

INTEGRATION GUIDE
BLUETEXGPS-GPRS
VERSION 1.5



REVISION HISTORY

VERSION	PRIMARY AUTHOR(S)	DESCRIPTION OF VERSION	DATE COMPLETED
1.0	Tobias Nilsson	Layout and initial draft for internal usage.	
1.1	Tobias Nilsson	First official release	2005-10-12
1.2	Tobias Nilsson	More information about SIM insertion	
1.3	Tobias Nilsson	Information about configuration for stay online and external I/O	2006-08-15
1.4	Tobias Nilsson	Clarification about GPRS-send commands	2006-09-20
1.5	Tobias Nilsson	Update about commands and settings	2006-12-07

CONTENTS

- Product principle
- GPRS messaging options
- Configuration options
 - Function buttons
- Protocols
 - POSPAC18
 - GPRS communications
 - GPS NMEA v0183
 - Specification of NMEA v0183 sentences
 - Control panel data protocol
- Bluetooth link
- DSUB9 connector
- Using the control panel
- Installation advice
- Installing or changing card
- External sensors
- Accessories

- Appendix:
 - Software revision history

PRODUCT PRINCIPLE

The main aim of the BlueTexGPS is to provide personal navigation and a back office positioning solution combined in one unit. This is achieved by integrating a GPS receiver, a Bluetooth chip and a Mobitex radio modem in the BlueTexGPS.

GPRS MESSAGING OPTIONS

The BlueTexGPS has the ability to save POSPAC18 messages internally and send many of them together. This means that the GPRS traffic load decreases because there is one network session for many POSPAC18 messages. The actual amount of position data is of course the same. Up to 99 POSPAC18 messages can be packed in one GPRS session. Up to 1900 POSPAC18 messages can be stored locally. If the BlueTexGPS has lost contact with the GPRS network, all generated messages are stored locally. When network contact is acquired again, all messages are sent in the same order as they were generated. The stay online option force BlueTexGPS to stay on the same connection as long as possible to save time and traffic by not connecting to a new session every time there is time to send a new message.

CONFIGURATION OPTIONS

The sending and generation of the POSPAC18 messages are configurable through a protocol. The parameters are set over the serial Bluetooth interface, RS232 interface or by SMS.

The configurable parameters are:

- Receiver IP and port.
- APN, APN username and password for the GPRS connection.
- PIN code for the used SIM card.
- Unit id or name.
- POSPAC18 generation and sending time interval.
- Individual payload associated with the F1 to F6 function buttons on the BlueTexGPS keyboard.
- Additional function associated with any function button.
- Unit modes
 - GPRS mode: When checked direct access to the GPRS modem is.
 - GPS mode: Provides GPS-data for personal navigation.
 - Staffling on: Sets the amount of POSPAC18 messages that will be packed together in one transmission. When not checked every message is sent individually.
 - Bluetooth power save on and off.
 - Stay connected to server between reporting.
- Power up and down method.
- External I/O in the DSUB9 connector

FUNCTION BUTTONS

The buttons F1 to F6 can be configured to contain a payload. That payload will be attached to the pospac18 message when the button is pressed. If a button is pressed it will be indicated by the led at over the button.

There are two types of button types. Momentan and sticky. The momentan button is when a status is momentan and sticky is when a status stays active until the button is pressed again. There can only be one sticky button active at the time. Sticky and momental buttons is configured by FyM13 to FyM18.

If there is an external I/O it has the function of a button. The indication of external I/O is done with the yellow led by the arrows. External I/O work as a sticky button and override sticky buttons F1 to F6. External I/O is configured by the FyM25 and FyM181 commands.

PROTOCOLS

There are several protocols to communicate with the unit.

The GPRS client-server communication is specified to use POSPAC18 and over the Bluetooth link, DSUB9 or SMS configuration can be done (read more below) and NMEA v0183 over the Bluetooth and in the DSUB9 connector is used to get the personal navigation system.

POSPAC18

The back office positioning solution is achieved by the BlueTexGPS by generating and sending the current position over the GPRS network as a message. The message interval is configurable. The message data format is POSPAC18, i.e. the position, time, date and optional 3 byte payload is compressed to only 18 bytes. This has the benefit of minimizing the radio traffic and saving precious battery power. The 3 byte payload can be set to any user defined value. In the BlueTexGPS, the payload is used for indicating the status of the unit for the back office system. This status could say "normal operation", "parked car" or "other obstacle" for instance.

BYTE NR	NAME	SIZE (BITS)	COMMENT
1-2	Date	16	7 bits for year, 4 bits for month, 5 bits for day 0000010 1001 10011 for 19th September 2002
3-4	Time	1+16	Number of seconds since midnight. MSB is put in the field "extra bits".
5	Lat. deg.	8	Latitude degrees. 0=90° south, 90=equator, 180=90° north
6-7	Lat. frac.	1+16	5 decimals for latitude (accuracy < 0,8m). MSB is put in the field "extra bits".
8	Long. deg.	1+8	Longitude degrees. 0=180° west, 180=0°, 360=180° east. MSB is put in the field "extra bits".
9-10	Long. frac.	1+16	5 decimals for longitude (accuracy < 0,8m). MSB is put in the field "extra bits".
11	Speed	1+8	Speed in km/h. Max 512 km/h. MSB is put in the field "extra bits".
12	Direction	8	Circle split in 256 parts

