mt-propeller

(E-3760)

ATA 61-07-60

OPERATION- and INSTALLATION MANUAL

ELECTRIC DE-ICE CONTROLLER

Revision 8: August 24th, 2026

EASA DE.21G.0008
EASA.21J.020

The technical content of this document is approved under authority of DOA No. EASA.21J.020.

WARNING

People who fly should recognize that various types of risks are involved; and they should take all precautions to minimize them, since they cannot be eliminated entirely.

Before a MT Electric De-Ice Controller is certified as being safe to operate on an airplane, an adequate margin of safety must be demonstrated. Even though every precaution is taken in the design and manufacture of a controller, history has revealed rare instances of failures.

The MT Electric De-Ice Controller is maintenance free. However, the de-icing function should be tested on a regular basis. See also testing procedures.

As a fellow pilot, I urge you to read this Manual thoroughly.
It contains a wealth of information about your new propeller.

Thank you for choosing a MT-Propeller Electric De-Ice Controller. Properly maintained it will give you many years of reliable service.

Gerd R. Mühlbauer
President
MT-Propeller Entwicklung GmbH

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LIST OF REVISIONS

No.	Date of Revision	Page	Short Description
Original Issue	2021-07-01	All Pages	Initial Issue
1	2021-10-06	2, 3, 9;	Model added
2	2022-07-25	2, 3, 17;	Typo corrected
3	2023-10-10	0-1, 2, 3, 4, 7, 8, 8-1, 9, 10, 11, 11-1, 11-2, 11-3, 12, 13, 14, 14-1, 15, 16, 16-1, 17;	Wiring Diagram added, Drawings updated and added; NG added
4	2023-11-27	2, 3, 8, 14, 15, 17;	Fig. 2 deleted, Table Numbering corrected;
5	2024-02-23	2, 3, 5, 9;	Note regarding DO-254 added
6	2024-08-14	2, 3, 11-1, 13-1, 14-1, 15, 17;	Chapter 7.1 extended
7	2025-09-23	All Pages	Completely restructured.
8	2026-08-24	9, 10, 17, 18, 21, 22, 23, 24, 26, 29-37 (new 33-1), 43;	Available models updated, WoW logic clarified, active WoW inhibits heater, J2 pinout updated, I/O levels added, P1 crimp version added, NG: J2 functions newly described, WoW, self-test, fault handling revised, Logic chart newly added, Relay output removed;

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MT-PROPELLER AIRWORTHINESS INFORMATION

Every owner should stay in close contact with his MT-Propeller dealer or distributor and Authorized MT-Propeller Service Shop to obtain the latest information pertaining to his Electrical De-Ice Controller and its installation. MT-Propeller takes a continuing interest in having the owner get the most efficient use of his De-Ice Controller and keeping it in the best operational condition. Consequently, MT-Propeller from time to time issues Service Bulletins, Service Letters and Manuals relating to MT-Propeller systems and its installation. Service Bulletins are of special importance and should be complied with promptly. These are sent to dealers, distributors and latest registered owners. Service Letters deal with products improvements and service hints pertaining to the propeller and its installation. These are sent to dealers, distributors and occasionally (at the factory`s discretion) to latest registered owners.

If any changes to this manual have been made, the appropriate list of revisions will be revised according to Revision List in Page 2 of this Manual.

1. GENERAL

1.1 STATEMENT OF PURPOSE

This operation and installation manual provides instructions on how to install and operate the EDC. It also provides a system overview including principles of operation.

1.2 SCOPE

This manual is only applicable for installation and operation of the EDC with part number P6DC-( ) / ( ).

1.3 INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

1.3.1 Periodic Maintenance

Regular functional checks shall be carried out in accordance with the instructions provided in:

- **EDC (G1):** see Section 5.5.2.1
- **EDC (NG):** see Section 6.5.2.1
- **EDC (NS):** see Section 7.5.2.1

These checks are to be performed as part of the scheduled maintenance program defined in the applicable **Aircraft Maintenance Manual (AMM).**

If no schedule is specified, the following default intervals apply:

- **100 flight hours** for piston engine applications
- **150 flight hours** for turboprop engine applications

1.3.2 Overhaul Period

No additional overhaul time limitations.

1.3.3 Airworthiness Limitation Section

N/A

2. REFERENCED DOCUMENTS AND ABBREVIATIONS

2.1 REFERENCED DOCUMENTS

Identifier	Doc. N°	Doc title; Revision
/DO-160G/	RTCA DO-160G	Environmental Conditions and Test Procedures for Airborne Equipment, Issue G, 2010-12-08
/DO-254/	RTCA DO-254	Design Assurance Guidance for Airborne Electronic Hardware, Issue B, 2000-04-19 Applicable to Gen 1 (Classic) Model only!

Table 1: Referenced Documents

For MT-Propeller service literature contact:

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Propellerplatz 1
94348 Atting / Germany

Tel.: +49-9429-9409-0
Fax: +49-9429-8432

E-Mail: sales@mt-propeller.com
Internet: www.mt-propeller.com

2.2 ABBREVIATIONS

DO, Doc.	Document
EDC	Electrical De-Ice Controller
EMI	Electromagnetic Interference
GND	Ground
IMA	Installation Manual
MDL	Master Documents List
MT	MT Propeller Entwicklung GmbH
P/N	Part Number
OAT	Outside Air Temperature
RF	Radio Frequency
RTCA	Radio Technical Commission for Aeronautics, RTCA, Inc.
VDC	Volts Direct Current
WoW	Weight on Wheels

Table 2: Abbreviations

3. SYSTEM OVERVIEW

3.1 GENERAL DESCRIPTION

The Electrical De-Ice Controller (EDC) is a control unit designed to manage the timed operation of electrically heated propeller De-Ice boots in aircraft de-icing systems.

There are two main variants of the EDC:

- **Basic Models:** Designed as direct "plug & play" replacements for older, conventional De-Ice timers, providing essential sequencing functionality.
- **Advanced Models:** Intended for new installations, offering enhanced supervisory and control features.

Key features of the EDC include:

- Supplying electrical power to propeller De-Ice boots or other electrically heated airframe components.
- Sequencing one or multiple heaters or De-Ice boots in predefined timed cycles.
- Providing control, status, and monitoring input/output signals (advanced models only).
- Supporting easy retrofit installation, matching dimensions and connector layouts of many legacy De-Ice timer units.

Output and Timing:

Up to four (depending on model) power outputs can be used to supply electrical De-Ice boots or other heaters. The EDC is available with different timing sequences. These define the time and order in which the outputs are enabled.

Supervisory Functions (Advanced Models):

- Integrated self-test capability
- Overcurrent and undercurrent detection
- Dedicated warning and status outputs for cockpit annunciation

These advanced functions ensure compatibility with modern aircraft systems requiring integrated status and health monitoring.

At the same time, the basic EDC versions allow for simple, cost-effective retrofit applications where minimal installation effort is preferred.

3.2 MODEL DESIGNATION

Part-Number:

P	-	6	DC	-	1	( )	/	3E1964-( )
1		2	3		4	5		6

Legend:

1	P	=	Propeller accessory
2	6	=	Manufactured for MT-Propeller by Avionik Straubing Entwicklungs GmbH
3	DC	=	De-Ice controller
4	1	=	Internal Design Version
5	none	=	EDC Generation 1
	N	=	EDC New Generation
	NS	=	EDC New Generation short
6	3E1964-( )	=	Application Number similar to other available Deice Timers (see Table 3)

Serial-Number:

20	DC	003	-	F
a	b	c		d

Legend:

a = Year of Manufacture
b = Electrical De-Ice Timer
c = Consecutive Number
d = Modification Status

4. AVAILABLE MODELS

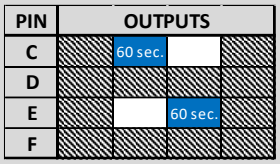
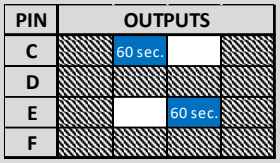
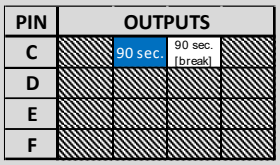
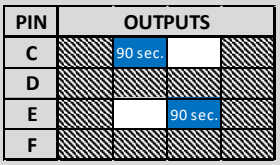
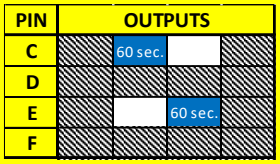
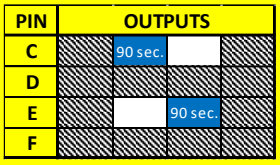
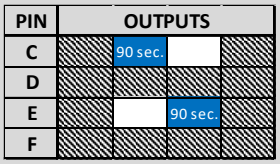
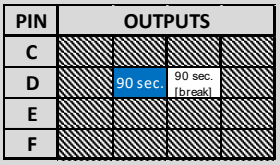
Electrical Attributes of available models							
P/N	**System Voltage**	**Output Current**	**Max. current/ Min. current**	**Recommended Use**	**I/O-Func. / J2 Feat.**	**Output Sequence**	**Total Cycle**
EDC Generation 1							
P6DC-1/ 3E1964-20	28 VDC (18,5-33 V)	13 A	16 A / 9 A Threshold	Advanced / New install	**Yes**		120 s
P-6DC-2/ 3E1964-20	28 VDC (18,5-33 V)	14 A	19 A / 9 A Threshold	Advanced / New install	**Yes**		120 s
P-6DC-3/ 3E1964-3	28 VDC (18,5-33 V)	10 A	12.75 A / 7.5 A Threshold	Advanced / New install	**Yes**		180 s
P-6DC-4/ 3E1964-3	28 VDC (18,5-33 V)	10 A	12.75 A / 7.5 A Threshold	Advanced / New install	**Yes**		180 s
EDC - New Generation							
P-6DC-1N/ 3E1964-20	28 VDC (18,5-33 V)	13 A	16.0 A / 9.0 A	Advanced / New install	**Yes**		120 s
P-6DC-4N/ 3E1964-3	28 VDC (18,5-33 V)	10 A	15.3 A / 8.0 A	Advanced / New install	**Yes**		180 s
P-6DC-6N/ 3E1964-3	28 VDC (18,5-33 V)	14 A	17.5 A / 10.5 A	Advanced / New install	**Yes**		180 s
EDC - New Generation Short							
P-6DC-3NS/ 3E1964-3	28 VDC (11,0 -33 V)	10 A	N/A	Retrofit	**No**		180 s

Table 3: Electrical Attributes of available models

5. EDC GENERATION 1

5.1 TECHNICAL SPECIFICATIONS

Physical Attributes	
	EDC Generation 1
Weight	800 g max.
Dimensions **(incl. mounts)**	137.6 mm /5.42 inch length 108.0 mm / 4.25 inch width 71.0 mm / 2.8 inch height
Mounting	Base Mount, orientation not critical Install in a vented position.

