

CYPRES

Reliability made in Germany



CYPRES

Static Line System

Manual

This **CYPRES Static Line System** manual

is applicable for:

- jump-masters
- logisticians
- technicians
- pilots
- store managers, etc.

it is virtually not necessary for:

- parachutists !

The information for parachutists is shown here:

**WHEN YOU SEE WHITE FLASHING, EVERYTHING IS O.K.
WHEN YOU SEE RED FLASHING, PLEASE INFORM YOUR J.M.**

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Preface

In 1991, Airtec generated a revolution in the world of parachuting by introducing the first ever reliable Automatic Activation Device.

As of today, this device has saved the lives of many more than 5200 parachutists, without a properly maintained CYPRES ever failing to activate and cut the reserve closing loop into two parts once the activation conditions were met. CYPRES is probably the most reliable piece of parachuting equipment ever produced.

In 2014, 23 years later, Airtec generated a second revolution in the parachuting world, by introducing the first ever Automatic Activation Devices for Lower Level Static-line jumps.

A device designed for this purpose has never existed before because it is a very difficult technological task. In the past there have been industry surveys and attempts made but none with any success.

Airtec had their first thoughts about this concept in the year 2000. At this time though suitable core technology was not available on the market to start the project. When the technological progress provided the means, it took another 7 years of research and development until market release.

The result is the CYPRES Static Line System.

1. The CYPRES Static Line System



the SLS Unit
is the Static Line AAD



the SLS Aircraft Module
serves all SLS Units that
are in the aircraft



the SLS Self-test Module
checks all SLS Units that
should be checked



Its purpose is to initiate the reserve opening of a static line parachutist typically 400 to 500 feet below the dispatching aircraft if the main does not deploy or does not fully deploy, allowing the jumper to fall too fast. Faster than 13 meters per second vertical.

This device does not require the parachutist to execute any settings, not even to switch it on. In fact, there are no options for manual settings by the parachutist.

There has never been any AAD system in the past that is capable to function without the parachutist performing any handling.

This perfection is unique to the CYPRES Static Line System.

Also might the SLS help to reduce stress and risk if a towed jumper is hanging below the aircraft.

The action could just be: go to 2000 feet and cut him off.

1.1 The SLS Unit

is mounted inside the reserve container. Typical installation in a chest reserve:



The control unit mounts outside the reserve in a clear pocket and is therefore visible.

The control unit only features a white and a red LED light. Nothing else.



From the moment of the SLS unit's installation there is no handling required by the parachutist. In fact, nothing needs to be done as nothing can be done. The only action required is to look for either a white or red flashing light.

If it **flashes white** it **can be used**.

If it **flashes red** it **can not be used** and should be checked.

Technically: The SLS Unit always flashes every 2 minutes throughout its lifetime. If a self-test has been done, then it flashes in a 5 second interval for a duration of 14 hours. If it gets into contact with the SLS Aircraft Module it flashes every 2 seconds, indicating that it is ready for function. 2 minutes after it has lost contact with the SLS Aircraft Modul it changes back to that flashing interval which it had before getting into contact with the SLS Aircraft Module.

Whenever it **discovers a fault** it changes from flashing white to **flashing red.**

The red flashing can only be eliminated by a repair or when the reason is resolved. In case of flashing red, a further self-test to check the outcome is permitted.

Practically: The reserve equipped with an SLS Unit can simply be taken from the store, fitted to a jumper and the whole configuration can be used as if there were no SLS unit.

1.1.1 Specifications of the SLS Unit

Activation altitude	approx. 500 ft to 600 ft below jump aircraft
Activation speed	approx. > 13 m/s / 29 mph
Lowest dispatching altitude	reserve opening plus 500 to 600 feet
Size of the processing unit	approx. 3 1/3 x 2 2/3 x 1 1/4 inch
.....	(85 x 43 x 32 mm)
Cable length of the display unit	approx. 25 inch (635 mm)
Cable length of the release unit.....	approx. 20 inch (500 mm)
Volume.....	approx. 8,9 cubic inch (146 cm ³)
Weight	approx. 4,66 ounces (165 grams)
Working temperature	+145° F to -25° F * (+ 63° to - 32° centigrade)
Storage temperature:.....	+160° F to -58° F (+71° to -50° centigrade)
Waterproof.....	up to 24 hours down to a depth of 8 feet
Maximum allowable humidity.....	up to 99,9 % rel. humidity
Operating range.....	- 2,140 feet to + 38,000 feet MSL (-650 m to +11,700 m)
Voluntary maintenance	5 and 10 years from date of manufacture +/- 6 months
Total sevice life	15.5 years from date of manufacture
Total warranty time	see chapter 3