13	Temp	8	0 = -128°C, 128 = 0°C, 255 = 127°C
14	RSSI	8	0-255
15-17	Payload	24	
18	GPS-q	2	0 = no gps, 1 = gps position, 2 = differential gps position
18	Extra bits	5	The 5 extra bits from the fields with +1 above is collected in the order the appear in the package. (time, lat frac, long deg, long frac, speed).
18	Not used	1	Always zero
	Summary	144	18 bytes

POSPAC18 EXAMPLE

MOBITEX CODED POSPAC18: 097DBF2D958BA3C616F10000802000000040

BINARY CODED POSPAC18:

0000 1001
0111 1101
1011 1111
0010 1101
1001 0101
1000 1011
1010 0011
1100 0110
0001 0110
1111 0001
0000 0000
0000 0000
1000 0000
0010 0000
0000 0000
0000 0000
0000 0000
0000 0000
0100 0000

TRANSLATED:

NAME	BINARY	REAL DATA	
date:	0000 100 1011 11101	04-11-29	
time:	1011 1111 0010 1101	48941s = 815.6833 min = 13.59472 hours	
lat deg:	1001 0101	= 149 - 90 = 59	59.35747
lat frac:	1000 1011 1010 0011	35747	deg north
long deg:	1100 0110	= 198 - 180 = 18	18.05873
long frac:	0001 0110 1111 0001	05873	deg east
speed:	0000 0000	0 km/h	
Dir:	0000 0000	0	
temp:	1000 0000	0 celsius	
rsssi:	0010 0000	32	
payload:	0000 0000 0000 0000 0000 0000		
GPS-q:	01	valid position	
extra:	00 000		
Not used:	0		

GPRS COMMUNICATION

The GPRS communication is based on B&M's specification. After connection a connected message is received and then an identification request. When the registration process is done the server waits for positions. To make sure that every message is transmitted successfully the messages have to be acked when received.

BlueTexGPS sends multiple POSPAC18 data packets on one connection if staffel of messages is enabled or if the unit was not able to send messages earlier and saved them in the memory.

In this document client is the same as the BlueTexGPS unit.

The communication protocol is TCP/IP.

CONNECTED

The communication is initialed by the server by sending a connected message to the client on connection. In this message there are the connection specific client id and that id have to be entered in every message over that connection.

IDENTIFICATION

For the server to know witch unit it's communicating with a identify command is sent to the client from the server. The client will answer the request with its id set by the control panel. The identification is sent as data with the data type identification 0x02.

MESSAGING

To identify what kind of data that is being sent the first byte in the message have to be data type identification. 0x02 for identification, 0x04 for POSPAC18.

0x01 is the type identification for a identification request from a server.

When the connection is set up and the identification is complete the client may send its messages.

KEEP ALIVE

The server may send keep alive messages to verify that the client is still connected. This feature is not supported by the BlueTexGPS yet.

EXAMPLE: CONNECTION AND SENDING ONE POSPAC18 DATA

CLIENT	DIRECTION	SERVER
Connecting		
		Connection accepted
	<-	Connected
Ack	->	
	<-	Identify request
Ack	->	
Identification	->	
	<-	Ack
POSPAC18	->	
	<-	Ack

MESSAGE STRUCTURE

Every message must have a “header” and a “tail” according to the following tables.

Header:

NAME	SIZE	VALUE	DESCRIPTION
ProtocolId	3 Bytes	0x24424D (\$BM)	Protocol identification
ProtocolVersion	1 Byte	0x01	Protocol version
ClientID	2 Bytes		Server defined client identification. Generated by server on connection.
MessageID	2 Bytes		Message number (0-65535). Increase on every message sent.
AcknowledgementId	2 Bytes		If it's an ack/nack message this bytes shows witch message number that is being acked/nacked.
MessageType	1 Byte		Type of message. See table below.
MessageLength	4 Bytes		Message length

Tail:

NAME	SIZE	VALUE	DESCRIPTION
EndOfData	1 Byte	0x03	Identify end of data
Checksum	2 Bytes		Checksum, calculated by adding all bytes in message and header.
EndOfMessage	1 Byte	0x04	Identify end of message

GPS NMEA v0183

The GPS data have the standard format of NMEA v0183.

SPECIFICATION OF NMEA v0183 SENTENCES

ZDA – Time and date.

\$GPZDA, hhmmss.ss, xx, xx, xxxx, , *hh<CR><LF>

Field data:

- 1: UTC
- 2: Day (01 to 31)
- 3: Month (01 to 12)
- 4: Year
- 5: unused
- 6: unused
- hh: checksum

GGA – GPS fix data.

\$GPGGA, hhmmss.ss, llll.lll, a, nnnnn.nnn, b, t, uu, v.v, w.w, M, x.x, M, y.y, zzzz*hh<CR><LF>

Field data:

- 1: UTC of Position
- 2,3: Latitude, N (North) or S (South)
- 4,5: Longitude, E (East) or W (West)
- 6: GPS Quality Indicator: 0 = No GPS, 1 = GPS, 2 = DGPS
- 7: Number of Satellites in Use
- 8: Horizontal Dilution of Precision (HDOP)
- 9,10: Antenna Altitude in Meters, M = Meters
- 11,12: Geoidal Separation in Meters, M=Meters. Geoidal separation is the difference between the WGS-84 earth ellipsoid and mean sealevel
- 13: Age of Differential GPS Data. Time in seconds since the last Type 1 or 9 Update
- 14: Differential Reference Station ID (0000 to 1023)
- hh: Checksum

GLL - Geographic Position - Latitude/Longitude.

