

Panoramic Monitor



FS30



Sainsel



Equipment Overview

The FS30 is a three 12" displays rugged monitor integrated in a mechanical frame providing a panoramic view of the scene. It has been specifically designed by Sainsel to satisfy the Panoramic Display requirements of a Vision System to be used in critical military applications.

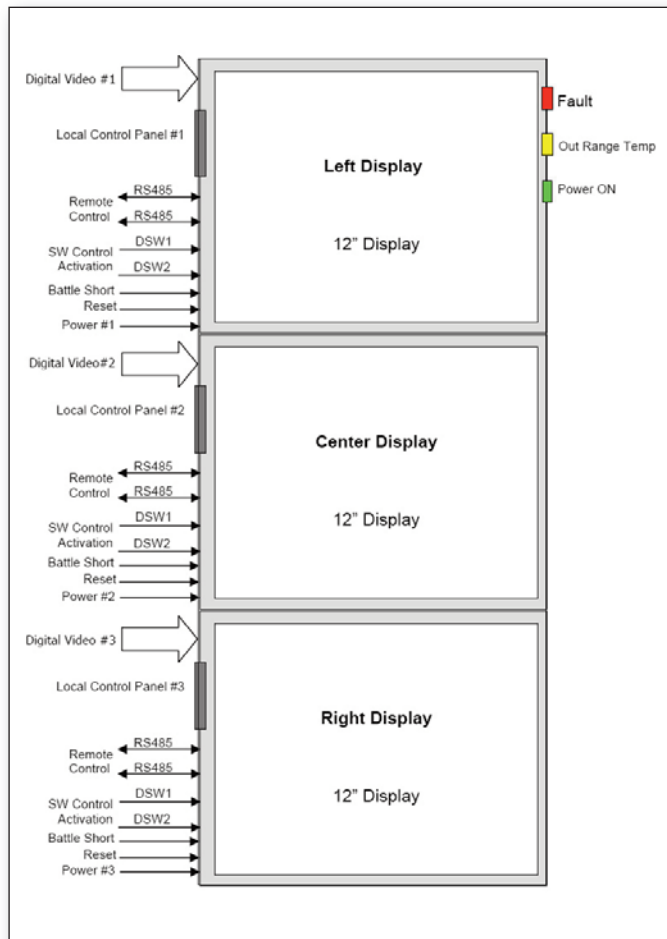
Each display presents the video generated by one of the three panoramic cameras of the Vision System, providing a panoramic vision of the operations.

The FS30 Monitor has been designed to be integrated in complete Vision system, so it satisfies four levels of specific requirements: Display requirements, Remote Control capabilities, Environmental/EMI/EMC and Power&Temperature Control requirements. It additionally has BIT capabilities, which provides status information to a central control position of the system.

Description

The FS30 Monitor consists of a mechanical frame integrating three 12.1" LCD TFT displays with 1024x768 of resolution, remotely controllable.

The figure below shows the interfaces diagram of the FS30 Monitor.



In order to remotely control the displays settings, the FS30 incorporates two redundant RS485 serial data lines connected in parallel to the three displays. This remote control can be deactivated controlling the status of two Sw Control Activation lines.

The FS30 includes internal resources to control the over-temperature and under-temperature conditions to protect it during such situations including heater to pass from under-temperature to the operational condition. These protections can be inhibited using an external Battle Short signal.

The monitor has three DVI-D separated video inputs, one for each display.

The address into the RS485 buses of each displays is fix and is stored in the firmware of its control board.

For maintenance purpose each display incorporates a local control panel on the rear.

The monitor incorporates indicators for Power On, Fault and Out Range Temp on the front.

Main Characteristics

PHYSICAL CONFIGURATION

The FS30 Monitor has the following features:

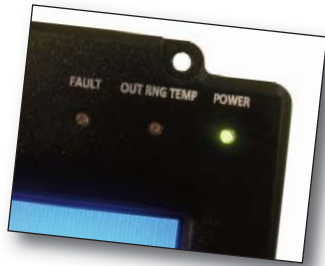
- Rugged enclosure.
- The monitor has robust aluminum bezel. The external connections are made using military connectors.



- Cooled by ambient air without additional fans.



- Three indicators on the front: FAULT, OUT RING TEMP (Over-temperature) and POWER



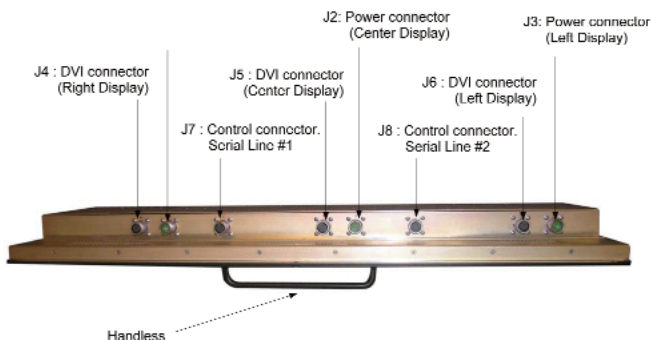
- Control Panel
For maintenance purposes the FS30 includes three control panels located in its rear including the following control keys:

- MENU/SEL
- DOWN
- UP
- EXIT
- POWER



Using this control panel the parameters of the display can be adjusted using the internal OSD.