Table 4: Physical Attributes

For additional information including weight, physical dimensions, and mounting details, refer to Chapter 8 – Drawings.

Qualifications Overview	
	EDC Generation 1
Hardware Qualification	DO-254, DAL-C
Software Qualification	Not applicable
Environmental Qualification	RTCA DO-160G
Altitude	Up to 50.000 ft
Operating Temperature	-40°C to +70°C

Table 5: Qualifications Overview

Detailed qualification information in accordance with RTCA DO-160G can be found in Chapter 9.

5.2 SYSTEM INTERCONNECTIONS – DEVICE CONNECTORS – EDC GENERATION 1

Pin connections for the power connector J1 are shown in Table 6.
Pin connections for control and status signals on connector J2 are shown in Table 7.

Connector J1					
Pin	Designation	Description	Levels		I/O
			Active	Inactive	
A	power supply return	GND	GND	-	Input
B	power supply input	supply voltage	28 VDC	-	Input
C	supply power to heater	power output, channel 1	28 VDC	Open	Output
D	supply power to heater	power output, channel 3	28 VDC	Open	Output
E	supply power to heater	power output, channel 2	28 VDC	Open	Output
F	supply power to heater	power output, channel 4	28 VDC	Open	Output
G	power supply return	GND	GND	-	Input

Table 6: Pin Assignment of J1

Connector J2					
Pin	Designation	Description	Levels		I/O
			Active	Inactive	
1	Reserved for future use	Reserved for future use	-	-	-
2	Reserved for future use	Reserved for future use	-	-	-
3	Reserved for future use	Reserved for future use	-	-	-
4	Reserved for future use	Reserved for future use	-	-	-
5	Heater enable	Open / GND	GND	-	Input
6	Self-test	Open / GND	GND	Open	Input
7	Reserved for future use	Reserved for future use	-	-	-
8	Warning**	Open / GND (normally open)	GND	Open	Output
9	Reserved for future use	Reserved for future use	-	-	-
10	Shield	Is connected to case	User needed application	Open	-
11	Reserved for future use	Reserved for future use	-	-	-
12	Reserved for future use	Reserved for future use	-	-	-
13	Reserved for future use	Reserved for future use	-	-	-
14	Reserved for future use	Reserved for future use	-	-	-
15	Reserved for future use	Reserved for future use	-	-	-
16	Reserved for future use	Reserved for future use	-	-	-
17	Reserved for future use	Reserved for future use	-	-	-
18	Reserved for future use	Reserved for future use	-	-	-
19	Reserved for future use	Reserved for future use	-	-	-
20	Shield	Is connected to case	User needed application	Open	-
21	Reserved for future use	Reserved for future use	-	-	-
22	WOW - weight on wheels	Open / GND -	GND	Open	Input
23	Reserved for future use	Reserved for future use	-	-	-
24	Reserved for future use	Reserved for future use	-	-	-

(to be continued on next page)

(continued)

Pin	Designation	Description	Levels		I/O
			Active	Inactive	
25	Reserved for future use	Reserved for future use	-	-	-
26	Reserved for future use	Reserved for future use	-	-	-
27	Reserved for future use	Reserved for future use	-	-	-
28	Reserved for future use	Reserved for future use	-	-	-
29	Reserved for future use	Reserved for future use	-	-	-
30	Reserved for future use	Reserved for future use	-	-	-
31	GND	Ground	GND	-	Input
32	Reserved for future use	Reserved for future use	-	-	-
33	Warning**	Open / GND (normally closed)	GND	Open	Output
34	Reserved for future use	Reserved for future use	-	-	-
35	Reserved for future use	Reserved for future use	-	-	-
36	Reserved for future use	Reserved for future use	-	-	-
37	Reserved for future use	Reserved for future use	-	-	-

Table 7: Pin Assignment of J2

Notes:

* Leave unused pins open.

** Master failure signals on pins 8 and 33 have same source. Different output switch configurations (normally open or normally closed) can be selected by wiring the correspondent pin. Explanation: Normally closed configuration is enabled while power off.

*** Only applicable at specific part numbers. See table 3. Leave pins open if unused.

5.3 MATING CONNECTORS (EDC GENERATION 1)

To interface the device, the following connectors can be used for production of wiring harness.

Connector P1: P/N: (P1:MS3106A20-15S, MIL-DTL-5015) is connected at the EDC J1.

Figure 1: view – connection side

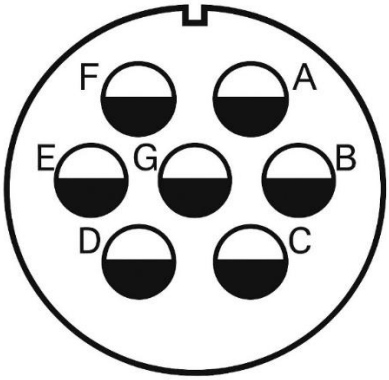


Figure 2: view – solder side

Connector P2: P/N: (P2:D38999/26WD35SN, MIL-DTL-38999) is connected at the EDC J2.

Figure 3: view – connection side

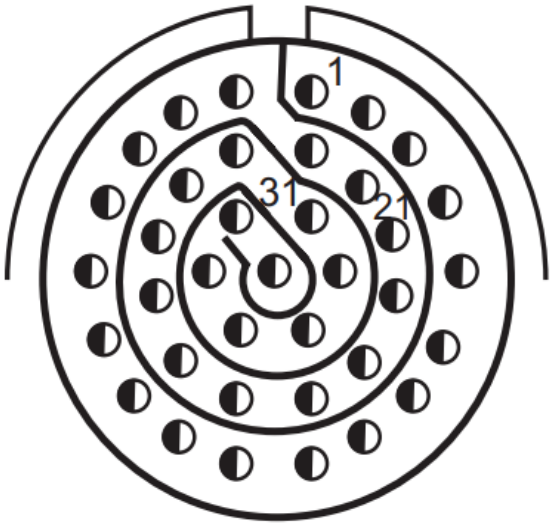


Figure 4: view – back side

5.4 INSTALLATION – EDC GENERATION 1

The EDC G1 is primarily intended for use in new system installations or functional upgrades requiring advanced capabilities and modern interface integration.
However, it is no longer recommended for newly designed installations, as the EDC (NG) is its direct successor, offering the same functional scope in a more compact and technically refined form factor.
The EDC (NG) supports all modern interface features while providing extended I/O options and reduced installation height and weight, making it the preferred choice for future system architectures.

For direct plug-and-play replacement of legacy units, the EDC (NG Short) remains the recommended solution due to its optimized mechanical and electrical compatibility. Its smaller dimensions and reduced weight also offer practical benefits in space-constrained or weight-sensitive environments.

NOTE:
OPERATION MODE DEPENDS ON ACTUAL CONFIGURATION REFER TABLE 3 FOR AVAILABLE CONFIGURATIONS.

5.4.1 Installation Considerations

The wiring shall be implemented according to the pin assignment specified in the Table 6 and Table 7.

A custom wiring harness must be fabricated. Standard mechanical and electrical installation practices apply. Ensure that cable routing avoids exposure to heat sources, RF, or EMI interference. Provide sufficient space for cables and mating connectors. Avoid sharp bends and routing near aircraft control cables.

For input protection, a trip-free circuit breaker shall be installed. Tripping current depends on actual heating device connected. Refer to heating device supplier data for circuit breaker requirements.

5.4.2 Location of Installation

The EDC housing may heat up under high ambient temperatures, enduring operation, or high output current configurations. It is therefore important not to choose an installation location close to exhaust, turbochargers, etc., as this passive heating significantly affects the performance of the EDC. Make sure that sufficient ventilation is provided to the mounting location and avoid close contact to devices sensitive to heat.

The EDC can be installed in any orientation.

5.4.3 Wiring Harness

Provide sufficient space for the installation of cables and connectors. The wiring harness must be fabricated and supplied by the installer. Use the connectors specified in sections 5.2 and 5.3.

5.5 OPERATION – EDC GENERATION 1

5.5.1 General Operation Information

The EDC G1 is primarily designed to serve either as an upgrade to existing systems or as part of a new installation. This dual-purpose design leads to two distinct installation pathways, each with its own operational considerations. Consequently, this manual provides separate operating procedures for retrofit applications and for new installations

NOTE:
OPERATION MODE DEPENDS ON ACTUAL CONFIGURATION REFER TABLE 3 FOR AVAILABLE CONFIGURATIONS.

5.5.2 Retrofit Operation

For retrofit use the EDC can be operated without any additional input and outputs signals.
In this mode the EDC is unsupplied in its in off-state. To enable heater operation, supply power must be applied to the EDC.
After power supply is off, the sequence is reset.

5.5.2.1 Functional Checks referring to 1.3.1

Lock brakes and operate the engine at approximately 75% of maximum RPM. Activate the de-icing system and monitor the ammeter:

- The needle should remain within the shaded area during a heating cycle.
- A brief flicker of the ammeter indicates switching between heating cycles.
- Verify the full cycle time (from flicker to flicker) against the specification listed in Table 3.

This procedure could be performed at any time the propeller is operating, and **OAT is low enough** to avoid overheating damage to the Deice-Boots.

The pilot may perform this check at their discretion but must observe OAT limitations to prevent damage to the de-ice system during warm conditions.

5.5.3 Operation with additional I/O features (J2 wired)

The EDC (G1) features a range of I/O-based operational functions accessible via connector J2. These include heater enable logic, heater status feedback, self-test functionality, weight-on-wheels (WoW) integration, and two warning outputs. These features are summarized in the table below and described in detail in the following sections.