\$GPGLL, llll.lll, a, YYYYY.YYY, a, hhmmss.ss, A, i*hh<CR><LF>

- 1,2: Latitude, N (North) or S (South)
- 3,4: Longitude, E (East) or W (West)
- 5: UTC of position
- 6: Status: A = Valid, V= Invalid
- 7: Mode Indicator
- A=Autonomous Mode
- D=Differential Mode
- E=Estimated (dead reckoning) Mode
- M=Manual Input Mode
- S=Simulated Mode
- N-Data Not Valid
- hh: Checksum

VTG - Track Made Good and Ground Speed.

\$GPVTG, x.x, T, x.x, M, x.x, N, x.x, K, i*hh<CR><LF>

- 1: Track made good in degrees true.
- 2: Track made good in degrees magnetic.
- 3,4: Speed over the ground (SOG) in knots.
- 5,6: Speed over the ground (SOG) in kilometer per hour.
- 7: Mode Indicator: A=Autonomous Mode, D=Differential Mode, E=Estimated (dead reckoning) Mode, M=Manual Input Mode, S=Simulated Mode, N-Data Not Valid
- hh: Checksum

GSA - GPS DOP and Active Satellites

\$GPGSA, a, x, xx, xx, xx, xx, xx, xx, xx, xx, xx, xx, xx, x.x, x.x, x.x*hh<CR><LF>

1: Mode: M = Manual, A = Automatic. In manual mode, the receiver is forced to operate in either 2D or 3D mode. In automatic mode, the receiver is allowed to switch between 2D and 3D modes subject to the PDOP and satellite masks.

2: Current Mode: 1 = fix not available, 2 = 2D, 3 = 3D

3-14: PRN numbers of the satellites used in the position solution. When less than 12 satellites are used, the unused fields are null

15: Position dilution of precision (PDOP)

16: Horizontal dilution of precision (HDOP)

17: Vertical dilution of precision (VDOP)

hh: Checksum

GSV - GPS Satellites in View

\$GPGSV, x, x, xx, xx, xx, xxx, xx, xx, xx, xxx, xx, xx, xx, xxx, xx, xx, xx, xxx, xx*hh<CR><LF>
>

1: Total number of GSV messages

2: Message number: 1 to 3

3: Total number of satellites in view

4: Satellite PRN number

5: Satellite elevation in degrees (90° Maximum)

6: Satellite azimuth in degrees true (000 to 359)

7: Satellite SNR (C/No), null when not tracking

8-11: PRN, elevation, azimuth and SNR for second satellite

12-15: PRN, elevation, azimuth and SNR for third satellite

16-19: PRN, elevation, azimuth and SNR for fourth satellite

hh: Checksum

RMC - Recommended Minimum Specific GPS/Transit Data

\$GPRMC, hhmmss.ss, A, llll.ll, a, yyyyy.yy, a, x.x, x.x, xxxxxx, x.x, a, i*hh<CR><LF>

1: UTC of Position Fix.

2: Status: A = Valid, V = navigation receiver warning

3,4: Latitude, N (North) or S (South).

5,6: Longitude, E (East) or W (West).

7: Speed over the ground (SOG) in knots

8: Track made good in degrees true.

9: Date: dd/mm/yy

10,11: Magnetic variation in degrees, E = East / W= West

12: Position System Mode Indicator; A=Autonomous, D=Differential, E=Estimated (Dead Reckoning), M=Manual Input, S=Simulation Mode, N=Data Not Valid

hh: Checksum

CONTROL PANEL DATA PROTOCOL

There is some commands that can be sent over the Bluetooth connection or the serial interface in the DSUB to configure BlueTexGPS. The messages is started with FyM (0x46794D) and ended with MyF (0x4D7946). Most commands are ASCII formatted, a 1 (0x31) sent will be identified as value 1, and a few commands are bit formatted, a 1 (0x31) sent will be identified as value 31. The serial connection has to have the baud rate 9600, 8 bit data, no parity and no flow control. The configurations can also be done by SMS, command 30 and 31 are customized for this purpose and will return a FyMOKMyF to the sender when used. Request for settings is not possible by SMS. Most of the parameters must have a specific length, if data is shorter fill with spaces (0x20) until the length is correct.

FyM10 Set receiver address

Sets the receiver IP and port number.

Syntax

Set command: FyM10=<IP> , <port>MyF
Responds: Ok
Get command: FyM10?MyF
Responds: 10: <IP> , <port>

Parameter description:

<IP>

IP number, formatted xxx.xxx.xxx.xxx (ASCII formatted)

example: 127.000.000.001 is 127.0.0.1

<port>

Remote port number, always five bytes, fill with space (0x20). If port number less than 10000. (ASCII formatted)

FyM11 Reserved for future use

FyM12 Set update time and staffel options

Set the time between positioning and the staffel options.

Syntax

Set command: FyM12=<update time>,<enable staffel>,<staffel count>MyF
Responds: Ok
Get command: FyM12?MyF
Responds: 12: <update time>,<enable staffel>,<staffel count>

Parameter description:

<update time>

Time between sampled GPS-positions. In ticks. (120 ticks are one second). If <update time> is set lower than 1200 ticks (10 seconds) BlueTexGPS will use 1200 ticks. (ASCII formatted) 4 characters.

<enable staffel>

Set to 1 to enable staffel. (ASCII formatted)

<staffel count>

POSPAC18 messages staffed before sending them. (ASCII formatted)

FyM13 – FyM18 Set button

Sets payload associated with a button and its sticky function.

Syntax

Set command: FyM1x=<enable sticky>,<payload>MyF
Responds: Ok
Get command: FyM1x?MyF
Responds: 1x: <enable sticky>,<payload>

Use 3 to 8 instead of x.

