

Installation / Operation Manual

iS Engine Panel V3



Contents

1.	Preface	3
2.	System Description	3
3.	Technical Specifications	6
4.	Operation.....	11
4.1	Operation with SCU / EMU (Variant 1).....	11
4.2	Operation Standalone (Variant 2)	12
5.	Electrical Installation	13
5.1	Electrical Installation in combination with SCU/EMU (Variant 1)	14
5.2	Electrical Installation Standalone (Variant 2)	17
5.3	Switching Logic.....	20

1. Preface

Thank you for purchasing an RS Flight Systems iS Engine Panel V3. We are pleased that you have chosen our product and are confident that it will meet all your expectations. In case of questions or problems with the unit, feel free to contact us:

RS Flight Systems GmbH
Oberer Luessbach 29-31
82335 Berg | Germany
Phone: +49-8178-8681-300
E-Mail: contact@rs-flightsystems.com

2. System Description

The iS Engine Panel V3 is an optional extension unit specifically developed for BRP Rotax iS engines. Its main function is to provide all necessary switches for Rotax iS engine operation.

The starting procedure of the Rotax iS engines differs from the one for the Rotax 912 and 914 engine series, due to its ECU controlled fuel-injection system. The iS Engines Panel V3 provides an interface for convenient engine start and engine check operations.

The iS Engine Panel V3 includes the control of LANE A and LANE B as well as the Main Fuel Pump and the Auxiliary Fuel Pump via a turning switch. The iS Engine Panel V3 is shown in Figure 2-1 and Figure 2-2.

The scope of delivery consists of:

- 1x Preassembled iS Engine Panel V3
- 2x Key
- 2x Ring Cable Lug 0.5-1.0 mm² M3
- 4x Ring Cable Lug 1.1-2.5 mm² M3
- 16x Ring Cable Lug 0.5-1.0 mm² M4
- 10x Ring Cable Lug 1.1-2.5 mm² M4

There are three versions of the iS Engine Panel V3 available:

iS Engine Panel V3	PN 26002-485	aluminum version, horizontal
iS Engine Panel V3 – CARBON	PN 12-362	CFRP version, horizontal
iS Engine Panel V3u	PN 27007-456	aluminum version, upright (vertical)



Figure 2-1: iS Engine Panel V3 front view



Figure 2-2: iS Engine Panel V3 isometric view



Figure 2-3: iS Engine Panel V3 - CARBON isometric view

3. Technical Specifications

The technical specifications of the iS Engine Panel V3 are listed in Table 3-1. The dimensions of the panel cut-out can be seen in Figure 3-1. There are 3 versions of the iSV3 panel available:

	iS Engine Panel V3u (vertical)	iS Engine Panel V3	iS Engine Panel V3 CARBON
Mechanical Dimensions (width, height, depth)	66 x 146 x 131 mm 2.6 x 5.75 x 5.16 in	146 x 66 x 131 mm 5.75 x 2.6 x 5.16 in	
Panel Cutout Dimensions (width, height)	58 x 138 mm 12 mm corner radius 2.28 x 5.42 in 0.47 in corner radius	138 x 58 mm 12 mm corner radius 5.42 x 2.28 in 0.47 in corner radius	
Mounting Depth excl. Connectors	92 mm 3.62 in		
Maximum Panel Thickness	6 mm 0.23 in		
Mounting	4 x M4 Screws		
Total Mass (w/o wiring harness)	0.46 kg 1.01 lbs		0.43 kg 0.94 lbs
Operating Altitude	< 7,620 m < 25,000 ft		
Operating Temperature Range	-20 to +70 °C -4 to +158 °F		
Humidity	< 95 %, non-condensing		

Table 3-1: Technical specification

The mechanical dimensions are shown in the technical drawings in Figure 3-1 , Figure 3-3, Figure 3-5, and Figure 3-6.