Function	Trigger Condition	System Behavior	Description	Notes
Heater-Enable	Pin 5 pulled to GND	Heater operates according to timing logic	Activates heater output if pulled to GND	Required for normal operation
Self-Test	Pin 6 momentarily pulled to GND	Triggers self-test sequence.	The TEST function can be applied at any time (on GND or airborne). The Device will clear the warning lamp if the applied load is in range. After Self-test the device will continue operating.	Optional. Use momentary switch. Holding = lamp test.
WoW	Pin 22 = GND	Heating is disabled when aircraft is on ground	Weight on Wheels: Deactivates heater outputs if WoW signal is pulled to GND.	Optional
Warning Output 1	Internal fault or self-test active	Pin 8 pulled to GND	Normally open. In case of a fault pulled to GND.	Optional
Warning Output 2	Internal fault or self-test active	Pin 33 - open	Normally closed. In case of a fault open	Optional

Table 8: operating functions – J2 signals

5.5.3.1 Heater-Enable

The Heater Enable input (Pin 5) must be pulled low (GND) to activate the heating logic. The EDC (G1) requires a permanent power supply; heating is not automatically initiated with power-on. The Heater Enable input must be externally controlled.

If the Weight-on-Wheels input (section 5.5.5.3) is present and active, heater output remains disabled regardless of the Heater Enable state.

5.5.3.2 Self-Test

The self-test function performs a validation of the internal control logic, output driver stages, and heating load current level:

- A power-on self-test is executed automatically upon each system start-up. During this phase, the Warning Outputs (Pin 8 & 33) are active for approximately 1 second to facilitate external lamp test.
- If all diagnostic conditions are met, the system transitions into operational state. If the test fails, the Warning Outputs remains active.

Manual Self-Test can be initiated via Pin 6.

The self-test-routine will clear the Warning Outputs (Pin 8 & 33) only if following conditions are true:

- All connected heating elements draw current within the defined range according Table 3
- All internal control diagnostics pass successfully

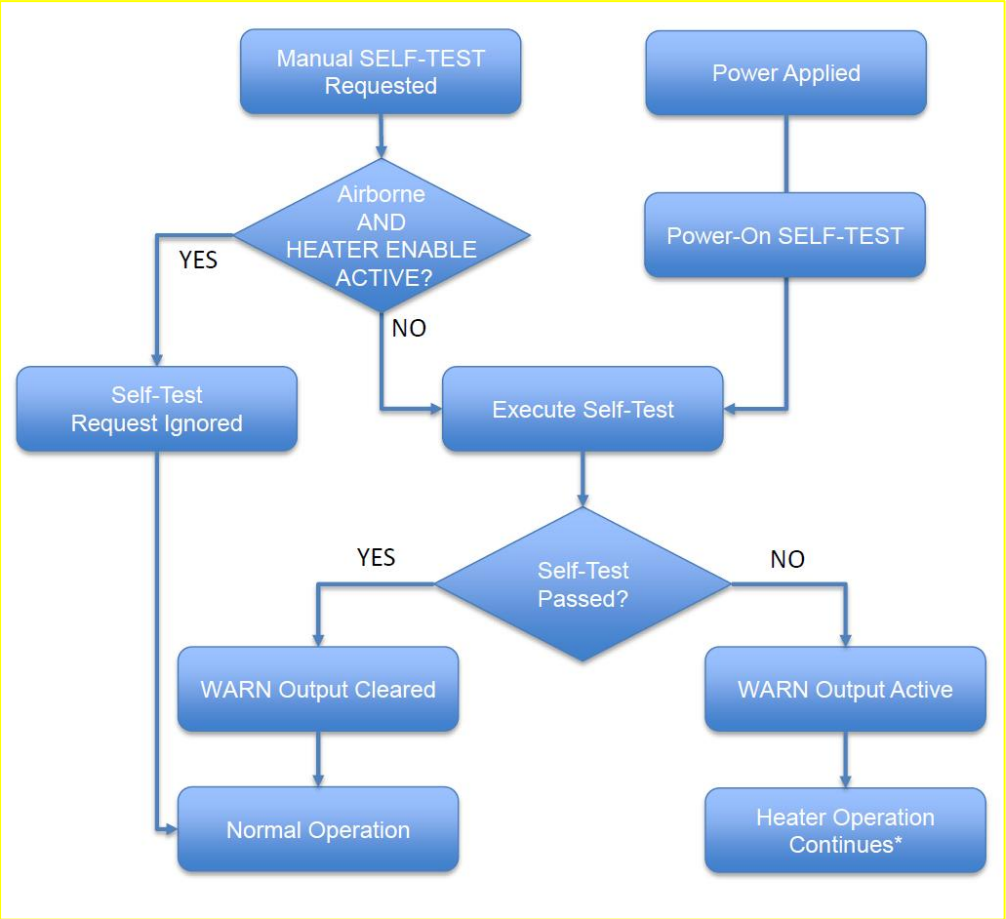


Figure 5: Self-Test Flow Chart

In the event of a self-test failure, the heating output **remains energized, maintaining voltage supply to the associated heating elements.*
*The fault condition is signaled via the designated Warning Outputs **without automatic shutdown** of heating functionality.*
It is the responsibility of the operator or maintenance personnel to assess the fault indication and determine appropriate action based on operational and environmental conditions.

NOTE:
CONTINUED OPERATION WITH AN ACTIVE FAULT INDICATION MAY LEAD TO REDUCED SYSTEM PERFORMANCE OR FURTHER DEGRADATION. IMMEDIATE INVESTIGATION IS RECOMMENDED WHENEVER PRACTICABLE.

Depending on the nature of the detected fault, different operational effects may occur:

- In the event of a short circuit, the associated circuit breaker (CB) may trip, disconnecting the heating element from the supply.
- In the event of an open-circuit, heating outputs remain energized without breaker activation, and the fault is indicated via the Warning Outputs only.

The system ammeter provides additional diagnostic information and can assist in distinguishing between open-circuit and short-circuit fault conditions.

Attention:
The self-test may fail intermittently when performed with the propeller not in operation, due to insufficient electrical contact at the brush blocks.
In such cases, the warning output will remain active.
To resolve this, repeat the self-test manually with the engine running. The warning will automatically reset if the current is within the specified operational range.

5.5.3.3 Weight on Wheels – WoW

The EDC features a dedicated input for a Weight-on-Wheels (WoW) signal. This input is used to automatically disable the heating outputs when the aircraft is on ground, in order to prevent potential overheating of the heating elements.

The WoW input (Pin 22) serves as an inhibit signal for heater activation when the aircraft is on ground. If the pin is pulled low (GND), the EDCG1 suppresses heater output regardless of the Heater Enable input.

The WoW function is overridden during manual Self-Test to allow on-ground diagnostics. The same override applies during the automatic power-on Self-Test sequence to execute regardless of whether the aircraft is on ground.

5.5.3.4 Warning Outputs

There are two Warning Outputs (Pin 8, normally open / Pin 33, normally closed). The warning outputs are indicating following errors and status of the EDC:

- Self-Test in progress
- Self-Test failed
- Internal hardware fault detected
- over- & undercurrent situations (Thresholds depending on P/N, see Table 3)

Additionally, the normally closed warning output (Pin 33), can be used to indicate loss of supply power.

5.5.3.5 Logic Chart – EDC Generation 1

Inputs			Outputs			
Heater enable	Self-test	WoW	Warning	Self-test active	Normal operation (heater sequence running, outputs active)	Use Case
0	0	0	0	0	0	#1
1	0	1	1	0	0	#2.1
0	0	1	0	0	0	#2.2
0	1	0	1	1	0	#3.1
0	1	1	1	1	0	#3.2
1	1	1	1	1	0	#3.3
1	0	0	0	0	1	#4.1
1	1	0	0	0	1	#4.2

Table 9: Logical Behavior

Legend: 1 = signal / output active, 0 = signal / output inactive

Explanation:

Use Case #	Description
#1	Device off.
#2.1	Active WoW overrides Heater-Enable input. This prevents De-Ice boots to be burned while aircraft on ground / engine not running
#2.2	
#3.1	Self-Test normal operation. While Self-Test is running, the warning outputs are active
#3.2	Self-Test overrides WoW input. Self-Test can be enabled when aircraft on ground.
#3.3	Self-Test is performed while aircraft on ground (WoW) and heater enable is active
#4.1	Heater in normal operation
#4.2	Heater Enable overrides Self-Test input. While deicing is operative this is not interrupted by the self-test routine.

Table 10: Description Use Case for Logical Behavior

6. EDC – NEW GENERATION

6.1 TECHNICAL SPECIFICATIONS

Physical Attributes	
	New Generation (NG) (e.g. -1N / -4N / -6N)
Weight	350 g max.
Dimensions **(incl. mounts)**	137.6 mm / 5.42 inch length, 108.0 mm / 4.25 inch width 27.5 mm /1.04 inch height
Mounting	BaseMount, orientation not critical Install in a vented position.

Table 11: Physical Attributes

For additional information including weight, physical dimensions, and mounting details, refer to Chapter 8 – Drawings.

Qualifications Overview	
	New Generation (NG)
Hardware Qualification	Simple hardware design acc. system specifications (SRD's).
Software Qualification	Not applicable
Environmental Qualification	DO-160G
Altitude	Up to 50.000 ft
Operating Temperature	-55°C to +85°C

Table 12: Qualifications Overview

Detailed qualification information in accordance with RTCA DO-160G can be found in Chapter 9.

6.2 SYSTEM INTERCONNECTIONS – DEVICE CONNECTORS – EDC GENERATION

Pin connections for the power connector J1 are shown in Table 13.
Pin connections for control and status signals on connector J2 are shown in Table 14.

