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AURAL AND VISUAL WARNINGS
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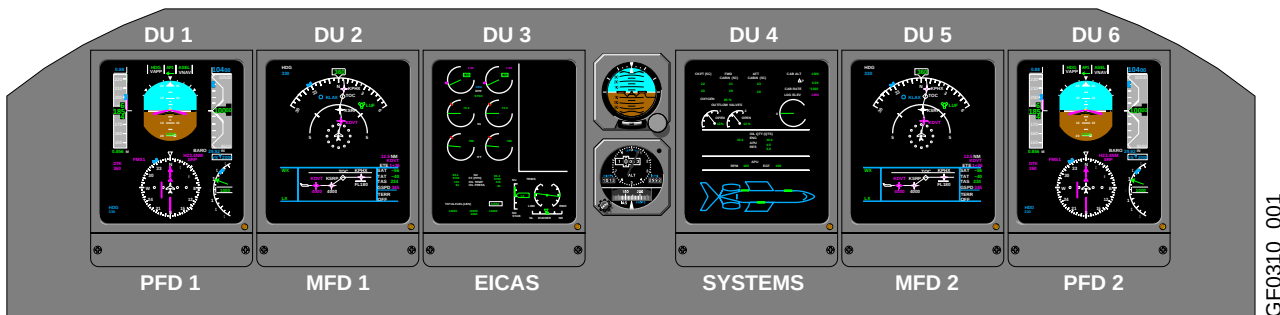
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GENERAL

The aural and visual warning system provides indications to warn of potentially unsafe operating conditions or airplane configurations, system malfunctions, and non-normal situations. Indications can be generated by the following:

- Crew alerting sub-system within the Engine Indication and Crew Alerting System (EICAS).
- Enhanced Ground Proximity Warning System (EGPWS).
- Weather Radar (WX) system.
- Traffic alert and Collision Avoidance System (TCAS).
- Altitude alert portion of the Air Data Computer (ADC).
- Stick shaker portion of the Stall Protection System (SPS).

EICAS provides crew with the necessary displays for airplane engine control and monitoring, control surface monitoring and all major sub-system synoptic displays. During normal operation, the engine and control surface information is displayed on the EICAS display unit (DU3) and the system synoptic information is displayed on the SYSTEMS display (DU4).



EICAS provides display of:

- Primary engine parameters
- Fuel quantities
- Flaps/slats/spoilers positions
- Crew Alerting System (CAS) messages
- Secondary engine parameters
- Landing gear position
- Surface trim indication

SYSTEMS provides synoptics display of:

- Bleed/Anti-Ice Air
- Hydraulics
- DC Electrical
- Flight Controls
- Air Conditioning
- AC Electrical
- Fuel
- Status

CENTRAL DISPLAY SYSTEM

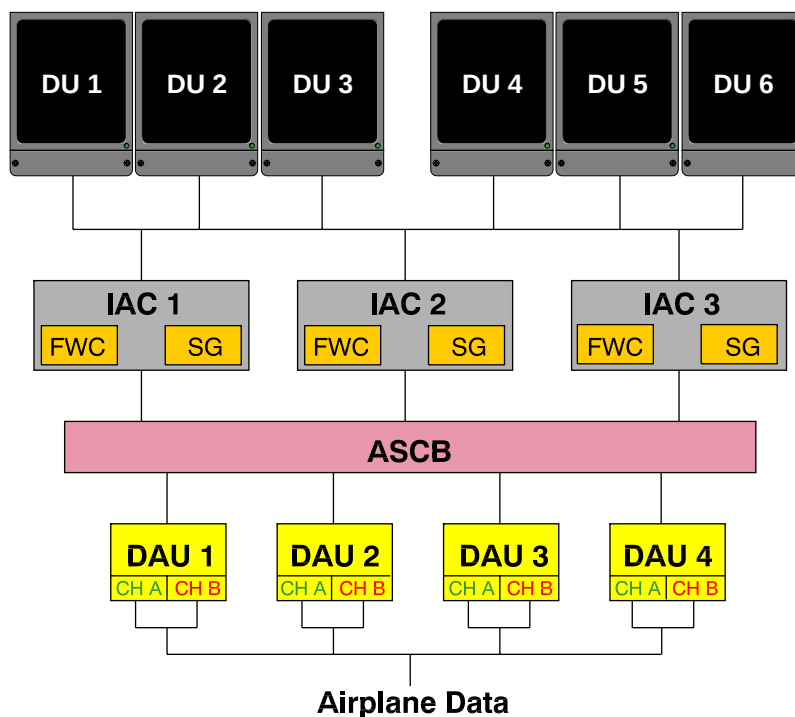
The central display system provides crew with displays for aircraft control, navigation, engine control and monitoring and systems synoptic. Other systems information provided for display are WX display, TCAS, EGPWS and Lightning Sensor System (LSS) display.

Airplane data is transmitted from airplane systems to 4 dual channel, Data Acquisition Units (DAU), through the Avionics Standard Communication Bus (ASCB), to 3 Integrated Avionics Computers (IAC), to the Display Units (DU).

The 4 dual channel DAUs operate with one channel active and the other channel on standby, with both channels updating data at the same time.

The ASCB is the principal communications network interconnecting the system components. Data traffic flow on the ASCB is managed by 3 bus controllers (one bus controller in each IAC). Only one bus controller is in control at a time, with the other 2 in standby status.

The three IACs, each contain a Symbol Generator (SG) and a Fault Warning Computer (FWC). The SGs process data from various sources and output the data to the 6 DUs. The FWC compares sensor input data, verifies all critical display data and displays warning, caution, advisory and status messages as applicable.



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The IACs perform the following functions:

IAC 1	IAC 2	IAC 3
EFIS, EICAS, FWC, CAIMS	EFIS, EICAS, FWC, CAIMS	EFIS, EICAS, FWC, CAIMS
Tone/Aural generator	Tone/Aural generator	LASERTRACK (if installed)
Flight Management System	Flight Management System	FMS 3 (if installed)
Autothrottle	Autothrottle	Autothrottle
AFCS	AFCS	AFCS

CREW ALERTING MESSAGES

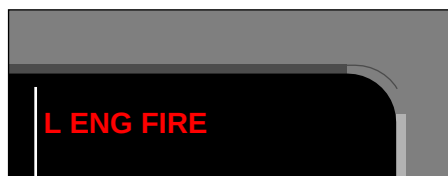
The crew alerting system portion of EICAS continually monitors all airplane systems. If an operationally significant fault occurs on a system, EICAS displays a crew alerting message on the EICAS display unit. In addition to the display messages, some crew alerts are also indicated by aural tones, voice advisories, MASTER WARNING and MASTER CAUTION lights.

All crew alerting system messages are divided into one of four categories and in the following priority:

Warning messages are generated when immediate recognition and corrective or compensatory action is required. They are the most urgent type of crew alerts. They always appear at the top of the message stack on the EICAS primary display. All warnings cause the MASTER WARNING lights on the glareshield to flash and have an aural alert consisting of a unique tone or a triple chime plus a voice advisory. Once acknowledged flashing stops.



Glareshield



EICAS Display

Triple Chime
"LEFT ENGINE FIRE"

Aural

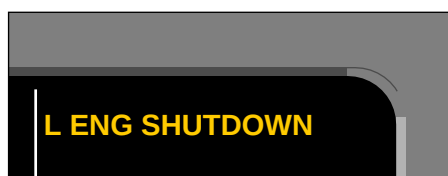
GF0310_004

Warning messages cannot be removed from view, unless the applicable failure has been rectified. If a failure is rectified, messages which appeared below the deleted message, will move up one line. When a new fault occurs, the new message will move to the top of the stack.

Caution messages are generated when immediate crew awareness is required and subsequent crew action will be required. Caution messages appear immediately below the warnings in the message stack on the EICAS display. All cautions cause the MASTER CAUTION lights on the glareshield to flash and have an aural alert consisting of a single chime. Once acknowledged flashing stops.



Glareshield



EICAS Display



Single Chime

Aural

GF0310_005

Caution messages can be paged and scrolled from view, using SCROLL knob on EICAS control panel. If a new abnormal situation occurs, the corresponding caution message will flash and the remaining messages will remain steady. To view all of the non-displayed messages, turn SCROLL knob on the EICAS control panel. If a new message is posted, it will be displayed at the top of the stack.

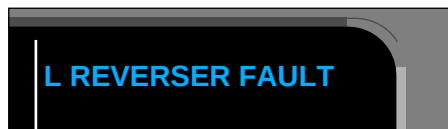


EICAS Control Panel

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CREW ALERTING MESSAGES (CONT'D)

Advisory messages are generated when crew awareness is required and subsequent crew action may be required. Advisory messages appear immediately below the cautions in the message stack on the EICAS display. When a new advisory message appears, it will flash for 5 seconds, then steady. There is no aural alert for advisory messages.



EICAS Display

GF0310_007

Advisory messages can be paged and scrolled from view, using SCROLL knob on EICAS control panel. To view all of the non-displayed messages, turn SCROLL knob on the EICAS control panel.

Status messages are generated to indicate non-normal pilot selections and are reminders to the crew. They are set in the message stack below the advisories. There is no aural alert for status messages.

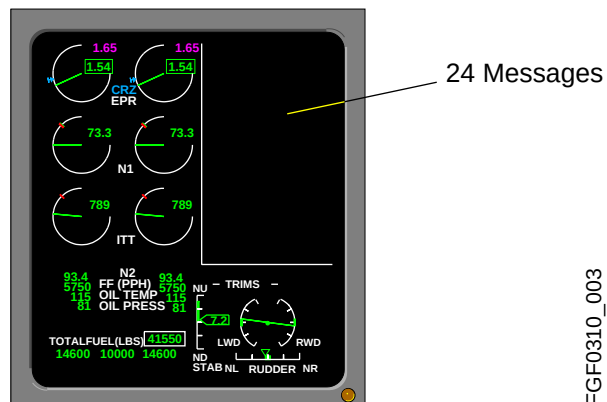
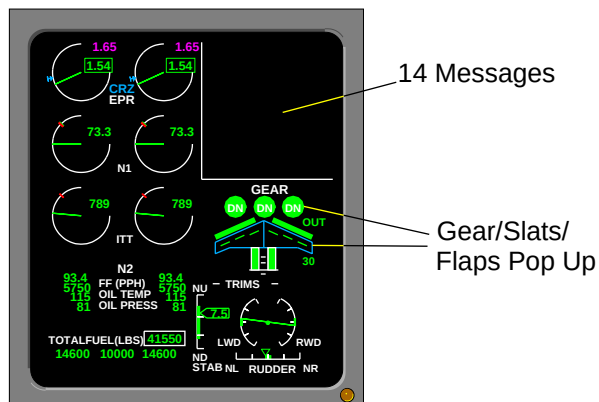


EICAS Display

GF0310_008

Status messages can be scrolled from view, using SCROLL knob on EICAS control panel. To view all of the non-displayed messages, turn SCROLL knob on the EICAS control panel.

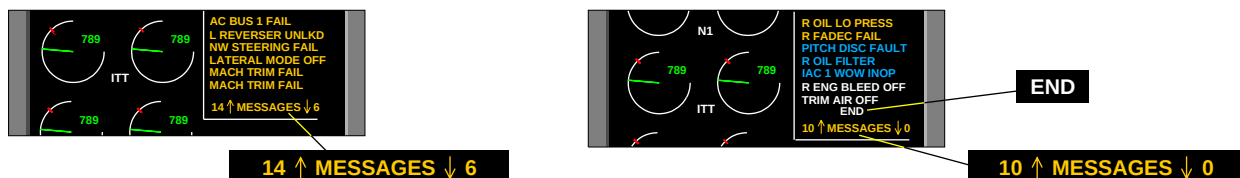
The EICAS message window displays up to 14 messages with the Gear/Slats/Flaps pop up displayed. With the Gear/Slats/Flaps pop up not displayed, the window can display up to 24 messages.



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CREW ALERTING MESSAGES (CONT'D)

If there are non-displayed messages above the top of the display or below the bottom of the display XXX↑ messages ↓XXX symbols will appear at the bottom of message window. The number of non-displayed messages will be indicated beside the ↑ or ↓ x arrows. If there are no more messages, END symbol will appear below last message. The colour of the status line corresponds to the highest level of messages not displayed. Warning messages are not part of the colour logic.



GF0310_010

CREW ALERTING MESSAGES (CONT'D)

EICAS **WARNING** MESSAGES

	Chapt. Ref.
APU FIRE	9
APU OVERSPEED	5
APU OVERTEMP	5
AV RACK OVHT	2
BRAKE OVHT	15
CABIN ALT	2
CABIN DELTA P	2
CHECK PFD	11
CONFIG AIL TRIM	10
CONFIG RUD TRIM	10
CONFIG SLAT/FLAP	10
CONFIG SPOILERS	10
CONFIG STAB TRIM	10
DUAL ENGINE OUT	18
EMER PWR ONLY	7
GEAR	15
L ENG FIRE	9
L OIL LO PRESS	18
L REVERSER UNLKD	18
MLG BAY OVHT	9
NORM BRAKE FAIL	15
PARK/EMER BRAKE ON	15
R ENG FIRE	9
R OIL LO PRESS	18
R REVERSER UNLKD	18
SMOKE AFT LAV	9
SMOKE AVIONICS BAY	9
SMOKE BAGGAGE	9
SMOKE FWD LAV	9
SMOKE CABIN	9
SMOKE CLOSET	9
SMOKE CLOSET FWD	9
SMOKE CLOSET AFT	9
WING A/ICE OVHT	14

NOTE

A single message or a combined message can be displayed on a message line, up to a maximum of 18 characters.

Example: **L REVERSER UNLKD** or **R REVERSER UNLKD** or **L-R REVERSER UNLKD**

FGF0310_007

CREW ALERTING MESSAGES (CONT'D)

EICAS CAUTION MESSAGES

	Chapt. Ref.		Chapt. Ref.		Chapt. Ref.
AC BUS 1 FAIL	7	DC BUS 1 FAIL	7	ICE DETECTOR FAIL	14
AC BUS 2 FAIL	7	DC BUS 2 FAIL	7	INBD BRK LO PRESS	15
AC BUS 3 FAIL	7	DC EMER BUS FAIL	7	INT CABIN DOOR	1
AC BUS 4 FAIL	7	DC ESS BUS FAIL	7	IRS 1 MSCMP	11
AC ESS BUS FAIL	7	DISP CTRLS FAIL	11	IRS 2 MSCMP	11
ADC 1 MSCMP	11	DOOR SYS FAIL	1	IRS 3 MSCMP	11
ADC 2 MSCMP	11	ELT TRANSMITTIG	6	IRS 1 OVHT	11
ADC 3 MSCMP	11	EMER DEPRESS	2	IRS 2 OVHT	11
AFCS ENGAGE INVAL	4	EMER LIGHTS OFF	16	IRS 3 OVHT	11
ALL ADC MSCMP	11	ELEVATOR SPLIT	10	IRS 1 SET HDG	11
ALL IRS MSCMP	11	EVS FAIL	11	IRS 2 SET HDG	11
AP TRIM IS LWD	4	EVS HEAT FAIL	11	IRS 3 SET HDG	11
AP TRIM IS RWD	4	EVS HEAT OVHT	11		
AP TRIM IS ND	4				
AP TRIM IS NU	4	FIRE BTL1 LO PRESS	9		
AP PITCH TRIM FAIL	4	FIRE BTL2 LO PRESS	9		
APU BATT FAIL	7	FLAP FAIL	10		
APU BLEED SYS FAIL	2	FLT SPOILERS FAIL	10		
APU DOOR FAIL	5	FLT SPLR DEPLOYED	10		
APU EGT SENSORS	5	FUEL COMPUTR FAIL	12		
APU FIRE FAIL	9	FUEL IMBALANCE	12		
APU FUEL SOV	12	FUEL LO QTY	12		
APU GEN OVERHEAT	7	FUEL TEMP SENSOR	12		
APU GEN OVLD	7	FUEL UNIT MISMATCH	12		
APU OIL HI TEMP	5	→ FUEL XFER FAIL	12		
APU OIL LO PRESS	5	← FUEL XFER FAIL	12		
APU REVERSE FLOW	5	→ FUEL XFER ON	12		
ASCB CTRL 1 FAIL	11	← FUEL XFER ON	12		
ASCB CTRL 2 FAIL	11				
ASCB CTRL 3 FAIL	11	GEAR DISAGREE	15		
ASCB FAIL	11	GEAR SYS FAIL	15		
A/T NOT IN HOLD	18	GEN 1 OVLD	7		
AUTOBRAKE FAIL	15	GEN 2 OVLD	7		
AUTO PRESS FAIL	2	GEN 3 OVLD	7		
AV BATT FAIL	7	GEN 4 OVLD	7		
AV FANS FAIL	2	GND LIFT DUMP	10		
BATT BUS FAIL	7	HUD FAIL	11		
BATT MASTER OFF	7	HUD MISCOMPARE	11		
BRAKE 50% DGRADED	15	HYD 1 HI TEMP	13		
		HYD 2 HI TEMP	13		
CABIN ALT	2	HYD 3 HI TEMP	13		
CARGO DOOR	1	HYD 1 LO PRESS	13		
CAT 2 INVALID	17	HYD 2 LO PRESS	13		
CB TRIP AC FEED	7	HYD 3 LO PRESS	13		
CB TRIP DC FEED	7	HYD 1 LO QTY	13		
CHECK DU 1	3	HYD 2 LO QTY	13		
CHECK DU 2	3	HYD 3 LO QTY	13		
CHECK DU 3	3	HYD 3 OVERFILLED	13		
CHECK DU 4	3	HYD RAT PUMP FAIL	13		
CHECK DU 5	3				
CHECK DU 6	3	IAC 1 OVHT	3		
CPLT BRAKE FAULT	15	IAC 2 OVHT	3		
CTR FUEL XFER FAIL	12	IAC 3 OVHT	3		
CTR TANK FULL	12	ICE	14		

NOTE

A single message or a combined message can be displayed on a message line, up to a maximum of 18 characters.

