Date:12/18/14
Rev.:1.0

Opencockpits

Manual Central Panel MIP B737 IDC.

Index:

Introduction:

B737 MIP central panel, flaps 45º, with IDC connection and with integrated backlight technology BKI panel. Made from a 6mm thick piece, with painted finish and professional engraving.

This panel was desigend to connect with inputs and outputs cards like IOCARD MIP, Master plus Expansion or other.

The panel has the following operating elements:

- Rotary switches and encoders and momentary switch.
- MFD keys.
- Autobrake indicator.
- Backlight.

As a novelty we introduce two concentric rotary encoders + switches for full functionality of the panel and 3 outputs (5V) for external panel indicators (Anti Skid Inop, LE Flaps Transit and LE Flaps Extended).

BKI Technology:

The BKI technology is similar to the original used in the original Boeing panels, it is embedded within the backlight panels, increasing the quality of the backlight and a significant drop in energy consumption and to avoid light pollution around the panels.

Wiring diagram:

Central panel can be connected to any inputs and outputs card through 40 pins IDC connector.

SEE ANEXE.

Connector's Description:

The central panel put into service with the following connections.

J9 CONNECTOR 40 PINS					
I/O	PIN	FUNCTION	I/O	PIN	FUNCTION
GND	1	GND OUTPUTS	I14	21	SPD REF ROTARY "<"
O1	2	INDICATOR 1 (+5V INCLUDED)	I15	22	SPD REF ROTARY "SET"
O2	3	INDICATOR 2 (+5V)	I16	23	SPD ENCODER
O3	4	INDICATOR 3 (+5V)	I17	24	SPD ENCODER BIS
O4	5	INDICATOR 4 (+5V)	GNDG3	25	GND INPUTS I9-17
-	6	-	I18	26	AUTOBRAKE ROTARY "RTO"
I1	7	N1 SET ROTARY "2"	I19	27	AUTOBRAKE ROTARY "OFF"
I2	8	N1 SET ROTARY "1"	I20	28	AUTOBRAKE ROTARY "1"
I3	9	N1 SET ROTARY "AUTO"	I21	29	AUTOBRAKE ROTARY "2"
I4	10	N1 SET ROTARY "BOTH"	I22	30	AUTOBRAKE ROTARY "3"
I5	11	N1 SET ENCODER	I23	31	AUTOBRAKE ROTARY "MAX"
I6	12	N1 SET ENCODER BIS	I24	32	MFD BUTTON "ENG"
I7	13	FUEL FLOW "USED"	I25	33	MFD BUTTON "SYS"
I8	14	FUEL FLOW "RESET"	GNDP	34	GND BACKLIGHT

GNDG2	15	GND INPUTS I1-8	PWLED	35	POSITIVE BACKLIGHT. Power feeding from 2.4 volts to 2.9 volts Attention: more voltage may damage the backlight!
I9	16	-	GNDP2	36	GND BACKLIGHT MFD BUTTONS
I10	17	SPD REF ROTARY "AUTO"	PWLED2	37	POSITIVE BACKLIGHT MFD BUTTONS Power feeding from 2.4 volts to 2.9 volts.
I11	18	SPD REF ROTARY "V1"	-	38	-
I12	19	SPD REF ROTARY "VR"	GNDG1	39	GND INPUTS I18-I25
I13	20	SPD REF ROTARY "WT"	-	40	-