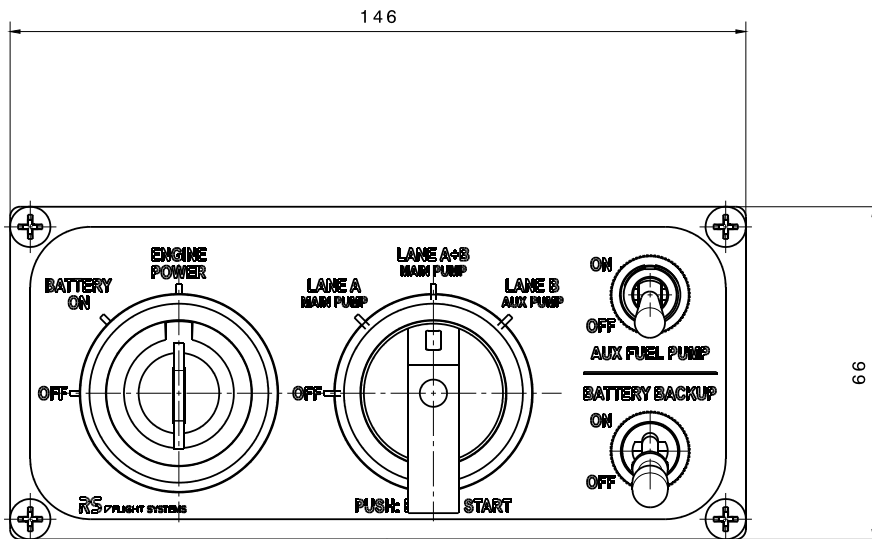


Figure 3-1: iS Engine Panel V3 drawing front view

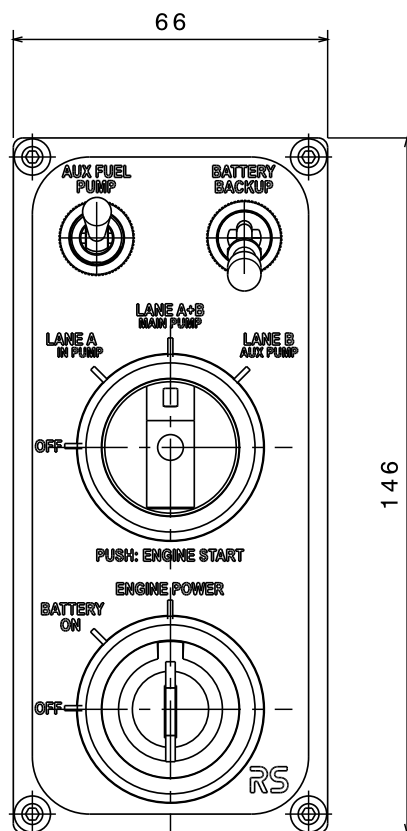


Figure 3-2: iS Engine Panel V3u drawing front view

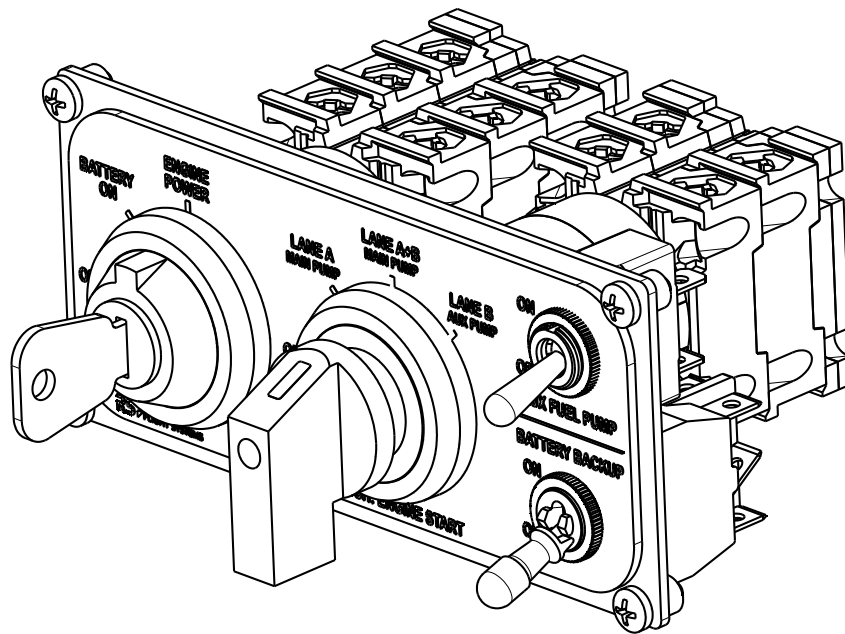


Figure 3-3: iS Engine Panel V3 drawing isometric view

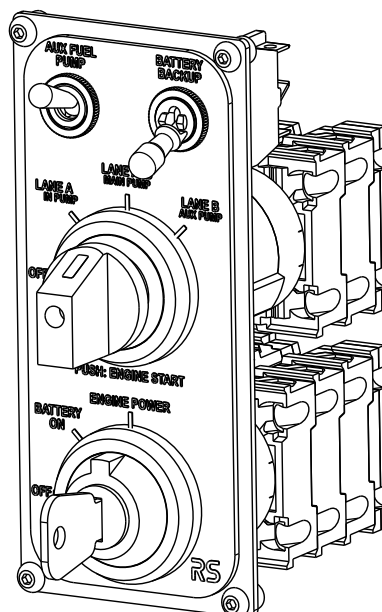