Connector	J1				
Pin	Designation	Description	Levels		I/O
			Active	Inactive	
A	power supply return	GND	GND	-	Input
B	power supply input	supply voltage	28 VDC	-	Input
C	supply power to heater	power output, channel 1	28 VDC	OPEN	Output
D	supply power to heater	power output, channel 3	28 VDC	OPEN	Output
E	supply power to heater	power output, channel 2	28 VDC	OPEN	Output
F	supply power to heater	power output, channel 4	28 VDC	OPEN	Output
G	power supply return	GND	GND	-	Input

Table 13: Pin Assignment of J1

Connector	J2				
Pin	Designation	Description	Levels		I/O
			Active	Inactive	
A	GND	Signal GND	GND	-	Input
B	TEST_IN	Self-Test Trigger Input, *active ground*	GND	OPEN	Input
C	WARN_N.C.	Warning Output, *normally closed*	OPEN	GND	Output
D	HEAT_N.O.	Heater Active Output, *normally open, fail-safe*	GND	OPEN	Output
E	WARN_N.O.*	Warning Output, *normally open*	GND	OPEN	Output
F	WOW_IN	Weight on Wheels Input, *active ground*	GND (on ground)	OPEN (in air)	Input
G	not connected	-			
H	not connected	-			
J	-	For maintenance use only	-	-	-
K	HEATER ENABLE	Heater Enable Input, *active ground*	GND	OPEN	Input

Table 14: Pin Assignment of J2

NOTE:
***LOGICALLY NORMALLY OPEN WARNING OUTPUT, ACTIVE-LOW AND FAIL-SAFE (OUTPUT PULLS TO GND ON ALARM OR POWER LOSS)**

6.2.1 Electrical Specification

Parameter	Value	Unit	Notes
Discrete Inputs			
Input LOW threshold	5.0	VDC	Max. voltage considered logic LOW
Input HIGH threshold	6.0	VDC	Min. voltage considered logic HIGH
Input bias current	-1.8	mA	Maximum input bias current due to internal pull-up configuration. Active-Low → input sources current to external load.
Input resistance (typ.)	15k	Ohm	Relative to VCC
Discrete Outputs			
Output signal drive sink current	30	mA	Suitable for indication LEDs, logic-level loads, audio signals
Output resistance open-drain	150	Ohm	Typical output resistance to GND for active open-drain outputs

Table 15: Electrical Specification I/O

6.3 MATING CONNECTORS – EDC (NG)

To interface the device, the following connectors can be used for production of wiring harness.

Connector P1:
P/N: (P1: MS3106A20-15S (*solder cup*) / MS3456W20-15S (*crimp contact*), MIL-DTL-5015) is connected at the EDC J1.

Figure 6: view – connection side

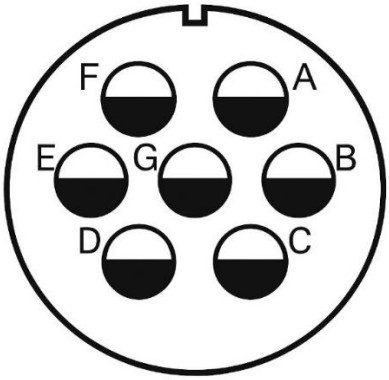


Figure 7: view – solder side

Connector P2:
P/N: (P2:85106RC12-10S50, MIL-DTL-26482) is connected at the EDC J2.

Figure 8: view – connection side

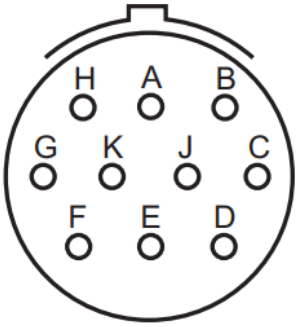


Figure 9: view – back side

6.4 INSTALLATION – EDC (NEW GENERATION)

The EDC (NG) is primarily intended for use in new system installations or functional upgrades requiring advanced capabilities and modern interface integration.
Although not specifically developed for retrofit applications, its use in such scenarios may be appropriate under certain conditions.
For direct plug-and-play replacement of legacy units, the EDC (NG) is the recommended choice due to its optimized mechanical and electrical compatibility. In addition, its smaller dimensions and reduced weight offer practical advantages in space-constrained or weight-sensitive environments.
Nonetheless, the EDC (NG) may be considered a viable alternative in retrofit applications where its larger housing is mechanically compatible with the existing installation infrastructure. In such cases, particular attention must be paid to the electrical compatibility with the existing system. A case-by-case evaluation is essential to ensure proper functionality and system integrity.

NOTE:
OPERATION MODE DEPENDS ON ACTUAL CONFIGURATION REFER TABLE 3 FOR AVAILABLE CONFIGURATIONS.

6.4.1 Wiring / Connection – Retrofit Installation

Connector	J1	
Pin	**Function**	**Description**
A	Power Return 1	Connect to system return (chassis ground) - GND
B	Power Input	+14V or +28V, depending on system voltage
C	Heater Supply C *	Positive-side output to heater element #C *
D	Heater Supply D *	Positive-side output to heater element #D *
E	Heater Supply E *	Positive-side output to heater element #E *
F	Heater Supply F *	Positive-side output to heater element #F *
G	Secondary Ground	Connect to airframe ground for redundancy **

Table 16: Pin Assignment of J1

**connected output channels to heater elements according to config. Table 3*
***only **one** power return (GND) must be connected, one can be used for heater return and second for airframe ground*

Important: Heater elements are driven on the **positive side**. The return path for each element must be properly grounded through the airframe or return wiring to complete the circuit.

Connector	J2				
Pin	**Function**	**Description**	**I/O**	**Wiring Requirement**	**Notes**
A	GND	Signal GND	Output	**Required ***	Must be connected to Pin K
B	TEST_IN	Self-Test Trigger Input	Input	Not used	-
C	WARN_N.C.	Warning Output	Output	Not used	-
D	HEAT_N.O.	Heater Active Output	Output	Not used	-
E	WARN_N.O.*	Warning Output	Output	Not used	-
F	WOW_IN	Weight on Wheels Input	Input	Not used	-
G	not connected	-	-	Not used	-
H	not connected	-	-	Not used	-
J	-	For maintenance use only	-	-	-
K	HEATER ENABLE	Heater Activation	Input	**Required ***	Must be connected to Pin A

Table 17: Pin Assignment of J2 – Retrofit installation

**Make sure that connector J2 includes an internal wiring bridge connecting Pin A (GND) to Pin K (Heater Enable) to ensure proper activation of the heating function.*

WARNING:
Verify correct wiring of P2 to prevent possible damage to internal eletronic.

6.4.1.1 Block Diagram – Retrofit Installation

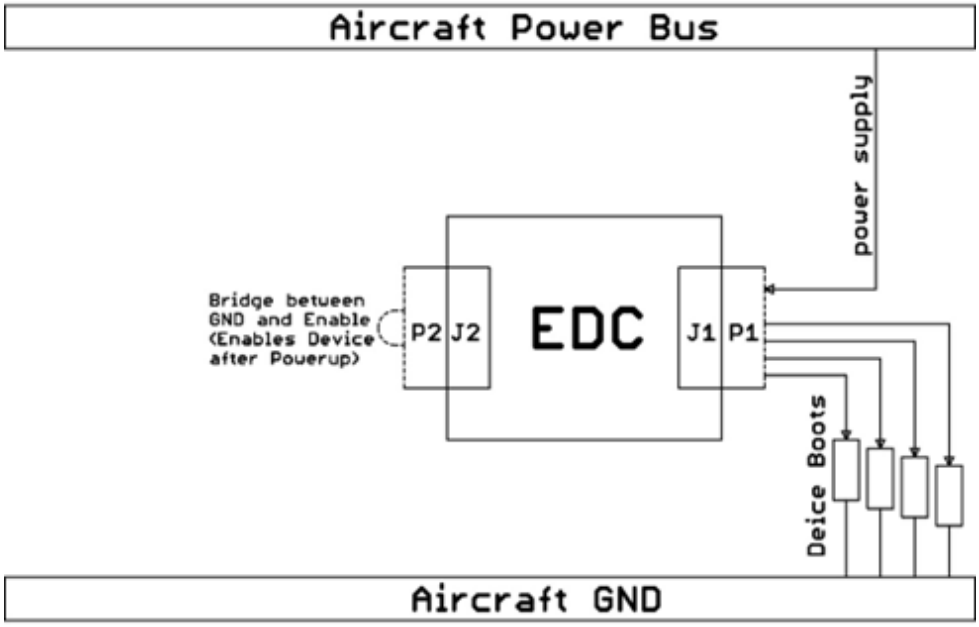


Figure 10: Block Diagram - Retrofit

6.4.2 Wiring / Connection – New / Upgrade Installation with I/O Functions

The wiring for connector **J1** remains unchanged across both retrofit and new/upgrade installations, provided the system setup and configuration are identical.

For connector **J2**, however, the installation concept differs:
In new or upgrade installations, it is recommended to make full use of the available interface signals to enable extended monitoring and control functions (e.g., system test, status indicators, relay outputs).

However, only **Pin A (GND)** and **Pin K (HEATER ENABLE)** are strictly required for basic functionality. All other connections are optional and may be omitted if their corresponding features are not required for the specific installation.

Connector		J1
Pin	**Function**	**Description**
A	Power Return 1	Connect to system return (chassis ground) - GND
B	Power Input	+14V or +28V, depending on system voltage
C	Heater Supply C *	Positive-side output to heater element #C *
D	Heater Supply D *	Positive-side output to heater element #D *
E	Heater Supply E *	Positive-side output to heater element #E *
F	Heater Supply F *	Positive-side output to heater element #F *
G	Secondary Ground	Connect to airframe ground for redundancy **

Table 18: Pin Assignment of J1

**connected output channels to heater elements according to config. Table 3*
***only **one** power return (GND) must be connected, one can be used for heater return and second for airframe ground*

Important: Heater elements are driven on the **positive side**. Each heater element must have a proper return path to ground via the airframe or dedicated return wiring to complete the circuit.

The following table defines the pin assignment for connector **J2** in new or upgrade installations. Only **required** connections must be implemented. All remaining pins provide optional I/O functions.