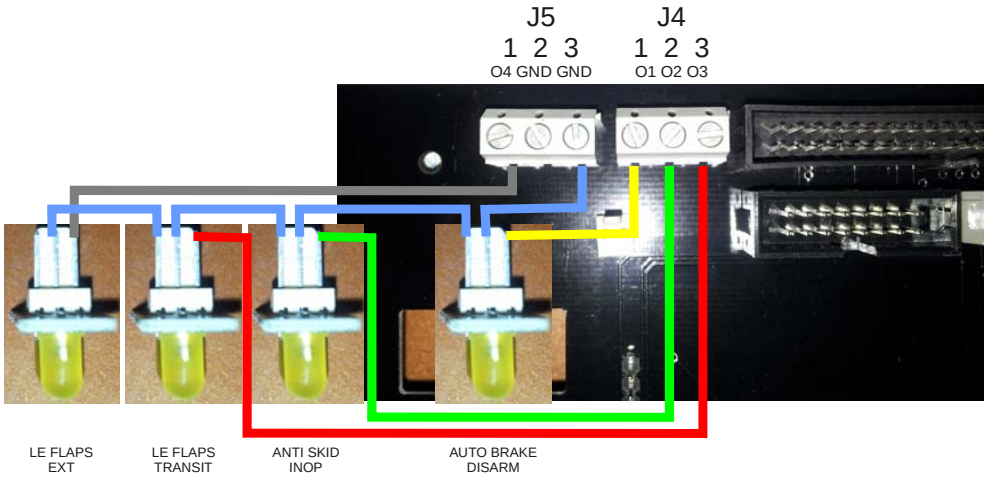
J4 & J5 CONNECTORS: OUTPUTS INDICATORS PANEL (pcb connectors)					
I/O	PIN	FUNCTION	I/O	PIN	FUNCTION
J4	1	POSITIVE O1 (+5V USED)	J5	1	POSITIVE O4 (+5V)
	2	POSITIVE O2 (+5V)		2	GND OUTPUTS
	3	POSITIVE O3 (+5V)		3	GND OUTPUTS (USED)

USB Dimcontrol card is recommended to manage the backlight.

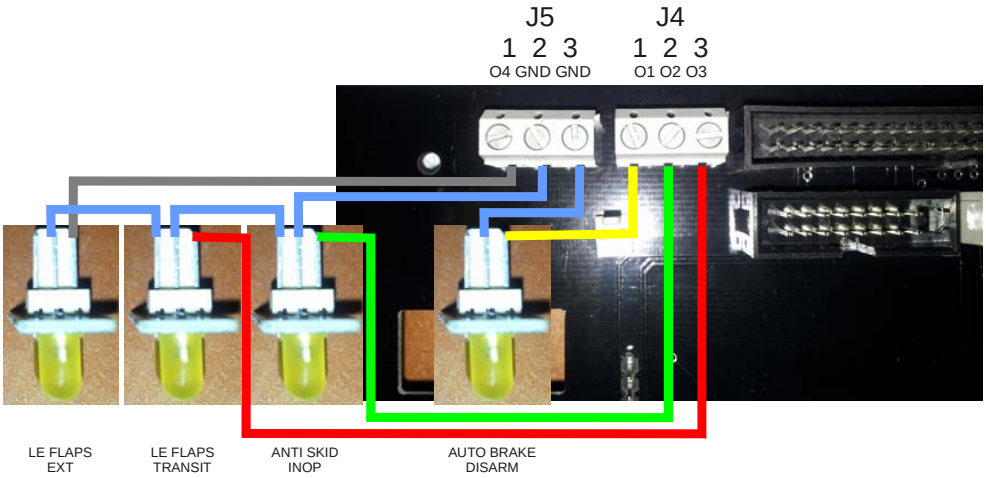
Connection of Auto Brake and Flaps indicators to central panel:

The Auto Brake Disarm indicator comes wired and operative from factory, but other 3 indicators can be connected to the central panel (Anti Skid Inop, LE Flaps Transit and LE Flaps Extended). They can be connected to any inputs or outputs card directly or wired to the Central Panel. There are two ways.