Figure 3-4: iS Engine Panel V3u drawing isometric view

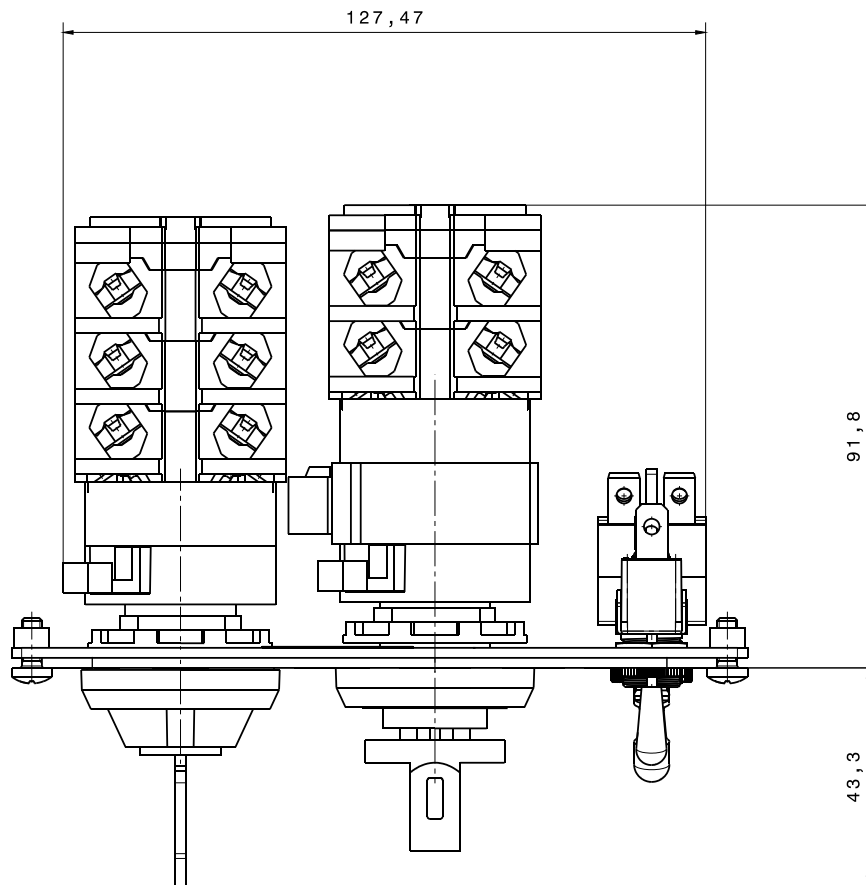


Figure 3-5: iS Engine Panel V3 drawing top view

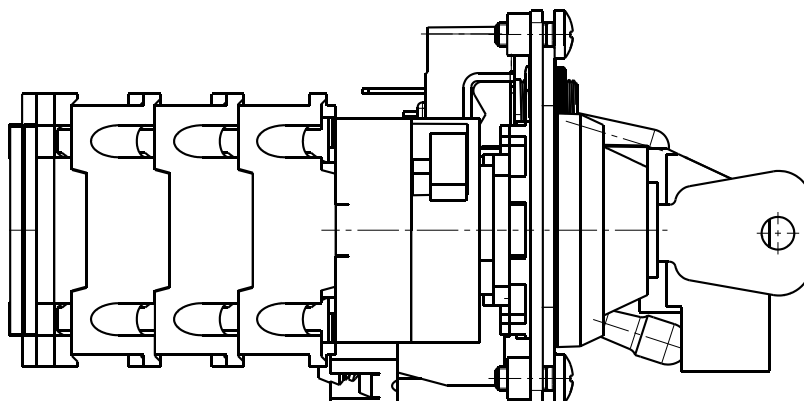


Figure 3-6: iS Engine Panel V3 drawing side view

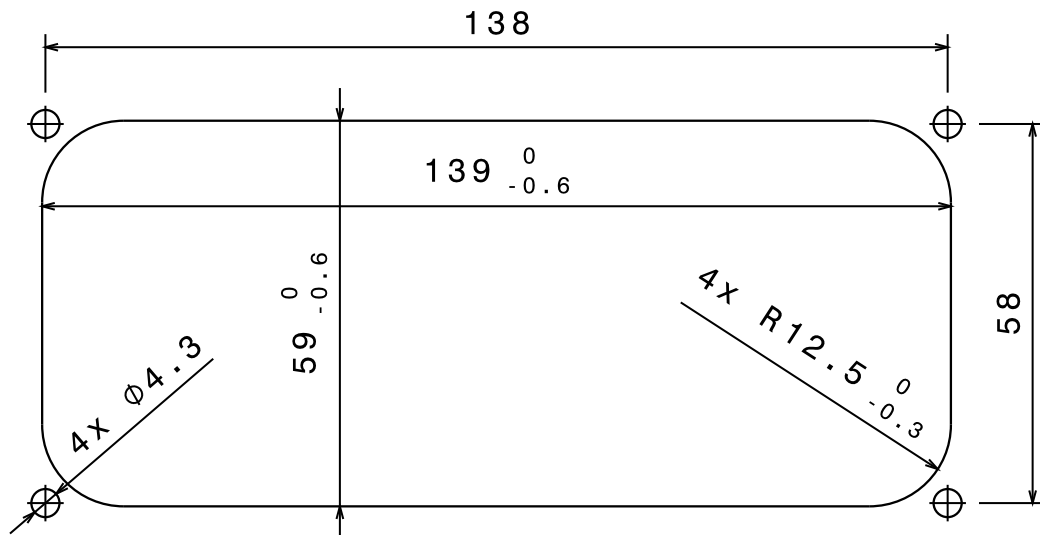


Figure 3-7: iS Engine Panel V3 cut out

Note: The cut out is identical for all three versions.

