Limited Liability Company
«NPK MORSVYAZAVTOMATICA»

LCD DISPLAY
MV-1901F

Operating Manual

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TABLE OF CONTENT

INTRODUCTION

This operating manual (hereinafter referred to as the OM) covers structure, construction, specifications of LCD display type MV-1901F (hereinafter referred to as the Product), its components and instructions required for the device's correct and safe operation (intended use, technical service, current repair), as well as disposal information for its components.

Only those who have read operational documentation shall be permitted to operate with the Product.

Only those who have had general education in the area of electronic devices and read operational documentation shall be permitted to provide the Product's service.

1 DESCRIPTION AND OPERATION OF THE PRODUCT

1.1 DESCRIPTION

The Product is a multipurpose device which displays textual, graphic and other data as a component of navigation and automation systems, security video surveillance, etc.

1.2 TECHNICAL SPECIFICATIONS

1.2.1 Main parameters and technical specifications of the Product are represented in Table 1.

Table 1 – Technical specifications of the Product

Parameter	Value
Screen diagonal	19"
Screen resolution	1280 × 1024
Viewable area, mm	376 × 301
Viewing angle, not less than	178°
Contrast ratio	1000 : 1
Brightness, cd/m²	300
Supported interfaces, pcs.	1 × VGA, 1 × DVI, 1 × Composite, 1 × S-Video
Supply voltage	110 / 220 VAC
Protection degree	IP22
Power consumption, W	25
Operating temperature, °C	–25…+55
Temperature limit, °C	–55…+75
Weight, kg	9.7
Dimensions, mm	440 × 370 × 75

1.3 THE PRODUCT'S STRUCTURE AND OPERATION

1.3.1 Installation

The Product enables different panel and desk-top mounting.

If panel mounting is chosen, refer to the dimensional drawing to prepare the location where the Product is to be mounted to the control panel with fixing holes.

If desk-top mounting is chosen, attach the brackets to the Product casing, prepare the location and tighten M5 screws to fix the display to the brackets.

CAUTION!

Provide 160 mm free space from the detachable connection to connect the Product at mounting.

1.3.2 General description

The Product is manufactured in metal casing, where a power connector, audio port and video ports are generally located, see Figure 8.

For the description of connectors, see Table 2. Electrical connectors pinouts are represented in Tables 3 – 7.

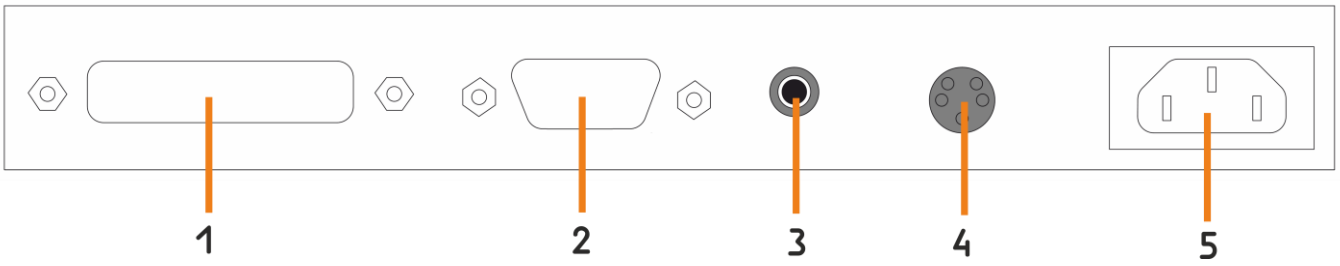


Figure 1 – Connectors layout depending on the diagonal

Table 2 – Description of the Product's connectors

N.	Description	Type
1	To connect DVI source	DVI-I
2	To connect VGA	DB-15F
3	To connect Composite	CVBS
4	To connect S-Video	S-Video
5	To connect AC voltage 110/220 V, 50 Hz	C13

Table 3 – Description of C13

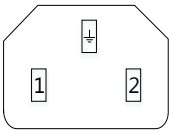
Type	Pin №	Description
 (view from soldering side)	1	L
	⏚	E (PE)
	2	N

Table 4 – Description of CVBS

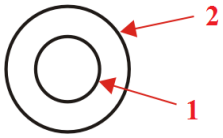
Type	Pin №	Description
	1	Signal
	2	Shield (GND)

Table 5 – Description of S-Video

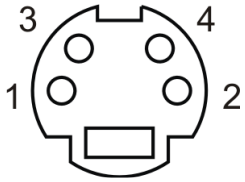
Тип разъема	№ контакта	Назначение
	1	GND
	2	GND
	3	Brightness
	4	Color

