

OUR GLOBAL COMPETENCE CENTRES



 APOLLO DISPLAY
TECHNOLOGIES



 DISTEC

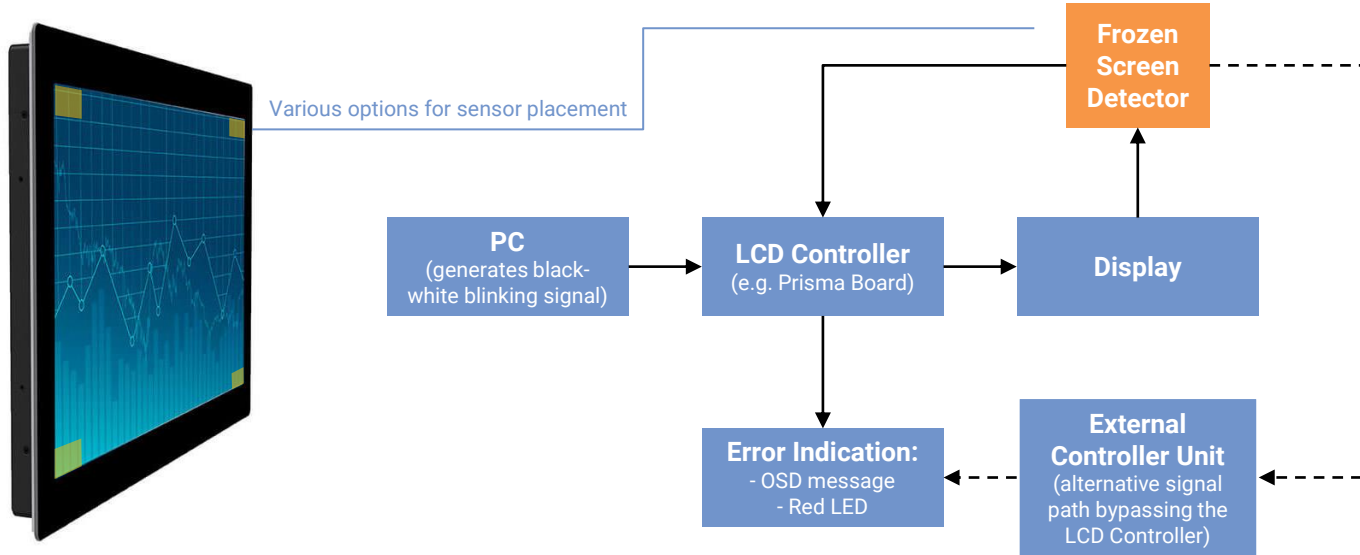


 DISPLAY
TECHNOLOGY



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IF 444 Frozen Screen Sensor



WE GENERATE SAFETY

LCD CONTROLLER BOARD

Faulty Component	Description	Detection Method Result	Error Indication Method	Remarks
Content Generating Device (e.g. PC, Embedded Computer)	Contents of the Screen are not getting updated but the old screen contents are still visible	PME-II/ External Controller Unit detects the black/white blinking PC-Signal [Failure Source: PC or Display] + Check again with PME-II generates black and white signal. 1) No detection: Display is faulty 2) Signal change detection: PC is faulty	OSD warning (PME-II) LED, GPIO, UART/USB	Primary use case
PME-II	Complete black or white screen is visible, but PME-II is not responding	PC communication [UART]	PC application detect no communication with PME-II + Light sensor Interrupt checked by PC	Error indication via LED possible if it is NOT controlled by the LCD controller
LCD Display	Complete black or white screen is visible	PME-II / External Controller Unit detects the black/white blinking PC-Signal [Failure Source: PC or Display] + Check again with PME-II generates black and white signal. 1) No detection: Display is faulty 2) Signal change detection: PC is faulty	LED, GPIO, UART/USB	