Example: **DU 1 FAN** or **DU 2 FAN** or **DU 3 FAN** or **DU 1-2-3 FAN**

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CREW ALERTING MESSAGES (CONT'D)

EICAS CAUTION MESSAGES

	Chapt. Ref.		Chapt. Ref.		Chapt. Ref.
LARGE SERV DOORS	1	PARK/EMER BRAKE ON	15	SG 1 FAIL	3
L AOA HEAT FAIL	14	PASSENGER DOOR	1	SG 2 FAIL	3
L BLEED LEAK	2	PITOT 1 HT FAIL	14	SG 3 FAIL	3
L BLEED SYS FAIL	2	PITOT 2 HT FAIL	14	SLAT-FLAP FAIL	10
L COWL A/ICE FAIL	14	PITOT 3 HT FAIL	14	SLAT-FLAP FAULT	10
L EMER EXIT	1	PLT BRAKE FAULT	15	SMALL SERV DOORS	1
L ENG FIRE FAIL	9			SMOKE AFT LAV FAIL	9
L ENG FLAMEOUT	18	RAT GEN FAIL	7	SMOKE AV BAY FAIL	9
L ENG FUEL LO TEMP	18	R AOA HEAT FAIL	14	SMOKE BAGGAGE FAIL	9
L ENG FUEL SOV	18	R BLEED LEAK	2	SMOKE CABIN FAIL	9
L ENG OVHT	18	R BLEED SYS FAIL	2	SMOKE CLOSET FAIL	9
L ENG OVERSPED	18	R COWL A/ICE FAIL	14	SMOKE CLO FWD FAIL	9
L ENG SAV FAIL	18	R EMER EXIT	1	SMOKE CLO AFT FAIL	9
L FADEC FAIL	18	R ENG FIRE FAIL	9	SMOKE FWD LAV FAIL	9
L FADEC N1 CTL	18	R ENG FLAMEOUT	18	SPLR LEVER FAIL	10
L FADEC OVHT	18	R ENG FUEL LO TEMP	18	STAB TRIM	10
L FUEL FILTER	18	R ENG FUEL SOV	18	STALL PROTECT FAIL	10
L FUEL LO PRESS	18	R ENG OVHT	18	STBY PITOT HT FAIL	14
L FUEL RECIRC FAIL	12	R ENG OVERSPED	18		
L HYD SOV FAIL	13	R ENG SAV FAIL	18	TRIM AIR FAIL	2
L INBD BRAKE FAIL	15	R FADEC FAIL	18	TRIM AIR LEAK	2
L MAIN GEAR DOOR	15	R FADEC N1 CTL	18		
L OIL LO QTY	18	R FADEC OVHT	18	UNCOMMANDED BRAKE	15
L OUTBD BRAKE FAIL	15	R FUEL FILTER	18	WING A/ICE LO HEAT	14
L PACK AUTO FAIL	2	R FUEL LO PRESS	18	WING A/ICE LEAK	14
L PACK FAIL	2	R FUEL RECIRC FAIL	12	WING FUEL HI TEMP	12
L PACK TEMP	2	R HYD SOV FAIL	13	WING FUEL LO TEMP	12
L PRI FUEL PUMPS	12	R INBD BRAKE FAIL	15	WING TO CTR LEAK	12
L REVERSER FAIL	18	R MAIN GEAR DOOR	15	WOW FAIL	15
L REV LOCK FAIL	18	R OIL LO QTY	18		
L START ABORTED	18	R OUTBD BRAKE FAIL	15	XBLEED FAIL	2
L THROTTLE FAIL	18	R PACK AUTO FAIL	2		
L WINDOW HEAT FAIL	14	R PACK FAIL	2	YD 1 FAIL	4
L WING A/ICE FAIL	14	R PACK TEMP	2	YD 2 FAIL	4
L WING FULL	12	R PRI FUEL PUMPS	12	YD OFF	4
L WSHLD HEAT FAIL	14	R REVERSER FAIL	18		
		R REV LOCK FAIL	18		
MACH TRIM FAIL	10	R START ABORTED	18		
MLG BAY OVHT FAIL	9	R THROTTLE FAIL	18		
		R WINDOW HEAT FAIL	14		
NOSE DOOR	15	R WING A/ICE FAIL	14		
NOSE STEER FAIL	15	R WING FULL	12		
		R WSHLD HEAT FAIL	14		
OUTBD BRK LO PRESS	15	ROLL SELECT	10		
OXYGEN LO QTY	8	ROLL SPOILERS FAIL	10		
		RUD AUTHORITY HIGH	10		
		RUD AUTHORITY LOW	10		
		RUD LIMITER FAIL	10		

Note:

A single message or a combined message can be displayed on a message line, up to a maximum of 18 characters.

Example: L HYD SOV FAIL or R HYD SOV FAIL or L-R HYD SOV FAIL

GF0310_013a

CREW ALERTING MESSAGES (CONT'D)

EICAS ADVISORY MESSAGES

	Chapt. Ref.		Chapt. Ref.
AC BUS 1 XFER FAULT	7	DAU 1A FAIL	3
AC BUS 2 XFER FAULT	7	DAU 1B FAIL	3
AC BUS 3 XFER FAULT	7	DAU 2A FAIL	3
AC BUS 4 XFER FAULT	7	DAU 2B FAIL	3
ADC 1 FAIL	11	DAU 3A FAIL	3
ADC 2 FAIL	11	DAU 3B FAIL	3
ADC 3 FAIL	11	DAU 4A FAIL	3
ADC 1 DEGRADED	11	DAU 4B FAIL	3
ADC 2 DEGRADED	11	DC BUS 1 XFER FAULT	7
ADC 3 DEGRADED	11	DC BUS 2 XFER FAULT	7
AFCS 1 FAIL	4	DC ESS XFER FAULT	7
AFCS 2 FAIL	4	DU 1-2-3-4-5-6 FAN	3
AP 1 FAIL	4		
AP 2 FAIL	4	ELEC SYS FAULT	7
APU BATT CHGR FAIL	7	ENG SYNC FAIL	18
APU BLEED DISABLED	5	ENG SYNC LIMIT	18
APU FADEC FAIL	5	ESS TRU 1 FAIL	7
APU FAULT	5	ESS TRU 2 FAIL	7
APU FIRE FAULT	9	EVS DEFOG FAULT	11
APU GEN FAIL	7	EXT AC PWR AVAIL	7
APU IN BITE	5	EXT DC PWR AVAIL	7
APU NOT AVAILABLE	5		
APU OIL LO QTY	5	FCU FAULT	10
APU SHUTDOWN	5	FDR ACCEL FAIL	4
APU SQUIB 1 FAIL	9	FDR FAIL	4
APU SQUIB 2 FAIL	9	FIRE SYS FAULT	9
ASCB FAULT	11	FLAP DRIVE OVHT	10
ASCB CTR 1 FAULT	11	FLAP HALFSPD	10
ASCB CTR 2 FAULT	11	FLT SPOILERS FAULT	10
ASCB CTR 3 FAULT	11	FMS 1 FAIL	17
AT 1 FAIL	18	FMS 2 FAIL	17
AT 2 FAIL	18	FMS 3 FAIL	17
AT ADC MISCMP	18	FUEL COMPUTR FAULT	12
AT IRS MISCMP	18	FUEL QTY DEGRADED	12
ATS ENVELOPE	18	FUEL RECIRC ON	12
AUTO PRESS FAULT	2	→ FUEL XFER ON	12
AV BATT CHGR FAIL	7	← FUEL XFER ON	12
AV FANS FAIL	2	→ XFER VALVE OPEN	12
AV RACK FAN FAIL	2	← XFER VALVE OPEN	12
AVIONIC FAN FAIL	2		
		GEAR SYS FAULT	15
BATT BUS XFER FAULT	7	GEN 1 FAIL	7
BATT EMER PWR ON	7	GEN 2 FAIL	7
BLEED MISCONFIG	2	GEN 3 FAIL	7
BRAKE FAULT	15	GEN 4 FAIL	7
BRAKE TEMP	15	GND LIFT DUMP	10
		GND PROX FAIL	17
CAB ALT LEVEL HI	2	GPWS SYSTEM FAIL	17
CB TRIP	7		
CHECKLIST MISMATCH	3	HUD FAN FAIL	11
CTR XFER FAULT	12	HUD MISALIGN	11
		HYD EDP 1A FAIL	13
		HYD EDP 2A FAIL	13
		HYD PUMP 3A FAIL	13
		HYD PUMP 1B FAIL	13
		HYD PUMP 2B FAIL	13
		HYD PUMP 3B FAIL	13

NOTE

A single message or a combined message can be displayed on a message line, up to a maximum of 18 characters.

Example: **AFCS 1 FAIL** or **AFCS 2 FAIL** or **AFCS 1-2 FAIL**

FGF0310_009

CREW ALERTING MESSAGES (CONT'D)

EICAS ADVISORY MESSAGES

	Chapt. Ref.		Chapt. Ref.
IAC 1 AURAL FAIL	3	RECIRC FAN FAIL	2
IAC 2 AURAL FAIL	3	REVRSION CTLR FAIL	3
IAC 1 INVALID	3	R AUX FUEL PUMP	12
IAC 2 INVALID	3	R BLEED FAULT	2
IAC 3 INVALID	3	R COWL A/ICE FAULT	14
IAC 1 MEM FULL	3	R ENG FIRE FAULT	9
IAC 2 MEM FULL	3	R ENG SQUIB 1 FAIL	9
IAC 3 MEM FULL	3	R ENG SQUIB 2 FAIL	9
IAC 1 WOW INOP	15	R FADEC FAULT	18
IAC 2 WOW INOP	15	R FUEL FILTER	18
IAC 3 WOW INOP	15	R OIL FILTER	18
IAC CONFIG MISMTCH	3	R PACK FAULT	2
ICE	14	R PRI FUEL PUMP	12
ICE DETECTOR FAULT	14	R POBE MON FAIL	14
IRS 1 AUX FAIL	11	R R/D VALVE OPEN	12
IRS 2 AUX FAIL	11	R REVERSER FAULT	18
IRS 3 AUX FAIL	11	R REV LOCK FAULT	18
IRS 1 FAIL	11	RUD AUTHORITY SAFE	10
IRS 2 FAIL	11	RUD LIMITER FAULT	10
IRS 3 FAIL	11		
IRS 1 NO ALIGN	11	SAFETY VALVE OPEN	2
IRS 2 NO ALIGN	11	SELCAL HF 1	6
IRS 3 NO ALIGN	11	SELCAL HF 2	6
IRS 1 AUX PWR	11	SELCAL VHF 1	6
IRS 2 AUX PWR	11	SELCAL VHF 2	6
IRS 3 AUX PWR	11	SELCAL VHF 3	6
		SET LDG ELEV	2
L AUX FUEL PUMP	12	SHAKER 1 FAIL	10
L BLEED FAULT	2	SHAKER 2 FAIL	10
L COWL A/ICE FAULT	14	SLAT DRIVE OVHT	10
L ENG FIRE FAULT	9	SLAT HALFSPD	10
L ENG SQUIB 1 FAIL	9	SLAT/FLAP BIT	10
L ENG SQUIB 2 FAIL	9	SLAT-FLAP HALFSPD	10
L FADEC FAULT	18	SPLRS/STAB IN TEST	10
L FUEL FILTER	18	SPLRS/STAB BIT	10
L OIL FILTER	18	STAB CH 1 FAIL	10
L PACK FAULT	2	STAB CH 2 FAIL	10
L PRI FUEL PUMP	12	STALL WARN ADVANCE	10
L PROBE MON FAIL	14	STALL WARN BASIC	10
L R/D VALVE OPEN	12		
L REVERSER FAULT	18	TAT 1 FAIL	14
L REV LOCK FAULT	18	TAT 2 FAIL	14
LTRK FAIL	17	TAT 3 FAIL	14
		TAT HT 1 FAIL	14
MACH XDUCER FAIL	10	TAT HT 2 FAIL	14
MACH XDUCER FAULT	10	TAT HT 3 FAIL	14
MAN PRESS FAULT	2	TERR FAIL	17
MFD CTLR 1 FAIL	3	TRIM AIR FAULT	2
MFD CTLR 2 FAIL	3	TRU 1 FAIL	7
MLG BAY OVHT FAULT	9	TRU 2 FAIL	7
NAV LIGHTS FAIL	16	WINDSHEAR FAIL	17
NO TAKEOFF	10	WINDMILL ENVELOPE	18
		WING A/ICE FAULT	14
OIL RES LO QTY	18	WING A/ICE SENSOR	14
OUTFLOW VLV 1 FAIL	2	WOW FAULT	15
OUTFLOW VLV 2 FAIL	2		
		XFEED VALVE FAIL	12
PASSENGER OXY ON	8		
PITCH DISC FAULT	10	YD HEAT 1 FAIL	4
PITCH FEEL FAULT	10	YD HEAT 2 FAIL	4
		YD NOT CENTERED	4
RAM AIR FAIL	2		
RAT GEN ON	7		

NOTE

A single message or a combined message can be displayed on a message line, up to a maximum of 18 characters.

Example: **MFD CTLR 1 FAIL** or **MFD CTLR 2 FAIL** or **MFD 1-2 CTLR FAIL**

GF0310_015a

CREW ALERTING MESSAGES (CONT'D)

EICAS STATUS MESSAGES

	Chapt. Ref.		Chapt. Ref.		Chapt. Ref.
AC BUS1 MAN OFF	7	HUD ON	11	PARK/EMER BRAKE ON	15
AC BUS 2 MAN OFF	7	HYD PUMP 1B OFF	13	PLT ROLL SPLRS	10
AC BUS 3 MAN OFF	7	HYD PUMP 1B ON	13		
AC BUS 4 MAN OFF	7	HYD PUMP 2B OFF	13	RAT GEN OFF	7
APU BLEED OFF	5	HYD PUMP 2B ON	13	RAM AIR ON	2
APU BLEED ON	5	HYD PUMP 3A OFF	13	RECIRC FAN OFF	2
APU FUEL SOV CLSD	12	HYD PUMP 3B OFF	13	R AUX PUMPS OFF	12
APU GEN OFF	7	HYD 3B ON	13	R COWL A/ICE AUTO	14
APU SOVS CLSD	9	HIGH PRESS RATE	2	R COWL A/ICE ON	14
AUTOBRAKE HI	15			R ENG BLEED ON	18
AUTOBRAKE LOW	15	IAC 1 AURAL MUTE	3	R ENG BLEED OFF	18
AUTOBRAKE MED	15	IAIC 2 AURAL MUTE	3	R ENG SOVS CLSD	9
AUX PRESS ON	2	IRS 1 IN ATT	11	R ENG SHUTDOWN	18
		IRS 2 IN ATT	11	R FADEC NI CTL	18
BATT BUS MAN OFF	7	IRS 3 IN ATT	11	R FUEL SOV CLSD	12
	10			R FUEL RECIRC ON	12
CPLT ROLL SPLRS		LDG ELEV MAN	2	R HYD SOV CLSD	9
		L AUX PUMP OFF	12	R IGNITION ON	18
DC BUS 1 MAN OFF	7	L COWL A/ICE AUTO	14	R PACK HIGH FLOW	2
DC BUS 2 MAN OFF	7	L COWL A/ICE ON	14	R PACK LOW FLOW	2
DC ESS BUS MAN OFF	7	L ENG BLEED ON	18	R PACK MAN TEMP	2
DITCHING ON	2	L ENG BLEED OFF	18	R PACK OFF	2
		L ENG SOVS CLSD	9	R PRI PUMPS OFF	12
EGPWS TERR OFF	17	L ENG SHUTDOWN	18	R WSHLD HEAT OFF	14
EMER LIGHTS ON	16	L FADEC NI CTL	18		
EVS ON	11	L FUEL SOV CLSD	12	SEAT BELTS SIGN ON	16
EVS CAL	11	L FUEL RECIRC ON	12	STAB CH 1 OFF	10
EXT AC PWR ON	7	L HYD SOV CLSD	9	STAB CH 2 OFF	10
EXT DC PWR ON	7	L IGNITION ON	18		
		L PACK HIGH FLOW	2	TRIM AIR OFF	2
→ FUEL XFER ON	12	L PACK LOW FLOW	2		
← FUEL XFER ON	12	L PACK MAN TEMP	2	WING A/ICE AUTO	14
		L PACK OFF	2	WING A/ICE ON	14
GEAR HORN MUTED	15	L PRI PUMPS OFF	12	WING FUEL XFER OFF	12
GEN 1 OFF	7	L WSHLD HEAT OFF	14	WING XBLEED FROM L	14
GEN 2 OFF	7			WING XBLEED FROM R	14
GEN 3 OFF	7	MAN PRESS CONTROL	2		
GEN 4 OFF	7			XBLEED CLOSED	2
GLD MANUAL ARM	10	NO SMKG SIGN ON	16	XBLEED OPEN	2
GND LIFT DUMP OFF	10	NOSE STEER OFF	15	XFEED VALVE OPEN	12
GPWS FLAP OVRD	17				
GPWS G/S MUTED	17	OUTFLOW VLV 1 CLSD	2		
		OUTFLOW VLV 2 CLSD	2		

NOTE

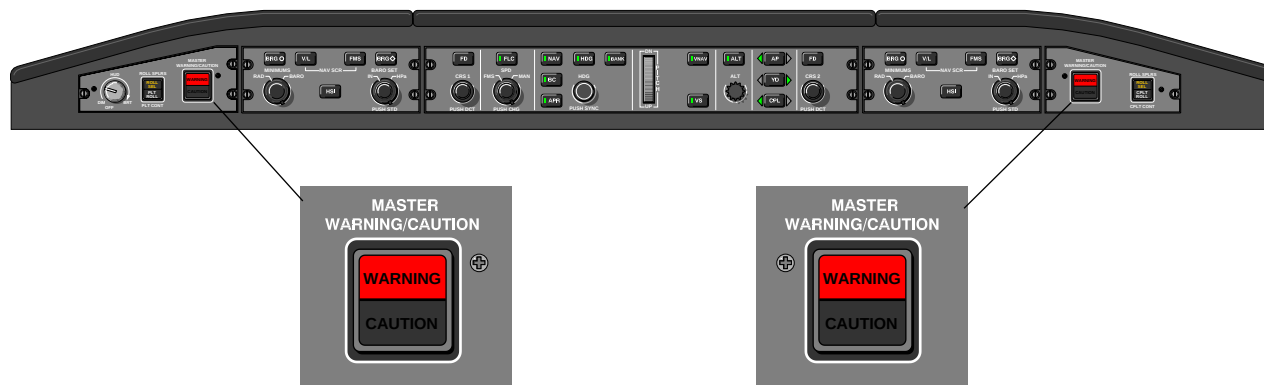
A single message or a combined message can be displayed on a message line, up to a maximum of 18 characters.

