SI-GATE GMBH

FMS-500

Reference Guide

Contents

Introduction

Congratulations on your purchase of the Si-Gate™ FMS-500 Fleet Manager. The FMS-500 is a very unique hardware system which offers possibilities not found in typical AVL systems. This includes multiple redundant wireless systems, vehicle communication possibilities in many protocol languages, & several communication ports.

The FMS-500 is able to gather important vehicle data by communicating with different vehicle bus protocols such as CAN. It then transmits this data together with NMEA signals from its built in GPS receiver. The transmission is an overlapped system using multiple communication protocols via DTE compatible V.24, GPRS, or WLAN. This provides an added security when it is critical that there is not an interruption in the flow of data. From interpretting AVL signals, incedent recording data, journey data,vehicle user data, vehicle diagnostic information, configurable warning codes, and many other variables, the Si-Gate FMS-500 leaves nothing open for speculation.

For more information on the FMS-500's you are welcome to contact us or to visit *www.si-gate.com* for additional information which may not be presented in this manual.

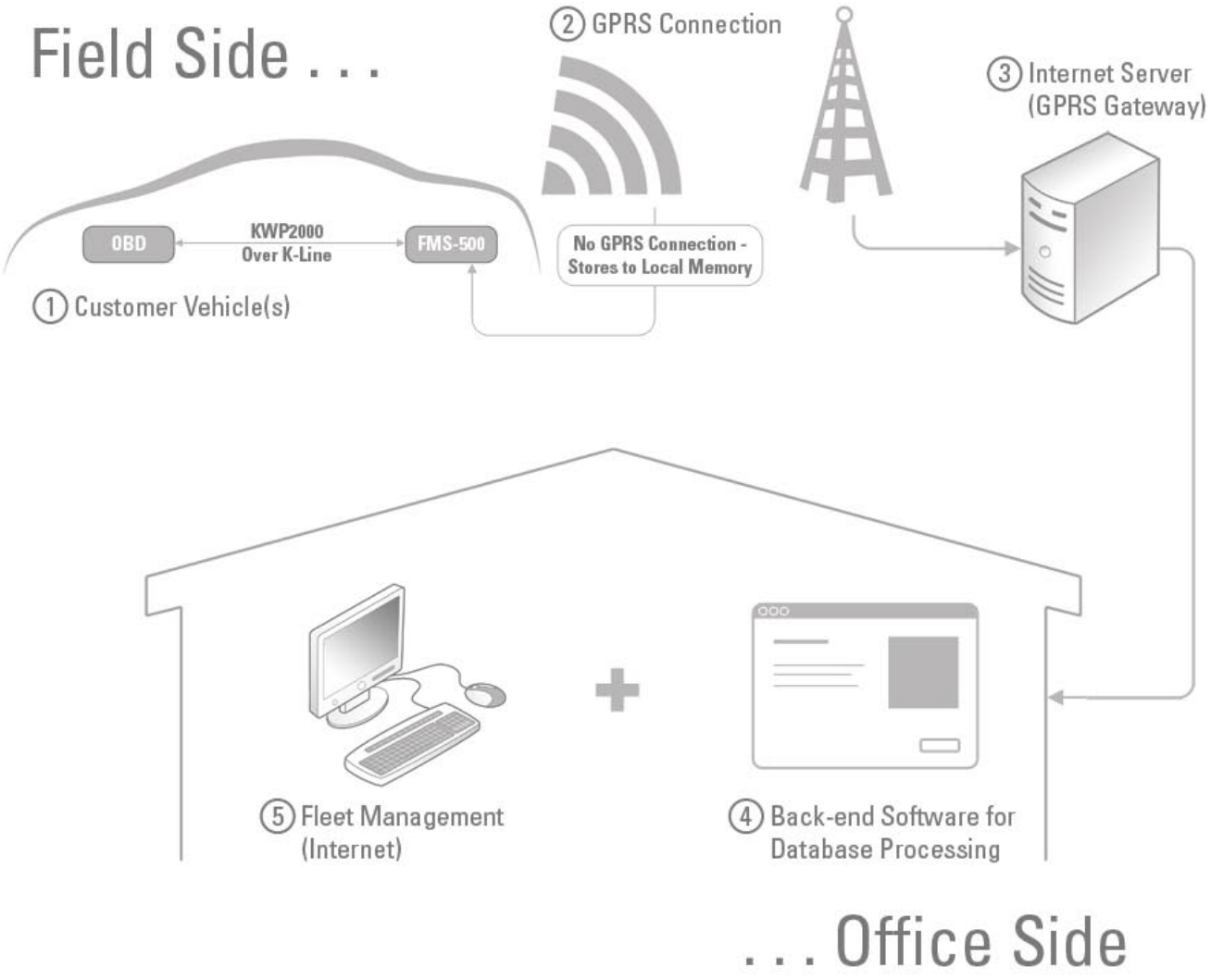
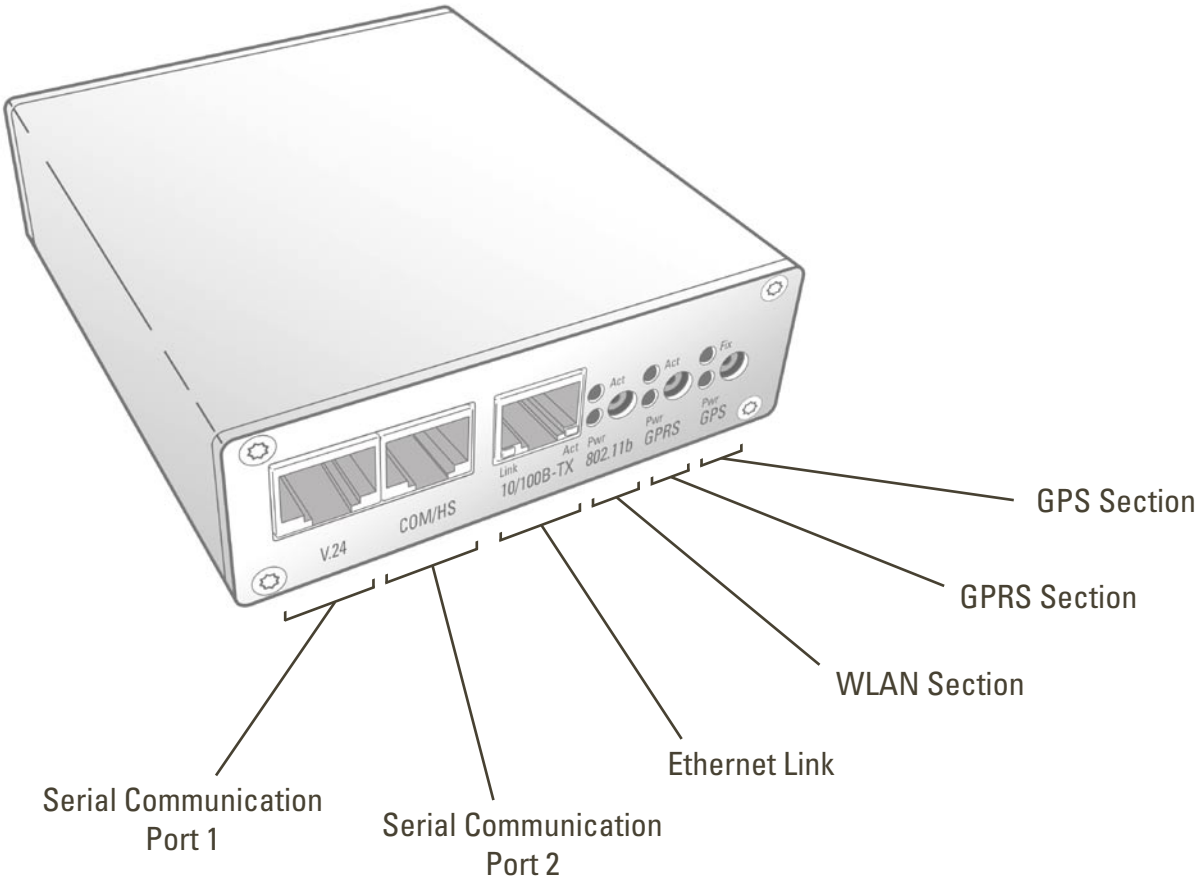
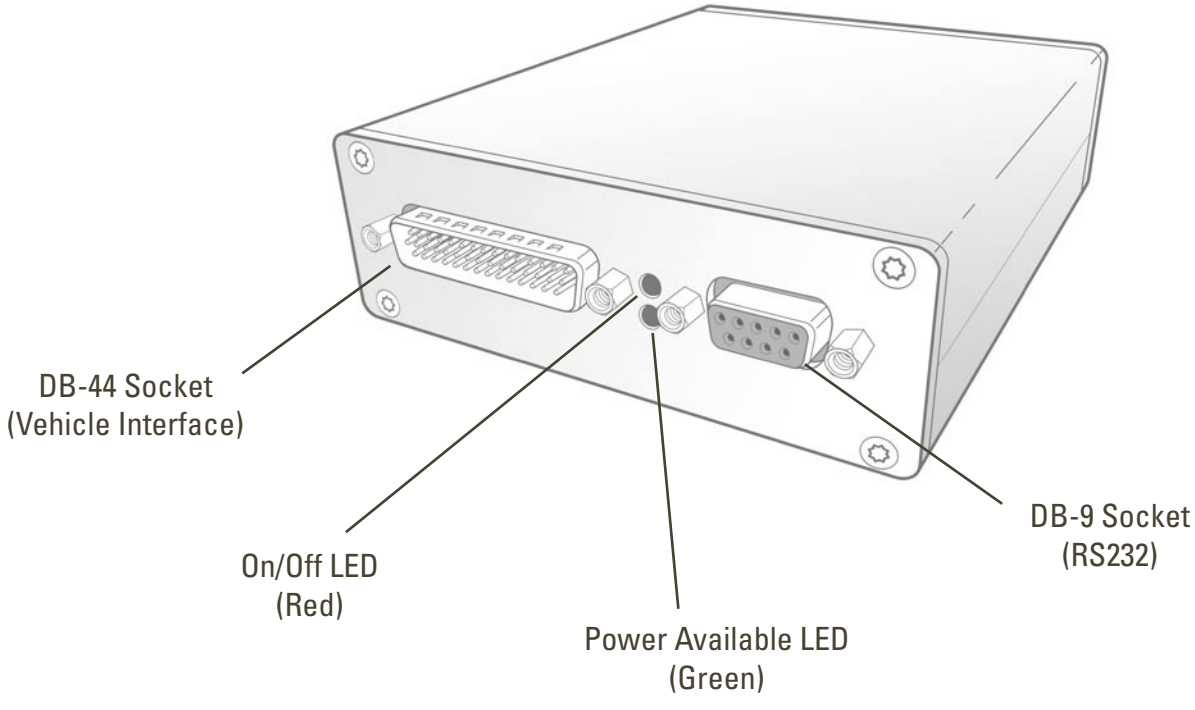


