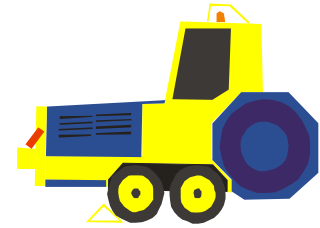


SKYLAUNCH

Winch Launch Systems

Electric/Gas/Petrol/Diesel
1/2/4/6 Cable Drums
Retrieve Winches
Equipment



Winch Launch Assistant

Telemetric system displaying glider air speed at the winch



Since winch launching has been invented winch drivers need to estimate the launched glider's speed at a far distance and have to adapt the throttle position to various glider types, characters of pilots and wind conditions. Especially light gliders, long launch runs, strong wind, bad powertrain properties and Dyneema cable with few sag make it hard to launch at optimum and save speed. Even cable tension and cable speed controlling systems cannot ensure proper air speed.

The development of digital transmission technology in open frequencies makes it possible to complete these procedures with an affordable metering and transmitting technology. It does not only increase safety, but also launch heights.

Devices:

The Winch Launch Assistant consists of a transmitter unit with integrated differential pressure sensor for the glider and a receiver unit with an LC display to be installed at the winch. During the launch, the system transmits the glider's air speed to the winch without any manual command needed.

Installation:

The transmitter unit has got two pressure ports to be connected with the air speed indicator of the glider via T-fittings. In addition to this, only a 12 V power supply is necessary which can be provided easily by the glider's own battery. The unit can be fixed with cable ties, and the aerial lead should be put parallel to the glider's lateral axis.

The receiver unit needs to be connected to 12 V only and can be mounted with bolts or cable ties close to the winch driver's sight.

Operation:

The transmitter turns on automatically when a speed of 50 kph has been superceeded for 3 sec and transmits the glider's airspeed for 90 seconds. Afterwards the transmitter turns off. After a landing it's ready for the next transmission. The receiver can be connected to the ignition switch for turning on and off automatically. This way, the systems works without any additional manual operation.

Launching:

Take-off and rotation of the glider are controlled as usual without using the speed display. A manual throttle lever with a reproducable position is strictly recommended, as the SKYLAUNCH dash board, which can also be fitted to any other winch, with integrated preselectors for glider type and wind speed provides.

After having reached the safety height, the throttle position can be checked every 2 or 3 seconds by having a short look at the receiver's display, and be adapted smoothly and slightly if necessary.

Advantages:

The glider's air speed can always be kept in the approved region. Instructors and winch drivers can adjust themselves with the telemetric system. Less cable or weak link breaks happen, usually occurring at stronger wind at the top of the launch if the throttle has not been reduced sufficiently. Release heights are higher, because the pilots fly in an optimum climb angle without being afraid of a stall or a cable break.

Technical Data

Range:

without optical obstacles > 3000 m, may be reduced by electro magnetic interferences close to the receiver unit (ignition system, power electronics etc.)

Frequency: Standard 869.75 MHz; 433,92 MHz version available (USA, AUS)

Transmitter:

Operating voltage: 9 – 18 V, protected against reverse polarity

Current consumption: 15 mA (stand-by), 35 mA (transmitting)

Transmitting power: 5 mW

Transmitting duration: 90 s after 27 kts were exceeded; ready for transmission after power off and on, or automatically after the speed staid below 27 kts for 100 s.

Dimensions: 52 mm x 36 mm x 19 mm

Receiver:

Operating voltage: 9 – 18 V, protected against reverse polarity

Current consumption: 45 mA

Scale: 50 – 200 kph (optional 27 – 108 kts, or 31 – 125 mph if ordered)

Dimensions: 61 mm x 49 mm x 42 mm

Questions and Answers

Why don't you transmit the air speed via the Flarm system?