* These temperature limits do not mean the outside (ambient) temperatures but rather temperatures inside the processing unit. Therefore, these limits won't have any meaning until the processing unit itself has reached the temperatures in question. In actual fact, these limits will rarely be reached due to the location of the SLS unit in the reserve container, and the insulating properties of the processing unit pouch and parachute canopies.

1.2 The SLS Aircraft Module (AM)

needs

1) to be placed inside the jump aircraft at a defined place (for specific instructions see chapter 1.2.3)



container with AM inside



AM front view



AM back view

and

2) its control unit has to be manually switched **ON** shortly (best 3 minutes), but **at least 1 minute before dispatching**

If possible, have a second person crosscheck the green light on the control unit of the Aircraft Module.
and

3) it has to be switched **OFF** shortly **after dispatching**, e.g. after the Static Lines have been pulled in.
Nothing else.

The Aircraft Module is designed to enable the SLS units function.

Use only in the aircraft

Technically: After the SLS Aircraft Module is switched on, it will indicate that it is **operational** by displaying a **permanent green LED light**.

If a **problem** is detected, a **permanent red LED light** will be displayed.

Switch the Aircraft Module off and on again. If it then displays a green light, it is good for use.

If the Aircraft Module displays the yellow LED light, a battery replacement will be necessary before the next day of use. Follow the instructions as given in Art.No.: 991032 “CYPRES SLS aircraft unit battery change” (the laminated sheet, which is in the accessories bag).

Practically: Please switch ON the Aircraft Module shortly before the drop (no less than 1 minute before) and switch it OFF after the drop. E.g. after the Static Lines have been pulled in.

Exception: If you have a towed parachutist hanging underneath the aircraft, then do **not switch the Aircraft Module off before the case is resolved.**

The Aircraft Module is designed to be switched on and off only during flight. Please do not switch it on while on the ground or at take off.

Please do not switch the Aircraft Module on earlier than necessary. In case that the **aircraft does a jump run**, drops parachutists and **then makes one additional jumprun or more additional jumpruns**, **then the Aircraft Module can permanently stay switched on** until after the last drop.

1.2.1 Specifications of the SLS Aircraft Module

Dimension of Aircraft Module casing approx. 6 2/3 x 6 1/3 x 1 1/6 inch (17 x 16 x 3 cm)
 Dimension of control unit.....approx. 5 x 2,5 x 1 2/3 inch (12,5 x 6,5 x 4 cm)
 Cable length of the control unit..... approx. 17 feet, (5,10 meter)
 Weight of the complete assembly..... approx. 7 lbs. (3 Kg)
 Working temperature +145° F to -25° F (+ 63° to - 32° centigrade)
 Storage temperature:..... +160° F to -58° F (+71° to -50° centigrade)
 Maximum allowable humidity.....up to 99 % rel. humidity
 Operating range..... - 2,140 feet to + 38,000 feet MSL (-650 m to +11,700 m)
 Working frequency.....433 MHz
 Output.....1 milliwatt (0 dBm)
 Working duration, when one battery is installed.....approx. 100 active hours
 Voluntary maintenance 5 and 10 years from date of manufacture +/- 6 months
 Total service life 15.5 years from date of manufacture
 Total warranty time see chapter 3

1.2.2 Battery in the SLS Aircraft Module

There are 8 slots for battery packs available inside the Aircraft Module casing.
 The more battery packs installed, the longer the unit will operate before the yellow light of the control unit will indicate a lowBat status.

Replace all installed batterie packs once the yellow light of the Aircraft Module's control unit indicates lowBat status.

Indication: On one installed pack of batteries, the Aircraft Module will run for approximately 100 active hours.