4. Operation

This chapter describes operational procedures for the iS Engine Panel V3.

4.1 Operation with SCU / EMU (Variant 1)

- Engine Key Switch in “OFF” position: both grounds “Aircraft” and “EMS” are connected to avoid different potentials during refueling and ground handling.
- Engine Key Switch in “BATTERY ON” position: The master relay is activated.
- Engine Key Switch in “ENGINE POWER” position: the SCU is powered. 1 sec later, the SCU activates the Start Power Relay and supplies the ECU with power. Also, the starter relay of the engine is enabled in this position (not activated).
Note: This is the standard position during flight.
- Lane Switch in “LANE A” position: The ECU LANE A is activated, and the Main Fuel Pump is supplied with power.
- Lane Switch in “LANE A+B” position: The ECU LANE A and B are supplied with power, and the Main Fuel Pump is supplied with power. Hold this position for at least 5 sec. every time you pass it.
- Lane Switch in “LANE A+B” position pushed: The starter relay of the engine is activated. The “ENGINE START” position is spring loaded. After starting the engine, maintain in position “LANE A+B”. The Start Power Relay is automatically switched off by the SCU 3 sec. after the engine has reached 1500 rpm. The starter is only engaged if the Engine Key Switch is in position “ENGINE POWER”.
- Lane Switch in “LANE B” position: The ECU LANE B is supplied with power, and the Auxiliary Fuel Pump is supplied with power.
- The Auxiliary Fuel Pump can alternatively be switched on by switching the toggle switch “AUX FUEL PUMP” to “ON”.
- The Backup Battery function, if needed, can be utilized by switching the “BATTERY BACKUP” toggle switch to “ON”.

Regarding the Lane check, please refer to the Operators Manual by Rotax. With the iS Engine Panel V3, the Lane check is conducted in parallel with the fuel pump check. When passing the position “A-B” during the Lane check, hold this position for at least 5 sec. until the warning lamps are switched off.

4.2 Operation Standalone (Variant 2)

- Engine Key Switch in “OFF” position: both grounds “Aircraft” and “EMS” are shorted to avoid different potentials during refueling and ground handling.
- Engine Key Switch in “BATTERY ON” position: The master relay is activated.
NOTE: This is the standard position during flight.
- Engine Key Switch in “ENGINE POWER” position: the Start Power function of the iS engine is activated. EMS is supplied with power from battery. Also, the starter relay of the engine is enabled in this position (not activated).
NOTE: This position is only set during engine start. After engine start, switch back to “BATTERY ON” position.
- Lane Switch in “LANE A” position: The ECU LANE A is activated, and the Main Fuel Pump is supplied with power.
- Lane Switch in “LANE A+B” position: The ECU LANE A and B are supplied with power, and the Main Fuel Pump is supplied with power. Hold this position for at least 5 sec. every time you pass it.
- Lane Switch in “LANE A+B” position pushed: The starter relay of the engine is activated. The “ENGINE START” position is spring loaded. After starting the engine, maintain in position “LANE A+B”. The starter is only engaged if the Engine Key Switch is in position “ENGINE POWER”.
- Engine Key Switch in “BATTERY ON” position: the Start Power function is deactivated. The EMS is supplied with power from the generator. This position must be switched before the automatic generator switching of the ECU is conducted (5 sec. at or above 2400 rpm).
- Lane Switch in “LANE B” position: The ECU LANE B is supplied with power, and the Auxiliary Fuel Pump is supplied with power.
- The Auxiliary Fuel Pump can alternatively be switched on by switching the toggle switch “AUX FUEL PUMP” to “ON”.
- The Backup Battery function, if needed, can be utilized by switching the “BATTERY BACKUP” toggle switch to “ON”.

Regarding the Lane check, please refer to the Operators Manual by Rotax. With the iS Engine Panel V3, the Lane check is conducted in parallel with the fuel pump check. When passing the position “A-B” during the Lane check, hold this position for at least 5 sec. until the warning lamps are switched off.

5. Electrical Installation

The switches of the iS Engine Panel V3 are connected to the Rotax HIC connectors A and B. The detailed pinout is listed from Table 5-3 to Table 5-5 and shown in the sketches in Figure 5-2 and Figure 5-3.

There are two wiring variants:

Option 1 is an installation with a SCU/EMU. In this variant, the Start Power is switched automatically by the SCU/EMU via an external relay. In flight, the normal position of the Engine Key Switch is “ENGINE POWER”. This option is described in chapter 5.1.

Option 2 is a Standalone installation. In this variant, the Start Power is switched manually with the Engine Key Switch in position “ENGINE POWER”. In flight, the normal position of the Engine Key Switch is “BATTERY ON”. This option is described in chapter 5.2

The legend of the wiring diagram is shown in Figure 5-1.

