Flytec Bluetooth Option

English

Setup Bluetooth

In order to use the Bluetooth/SMS option, the Bluetooth module must be installed and tested by Flytec or Bräuniger. With the BT module installed and the SMS feature unlocked the 6020/6030/6040/5020 and IQ Compeo+ /Competino+ /Competino can send SMS position info using a Bluetooth-enabled mobile phone with DUN (**D**ial **U**p **N**etwork) capability. Alternatively, NMEA strings can be sent using a Java enabled mobile phone that is able to receive NMEA strings via Bluetooth with the help of a specialized Java program. In this case the data is sent via SMS or GPRS to a phone number (e.g., Leonardo Live Server)

Requirements

- Flytec 5020/Competino with firmware v1.18 (or hiher), 6020/Competino+ with firmware v3.07 (or higher), 6030/Compeo+ with v3.28 (or higher), 6040 with v2.05, (or higher) and built-in Bluetooth module with option unlock code entered.
- GSM mobile phone with integrated Bluetooth interface with DUN profile. If you are not sure if your mobile phone supports DUN you can check it with a Windows PDA, Laptop or PC with Bluetooth. If you search for the services of your mobile phone you should see "Dial-up Networking".

General pairing procedure

To initiate a new pairing, the instrument must reset the Bluetooth system. There a 6 reset phases. With these 6 phases, all recent pairings will be deleted and the module will establish new connection in a Bluetooth network.

After the reset, the instrument will search for Bluetooth devices nearby for 30s to 60s. The instrument can only receive a maximum of 12 Bluetooth devices. If more than 12 Bluetooth devices are found, the instrument will display a warning to change location or to switch off some devices to reduce the number of detected devices.

In Bluetooth **Mode 1 NMEA -out** (SPP Profile) the instrument starts directly in the Bluetooth mode after quitting the setup menu. The pairing procedure must be started from the Laptop, PC or Windows PDA. The Bluetooth driver on the PC side allocates a virtual COM port. This COM port must be entered in the application on the PC side.

In Bluetooth **Mode 2 SMS** (DUN Profile), the pairing procedure must be initiated from the instrument. It is not possible to pair it from the mobile phone. The Bluetooth function must be enabled on the mobile phone before the pairing process is initiated on the instruments. The mobile phone normally will show a small Bluetooth symbol when the Bluetooth function is active. After reset and searching, up to 12 Bluetooth members will be listed on the instrument. The user can chose the desired device and start the pairing.

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Procedure

1. Turn on the Bluetooth functionality on your GSM mobile phone and set it to **Discoverable (visibility)**.

2. Bring up the Bluetooth Menu on the Flight instrument
   Menu → Instrument Setup → Bluetooth → OK,
   select the 1:**SPP** or 2:**DUN** profile and press **OK**

3. The instrument will display: Reset phase 0… through 6, followed by "Searching ... 30s" The Instrument will now search a Bluetooth device for 30 sec.
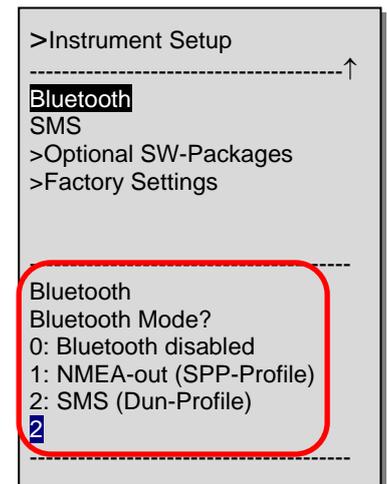
4. After finishing the searching mode, the instrument will display:

   > Ok (123)"
   > Devices found:1
   > Ok to continue

   The number shown after "ok" indicates the received bytes. It has no particular meaning and can vary. Press **OK** to proceed.