Table 6 – Description of DB-15F

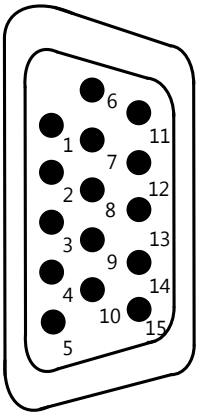
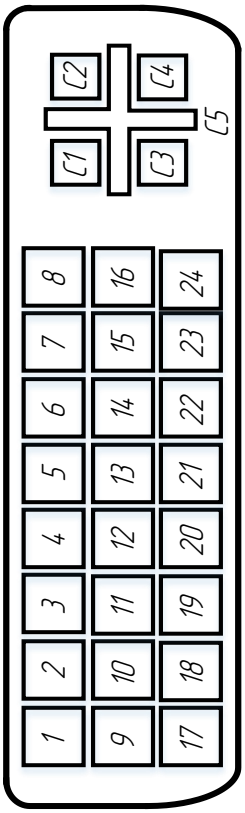
Type	Pin №	Description
 (pinout of unit from side of cable connection)	1	Red
	2	Green
	3	Blue
	4	Not used
	5	common (GND)
	6	GND_Red
	7	GND_Green
	8	GND_Blue
	9	+ 5 V
	10	GND
	11	GND
	12	data (SDA)
	13	HSYNC
	14	VSYNC
	15	Data sync (SCL)

Table 7 – Description of DVI-I connector pins

Type	Pin №	Description
 (pinout of unit from side of cable connection)	1	TMDS 2 -
	2	TMDS 2 +
	3	TMDS 2 Sh
	4	Not used
	5	Not used
	6	SCL
	7	SDA
	8	Not used
	9	TMDS 1 -
	10	TMDS 1 +
	11	TMDS 1 Sh
	12	Not used
	13	Not used
	14	+ 5 V
	15	GND
	16	HPD
	17	TMDS 0 -
	18	TMDS 0 +
	19	TMDS 0 Sh
	20	Not used
	21	Not used
	22	TMDS Cl Sh
	23	TMDS Cl +
	24	TMDS Cl -
	C1	Analog Red
	C2	Analog Green
	C3	Analog Blue
	C4	Analog HSYNC
	C5	Analog GND

1.3.3 Controls and indication of MV-xx04, MV-xx05 type

Controls, indication (LEDs) are also located on the switching card, see Figure 2.

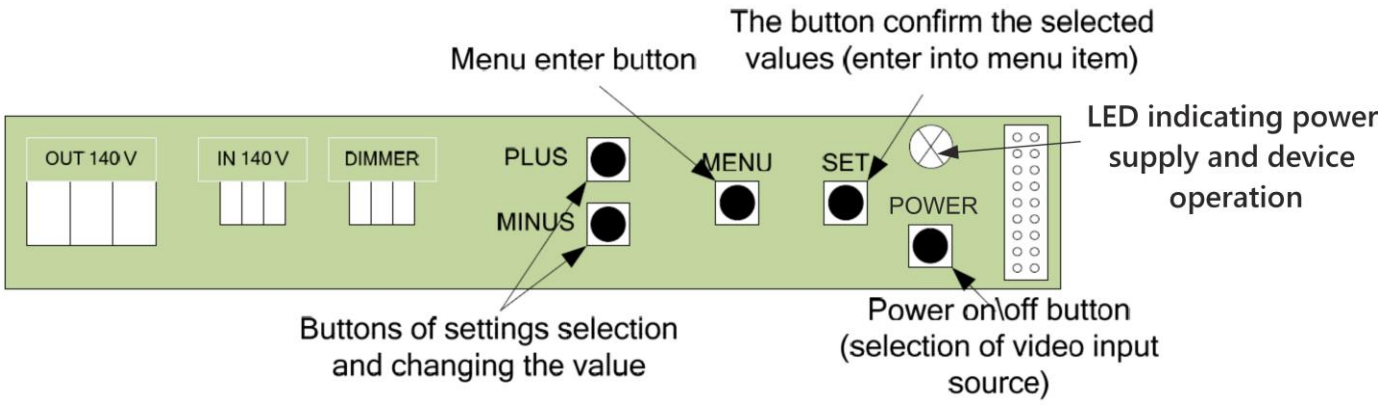


Figure 2 – Layout of controls, indication (LEDs) on the front panel of the Product

1.4 Measurement tools, instruments and appliances

Technical service (hereinafter – the TS) of the Product is carried out using tools and consumables represented in Table 8.