WE GENERATE SAFETY

WIRELESS CONNECTIVITY

Faulty Component	Description	Detection Method Result	Error Indication Method	Remarks
Content Generating Device (e.g. PC, Embedded Computer)	Contents of the Screen are not getting updated but the old screen contents are still visible	External Controller Unit detects the black/white blinking PC-Signal. No possibility to determine if PC or Display has failed.	LED, GPIO, UART/USB, Bluetooth	
External Controller Unit	External Controller Unit is not responding	PC communication [UART]	PC application detects no communication with External Controller Unit + Light sensor Interrupt checked by the PC	Error indication via LED possible if it is NOT controlled by the External Controller Unit
LCD Display	Complete black or white screen is visible	External Controller Unit detects the black/white blinking PC-Signal. No possibility to determine if PC or Display has failed.	LED, GPIO, UART/USB, Bluetooth	

ERROR DETECTION: CUSTOMIZABLE PARAMETERS

Parameter	Content Generating Device	LCD Controller Board	External Controller Unit	Range / Unit	Remarks
Black / White Blinking Signal Interval	✓			1 – 60 [s]	Free Sample Code for Windows / Linux available.
Frozen Screen Detector Timeout		✓	✓	1 – 60 [s]	The Frozen Screen Detector goes into error state after the timeout. The input Blinking Signal has to be within this range.
GPIO / LED Blinking Frequency		✓	✓	1 – 10 [Hz]	
UART / RS232 Status Polling Enable	✓			ON / OFF	The UART / RS232 is always available on the LCD Controller Board.
UART / RS232 Status Polling Interval	✓			1 – 60 [s]	
OSD Warning Enable		✓		ON / OFF	
Bluetooth / Wifi Enable			✓	ON / OFF	Available only on Wireless Connectivity board.
Bluetooth / Wifi Communication			✓	TBD	