Parameter description:

<enable sticky>

Set to 1 to enable this button as sticky. (ASCII formatted)

<payload>

Six bytes payload. (ASCII formatted)

FyM181 – External I/O payload

Sets payload for the external I/O feature.

Syntax

Set command: FyM181=1, <payload>MyF
Responds: Ok
Get command: FyM181?MyF
Responds: 18: 1<payload>

Parameter description:

<payload>

Three bytes payload. (NOT ASCII formatted)

FyM19 Device ID

Sets the identification string of the unit.

Syntax

Set command: FyM19=<ID>MyF
Responds: Ok
Get command: FyM19?MyF
Responds: 19: <ID>

Parameter description:

<ID>

Ten characters unit id. (ASCII formatted)

FyM20 APN

Sets the APN for the GPRS connection. Get the APN from GPRS provider.

Syntax

Set command: FyM20=<APN>MyF
Responds: Ok
Get command: FyM20?MyF
Responds: 20: <APN>

Parameter description:

<APN>

Thirty characters APN. Fill with space (0x20) if APN is shorter. (ASCII formatted)

FyM21 APN identification

Sets the username and password for the APN. Provided by the GPRS-provider. Not all GPRS-providers use identification for the APN.

Syntax

Set command: FyM21=<ENABLE APNID> , <UNAME> , <PWORD>MyF
Responds: Ok
Get command: FyM21?MyF
Responds: 21: <ENABLE APNID> , <UNAME> , <PWORD>

Parameter description:

<ENABLE APNID>

Set to 1 to enable APN identification. (ASCII formatted)

<UNAME>

Ten characters username for the APN, fill with space (0x20) if shorter. (ASCII formatted)

<PWORD>

Ten characters password for the APN, fill with space (0x20) if shorter. (ASCII formatted)

FyM22 Power up mode and BT-power save

Sets power up method and enables BT-power save

Syntax

Set command: FyM22=<POWER ON METHOD> , <POWER OFF TIMEOUT> , <ENABLE BT_POWER SAVE>MyF
Responds: Ok
Get command: FyM22?MyF
Responds: 22: <POWER ON METHOD>

Parameter description:

<POWER ON METHOD>

One byte. 0 = Button used for turning the unit on and off, 1 = The unit starts on motion, units shutdown after <POWER OFF TIMEOUT> without motion. 2 = Starts when power plug is inserted, shutdown after <POWER OFF TIMEOUT> without power plug. 3 = Starts when unit is charging, power plug has power, shutdown after <POWER OFF TIMEOUT> with no power on the charging plug. (ASCII formatted)

<POWER OFF TIMEOUT>

Two bytes. Time in minutes to power off if <POWER ON METHOD> is 1, 2 or 3. Also used as time for BT to be turned off after startup if <ENABLE BT POWERSAVE> is enabled. 01-09 minutes. (ASCII formatted)

<ENABLE BT POWERSAVE>

One byte. If 1 the BT will be shutdown after <POWER OFF TIMEOUT> minutes after startup. To start the BT again while unit is running, press the on-off button ones. (ASCII formatted)

FyM23 set pin code

Set the pin code for the SIM card. If there is no pin code for the sim, set any data here. If an incorrect pin is set, the unit will try it ones and then halt until a new pin is entered in to it.

Syntax

Set command: FyM23=<PIN>MyF
Responds: Ok
Get command: FyM23?MyF
Responds: [nothing]

Parameter description:

<PIN> Pin code for the SIM card. (ASCII formatted) *This will not be returned if asked for due to security reasons, use FyM9 to retrieve it.*

FyM25 set wait online and enable external I/O

Enable for the unit to stay on the GPRS network and enable an external I/O in the DSUB9 connector.

Syntax

Set command: FyM25=<WAIT ONLINE> , <EXTERNAL IO>MyF
Responds: Ok
Get command: FyM25?MyF
Responds: [nothing]

Parameter description:

<WAIT ONLINE> If set to 1 wait online is enabled. Used if update time is less then 60s. to save connections to the GPRS network.

<EXTERNAL IO> If set to 1 an external I/O will be enable in the DSUB9 connector, button F6 will be overridden and sticky functions disabled. Data over RS232 will also be disabled, to temporarily enable press F6, it will then stop again after 2 minutes.

FyM30 multiple settings command

Sends multiple settings at ones. Customized for SMS sending. Will return a sms with the current settings to the sender if done by SMS. Parameters used as above.

Syntax

Set command: FyM30=<IP><PORT><NA1><NA2><update time><enable staffel> <staffel count><enable sticky 1><payload 1><enable sticky 2> <payload 2><enable sticky 3><payload 3><enable sticky 4> <payload 4><enable sticky 5><payload 5><enable sticky 6> <payload 6><ID>MyF
Responds: Ok (if done over serial Bluetooth link) FyM<IP><PORT><NA1><NA2><update time><enable staffel> <staffel count><enable sticky 1><payload 1><enable sticky 2> <payload 2><enable sticky 3><payload 3><enable sticky 4> <payload 4><enable sticky 5><payload 5><enable sticky 6> <payload 6>1<payload ExternalIO><ID>MyF (if done by SMS)
Get command: FyM30?MyF
Responds: FyM<IP><PORT><NA1><NA2><update time><enable staffel> <staffel count><enable sticky 1><payload 1><enable sticky 2> <payload 2><enable sticky 3><payload 3><enable sticky 4> <payload 4><enable sticky 5><payload 5><enable sticky 6> <payload 6><ID><SW-version>MyF

Parameter description:

<IP>

Receiver IP. 12 characters. *ex. 127000000001 is 127.0.0.1*

<PORT>

Receiver port, 5 characters, fill with blank (0x20) at the end.

