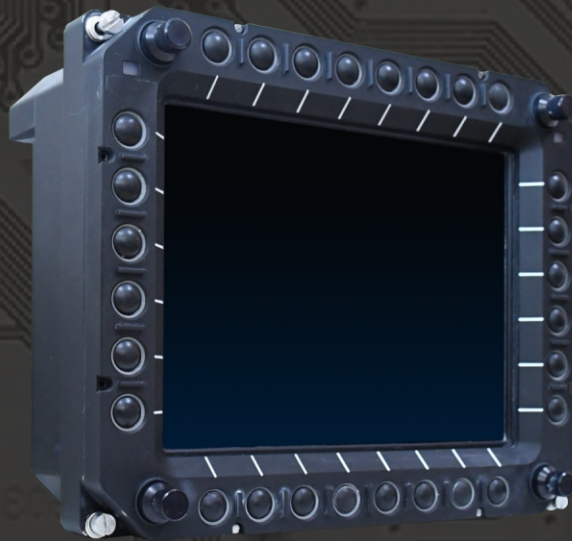





# **DiSPLAY**

PROTECTING THE FUTURE

**AVIONIC  
DISPLAYS**



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FOR MORE THAN 35 YEARS «DISPLAY» DESIGN OFFICE», JSC, HAS BEEN SPECIALIZING IN ENGINEERING AND MANUFACTURE OF DISPLAY DEVICES DESIGNED FOR OPERATION IN SEVERE CONDITIONS AND IS CONSIDERED TO BE ONE OF THE MARKET LEADERS IN THIS INDUSTRY.

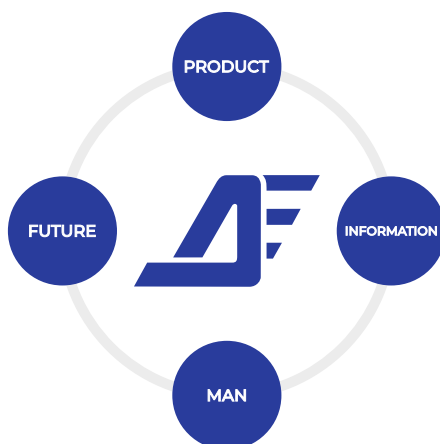
## COMPANY PROFILE:

- DESIGN AND PRODUCTION OF RUGGED VIDEO MONITORS;
- DESIGN AND PRODUCTION OF RUGGED PANEL AND LAPTOP COMPUTERS;
- DESIGN AND PRODUCTION OF AVIONIC DISPLAYS;
- DESIGN AND PRODUCTION OF MICRO DISPLAY SYSTEMS;
- LCD RUGGEDIZATION.

## OUR PRODUCTS OPERATE SUSTAINABLY IN THE FOLLOWING CONDITIONS:

- LOW TEMPERATURES, -55 °C;
- HIGH TEMPERATURES, до +70 °C;
- 100% HUMIDITY, FOG, SPATTER, RAIN;
- AGGRESSIVE ENVIRONMENT INFLUENCE, SALT SPRAY FOG, FUNGI, SAND;
- VIBRATION UP TO 6 g;
- SINGLE SHOCKS UP TO 500 g;
- HIGH AMBIENT ILLUMINATION (UP TO 100,000 Lux).

DESIGNING OUR PRODUCTS FOR OPERATION IN SEVERE CONDITIONS WE PROTECT THEM FROM ENVIRONMENTAL EXPOSURE. BY THAT WE PROTECT THE DISPLAYED INFORMATION AND THE PEOPLE WHO RECEIVE THE INFORMATION. PROTECTING THE PERSON, GIVING THE CHANCE TO IT TO MORE OPERATIVELY CORRECT DECISIONS, ON THE BASIS OF THE RECEIVED INFORMATION, **WE PROTECT THE FUTURE.**



BEING AWARE OF ALL THE RESPONSIBILITY, IN OUR ACTIVITY WE ARE GUIDED BY THE FOLLOWING PRINCIPLES:

- PERSONAL APPROACH TO EVERY CUSTOMER.
- UNIQUE TECHNOLOGIES, DEVELOPED BY OUR HIGHLY SKILLED SPECIALISTS.
- RESPONSIBILITY FOR MANUFACTURED PRODUCTS.

**OUR KEY COMPETENCE:  
HIGH PRODUCTS CUSTOMIZATION TO APPLICATION ENVIRONMENT.**

«DISPLAY» DESIGN OFFICE», JSC, IS OPEN FOR COOPERATION, PARTICIPATION IN NEW PROJECTS. R&D WORK IS ALWAYS OF GREAT INTEREST TO OUR COMPANY.

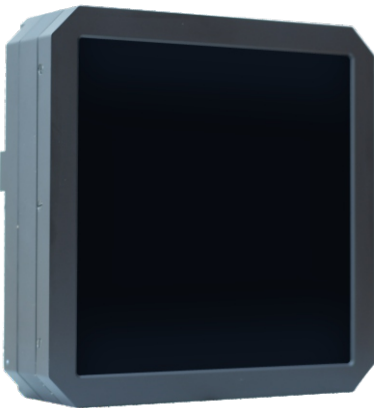


A PARTICULAR FOCUS OF THE COMPANY'S ACTIVITY IS THE DESIGN OF COCKPIT DISPLAYS BASED ON LCD PANELS. THESE PRODUCTS OPERATE IN SEVERE ENVIRONMENTS AND GUARANTEE SUNLIGHT READABLE IMAGE (UP TO 100,000 Lux).