Example: L IGNITION ON or R IGNITION ON or L-R IGNITION ON

FGF0310_010

MASTER WARNING/MASTER CAUTION LIGHTS

- Two MASTER WARNING switch/lights come on flashing when any warning occurs. Pushing either MASTER WARNING switch/light extinguishes both MASTER WARNING lights for the duration of that warning and resets the lights for future warnings.

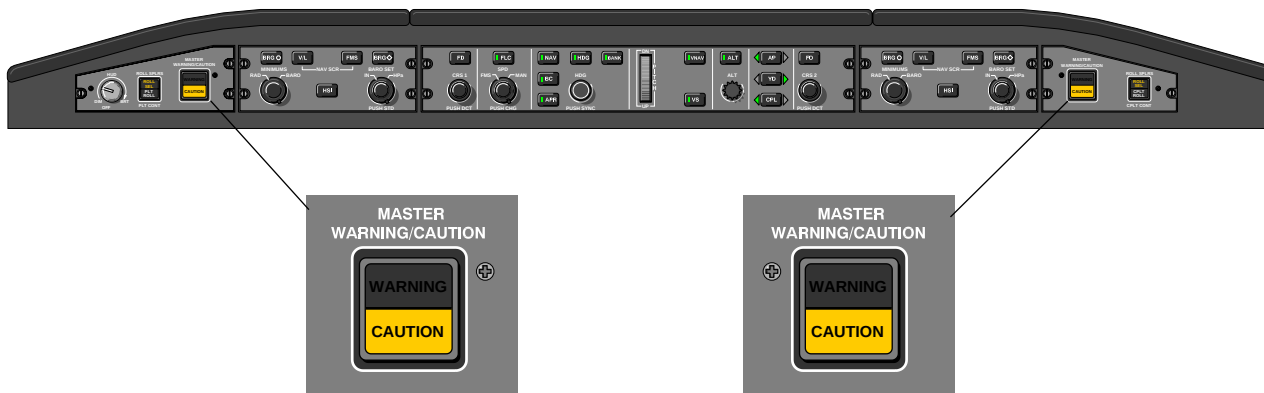


FGF0310_004

Pushing the MASTER WARNING also silences the aural warnings except for the following cases:

- Stall warnings
- EGPWS/TCAS (voices and aural)
- Overspeed Continuous Horn (A-chord)
- Trim clacker
- Autopilot disconnect cavalry charge
- Configuration warnings
- Gear Horn
- Autothrottle disconnect
- Windshear warning

Two MASTER CAUTION switch/lights come on flashing when any caution occurs. Pushing either MASTER CAUTION switch/light extinguishes both MASTER CAUTION lights for the duration of that caution and resets the lights for future cautions.



FGF0310_005

Pushing the MASTER CAUTION will not silence the following:

- EGPWS and TCAS voice alerts
- Altitude alert (C-chord) aural
- Stall warning
- Overspeed continuous horn (A-Chord)
- Trim clacker
- Autopilot disconnect cavalry charge
- Gear horn

AURALS

Aurals and tones that call attention to warnings and cautions.

Aural/Tone	Indication	Chapter Reference
C-chord (1 second)	Altitude alert	Chapter 11, Flight Instruments
Cavalry Charge	Autopilot disconnect	Chapter 4, Automatic Flight Control System
Caution (Single chime)	Tone that precedes an aircraft system caution message	Chapters 2 through 18
Clacker	Excessive stabilizer movement	Chapter 10, Flight Controls
Double C-chord	VNAV vertical track alert	Chapter 4, Automatic Flight Control System
Horn Continuous (A-chord)	Overspeed warning	Chapter 4, Automatic Flight Control System Chapter 10, Flight Controls
Stick Shaker	Stall	Chapter 10, Flight Controls
Voice	Voice aural warnings	Chapters 2 through 18
Warning (Triple chime)	Tone that precedes an aircraft system warning message and/or voice advisory	Chapters 2 through 18
Whoop – Whoop	EGPWS mode 1 or 2 (excessive descent rate or excessive closure rate) (if installed)	EGPWS, Chapter 17, Navigation

Voice Messages

The following is an alphabetical list of Voice messages:

VOICE MESSAGE – ALPHABETICAL			
W = Warning			
SYS = System			
Voice Message	Type	Chapter Ref.	EICAS/ PFD INDICATION
Adjust Vertical Speed, Adjust	SYS	17	TCAS – Monitor vertical speed to keep aircraft inside PTZ and away from PAZ.
Approaching Decision Height (DH)	SYS	17	Approaching DH selected on PFD
Approaching Minimums	SYS	17	Approaching minimum altitude selected on PFD
APU FIRE	W	5	APU FIRE
Bank Angle	SYS	17	EGPWS – Excessive bank angle on final approach
CABIN ALTITUDE	W	2	CABIN ALT / Cabin altitude >9000 feet

AURALS (CONT'D)

VOICE MESSAGE – ALPHABETICAL			
W = Warning			
SYS = System			
Voice Message	Type	Chapter Ref.	EICAS/ PFD INDICATION
Caution Obstacle	SYS	17	EGPWS – An obstacle threat has been detected.
Caution Terrain	SYS	17	EGPWS – A terrain threat has been detected.
Cavalry Charge	SYS	4	Autopilot disconnect
Clear of Conflict	SYS	17	TCAS – Encounter has ended and separation increasing
Climb – Climb	SYS	17	TCAS – Indicates a climb command. Displays a green fly-to PTZ and a red PAZ on both PFD ADIs
Climb, Climb Now! – Climb, Climb Now!	SYS	17	TCAS – Following a descent command, a climb is necessary to provide adequate separation
Climb, Crossing Climb – Climb, Crossing Climb	SYS	17	TCAS – Indicates a climb command. Displays a green fly-to PTZ and a red PAZ on both PFD ADIs. Aircraft flight path will cross intruder's altitude
Decision Height	SYS	11	At DH selected on PFD
Descend, Crossing Descend – Descend, Crossing Descend	SYS	17	TCAS – Indicates a descend command. Displays a green fly-to PTZ and a red PAZ on both PFD ADIs. Aircraft flight path will cross intruder's altitude
Descend – Descend	SYS	17	TCAS – Indicates a descend command. Displays a green fly-to PTZ and a red PAZ on both PFD ADIs
Descend, Descend Now! – Descend, Descend Now!	SYS	17	TCAS – Following a climb command, a descent is necessary to provide adequate separation
Don't Sink	SYS	17	EGPWS – Sink after take-off
Gear Bay Overheat	W	9	MLG BAY OVHT / Main wheel well overheat
Gear, Gear	SYS	15	Gear not all fully down and locked during an attempted landing
Glideslope	SYS	17	EGPWS – Excessive deviation below glideslope
Increase Climb – Increase Climb	SYS	17	TCAS – PTZ command increases to increase climb rate

AURALS (CONT'D)

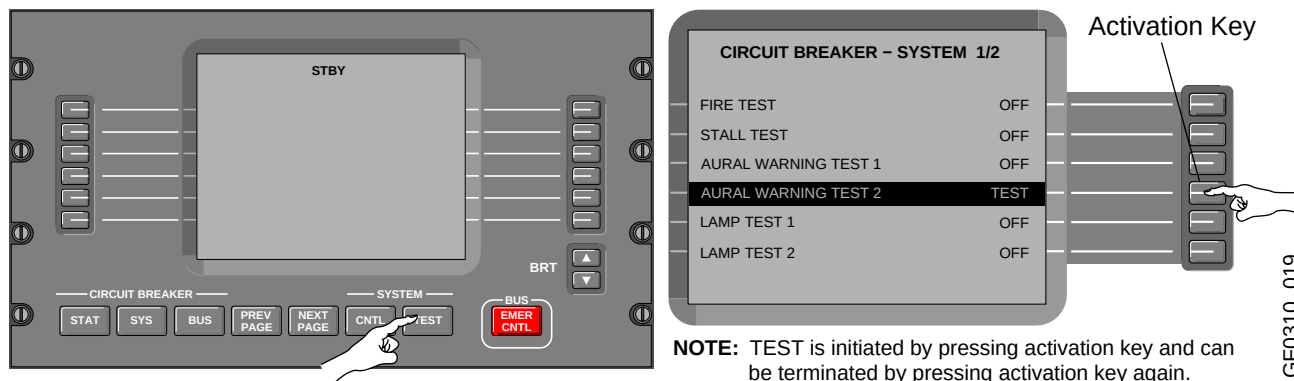
VOICE MESSAGE – ALPHABETICAL			
W = Warning			
SYS = System			
Voice Message	Type	Chapter Ref.	EICAS/ PFD INDICATION
Increase Descent – Increase Descent	SYS	17	TCAS – PTZ command decreases to increase descent rate
LEFT ENGINE FIRE	W	9	L ENG FIRE
Maintain Vertical Speed, Crossing Maintain	SYS	17	TCAS – Monitor pitch attitude to keep pitch attitude inside PTZ and away from PAZ. Aircraft flight path will cross intruder's altitude
Maintain Vertical Speed Maintain	SYS	17	TCAS – Monitor pitch attitude to keep pitch attitude inside PTZ and away from PAZ
Minimums	SYS	17	At minimum altitude selected on PFD
Monitor Vertical Speed – Monitor Vertical Speed	SYS	17	TCAS – Monitor pitch attitude to keep pitch attitude inside PTZ and away from PAZ
NO TAKEOFF	W	10 & 15	CONFIG AIL TRIM CONFIG RUD TRIM CONFIG SLATS/FLAPS CONFIG SPOILERS CONFIG STAB TRIM PARK BRAKE ON
Obstacle, Obstacle	SYS	17	EGPWS – Excessive obstacle closure
Pull Up	SYS	17	EGPWS – Corrective action after excessive descent rate during approach
RIGHT ENGINE FIRE	W	9	R ENG FIRE
Selcal	SYS	6	SELCAL HF, SELCAL VHF 1, SELCAL VHF 2, SELCAL VHF 3
Sink Rate	SYS	17	EGPWS – Excessive descent rate during approach
SMOKE	W	9	SMOKE BAGGAGE SMOKE FWD LAV SMOKE AFT LAV SMOKE CLOSET SMOKE AVIONICS BAY
Terrain, Terrain	SYS	17	EGPWS – Excessive terrain closure
Too Low Flap	SYS	17	EGPWS – Insufficient flap, low altitude
Too Low Gear	SYS	17	EGPWS – Gear up, low altitude
Too Low Obstacle	SYS	17	Obstacle closure low altitude
Too Low Terrain	SYS	17	EGPWS – Terrain closure low altitude
Traffic, Traffic	SYS	17	TCAS – Conduct visual search for intruder

AURALS (CONT'D)

VOICE MESSAGE – ALPHABETICAL			
W = Warning			
SYS = System			
Voice Message	Type	Chapter Ref.	EICAS/ PFD INDICATION
Windshear, Windshear	SYS	17	EGPWS – WINDSHR (decreasing performance)
500, 100, 50, 30	SYS	17	EGPWS – Descending altitude callouts

AURAL WARNING TEST

Most aural alerts are exercised as part of their own system test. For all other aural alerts, an AURAL WARN TEST can be initiated via the Electrical Management System (EMS) Control Display Unit (CDU) located on the pilot's and copilot's side panel. There are two warning test selections provided to test Integrated Avionics Computer (IAC 1 and IAC 2).

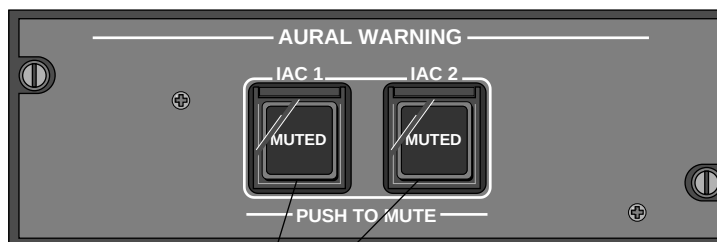


The test sequences through each tone and/or voice message in the following priority order:

- "AURAL WARNING TEST 1" or "AURAL WARNING TEST 2".
- "STALL" (stall shaker active).
- Continuous tone (overspeed).
- Triple Chime tone (any warning).
- "NO TAKE-OFF".
- "LEFT ENGINE FIRE".
- "RIGHT ENGINE FIRE".
- "APU FIRE".
- "SMOKE".
- "CABIN ALTITUDE".
- "GEAR BAY OVERHEAT".
- "LEFT REVERSER UNLOCKED".
- "RIGHT REVERSER UNLOCKED".
- "NORMAL BRAKE FAIL".
- Single Chime (any caution).
- "GEAR".
- Single Cavalry Charge tone (autopilot disengage).
- "AUTOTHROTTLE".
- "ALTITUDE" (altitude alert – departure).
- C-chord tone (altitude alert – capture).
- Double C-chord tone (vertical track alert).
- Single Chime.
- Trim clacker (trim in motion).
- "MINIMUMS, MINIMUMS" (DH and MDA).
- "SELCAL, SELCAL".

AURAL WARNING PANEL

The aural warning panel, located on the overhead panel, is used to disable the tone/aural generators, located in IAC 1 and IAC 2. Aural for EGPWS and TCAS will not be inhibited by muting the IACs.



IAC1 and IAC2 PUSH TO MUTE Switches

Used to disable respective tone/aural generator located in the respective IACs.

GF0310_020

INHIBITS

During take-off and landing, the IAC fault warning computer, will process inhibit logic to minimize spurious or distracting messages. Warnings and status messages are not inhibited except for **APU OVERTEMP** (TO only), **NORM BRAKE FAIL** (TO only), **CABIN ALT**, **CABIN DELTA P** and **BRAKE OVHT** (TO only).

During take-off, the caution and advisory messages are inhibited when:

- Weight On Wheels.
- Indicated airspeed transitions from less than 80 knots to greater than or equal to 80 knots.

The caution and advisory messages' inhibit is removed 25 seconds after:

- Weight Off Wheels.
- Pressure Altitude is greater than or equal to take-off altitude +400 feet.
- Indicated airspeed is less than 50 knots.
- Take-off inhibit has been active for 60 consecutive seconds.

During landing, the caution and advisory messages are inhibited when:

- Landing gear down.
- Radio altitude transitions from 200 feet to less than or equal to 200 feet.

The caution and advisory messages' inhibit is removed:

- 25 seconds after air to ground transition.
- Radio altitude greater than 200 feet.
- Indicated airspeed less than 50 knots.

INHIBITS (CONT'D)

The following caution and advisory messages are **NOT** inhibited during take-off and/or landing.

Airplane System	Caution Messages	Advisory Messages
AFCS	AP MISTRIM NOSE UP-DN (Ldg only) AP MISTRIM LWD-RWD (Ldg only) YD 1-2 FAIL YD OFF	YD NOT CENTERED (TO only)
Air Conditioning Pressurization	EMER DEPRESS L-R PACK FAIL	
Aural and Visual Warnings	CHECK DU 1-2-3-4-5-6 SG 1-2-3 FAIL	
Electrical Power	BATT MASTER OFF	BATT EMER PWR ON RAT GEN ON (Ldg only)
Doors and Exits	CARGO DOOR LARGE SERV DOORS L-R EMER EXIT PASSENGER DOOR SMALL SERV DOORS	
Flight Controls	ELEVATOR SPLIT FLT SPLR DEPLOYED FLT SPOILERS FAIL GND LIFT DUMP ROLL SELECT ROLL SPOILERS FAIL RUD AUTHORITY LOW SLAT-FLAP FAIL STAB TRIM STALL PROTECT FAIL	FLT SPOILERS FAULT GND LIFT DUMP NO TAKEOFF (TO only) SHAKER 1-2 FAIL SLAT-FLAP HALFSPD STALL WRN ADVANCE RUD AUTHORITY SAFE SLAT-FLAP BIT
Hydraulic Power	HYD 1-2-3 LO PRESS HYD RAT PUMP FAIL (Ldg only)	
Ice and Rain Protection	ICE	
Instruments	ADC 1-2-3 MISCMP	ADC 1-2-3 FAIL

INHIBITS (CONT'D)

The following caution and advisory messages are **NOT** inhibited during take-off and/or landing.