Connector			J2		
Pin	**Function**	**Description**	**I/O**	**Wiring Requirement**	**Notes**
A	GND	Signal GND	-	**Required ***	Must be connected to system GND
B	TEST_IN	Self-Test Trigger Input	Input	Optional	For functional self-test trigger via external push-button; *Active = GND*
C	WARN_N.C.	Warning Output	Output	Optional	Drives heater warning indication *Active = OPEN*
D	HEAT_N.O.	Heater Active Output	Output	Optional	Drives heater status indicator; *Active = GND*
E	WARN_N.O.*	Warning Output	Output	Optional	Drives heater warning indication; *Active = GND* **Fail-Safe = GND on power loss*
F	WOW_IN	Weight on Wheels Input	Input	Optional	*GND = on ground;* *OPEN = in air*
G	not connected	-	-	-	-
H	not connected	-	-	-	-
J	-	For maintenance use only	-	-	-
K	HEATER ENABLE	Heater Activation	Input	**Required ***	Enables heater operation; *Active = GND*

Table 19: Pin Assignment of J2 – New / Upgrade Installation

6.4.2.1 Block Diagram – New / Upgrade Installation with I/O Functions

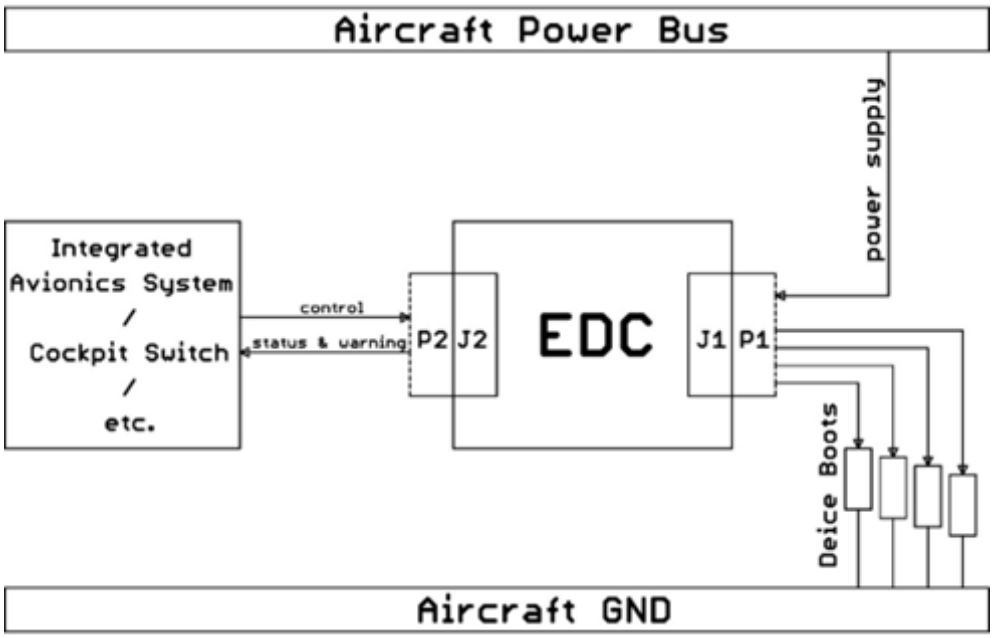


Figure 11: Block Diagram – Upgrade / New Installation

6.4.2.2 Wiring Example – New / Upgrade Installation with I/O Functions

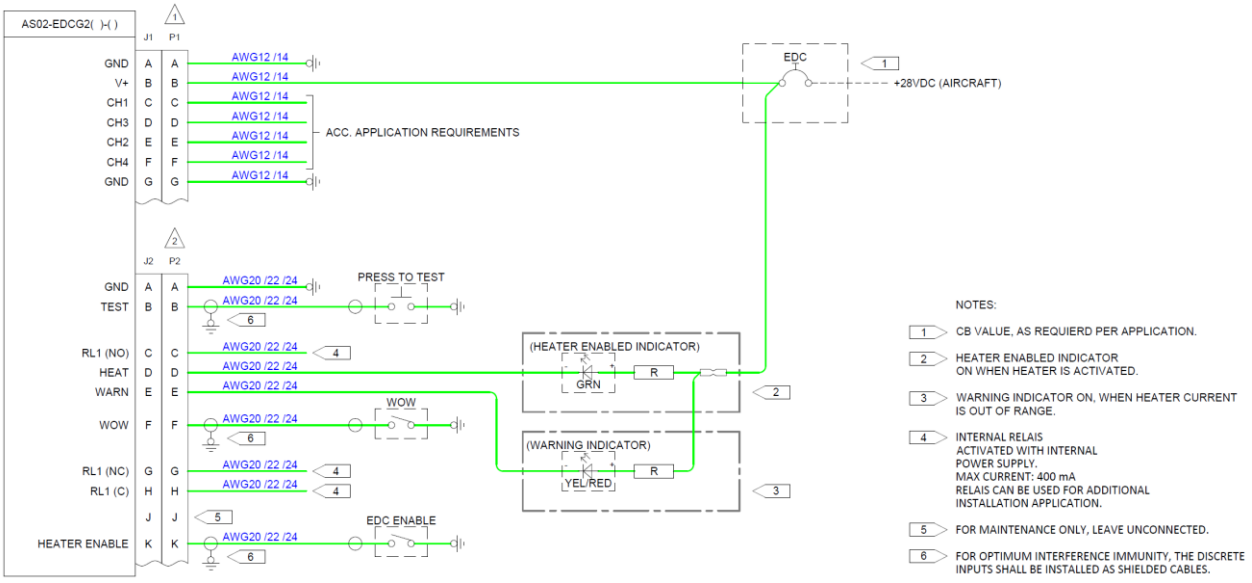


Figure 12: Wiring Diagram for EDC (NG) with I/O Functions

6.4.3 Installation Considerations

A custom wiring harness must be fabricated. Standard mechanical and electrical installation practices apply. Ensure that cable routing avoids exposure to heat sources, RF, or EMI interference. Provide sufficient space for cables and mating connectors. Avoid sharp bends and routing near aircraft control cables.

For input protection, a trip-free circuit breaker shall be installed. Tripping current depends on actual heating device connected. Refer to heating device supplier data for circuit breaker requirements.

When installing the EDC (NG) as a replacement for an existing de-ice timer, existing wiring may be reused where compatible. Verify wire functions and continuity prior to connection.

6.4.4 Location of Installation

The EDC housing may heat up under high ambient temperatures, enduring operation, or high output current configurations. It is therefore important not to choose an installation location close to exhaust, turbochargers, etc., as this passive heating significantly affects the performance of the EDC. Make sure that sufficient ventilation is provided to the mounting location and avoid close contact to devices sensitive to heat.

The EDC (NG) can be installed in any orientation.

6.4.5 Wiring Harness

Provide sufficient space for the installation of cables and connectors. The wiring harness shall be designed and assembled by the installer in accordance with system requirements.
Only the connector types specified in section 6.3 are to be used.

6.5 OPERATION – EDC (NEW GENERATION)

6.5.1 General Operation Information

The EDC (NG) is primarily designed to serve either as an upgrade to existing systems or as part of a new installation. This dual-purpose design leads to two distinct installation pathways, each with its own operational considerations. Consequently, this manual provides separate operating procedures for retrofit applications and for new installations

NOTE:
OPERATION MODE DEPENDS ON ACTUAL CONFIGURATION REFER TABLE 3 FOR AVAILABLE CONFIGURATIONS.

6.5.2 Retrofit Operation

For retrofit use the EDC (NG) can be operated without any additional input and outputs signals.
In this mode the EDC (NG) is unsupplied in its off-state. To enable heater operation, supply power must be applied to the EDC (NG).
After power supply off, the sequence is reset.

Make sure that connector J2 includes an internal wiring bridge connecting Pin A (GND) to Pin K (Heater Enable) to ensure proper activation of the heating function.

6.5.2.1 Functional Checks referring to 1.3.1

Lock brakes and operate the engine at approximately 75% of maximum RPM. Activate the de-icing system and monitor the ammeter:

- The needle should remain within the shaded area during a heating cycle.
- A brief flicker of the ammeter indicates switching between heating cycles.
- Verify the full cycle time (from flicker to flicker) against the specification listed in Table 3.

This procedure could be performed at any time the propeller is operating and **OAT is low enough** to avoid overheating damage of the Deice-Boots.

The pilot may perform this check at their discretion, but must observe OAT limitations to prevent damage to the de-ice system during warm conditions.

6.5.3 Operation with additional I/O features (J2 wires)

The EDC (NG) features a range of I/O-based operational functions accessible via connector J2. These include heater enable logic, heater status feedback, self-test functionality, weight-on-wheels (WoW) integration and warning outputs. These features are summarized in the table below and described in detail in the following sections.

Function	Trigger Condition	System Behavior	Description	Notes
HEATER ENABLE	Pin K pulled to GND	Heater operates according to timing logic	Activates heater output if pulled to GND	Required for normal operation
HEATER ACTIVE	Heater cycle active	Pin D pulled to GND	Normally open. Pulled to ground while heater output is energized.	Optional use for external indication lamp
SELF-TEST	Pin B momentarily pulled to GND	Triggers self-test sequence after releasing button. Holding the input activates lamp test	SELF-TEST can be initiated at any time. If airborne with HEATER ENABLE active, the request is ignored and normal heating operation continues. Holding the TEST button activates the Lamp Test (WARN and HEAT indication outputs active). Releasing the TEST button initiates the Self-Test routine. If the applied load is within limits, the warning output is cleared.	Optional. Use momentary switch. Holding = lamp test.
WOW	Pin F = GND	Heating is disabled when aircraft is on ground	Weight on Wheels: Deactivates heater outputs if WoW signal is pulled to GND.	Optional
WARNING OUTPUTS	Internal fault or self-test active	Pin E pulled to GND	Normally open. In case of a fault pulled to GND.	Optional

Table 20: Operating Functions – J2 signals

6.5.3.1 Heater Enable

The **Heater Enable** input (Pin K) must be pulled to GND to enable heater operation.
The EDC (NG) requires a permanent power supply. Heating is not automatically initiated with power-on.
The **Heater Enable** input must be externally controlled.

If the **Weight-on-Wheels** input (section 4.2.5.6) is present and active, heater output remains disabled regardless of the **Heater Enable** state.

6.5.3.2 Weight on Wheels - WoW

The EDC (NG) features a dedicated input for a **Weight-on-Wheels (WoW)** signal.
This input is used to automatically disable the heating outputs when the aircraft is on ground, in order to prevent potential overheating of the heating elements.

The WoW input (Pin F) serves as an inhibit signal for heater activation when the aircraft is on ground. If the pin is pulled to **GND**, the EDC (NG) disables heater output regardless of the **HEATER ENABLE** input.

