



Foreign Part-147 Distance learning training method User guide

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**DOCUMENT CONTROL SHEET****Reference documents****a) Contextual documents**

Commission Regulation (EU) 1321/2014 - Commission Regulation (EU) of 26 November 2014 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organizations and personnel involved in these tasks

Commission Regulation (EU) 2019/2153 - Regulation of 16 December 2019 on the fees and charges levied by the European Aviation Safety Agency Regulation (OJ L 327, 17.12.2019) and repealing the Regulation (EC) 319/2014

ED Decision 2015/029/R - ED Decision 2015/029/R of 17 December 2015 issuing acceptable means of compliance and guidance material to Part-M, Part-145, Part-66 and Part-147 of Regulation (EU) N°1321/2014 and repealing Decision 2003/19/RM of the ED of the Agency of 28 November 2003 and amended by ED Decision 2020/002/R of 13 March 2020

MB Decision 01-2017 - Decision of the Management Board of 13 June 2017 repealing MB Decision 01-2011 on guidelines for the allocation of certification tasks to National Aviation Authorities and Qualified Entities

Regulation (EU) 2018/1139 - Regulation (EU) 2018/1139 of the European Parliament and of the Council of 4 July 2018 on common rules in the field of civil aviation and establishing a European Union Aviation Safety Agency, and amending Regulations (EC) No 2111/2005, (EC) No 1008/2008

EASA Guidance for allowing virtual classroom instruction and distance learning in relation to the COVID-19 pandemic Issue no.:5 dated 18.08.2020

b) Internal documents

WI.IMS.00105-002 - Filing plan Maintenance and Production Department

Abbreviations/Definitions

AMC: Acceptable Means of Compliance

ATO: Approved Training Organization

CAO: Continuing Airworthiness Organization

CAOM: Continuing Airworthiness Organizations Manager

C/S: Certifying Staff

CBT: Computer-based Training

DSL: Distance learning

EASA: European Union Aviation Safety Agency

EASATL: EASA Team Leader

EU: European Union

F145: Foreign Part 145

F147: Foreign Part-147

GM: Guidance Material





MTOA: Maintenance Training Organization Approval

MTOAP: Maintenance Training Organization Approval Procedures

MTOC: Maintenance Training Oversight Coordinator

MTOE: Maintenance Training Organization exposition

NAA: National Airworthiness Authority

WBT: Web-based Training



**Log of issues**

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1. Introduction





1.1 Table of contents

1.	Introduction.....	5
1.1	Table of contents.....	6
1.2	Scope & purpose	7
2.	Distance learning training method.....	8
2.1	General principles.....	9
2.2	Training tools.....	10
2.3	Approval process of the addition of DSL training method.....	10
2.4	Synchronous distance learning training method	11
2.4.1	Virtual Classroom.....	11
2.4.2	Theoretical training	14
2.4.3	Theoretical examination.....	15
2.4.4	Practical training.....	16
2.4.5	Practical assessment.....	18





1.2 Scope & purpose

This User Guide applies to EASA Part-147 organisations based outside the EU Member States (hereinafter referred to as “Foreign Part-147 organisations”), for which EASA is the Competent Authority.

This User Guide is a summary of technical instructions to be followed when the Foreign Part-147 training organisation is implementing distance learning training method (DSL) within its approved scope of approval.

This User Guide is complementary to the requirements of Implementing Rule - Regulation (EU) No 1321/2014 Annex IV “Part-147”, as amended, and does not supersede or replace the information defined within this document.





2. Distance learning training method





2.1 General principles

Distance learning training method is introduced by Annex IV of ED decision 2020/002 in AMC 147.A.130(a), which is applicable to both basic and type training organisation.

AMC 147.A.130(a) defines 2 different types of distance learning training method:

- Distance learning asynchronous:
Distance learning reflects training situations in which instructors and students are physically separated. The instructor and the students do not interact at the same time.
This training method is "Student-centred" (i.e. the student is responsible for the learning progress).
- Distance learning synchronous:
Distance learning reflects training situations in which instructors and students are physically separated. The teacher and the students interact at the same time (real time).
This training method is "Instructor centred" (i.e. instructor is responsible for teaching the student).