The Flarm development team does not support any telemetric system for winch launches, neither with hardware nor with software. In addition to this, its vertical range of 500 m ist not sufficient. Not all gliders (especially the types having the greatest benefit from the telemetric system) are and will be fitted with Flarm for cost reasons.

What are the Winch Launch Assistant's advantages over other telemetric systems?

Easy installation, no room in the glider's panel needed, automatic power-on, affordable price

Is the Winch Launch Assistant legal?

The system is not mandatory in a glider, that's why it does not need any own certificate (just as an electronic variometer, for instance). The transmitter works within a mostly open ISM band with not more than 5 mW power, so it is legal in most countries. The installation of the transmitters should be checked by an inspector. Please ask him before which documents he needs for his approval!

How much is the Winch Launch Assistant?

Transmitter: € 220 net plus 19% VAT (one needed per glider)

Receiver: € 330 net plus 19% VAT (one needed per winch)

External analogue repeater gauge for receiver: € 235 net plus 19% VAT

Options for transmitter or receiver: 433,92 MHz (€ 35 net plus 19% VAT, per unit)

Changes of prices and features possible, 2022-05-28.

Sales: SKYLAUNCH Windenstartsysteme

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Instructions for installation and operation of the devices

The winch driver alone is responsible for the correct control of the winch.

Transmitter or receiver unit of the Winch Launch Assistant must not be used as electronic control units for a winch engine or motor. The displayed value is only used for fine tuning and cannot replace watching the glider, wind conditions, the winch drive and the behaviour of the pilot for estimating the necessary power.

The housings and the displays of the Winch Launch Assistant are not waterproof.

Protect from rain and washing water!

Speed and altitude indicators are sensible for moisture in the hoses.

Do not blow into the hoses or the glider's pressure probes!

The wires and hoses have no pull relief.

Do not pull the cables or hoses. Mount wires and hoses in a way that they are not under tension, do not kink or squeezed, do not rub anywhere and no person can tangle with arms or legs. Therefore also consider changes of temperature and length by swinging canopies / doors / guards. For mounting the transmitter it is sufficient to fix the hoses. Fixing the transmitter's housing may break the differential pressure sensor from its mount.

Align the arials parallel to each other.

Parallel to the glider's lateral axis (wing) or the winch's lateral axis, respectively. The length of the arials is adapted to the wavelength of the transmitting frequency. Do not shorten nor extend the arials.

Ensure sufficient and smooth supply voltage.

Minimum 8V (e.g. 9V compact battery for testing), or better 12 V from on board power supply. Exceeding 18 V destroys the internal power supply! Winches with a lorry engine and 24 V on board voltage need an additional voltage converter to supply 12V for the receiver unit, or use a separate 12V battery! Use suitable, corrosion free electric connectors only. Avoid soldering, but prefer crimp connectors and use the proper crimping tools. Protect electric contact from corrosion by using electric grease.

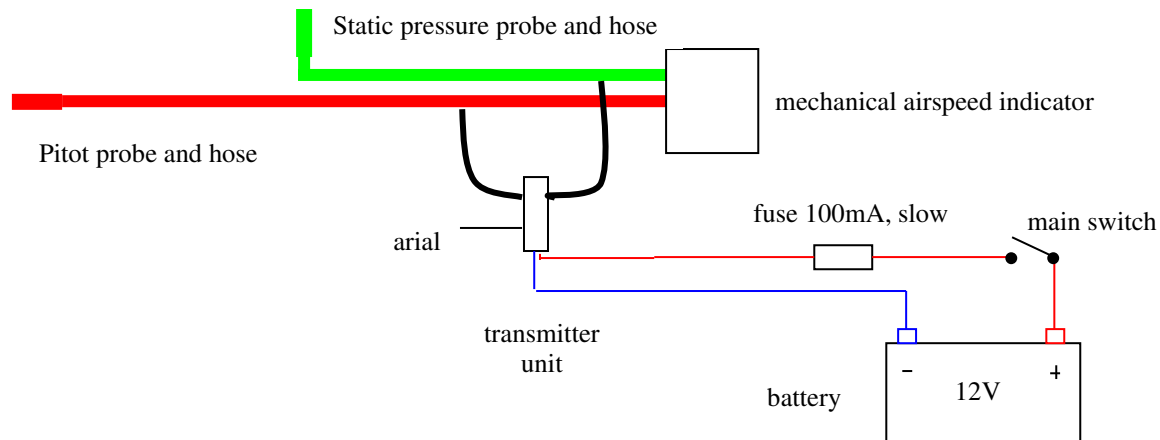
Use a power switch and fuses.