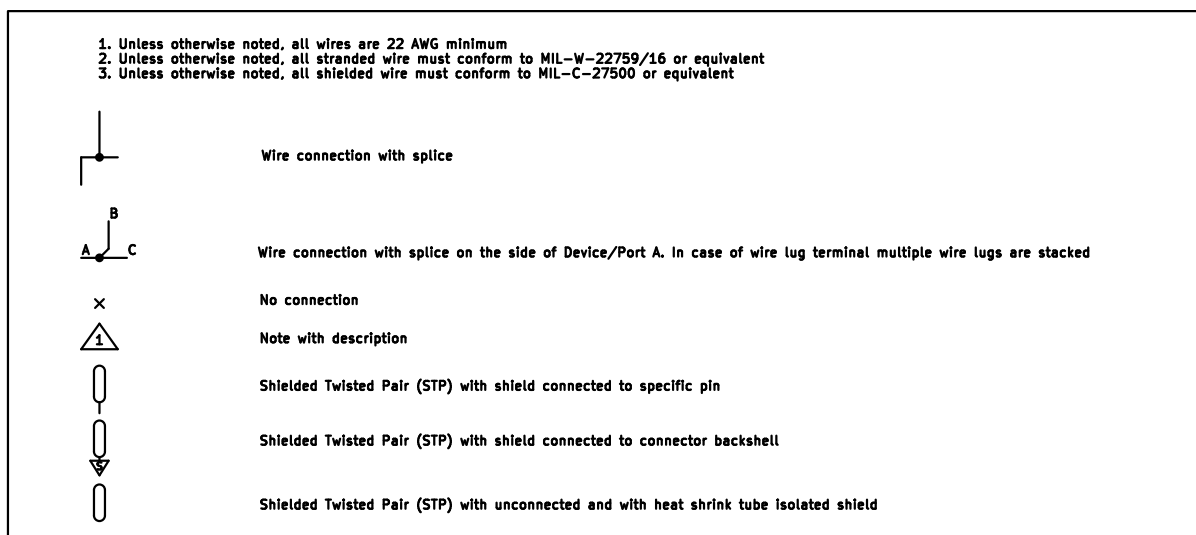


Figure 5-1: Legend of wiring diagram

5.1 Electrical Installation in combination with SCU/EMU (Variant 1)

Pin Lane Switch	Connector	Pin	Signal Name	Signal Description	Current / Wire Size
1	HIC A	1	LANE_SEL_SW_A_1	Lane A Supply	AWG 16
2	HIC A	7	LANE_SEL_SW_A_2	Lane A Signal	AWG 16
3	HIC B	1	LANE_SEL_SW_B_1	Lane B Supply	AWG 16
4	HIC B	9	LANE_SEL_SW_B_2	Lane B Signal	AWG 16
5	HIC A	9	GND_FUEL_PUMP_1	Fuel Pump Main GND	AWG 18
6	HIC A	3	SIG_FUEL_PUMP_1	Fuel Pump Main Signal	AWG 18
7	HIC B	11	GND_FUEL_PUMP_2	Fuel Pump AUX GND	AWG 18
8	HIC B	3	SIG_FUEL_PUMP_2	Fuel Pump AUX Signal	AWG 18
13	Engine Key Switch	7	STARTER_IN	Starter Supply	AWG 18
14	HIC B	12	SUPP_START_SWITCH	Starter Supply	AWG 18

Table 5-1: Lane Switch pinout

The Auxiliary Fuel Pump Switch must be wired in parallel to Pin 7 and 8 of the Lane Switch.

Pin AUX FP Switch	Connector	Pin	Signal Name	Signal Description	Current / Wire Size
1	Lane Switch	8	SIG_FUEL_PUMP_2	Fuel Pump AUX Signal	AWG 18
2	Lane Switch	7	GND_FUEL_PUMP_2	Fuel Pump AUX GND	AWG 18

