

<b>Introduction</b>	Qualification Documentation Art. no.	<b>VESTFROST</b> <i>SOLUTIONS</i>
ULTF No.		

## Installation Qualification

## Operational Qualification

### ULTF 500 / ULTF 700

## Introduction: Test Protocols for Qualification

For information or technical assistance contact your local Vestfrost representative

Generation date:	Date of alteration:
Author:	

<b>Introduction</b>	Qualification Documentation Art. no.	<b>VESTFROST</b> SOLUTIONS
ULTF No.		

## 1. Introduction

These test protocols were written by the manufacturer of the chamber and contain tests to ensure its identity as well as its duly installation, commissioning, and performance on the site of its use with the customer.

## 2. Intended use

These test protocols are suitable to test the identity of the chamber as well as its duly installation, commissioning, and performance and to document the results. They can be used to be enclosed to the GLP/GMP documentation of the customer.

## 3. Prerequisites

To be able to carry out the proposed tests the enforcing personnel must be qualified and familiar with the operation of the chamber. Sufficient qualification is achieved by:

- Electrotechnical training **or** several years of practical experience in maintenance and calibration of low temperature freezers.
- Technical training by Vestfrost
- Knowledge of the actual operating manual of the chamber to be tested
- Knowledge of the relevant regulations for handling CO<sub>2</sub> gas and for dealing with pressurized gas cylinders.

## 4. Required tools and test equipment

### Required tools and test equipment:

#### General equipment:

- Set of screw drivers, stopwatch, spirit level, measuring tape, thermometer, hygrometer

#### For check of the zero-voltage relay alarm outputs:

- Resistance measuring device or continuity checker

#### For test of ambient temperature alarm

- Fan heater Vestfrost

#### For test of tolerance range alarm with too low temperature (optional):

Availability of liquid nitrogen

#### For calibration/adjustment of temperature:

An electronic measuring and display device traceable to an acknowledged standards/calibration institution (DKD, PTB for Germany) with a valid calibration certificate. Measuring range at least -100 °C to +40 °C, calibrated to -86 °C. The sensor probe should be connected to the device via a thin cable suitable to be laid over the door sealing without causing any leakages.

Generation date:	Date of alteration:
Author:	

<b>Introduction</b>	Qualification Documentation Art. no.	<b>VESTFROST</b> <i>SOLUTIONS</i>
ULTF No.		

**Note: Also measuring equipment with a smaller measuring range can be used if it is sufficient to perform the tests described in this documentation.**

For IT qualification (test of the Ethernet interface):

- Computer with Microsoft® Windows® operating system, patch cable or, if necessary, a crossover cable for hardware connection.

Generation date:	Date of alteration:
Author:	