The devices must be electrically detachable to avoid any total discharge of the on board batteries. For the transmitters it is sufficient to supply them via the glider's main switch. The receiver unit may be connected to the 12 V ignition circuit (at the ignition switch) of the winch engine. Close to the switch the supply line should be fused with 100 mA (slow) to prevent any smoke and poisonous fumes in the case of a short circuit.

Installing the transmitter unit

Cut both pressure hoses of the mechanical speed indicator (static pressure/Pstat and Total Pressure/Gesamtdruck/Messdruck/Staurohr/Pitot/Ptot) in the glider at a suitable distance from the mechanical airspeed indicator (check with your glider inspector before if he insists on separate pressure probes for the transmitter unit). Insert the T-

fittings of the transmitter unit at the cut-off points. Hard hoses may become sleeker when treated with a hot air gun. Make sure that the hoses of the speed indicator don't get swapped and that they are attached to their corresponding port of the transmitter unit (see labels at the transmitter's housing). Fix the 4 mm hoses with cable ties, do



not necessarily fix the transmitter's housing. Aerial wire parallel to the glider's lateral axis (wing), install the wires properly and fix them.

Installing the receiver unit at the winch

Do not mount on seriously vibrating parts. Fix the housing at the lateral border of the winch driver's visual field using some cable ties or bolts (aerial side on the top). Do not glue because it's not durable. Mesh guards usually do not interfere with radio reception. Align the aerial laterally.

Testing the receiver unit

Turn on power supply (e.g. turn ignition switch on). A value might appear on the display for a short moment vanishing right afterwards. Start the engine und turn on all electrical load while idling. There shouldn't occur any values on the display, as long as no transmitter is active. Otherwise, check if voltage is sufficient (always more than 8 V), smooth and free of blackouts. The voltage may be smoothed by an electrolytic capacitor close the receiver unit (e.g. 100 μ F, 25 V), connected to positive 12 V and ground.

Testing the transmitter unit (only recommended for fault finding)

Turn on the receiver unit and let an assistant watch its display if necessary. Pull the hose of the static pressure coming from the glider's probe off the T-fitting and suck slightly (max $\frac{1}{4}$ atm), so that the mechanical airspeed indicator shows more than 27 kts. Now the receiver unit should display a value. Deviations to the mechanical speed indicator of up to 4% are possible, because 2% for each system are allowed. 90 seconds later, the transmitter turns off and the value on the receiver's display disappears. A transmitter can be reset to the ready-for-transmission-state either by turning of and on the power supply, or by equalizing the pressure at both ports of the sensor for 100 seconds (landing detection).

Launching

The receiver unit can only display speed values when it receives an undisturbed signal. This is the case when the glider exceeds an airspeed of 27 kts and is visible for the receiver unit. Otherwise, the winch has to be inspected for sources of interference (e.g. ignition system, high power electronic systems etc.) which have to be shielded. Interferences can be prevented by using a separate power supply for the receiver unit, a filter capacitor parallel to the receiver unit, a choke in serial to the receiver unit, a filter unit as used for car radios, a power supply directly coming from the battery with a manual switch or a relay operated by the ignition switch. In addition to this, make sure that no second transmitter is active at the same moment and the transmitter gets sufficient voltage.

Always safe launches and great launch heights wish you

The SKYLAUNCH-Team