Airplane System	Caution Messages	Advisory Messages
Landing Gear	BRAKE 50% DEGRADED CPLT BRAKE FAULT GEAR DISAGREE INBD BRAKE LO PRESS L-R INBD BRAKE FAIL L-R OUTBD BRAKE FAIL NOSE STEER FAIL OUTBD BRAKE LO PRESS PARK/EMER BRAKE ON (Ldg only) PLT BRAKE FAULT UNCOMMANDED BRAKE	BRAKE TEMP (TO only) GEAR SYS FAULT NO TAKEOFF (TO only)
Lighting	EMER LIGHTS OFF	
Navigation	ALL IRS MISCMP	
Power Plant	A/T NOT IN HOLD (TO only) L-R FADEC N1 CTL L-R REV LOCK FAIL L-R REVERSER FAIL (Ldg only) L-R FUEL FILTER	A/T 1-2 FAIL

CENTRAL AIRCRAFT INFORMATION AND MAINTENANCE SYSTEM (CAIMS)

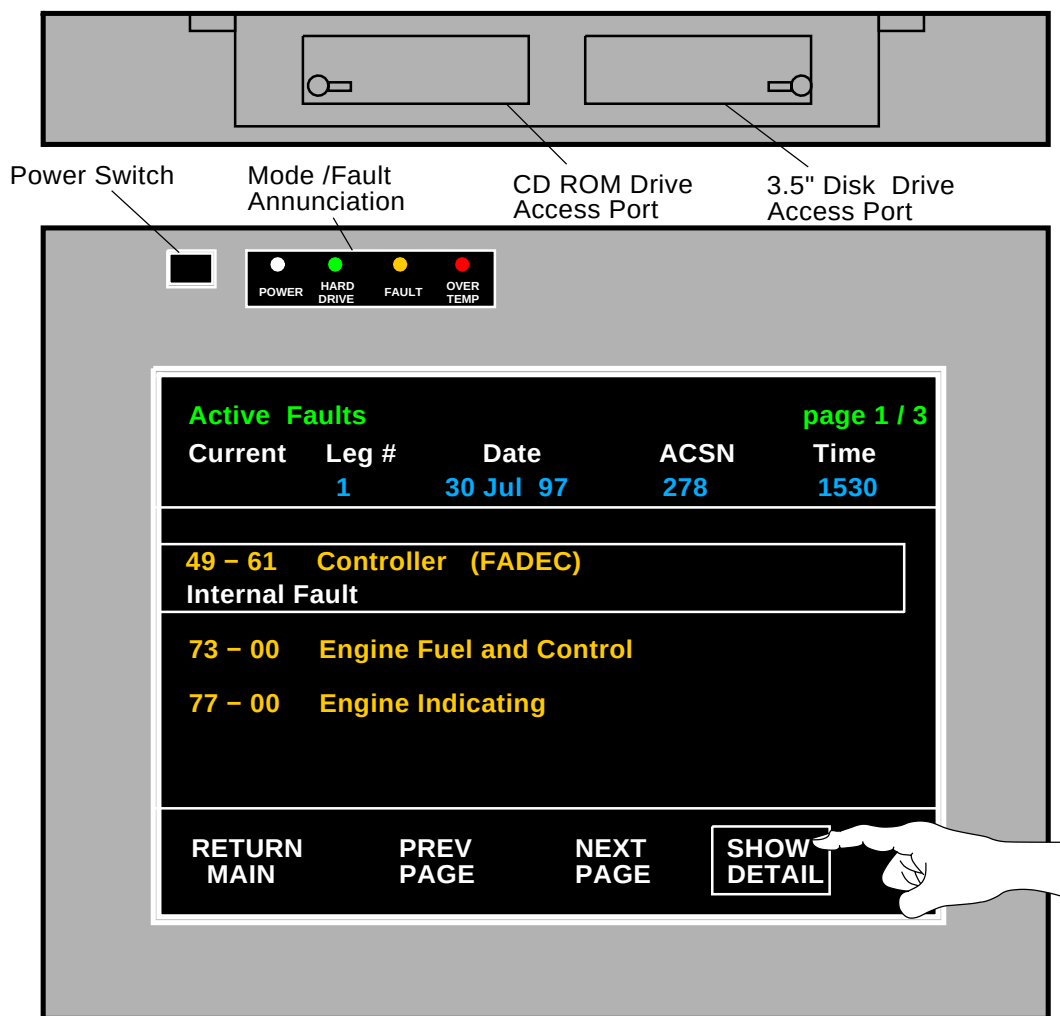
The CAIMS collects diagnostic and fault data from other airplane systems. From this data, the CAIMS assembles a fault record that can be used to monitor system performance during the flight. The maintenance personnel uses CAIMS to accomplish system tests and to isolate defective components.

The CAIMS supplies fault data during all phases of airplane operation through the Portable Maintenance Access Terminal (PMAT), touch screen, located in the passenger cabin. The PMAT hard-disk contains approximately 8MB of operational software files and 25MB of loadable diagnostic files. A CD-ROM is installed in the PMAT CD-ROM drive and contains an electronic copy of the Aircraft Maintenance Manual (AMM).

The crew has the option of monitoring the PMAT display for active faults and/or may print the report on the cockpit printer. For more information on the printer, refer to chapter 6 COMMUNICATIONS.

The CAIMS is comprised of the following components:

- PMAT (located in the cabin)

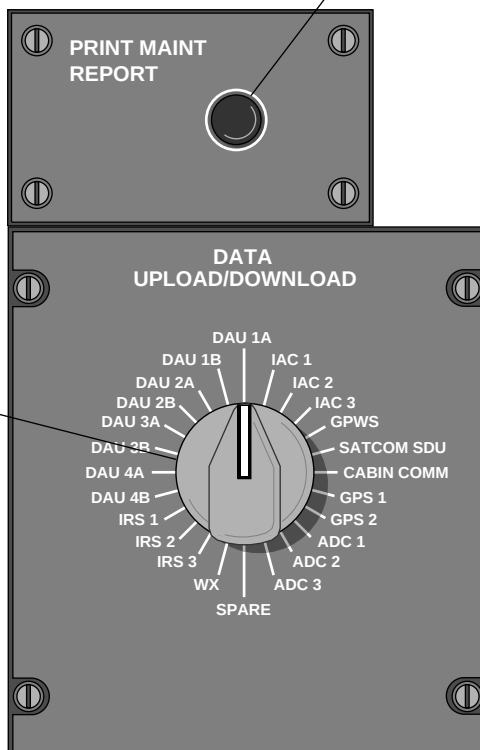


- DATA UPLOAD/DOWNLOAD switch and PRINT MAINT REPORT switch (located on bulkhead behind pilot).

CENTRAL AIRCRAFT INFORMATION AND MAINTENANCE SYSTEM (CAIMS) (CONT'D)

CAIMS PRINT MAINT REPORT SWITCH

Used to get a report of active faults from the cockpit printer.

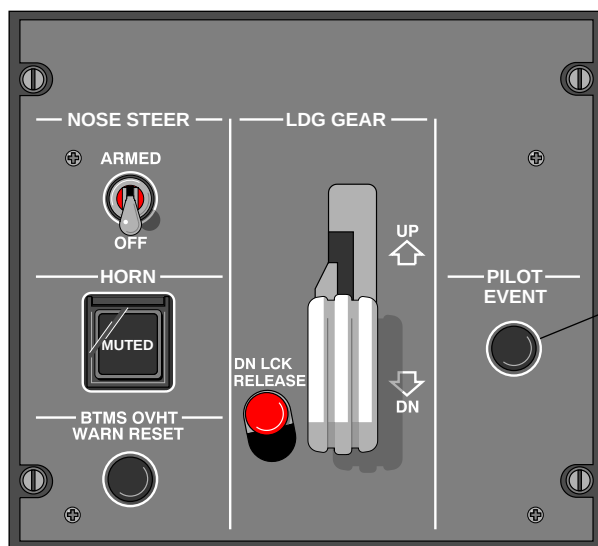


Data Selector Switch

Used to select system to upload/download a copy of non-volatile data on to a 3.5 inch disk.

FGF0310_006

- Pilot Event Marker (located on the landing gear control panel).



FDR/CAIMS Event Button

Used to store information in Line Replaceable Units (LRUs), which report to CAIMS.

Landing Gear Control Panel

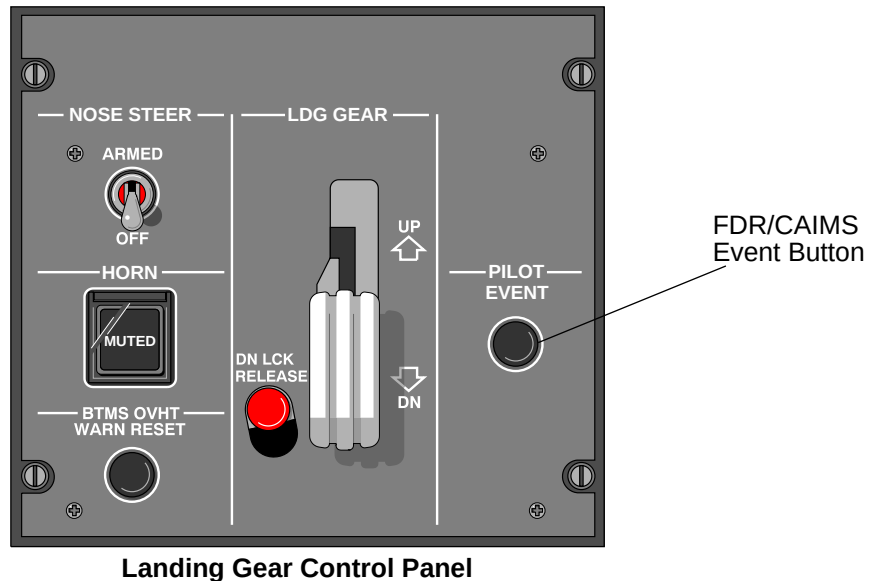
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FLIGHT DATA RECORDER

EICAS channels aircraft systems data (including altitude, airspeed, heading, acceleration and radio communications events) to the Flight Data Recorder (FDR). DAU 4B gathers sensor data for transmission to the FDR.

DAU 4 is fully self-monitoring and provides CAS messages in the event of a failure. If DAU 4B channel fails, FDR information is not available.

To record an additional event, in the FDR push the PILOT EVENT button on landing gear control panel, located on the pedestal. Pushing the PILOT EVENT will also encode the Central Aircraft Information Maintenance System (CAIMS).



GF0310_024

STALL WARNING

Warning of an impending stall is provided by independent stall protection systems. Both systems are energized in flight and deactivated on the ground through air/ground logic. The flight displays indicate airplane approach to stall speed by low speed cues (red band) and a TBD V_S indicator on the primary flight displays (PFDs) airspeed tape.

Stall warnings are provided by an aural "STALL", a **STALL** icon appears on the PFD and vibration of both control columns. If the airplane angle-of-attack continues to increase, a stick pusher then pushes the control column forward to prevent further development of a stall. For more information refer to Chapter 10, FLIGHT CONTROLS.

TAKE-OFF CONFIGURATION WARNINGS

Take-off configuration warnings are armed when the airplane is on the ground and both engines are accelerated towards take-off thrust (throttle position $\geq 30^\circ$). A voice warning, EICAS warning message, and both MASTER WARNING lights come on for any of the following:

Condition	Voice Message	EICAS Message
Aileron trim outside of take-off range	"NO TAKEOFF"	CONFIG AIL TRIM
Parking brake on during take-off	"NO TAKEOFF"	PARK BRAKE ON
Rudder trim outside of take-off range	"NO TAKEOFF"	CONFIG RUD TRIM
Flaps not in take-off position	"NO TAKEOFF"	CONFIG SLATS/FLAPS
Spoilers not in take-off position	"NO TAKEOFF"	CONFIG SPOILERS
Horizontal stabilizer outside of take-off range ("green band")	"NO TAKEOFF"	CONFIG STAB TRIM

All configuration warning indications are cancelled when the configuration error is corrected, or the airplane is airborne or either thrust lever is retarded.

Note: **NO TAKEOFF** advisory message will appear during taxi, prior to advancing throttles.

LANDING CONFIGURATION WARNING

The “GEAR” aural will sound if any gear is not down and locked and the airplane is below 16,500 feet and:

- The radio altitude is less than 1,000 feet AGL and the descent rate is more than 400 feet per minute.

OR

- The radio altitude is less than 500 feet AGL and either throttle is below 25° throttle lever angle and the flap position is 30°.

OR

- The radio altitude is less than 500 feet AGL and both throttles are below 25° throttle angle and the flap position is not at 30°.

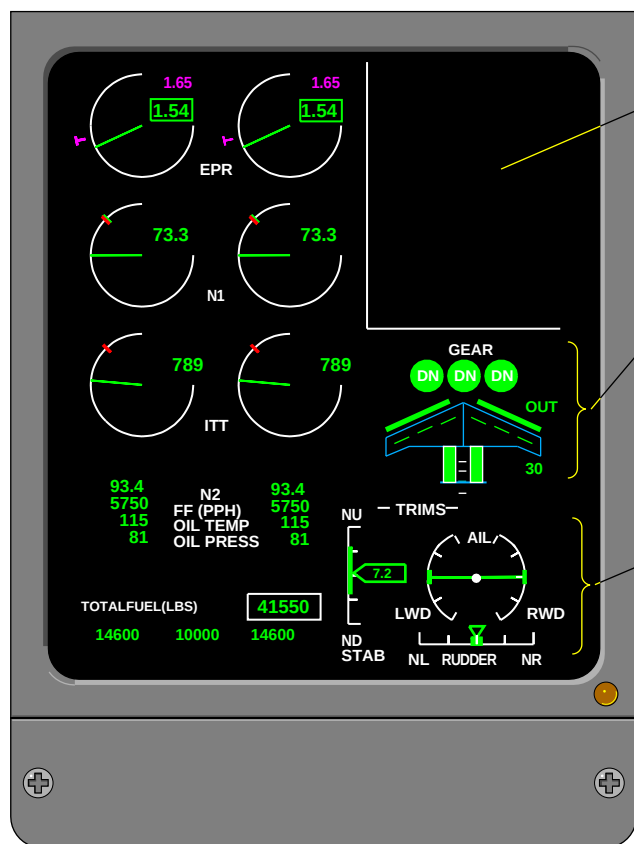
NOTE

The “GEAR” aural can not be muted during any of these conditions.

The “Too low gear” (EGPWS) aural warning is heard if any landing gear is not down and locked with the radio altitude less than 500 feet AGL and the indicated airspeed at less than 190 knots.

If neither radio altimeter is valid, the “GEAR” aural will sound if any gear is not down and locked and the airplane is below 16,500 feet. The landing gear horn may be muted by pressing the mute hornn swith/ light on the landing gear control panel. With both thrust levers at IDLE, (less than three degrees throttle lever angle) the horn cannot be muted.

EICAS DISPLAY

**Crew Alerting System Window**

14 message lines with Gear/Slats/Flaps pop up displayed.

Slats/Flaps, Spoilers and Gear Position Pop Up

The pop up display will be removed from the primary page (in flight only) 30 seconds after the gear and flaps indicate up, and no predetermined malfunctions exist, or flight spoilers out.

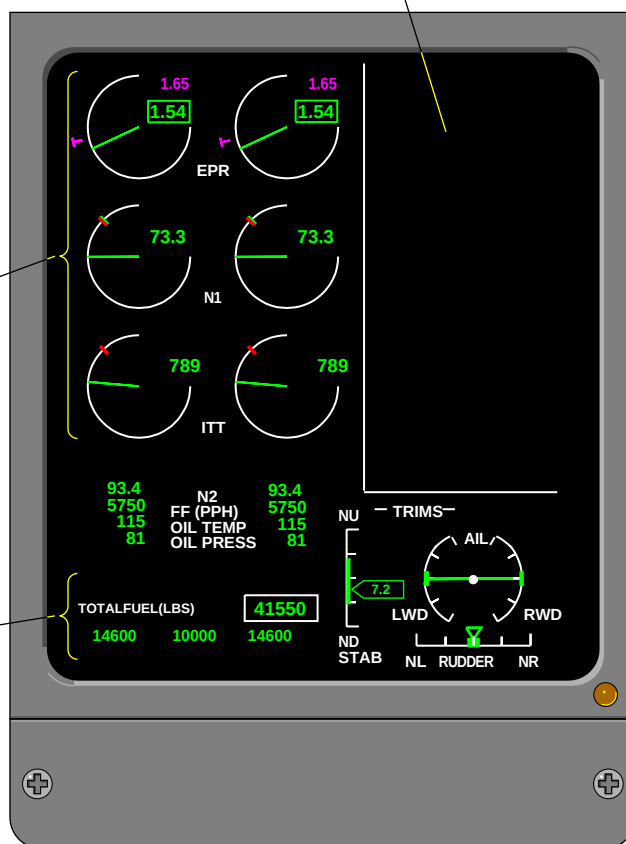
The pop up display will appear with flap selection greater than zero degrees, gear selected down and/or if any predetermined malfunctions exist.

Trims

Indications for Aileron, Rudder and Stabilizer Trim. For more information see Chapter 10, FLIGHT CONTROLS.

Crew Alerting System Window

24 message lines with Gear/Slats/Flaps pop up not displayed.



FGF0310_001

NOTE

EICAS will automatically be displayed when airplane is powered up (BATT MASTER ON)

Engine Indicating

Indications of EPR, N1, ITT, N2, FF, OIL TEMP and OIL PRESSURE. For more information see Chapter 18, POWER PLANT.

Fuel

Indications of total fuel quantity and individual tank quantity. For more information see Chapter 12, FUEL.

SYSTEMS DISPLAY (STAT PAGE)

CKPT/CABIN Temperature

Indications of cockpit, cabin forward and cabin aft temperature. For more information see Chapter 2, AIR CONDITIONING AND PRESSURIZATION.

CAB ALT, ΔP and CAB RATE

Indications of cabin altitude, cabin differential and cabin rate of climb. For more information see Chapter 2, AIR CONDITIONING AND PRESSURIZATION.

OXYGEN

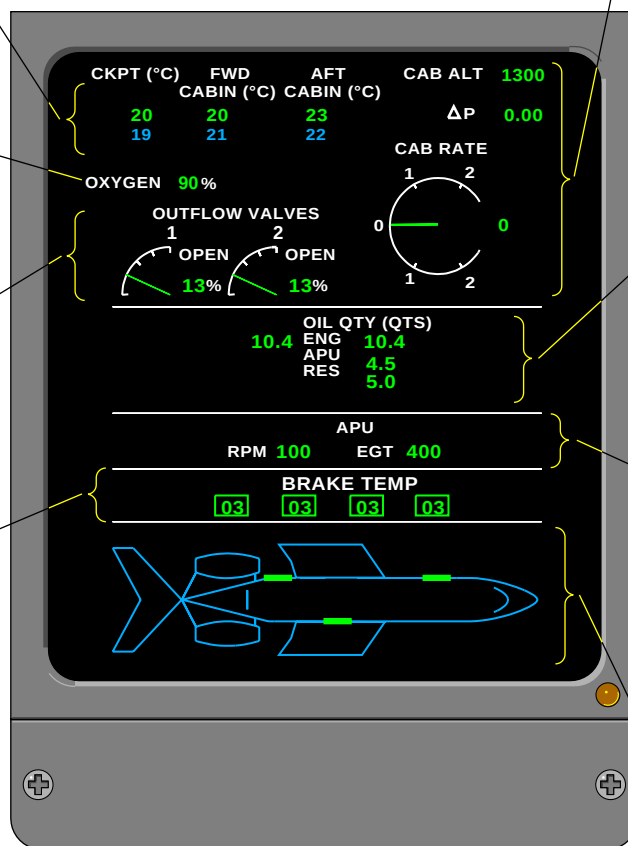
Indications of oxygen quantity. For more information see Chapter 8, EMERGENCY EQUIPMENT.

OUTFLOW VALVES

Indications of outflow valves position (manual mode only). For more information see Chapter 2, AIR CONDITIONING AND PRESSURIZATION.

BRAKE TEMP

Indications of brake temperatures. For more information see Chapter 15, LANDING GEAR.

**OIL QTY**

Indications of engine, APU and reservoir oil quantity. For more information see Chapter 5, APU, and Chapter 18, POWER PLANT.

APU

Indications of APU door position (failure mode only), APU RPM and EGT. For more information see Chapter 5, AUXILIARY POWER UNIT.