It is possible to deliver a blended training which integrates a range of learning opportunities by implementing:

- different training tools (e.g. slideshows, virtual aircraft, virtual classroom..)
- different delivery methods (CBT, WBT, synchronous DSL, lecturing...)
- different scheduling (synchronous/asynchronous)
- different levels of guidance.

This user guide is focused on synchronous DSL, which is the most common DSL type implemented by foreign EASA Part-147 organisation.

Synchronous DSL can be used to teach theoretical part, and practical elements under conditions, which are further detailed in this user guide. However, as per AMC 147.A.130(a) the suitability of DSL is limited when teaching:

- Theoretical level 3 topics
- Practical elements.





2.2 Training tools

As per AMC 147.A.130(a) table 3, the following training tools can be used during synchronous DSL either for theoretical part (basic or type) or practical element of the type training:

- Slideshow presentation
- Manuals
- Computer (desktop, PC, laptop, etc...)
- Mobile devices (such as, but not limited to, tablets, etc.)
- Videos
- Virtual reality
- Virtual classroom
- Virtual aircraft

A combination of several training methods/tools is recommended in order to increase the overall effectiveness of the training.

Mobile phone cannot be used for the video presentation of the virtual classroom as the screen size does not allow to attend virtual classroom with sufficient comfort (i.e. audio only is acceptable on mobile).

2.3 Approval process of the addition of DSL training method

In order to be approved to use DSL training method on a permanent basis, the training organisation has:

- to submit an EASA Form 12 to apply for off-site training, only when not previously approved
- to submit for approval the amended MTOE describing the implementation procedure of DSL training method and associated training tools in compliance with all technical instructions detailed in this user guide
- to be audited by the surveyor either on-site or remotely (remote audit not applicable for initial application)
- Similar approval process is required whether it is an initial application or a change of an existing approval.

At the minimum the following MTOE chapter have to be amended to describe the use of DSL:

- 2.1 Organisation of courses
- 2.2 Preparation of course material
- 2.3 Preparation of classroom and equipment
- 2.5 Conduct of theoretical training and practical training
- 2.6 Records of training carried out
- 2.8 Training at locations not listed in paragraph 1.6
- 3.6 Qualifying the instructors
- 3.8 Record of qualified instructors and examiner

Alternatively, DSL procedure can be consolidated in a procedure describing only applicable conditions requirements. Applicable MTOE chapters should make a clear reference to this additional procedure.





DSL is not limited to any specific training site and both students and instructors can be present at different non-approved locations. Therefore, the training organisation is required to be approved to conduct “off-site training”. Although, the addition of a training method has no impact on the previously approved training sites or scope of approval, DSL is considered as a change requiring to submit an EASA form 12 (Refer to User Guide for applicants UG.CAO.00015 § 2.2.8 for further details about the application for change).

On Form 12, the following boxes have to be ticked:

- box 3.1 “Approval of change other than above” for the addition of the DSL training method
- box 3.8 “MTOE off-site training/examination procedure” for the addition of the off-site training privilege

DSL training method is an additional training method to the existing physical classroom training. Foreign Part-147 training organisations have to demonstrate the capability to conduct physical classroom to be approved to use DSL training method (i.e. availability of classroom, workshops, library, etc.)

2.4 Synchronous distance learning training method

2.4.1 Virtual Classroom

Virtual classroom is the most common training tool implemented by training organisations during synchronous DSL either theoretical or practical. In a virtual classroom, students are connected with each other and the instructor through a video and audio connection instead of being physically together. It is the media allowing the instructor to simulate a classroom and present the students slideshows, manuals, videos, virtual aircraft etc. This requires the use of adequate hardware and software by both students and instructors.

Virtual classroom has to allow a 2 ways communication channel for a full video interaction between students and instructors, as close as possible to a real classroom. Students should be able to highlight any difficulty during the training and ask possible questions to the instructor.