5. Up to 12 devices will be displayed. Select the desired device with the arrow keys and press **OK** The instrument displays:

   > Set auto call
   > Response....60s
   > Check mobile
   > Code: 0XXXX
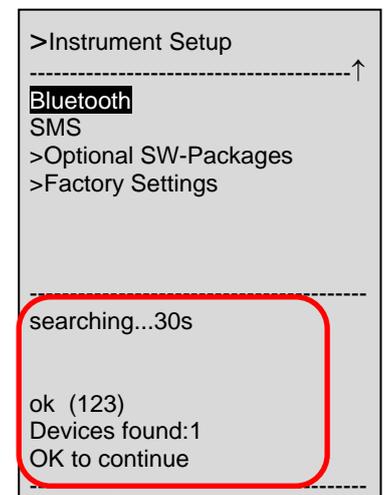
6. The instrument will now attempt to pair with the selected device. The mobile phone display should have a comment asking if you would like to pair with the 6020/6030/6040 5020/Compeo+/Competino+/Competino.You must then enter the **5-characters instrument serial number** of the instrument (Without the letters Fl or Br), Flxxxxx for 5020/6020/30/40 or Brxxxxx for /Competino /Compeo+/ Competino+. This action must be performed within **1 minute.** Hint: The instrument should be entered into the list of paired members. The reason for this is that after the pairing, the connection will be cancelled for a short time. If the instrument is listed, the connection will be re-established automatically.
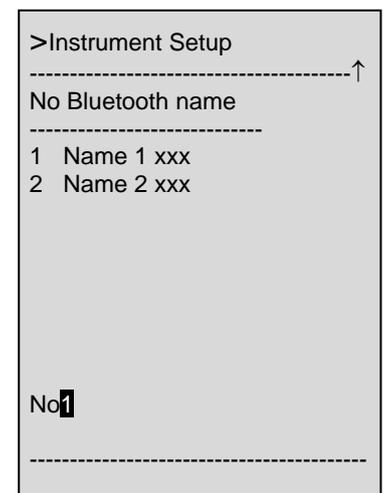
7. After a successful pairing the instrument shows:
   CONNECT 0 RFCOMM 1
   If there was an error, the instrument will show an error that depends on the mobile phone. e.g. "RF COMMUNICATION FAILED"

8. After successful pairing, confirm by pressing OK and go back to the run mode with Esc key.

>Instrument Setup
----------------------------------↑
Bluetooth
SMS
>Optional SW-Packages
>Factory Settings

Bluetooth
Bluetooth Mode?
0: Bluetooth disabled
1: NMEA-out (SPP-Profile)
2: SMS (Dun-Profile)
2

>Instrument Setup
----------------------------------↑
Bluetooth
SMS
>Optional SW-Packages
>Factory Settings

searching...30s

ok (123)
Devices found:1
OK to continue

>Instrument Setup
----------------------------------↑
No Bluetooth name
----
1   Name 1 xxx
2   Name 2 xxx

No1

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Operation

After around 30 to 60 seconds the connection to the mobile phone will be re-established.

You may have to confirm the connection on your mobile phone, or the mobile phone may show a confirmation on its' own. After at least 1 minute the Bluetooth symbol will appear on the instrument display.

Setting up the instrument for SMS:

Bluetooth setup should be set up first.

Set the SMS parameters in the SMS menu as follows:

- **Receiver**: Input the recipient phone number. The phone number must be in the format: **49**_1728212530_ where e.g. **49** is the country code (the country code is mandatory) and the rest is the mobile number without leading zero's. No special characters or spaces are allowed.

- **comp:** Competition mode
  Select <u>**Yes**</u> to use the compressed competition mode (8 positions/SMS) or <u>**No**</u> to use the text mode (1 position/SMS), which is a human readable format.

- **[min]:** Interval (min)
  This Parameter sets the interval that your position is sampled from the internal GPS receiver. A range from 0 (no transmission) to 15 min can be set. The instrument must be in the recording mode (flight acceptance) to send SMS. If SMS transmission is also necessary on the ground (e.g. while walking, etc.) be sure to set the *Recording Mode* to "Manual". If there is no GSM reception at a given transmission time, the instrument will hold the data and transmit as soon as a network is available. Availability is checked every 10s when SMS data is pending. The status of pending and sent positions can be checked in the user-field **SMS p/s** (SMS pending/sent)
  - Text mode: The SMS is sent using this interval.
  - Competition mode: 8 positions are collected until the SMS is sent.