To install or replace a battery pack, please follow instructions in Art.No.: 991032 "CYPRES SLS aircraft unit battery change" (the laminated sheet, which is in the accessories bag).

1.2.3 Positioning inside the aircraft

Depending on the size of the jump aircraft, there are different locations recommended in which to position the Aircraft Module.

We recommend positioning the Aircraft Module container at the ceiling, centered (left / right) if the ceiling height allows enough space for a fully equipped parachutist to walk underneath.

The location should be where the side doors are.

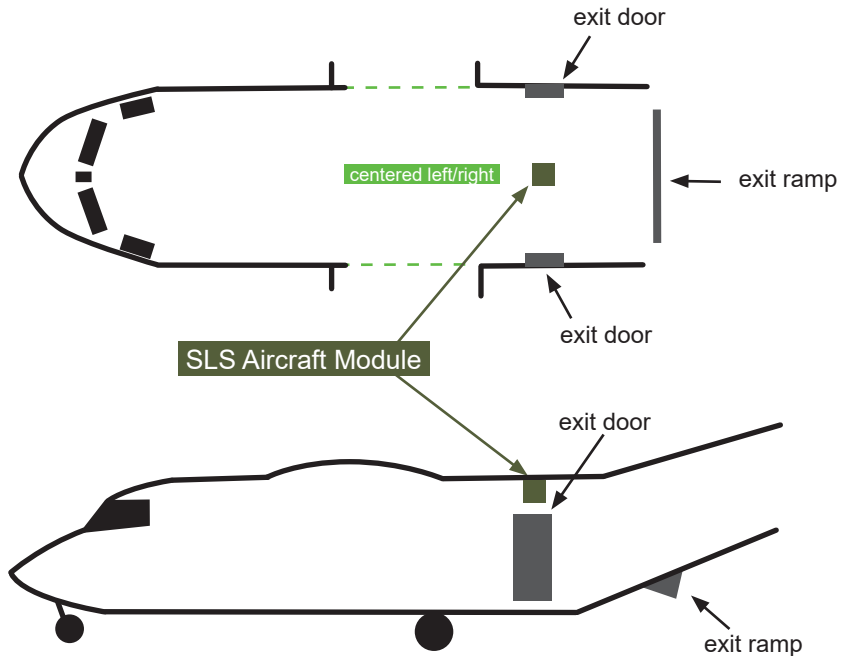
This position can also be used for ramp exits.

For this kind of attachment at the ceiling, the control unit of the Aircraft Module can be separated from the Aircraft Module. Take the control unit out of its slot, uncoil as much as needed of the green cable to position the control unit at an easily accessible location for the jump master. To tie down the green cable to the ceiling and the side wall, you will find Velcro straps in one of the side pockets of the Aircraft Module container. In the other side pocket you will find a nylon protection cover for the control unit.

This applies to aircraft like e.g. C160 (Transall), C130 (Hercules), AN-12 or similar.

See drawing on next page.





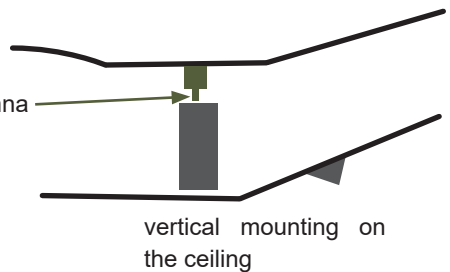
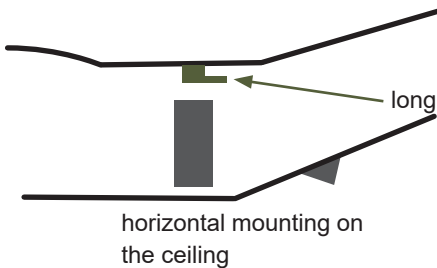
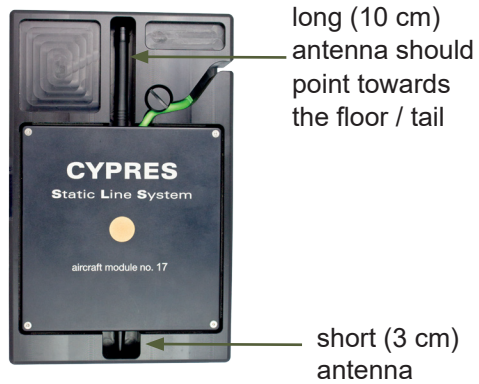
This location of the Aircraft Module can also be used for ramp exits.