DOORS

Indications of passenger entry door, overwing emergency exit baggage door. For more information see Chapter 1, AIRPLANE GENERAL.

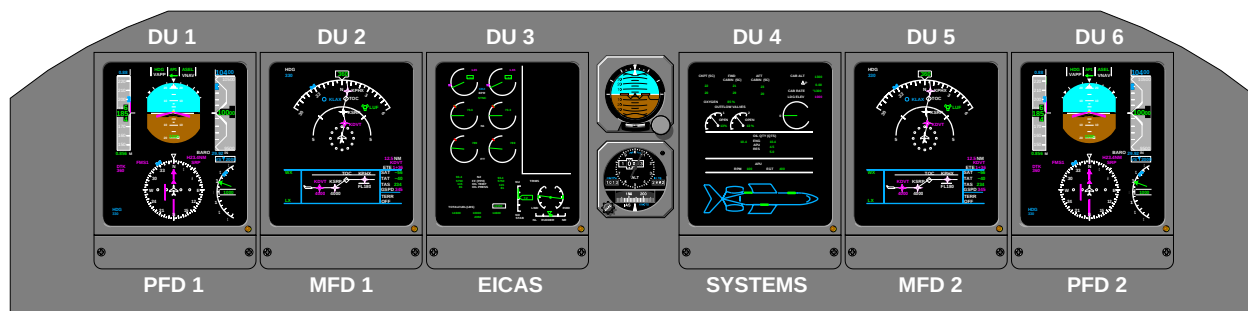
NOTE

SYSTEM display will automatically be displayed when airplane is powered up (BATT MASTER ON).

GF0310_026a

REVERSION CONTROL PANEL

The reversion panel, located on the pedestal, can be used to revert the EICAS display to alternate display units, to revert IRS and ADCs and to revert SGs.

**PFD1 and PFD2 Knobs**

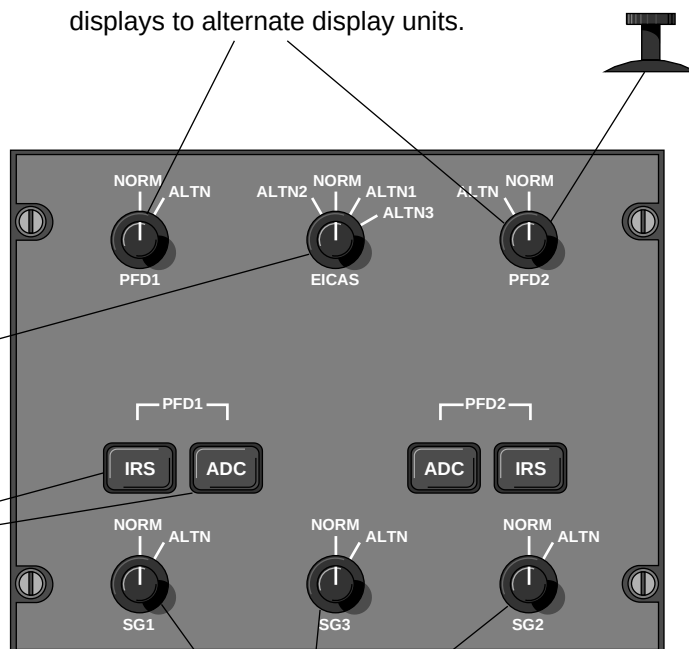
Used to revert PFD 1 and PFD 2 displays to alternate display units.

EICAS Knob

Used to revert EICAS display to alternate display units.

IRS and ADC Knobs

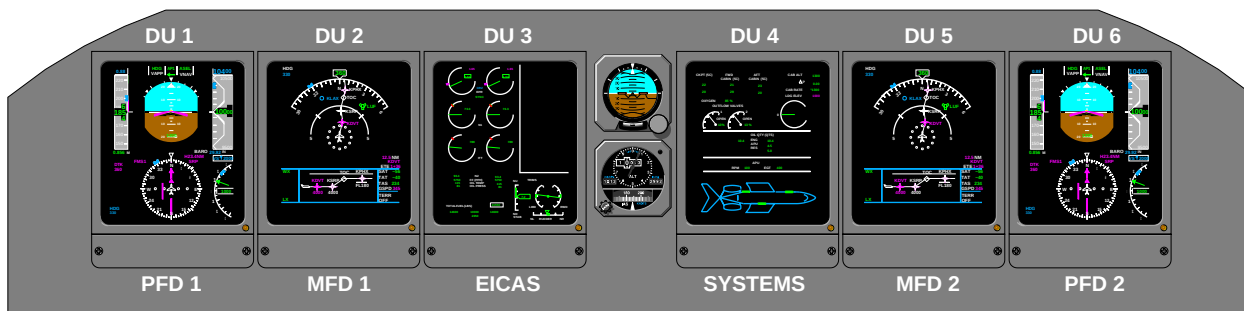
Used to revert IRS and ADCs. For more information see Chapter 11, FLIGHT INSTRUMENTS.

**SG1, SG2, SG3, Knobs**

Used to revert applicable symbol generators to specific displays.

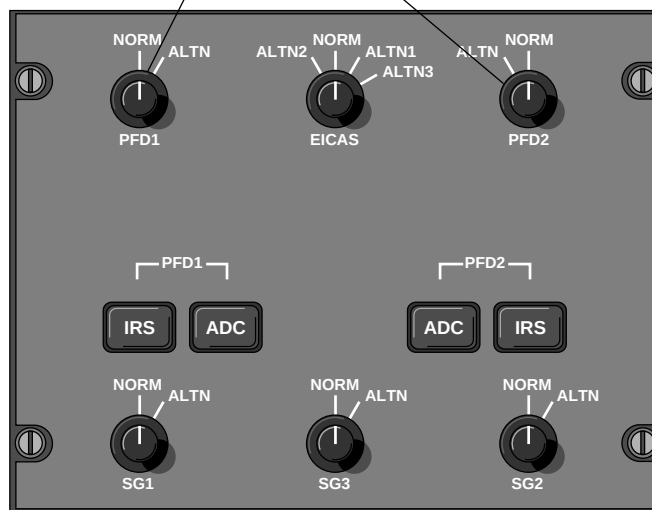
GF0310_027

PFD REVERSION CONTROL



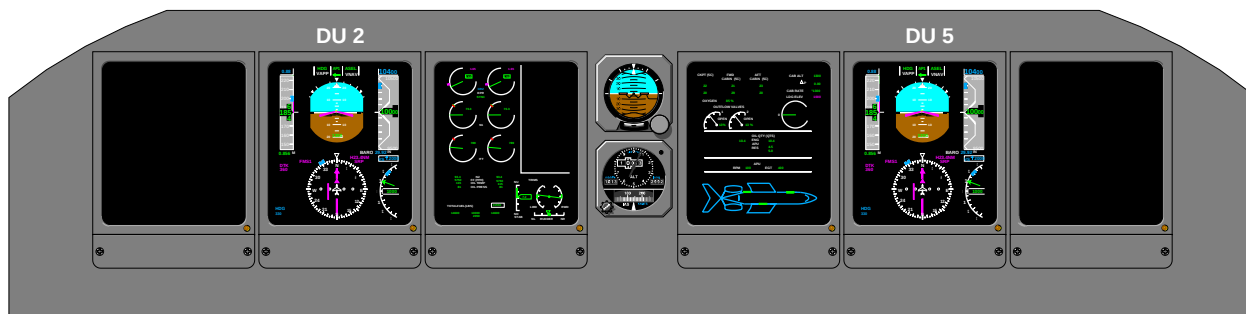
PFD1 and PFD2 Reversion Knobs

- **NORM** – PFD 1 displayed on DU1, PFD 2 displayed on DU6.
- **ALTN** – PFD 1 displayed on DU2, PFD 2 displayed on DU5.



GF0310_028

PFD REVERSION

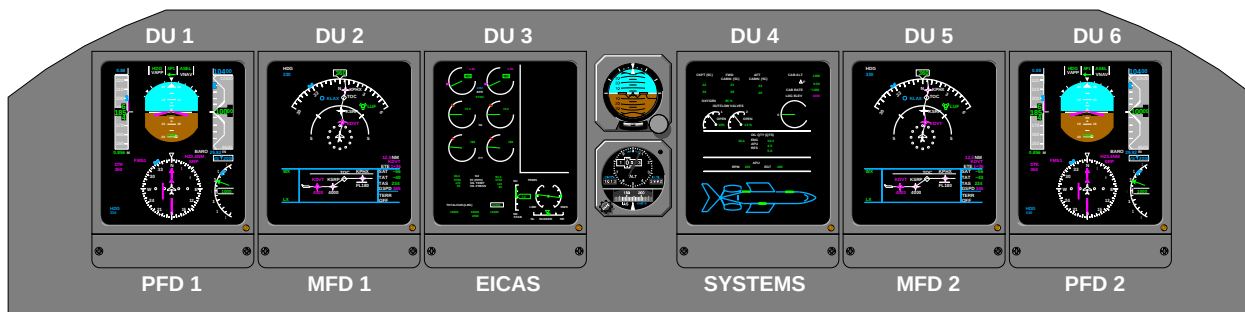


- **ALTN** – PFD 1 displayed on DU2, PFD 2 displayed on DU5.



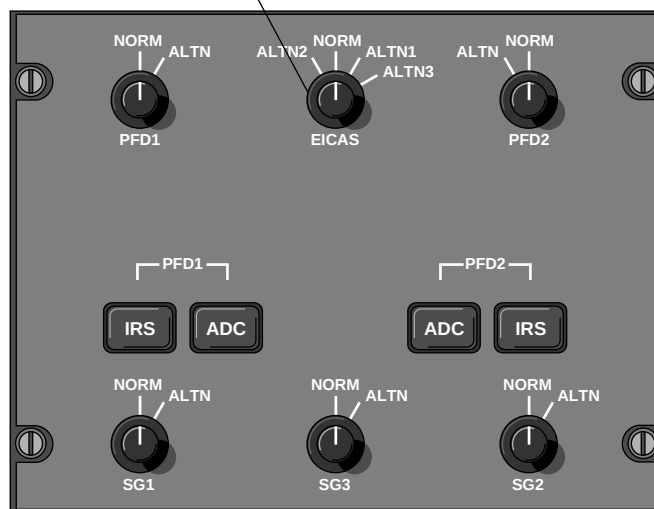
GF0310_029

EICAS REVERSION CONTROL

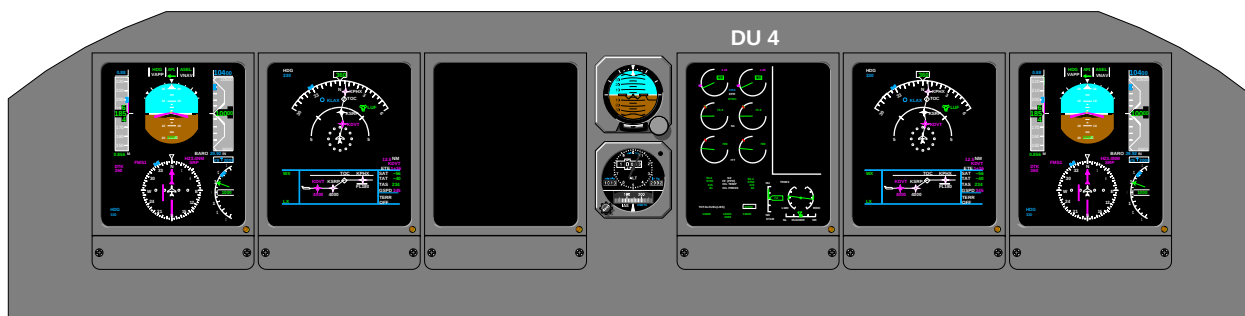


EICAS Reversion Knob

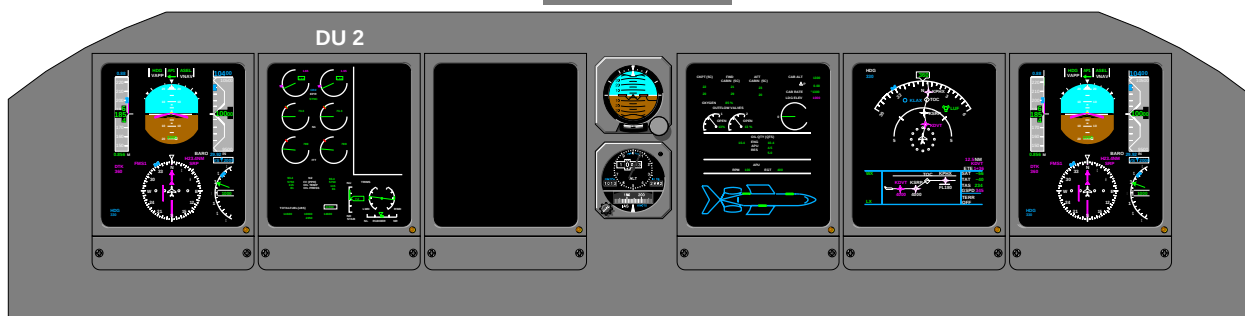
- **NORM** – EICAS displayed on DU3.
- **ALTN 1** – EICAS displayed on DU4.
- **ALTN 2** – EICAS displayed on DU2.
- **ALTN 3** – EICAS displayed on DU5.



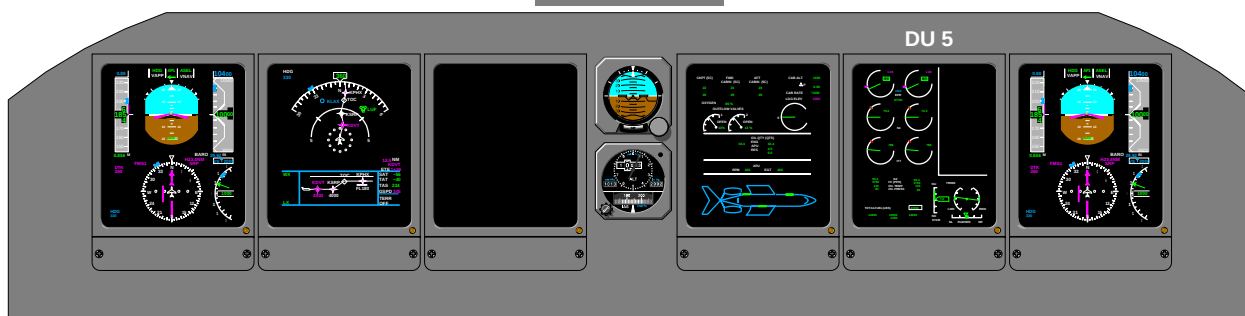
EICAS REVERSION



- ALTN 1 – EICAS displayed on DU4.



- ALTN 2 – EICAS displayed on DU2.

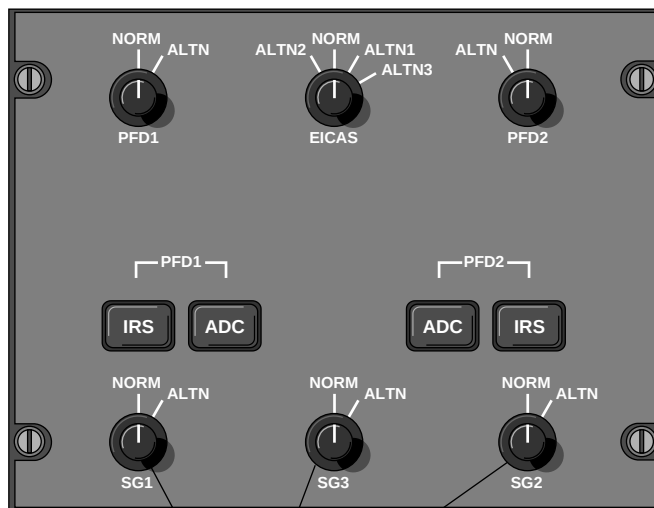


- ALTN 3 – EICAS displayed on DU5.



GF0310_031

SG REVERSION CONTROL



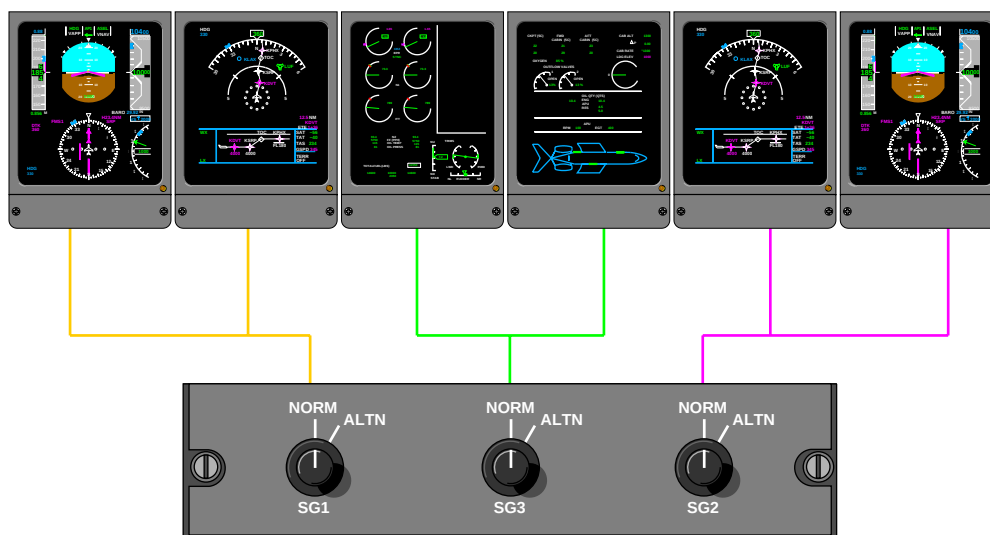
SG1, SG2, SG3 Reversion Knobs

- **SG1 NORM** – SG1 drives DU1 and DU2.
- **SG2 NORM** – SG2 drives DU5 and DU6.
- **SG3 NORM** – SG3 drives DU3 and DU4.
- **SG1 ALTN** – SG2 drives DU5 and DU6 as well as DU3.
SG3 drives DU1 and DU2 as well as DU4.
- **SG2 ALTN** – SG1 drives DU1 and DU2 as well as DU4.
SG3 drives DU5 and DU6 as well as DU3.
- **SG3 ALTN** – SG1 drives DU1, DU2 as well as DU4.
SG2 drives DU3, DU5 and DU6.