The WoW function is overridden during **manual Self-Test** to allow on-ground diagnostics.
The same override applies during the automatic **power-on Self-Test**, which is executed regardless of the aircraft ground state.

6.5.3.3 Self-Test

The **SELF-TEST** function performs a validation of the internal control logic, output driver stages, and heater load current level:

- A **Power-On SELF-TEST** is executed automatically at each system start-up. During this phase, the Warning Outputs (Pin C, Pin E) are active for approximately 1 second to facilitate external lamp test.
- If all diagnostic conditions are met, the system transitions to **normal operation**. If the test fails, the **Warning Outputs** remain active.

Manual Self-Test

Manual **SELF-TEST** can be initiated via **Pin B**:

- While the input is held low, a **lamp test** is performed (HEAT and WARN = active).
- Releasing the input initiates the self-test routine.

If the aircraft is **airborne** and **HEATER ENABLE** is active, the manual self-test request is **ignored** and normal heater operation continues.

Self-Test Result

The Self-Test-routine clears the Warning Outputs only if following conditions are true:

- All connected heating elements draw current within the defined limits according to Table 3.
- All internal control diagnostics pass successfully

If any diagnostic condition fails, the **Warning Output remains active** while heater operation continues.

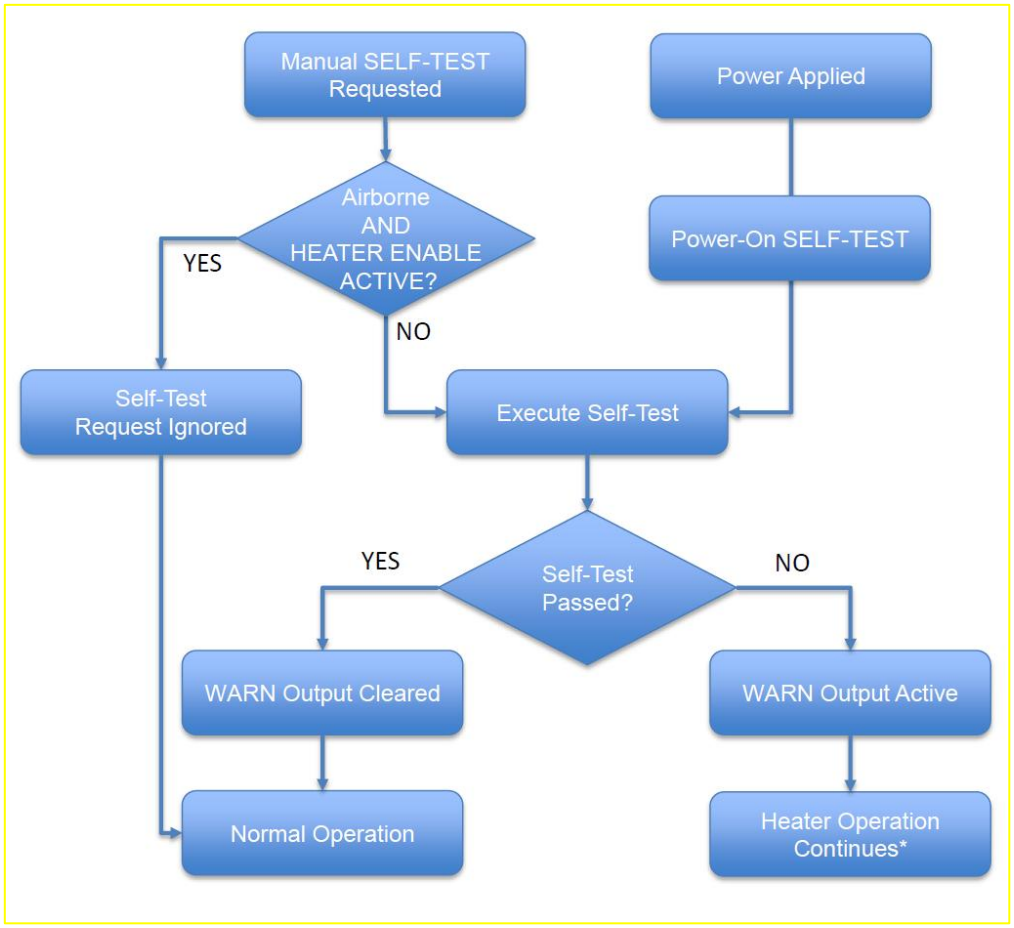


Figure 13: Self-Test – Flow Diagram

** If a self-test failure is detected, the heater outputs remain energized to maintain power supply to the connected heating elements.*
*The fault condition is indicated via the designated **Warning Outputs**. Heater operation is **not automatically disabled**.*

NOTE:
CONTINUED OPERATION WITH AN ACTIVE FAULT INDICATION MAY LEAD TO REDUCED SYSTEM PERFORMANCE OR FURTHER DEGRADATION.
IMMEDIATE INVESTIGATION IS RECOMMENDED WHENEVER PRACTICABLE.

Depending on the nature of the detected fault, different operational effects may occur:

- **Short circuit:** the associated circuit breaker (CB) may trip, disconnecting the heating element from the power supply.
- **Open-circuit:** heater outputs remain energized without breaker activation.

Both fault conditions are detected by the controller and indicated via the **Warning Outputs**.

The system ammeter provides additional diagnostic information and can assist in distinguishing between open-circuit and short-circuit fault conditions.

CAUTION:
The Self-Test may fail intermittently when performed with the propeller not in operation, due to insufficient electrical contact at the brush blocks.
In such cases, the Warning Outputs will remain active.
To clear the indicatoin, repeat the Self-Test manually with the engine running. The Warning Outputs automatically reset if the current is within the specified operational range.

6.5.3.4 Warning Outputs

Two different open-drain **Warning Outputs** are provided:

- **WARN Pin C (N.C.)**: normally closed
- **WARN Pin E (N.O.):** normally open with fail-safe behavior

The Warning Outputs indicate system status and detected fault conditions, including:

- Self-Test in progress
- Self-Test failure
- Internal hardware fault detected
- Overcurrent or undercurrent condition (Thresholds depending on P/N, see Table 3)

The outputs may be connected to a visual or audible warning device.
Maximum current sink capability: **approximately 30 mA**.

6.5.3.5 Heater Active Output

The **HEATER ACTIVE** signal (Pin D) provides real-time feedback on heater output state.

The output is **open-drain** and pulled to **GND** when the internal heater drivers are active. This signal can be used for annunciator lamps, remote system monitoring, or as a feedback signal into a supervisory controller.

It is also active during **lamp-test** mode initiated via the **Self-Test** input (Pin B).

6.5.4 Logic Chart – EDC New Generation

Table 21 defines the relationship between discrete input signals and the resulting system outputs.

Inputs			Discrete Outputs		PWR Outputs		REMARK
HEATER ENABLE	SELF-TEST	WOW	WARN	HEAT	Heating Sequence active	Self-Test active	#
0	0	0	0	0	0	0	#1
0	0	1	0	0	0	0	#2
0	1	0	1	1	0	1	#3
0	1	1	1	1	0	1	#4
1	0	0	0	1	1	0	#5
1	0	1	1	0	0	0	#2, #6
1	1	0	0	1	1	0	#7
1	1	1	1	1	0	1	#8

Table 21: EDC NG – Logic Chart

Legend:

- *1 = signal / output active*
- *0 = signal / output inactive*

REMARKS #	DESCRIPTION
#1	Device Off
#2	Active **WoW** overrides **HEATER ENABLE** input. This prevents de-ice boots to be damaged when aircraft is on ground / engine no running
#3	**WARN** and **HEAT** outputs active while **SELF-TEST** is in progress
#4	**SELF-TEST** overrides WoW input
#5	Normal heater operation
#6	**HEATER ENABLE** with the aircraft on ground activates the **WARN** outputs (not latched)
#7	**HEATER ENABLE** overrides **SELF-TEST** input. De-icing sequence is not interrupted by the **SELF-TEST** routine
#8	Manual **SELF-TEST** while aircraft on ground and **HEATER ENABLE** is active

Table 22: remark table

NOTE:

1. **HOLDING THE SELF TEST BUTTON ACTIVATES THE LAMP TEST (WARN AND HEAT OUTPUTS ACTIVE). RELEASING THE SELF-TEST BUTTON INITIATES THE SELF TEST. IF THE DE-ICE BOOT CURRENT IS WITHIN THE VALID RANGE, THE DEVICE CLEARS THE WARNING INDICATION. UPON COMPLETION OF THE SELF TEST, THE DEVICE RETURNS TO NORMAL OPERATION.**

2. **UPON POWER-UP, THE DEVICE AUTOMATICALLY INITIATES A POWER-UP SELF-TEST. THIS TEST IS PERFORMED REGARDLESS OF THE STATUS OF HEATER ENABLE OR WOW AND HAS HIGHEST PRIORITY.**

7. EDC – NEW GENERATION SHORT

7.1 GENERAL OPERATION INFORMATION

Physical Attributes	
	New Generation Short (NS) (e.g. -3NS)
Weight	350g max.
Dimensions **(incl. mounts)**	90.0 mm / 3.54 inch length 82.0 mm / 3.23 inch width 53.0 mm / 2.09 inch height
Mounting	Base Mount, orientation not critical Install in a vented position

Table 23: Physical Attributes

For additional information including weight, physical dimensions, and mounting details, refer to Chapter 8 – Drawings.

Qualifications Overview	
	New Generation Short (NS) (e.g. -3NS)
Hardware Qualification	Simple hardware design acc. system specifications (SRD's).
Software Qualification	Not applicable
Environmental Qualification	RTCA DO-160G
Altitude	Up to 50.000 ft
Operating Temperature	-55°C to +85°C

Table 24: Qualifications Overview

Detailed qualification information in accordance with RTCA DO-160G can be found in Chapter 9.

7.2 SYSTEM INTERCONNECTIONS – DEVICE CONNECTORS – EDC NEW GENERATION SHORT

Pin connections for the power connector J1 are shown in Table 25.