For not that large jump aircraft with lower ceilings please follow these guidelines. For mounting on side walls we recommend the Aircraft Module to be positioned as follows:

- In small aircraft like Cessna 172, 182, 206, Beaver, Pack 750, Porter, Caravan, Twin Otter or similar, install the Aircraft Module on the side wall opposite of the jump door and close to the ceiling.
- In larger aircraft with a tailgate to exit from, like CASA, Skyvan, AN-12, AN-26, etc., the Aircraft Module should be located at the ceiling, shortly before the ramp or above the jump door.
- For helicopters like NH90, Huey, Eurocopter, Blackhawk, Lynx, etc., the Aircraft Module should be close to the ceiling in one of the following locations: above the jump door, the opposite side of the jump door, or on the back wall between the two jump doors.

- In helicopters like the CH47 (Chinook), CH-53, Mi-8/17, etc. the Aircraft Module should be located at the ceiling, shortly before the ramp or above the jump door.

In case the ceiling height is not adequate to hang the Aircraft Module container vertically, then the Aircraft Module container can be fastened to the ceiling horizontal so that the long (10 cm) antenna points towards the tail of the aircraft.



1.3 The SLS Self-test Module

is a device for the storage crew or the J.M. It allows them to check all CYPRES SLS Units within range.



Just one click on the push button triggers the SLS Units within range to execute a self-test. Every unit will count down the typical 10 CYPRES self-test digits by flashing white 10 times.

After the self-test is complete, every SLS Unit will flash white in an interval of 5 seconds, indicating the successful self-test. The SLS Units will flash white in the 5 second interval for 14 hours. After that it changes back to the 2 minute flash interval.

In case a SLS Unit detects a problem, it will at the end of the self-test, light the red LED permanently for 3 minutes and thereafter flash in red intervals instead of in white intervals.

The flashes will stay red until it is repaired. Or if the reason for the red flashing is resolved.

The Self-test Module is designed to check the SLS Units status on the ground.

To avoid a detection of a non functional SLS unit at altitude, please do a self-test on the ground prior to use.

Technically: When the button is clicked, the self-test module will be active for 16 seconds while the green LED lights permanently. Within this time, all SLS Units within range should recognize this and start the self-test procedure.

This procedure can be repeated as often as necessary, without creating a problem for the Self-test Module or the SLS Units.

The SLS Self-test Module does not need a battery replacement.

Practically: The rigging loft manager can trigger a self-test of his CYPRES SLS Units early in the morning on a mission day in his loft.

All reserves that flash white are good to use.

If a SLS unit should flash red it should not be used but be checked.

This allows an easy way for everybody involved to realize the “good” status of the SLS CYPRES.

1.3.1 Specifications of the SLS Self-test Module

Dimension of casing	approx. 6 x 4 x 1 3/4 inch (15 x 10 x 4 cm)
Weight of module.....	approx. 650 grams
Working temperature	+145° F to -25° F (+ 63° to - 32° centigrade)
Maximum allowable humidity.....	up to 99 % rel. humidity
Operating range.....	- 2,140 feet to + 38,000 feet MSL (-650 m to +11,700 m)
Working frequency.....	433 MHz
Output.....	1 milliwatt (0 dBm)
Battery change	never
Voluntary maintenance	5 and 10 years from date of manufacture +/- 6 months
Total service life	15.5 years from date of manufacture
Total warranty time	see chapter 3

1.4 Easy overview of the SLS Unit's flashing scheme

always

flashes white every 2 minutes

if a self-test has been performed via the SLS Self-test Module

flashes white every 5 seconds

for 14 hours

if the SLS Unit is in contact with the SLS Aircraft Module

flashes white every 2 seconds

until 2 minutes after it has lost contact to the SLS Aircraft Module

Then it changes back to the flashing interval that it executed before it got in contact with the Aircraft module.

in case of error detection

lights permanently red for 3 minutes

Thereafter executes all flashes in red until the problem is solved.

