# Butterfly Interface Unit
# NMEA <> CANaerospace

Installation- and Usermanual

www.butterfly.aero

## A. Document Status And Revision History

| Revision | Date | Status | Author | Comments |
|---|---|---|---|---|
| 1.0 | 02. November 2012 | released version | Butterfly | Translation from german version |
| 1.1 | 23. November 2012 | released version | Butterfly | Minor correction |

## B. General Note

This manual is part of the device and has to be stored in the aircraft logbook. Please always comply with all warning and safety notices in this manual. Only install Butterfly Vario if you are qualified and have carefully read the manual. If you are unsure please consult an expert.
Addition or removal of connected devices may require reconfiguration.

# General Notes

## Legal Notes

### Trademarks and intellectual property

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### Liability

Butterfly Avionics GmbH will not be liable for errors/changes/omissions in this document - specifications are subject to change without notice.
Butterfly Avionics, its associates, development team, suppliers, manufacturers and data suppliers accept no responsibility for any damage or claims that may arise from use of Butterfly Vario.

## Restricitions

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Es ist möglich dass Daten, die über die Butterfly Interface Unit übertragen werden, teilweise or vollständig verloren gehen, verfälscht or abgeändert werden.

*The pilot is ultimately responsible for all flight decisions and for operating the aircraft safely at all times. This device does not eliminate the need for an effective lookout, prudent flight planning and safe flying. Butterfly Interface Unit may fail in flight. It is not tested against JTSO or FAA-TSO standards and must not be used in certified or commercially used aircraft.*

## Support

Contact our support via support@butterfly.aero. Additional information can be found on our website www.butterfly.aero.

We are available by phone on business days (CET) via +49 6224 82 83 87 0.

# General Specifications

## Part List

Following Parts are contained with each Butterfly Interface Unit.

| Item |
| --- |
| Butterfly Interface Unit |
| M12 CANaerospace Kabel |

## Optional Accessories

The following accessories are availbale. Order accessories via your local dealer or directly from Butterfly via www.butterflystore.aero

| Item | SKU |
| --- | --- |
| M12 CANaerospace Kabel 0.3m | 27.000.002 |
| M12 CANaerospace Kabel 1m | 27.000.002-1 |
| M12 CANaerospace Kabel 3m | 27.0.0.0002-2 |
| Butterfly Y-Adapter mit TX-Trennung | 1.1.0.0001 |
| Butterfly Y-Adapter mit TX-Umschalter | 1.1.0.0003 |
| Naviter Oudie Anschlusskabel für Interface Unit | |

# Introduction

### Short description

The Butterfly Interface Unit allows for the use of third party NMEA devices via RS232c on CANaeropsace bus installations.
Data is bONg read from a CANaerospace bus and sent out via RS232c in enhanced and configurable NMEA protocolls. Additionally data that is received via RS232c/NMEA can be sent to the bus system.
Two serial Ports are available, the unit is powered by the attached CANaeropsace bus system.