In a virtual classroom, interactivity between instructor and students is reduced compared to a real classroom environment. Therefore, additional effort is necessary from instructor to maintain the attention of the students during the training, whether theoretical or practical. Additional training for the instructor has to be considered by the training organisation with regards to DSL specific pedagogical skills.



**1) Hardware requirements for students:**

- a desktop computer or a laptop or tablet with sufficient performances to attend the virtual classroom without disruption, equipped with webcam, headset and microphone
- one screen having a sufficient size to comfortably display all required training material (AMM, slideshows, schematics). The use of a second screen is highly recommended.
- The use of mobile phone or tablet with screen size smaller than 10 inches size is not allowed to attend virtual classroom as the screen size is not sufficient to display complex document such as schematics with sufficient comfort. However, it can be combined with a computer for audio purposes.
- Internet connection with a sufficient bandwidth to attend the virtual classroom without disruption or discomfort
- Both computer and screens have to meet the minimum specifications of the online meeting software in use.

In some cases, students are all physically present in a real classroom (e.g. customer classroom) and the instructor present at a different location (e.g. training organization headquarters). In such cases, students' hardware requirements remain applicable. The use of an additional larger screen or smartboard readable by all students present in the classroom is recommended.

2) Hardware requirement for instructors:

- a desktop computer or a laptop or tablet with sufficient performances to conduct the virtual classroom without disruption, equipped with webcam, headset and microphone
- 2 screens having a sufficient size to comfortably display all training material (AMM, slideshows, schematics). The use of a second screen is necessary to be able to display both virtual classroom (i.e. students' webcam) and training material
- Internet connection with a sufficient bandwidth to conduct the virtual classroom without disruption or discomfort
- Both computer and screens have to meet the minimum specifications of the online meeting software in use.

3) Software requirement

Online meeting software (i.e. virtual classroom) allowing 2 ways communications and sharing presentations and other documents.

Prior to first DSL training, both instructors and students have to receive sufficient training on the specificities of synchronous DSL and on the use of virtual classroom software:

- Students have to be able to interact with the instructor and use the available functions of the meeting software (i.e. raise hand, share documents, mute microphone...)
- Instructors have to show a good command of the meeting software in order to be able to provide necessary guidance to the students during the training sessions.

It is recommended that the training organization arrange a test training session to ensure all students are sufficiently familiarized with the meeting software.





4) Instructors qualification

The instructors have to be assessed and formally authorized by the training organization for the use of synchronous DSL training method and virtual classroom. DSL training method has to be formally added to the instructors' terms of reference. Training records and authorisation have to be kept in instructors files.

5) Student attendance

Students attendance has to be accurately recorded by the instructors on a regular basis (i.e. at the beginning of each class and after each break) and automatically if the software allows to record the actual student attendance. Lost training sessions due to interruption of connection or loss of communication shall be deducted from the attendance of affected participants and recovered at earliest opportunity.

6) Students training environment

147.A.100(c) requires that training environment is maintained such that students are able to concentrate on their studies or examination as appropriate, without undue distraction or discomfort. When using DSL, instructors are not able to ensure this requirement is fulfilled for all students at any time of the training. Therefore, it is required that each student signs a statement to commit to attend course in the following conditions:

- in a suitable environment (i.e. noise, temperature, distraction, human factor)
- using suitable hardware and software
- during a period exclusively dedicated to training course (i.e. no other activity in parallel or excessive additional working time)

Instructors should regularly check that students remain in an appropriate environment through the video and record student as absent during the training session when the conditions above are not met.

7) E-library

147.A.100(i) requires that a library is provided to students containing all technical material appropriate to the scope and level of training undertaken. When the students cannot physically access the library located at the training organisation, suitable documents have to be accessible online (i.e. e-library) in addition to the physical library available at the training organisation.

8) Sampling of DSL training sessions by the EASA/NAA surveyor

Access to the virtual classroom has to be granted by the EASA/NAA surveyor to allow the performance of scheduled or unannounced audits. Therefore, the training organisation has to notify the assigned surveyor ahead of scheduled DSL trainings. Adequate credentials have to be provided by the training organisation to the surveyor either on request or on a permanent basis.

