC, 5V	Red
2	D-	White
3	D+	Green
4	GND	Black



Connector Pin Assignment

Mögliche Kabelsätze für den GPS Kabelempfänger

Input voltage: DC12V~24V, Output: 5V/2A

ITEM	Description
1	Car charger for ACER N20
2	Car charger for ACER S60
3	Car charger for ASUS A600
4	Car charger for ASUS A620 / A620BT
5	Car charger for CASIO E115
6	Car charger for CASIO E125/EM500
7	Car charger for CASIO E200
8	Car charger for DELL AXIM X3
9	Car charger for DELL AXIM X5
10	Car charger for Eten P300 / M500
11	Car charger for HP Jonada
12	Car charger for IPAQ iPAQ 38xx/39xx/22xx/4x/5x/Rx/RZ/Hx serial
13	Car charger for IPAQ 36XX/37XX
14	Car charger for Mitac Mio 338/528/558
15	Car charger for NEC
16	Car charger for PALM 500/505/T3
17	Car charger for PALM Vx
18	Car charger for Siemens Loox
19	Car charger for SONY Nxx Series
20	Car charger for SONY Txx
21	Car charger for Toshiba E330/E740
22	Car charger for Toshiba E400
23	Car charger for Toshiba E570
24	Car charger for Toshiba E800
25	Car charger for XDA/T-Mobile MDA
26	Car charger for XDA-II/T-Mobile MDA
27	Car charger for Yakumo Delta 300
28	Car charger for Yakumo Omnikron
29	Car charger for Anex TEK SP230
30	Car charger for Acer N30/N35/N50
31	Car charger for Dell Axim X50V/X50
32	Car charger for ASUS A716 / A730 / A730W / P505
33	Car charger for Palm T5 / Treo 650/Tungsten E2