1. The positive pins (pin 1) of each indicator goes to their respective panel outputs (O1, O2, O3 & O4): J4 pin 1 (O1) wired to Auto Brake Disarm pin 1, J4 pin 2 (O2) to Anti Skid Inop pin 1, J4 pin 3 (O3) to LE Flaps Transit pin 1 and J5 pin 1 (O4) to LE Flaps Ext pin 1 and negative pins (GNDs): from J5 pin 3 to Auto Brake Disarm pin 2, from Auto Brake Disarm pin 3 exits a jumper to Anti Skid Inop pin 2 (GND), from Anti Skid Inop pin 3 (GND) exits other jumper to LE Flaps Transit pin 2 (GND) and from LE Flaps Transit pin 3 exits other jumper to LE Flaps Ext pin 2.



2. The positives are connected the same way: The positive pins (pin 1) of each indicator goes to their respective panel outputs (O1, O2, O3 & O4): J4 pin 1 (O1) wired to Auto Brake Disarm pin 1, J4 pin 2 (O2) to Anti Skid Inop pin 1, J4 pin 3 (O3) to LE Flaps Transit pin 1 and J5 pin 1 (O4) to LE Flaps Ext pin 1 and negative for Auto Brake Disarm indicator like factory wiring and for other indicators: from J5 pin 2 (GND) exits a wire to Anti Skid Inop pin 2 (GND), from Anti Skid Inop pin 3 (GND) exits other jumper to LE Flaps Transit pin 2 (GND) and from LE Flaps Transit pin 3 exits other jumper to LE Flaps Ext pin 2.



Inputs and Outputs Declaration:

To declare variables of inputs and outputs the previous table of connection must be used.
The numbers assigned will depend of wiring and inputs and outputs cards used. If we use a Master + Expansion card with or without the IOCard MIP PCB the inputs and outputs are static, but other cards can be used too.
With the IOCard MIP PCB and Master + Expansion cards the inputs and outputs will be the same and the official OC scripts and custom scripts will be the same too.

Inputs and outputs definition:

// OUTPUTS
Var 2000, name MIPBRAKEDIS_O, Link IOCARD_OUT, DEVICE XX, Output 21 // AUTO BRAKE DISARM INDICATOR
Var 2002, name MIPANTI_SKID_O, Link IOCARD_OUT, DEVICE XX, Output 22 // ANTI SKID INOP INDICATOR
Var 2004, name MIPFLAPTRANS_O, Link IOCARD_OUT, DEVICE XX, Output 23 // LE FLAPS TRANSIT INDICATOR
Var 2006, name MIPFLAPSEXT_O, Link IOCARD_OUT, DEVICE XX, Output 24 // LE FLAPS EXTENDED INDICATOR

// INPUTS
// N1 SET
Var 2010, name N1SET2_I, Link IOCARD_SW, DEVICE XX, Input 36 // N1 SET ROTARY SWITCH POSITION 2
Var 2012, name N1SET1_I, Link IOCARD_SW, DEVICE XX, Input 37 // N1 SET ROTARY SWITCH POSITION 1
Var 2014, name N1SETAUTO_I, Link IOCARD_SW, DEVICE XX, Input 38 // N1 SET ROTARY SWITCH POSITION AUTO
Var 2016, name N1SETBOTH_I, Link IOCARD_SW, DEVICE XX, Input 39 // N1 SET ROTARY SWITCH POSITION BOTH
Var 2018, name N1SETENC_I, Link IOCARD_SW, DEVICE XX, Input 40 // N1 SET ENCODER INPUT

// FUEL FLOW
Var 2020, name FUEL_USED_I, Link IOCARD_SW, DEVICE XX, Input 42 // FUEL FLOW SWITCH USED
Var 2022, name FUEL_RESET_I, Link IOCARD_SW, DEVICE XX, Input 43 // FUEL FLOW SWITCH RESET