# Installation

## Mechanical Installation

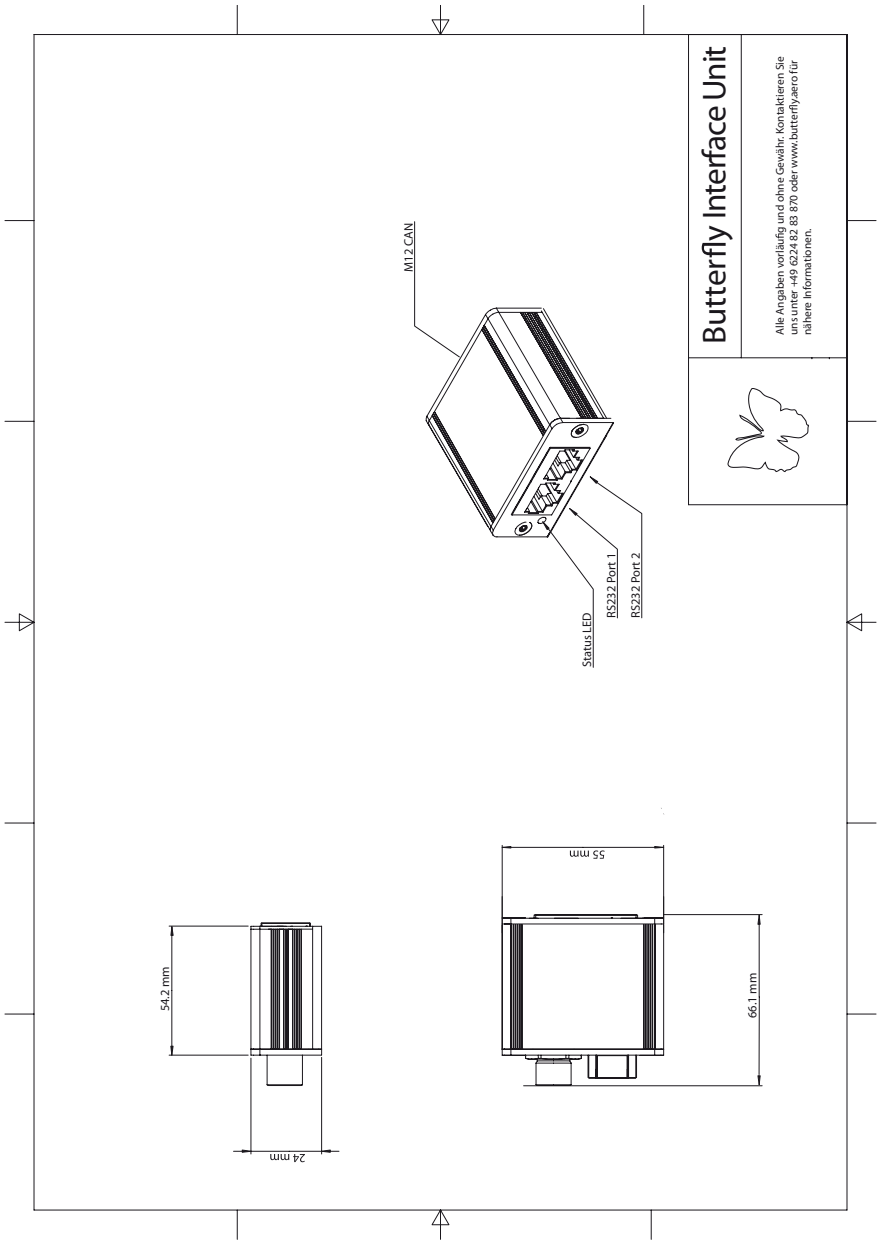
In all cases the installation is to be performed only with expert advice in accordance with this guidance.

### Mounting

The Interface unit can be mounted with wire-straps or Dual-Lock® at a suitable position.

*Ensure that the mechanical installation does not interfere with full control movements, canopy jettison and other safety features of the aircraft.*

### Dimensions



# Electrical Installation

## General information about electrical installation

The electrical installation has to be undertaken according to the guidelines and regulations applicable to the specific aircraft type. When uncertain as to how to perform any aspect of the installation, you should consult with an aeronautical engineer or an aircraft maintenance facility.
In all cases the installation is to be performed only with expert advice in accordance with this guidance.

## Power supply

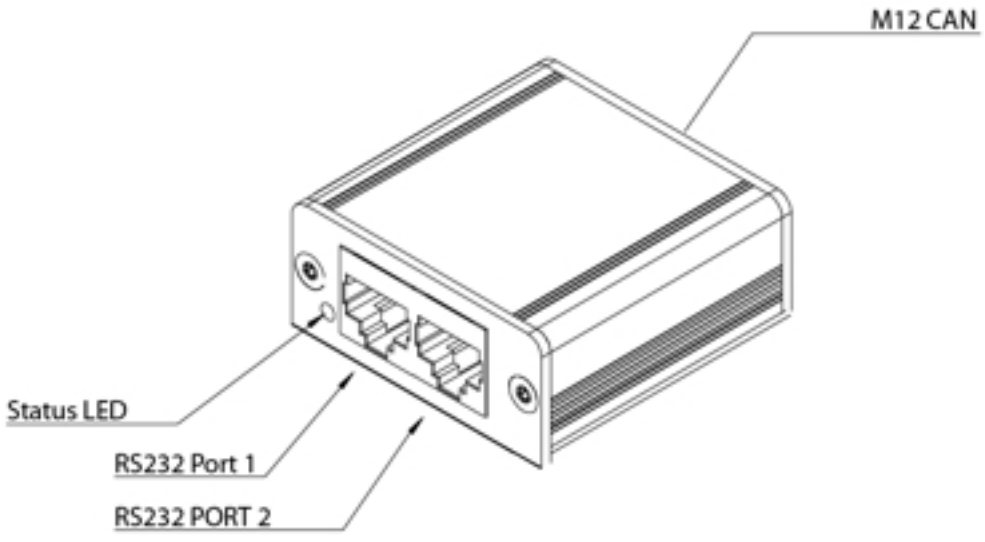
Butterfly Interface Unit is directly powered by the attached CANaeropsace bus system. A separate power supply is not intended.

| | |
|---|---|
| Input Voltage | 9V to 31V DC |
| Power | 250mW at 12V, 500mW at 24V |

## Connections

The following connectors are part of the interface box.