Preliminary

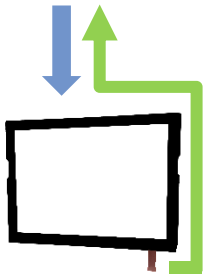
ERROR DETECTION: LCD CONTROLLER BOARD



Normal Operation



Prisma
Controller Card



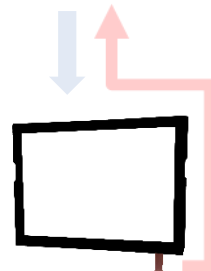
PC Failure



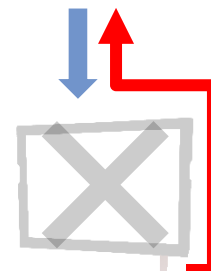
LED Error
Indication



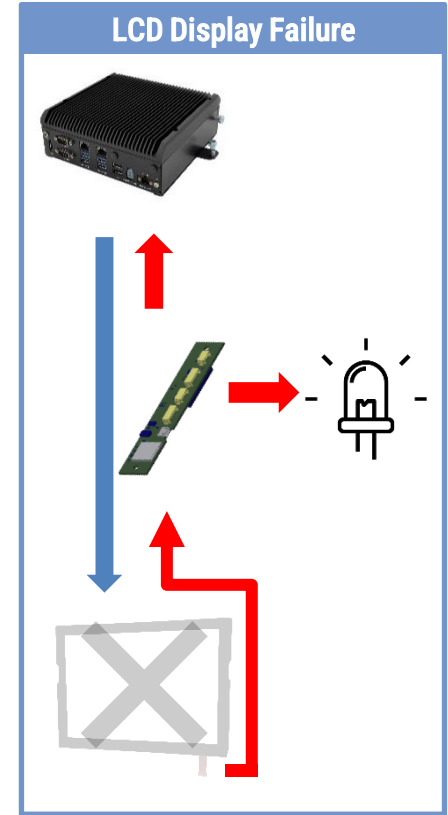
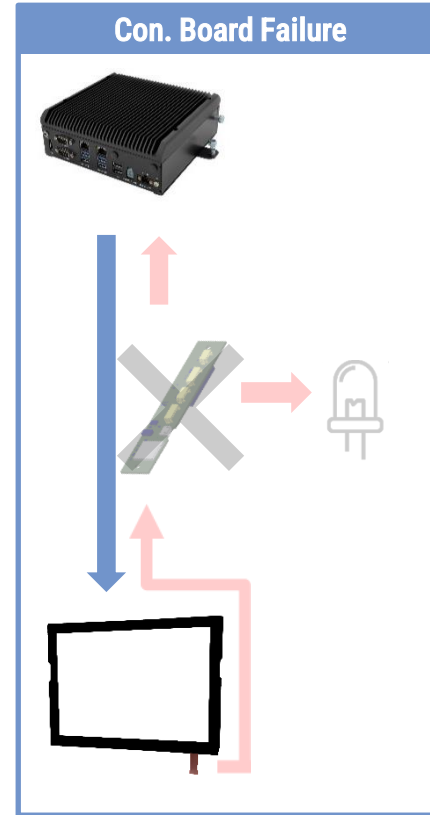
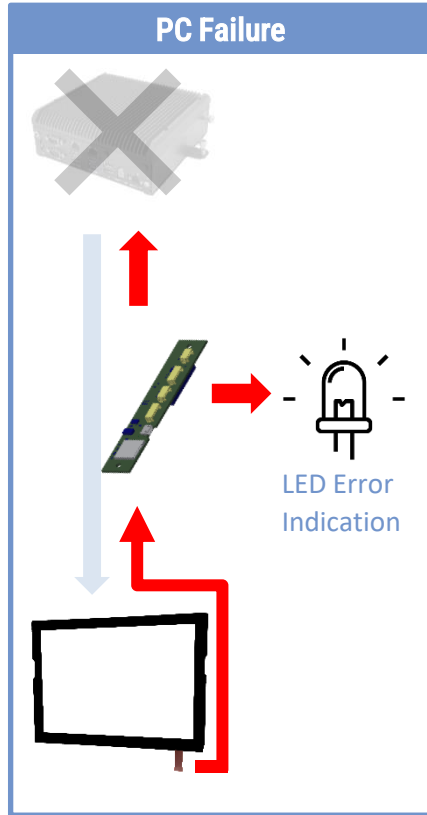
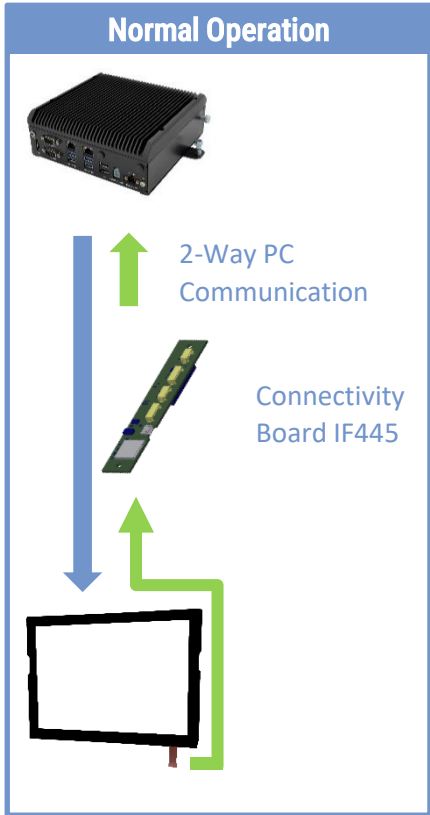
LCD Controller Failure



LCD Display Failure



ERROR DETECTION: CONNECTIVITY BOARD



PRODUCTION PROCESS OF SAFETY MODULE

- Disassembly of TFT module
- Cut out in the frame at sensor mounting position
- Fixation of the sensor on TFT surface

- Option: TFT Bonding via VACUBOND

Note: Excluded without special release are applications in life support equipment and applications where frozen screen could cause material damage

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