HIGH-TECH SOLUTIONS, APPLIED IN THE PRODUCTION OF AVIONIC DISPLAYS:

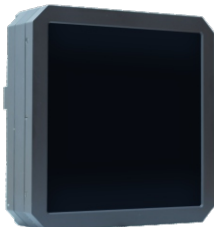
- BONDING OF HIGH-Q SCREEN-FILTERS.
- THE USE OF SMART LIGHTING SYSTEMS. HIGH-PERFORMANCE LED-LIGHTING (INCL. MULTICOLOR) HAS BEEN IMPLEMENTED. WE CAN AS WELL PROVIDE COMPATIBILITY WITH NVIS WITHOUT THE USE OF IR-FILTERS, HEREWITH PRESERVING LOW COLOR SHIFTING. SPECIFIC COLOR RENDERING REQUIREMENTS CAN BE IMPLEMENTED (E.G. COMPLETE EMULATION OF CATHODE-RAY TUBE PHOSPHOR COLOR WHEN UPGRADING COMPLEXES).

**CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST**



# MCD-6262

AVIATION MONITOR WITH A SCREEN SIZE OF 6,2"x6,2" INCHES, DESIGNED FOR DISPLAYING INFORMATION AS PART OF ONBOARD AVIATION EQUIPMENT.



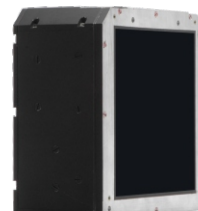
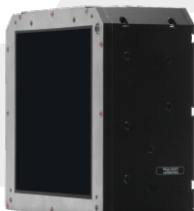
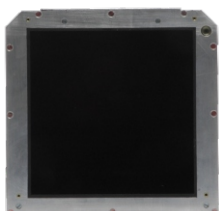
MODEL	MCD-6262
DISPLAY AREA, INCH	6,2"x6,2"
RESOLUTION	768x768
VIEWING ANGLE, °	
HORIZONTAL	±75
VERTICAL	±75
CONTRAST	500:1
BRIGHTNESS, cd/m²	600
SUPPORTED INTERFACES	LVDS (8 BIT)
POWER SUPPLY, V	+5, +24, +28
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	82
DIMENSIONS, mm:	
WIDTH	191
HEIGHT	191
DEPTH	83
WEIGHT, kg	2,5
TEMPERATURE, °C:	
OPERATING	-40...+55
SHORT-TERM OPERATION	+70
STORAGE	-55...+85
HUMIDITY	98%, 50 °C
VIBRATION	5...500 Hz, 2g
SHOCKS:	
SINGLE	15g
REPEATED	6g





# MCD-066M

THE COLOR DISPLAY MODULE IS DESIGNED TO DISPLAY GRAPHICAL INFORMATION WHEN WORKING AS PART OF A MULTIFUNCTIONAL INDICATOR.



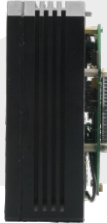
MODEL	MCD-066M
DISPLAY AREA, INCH	6,2"x6,2"
RESOLUTION	768x768
VIEWING ANGLE, °	
HORIZONTAL	±80
VERTICAL	±80
CONTRAST	500:1
BRIGHTNESS, cd/m <sup>2</sup>	800
AUTOMATIC BRIGHTNESS ADJUSTMENT	+
DAY / NIGHT MODE	+
SUPPORTED INTERFACES	LVDS (6 BIT)
POWER SUPPLY, V	+12; ~115 (400 Hz)
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	60 (DC VOLTAGE), 120 (AC VOLTAGE)
DIMENSIONS, mm:	
WIDTH	204
HEIGHT	200
DEPTH	105
WEIGHT, kg	4
TEMPERATURE, °C:	
OPERATING	-40...+60
SHORT-TERM OPERATION	-
STORAGE	-60...+60
HUMIDITY	98%, 35 °C
VIBRATION	10...2000 Hz, 13,2g
SHOCKS:	
SINGLE	15g
REPEATED	-

CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST



# MD-055N

DISPLAY MODULE MD-055N PROVIDES HIGH-QUALITY DISPLAY OF INFORMATION IN ANY CONDITIONS, INCLUDING SUNLIGHT. MULTICOLOR LED BACKLIGHTING SYSTEM PROVIDES IN MODE ACCORDING TO MIL-STD-3009 WHILE MAINTAINING QUALITY COLOR RENDERING. THE BACKLIGHT DESIGN IS PATENTED.

