

# COST-EFFECTIVE AIRCRAFT DISPLAY

The multipurpose aircraft display (MFD) utilizes a color active matrix LCD module based on the amorphous silicon TFT (Thin Film Transistor) technology. The display panel may be oriented horizontally or vertically as both display scan modes are available. There are 6 operating push-buttons with adjustable backlight. The MFD software can be modified in accordance with the customer's requirements. The MFD is certified for the aircraft Ae270 (AERO VODOCHODY) and it has approval EASA Form One Airworthiness. It is used in the unique System of Aviation Modules (SAM).

## Power supply

The MFD module is fed by the aircraft's +28 VDC electric power supply system and has built-in overvoltage protection.

## Interface

The MFD module interfaces with the aircraft's on-board systems by means of discrete input and output signals and communication links.

It is equipped with one CAN bus interface and one asynchronous RS232 serial interface, both of which are electrically isolated from the module.

## Discrete inputs

The discrete input signals can have two states - active and inactive. The inputs can reliably detect the active level of an input signal and are equipped with filters to block interfering signals. The inputs are electrically isolated by means of opto-couplers and are protected against reverse polarity and short circuits.

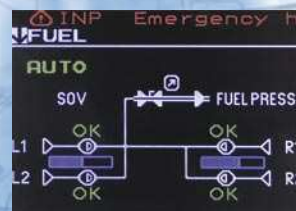
## Discrete outputs

The discrete output signals can have two states - active and inactive. The outputs can be used to control any component (warning element, relay etc.). The loading of the output circuits is less than 300 mA (continuous) and up to 500 mA for a period of 100 ms. Resistance of external equipment connected to the outputs must fulfil the EN and DO160C requirements.

The discrete outputs are intended for switching a high-power load to ground of the aircraft's power supply. They are electrically isolated using opto-couplers consisted of MOSFET transistors. The discrete outputs are protected against voltage peaks by the protecting diodes.

## Battery

The MFD module is equipped with the real time circuits and a replaceable battery. The battery power is continually monitored and the warning is generated a lot of time before the replacement is necessary. Minimal time to the battery replacement is 5 years.



## Technical specifications

Display type	Color active matrix LCD, TFT technology
Resolution (W x H)	320 x 240 dots, 76 800 pixels
Active area (W x H)	78.72 x 53.64 mm
Screen size (diagonal)	3.8 "
Pixel configuration	RGB, striped
Color support	262 144 colors
Dot pitch (W x H)	0.0820 x 0.2235 mm
Text mode (W x H)	20 x 13 chars
Brightness	450 cd/m <sup>2</sup>
Contrast ratio (white / black)	100 : 1
Viewing angle (side to side)	130 °
Sync rate (vertical / horizontal)	49.21 Hz / 11.81 kHz
Response time (rise / fall)	30 / 50 ms
Surface treatment	Antiglare polarization plate
	Low-reflection polarization plate
Backlight system	Edge-lighting, 1x CCFT (Cold Cathode Fluorescent Tube)
Push-buttons	6, adjustable backlight

Communication interface	CAN bus + RS232
Communication protocol	CANAerospace
CAN bus speed (preset / maximal)	27.717 kbit/s / 1 Mbit/s
RS232 speed	9.6 kbit/s

Power supply	+28 VDC
Marginal power supply (minimal / maximal)	+12 VDC / +35 VDC
Maximal power consumption	560 mA at +28 VDC

Discrete inputs	1 + reset
Discrete outputs	5
Input discrete signal voltage for logical level GND (rated / maximal)	0 VDC / +4 VDC
Input discrete signal voltage for logical level +28 VDC (rated / minimal)	+28 VDC / +15 VDC
Maximal output discrete signal current	300 mA

Power supply and I/O discrete signals connector	15-pin D-Sub
External device (e.g. GPS) connector	9-pin D-Sub
Interface connector	Doubled 9-pin D-Sub
GND connection	Ground point

Regulations	RTCA/DO-160C
	RTCA/DO-178B
	EN 2282
	FAR 23
	FAA AC23.1309-1B

DO-178B criticality level	C
Operating temperature range	-20 to +55 (shortly up to +70) °C
Operating altitude	10 700 m
Operating humidity	RTCA/DO-160C: category A
User data memory size	15 MB
Minimal lamp lifetime	20 000 hours
Storage temperature range	-40 to +85 °C
Outline dimensions	162.4 x 77.0 x 143.0 mm
Weight	1.3 kg