Table 5-2: AUX Fuel Pump Switch pinout

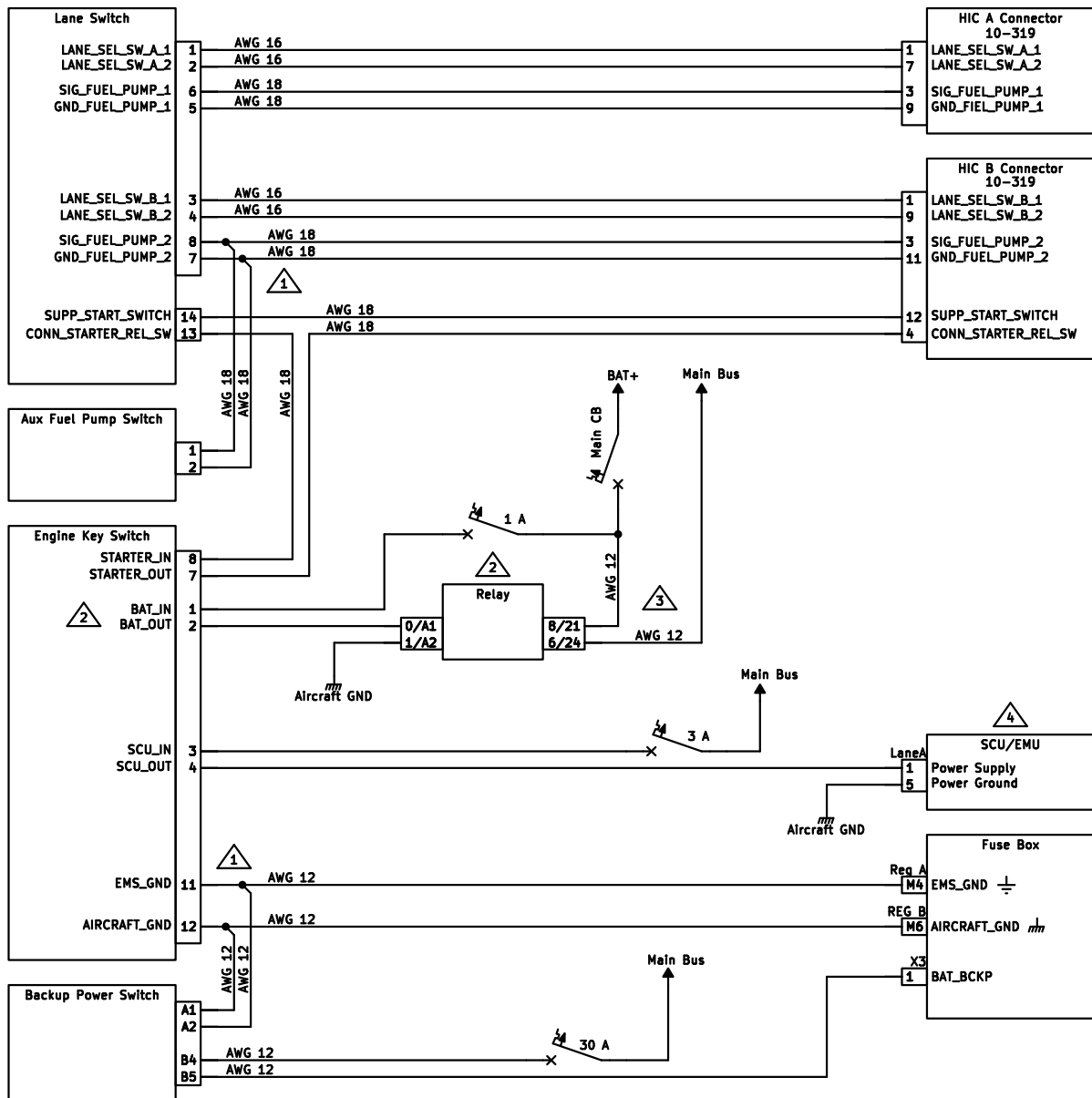
Pin Engine Switch	Connector	Pin	Signal Name	Signal Description	Current / Wire Size
1	-	-	BAT IN	BAT Supply	
2	-	-	BAT OUT	BAT Signal	
3	-	-	SCU	SCU / EMU Supply	AWG 22
4	-	-	SCU	SCU / EMU Signal	AWG 22
5	-	-	-	-	-
6	-	-	-	-	-
7	HIC B	4	CONN_STARTER_REL_SW	Starter	AWG 18
8	Lane Switch	13	CONN_STARTER_REL_SW	Starter	AWG 18
9	-	-	-	-	-
10	-	-	-	-	-
11	Reg A	M4	EMS_GND	EMS GND	AWG 12
12	Reg B	M6	AIRCRAFT_GND	Aircraft GND	AWG 12

Table 5-3: Engine Key Switch pinout

The Battery Backup Switch is a double pole toggle switch with a locking lever. It is used to connect the EMS ground with the AC ground as well as the power from the main bus via a 30 A circuit breaker to Pin 1 of the X3 connector of the fuse box.

Pin Battery BCK Switch	Connector	Pin	Signal Name	Signal Description	Current / Wire Size
A1	Engine Key Switch	12	AIRCRAFT_GND	Aircraft GND	AWG 12
A2	Engine Key Switch	11	EMS_GND	EMS GND	AWG 12
B4	-	-	Main Bus	Main Bus	AWG 12
B5	Fuse Box X3	1	BAT_BCKP	Backup Power	AWG 12

Table 5-4: Battery Backup Switch pinout



- 1 All incoming wires are terminated with a wire lug. All wire lugs are connected in the Engine Key Switch/Lane Switch
- 2 For currents below 20 A relay can be omitted. BAT+ is routed directly through Engine Key Switch towards Main Bus
- 3 Wire thickness according to current
- 4 Start Power is provided by SCU/EMU. Please refer to the SCU/EMU IOM for detailed wiring instructions

Figure 5-2: iS Engine Panel V3 wiring diagram

5.2 Electrical Installation Standalone (Variant 2)

In the Standalone configuration, the iSEP covers the function of the Start Power. The engine switch activates the Start Power in position “ENGINE POWER”. After engine start, the engine switch must be turned to position “BATTERY ON” in order deactivate the Start Power function. The pinout for the Standalone configuration is shown in the following tables.