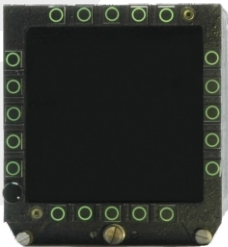


MODEL	MD-055N
DISPLAY AREA, INCH	5"x5"
RESOLUTION	600x600
VIEWING ANGLE, °	
HORIZONTAL	±80
VERTICAL	±80
CONTRAST	400:1
BRIGHTNESS, cd/m²	800
COMPATIBILITY WITH NIGHT VISION DEVICE	+
SUPPORTED INTERFACES	LVDS (8 BIT)
POWER SUPPLY, V	+28; +100
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	20 (101)
DIMENSIONS, mm:	
WIDTH	153
HEIGHT	153
DEPTH	70
WEIGHT, kg	1,44
TEMPERATURE, °C:	
OPERATING	-55...+55
SHORT-TERM OPERATION	+70
STORAGE	-55...+85
HUMIDITY	98%, 40 °C
VIBRATION	10...2000 Hz, 4,5g
SHOCKS:	
SINGLE	40g
REPEATED	-



# VM-18

THE AVIATION VIDEO MONITOR IS DESIGNED FOR DISPLAYING VIDEO INFORMATION RECEIVED VIA ANALOG VGA INPUT FROM THE ONBOARD COMPUTER. DISTINCTIVE FEATURES OF THE PRODUCT ARE THE PRESENCE OF A FUNCTIONAL KEYBOARD, INFORMATION EXCHANGE WITH WHICH IS CARRIED OUT VIA ARINC-429 INTERFACE, MANUAL AND AUTOMATIC ADJUSTMENT OF IMAGE BRIGHTNESS, FORMATION OF INTERNAL TEST IMAGE.



MODEL	VM-18
DISPLAY SIZE, INCH	7,1"
RESOLUTION	480x480
VIEWING ANGLE, °	
HORIZONTAL	±85
VERTICAL	±85
CONTRAST	100:1
BRIGHTNESS, cd/m²	1000
AUTOMATIC BRIGHTNESS ADJUSTMENT	+
SUPPORTED INTERFACES	VGA
POWER SUPPLY, V	+27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	40
DIMENSIONS, mm:	
WIDTH	165
HEIGHT	177
DEPTH	298
WEIGHT, kg	4,5
TEMPERATURE, °C:	
OPERATING	-50...+60
SHORT-TERM OPERATION	-
STORAGE	-60...+80
HUMIDITY	98%, 35 °C
VIBRATION	10...300 Hz, 3g
SHOCKS:	
SINGLE	10g
REPEATED	6g
PUSH-BUTTON FRAME	+

CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST



## UD-400 TYPE 3

DISPLAY DEVICE UD-400 TYPE 3 IS DESIGNED TO DISPLAY GRAPHIC, NUMERIC, ALPHABETIC INFORMATION WHEN WORKING AS PART OF THE EQUIPMENT. THE PRODUCT RECEIVES VIDEO INFORMATION VIA LVDS 6-BIT INTERFACE AND DISPLAYS THE RECEIVED INFORMATION ON THE LCD SCREEN. THE PRODUCT USES LED BACKLIGHTING OF THE LCD PANEL. BACKLIGHTING SYSTEM IN "NIGHT" MODE IS ADAPTED TO NIGHT VISION GOGGLES ACCORDING TO MIL-STD NIGHT VISION GOGGLES ACCORDING TO MIL-STD-3009 CLASS B.

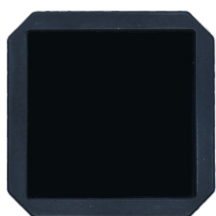


MODEL	UD-400 TYPE 3
DISPLAY AREA, INCH	3,5"x3,5"
RESOLUTION	640x640
VIEWING ANGLE, °	
HORIZONTAL	±80
VERTICAL	±80
CONTRAST	400:1
BRIGHTNESS, cd/m <sup>2</sup>	1000
COMPATIBILITY WITH NIGHT VISION DEVICE	+
SUPPORTED INTERFACES	LVDS (6 BIT)
POWER SUPPLY, V	+3,3, +12; +28
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	26 (40)
DIMENSIONS, mm:	
WIDTH	110
HEIGHT	110
DEPTH	33
WEIGHT, kg	0,6
TEMPERATURE, °C:	
OPERATING	-50...+55
SHORT-TERM OPERATION	+70
STORAGE	-60...+85
HUMIDITY	98%, 35 °C
VIBRATION	5...500 Hz, 4,3g
SHOCKS:	
SINGLE	15g
REPEATED	4g



## UD-400 TYPE 4

THE DISPLAY DEVICE IS DESIGNED TO WORK IN EXTREMELY DIFFICULT OPERATING CONDITIONS. THE PRODUCT RETAINS ITS CHARACTERISTICS IN A WIDE RANGE OF MECHANICAL AND TEMPERATURE LOADS.



MODEL	UD-400 TYPE 4
DISPLAY AREA, INCH	2,4"x2,4"
RESOLUTION	480x480
VIEWING ANGLE, °	
HORIZONTAL	±70
VERTICAL	±70
CONTRAST	600:1
BRIGHTNESS, cd/m <sup>2</sup>	800
COMPATIBILITY WITH NIGHT VISION DEVICE	+
SUPPORTED INTERFACES	LVDS (6 BIT)
POWER SUPPLY, V	+28
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	6
DIMENSIONS, mm:	
WIDTH	78
HEIGHT	78
DEPTH	38
WEIGHT, kg	0,25
TEMPERATURE, °C:	
OPERATING	-55...+55
SHORT-TERM OPERATION	+70
STORAGE	-55...+85
HUMIDITY	95%, 35...50 °C
VIBRATION	5...500 Hz, 1,5g
SHOCKS:	
SINGLE	20g
REPEATED	6g

CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST



# UD-400 TYPE 5

DISPLAY DEVICE UD-400 TYPE 5 IS DESIGNED FOR DISPLAYING GRAPHIC, NUMERIC, ALPHABETIC INFORMATION WHEN WORKING AS PART OF THE EQUIPMENT. LVDS 8-BIT DIGITAL INTERFACE. RESOLUTION 600x600 PIXELS.