9) Monitoring of the students' progress

Students' progress has to be monitored to ensure the training sessions learning objectives are successfully achieved.

Different means are acceptable to validate students' progress such as:

- Follow-up examinations. Such examination are not considered as the EASA Part-147 final examination. A question bank separate from the actual EASA Part-147 examination has to be used
- regular electronic quiz
- Direct questioning of students at the end of class or on a regular basis during class, etc..





2.4.2 Theoretical training

During DSL theoretical training, virtual classroom training tool is the main training platform.

1) Number of students

147.A.100(b)1 requires that number of students in class cannot exceed 28 students. When using DSL this maximum number have to be reduced as the interactivity with students is more limited than in an actual classroom. It is recommended not to exceed 20 students for the theoretical part. This number can be increased when it is demonstrated to the surveyor that both students and instructors are familiar with DSL and that previous trainings were satisfactorily delivered.

The bandwidth of the internet connection of the both instructor and students might be an additional limiting factor to determine the maximum number of students.

2) Daily training time

AMC 147.A.200(f) and Appendix III to Part-66 specifies that the maximum number of training hours per day for the theoretical element of type training should not be more than 6 hours. In order to follow pedagogical and human factors principles, daily training time might need to be reduced as DSL increases the difficulty to maintain the students' attention and fatigue compared to a real classroom environment, especially when students are not familiar with DSL. In addition, the impact of students and instructors being present in different time zones has to be taken into account.

3) Training material

The training organisation has to define the training material used for each module or ATA during DSL as well as any additional training tools. When training material differs from the one used in real classroom training, it has to be submitted to the surveyor for review and acceptance (sampling is acceptable).

4) Additional tuition hours and/or training method

Depending on the level of detail of the topic to be taught, additional tuitions hours and/or additional training methods might be necessary when using DSL compared to a real classroom environment (e.g. level 3).

For basic training, it is recommended to consider additional hours as support tuitions hours to the already approved training to ensure that the ratio between theoretical and practical training remains as detailed in the approved course approval form. Such support hours can be adjusted to the actual needs of a student or group of students.

5) Training schedule

Based on point 2 to 4, TNAs, training schedules and course approval form dedicated to DSL might need to be submitted to reflect virtual classroom training plan when these differ from the real classroom environment.





2.4.3 Theoretical examination

Formal examinations are not allowed using DSL training method. Therefore, all examinations have to take place:

- at an approved examination site
- or under off-site procedure as per MTOE 2.16 for type training organisations only

It might be necessary for the training organisation to arrange additional training hours (i.e. refresher course) or conduct knowledge tests prior to the formal examinations as these could take place after completing all theoretical part using DSL. In that case, the security of examination has to be maintained by ensuring that:

- the instructor in charge of the additional training is not involved in the final examination paper preparation (i.e. use of independent examiner).
- the Part-147 examination question bank for the approved examinations is not used for intermediate knowledge test purposes

It is acceptable when all students are present at same training location (e.g. customer facility) to organise type training examination at this location when the following condition are met:

- Use of independent invigilators which are trained and authorized by the training organization on the examination procedure and security (e.g. customer QA personnel)
- Examination room allows to ensure the security and the integrity of the examination
- Examination papers are available at the students' examination site shortly before the examination takes place in a sealed envelope. It is recommended to organize an electronic examination to ensure the highest level of security.
- The master answer sheet is not sent to the remote examination location.
- Examination is video monitored by the examiner at training facility and video recorded. The video recording is considered as part of the examination records.
- All examination answer sheets are scanned and sent immediately after the examination by email by the invigilator to the training organization examiner. Original answer sheets have to be sent back in a sealed envelope by mail to the training organization.
- Marking of the examination is performed by the examiner located at the training organization.
- All examination papers have to be retrieved and sent back to the training organization in a sealed envelope. Alternatively, examination papers can be destroyed after the examination if sufficient security can be ensured, e.g. papers shredded in the examination room straight after the examination with the training organization examiner video attendance.