Diagram showing operation of the FMS-500.

Short Overview

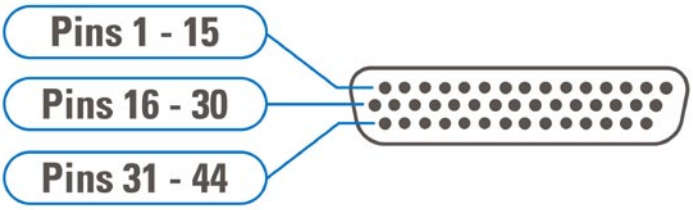
The following section will inform you on the basic elements of the FMS-500.





FMS-500 User Interface	
Serial Communication Port 1	For serial communications over the V.24 communication protocol (DTE compatible)
Serial Communication Port 2	For interfacing to external devices i.e. bar code reader, card reader (DTE compatible)
Ethernet Link	**This section has 3 different elements:** 1. LINK - Lit LED indicates an ethernet connection 2. ACT - Blinking LED indicates communication over the ethernet protocol 3. RJ45 socket for connecting ethernet cable
WLAN Section (802.11b protocol)	**This section has 3 different elements:** 1. PWR - Lit LED indicates power is being supplied to the WLAN module 2. ACT - Blinking LED indicates that unit is active 3. WLAN antenna connector
GPRS Section	**This section has 3 different elements:** 1. PWR - Lit LED indicates power is being supplied to the GPRS module 2. ACT - Blinking LED indicates that unit is active 3. GPRS antenna connector
GPS Section	**This section has 3 different elements:** 1. PWR - Lit LED indicates power is being supplied to the GPRS module 2. Fix - Lit LED indicates 3. GPS antenna connector
DB-9 Socket (RS232)	This connector is a serial port based on RS232 It can be used for communication to and from the VDL-1000 from a PC or similar device
On/Off LED (Red)	This is LED is steadily lit when the VDL-1000 is switched on
Power Available LED (Green)	This LED is steadily lit when there is power connected to the VDL-1000
DB-44 Socket (Vehicle Interface)	**This port includes the following interfaces:** Two high speed CAN buses 22 Switch inputs (0-5V analog) 4 High side switch outputs 4 Low side switch outputs 1 K Line / LIN interface Direct battery Switch battery