MODEL	UD-400 TYPE 5
DISPLAY AREA, INCH	5"x5"
RESOLUTION	600x600
VIEWING ANGLE, °	
HORIZONTAL	±70
VERTICAL	±70
CONTRAST	800:1
BRIGHTNESS, cd/m <sup>2</sup>	800
SUPPORTED INTERFACES	LVDS (8 BIT)
POWER SUPPLY, V	+3,3, +12; +27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	26 (88)
DIMENSIONS, mm:	
WIDTH	148
HEIGHT	155
DEPTH	30
WEIGHT, kg	0,8
TEMPERATURE, °C:	
OPERATING	-60...+60
SHORT-TERM OPERATION	+70
STORAGE	-60...+85
HUMIDITY	98%, 35 °C
VIBRATION	10...2000 Hz, 12g
SHOCKS:	
SINGLE	15g
REPEATED	6g



# UD-400

THE DISPLAY DEVICE IS DESIGNED TO WORK IN EXTREMELY DIFFICULT OPERATING CONDITIONS. THE PRODUCT RETAINS ITS CHARACTERISTICS IN A WIDE RANGE OF MECHANICAL AND TEMPERATURE LOADS.



MODEL	UD-400
DISPLAY AREA, INCH	2,9"x2,2"
RESOLUTION	640x480
VIEWING ANGLE, °	
HORIZONTAL	±80
VERTICAL	±80
CONTRAST	600:1
BRIGHTNESS, cd/m²	800
SUPPORTED INTERFACES	LVDS (6 BIT)
POWER SUPPLY, V	+3,3, +12
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	15
DIMENSIONS, mm:	
WIDTH	116
HEIGHT	74
DEPTH	24
WEIGHT, kg	0,27
TEMPERATURE, °C:	
OPERATING	-60...+65
SHORT-TERM OPERATION	+70
STORAGE	-60...+85
HUMIDITY	98%, 29 °C
VIBRATION	10...2000 Hz, 4,3g
SHOCKS:	
SINGLE	15g
REPEATED	6g

CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST



# UD-400 TYPE 2

DISPLAY DEVICE UD-400 TYPE 2 IS DESIGNED TO DISPLAY GRAPHIC, NUMERIC, ALPHABETIC INFORMATION WHEN WORKING AS PART OF THE EQUIPMENT.



MODEL	UD-400 TYPE 2
DISPLAY AREA, INCH	4,1"x3,3"
RESOLUTION	820x658
VIEWING ANGLE, °	
HORIZONTAL	±80
VERTICAL	±80
CONTRAST	250:1
BRIGHTNESS, cd/m²	800 (MIN. 0,2)
SUPPORTED INTERFACES	LVDS (6 BIT)
POWER SUPPLY, V	+3,3, +12; +27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	20
DIMENSIONS, mm:	
WIDTH	135
HEIGHT	110
DEPTH	41
WEIGHT, kg	1,5
TEMPERATURE, °C:	
OPERATING	-60...+60
SHORT-TERM OPERATION	+70
STORAGE	-65...+85
HUMIDITY	98%, 35 °C
VIBRATION	10...2000 Hz, 4,3g
SHOCKS:	
SINGLE	15g
REPEATED	-



# MDC-104

## MDC-104 TYPE 1

DISPLAY MODULES WITH HIGH ANTI-REFLECTIVE PROPERTIES AND WIDE VIEWING ANGLES, WHICH PROVIDES COMFORTABLE AND CONFIDENT READING OF INFORMATION FROM THE SCREEN IN SUNLIGHT CONDITIONS IN THE CABIN. PATENTED DESIGN OF END LED BACKLIGHT PROVIDES IN "NIGHT" MODE COMPATIBILITY WITH NIGHT VISION GOGGLES ACCORDING TO MIL-STD-3009.

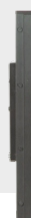
MODEL	MDC-104	MDC-104 TYPE 1
DISPLAY AREA, INCH	8,3"x6,2"	
RESOLUTION	1024x768	
VIEWING ANGLE, °		
HORIZONTAL	±80	
VERTICAL	±80	
CONTRAST	400:1	500:1
BRIGHTNESS, cd/m²	1000	
DAY / NIGHT MODE	-	+
SUPPORTED INTERFACES	LVDS (6 BIT)	
POWER SUPPLY, V	+3,3, +12; +28	
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	20	
DIMENSIONS, mm:		
WIDTH	192	186
HEIGHT	238	234
DEPTH	26	30
WEIGHT, kg	1,35	1,5
TEMPERATURE, °C:		
OPERATING	-55...+55	-55...+60
SHORT-TERM OPERATION	+70	+70
STORAGE	-60...+85	-60...+85
HUMIDITY	98%, 35 °C	
VIBRATION	10...2000 Hz, 2,8g	10...2000 Hz, 1,8g
SHOCKS:		
SINGLE	-	
REPEATED	6g	

CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST

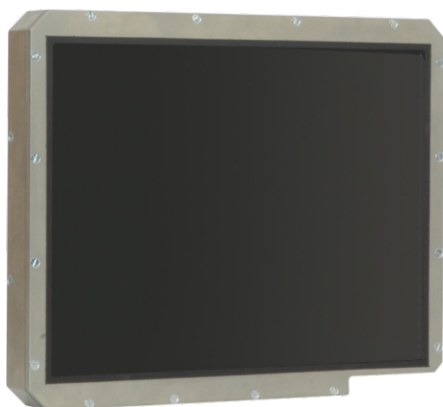


# MDC-104EM

IT DIFFERS FROM MDC-104EM BY ITS DESIGN AND THE PRESENCE OF THE SYSTEM OF AUTOMATIC BRIGHTNESS ADJUSTMENT DEPENDING ON AMBIENT LIGHT.