GF0310_032

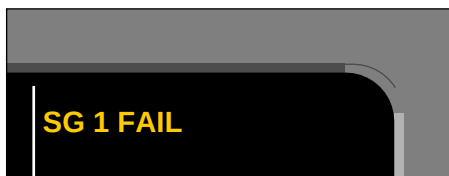
SG REVERSION

- **SG1 NORM** – SG1 drives DU1 and DU2.
- **SG2 NORM** – SG2 drives DU5 and DU6.
- **SG3 NORM** – SG3 drives DU3 and DU4.

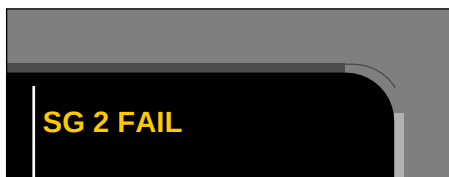
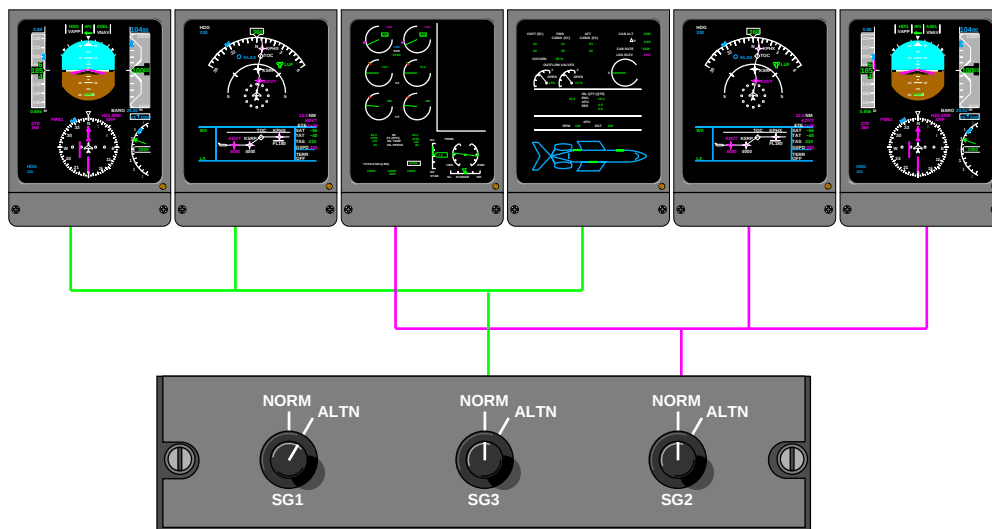


GF0310_033

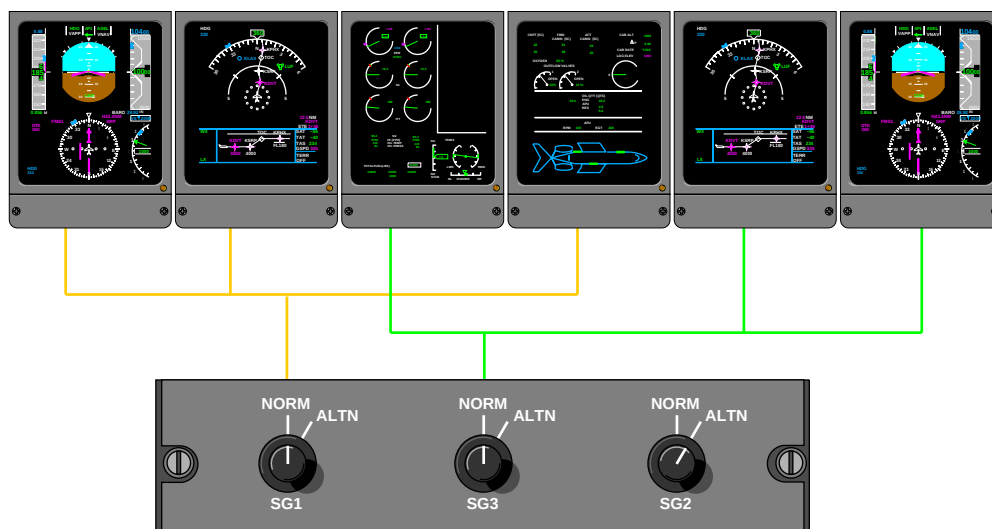
SG REVERSION (CONT'D)



If **SG 1 FAIL** select **SG1 ALTN** – SG2 drives DU3, DU5 and DU6.
– SG3 drives DU1, DU2 and DU4.

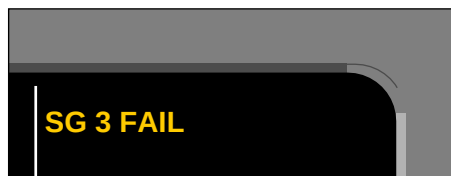


If **SG 2 FAIL** select **SG2 ALTN** – SG1 drives DU1, DU2 and DU4.
– SG3 drives DU3, DU5 and DU6.

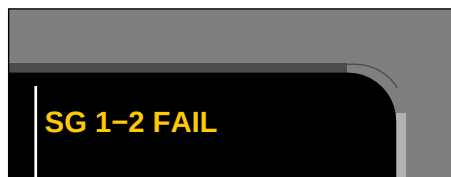
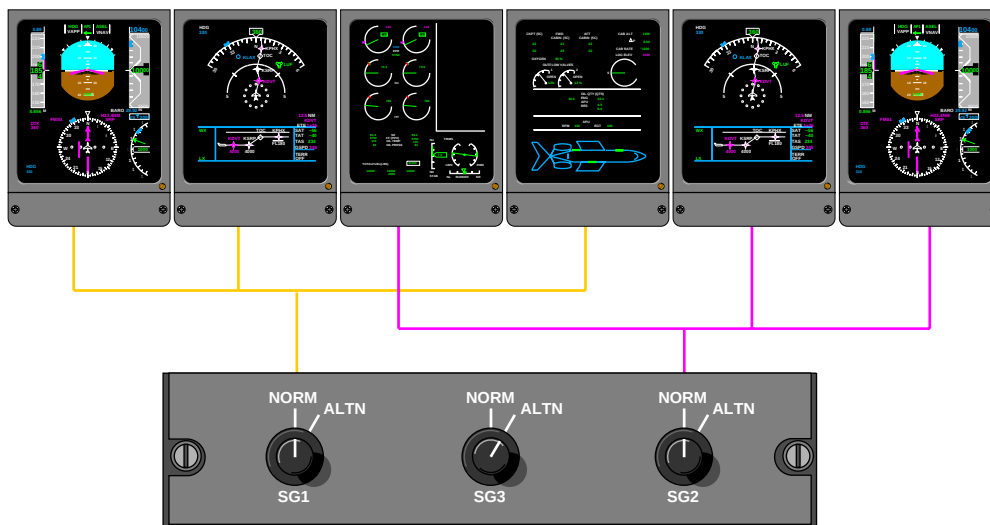


GF0310_034

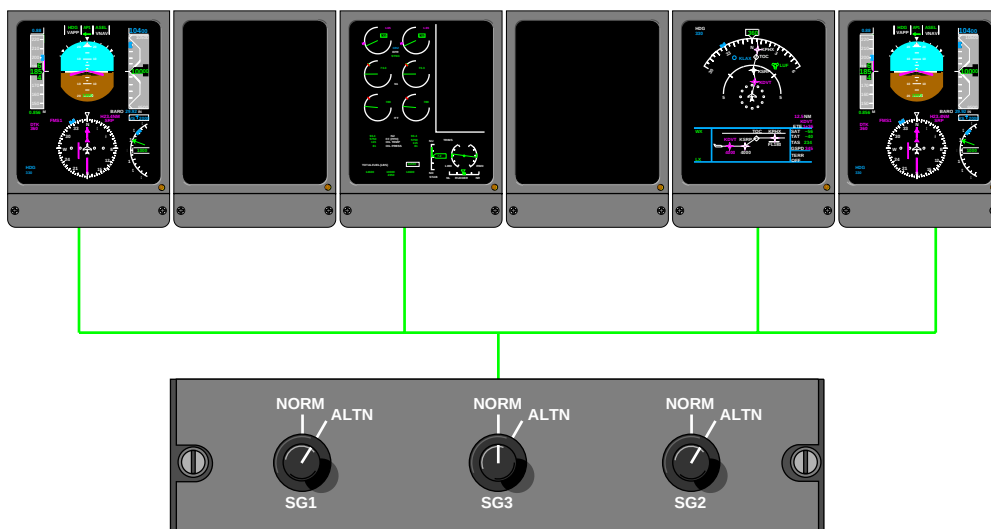
SG REVERSION (CONT'D)



- If **SG 3 FAIL** select **SG3 ALTN** – SG1 drives DU1, DU2 and DU4.
– SG2 drives DU3, DU5 and DU6.



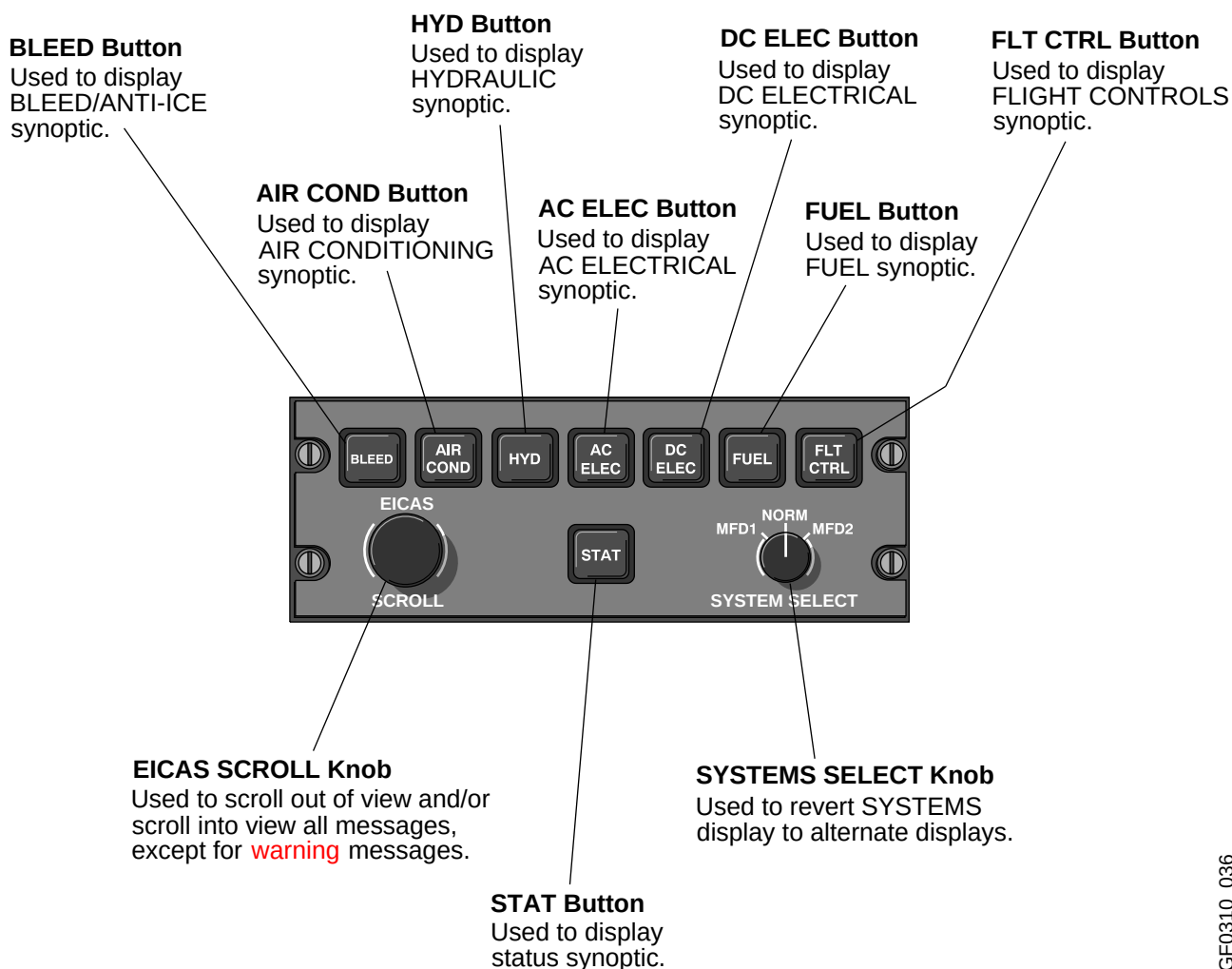
- If **SG 1-3 FAIL** – **SG2** drives DU1, DU3, DU5 and DU6.
If **SG 2-3 FAIL** – **SG1** drives DU1, DU3, DU5 and DU6.
If **SG 1-2 FAIL** – **SG3** drives DU1, DU3, DU5 and DU6.



GF0310_035

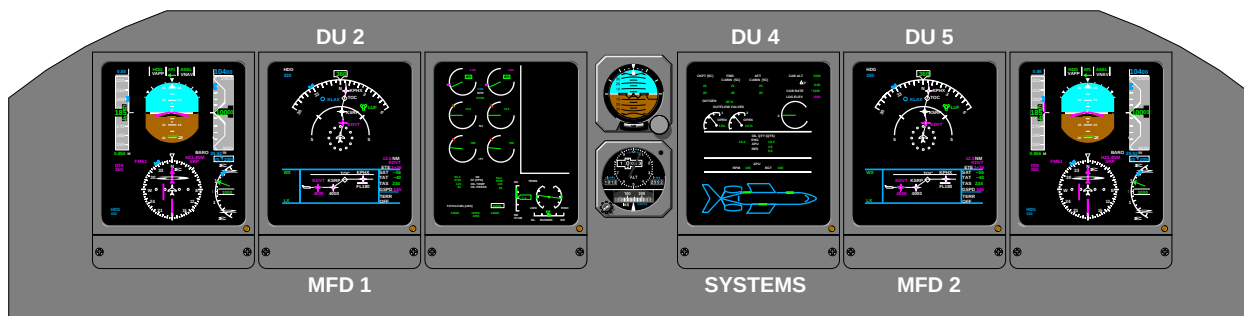
EICAS CONTROL PANEL

The EICAS control panel, located on the pedestal, can be used to revert SYSTEMS display, scroll non-displayed messages and to display SYSTEMS synoptic pages.



GF0310_036

SYSTEMS REVERSION CONTROL

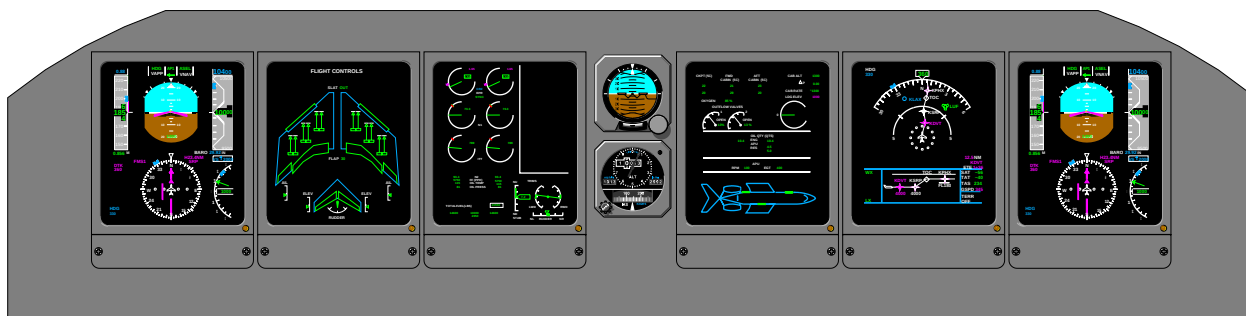


SYSTEM SELECT Knob

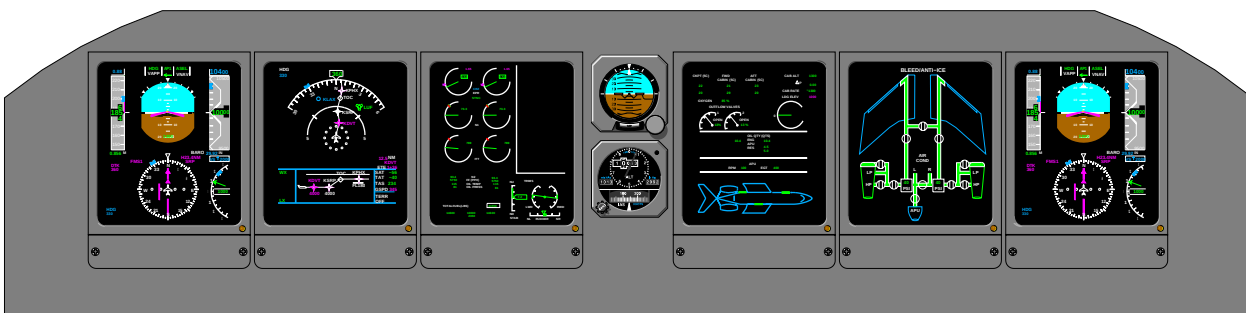
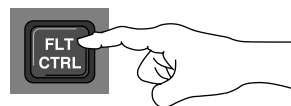
- **NORM** – SYSTEM displayed on DU4.
- **MFD1** – SYSTEM displayed on DU2.
- **MFD2** – SYSTEM displayed on DU5.

GF0310_037a

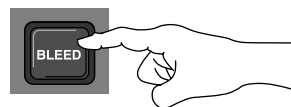
SYSTEMS REVERSION CONTROL (CONT'D)



- MFD1 – SYSTEM displayed on DU2 and DU4.



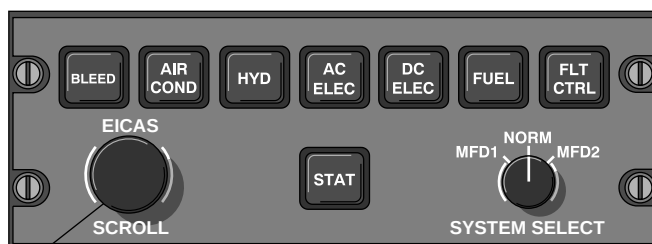
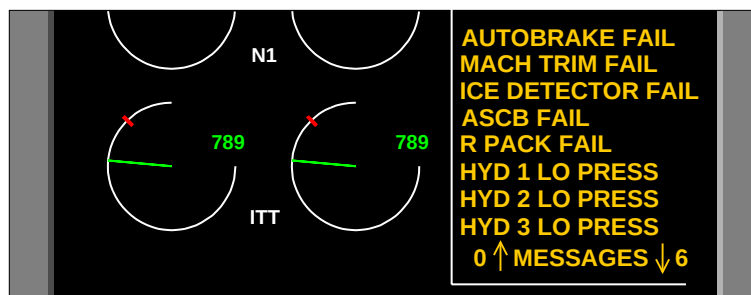
- MFD2 – SYSTEM displayed on DU5 and DU4.