// SPD REF
Var 2024, name SPD_AUTO_I, Link IOCARD_SW, DEVICE XX, Input 45 // SPD REF ROTARY SWITCH POSITION AUTO
Var 2026, name SPD_V1_I, Link IOCARD_SW, DEVICE XX, Input 46 // SPD REF ROTARY SWITCH POSITION V1
Var 2028, name SPD_VR_I, Link IOCARD_SW, DEVICE XX, Input 47 // SPD REF ROTARY SWITCH POSITION VR
Var 2030, name SPD_WT_I, Link IOCARD_SW, DEVICE XX, Input 48 // SPD REF ROTARY SWITCH POSITION WT
Var 2032, name SPD_VREF_I, Link IOCARD_SW, DEVICE XX, Input 49 // SPD REF ROTARY SWITCH POSITION VREF
Var 2034, name SPD_A_I, Link IOCARD_SW, DEVICE XX, Input 50 // SPD REF ROTARY SWITCH POSITION TRIANGLE
Var 2036, name SPD_SET_I, Link IOCARD_SW, DEVICE XX, Input 51 // SPD REF ROTARY SWITCH POSITION SET
Var 2038, name SPD_ENC_I, Link IOCARD_SW, DEVICE XX, Input 52 // SPD REF ENCODER INPUT

// AUTO BRAKE
Var 2040, name BRAKE_RTO_I, Link IOCARD_SW, DEVICE XX, Input 54 // AUTO BRAKE ROTARY SWITCH POSITION RTO
Var 2042, name BRAKE_OFF_I, Link IOCARD_SW, DEVICE XX, Input 55 // AUTO BRAKE ROTARY SWITCH POSITION OFF
Var 2044, name BRAKE_1_I, Link IOCARD_SW, DEVICE XX, Input 56 // AUTO BRAKE ROTARY SWITCH POSITION 1
Var 2046, name BRAKE_2_I, Link IOCARD_SW, DEVICE XX, Input 57 // AUTO BRAKE ROTARY SWITCH POSITION 2
Var 2048, name BRAKE_3_I, Link IOCARD_SW, DEVICE XX, Input 58 // AUTO BRAKE ROTARY SWITCH POSITION 3
Var 2050, name BRAKE_MAX_I, Link IOCARD_SW, DEVICE XX, Input 59 // AUTO BRAKE ROTARY SWITCH POSITION MAX

// MFD
Var 2052, name MFD_ENG_I, Link IOCARD_SW, DEVICE XX, Input 60 // MFD ENG MOMENTARY SWITCH BUTTON
Var 2054, name MFD_SYS_I, Link IOCARD_SW, DEVICE XX, Input 61 // MFD SYS MOMENTARY SWITCH BUTTON

// FLAPS SERVO
Var 2056, name SERVO_FLAPL, Link USB_SERVOS, Device YY, Output 1, PosL 150, PosC 512, PosR 1023, Type 1 // LEFT NEEDLE SERVO OF FLAPS GAUGE.
Var 2058, name SERVO_FLAPR, Link USB_SERVOS, Device YY, Output 2, PosL 150, PosC 512, PosR 1023, Type 1 // RIGHT NEEDLE SERVO OF FLAPS GAUGE.