MODEL	MDC-104EM
DISPLAY AREA, INCH	8,3"x6,2"
RESOLUTION	1024x768
VIEWING ANGLE, °	
HORIZONTAL	±60
VERTICAL	±60
CONTRAST	500:1
BRIGHTNESS, cd/m <sup>2</sup>	1000
COMPATIBILITY WITH NIGHT VISION DEVICE	+
SUPPORTED INTERFACES	LVDS (8 BIT)
POWER SUPPLY, V	+3,3, +12; +27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	25
DIMENSIONS, mm:	
WIDTH	186
HEIGHT	234
DEPTH	34
WEIGHT, kg	1,5
TEMPERATURE, °C:	
OPERATING	-60...+60
SHORT-TERM OPERATION	+70
STORAGE	-65...+85
HUMIDITY	98%, 35 °C
VIBRATION	10...2000 Hz, 13,6g
SHOCKS:	
SINGLE	15g
REPEATED	-



# MDC-104 TYPE 2 /TYPE 3

COLOR DISPLAY MODULES DISTINGUISHED (FROM MDC-104) BY THE PRESENCE OF IR-SENSOR PANEL, MINIMUM AVAILABILITY TIME AT LOW TEMPERATURES, INCREASED DURABILITY TO MECHANICAL INFLUENCES.



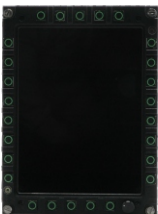
MODEL	MDC-104 TYPE 2	MDC-104 TYPE 3
DISPLAY AREA, INCH	8,3"x6,2"	
RESOLUTION	1024x768	
VIEWING ANGLE, °		
HORIZONTAL	±80	
VERTICAL	±80	
CONTRAST	500:1	
BRIGHTNESS, cd/m²	300	1000
TOUCH SCREEN	+ (INFRARED)	
SUPPORTED INTERFACES	LVDS (6 BIT / 8 BIT)	
POWER SUPPLY, V	+5, +12; +27	
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	10	22
DIMENSIONS, mm:		
WIDTH	237	
HEIGHT	193	
DEPTH	31	
WEIGHT, kg	2	
TEMPERATURE, °C:		
OPERATING	-50...+65	
SHORT-TERM OPERATION	-	
STORAGE	-65...+70	
HUMIDITY	98%, 35 °C	
VIBRATION	1...500 Hz, 6g	1...500 Hz, 5g
SHOCKS:		
SINGLE	500g	75g
REPEATED	-	-

CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST



# VM-26

THE AVIATION VIDEO MONITOR IS DESIGNED FOR DISPLAYING VIDEO INFORMATION RECEIVED VIA ANALOG VGA INPUT FROM THE ONBOARD COMPUTER. DISTINCTIVE FEATURES OF THE PRODUCT ARE THE PRESENCE OF A FUNCTIONAL KEYBOARD, INFORMATION EXCHANGE WITH WHICH IS CARRIED OUT VIA ARINC-429 INTERFACE, MANUAL AND AUTOMATIC ADJUSTMENT OF IMAGE BRIGHTNESS.



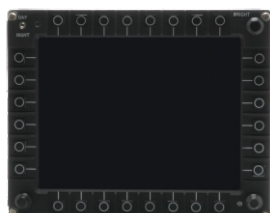
MODEL	VM-26
DISPLAY SIZE, INCH	10,4"
RESOLUTION	480x640
VIEWING ANGLE, °	
HORIZONTAL	±88
VERTICAL	±88
CONTRAST	100:1
BRIGHTNESS, cd/m²	500
AUTOMATIC BRIGHTNESS ADJUSTMENT	+
SUPPORTED INTERFACES	VGA
POWER SUPPLY, V	+27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	50
DIMENSIONS, mm:	
WIDTH	200
HEIGHT	270
DEPTH	158
WEIGHT, kg	5
TEMPERATURE, °C:	
OPERATING	-50...+60
SHORT-TERM OPERATION	-
STORAGE	-60...+80
HUMIDITY	98%, 35 °C
VIBRATION	10...300 HZ, 3g
SHOCKS:	
SINGLE	10g
REPEATED	6g
PUSH-BUTTON FRAME	+





## VM-300

**VIDEO MODULE VM-300 IS DESIGNED FOR DISPLAYING INFORMATION FROM AIRBORNE AVIATION CALCULATORS IN CONDITIONS OF DIRECT SUNLIGHT, SHARP TEMPERATURE AND PRESSURE DIFFERENCES, MECHANICAL OVERLOADS. ON THE FRONT PANEL THERE ARE 28 BACKLIT FUNCTION BUTTONS, 3 ENCODERS WITH PUSH FUNCTION, "DAY/NIGHT" MODE SWITCH, 2 PHOTO SENSORS.**