**NOTE**

All SYSTEMS synoptics can be displayed, when SYSTEM SELECT reverted, on MFD1 or MFD2, by selecting applicable button on EICAS Control Panel

GF0310_038

MESSAGE SCROLLING



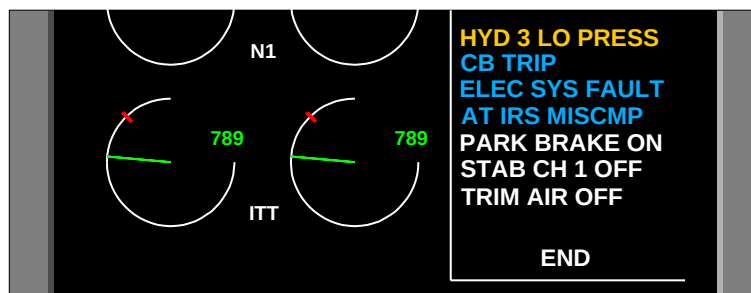
EICAS SCROLL Knob

Used to scroll messages out of view and/or display non-displayed messages. **Warning** messages cannot be scrolled out of view.

- Turning SCROLL knob clockwise will scroll messages up.
- Turning SCROLL knob counter-clockwise will scroll messages down.

NOTE

Each "click" of the SCROLL knob will move the message stack, one line up or down.



GF0310_039

SYSTEMS SYNOPTICS

To view SYSTEMS synoptic displays, select the appropriate button on the EICAS control panel.

STAT Page



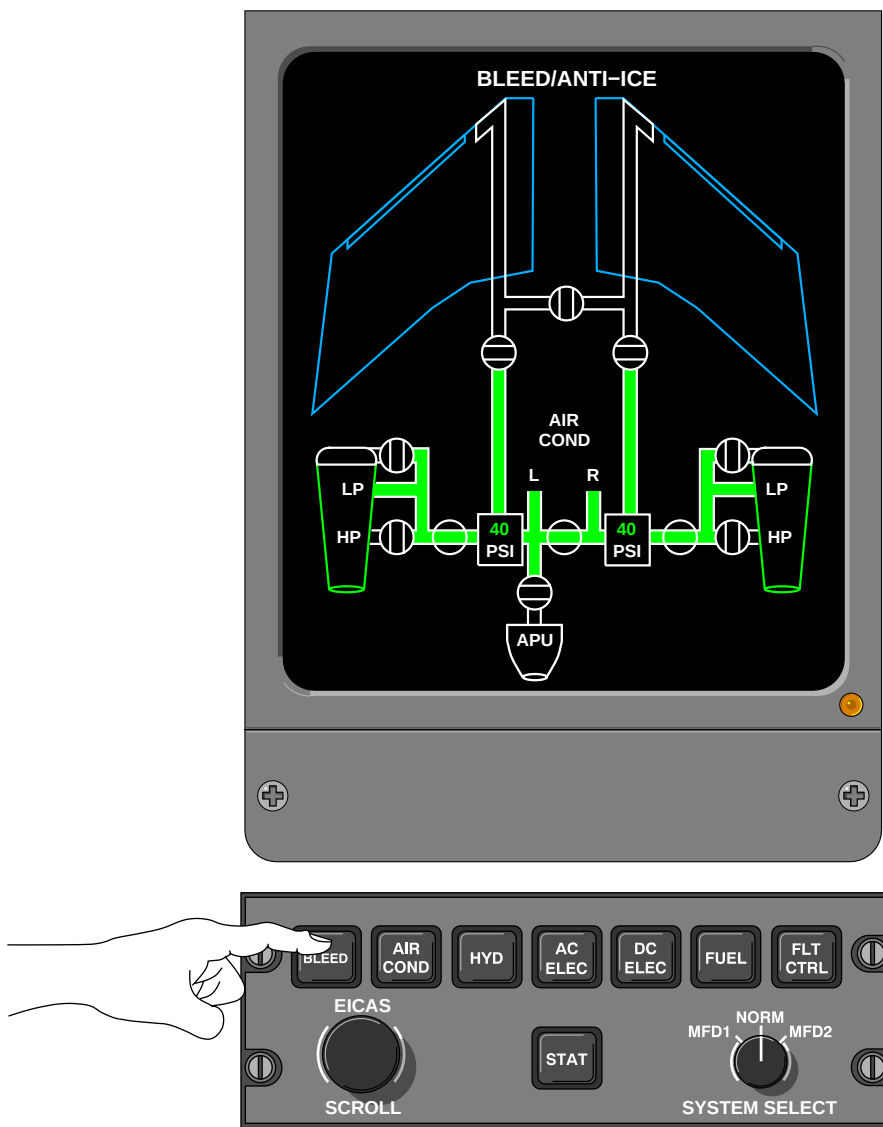
NOTE

STAT page will automatically be displayed when airplane is powered up (BATT MASTER ON).

GF0310_040

SYSTEMS SYNOPTICS (CONT'D)

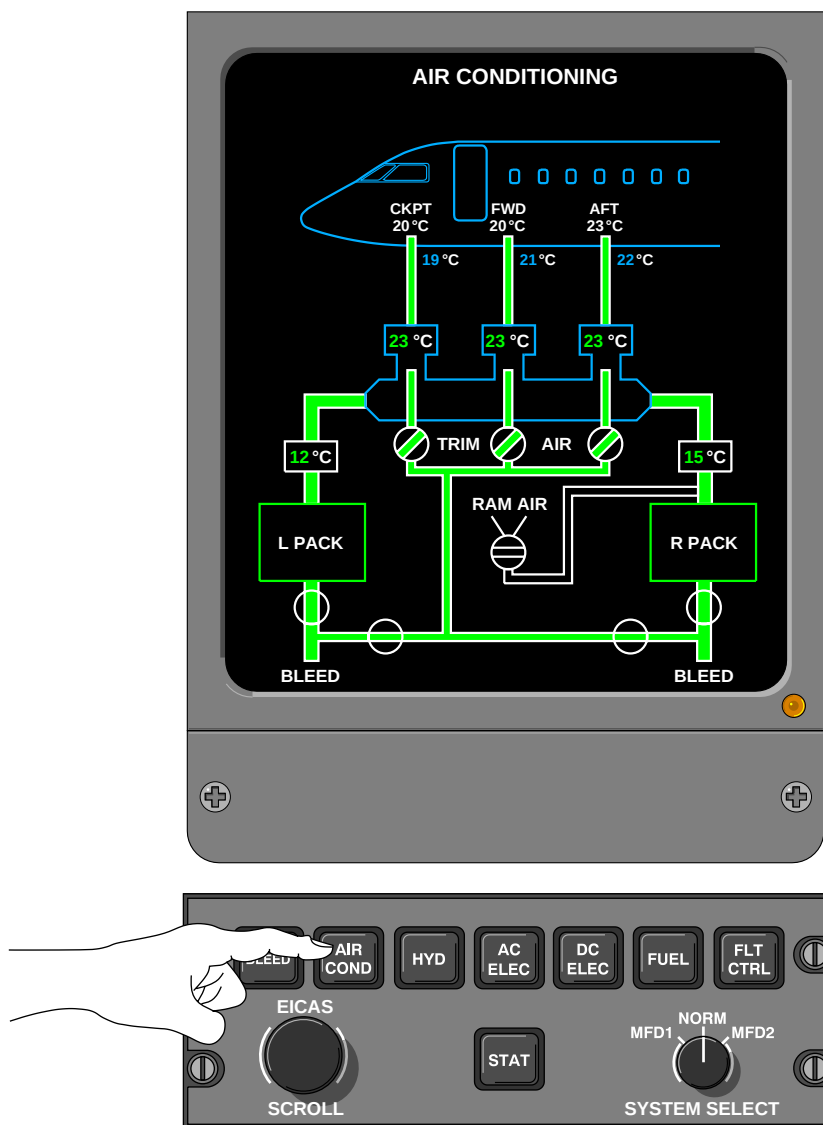
Bleed/Anti-Ice Synoptic Page



GF0310_041

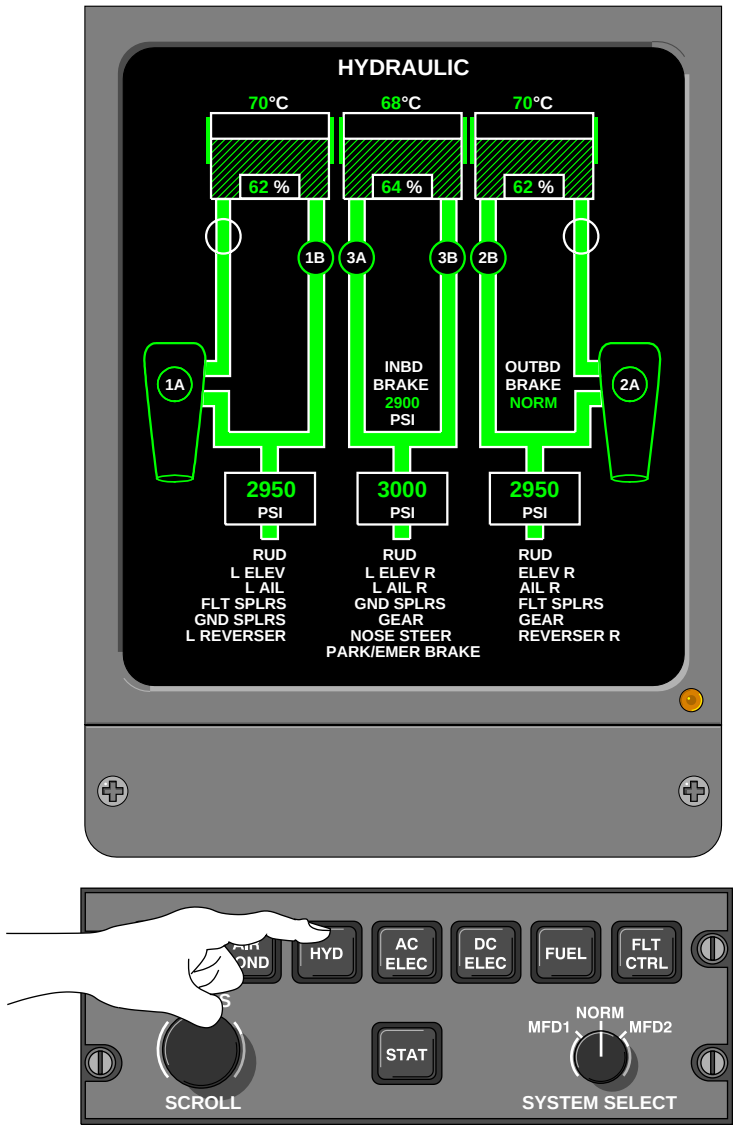
SYSTEMS SYNOPTICS (CONT'D)

Air Conditioning Synoptic Page



GF0310_042

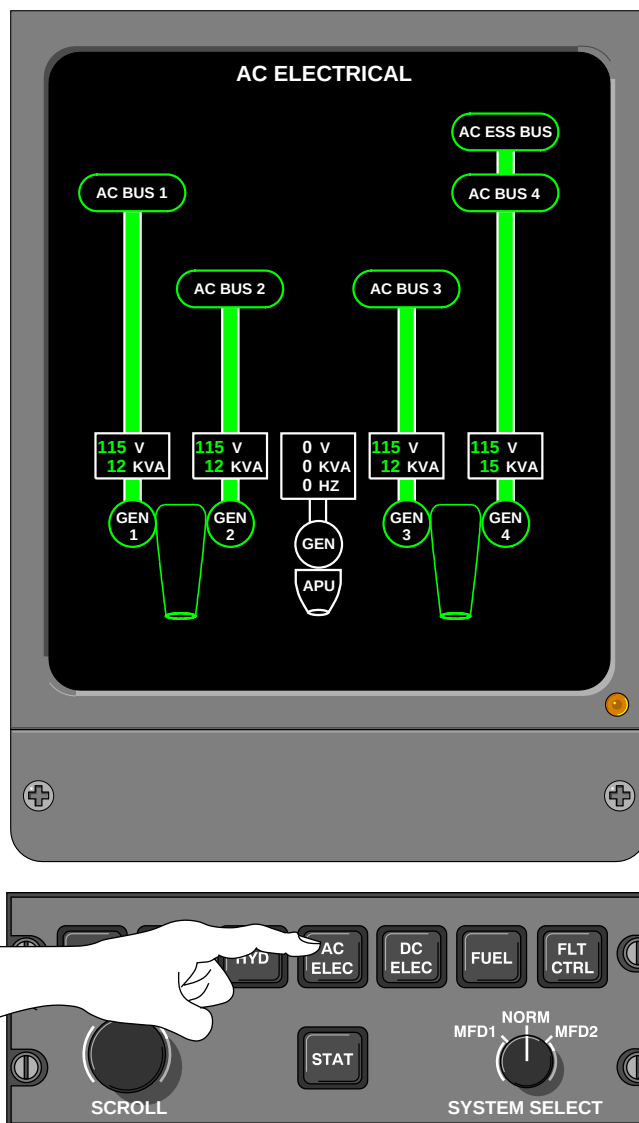
SYSTEMS SYNOPTICS (CONT'D)
Hydraulic Synoptic Page



GF0310_043

SYSTEMS SYNOPTICS (CONT'D)

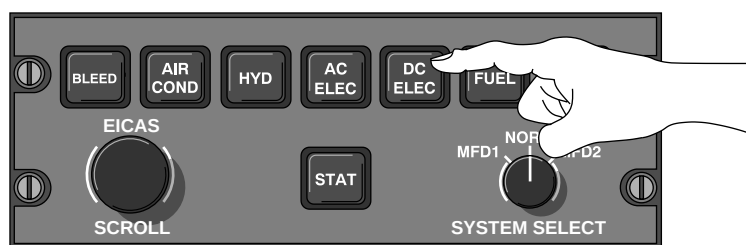
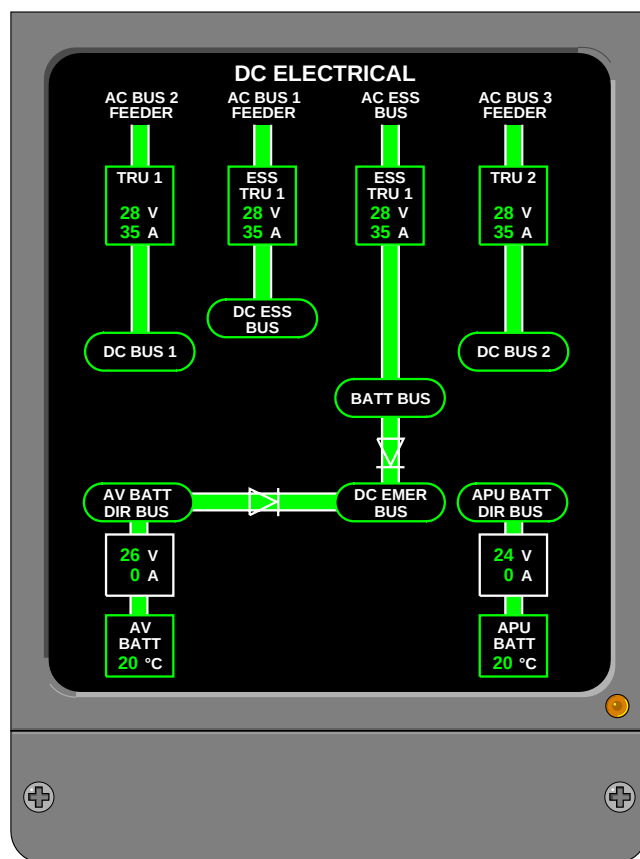
AC Electrical Synoptic Page



GF0310_044

SYSTEMS SYNOPTICS (CONT'D)

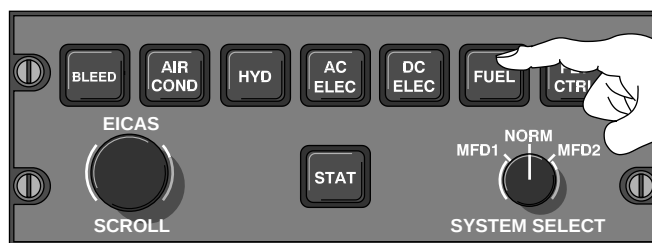
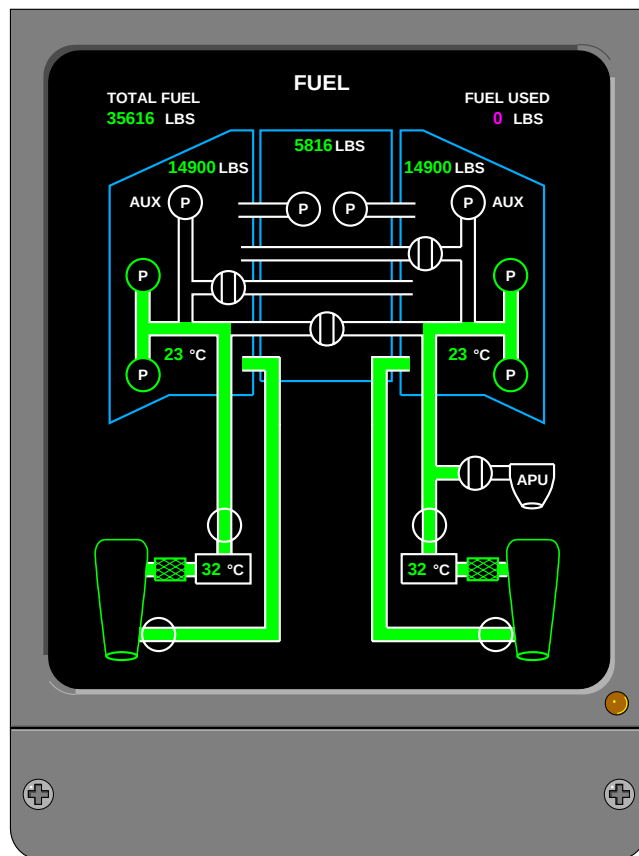
DC Electrical Synoptic Page