- **emer**: Emergency mode: Active in Text mode and Competition mode. Upon landing, after the **Flight Analysis** page is displayed, the instrument prompts the pilot to press any key with a continuous beep for 1 minute. If no key is pressed within this period, an emergency SMS is sent, assuming the pilot is unable to react.

- **Glider – Id as keyw:** The first line in the text mode SMS string is the Glider Id (see example next page). It is possible to use the first x number of characters as a keyword where x is set in the **Glider – Id as keyw** field. This feature can be used with servers that can recognize keywords to trigger an action. For example, a competition can set a 3-letter keyword on a mapping server and only SMS received with the corresponding 3-letter keyword prefix on the Glider ID will be shown on the map. In this case the **Glider – Id as keyw** would be set to 3.

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Send Position Manually

At any time (when the GPS is acquired) it is possible to transmit the current position in Text Mode. Press the (i) key to open the information page; short press to the F1 key (Send SMS) to send an SMS of the current position. *This function is not available when the comp Mode is being used.*

Format definition of the Text mode:

Example:	Explanation:
Glider – Id	*The length can be defined in the SMS parameters menu*
COMPETINOV115,	*Flight Instrument Company String, V115 Software Version*
30.05.2005,	*UTC Date*
13:50:00,	*UTC Time*
47'58.6236N,	*Position Latitude*
011'07.5361E,	*Position Longitude*
645m,	*Pressure Altitude*
42kmh,	*GPS Speed*
187',	*Track*
Info / Emer	*Info or Emergency*
LSTPOS / ACTPOS	*LSTPOS No actual GPS position, last valid position is sent, or ACTPOS indicates valid position*

Format definition of the Competition mode sms

Within competition mode, 8 positions are collected and send together in one SMS. Only during flying, positions will be sampled and sent.

	Explanation:
DDD	*Day and month in hex notation (example: 1FB = 05.07)*
TTT	*UTC time of last position, hex notation (example: 2E0 = 07:36)*
I	*position interval, hex notation*
yyyyyyyyxxxxxxxxAAA	yyyyyyyy: *Latitude in 1/10000min, N if positive, S if negative (2's*
yyyyyyyyxxxxxxxxAAA	*complement). Hex notation*
yyyyyyyyxxxxxxxxAAA	xxxxxxxx: *Longitude in 1/10000min, E if positive, W if negative*
yyyyyyyyxxxxxxxxAAA	*(2's complement), hex notation*
yyyyyyyyxxxxxxxxAAA	AAA: *pressure altitude in m of position, hex notation in 10m*
yyyyyyyyxxxxxxxxAAA	*resolution no CrLf between data!*
yyyyyyyyxxxxxxxxAAA	*When no valid position is received at the sample interval*
yyyyyyyyxxxxxxxxAAA	*latitude and longitude are set to 0.*

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NMEA

After pairing the instrument with Bluetooth mode 1 NMEA-out (SPP Profile) the instrument starts immediately to send the $GPGGA sentence alternating with $GPRMC. Data is sent every second alternating.

$GPGGA - Global Positioning System Fix Data
 Time, Position and fix related data for a GPS receiver.

```
                                                    11
          1         2       3 4         5 6 7  8   9  10 |  12 13  14    15
          |         |       | |         | | |  |   |  |  |  | |   |     |
$--GGA,hhmmss.ss,llll.ll,a,yyyyy.yy,a,x,xx,x.x,x.x,M,x.x,M,x.x,xxxx*hh<CR><LF>
```

```
Field Number:
 1) Universal Time Coordinated (UTC)
 2) Latitude
 3) N or S (North or South)
 4) Longitude
 5) E or W (East or West)
 6) GPS Quality Indicator,
    0 - fix not available,
    1 - GPS fix,
    2 - Differential GPS fix
 7) Number of satellites in view, OO - 12
 8) Horizontal Dilution of precision
 9) Antenna Altitude above/below mean-sea-level (geoid)
10) Units of antenna altitude, meters
11) Geoidal separation, the difference between the WGS-84 earth
    ellipsoid and mean-sea-level (geoid), "-" means mean-sea-level
    below ellipsoid
13) Age of differential GPS data, time in seconds since last SC104
    type 1 or 9 update, null field when DGPS is not used
14) Differential reference station ID, 0000-1023
15) Checksum
```