MODEL	VM-300
DISPLAY SIZE, INCH	10,4"
RESOLUTION	1024x768
VIEWING ANGLE, °	
HORIZONTAL	±75
VERTICAL	±75
CONTRAST	5:1 (AT AMBIENT ILLUMINATION BY DIFFUSE RADIATION OF 75000 LUX).
BRIGHTNESS, cd/m <sup>2</sup>	1000
TOUCH SCREEN	+ (RESISTIVE)
AUTOMATIC BRIGHTNESS ADJUSTMENT	+
COMPATIBILITY WITH NIGHT VISION DEVICE	+
SUPPORTED INTERFACES	VGA, COMPOSITE VIDEO (BLACK AND WHITE), DVI - OPTIONAL
POWER SUPPLY, V	+27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	40
DIMENSIONS, mm:	
WIDTH	275
HEIGHT	204
DEPTH	80
WEIGHT, kg	3,5
TEMPERATURE, °C:	
OPERATING	-40...+55
SHORT-TERM OPERATION	+70
STORAGE	-50...+85
HUMIDITY	98%, 35 °C
VIBRATION	1...2000 Hz, 4,5g
SHOCKS:	
SINGLE	15g
REPEATED	-
PUSH-BUTTON FRAME	+

CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST



# VM-10

THE VM-10 VIDEO MODULE PROVIDES OPERATION WITH VGA SIGNAL. THE PRODUCT PROVIDES MANUAL AND AUTOMATIC BRIGHTNESS ADJUSTMENT, AND IS ALSO COMPATIBLE WITH NIGHT VISION GOGGLES.



MODEL	VM-10
DISPLAY SIZE, INCH	10,4"
RESOLUTION	1024x768
VIEWING ANGLE, °	
HORIZONTAL	±85
VERTICAL	±85
CONTRAST	500:1
BRIGHTNESS, cd/m <sup>2</sup>	800
AUTOMATIC BRIGHTNESS ADJUSTMENT	+
DAY / NIGHT MODE	+
COMPATIBILITY WITH NIGHT VISION DEVICE	+
SUPPORTED INTERFACES	VGA, COMPOSITE VIDEO (BLACK AND WHITE)
POWER SUPPLY, V	+27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	50
DIMENSIONS, mm:	
WIDTH	260
HEIGHT	210
DEPTH	127
WEIGHT, kg	5
TEMPERATURE, °C:	
OPERATING	-40...+55
SHORT-TERM OPERATION	+70
STORAGE	-50...+70
HUMIDITY	98%, 35 °C
VIBRATION	1...2000 Hz, 1,5g
SHOCKS:	
SINGLE	50g
REPEATED	15g



# MR-10

AVIATION MONITOR WITH A SCREEN DIAGONAL OF 10.4 INCHES, DESIGNED FOR DISPLAYING INFORMATION AS PART OF THE AVIONICS COMPLEX.



MODEL	MR-10
DISPLAY SIZE, INCH	10,4"
RESOLUTION	1024x768
VIEWING ANGLE, °	
HORIZONTAL	±85
VERTICAL	±85
CONTRAST	600:1
BRIGHTNESS, cd/m²	800
DAY / NIGHT MODE	+
SUPPORTED INTERFACES	VGA - 2 PCS. COMPOSITE VIDEO (COLORED)
POWER SUPPLY, V	+27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	50
DIMENSIONS, mm:	
WIDTH	297
HEIGHT	250
DEPTH	114
WEIGHT, kg	6
TEMPERATURE, °C:	
OPERATING	-30...+55
SHORT-TERM OPERATION	+70
STORAGE	-50...+70
HUMIDITY	98%, 35 °C
VIBRATION	1...2000 Hz, 1,5g
SHOCKS:	
SINGLE	50g
REPEATED	15g
PUSH-BUTTON FRAME	+

CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST

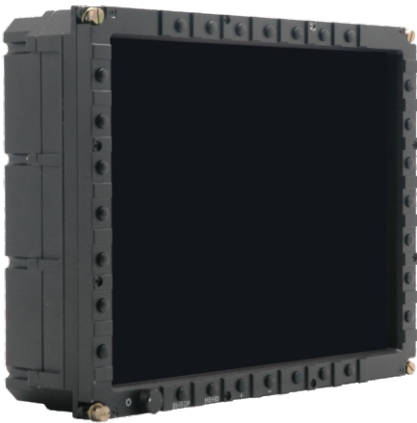


# MR-15

AVIATION MONITOR WITH A SCREEN DIAGONAL OF 15 INCHES, DESIGNED FOR  
DISPLAYING INFORMATION AS PART OF THE ONBOARD RADIO-ELECTRONIC COMPLEX.



MODEL	MR-15
DISPLAY SIZE, INCH	15"
RESOLUTION	1024x768
VIEWING ANGLE, °	
HORIZONTAL	±85
VERTICAL	±85
CONTRAST	400:1
BRIGHTNESS, cd/m²	400
SUPPORTED INTERFACES	VGA - 2 PCS. COMPOSITE VIDEO (COLORED)
POWER SUPPLY, V	+27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	50
DIMENSIONS, mm:	
WIDTH	387
HEIGHT	308
DEPTH	122
WEIGHT, kg	6,5
TEMPERATURE, °C:	
OPERATING	-30...+55
SHORT-TERM OPERATION	+70
STORAGE	-50...+70
HUMIDITY	98%, 35 °C
VIBRATION	1...2000 Hz, 1,5g
SHOCKS:	
SINGLE	50g
REPEATED	15g



# VMC-38.3 TT

THE VIDEO MONITOR IS EQUIPPED WITH A FUNCTIONAL KEYBOARD, INFORMATION EXCHANGE IS CARRIED OUT VIA RS-232 INTERFACE. HIGH BRIGHTNESS AND RESOLUTION OF THE SCREEN, WIDE RANGE OF OPERATING TEMPERATURES AND MECHANICAL LOADS.