GF0310_045

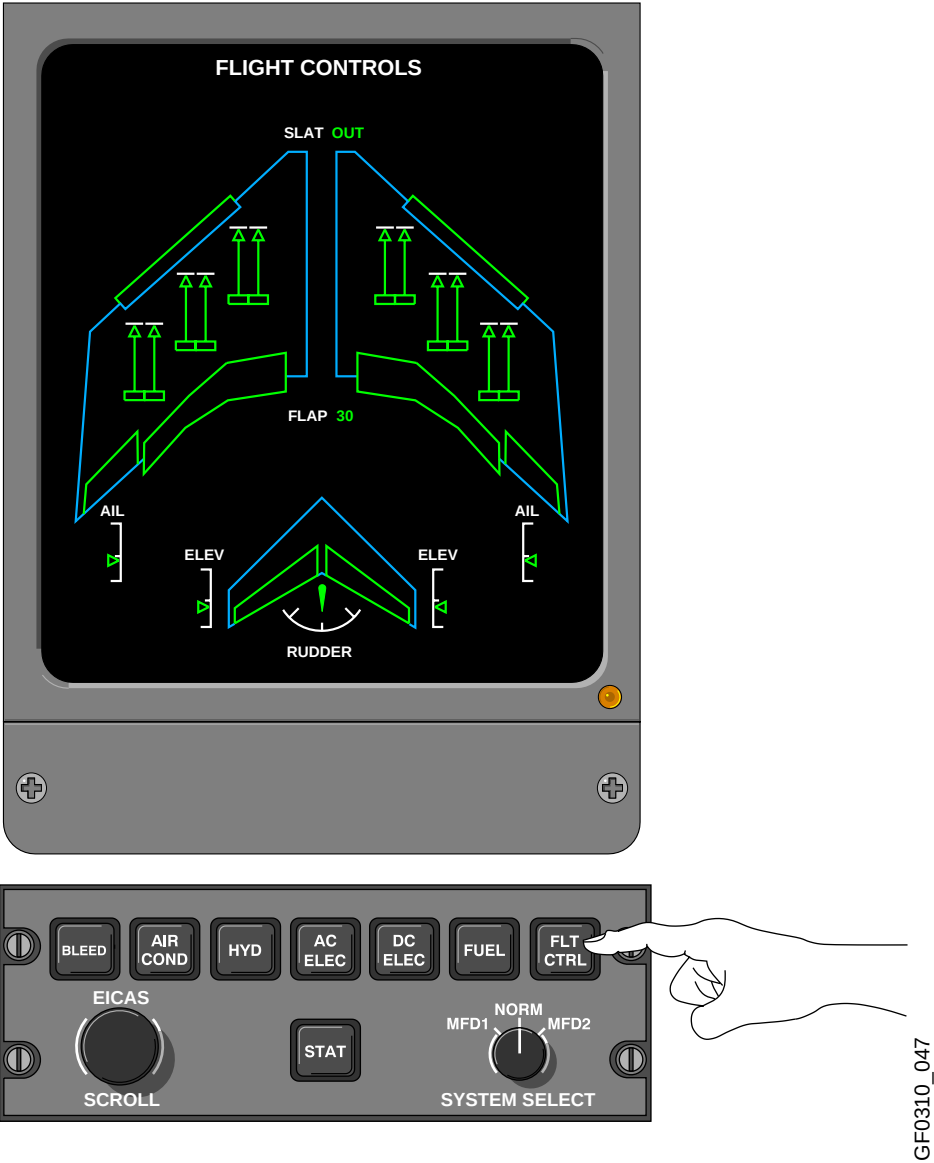
SYSTEMS SYNOPTICS (CONT'D)

Fuel Synoptic Page

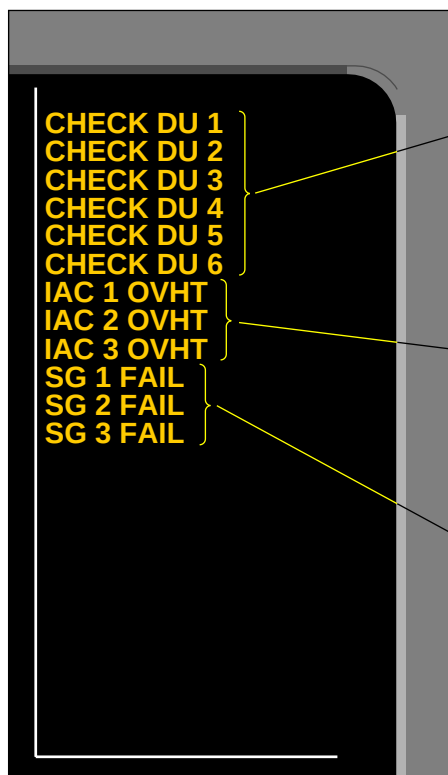


FGF0310_002

SYSTEMS SYNOPTICS (CONT'D)
Flight Controls Synoptic Page



AURAL AND VISUAL WARNING EICAS MESSAGES



CHECK DU 1-2-3-4-5-6

Indicates that data from affected DU does not match data from sensor.

Note: If all 6 DUs fail, the messages posted are **CHECK PFD** and **CHECK DU 1-2-3-4-5-6**.

IAC 1 (2, 3) OVHT

Indicates that IAC has overheated, resulting in possible loss of functions.

SG 1 (2, 3) FAIL

Indicates that there is a loss of communication with affected SG, or SG is indicating a power up failure.

GF0310_048a

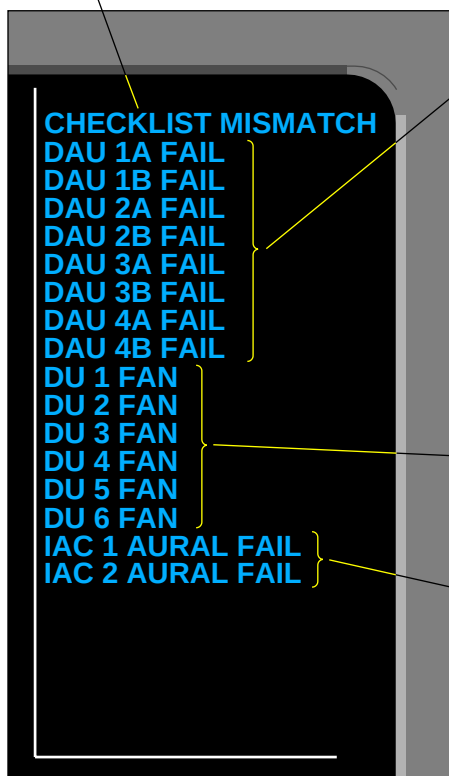
AURAL AND VISUAL WARNING EICAS MESSAGES (CONT'D)

CHECKLIST MISMATCH

Indicates that checklists are not identical in all IACs (on ground only).

DAU 1A-1B-2A-2B-3A-3B-4A-4B FAIL

Indicates that there is a loss of communication with the affected DAU, or DAU has failed.



DU 1-2-3-4-5-6 FAN

Indicates that DU has overheated, resulting in possible loss of functions.

IAC 1-2 AURAL FAIL

Indicates that there is no DC power to aural warning system, or a BIT failure is being indicated and not muted.

GF0310_049

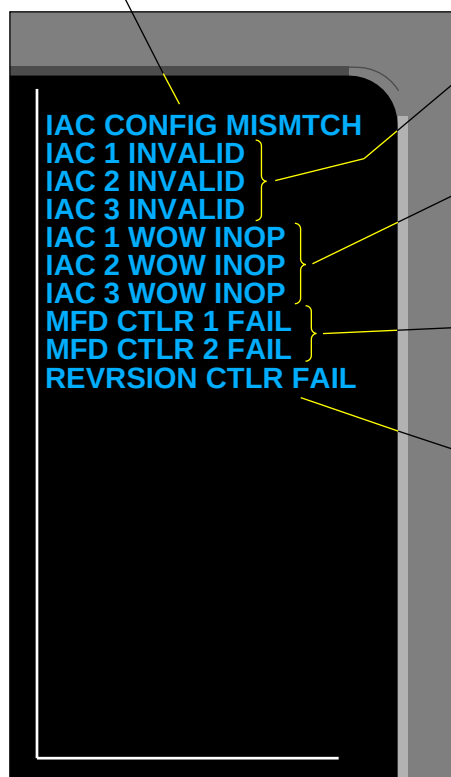
AURAL AND VISUAL WARNING EICAS MESSAGES (CONT'D)

IAC CONFIG MISMTCH

Indicates that the IACs are not configured with the same options or aircraft configuration.

IAC 1-2-3 INVALID

Indicates that there is invalid software configuration in IAC, or incorrect airplane ID.



IAC 1-2-3 WOW INOP

Indicates that there is a loss of power up testing and function loss. IAC WOW input is inconsistent with other airplane parameters.

MFD CTLR 1-2 FAIL

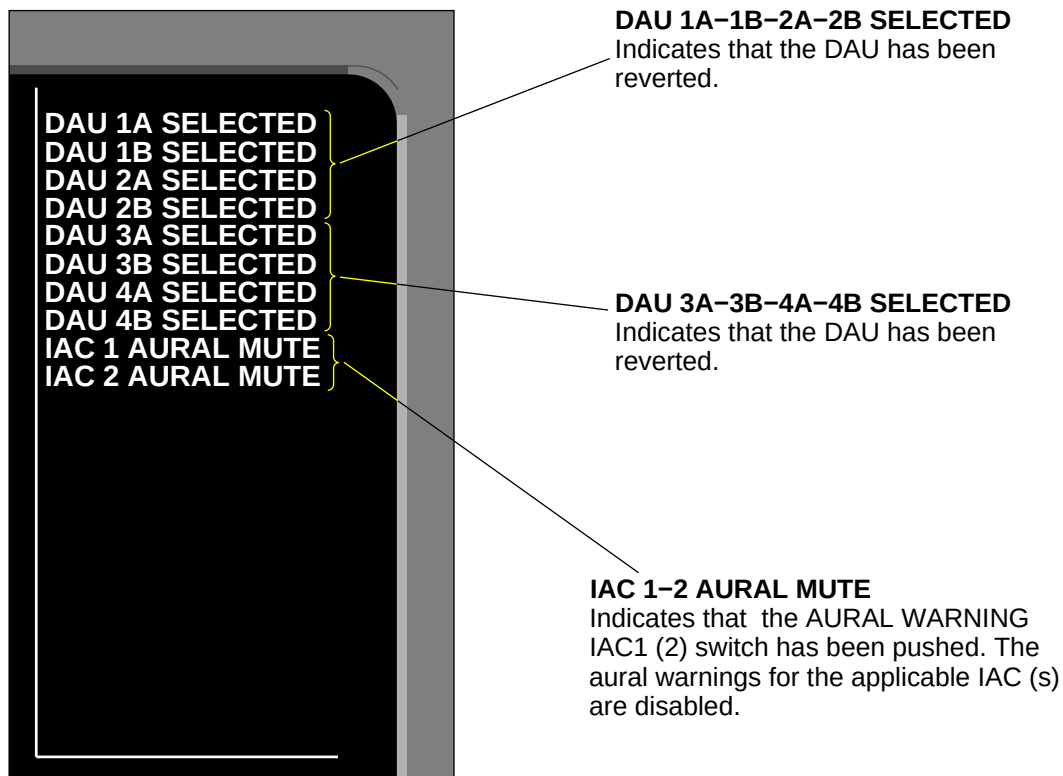
Indicates that the affected MFD controller has failed.

REVRSION CTRL FAIL

Indicates that there is a loss of reversionary control functions. May not be able to revert SGs or DUs.

GF0310_050

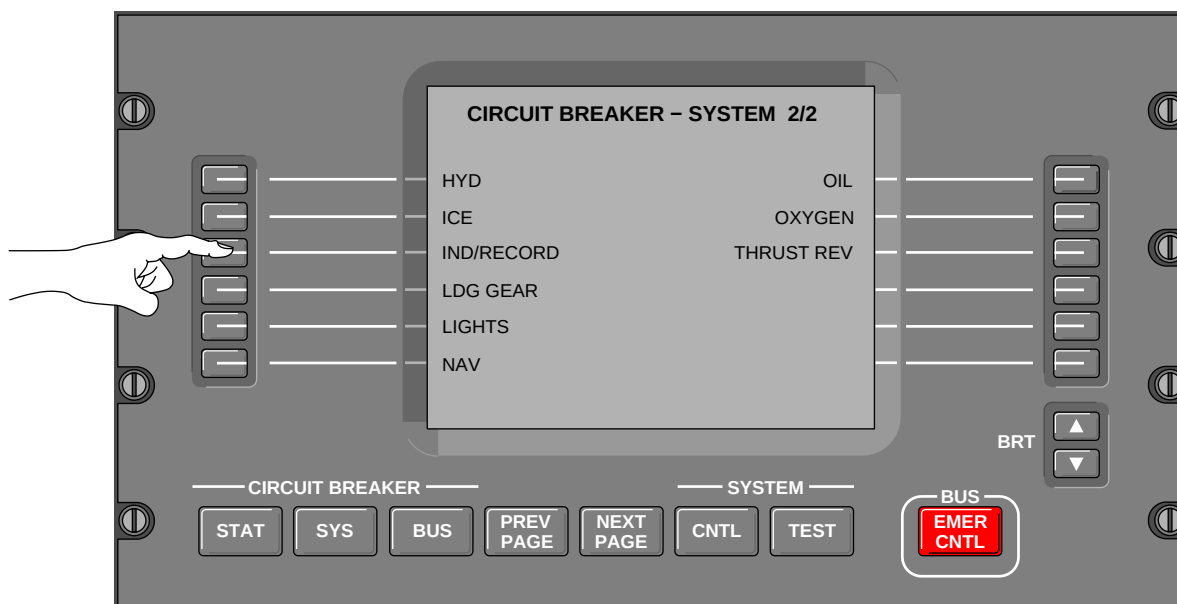
AURAL AND VISUAL WARNING EICAS MESSAGES (CONT'D)



GF0310_052

AURAL AND VISUAL WARNINGS
EMS CIRCUIT PROTECTION

CB - IND/RECORD SYSTEM



CB - IND/RECORD SYSTEM 1/5

ADC 1	BATT	IN
ADC 2	DC 1	IN
ADC 3	DC ESS	IN
AURAL WARNING 1	BATT	IN
AURAL WARNING 2	DC ESS	IN
CLOCK 1	BATT	IN

CB - IND/RECORD SYSTEM 2/5

CLOCK 2	DC 1	IN
CLOCK BACK UP	AV BATT DCPC	IN
CVR	DC ESS	IN
CVR ERASE	DC 2	IN
DATA LOADER	DC 2	IN
DAU 1 CH A	BATT	IN

CB - IND/RECORD SYSTEM 3/5

DAU 1 CH B	DC 1	IN
DAU 2 CH A	BATT	IN
DAU 2 CH B	DC 2	IN
DAU 3 CH A	BATT	IN
DAU 3 CH B	DC 2	IN
DAU 4 CH A	BATT	IN

CB - IND/RECORD SYSTEM 4/5

DAU 4 CH B	DC 1	IN
DU 1	DC ESS	IN
DU 2	DC ESS	IN
DU 3 PWR A	BATT	IN
DU 3 PWR B	DC 1	IN
DU 4 PWR A	BATT	IN

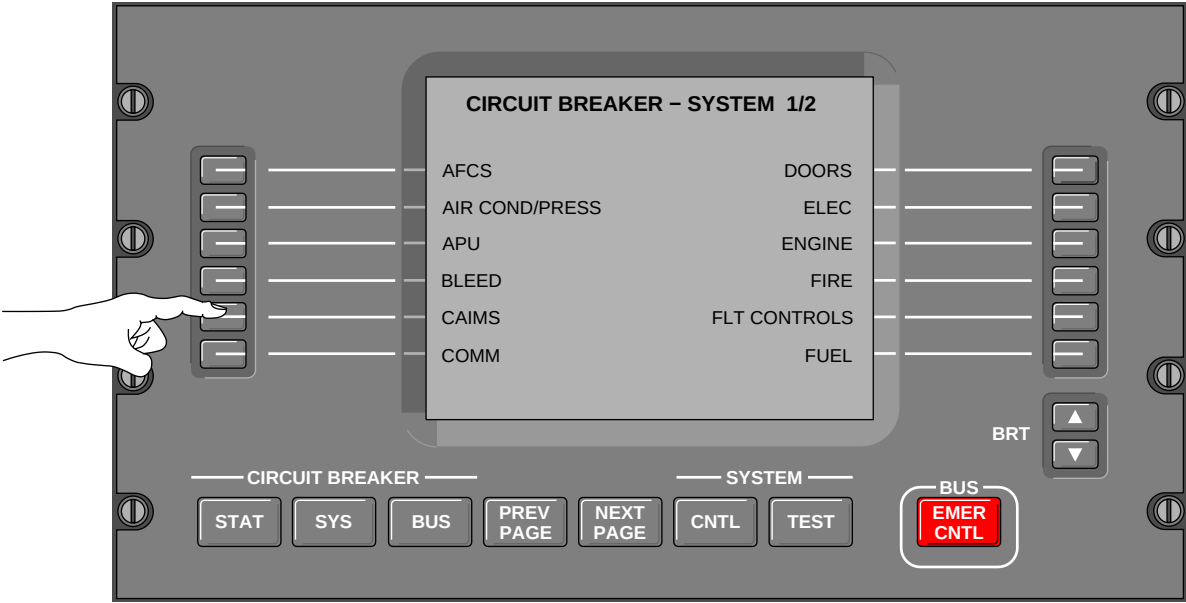
CB - IND/RECORD SYSTEM 5/5

DU 4 PWR B	DC 2	IN
DU 5	DC 2	IN
DU 6	DC 2	IN
FDR	DC 2	IN
FDR ACCELEROMETER	DC 2	IN

GF0320_001

AURAL AND VISUAL WARNINGS
EMS CIRCUIT PROTECTION

CB - CAIMS SYSTEM



CB – CAIMS SYSTEM		1/1
CAIMS PMAT LAPTOP	DC 1	IN
CKPT PRINTER	DC 1	IN

GF0320_002