Following MTOE chapters have to be amended to describe the examination procedure for this specific case:

- 2.9 Organisation of examination (if applicable)
- 2.10 Security and preparation of examination material (if applicable)
- 2.11 Preparation of examination room
- 2.16 Examinations at locations not listed in paragraph 1.6 (if applicable)





2.4.4 Practical training

For foreign EASA Part-147 training organisations, the use of DSL is currently allowed for the practical elements of the type training only.

Basic training practical training is not allowed using DSL as basic practical training objectives is to gain initial basic hands-on skills and competences, which cannot be achieved in a virtual class environment.

In accordance with Annex IV of AMC 147.A.130(a) table 3 of ED decision 2020/002, practical training using synchronous DSL has a limited suitability and requires complementary methods to fulfil the learning objectives. Therefore, the following limitations are required:

- the number of practical tasks taught using DSL cannot exceed 50 % of the total number of practical tasks performed during the practical training. At least 50% of the practical tasks will be performed in an actual aircraft environment with both students and practical instructor present at the same location. This allows the students to be exposed to the real aircraft in order to appreciate actual aircraft dimensions, components/access panel locations, etc. When several engine options are included in the same practical training, practical tasks on actual aircraft have to be included for each these engine options
- practical training using DSL has to be limited to suitable tasks which can be effectively taught in a virtual environment

Suitable tasks are practical tasks which:

- include tests/inspections performed at a limited number of aircraft location
- and/or include a limited number of maintenance steps
- and/or can be easily explained/replicated in a virtual environment
- and/or can be practiced by the students on a virtual aircraft

Virtual classroom training tool is the main training platform to present AMM, pictures, videos etc... However, live videos with an instructor being present on a real aircraft are not allowed due to the low quality of information received by the students compared to the other training tools (videos, virtual reality etc..). A combination of training tools is required to fulfil the learning objectives.

Although it is acceptable to teach practical tasks in a virtual classroom environment when the suitability is demonstrated, the choice of a virtual aircraft training tool which allows tasks simulated practice should be privileged.





During the DSL practical training session, it is necessary to:

- Clearly identify and introduce the task selected from practical logbook
- Use AMM procedure (and other relevant documents) as the reference document
- Safety procedure has to be clearly highlighted.

1) Hardware requirement

Same as theoretical part (See 1.1.1)

2) Software requirement

Same as theoretical part (See 1.1.1)

3) Number of students

147.A.100(f) requires that number of students undergoing practical training cannot exceed 15 students. When using DSL this maximum number have to be adjusted as the interactivity with students is more limited than in an actual practical training. It is recommended not to exceed 10 students.

4) Daily training time

Same as theoretical part (See 1.1.1)

5) Practical logbook

Prior to be approved by EASA for DSL practical training, the training organisation is required to prepare and submit a practical logbook with a suitability analysis for each task. This should clearly indicate which tasks are taught using DSL or on real aircraft environment, as well as any associated training tools (pre-recorded videos, virtual aircraft, pictures, AMM etc.).

Practical tasks performed during DSL will have to be recorded by the instructors in the students' practical logbook after ensuring students have correctly understood the task.

NOTE: Practical training delivered by a C/S acting as an instructor/assessor present on the aircraft with the students and guided by a practical instructor/assessor located at the training organisation is not considered as a DSL training (e.g. in case of use of a C/S from the customer organisation). The C/S present on the aircraft has to be suitably authorised by the maintenance organisation on the aircraft type to be taught. In addition, he has to be trained, assessed and authorised as a practical instructor/assessor for the duration of the practical training by the training organisation. This procedure has to be detailed in MTOE as part of the off-site training procedure. In case of one time use of such procedure, the training organisation has to submit a concession request for a time limited approval of this procedure identifying designated C/S. The C/S remains responsible to ensure the appropriate delivery of the practical elements of type training on-site and the associated assessments, based on the directives of the training organisation instructor. Practical logbook is filled either by the C/S present at the aircraft or the practical instructor at the training organisation.





2.4.5 Practical assessment

Practical assessment is not allowed using DSL training method and has to be performed when the practical training is completed with both instructors and students present in a real aircraft environment. Assessment performed in an actual aircraft environment can cover both practical tasks taught using DSL and the one taught actual aircraft.