<NA1>

Twelve bytes. Reserved for future usage. Must be zeroes. (ASCII formatted)

<NA2>

Five bytes. Reserved for future usage. Must be zeroes. (ASCII formatted)

<update time>

Time between sampled GPS-positions. In ticks. (120 ticks are one second). If <update time> is set lower than 1200 ticks (10 seconds) BlueTexGPS will use 1200 ticks. (ASCII formatted) 4 characters.

<enable staffel>

Set to 1 to enable staffel. (ASCII formatted)

<staffel count>

POSPACS18 messages staffed before sending them. (ASCII formatted)

<enable sticky 1> to <enable sticky 6>

If set to 1, the button will be sticky. see “**FyM13 – FyM18 Set button**” for more information.

<payload 1> to <payload 6>

Payload for the buttons. see “**FyM13 – FyM18 Set button**” for more information.

<ID>

Device id. see “**FyM19 Device ID**” for more information.

<payload ExternalIO>

Payload for the externalIO.

<SW.version>

Software version, ASCII formatted hex.

FyM31 multiple settings command

Sends multiple settings at ones. Customized for SMS sending. Will return a `FyMOKMyF` to the sender if done by SMS. Parameters used as above.

Syntax

Set command: FyM31=<APN><NA3><ENABLE APNID><UNAME><PWORD><POWER ON METHOD><POWER OFF TIMEOUT><ENABLE BT_POWER SAVE><PIN><WAIT ONLINE><ENABLE EXTERNAL IO>MyF
Responds: Ok (if done over serial Bluetooth link) FyM31=<APN><NA3><ENABLE APNID><UNAME><PWORD><POWER ON METHOD><POWER OFF TIMEOUT><ENABLE BT_POWER SAVE><PIN><WAIT ONLINE><ENABLE EXTERNAL IO><SW-VERSION>MyF (if done by SMS)
Get command: FyM31?MyF
Responds: FyM31=<APN><NA3><ENABLE APNID><UNAME><PWORD><POWER ON METHOD><POWER OFF TIMEOUT><ENABLE BT_POWER SAVE><PIN><WAIT ONLINE><ENABLE EXTERNAL IO><SW-VERSION>MyF

Parameter description:

<APN>

Thirty characters APN. Fill with space (0x20) if APN is shorter. (ASCII formatted) see “**FyM20 APN**” for more information.

<NA3>

Two characters. Reserved for future use, must be zeroes.

<ENABLE APNID>

One character. Set to 1 to enable APN identification. (ASCII formatted) see “**FyM21 APN identification**” for more information.

<UNAME>

Ten characters username for the APN, fill with space (0x20) if shorter. (ASCII formatted) see “**FyM21 APN identification**” for more information.

<PWORD>

Ten characters password for the APN, fill with space (0x20) if shorter. (ASCII formatted) see “**FyM21 APN identification**” for more information.

<POWER ON METHOD>

One byte. 0 = Button used for turning the unit on and off, 1 = The unit starts on motion, units shutdown after <POWER OFF TIMEOUT> without motion. 2 = Starts when power plug is inserted, shutdown after <POWER OFF TIMEOUT> without power plug. 3 = Starts when unit is charging, power plug has power, shutdown after <POWER OFF TIMEOUT> with no power on the charging plug. (ASCII formatted)

<POWER OFF TIMEOUT>

Two bytes. Time in minutes to power off if <POWER ON METHOD> is 1, 2 or 3. Also used as time for BT to be turned off after startup if <ENABLE BT POWERSAVE> is enabled. 01-09 minutes. (ASCII formatted)

<ENABLE BT POWERSAVE>

One byte. If 1 the BT will be shutdown after <POWER OFF TIMEOUT> minutes after startup. To start the BT again while unit is running, press the on-off button ones. (ASCII formatted)

<PIN> Pin code for the SIM card. (ASCII formatted).

<WAIT ONLINE>

On byte, if 1 (0x31) force BlueTexGPS to stay connected to the server.

<ENABLE EXTERNAL IO>

One byte. If 1 (0x31) external I/O is enable.

<SW-VERSION>

Software version, ASCII formatted hex.

FyM50 set mode

Set what kind of data to be sent over the Bluetooth link. This will be reset to GPS at reboot. If this is set to other values then 0 or 1 the unit may behave strange.

Syntax

Set command: FyM50=<MODE>MyF
Responds: Ok
Get command: FyM50?MyF
Responds: 50: <MODE>

Parameter description:

<MODE>

0 for GPS data over the Bluetooth [default at reboot]

1 for GPRS access over the Bluetooth

(ASCII formatted)

FyM8

Sends first half of the settings over the Bluetooth serial port if such exists.

Syntax

Get command: FyM8MyF
Responds: FyM8:<IP><PORT><NA1><NA2><update time><enable staffel> <staffel count><enable sticky 1><payload 1><enable sticky 2> <payload 2><enable sticky 3><payload 3><enable sticky 4> <payload 4><enable sticky 5><payload 5><enable sticky 6> <payload 6>1<payload externalIO><ID>MyF

Parameter description:

<IP>

Receiver IP. 12 characters. *ex. 127000000001 is 127.0.0.1*

<PORT>

Receiver port, 5 characters, filled with blank (0x20) or null (0x00) at the end.