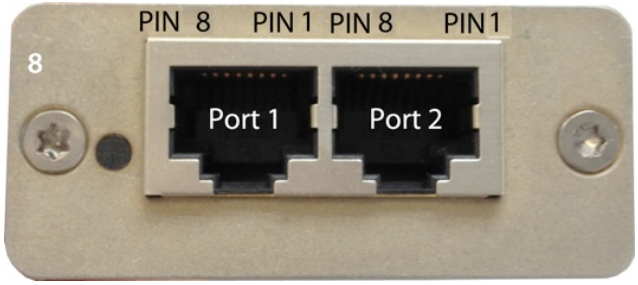
- M12 CANaerospace Plug
- M12 CANaerospace Jack
- 2x RJ45 with standard IGC-Pinout for RS232c.




**RJ45 Jack**
RJ45 ports have standard IGC pinout. Both contain one ingle RS232 interface. Port 1 sends and receives data, port 2 only sends data.

### *RJ45 pinout*

This standard pinout is similar to many Flightrecorders or FLARM®-devices.




***Port 1***
PIN 1: N/C
PIN 2: N/C
PIN 3: N/C
PIN 4: N/C
PIN 5: TXD (Interface Unit sends Data)
PIN 6: RXD (Interface Unit receives Date)
PIN 7: GND
PIN 8: GND

***Port 2***
PIN 1: N/C
PIN 2: N/C
PIN 3: N/C
PIN 4: N/C
PIN 5: TXD (Interface Unit sends Data)
PIN 6: N/C
PIN 7: GND
PIN 8: GND

### *RS-232 Interface*

NMEA 0183 conform messages are sent out and received. The interface datarate is fixed to 38400 BD, the logic levels are RS232c standard.
Other datasets containing enhanced information like wind or vario values are sent out via proprietary extended protocolls that are configurable with attached display units.

**M12-CANaerospace**

M12 Connectores are connected with the included M12 CANaerospace cable.
For connection of all CANaerospace nodes (Sensor unit, Display Unit etc) M12 DeviceNet®-cables are used. The supplied cables are extremely rugged and have polyurethane-based jacked. They fullfill highest level requirements regarding flammability, robustness and isolation.

## Integration into CANaerospace installations

The interface unit can be connected to exisiting CANaerospace installations at any place inside the bus-system.

**Termination**
Please note that a wire termination resistor is to be connected at the end of a CANaerospace bus installation.

**Examples**
The following examples show installations of an Interface unit in a Butterfly Vario CANaerospace system.

***Installation at the end of a bus-system with termination***

***Installation inside a bus-system***

# Technical Data

| | |
|---|---|
| Input Voltage | 9V bis 31V DC |
| Power | 250mW bei 12V, 500mW bei 24V |
| Weight | 95g (ohne Kabel) |
| Temperature Range | -10°C bis 70°C |

# Using the Interface Unit

## Data

**Sent daatatsets and information**
The following datasets are sent from the Interface unit.

| Information | Dataset | Comment |
|---|---|---|
| GPS-Position | Standard NMEA | |
| GPS-Status | Standard NMEA | |
| Barometric Altitude | Standard NMEA | |
| Wind (Direction and Strenght) | LX or Cambridge | configurable |
| Vario Value | LX or Cambridge | configurable |
| Total Pressure | LX or Cambridge | configurable |
| IGC-Data Readout | FLARM-Extension | |
| FLARM Traffic Data | FLARM-Extension | |

*Datasets can only be generated and sent out, if all data producing devices are connected to the CANaerospace bus and powered correctly!*
*Documented Datasetz require a Butterfly Vario Installation with connected temperature probe and Butterfly ISU.*

**Received daatatsets and information**
The following datasets are received by the Interface unit.

| Information | Dataset | Comment |
|---|---|---|
| Flight declaration into IGC Logger | FLARM-Extension | |

# Initial Operation

**Softwareupdate**

To be able to use the Butterfly Interface Unit a Softwareupdate to the latest firmware version of both the Butterfly Vario installation as well as the Interface Unit itself is required.

*Update Procedure:*

- *Update Butterfly Vario to Version 1.05 or higher*
- *Restart Butterfly Vario*
- *Again conduct the update procedure (now the interface unit is updated)*

# Configuration

**Configuration**

Dataset configuration works through the CANaerospace bus and is done through a connected display unit (e.g. Butterfly Vario)

The following table shows all configuration options.

| Configuration | Possible Values | Description |
|---|---|---|
| COM Baudrate | 38400 | Datarate of the serial Ports (RJ45) in BAUD, fixed to 38400 and not changeable |
| FLARM | ON / OFF | FLARM®-Data output active/inactive |
| GPS | ON / OFF | GPS-Data output active/inactive |
| VARIO | CAI / LXWP / VEGA / OFF | Vario-Data extension output (Cambridge/LX/Vega/ inactive) |
| Factory Reset | | Resets all values to factory settings |

**Configuration Menu in Butterfly Vario**

The configuration menu can be found here: *Menu* > *Setup* > *NMEA BOX*
All settings can be changed directly in use.