



Northern Avionics
 v.le dell'Aviazione, 65
 20138 – Milano
 PART-145 App. IT.145.0004
 PART-21G App. IT.21G.0041
 PART-21J App. EASA.21J.223

MOD DESCRIPTION BROCHURE

Ref. NAV-0519

Rev.0

PROJECT No. 01531NAV0519 First Limit Advisory System (FLAS)

PROJECT TYPE		APPLICABILITY:
STC	<input checked="" type="checkbox"/>	
	Minor Change <input type="checkbox"/>	

When performing aerial work (e.g. cargo hook delivery) in specific climatic conditions, like hot and humid weather, the helicopter could be operated at its performance limits and the pilot attention is mainly focused outside the cockpit and not toward the instrument indications.

First Limit Advisory System (FLAS) is a supplementary advisory system capable to recall the attention of the pilot on the engine indications when one of the monitored parameters (N1, ITT, Torque, N2 and NR) exceed a customer defined advisory limit, set at a value lower than the limit.

The FLAS system doesn't modify the philosophy/priority of the main aural warnings already existing on the helicopter, but only introduce an "anticipated" acoustic alert that could avoid conditions where the engine performance limits are reached, or exceeded, and high cost engine inspection became effective.

First Limit Advisory System (FLAS) block diagram is shown in figure 1.

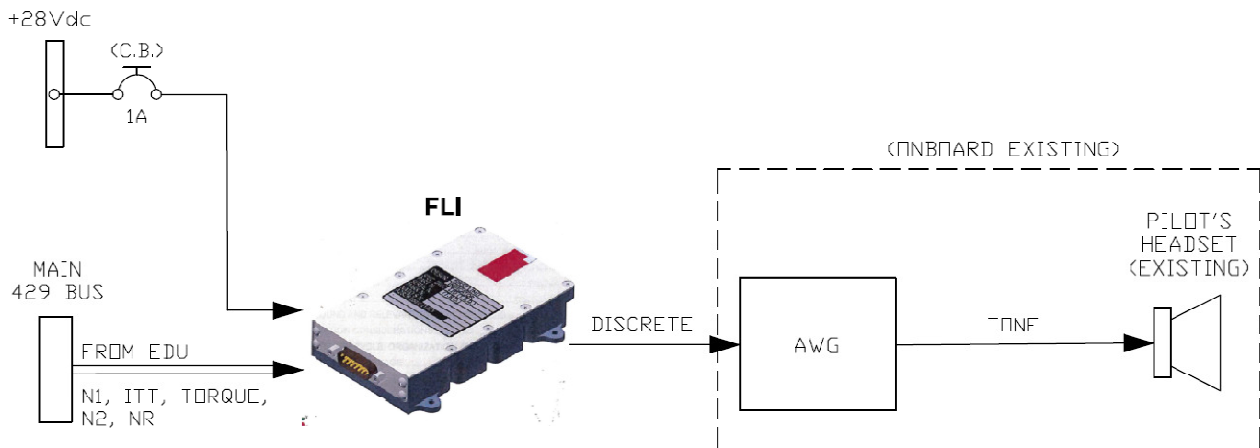


Fig. 1 – FLAS Block Diagram

This installation is applicable on helicopters that install the Integrated Display System; a simple Northern Avionics system provision must be applied before the FLAS activation. The FLAS provision consists of:

1. Mechanical provision (inserts) for the installation of the First Limit Indicator (FLI).
2. Electrical provision, for the installation of the FLI Interface Harness and circuit breaker.
3. Modification of the existing Aural Warning Generator (AWG) software configuration, necessary to enable the new discrete input coming from the FLI.



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The First Limit unit refers to a selected ARINC 429 cross talk bus for the required parameters values and it will be triggered as soon as one of the collected parameters exceed the customer advisory value specification; refer to below table 1.

When triggered, the FLI will sent a discrete command to the Aural Warning Generator in order to give an alert tone to the Pilot headset; the alert tone will be heard until the exceedance is removed.

Parameter	Customer Defined Advisory	Manufacturer Exceedance
N1	100%	100.15<N1<103.25 FOR 5 MIN. 103.25<N1<103.85 FOR 30 SEC. N1>103.85 ANY TIME
ITT	755°C	755<ITT<810 FOR 5 MIN. ITT>870 FOR 2 SEC. + INCREASE LAW ITT>870 FOR 10 SEC. ITT>860 ANY TIME ITT>810 FOR 15 SEC.
Torque	100.5%	100.5<TQ<108.5 FOR 5 MIN. 108.5<TQ<115.5 FOR 6 SEC. TQ>115.5 ANY TIME
N2	103.5%	103.5<N2<108.5 FOR 10 SEC. N2>108.5 ANY TIME
NR	104%	NR>110.5 ANY TIME

Table 1 – FLI Parameters and advisory values (as example)

The FLAS became operative when the N1 parameter is >43%; a Power-up and a Continuous Built-in Test monitor the functionality of the system.

This system can be also adapted to different helicopters model or with different parameters value.

For more information you can contact:

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SUPPLEMENTAL TYPE CERTIFICATE

10057020

This Supplemental Type Certificate is issued by EASA, acting in accordance with Regulation (EC) No. 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation and in accordance with Commission Regulation (EU) No. 748/2012 to:

NORTHERN AVIONICS S.R.L.

**VIALE DELL' AVIAZIONE 65
20138 MILANO
ITALY**

and certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable Type Certification Basis and environmental protection requirements when operated within the conditions and limitations specified below:

Original Type Certificate Number: EASA.R.005

Type Certificate Holder: AgustaWestland S.p.A.

Type: A109/A119

Model: A119, AW119MKII

Description of Design Change:

First Limit Advisory System (FLAS)

The FLAS system is designed to trigger by means of a discrete output the Aural Warning Generator when one or more of the selected parameters exceed the customer limit value.

The warning provided is supplemental and auxiliary to the existing visual/audio alerts already part of the helicopter indicating system.

See Continuation Sheet(s)

For the European Aviation Safety Agency

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