Simplifications in GGA: *-DOP always 3.5,   - Ellipsoidal separation always 0.0*

RMC - Recommended Minimum Navigation Information

```
                                                        12
          1         2 3       4 5         6 7   8   9   10 11|
          |         | |       | |         | |   |   |   |  | |
$--RMC,hhmmss.ss,A,llll.ll,a,yyyyy.yy,a,x.x,x.x,xxxx,x.x,a*hh<CR><LF>
```

```
Field Number:
 1) UTC Time
 2) Status, V = Navigation receiver warning
 3) Latitude
 4) N or S
 5) Longitude
 6) E or W
 7) Speed over ground, knots
 8) Track made good, degrees true
 9) Date, ddmmyy
10) Magnetic Variation, degrees
11) E or W
12) Checksum
```

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FLYSEN - Special Sentence for Flytec instruments

```
$FLYSEN,                            8 Digits
Time(hhmmss),                       6 Digits
Date(ddmmyy),                       6 Digits
Latitude(ddmm.mmm),                 8 Digits incl. decimal
N (or S),                           1 Digit
Longitude(dddmm.mmm),               9 Digits inc. decimal
E (or W),                           1 Digit
Track (xxx Deg),                    3 Digits  (000 to 359)
Speed over Ground (xxxxx cm/s)      5 Digits
GPS altitude (xxxxx meter),         5 Digits
Validity of 3 D fix A or V,         1 Digit
In case of V (void=not valid) GPS data should not be used.
GPS altitude, position and speed should be ignored.
Satellites in Use (0 to 12),        2 Digits
Raw pressure (xxxxxx hPa),          6 Digits
Baro Altitude (xxxxx meter),        5 Digits (-xxxx to XXXXX)(Based on 1013.25hPa)
Variometer (xxxx cm/s),             4 or 5 Digits (-9999 to 9999)
true airspeed (xxxxx cm/s),         5 Digits (0 to 99999cm/s = 3600km/h)
Airspeed source P or V,             1 Digit P= pitot, V = Vane wheel
Temp. PCB (xxx °C),                 3 Digits (-99 to 999)
Temp. Balloon Envelope (xxx °C),    3 Digits (-99 to 999)
Battery Capacity Bank 1 (0 to 100%) 3 Digits
999 if data is not available (no battery, or other reason)
Battery Capacity Bank 2 (0 to 100%) 3 Digits
999 if data is not available (no battery, or other reason)
Speed to fly1 (MCO xxxxx cm/s),     5 Digits
Speed to fly2 (McC. xxxxx cm/s)     5 Digits
Keypress Code (Experimental empty to 99)    3 Digits (Code see below)
Dist. to WP (xxxxxx m),             6 Digits (Max 200000m)
999999 if not available (GPS position not available, or other reason)
Bearing (xxx Deg),                  3 Digits (999 if not available
*Checksum<CR><LF>                   5 Digits
Total                               115 Digits
```

General:
- If the value is not available the value is empty ",,"
- The time could also be empty. This is the case, when the real time clock is not valid, e.g. is not synchronized with the GPS time. This could happen after a battery change, before the first valid fix from the GPS system.
- Degree values can be from 0 to 359
- Variometer is the 1 second integrated value.
- Temperature balloon Envelope is the temperature received from the TT34 balloon transmitter
- The accuracy of the different sensors is not the resolution! The accuracy is according to the specification of the instrument.
- Minus sign means minus value.

Code of keypresses

```
OK_MENU         0x0001
INFO_HTWIND     0x0002
DOWN            0x0004
LEFT            0x0008
VOL_GOTO        0x0010
SINK_ROUTE      0x0020
MCR_WP          0x0040
```

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F1A1_MARK	0x0080
ESC_ONOFF	0x0100
RIGHT	0x0200
F2A2	0x0400
UP	0x0800

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