- External connectors on the rear part and in parallel position to the monitor front to save required installation space.



COOLING /HEATING

The maximum power dissipated by the FS30 is 45 W.

The monitor is cooled by natural air convection, and it can operate between -20°C and 60°C

For low temperature operation, from 0°C to -20°C, the FS30 incorporates an internal heater. This heater remains powered from the power application until the internal temperature is over 0°C, which is the minimum temperature required by the internal hardware to work with its full operational performances.

The start-up time period required in low temperature for warm up is shorter than 30 minutes.

The Temperature Out Range indicator lights when the internal temperature is out the operational range.

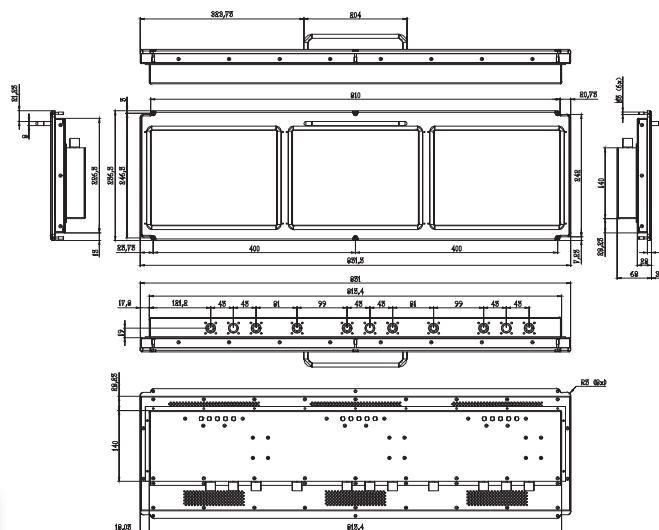
The FS30 provides means to prevent power application when the equipment temperature is out the operational range. This protection can be inhibited by the Battleshort external signal.

WEIGHT

The total FS30 weight is 17,5 Kg.

DIMENSIONS

Overall FS30 dimensions are shown in figure below.



Remote Control

A set of display setting commands can be sent to each display of the monitor, including, Brightness, Contrast, Hue, ...

The three displays can simultaneously be addressed using a particular broadcast address.

RGB/ Video Interface Board

The Video Interface Controller has the following main characteristics:

- 1 Digital Video (DVI-D)
- Resolution accepted at least:
 - 1280x1024
 - 1024x768
 - 800x600
- Refresh rate 60 to 85Hz.
- 18 bits per pixel

Display

The Display has the following main characteristics:

- LCD Active Matrix Flat Panel Display
- 12.1 inches diagonal (active area: 245.76 H x 184.32 V)
- Aspect Ratio 4:3
- Contrast Ratio 600:1
- Viewing Angle (typ.): Horizontal Right side, Horizontal Left side 70° and Vertical Up side 45° and Vertical Down side 55° (at the contrast ratio >= 10:1)
- Brightness: 400 cd/m2 (typ.)
- Pixel Resolution : 1024x768
- Pixel pitch: .24 mm.

Environmental Characteristics

The equipment meets the environmental qualification requirements defined herein. Qualification test methods use the MIL-STD-810E and RTCA/DO-160D for guidance.

<i>DO-160D Section</i>	<i>Description</i>	<i>Applicable Category Standard Equipment bays</i>
4	Temperature/Altitude	Category A1
5	Temperature Variation	Category C
6	Humidity	Category A
7	Operational Shock and Crash Safety	Operational Shock and Crash Safety
8	Vibrations	Curve B, B1, R
9	Explosion Proofness	Environment III = Category X
12	Sand and Dust	Category X
13	Fungus Resistance	Category X

Electromagnetic Compatibility

The EM Susceptibility and Internal EMC Between Systems tests have followed the procedures stated in EUROCAE-14D/RTCA-DO-160D.

Electrical Characteristics

The equipment meets the electrical qualification requirements defined in the following tables:

Normal Operating Conditions Standard

Nominal Voltage	28V	MIL-STD-704C
Maximum Voltage	29V	MIL-STD-704C
Minimum Voltage	22V	MIL-STD-704C
Ripple	1.5Vp	MIL-STD-704C
Ripple Frequency Spectrum	Figure 9	MIL-STD-704C
Voltage Transient	Figure 10	MIL-STD-704C
Momentary Power Interruptions	50ms	MIL-STD-704C
Distortion	2Vp	MIL-STD-704C

Abnormal Operating Conditions

Overvoltage	Figure 12	MIL-STD-704C
Undervoltage	Figure 12	MIL-STD-704C
Steady State Voltage	20-31.5V	MIL-STD-704C

Emergency Operating Conditions

Voltage	16-30V	MIL-STD-704C
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Engine Starting

Voltage	16-30V	MIL-STD-704C
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