Connector		J1			
Pin	Designation	Description	Levels		I/O
			Active	Inactive	
A	power supply return	GND	GND	-	Input
B	power supply input	+14VDC or +28VDC supply voltage	28 VDC	-	Input
C	supply power to heater	power output, channel 1	28 VDC	OPEN	Output
D	supply power to heater	power output, channel 3	28 VDC	OPEN	Output
E	supply power to heater	power output, channel 2	28 VDC	OPEN	Output
F	supply power to heater	power output, channel 4	28 VDC	OPEN	Output
G	power supply return	not to connect (internal on PWR GND)	GND	-	Input

Table 25: Pin Assignment of J1

7.3 MATING CONNECTORS – EDC (NS)

To interface the device, the following connectors can be used for production of wiring harness.

Connector P1:
P/N: (P1:MS3106A20-15S (*solder cup*) / **MS3456W20-15S** (*crimp contact*), MIL-DTL-5015) is connected at the EDC J1.

Figure 14: view – connection side

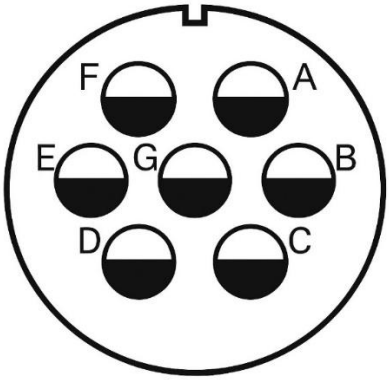


Figure 15: view – solder side

7.4 INSTALLATION – EDC (NEW GENERATION SHORT)

The EDC (NS) is designed as a direct plug-and-play replacement for legacy de-ice timer units. No changes to aircraft wiring, connector types, or mounting hardware are required, provided the legacy installation adheres to standard configurations.

The unit is pin-compatible with the previous system and integrates seamlessly using existing electrical and mechanical interfaces.

ATTENTION:
Pin mismatch or incorrect wiring may cause permanent damage to the unit or aircraft systems. Always verify connector assignments before installation.

7.4.1 Wiring / Connection – Retrofit Installation

Connector		J1
Pin	**Function**	**Description**
A	Power Return 1	Connect to system return (chassis ground) - GND
B	Power Input	+14V or +28V, depending on system voltage
C	Heater Supply C *	Positive-side output to heater element #C *
D	Heater Supply D *	Positive-side output to heater element #D *
E	Heater Supply E *	Positive-side output to heater element #E *
F	Heater Supply F *	Positive-side output to heater element #F *
G	Secondary Ground	Connect to airframe ground for redundancy **

Table 26: Pin Assignment of J1

*connected output channels to heater elements according to config. Table 3
only **one power return (GND) must be connected, one can be used for heater return and second for airframe ground

Important:
Heater elements are driven on the positive side. The return path for each element must be properly grounded through the airframe or return wiring to complete the circuit.

7.4.2 New Installation

The EDC (NS) may also be installed in new aircraft systems where basic de-icing functionality is required without external I/O or configurable logic.

New installations shall follow the same wiring scheme and pin assignments as defined in section 7.4.1 Wiring/Connection – Retrofit Installation

NOTE:
THE EDC (NS) DOES NOT SUPPORT EXTERNAL CONTROL OR MONITORING FEATURES. FOR SYSTEMS REQUIRING HEATER ENABLE INPUT, SELF-TEST FUNCTIONALITY, OR FAULT OUTPUTS, REFER TO THE EDC (NG) (CHAPTER 6).

7.4.3 Installation Considerations

For new installations a custom wiring harness must be fabricated. Standard mechanical and electrical installation practices apply. Ensure that cable routing avoids exposure to heat sources, RF, or EMI interference. Provide sufficient space for cables and mating connectors. Avoid sharp bends and routing near aircraft control cables.

For input protection, a trip-free circuit breaker shall be installed. Tripping current depends on actual heating device connected. Refer to heating device supplier data for circuit breaker requirements.

When installing the EDC (NS) as a replacement for an existing de-ice timer, existing wiring may be reused where compatible. Verify wire functions and continuity prior to connection.

7.4.4 Location of Installation

The EDC housing may heat up under high ambient temperatures, enduring operation, or high output current configurations. It is therefore important not to choose an installation location close to exhaust, turbochargers, etc., as this passive heating significantly affects the performance of the EDC. Make sure that sufficient ventilation is provided to the mounting location and avoid close contact to devices sensitive to heat.

The EDC (NS) can be installed in any orientation.

7.4.5 Wiring Harness

Provide sufficient space for the installation of cables and connectors. The wiring harness must be fabricated and supplied by the installer. Use the connectors specified in sections 5.2 and 5.3.

7.5 OPERATION – EDC (NEW GENERATION SHORT)

7.5.1 General Operation Information

The EDC (NS) is primarily designed to serve either as an upgrade to existing systems or as part of a new installation. This dual-purpose design leads to two distinct installation pathways, each with its own operational considerations. Consequently, this manual provides separate operating procedures for retrofit applications and for new installations

NOTE:
OPERATION MODE DEPENDS ON ACTUAL CONFIGURATION REFER TABLE 3 FOR AVAILABLE CONFIGURATIONS. OUTPUT SEQUENCING IS FACTORY-CONFIGURED AND NOT USER-ADJUSTABLE. THE EDC (NS) DOES NOT SUPPORT OPERATIONAL CONFIGURATION OR MODE SWITCHING.

7.5.2 Retrofit Operation

For retrofit use the EDC (NS) can be operated without any additional input and outputs signals.
In this mode the EDC (NS) is unsupplied in its in off-state. To enable heater operation, supply power must be applied to the EDC (NS).
After power supply off, the sequence is reset.

The device automatically cycles through the connected heating channels (Pins C–F) according to its configuration chart Table 3.

7.5.2.1 Functional Checks referring to 1.3.1

Lock brakes and operate the engine at approximately 75% of maximum RPM. Activate the de-icing system and monitor the ammeter:

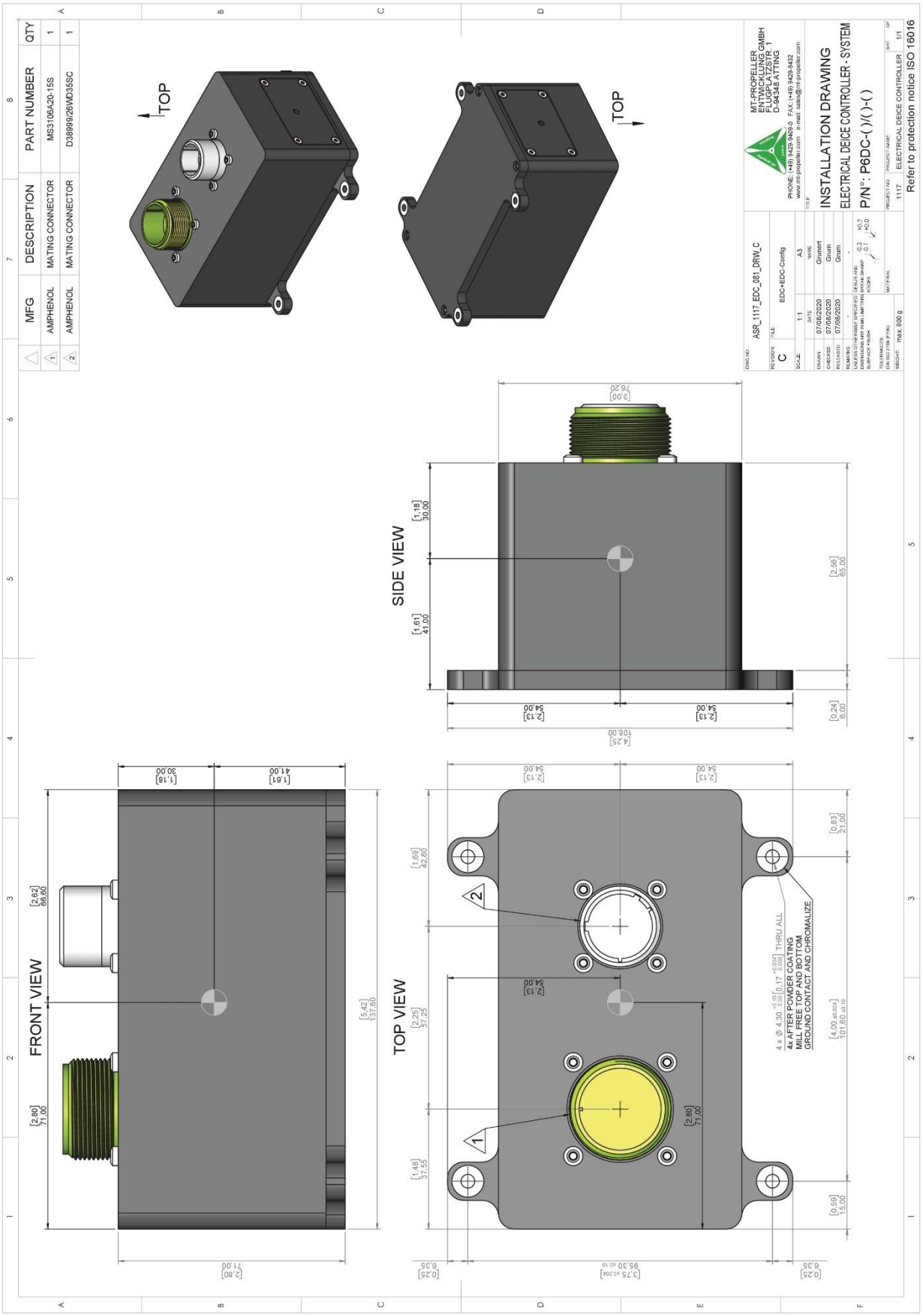
- The needle should remain within the shaded area during a heating cycle.
- A brief flicker of the ammeter indicates switching between heating cycles.
- Verify the full cycle time (from flicker to flicker) against the specification listed in Table 3.

This procedure could be performed at any time the propeller is operating and **OAT is low enough** to avoid overheating damage of the Deice-Boots.