2. Guidelines for the pilot

1. Fly horizontal during the time of dropping.
2. After dropping, fly horizontal for at least 15 seconds.
Thereafter do not exceed a descent rate of 2500 feet per minute until wheels are on the ground.*

Please know that sometimes a jump master has replacement reserve parachutes with installed SLS devices in the aircraft.

* The restricted descent rate (of 2500 feet per minute) does **only** apply if there are still SLS devices in the aircraft. No SLS devices in the aircraft means no restricted descent rate.

* If more than 2 minutes have passed by since the SLS Aircraft module has been switched off by the Jump Master, then the restricted descent rate (of 2500 feet per minute) does **no longer** apply.

3. Warranty

Airtec GmbH & Co. KG grants the legally prescribed warranty of two years. Provided it is technically possible and economically justifiable, we intend to carry out repairs free of charge on a voluntary basis for a further three years for all non-intentional or non-negligent damage.

Provided it is technically feasible and economically justifiable, and the affected device has been regularly maintained on schedule, Airtec will thereafter, at its sole discretion, consider repair or replacement free of charge for all non-intentional or non-negligent damage. This has been a long-standing Airtec practice since 1991.

The manufacturer reserves the right to decide whether the unit will be repaired or replaced. Neither repair nor replacement will affect the original warranty.

When a CYPRES2 unit is returned to the manufacturer or service center, it must be packed in the original box or an equivalent shipping package including a fully completed service form/proper documentation for billing purposes, return shipping information, contact information, and any other relevant notes.

No claims will be accepted if the unit has been damaged or opened by an unauthorized individual or if an attempt has been made to open the processing unit, release unit (cutter) or control unit.

4. Disclaimer

In designing and manufacturing CYPRES, the aim of Airtec GmbH & Co. KG Safety Systems, is that the device should not accidentally sever the loop but should try to sever the reserve closing loop when the activation criteria are met. All investigations and experiments performed during the product's development and all laboratory and field tests accompanying trial and production phases have indicated that CYPRES meets both these goals.

However, as an electro-mechanical device the possibility of CYPRES malfunctioning cannot be excluded. Such may cause injuries or death. We accept no responsibility for damages and consequences resulting from any malfunction.

Airtec GmbH & Co. KG Safety Systems also accepts no responsibility for damages or problems which are caused by the use of non-original Airtec parts and supplies.

The use of CYPRES is voluntary, and does not automatically prevent injury or death. Risk can be reduced by assuring that each component has been installed in strict compliance with the manufacturer's instructions, by obtaining proper instruction in the use of this system and by operating each component of the system in strict compliance with this User's Guide / Manual.

If used in the United States, the use of CYPRES shall be in accordance with USPA BSRs.

Automatic activation devices (AADs) sometimes display a wrong status, fail to operate or operate properly and sometimes activate when they should not, even when properly installed and operated. Therefore the user risks serious injury or even death to themselves and others during each use of a CYPRES.

By using or allowing others to use CYPRES, you acknowledge that you accept responsibility for the proper use of the device, as well as accepting the consequences of any and all use of this device.

Airtec GmbH & Co. KG Safety Systems, their Dealers, Service Centers, and Agents total and complete responsibility is limited to the repair or replacement of any defective device.

CYPRES is strictly a backup device, and is not intended to replace proper training or timely execution of appropriate emergency procedures. If you, your friends, or family are not in agreement of this disclaimer please do not use CYPRES. Please note that even though CYPRES has an extraordinary track record, your results may vary.

5. Trade Marks

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Subject to change without notice. This revision replaces and supersedes all previous versions. See <https://military.cypres.aero> to verify / obtain the latest version.

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If questions

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Note questions and answers here:

This is a small hint for people who have to deal with altitude and pressure.

If you have to determine what pressure is existing at a given altitude, or if you have to find out which altitude is equivalent to a certain pressure or similar, you can make use of the “Military CYPRES Calculator”.

This item is available as a hardware device and also as an App for Apple and Android smartphones and tablets.

The Apps are available free of charge.



Scan to navigate to

<https://downloads.cypres.aero/military/calculator/index.php>



Note questions and answers here:

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