Table 8 – Number of consumables required for the TS

Name and identifier of consumables	Weight of consumables	Note
Cleaning cloth	0.10 kg	1To clean surfaces and parts of the device – use clean cloth; 2 To clean severe contamination – use alcohol-soaked cloth
Rectified hydrolytic technical ethyl alcohol	0.01 l	To soak cloth while removing contamination
Varnish	0.05 kg	To cover surfaces of the device in case of paint coating damage
Abrasive cloth	0.06 x 0.06 m	To polish surfaces of the device in case of paint coating damage

1.5 Marking and sealing

The Product has a marking plate of connectors and nameplate where a user can find a serial number, date of manufacturing, weight, protection degree, rated input voltage and power consumption.

1.6 Packaging

The Products are packed in a corrugated board box and inner packaging ensuring its transportation and storage at the warehouse.

Transport packaging is also used as a returnable packaging for transportation of the Device devices to the repair location and back. Packaging sealing is not provided.

2 INTENDED USE

2.1 OPERATIONAL CONSTRAINTS

The Product's installation site must be selected according to the operational constraints (operating temperature and protection degree).

CAUTION!

Installation site of the Product must not be less than 1 m from a magnetic compass

2.2 PREPARATION FOR THE PRODUCT'S OPERATION

2.2.1 Safety features

While preparing the Product to operation provide the visual check and make sure the mechanical damage is absent.

Connection of the Product to the power mains must be provided only considering input power requirements.

The Products must be switched off and grounded before connection.

The staff shall follow «The technical rules for operation of electric installation» and «Safety rules for operation of electric installation» while testing electrical circuits and insulation resistance.

2.2.2 Method of the visual check

Before switching the Product on, the staff shall:

– observe visually the cable integrity and initial position of the controls on the front panel;

– clean front panels from dust and dirt by clean soft cloth, if necessary;

– check reliable cable connections to the devices and proper grounding.

2.2.3 Switching the Product on instructions

While connecting the Product and preparing it for operation follow the steps below:

– make sure that power mains voltage conforms with input voltage requirements;

– transfer circuit breakers of main power switchboard to «OFF position»;

– connect power cable and interface cables to the Product;

– transfer circuit breakers of main power switchboard to «ON» position;

– press «Power» button on the front panel;

– adjust display brightness using brightness controls on the front panel of the Product.

Switching the Product off is carried out in the following order: switch off power supply using software tools, transfer circuit breakers of main power switchboard to «OFF» position, disconnect power cable from the Product.

2.3 USAGE OF THE PRODUCT

The Product is delivered with factory settings it is ready to be used after connection according to 2.2.

After switching the Product on, make sure that graphic data is displayed correctly and has a good quality.

3 TECHNICAL SERVICE OF THE PRODUCT

3.1 GENERAL INSTRUCTIONS

Technical Service of the Product (hereinafter – the TS) must be provided by staff, acquainted with its structure, composition and operational features.

To ensure reliable operation of the Product service personnel shall carry out all types of service:

– Technical service № 1 (TS-1) – semi-annual TS;

– Technical service № 2 (TS-2) – annual TS;

TS-1, TS-2 shall be provided by staff on the equipment in operation/running.

3.2 SAFETY FEATURES

While providing the TS the staff shall follow instructions, see 4.2.

3.3 MAINTENANCE ROUTINE

The list of works for all types of the Technical service is given in Table 9. Maintenance routine procedure is given in the checklists (CL), represented in Tables 10 – 11.

Table 9 – The list of the TS works

CL №	Name of work	TS type	
		TS-1	TS-2
1	Visual check of device	+	+
2	Product's operability test	–	+
Notes «+» – work is obligatory; «-» – work is not required.			

Table 10 – CL № 1. Visual check

To be done	Routine	Man-hours per 1 Device
Visually examine the Product	1 Check completeness and appearance of the Device; mechanical damage, paint defects must be absent; legends are to be read easily; 2 Clean all surfaces by clean cloth; 3 Remove severe contamination, parts of corrosion, oil spots: – from metal surfaces: by suds, avoiding its penetration inside the device; all surfaces clean dry by clean cloth and dry up; – from LED: by alcohol soaked cloth. Do not use hard cloth, paper, glass cleaning liquids or chemicals; Do not press hard on the surface while cleaning; Do not spray liquid directly to the surface of the Device; 4 In case of varnish damage clean it with abrasive cloth, then alcohol soaked cloth, cover with varnish and let dry	1 person 5 mins
Check reliability of cable connections and grounding buses	1 Make sure that connectors and attaching screws are fastened tight, provide further fastening if needed; 2 Check integrity (no mechanical damage) of leading cables which are visible	1 person 5 mins

Table 11 – CL №2. The Product's operability check

To be done	Routine	Man-hours per 1 Device
Check operability of the Product	1 Supply power to the product; 2 Check that screen brightness LED is working; if the picture is absent «Power» button and adjust brightness if necessary; 3 Access the Product's menu and provide settings using buttons located on the front panel; 4 Check picture display from all possible video signal sources in turns and make sure that each port transmits the picture	1 person 15 mins

3.4 PRESERVATION

The Product and set of operational documents are stored in preserved condition in Manufacturer's packaging boxes.