<NA1>

Twelve bytes. Reserved for future usage. (ASCII formatted)

<NA2>

Five bytes. Reserved for future usage. (ASCII formatted)

<update time>

Time between sampled GPS-positions. In ticks. (120 ticks are one second). (bit formatted) 4 characters. Only the two least significant bytes are used.

<enable staffel>

Set to 1 if staffel is enabled. (ASCII formatted)

<staffel count>

POSPACS18 messages staffed before sending them. (ASCII formatted)

<enable sticky 1> to <enable sticky 6>

If set to 1, the button will be sticky. see **"FyM13 – FyM18 Set button"** for more information. (ASCII formatted) 1 byte.

<payload 1> to <payload 6>

Payload for the buttons. (bit formatted) 3 bytes.

<payload ExternalIO>

Payload for the externalIO.

<ID>

Device id. see **"FyM19 Device ID"** for more information.

FyM9

Sends second half of the settings over the Bluetooth serial port if such exist.

Syntax

Get command: FyM9MyF
Responds: FyM9: <APN><NA3><ENABLE APNID><UNAME><PWORD><POWER ON METHOD><POWER OFF TIMEOUT><ENABLE BT_POWER SAVE><PIN>><WAIT ONLINE><ENABLE EXTERNAL IO>MyF

Parameter description:

<APN>

Thirty characters APN. Filled with space (0x20) or null (0x00) if APN is shorter. (ASCII formatted) see “**FyM20 APN**” for more information.

<NA3>

Two characters. Reserved for future use.

<ENABLE APNID>

One character. If set to 1 APN identification is enable. (ASCII formatted) see “**FyM21 APN identification**” for more information.

<UNAME>

Ten characters username for the APN, filled with space (0x20) or null (0x00) if shorter. (ASCII formatted) see “**FyM21 APN identification**” for more information.

<PWORD>

Ten characters password for the APN, filled with space (0x20) or null (0x00) if shorter. (ASCII formatted) see “**FyM21 APN identification**” for more information.

<POWER ON METHOD>

One byte. 0 = Button used for turning the unit on and off, 1 = The unit starts on motion, units shutdown after <POWER OFF TIMEOUT> without motion. 2 = Starts when power plug is inserted, shutdown after <POWER OFF TIMEOUT> without power plug. 3 = Starts when unit is charging, power plug has power, shutdown after <POWER OFF TIMEOUT> with no power on the charging plug. (ASCII formatted)

<POWER OFF TIMEOUT>

Two bytes. Time in minutes to power off if <POWER ON METHOD> is 1, 2 or 3. Also used as time for BT to be turned off after startup if <ENABLE BT POWERSAVE> is enabled. 01-09 minutes. (ASCII formatted)

<ENABLE BT POWERSAVE>

One byte. If 1 the BT will be shutdown after <POWER OFF TIMEOUT> minutes after startup. To start the BT again while unit is running, press the on-off button ones. (ASCII formatted)

<PIN> Pin code for the SIM card. (ASCII formatted).

<WAIT ONLINE>

On byte, if 1 (0x31) force BlueTexGPS to stay connected to the server.

<ENABLE EXTERNAL IO>

One byte. If 1 (0x31) external I/O is enable.

Examples:

FyM10=127.000.000.001,80 MyF	Remote IP: 127.0.0.1 (local host do not use) Remote Port: 80 (notice the fill out spaces)
FyM12=2400,1,15MyF	Update time: 20 seconds (2400 ticks) staffel enable staffel 15 messages before sending.
FyM13=1,00FF01MyF	Button 1: Sticky enable. Payload: 0x00FF01 (65281)
FyM19=1234567890MyF	Unit ID: 1234567890

BLUETOOTH LINK

The BlueTexGPS is connectable over Bluetooth via the serial port profile. The raw NMEA v0183 data is directly forwarded from the GPS-receiver to the Bluetooth serial port. The GPS data is sent once every second at 9600 bits/second, 8 bit, no parity and one stop bit. The control panel data over the Bluetooth link uses the same baud rate and bit settings as the GPS data.

DSUB9 CONNECTOR

In the DSUB9 connector it is possible to use a standard RS232 interface, 9600 bits/second, 8 bit, no parity and one stop bit, this interface may be used the same way as the Bluetooth link above. The DSUB9 may also be configured to host a external input/output.

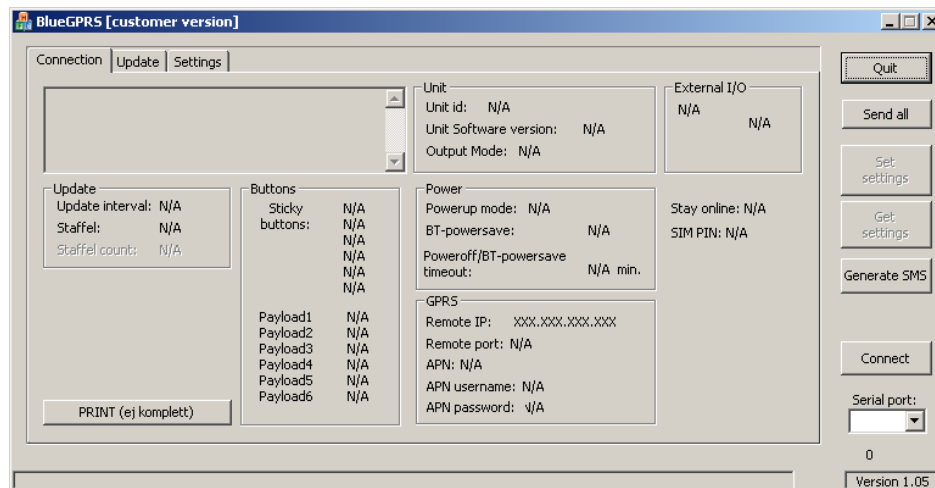
When external I/O is enabled the serial interface on the DSUB9 will stop. To activate it again for configuration press the on/off button for 2 seconds. The external I/O is indicated by the yellow led.