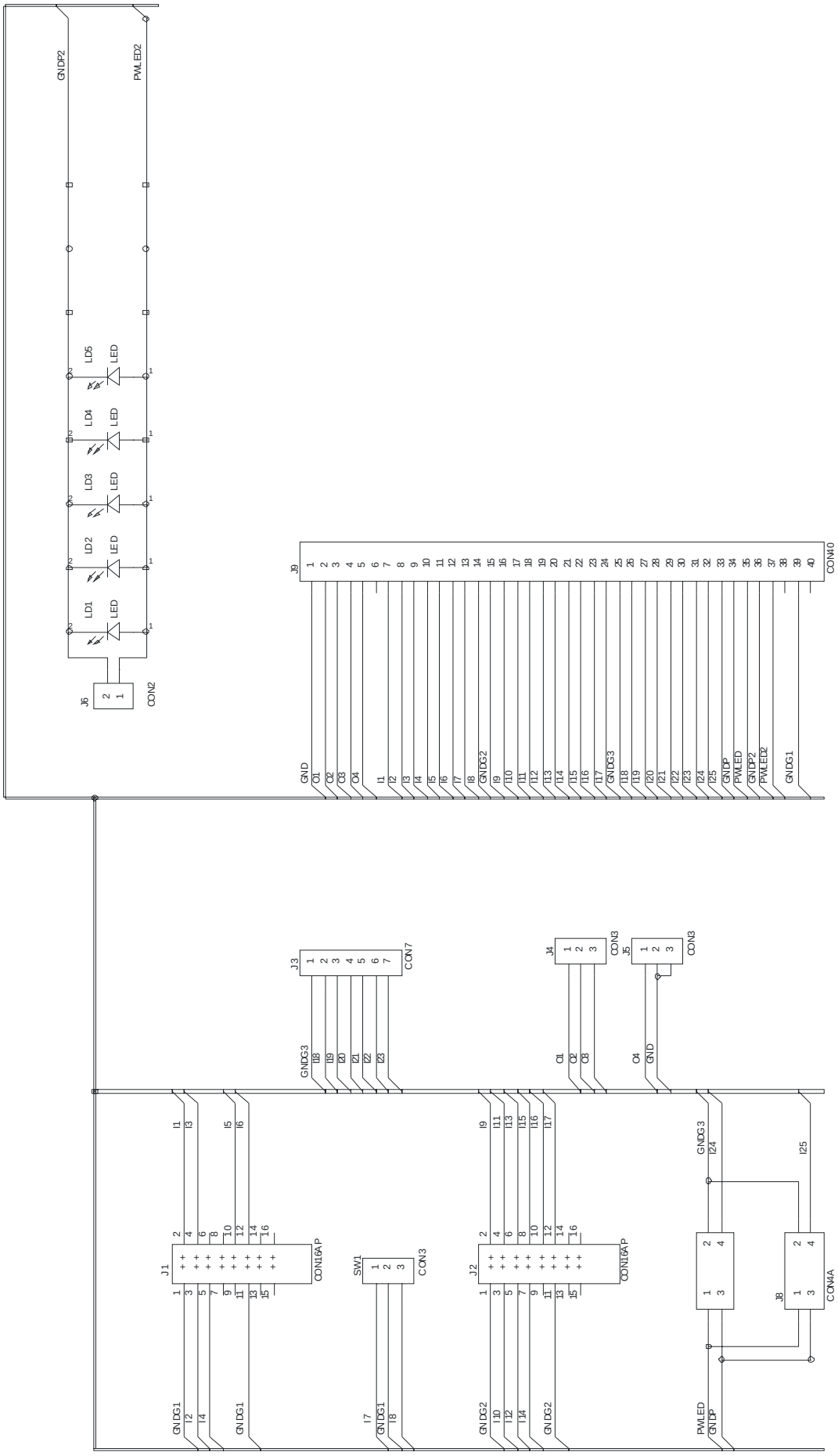
With this purpose we end this manual and you are kindly invited to read the other Opencockpits items and the SIOC software manuals. Thank you for trusting us.

Links of interest:

Support zone for customers:

http://www.opencockpits.com/catalog/info/

Anexe:


GNDP2
PWLED2
LD5
LED
LD4
LED
LD3
LED
LD2
LED
LD1
LED
J6
CON2
J9
CON40
GND
O1
O2
O3
O4
I1
I2
I3
I4
I5
I6
I7
I8
GNDG2
I9
I10
I11
I12
I13
I14
I15
I16
I17
GNDG3
I18
I19
I20
I21
I22
I23
I24
I25
GNDP
PWLED
GNDP2
PWLED2
GNDG1
J3
CON7
J4
CON3
J5
CON3
O1
O2
O3
O4
GND
J1
CON16AP
J2
CON16AP
SW1
CON3
J8
CON4A
GNDG1
GNDG2
GNDG3
PWLED
GNDP