The time of represervation – 2 years from the Manufacturer's commissioning.

The represervation is done in heated rooms in the same order as the preservation.

The represerved Product, SPTA kit and documents are placed in package. The time of storage – 2 years.

4 INSTALLATION AND DISASSEMBLY ON THE PRODUCT

4.1 GENERAL DESCRIPTION

The Product's operability is controlled by the display brightness LED located on the front panel, and presence of image on the screen.

To test problems, see Table 1212.

If trouble shooting cannot be provided, contact manufacturer's service center.

4.2 SAFETY FEATURES

Repair works must be provided by personnel, examined in occupational safety and received qualification group not lower than 3.

The Product must be grounded before repair works.

Replacing defected parts, cards and modules when power of device under repair is ON is STRICTLY PROHIBITED.

It is PROHIBITED to put a poster "DO NOT switch on! Under Operation!", when power supply switch is in OFF position.

Installation, commissioning and repair works are PROHIBITED in the room, where less than 2 people present.

4.3 CURRENT REPAIR

The service personnel can provide repair works as given in Table 12.

All other defects shall be carried out only by the Manufacturer's specialists or the Manufacturer's representatives.

Table 12 – Possible problems / defects and troubleshooting

Problem / defect	Possible reasons	To do
Display's image is absent, brightness LED does not glow.	No voltage supplied from the power source	Check power cable connection to the Product
		Provide the voltage
Display's image is absent, brightness LED does not glow.	No connection with signal source or low picture brightness	Check the Product's connection to the signal source
		Mare sure that correct signal source was selected using the Product's menu
		Check the status of signal source
		Check that the cable has no broken or damaged (bent) connector pins
		Adjust the screen brightness using a brightness dimmer on the front panel or increase brightness and contrast using the menu
The picture is displayed incorrectly (curved, blurred, doubled, etc.)	Wrong screen settings	Reset to the factory stings using the menu
		Provide the settings using the menu
The picture is too bright or too pale	Wrong screen settings	Reset to the factory stings using the menu
		Adjust brightness by dimmer on the front panel or increase brightness and contrast using the menu
Picture colour fails	Wrong screen settings or connection error with the signal source	Adjust color settings using the screen menu
		Check the Product's connection to the signal source
		Check that video cable has no broken or damaged (bent) connector pins

5 STORAGE

The Product must be stored in packaging inside areas complying with the required storage conditions (+5 °C …+ 40 °C) with the concentration of dust, oil, moisture and aggressive impurities in the air within the required limits for the working areas of production facilities.

After storage or transportation of the Product below +10 °C, it must be unpacked only in heated premises and left in normal climate conditions for 12 hours beforehand.

6 TRANSPORTATION

The Product must be transported in the Manufacturer's transportation package in closed means of transport.

Types of shipment:

- motor vehicle and railroad transportation in closed means of transport (covered cars, multipurpose containers);

- air transportation (in sealed and heated compartments);

- sea transportation (in dry service premises).

The Product must be transported in compliance with transportation rules applicable for each means of transport.

During loading / unloading operations and transportation, the requirements indicated on warning labels on the boxes/packaging must be observed, and no impacts are permitted since they can affect the safety and performance of the Product.

Inside the means of transport, the packed device must be firmly secured / fastened.

7 DISPOSAL

New equipment, the parts of the Product damaged during operation, and any overage equipment must not be disposed as standard household wastes, since they contain the materials suitable for re-use.

Decommissioned and non-used components of the Product must be delivered to a special waste disposal center licensed by local authorities. You can also send an over-age equipment / unit to the manufacturer for its further disposal.

Proper disposal of Product components allows avoiding possible negative environmental and health impacts, and it also allows for proper restoration of components with substantial energy and resources saving.

During operation and upon completion of its service life, the equipment is not hazardous for health and environment

This unit must be disposed according to the rules applied to electronic devices (Federal Law dated 24.06.98 No. 89-FZ On Production and Consumption of Waste as amended of 30.12.2008 No.309-FZ)

Any products marked with a crossed trash bin must be disposed separately from standard house-hold wastes

8 WARRANTY

The Manufacturer is under warranty obligations in case of correct System exploitation according to the OM. In case of incorrect operation or service damage claims are not considered by the Manufacturer.

More information about warranty terms you can find on the official site of «NPK Morsvyazavtomatica» LLC, section Support.

Address and contacts of the Manufacturer's service centre:

«NPK Morsvyazavtomatica» LLC

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