More about the external I/O option in the section named "installing external sensors".

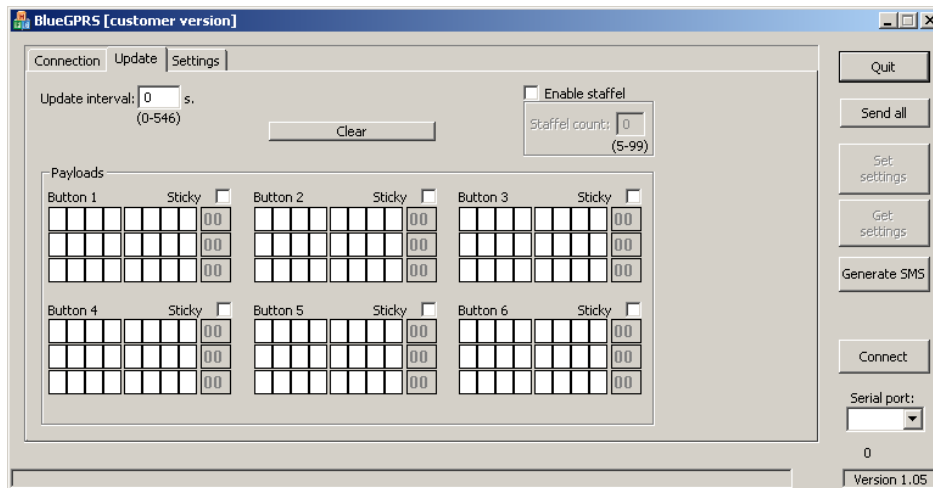
NOTE: The first thing to do to continue reconfiguration is to disable external I/O with the FyM25 command, any other command will turn off the RS232 interface and return to external I/O.

USING THE CONTROL PANEL

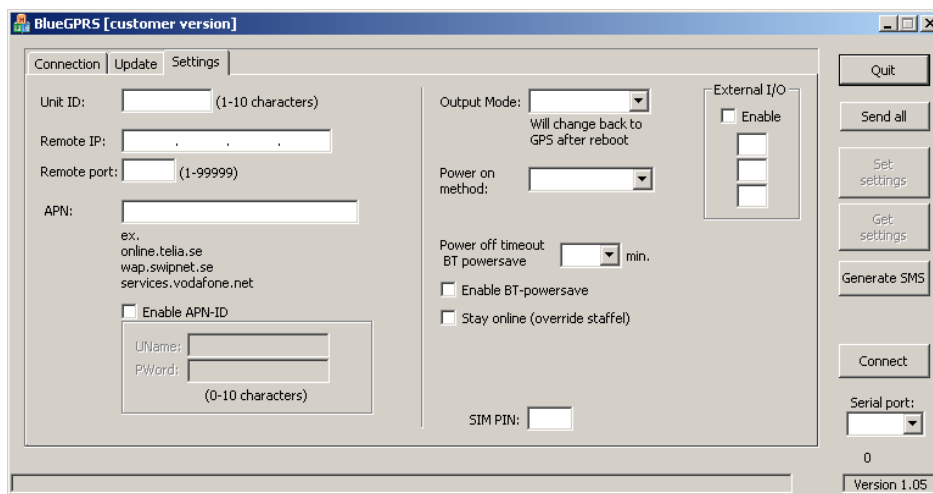
Below are screendumps of the BlueTexGPS control panel.



Screen dump 1. Connection tab



Screen dump 2. Update tab



Screen dump 3. Settings tab

Connection tab contains a summary of current settings. It is updated after a request. Update tab contains update time, staffel and payload settings. Settings tab contains connection parameters, ID and modes.

CONNECT

To connect to a BlueTexGPS unit select the serial port that the Bluetooth device give you. Press the Connect button and wait. When connected the units software information will be showed in the connection tab.

UPDATE

In the Update tab payload is set bitwise. Checkboxes are for indicate sticky functions on the buttons. Update interval is in seconds. Staffel may be enabled and set to a value between 5 and 99.