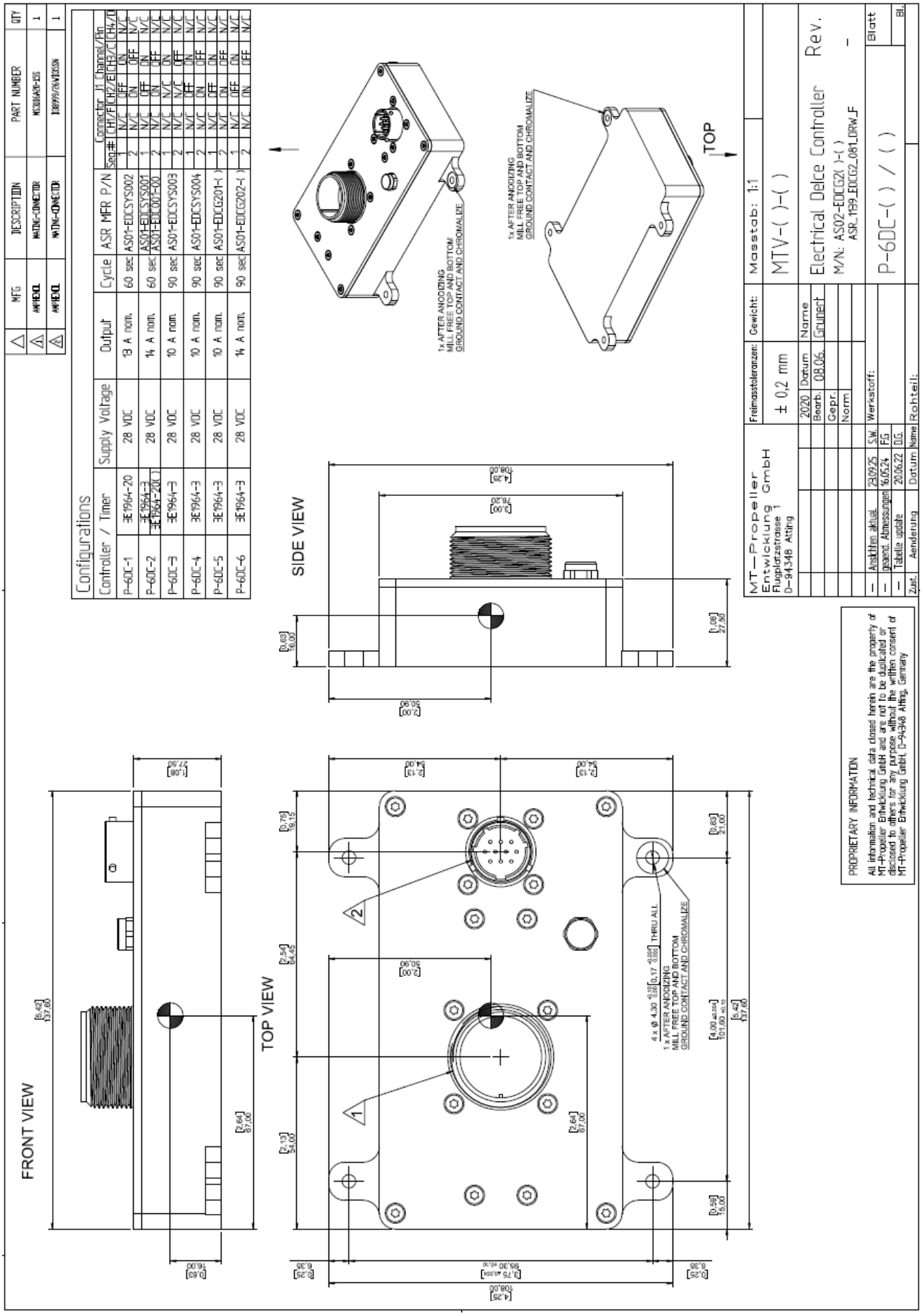
The pilot may perform this check at their discretion, but must observe OAT limitations to prevent damage to the de-ice system during warm conditions.

8. DRAWINGS

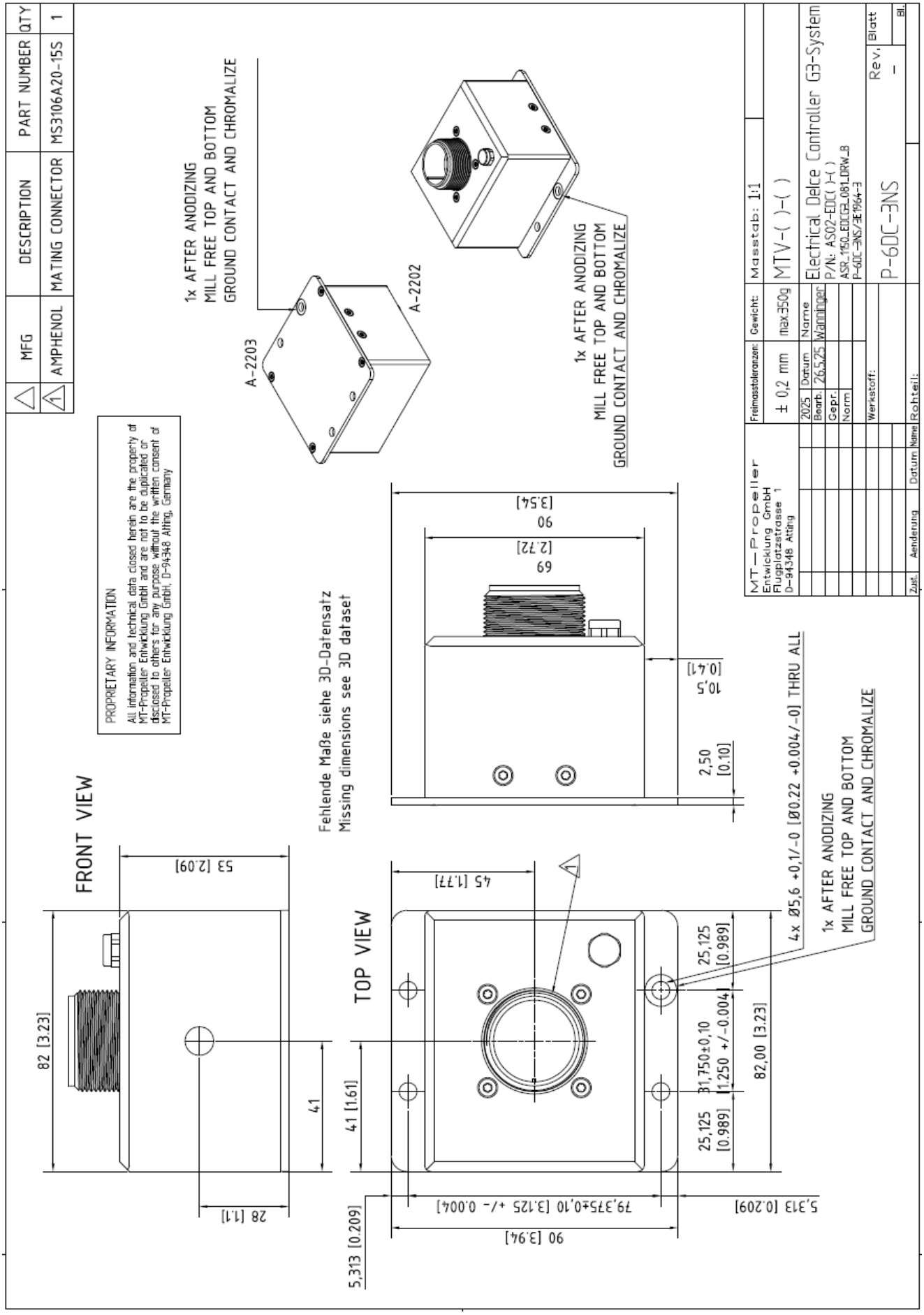
8.1 EDC – GENERATION 1



8.2 EDC – NEW GENERATION



8.3 EDC – NEW GENERATION SHORT



9. QUALIFICATION

Environmental qualification according RTCA DO-160G:			
Section	**Purpose**	**Category**	**Description**
4.5.1, 4.5.2	Low temperature	C4 (Classic) D3 (New Gen.)	Classic Version: -55°C ground survival (non-operating), Classic Version: -40 °C operating low, NG: -55°C ground survival (non-operating), NG: -55 °C operating low
4.5.3, 4.5.4	High temperature	C4 (Classic) D3 (New Gen.)	Classic Version: +85°C ground survival (non-operating), Classic Version: +70°C operating high NG: +85°C ground survival (non-operating), NG: +85°C operating high
4.5.5	In-flight loss of cooling	X	N/A, not tested
4.6.1	Altitude	D2 (Classic Version) D3 (NG/NS)	50000 ft, non-pressurized, non-controlled temperature
4.6.2	Decompression	X	N/A, not tested
4.6.3	Overpressure	X	N/A, not tested
5.3.1	Temperature variation	A	10°C/minute, combined testing
6.2	Humidity	C*	*Design assurance only; not demonstrated
7.2.1, 7.3.1	Operational shock and crash safety	B	6 g operational, 20 g crash safety non-operational
8.8.3	Vibration	S	Test curves T (10 g PK)
9.7	Explosive atmosphere	X	N/A, not tested
10.3.1	Waterproofness	X	N/A, not tested
11.4.1	Fluids susceptibility	X	N/A, not tested
12.4	Sand and dust	X	N/A, not tested
13.0	Fungus	X	N/A, not tested
14.3.6.6	Salt fog	X	N/A, not tested
15.3	Magnetic effect	X (G1) Z (NG/NS)	 ≤1° @ d=0.3m
16.6.1, 16.6.2	Power input	B X	Normal operation, abnormal operation DC current ripple test not performed
17.4	Voltage spike	A	600 Volts spikes
18.3.1	Audio frequency conducted susceptibility	B	
19.3	Induced signal susceptibility	ZCX	
20.4, 20.5	Radio frequency susceptibility	W	150mA; 100V/m
21.4, 21.5	Emission of radio frequency	B	
22.5	Lightning induced transient susceptibility	A3E3X	
23.0	Lightning direct effects	X	N/A, not tested
24.0	Icing	X	N/A, not tested
25.5	Electrostatic discharge	A	
26.0	Fire, flammability	X	N/A, not tested
Environmental qualification category code: Generation 1: [C4C4XD2XX]ACBSXXXXXXX(BX)AB(ZCX)WB(A3E3X)XXAX New Generation: (D3)ACBSXXXXXXZ(BX)AB(ZCX)WB(A3E3X)XXAX New Generation Short: (D3)ACBSXXXXXXZ(BX)AB(ZCX)WB(A3E3X)XXAX			

Table 27: DO-160G Environmental Qualification