MODEL	VMC-38.3 TT
DISPLAY SIZE, INCH	15"
RESOLUTION	1024x768
VIEWING ANGLE, °	
HORIZONTAL	±85
VERTICAL	±85
CONTRAST	500:1
BRIGHTNESS, cd/m²	1000
SUPPORTED INTERFACES	VGA, DVI, RS-232
POWER SUPPLY, V	+27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	70
DIMENSIONS, mm:	
WIDTH	345
HEIGHT	270
DEPTH	117
WEIGHT, kg	8
TEMPERATURE, °C:	
OPERATING	-60...+55
SHORT-TERM OPERATION	+70
STORAGE	-60...+85
HUMIDITY	98%, 35 °C
VIBRATION	10...2000 Hz, 7g
SHOCKS:	
SINGLE	30g
REPEATED	-
PUSH-BUTTON FRAME	+

CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST



# MCD-015MF TYPE 2

## > VERSION 2

## > VERSION 3

THE COLOR DISPLAY MODULE IS DESIGNED TO DISPLAY GRAPHIC IMAGES RECEIVED VIA LVDS OR DVI-D INTERFACE IN HD STANDART, 60 Hz. THE HIGH BRIGHTNESS AND RESOLUTION OF THE DISPLAY ENSURE RELIABLE READING OF INFORMATION.



MODEL	MCD-015MF TYPE 2 (VERSION 2)	MCD-015MF TYPE 2 (VERSION 3)
DISPLAY SIZE, INCH	20"	10,4"
RESOLUTION	1600x1200	1024x768
VIEWING ANGLE, °		
HORIZONTAL		±80
VERTICAL		±80
CONTRAST		700:1
BRIGHTNESS, cd/m²		700
DAY / NIGHT MODE		+
SUPPORTED INTERFACES		DISPLAYPORT, RS-232
POWER SUPPLY, V		+27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	70 (310)	40 (180)
DIMENSIONS, mm:		
WIDTH	485,5	290,5
HEIGHT	385,5	240
DEPTH	115	140
WEIGHT, kg	11	6
TEMPERATURE, °C:		
OPERATING		-55...+55
SHORT-TERM OPERATION		-
STORAGE		-60...+85
HUMIDITY		98%, 35 °C
VIBRATION		10...2000 Hz, 4,5g
SHOCKS:		
SINGLE		15g
REPEATED		-
PUSH-BUTTON FRAME		+





## MCD-015MF TYPE 2

THE COLOR DISPLAY MODULE IS DESIGNED TO DISPLAY GRAPHIC IMAGES RECEIVED VIA LVDS OR DVI-D INTERFACE IN HD STANDART, 60 HZ. THE HIGH BRIGHTNESS AND RESOLUTION OF THE DISPLAY ENSURE RELIABLE READING OF INFORMATION.



MODEL	MCD-015MF TYPE 2
DISPLAY SIZE, INCH	15,6"
RESOLUTION	1920x1080
VIEWING ANGLE, °	
HORIZONTAL	±70
VERTICAL	±70
CONTRAST	500:1
BRIGHTNESS, cd/m <sup>2</sup>	1000
SUPPORTED INTERFACES	LVDS 6 BIT/ 8 BIT, DVI-D
POWER SUPPLY, V	+12, +27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	50
DIMENSIONS, mm:	
WIDTH	370
HEIGHT	240
DEPTH	39
WEIGHT, kg	4
TEMPERATURE, °C:	
OPERATING	-55...+55
SHORT-TERM OPERATION	+70
STORAGE	-60...+85
HUMIDITY	98%, 35 °C
VIBRATION	10...2000 Hz, 1,8g
SHOCKS:	
SINGLE	15g
REPEATED	6g

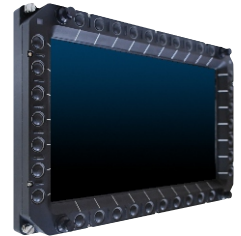
CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST



# MCD-015MF TYPE 2

## > VERSION 1

THE COLOR DISPLAY MODULE IS DESIGNED TO DISPLAY GRAPHIC IMAGES RECEIVED VIA LVDS OR DVI-D INTERFACE IN HD STANDART, 60 Hz. THE HIGH BRIGHTNESS AND RESOLUTION OF THE DISPLAY ENSURE RELIABLE READING OF INFORMATION.