Pin Lane Switch	Connector	Pin	Signal Name	Signal Description	Current / Wire Size
1	HIC A	1	LANE_SEL_SW_A_1	Lane A Supply	AWG 16
2	HIC A	7	LANE_SEL_SW_A_2	Lane A Signal	AWG 16
3	HIC B	1	LANE_SEL_SW_B_1	Lane B Supply	AWG 16
4	HIC B	9	LANE_SEL_SW_B_2	Lane B Signal	AWG 16
5	HIC A	9	GND_FUEL_PUMP_1	Fuel Pump Main GND	AWG 18
6	HIC A	3	SIG_FUEL_PUMP_1	Fuel Pump Main Signal	AWG 18
7	HIC B	11	GND_FUEL_PUMP_2	Fuel Pump AUX GND	AWG 18
8	HIC B	3	SIG_FUEL_PUMP_2	Fuel Pump AUX Signal	AWG 18
13	Engine Key Switch	7	STARTER_IN	Starter Supply	AWG 18
14	HIC B	12	SUPP_START_SWITCH	Starter Supply	AWG 18

Table 5-5: Lane Switch pinout for Standalone

The Auxiliary Fuel Pump Switch must be wired in parallel to Pin 7 and 8 of the Lane Switch.

Pin AUX FP Switch	Connector	Pin	Signal Name	Signal Description	Current / Wire Size
1	Lane Switch	8	SIG_FUEL_PUMP_2	Fuel Pump AUX Signal	AWG 18
2	Lane Switch	7	GND_FUEL_PUMP_2	Fuel Pump AUX GND	AWG 18

Table 5-6: AUX Fuel Pump Switch pinout

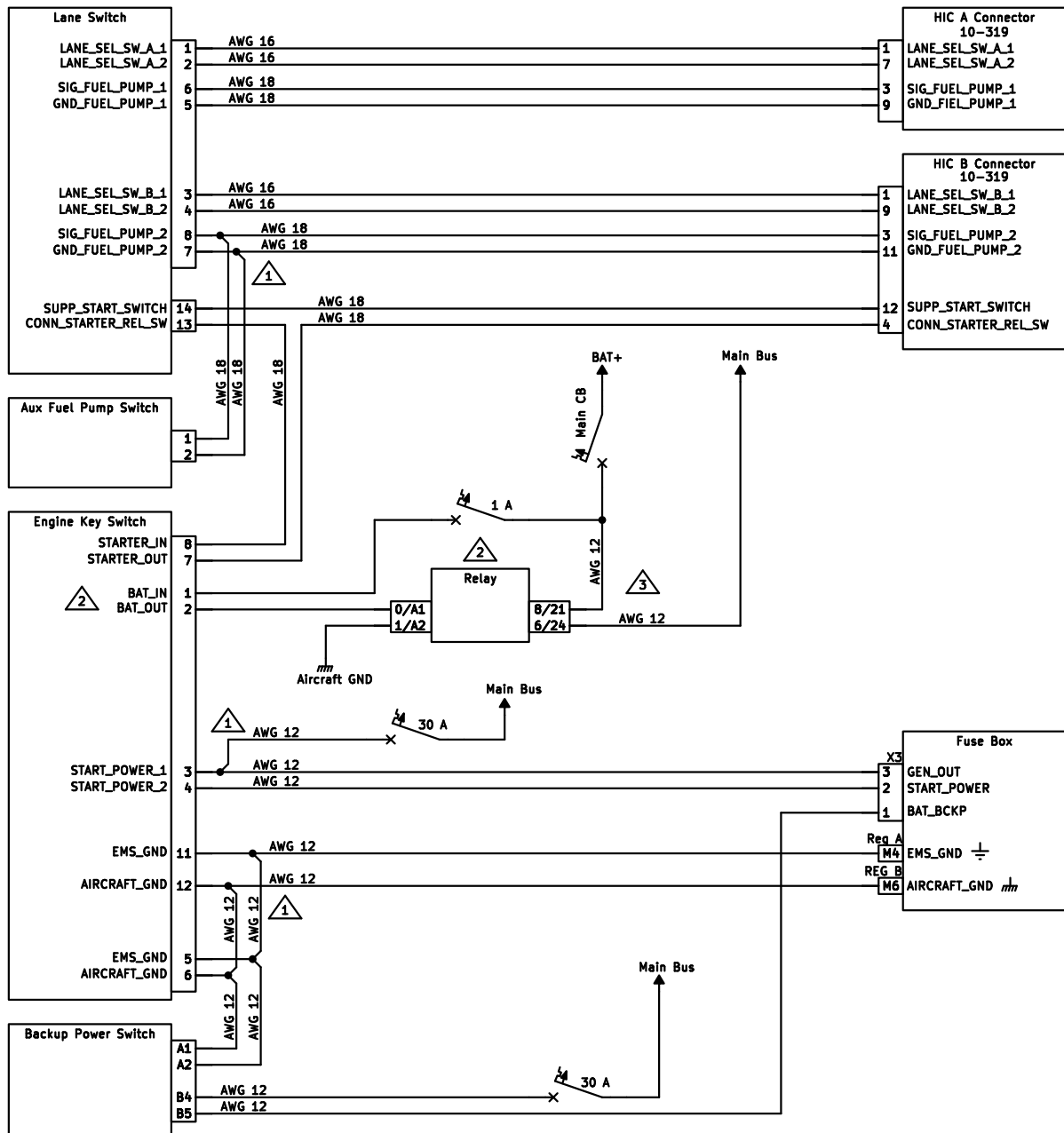
Pin Engine Key Switch	Connector	Pin	Signal Name	Signal Description	Current / Wire Size
1	-	-	BAT	BAT Supply	
2	-	-	BAT	BAT Signal	
3	Fuse Box X3	3	GEN_OUT	Generator Output Power	AWG 12
4	Fuse Box X3	2	START_POWER	Start Power	AWG 12
5	Engine Key Switch	11	EMS_GND	EMS GND	AWG 12
6	Engine Key Switch	12	AIRCRAFT_GND	Aircraft GND	AWG 12
7	HIC B	4	CONN_STARTER_REL_SW	Starter	AWG 18
8	Lane Switch	13	CONN_STARTER_REL_SW	Starter	AWG 18
9	-	-	-	-	-
10	-	-	-	-	-
11	Reg A	M4	EMS_GND	EMS GND	AWG 12
12	Reg B	M6	AIRCRAFT_GND	Aircraft GND	AWG 12