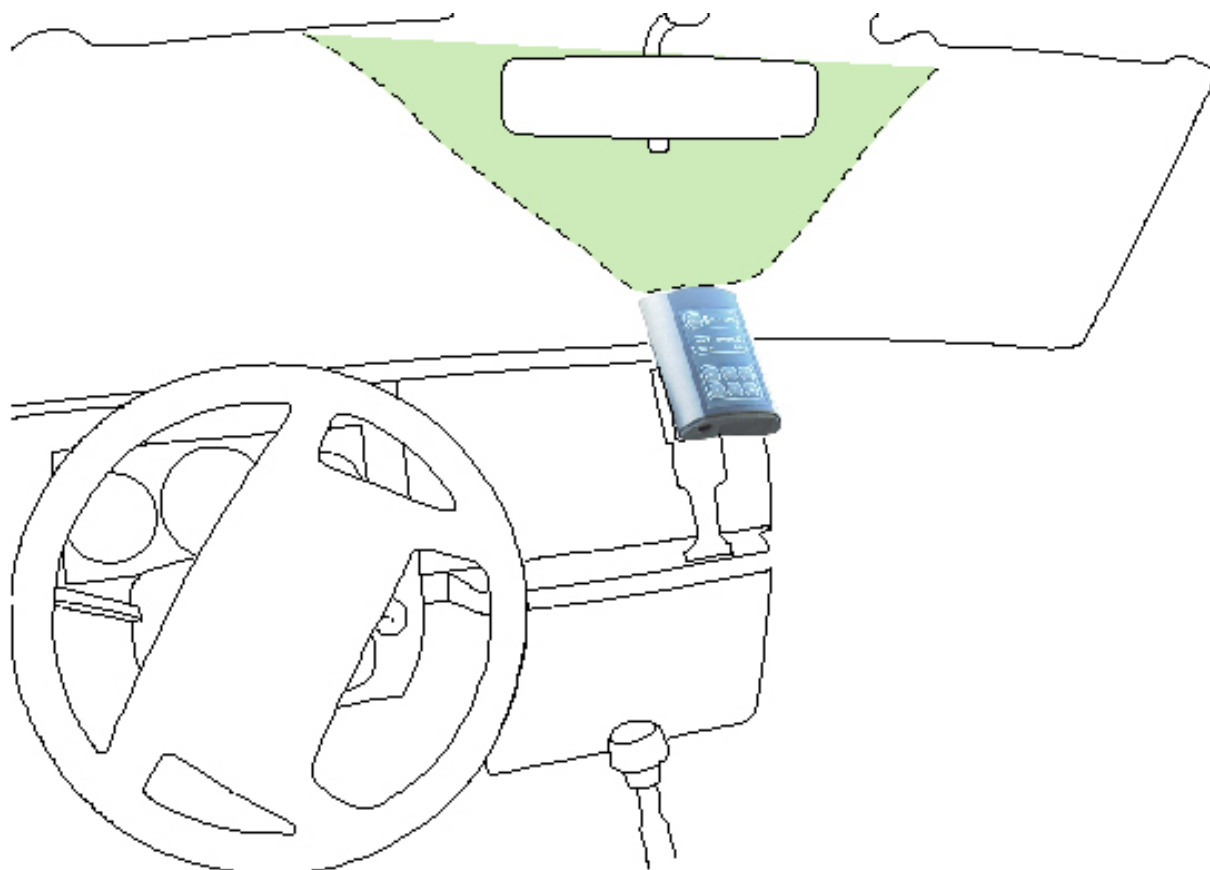
SETTINGS

In the setting tab the connection specific parameters are set. Some GPRS providers requires username and password to allow connection to there network. If that is the case, enable APN-ID else let it be disabled.

Remote IP and remote port should be provided by the back office server provider and the apn by the GPRS provider. The SIM PIN is usually provided with the sim card.

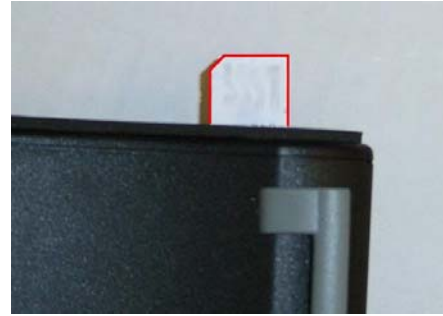
INSTALLATION ADVICE

The BlueTexGPS has a built-in GPS antenna. For optimal GPS performance, the unit should be placed viewing as much clear sky as possible. For example on the dashboard looking out the windscreen, see picture. The green/shadowed area show the optimal reception angle of the GPS antenna.



INSTALLING OR CHANGING SIM CARD

If the new sim does not have a pin code it is possible to only replace the sim card without any configuration. If the new sim card requires a sim code that differ from the old one you need to configure the unit the right way. Start by removing the old sim card. Start the unit, connect with the control panel or use the FyM23 or FyM31 to enter the new pin code in to the unit. Turn the unit off and insert the new sim card. The procedure is done and the unit will use the new pin code for the new sim card.



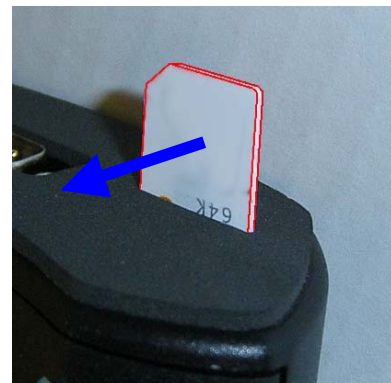
If the wrong pin code has been entered do as above to solve the problem, remember, there is only three chances to enter an invalid pin code before a puk code is needed. For this you need to remove the sim card and enter the puk in another device, eg. your mobile phone. BlueTexGPS does not support puk code management.

The unit will only try the pin entered ones, if it is incorrect it will not try again until a new pin is entered.

NOTE: While removing or insert sim cards the unit must be off to prevent data lost and sim card damage.

NOTE: GPRS needs to be active for the sim card, some operators does not activate this automatically.

Generally the simplest way to insert the sim card is to insert it almost half the way, tilt it in direction as shown in the image, then push it in abit more to make shure that it is in its slot by carefully try to move it up and down, before pushing it all the way in.



EXTERNAL SENSORS

It is possible to connect external sensors in the DSUB9 connector and use it to indicate an external I/O event.

To be able to do so a setting has to be done with control data. This will stop the serial data on the DSUB9 and activate for external I/O.

There is some different sensors developed, they are listed under accessories.

ACCESSORIES

ARTICLE NR	NAME	
888200095	Button sensor	
888200095_2	Led sensor	
942004	Car charger	
245102	Car hold simple	
245106	Car hold with external connections	
888200095_3	Inductive sensor	