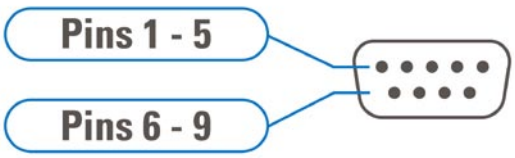
Pin Allocations



DB-44 Socket

Pin No.	Signal		Description
1	SG0	Switch-to-GND input	Detects switch to ground state, selectable wetting current or can be used as 0-5V analog input
2	SG1	Switch-to-GND input	
3	SG2	Switch-to-GND input	
4	SG3	Switch-to-GND input	
5	SG4	Switch-to-GND input	
6	SG5	Switch-to-GND input	
7	SG6	Switch-to-GND input	
8	SG7	Switch-to-GND input	
9	SG8	Switch-to-GND input	
10	SG9	Switch-to-GND input	
11	SG10	Switch-to-GND input	
12	SG11	Switch-to-GND input	
13	SG12	Switch-to-GND input	
14	SG13	Switch-to-GND input	
15	SP0	Programmable Switch Input	Detects switch state, programmable polarity, selectable wetting current or can be used as 0-5V analog input
16	SP1	Programmable Switch Input	
17	SP2	Programmable Switch Input	
18	SP3	Programmable Switch Input	
19	SP4	Programmable Switch Input	
20	SP5	Programmable Switch Input	
21	SP6	Programmable Switch Input	
22	SP7	Programmable Switch Input	
23	S1	Source1	High-side switch out, 1...2A max, current limited, open load detection
24	S2	Source2	High-side switch out, 1...2A max, current limited, open load detection
25	S3	Source3	High-side switch out, 1...2A max, current limited, open load detection
26	S4	Source4	High-side switch out, 1...2A max, current limited, open load detection
27	D5	Drain5	Low-side switch out, 1...2A max, current limited, open load detection
28	D6	Drain6	Low-side switch out, 1...2A max, current limited, open load detection
29	D7	Drain7	Low-side switch out, 1...2A max, current limited, open load detection
30	D8	Drain8	Low-side switch out, 1...2A max, current limited, open load detection

Pin No.	Signal	Description
31	CANL1	CAN1
32	CANH1	CAN1
33	CANL2	CAN2
34	CANH2	CAN2
35	K-Line/LIN	Diagnostic
36	Unused	
37	Unused	
38	SGND	Signal GND
39	SG12	Switch-to-GND input
40	VIGN	Ignition
41	VBAT	Direct Battery
42	VBAT	Direct Battery
43	PGND	Power GND
44	SP3	Power GND



DB-9 Socket

Pin No.	Signal	Description
1	DCD	Data Carrier Detect
2	RD	Receive Data
3	TD	Transmit Data
4	DTR	Data Terminal Ready
5	SG	Signal GND
6	DSR	Data Set Ready
7	RTS	Request to Send
8	CTS	Clear to Send
9	RI	Ring Indicator

Appendix

Technical Data

Weight:	~500 grams
Dimensions (LxWxD):	120 mm x 105 mm x 35 mm without mounting flange 120 mm x 130 mm x 35 mm with mounting flange
Current consumption:	Approx. 200 mA at 12 V during normal operation + 200 mA with WLAN + 25 mA with GPS + 2 A peak with GSM
Memory:	2 - 8Mb E^2PROM
Maximum power supply:	16V DC

Interfaces

- Two high speed CAN bus interfaces
- 22 Analog inputs (0 – 5V, 10 bit resolution)
- RS232 interface
- WLAN
- Ethernet
- Tri-Band GPRS/GSM Modem
- Coms 1
- Coms 2
- Coms 3
- GPS

Internal Sensors

- Yaw sensor
- +- 50g 20 axis accelerometer
- +- 1.7g 20 axis accelerometer
- Temperature sensor

Further Information

Technical Support

Telephone +49 711 23160004
+49 711 23160000

FAX +49 711 2317054

Technical Support Hours:
9:00 AM to 5:00 PM Central European Time Monday thru Friday

Contact Address:
Si-Gate GmbH
C/O Customer Service
Karlsruher Str. 11/1
70771 Leinfelden-Echterdingen
Germany

Warranty

Si-Gate GmbH warrants the equipment it manufactures to be free from defects in material and workmanship.

If equipment fails because of such defects and Si-Gate GmbH is notified within one (1) year from the date of shipment, Si-Gate GmbH will, at its option, repair or replace the equipment, provided that the equipment has not been subjected to mechanical, electrical or other abuse or modifications.

Equipment that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for ninety (90) days from the day of shipment to the Buyer.

This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.

The information in this manual has been carefully checked and is believed to be accurate. However, Si-Gate GmbH assumes no responsibility for any inaccuracies that my be contained in this manual. In no event will Si-Gate GmbH, be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. The technical information contained herein regarding the FMS-500 features and specifications is subject to change without notice.

www.si-gate.com

Si-Gate FMS-500 User's Manual
Revision 1.0 10.08.2005