MODEL	MCD-015MF TYPE 2 (VERSION 1)
DISPLAY SIZE, INCH	15,6"
RESOLUTION	1920x1080
VIEWING ANGLE, °	
HORIZONTAL	±80
VERTICAL	±80
CONTRAST	700:1
BRIGHTNESS, cd/m²	700
DAY / NIGHT MODE	+
SUPPORTED INTERFACES	DISPLAYPORT, RS-232
POWER SUPPLY, V	+27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	55 (235)
DIMENSIONS, mm:	
WIDTH	420
HEIGHT	270
DEPTH	113
WEIGHT, kg	8,5
TEMPERATURE, °C:	
OPERATING	-55...+55
SHORT-TERM OPERATION	-
STORAGE	-60...+85
HUMIDITY	98%, 35 °C
VIBRATION	10...2000 Hz, 4,5g
SHOCKS:	
SINGLE	15g
REPEATED	-
PUSH-BUTTON FRAME	+



# KSH-050R

## KSH-050R-01

## KSH-050A

THE PRODUCT IS EQUIPPED WITH MULTICOLOR LED ILLUMINATION, ILLUMINATION OF CONTROLS AND MALFUNCTION INDICATOR, DUE TO WHICH IN THE "NIGHT" MODE PROVIDES COMPATIBILITY WITH NIGHT VISION DEVICE ACCORDING TO MIL-STD-3009.



MODEL	KSH-050R /KSH-050R-01 /KSH-050A
DISPLAY AREA, INCH	4,4"x3,4"
RESOLUTION	640x480
VIEWING ANGLE, °	
HORIZONTAL	±70
VERTICAL	±70
CONTRAST	400:1
BRIGHTNESS, cd/m²	1000
COMPATIBILITY WITH NIGHT VISION DEVICE	+
SUPPORTED INTERFACES	LVDS (6 BIT)
POWER SUPPLY, V	+3,3, +12; +27
POWER CONSUMPTION, (POWER WITH HEATING SYSTEM), W	6
DIMENSIONS, mm:	
WIDTH	146
HEIGHT	160
DEPTH	18
WEIGHT, kg	0,8
TEMPERATURE, °C:	
OPERATING	-50...+65
SHORT-TERM OPERATION	+70
STORAGE	-60...+85
HUMIDITY	98%, 50 °C
VIBRATION	10...2000 Hz, 2,2g
SHOCKS:	
SINGLE	20g
REPEATED	-

CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST

## 1. LCD CUTTING (FROM STANDARD SIZE UP TO CUSTOMIZED SIZE).

### 1.1 LCD CUTTING UP TO 1:1 SIZE

STANDARD LCD			MODIFICATION LCD			INTERFACE
DISPLAY SIZE, INCH	DISPLAY AREA, INCH	RESOLUTION, PIXEL	DISPLAY SIZE, INCH	DISPLAY AREA, INCH	RESOLUTION, PIXEL	
8,4	6,7x5,0	640x480	7,1	5,0x5,0	480x480	LVDS
8,4	6,7x5,0	800x600	7,1	5,0x5,0	600x600	LVDS
8,4	6,7x5,0	1024x768	7,1	5,0x5,0	768x768	LVDS
10,4	8,3x6,2	1024x768	8,8	6,2x6,2	768x768	LVDS

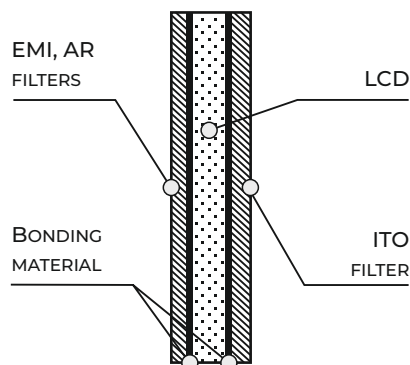
### 1.2 . CUSTOMIZED CUTTING UP TO VARIOUS SIZES 1:1 (SQUARE), 3:1 (NARROW SCREEN), ETC.

## 2. BONDING OF AR-FILTERS, ITO-HEATERS, EMI-FILTERS.

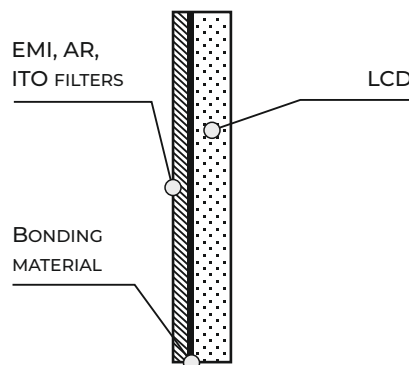
THIS TECHNOLOGY MAKES IT POSSIBLE TO:

- MAKE THE DISPLAYED INFORMATION SUNLIGHT READABLE DUE TO REACHING OF LOW SPECULAR REFLECTION INDEX (1...1,3%);
- IMPROVE DRAMATICALLY MECHANICAL RESISTANCE OF LCD MODULES;
- PROVIDE PARAMETERS OF ELECTROMAGNETIC COMPATIBILITY.

**EXAMPLE 1** – WITH TWO FILTERS (TWO BONDED LAYERS), ONE OF WHICH IS WITH ANTIREFLECTIVE COATING AND THE SECOND ONE – ITO.



**EXAMPLE 2** – WITH ONE COMBINED FILTER (AR+ITO+EMI).



AR – ANTI-REFLECTIVE COATING / EMI – ELECTROMAGNETIC INTERFERENCE / ITO – INDIUM TIN OXID

## 3. THE USE OF TOUCH SCREENS.

## 4. DEEP LCD RUGGEDIZATION WITH CASE REPLACEMENT.

## 5. PROVIDING COMPATIBILITY WITH NVIS.

## 6. BRIGHTNESS IMPROVEMENT.

## 7. LCD INTERFACE CONVERSION (TTL INTO LVDS, LVDS INTO TTL, ETC.).

CUSTOMIZED OPTIONS ARE PROVIDED UPON REQUEST





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