Table 5-7: Engine Key Switch pinout for Standalone

The Battery Backup Switch is a double pole toggle switch with a locking lever. It is used to connect the EMS ground with the AC ground as well as the power from the main bus via a 30 A circuit breaker to Pin 1 of the X3 connector of the fuse box.

Pin Battery BCK Switch	Connector	Pin	Signal Name	Signal Description	Current / Wire Size
A1	Engine Key Switch	6	AIRCRAFT_GND	Aircraft GND	AWG 12
A2	Engine Key Switch	5	EMS_GND	EMS GND	AWG 12
B4	-	-	Main Bus	Main Bus	AWG 12
B5	Fuse Box X3	1	BAT_BCKP	Backup Power	AWG 12

Table 5-8: Battery Backup Switch pinout



- △1 All incoming wires are terminated with a wire lug. All wire lugs are connected in the Engine Key Switch/Lane Switch
- △2 For currents below 20 A relay can be omitted. BAT+ is routed directly through Engine Key Switch towards Main Bus
- △3 Wire thickness according to current

Figure 5-3: iS Engine Panel V3 wiring diagram Standalone variant

5.3 Switching Logic

The switching logic is listed in Table 5-9 and Table 5-10 . “On” means the corresponding pin numbers are electrically conducted. “-” means the corresponding pin numbers are electrically non-conductive.

	Name	BAT ON	SCU/EMU Start Power	Start Power GND	STARTER	-	GND
Name	Position Pin	1/2	3/4	5/6	7/8	9/10	11/12
OFF	0°	-	-	-	-	-	On
BATTERY ON	45°	On	-	-	-	On	-
ENGINE POWER	90°	On	On	On	On	On	-

Table 5-9: Engine Key Switch arrangement

Description of the Connections of the Engine Key Switch:

BAT ON	Activation of the relay of the avionic bus (Avionic Master Switch)
ENGINE POWER	Activation of the SCU / EMU or of the Start Power
Start Power GND	For Standalone: Connection of EMS GND and AC GND
Starter	Enabling of Starter
GND	Connection of EMS GND and AC GND for refueling

	Name	LANE A	LANE B	Fuel Pump Main	Fuel Pump AUX	Starter
Name	Position Pin	1/2	3/4	5/6	7/8	13/14
OFF	0°	-	-	-	-	-
LANE A + FP Main	45°	On	-	On	-	-
Lane A+B + FP Main	90°	On	On	On	-	-
PUSH	90°	On	On	On	-	On
Lane B + FP Aux	135°	-	On	-	On	-

Table 5-10: Lane Switch arrangement

Description of the Connections of the Lane Switch:

LANE A	Activation of Lane A
LANE B	Activation of Lane B
Fuel Pump Main	Activation of main fuel pump (pump A)
Fuel pump Aux	Activation of auxiliary fuel pump (pump B)
Starter	Activation of the engine starter



RS Flight Systems GmbH

Oberer Luessbach 29-31

82335 Berg | Germany

+49 8178 8681 – 300

contact@rs-flightsystems.com

www.rs-flightsystems.com

iS Engine Panel V3 | Version: 3.0

© Copyright 2025 RS Flight Systems GmbH