

UNIVERSAL SYSTEM UNDER MONITOR DISPLAY

DM4030R01

Technical Manual DM4030D01

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Switch Table of configuration

IMPORTANT NOTE
USE OF THIS MANUAL

This manual makes reference to the Control Unit of the Display Monitor System (DM4001R01) and to the Tally Matrix Control Unit (MT4002R01). For its installation and putting the unit into operation, the user must check the corresponding manuals.

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1. THE DISPLAY UNITS INSTALLATION

The installation must be begun with the preparation of the interconnection wiring of all the display units with the control unit. For that, check Appendix A, in order to know the type of cable to use and the types of connectors.

The connection must begin in the control unit. Next, the first display unit must be connected. From this first display unit to the following one, and of this form with the consecutive ones. The distance between the control unit and the first display unit can not be more than 100 meters. The maximum distance between the display units will be 100 meters. The total distance between the control unit and the last display unit will not be more than 300 meters. For greater lengths check it with your authorized distributor who will tell you the way to solve it .

At the moment of the installation it will have to assign to each display unit an address. This is because the display units are connected through a bus RS485, and the display units need an identifier in order to communicate and to receive the opportune orders from the control unit. This address is settled down by means of dipswitches at the rear panel. Check the Appendix A-4 in order to determine the form to program the address.

It is recommendable that the first display unit begins with address 1. The following addresses will settle down by connection order: 2, 3 and so on. This simplifies to the programming duties and the displays configuration.

Unlike the display of the previous generation, it is necessary to program the type of display as simple, double or triple. For it, the user must program the dipswitches indicated with "OPTIONS" at the rear panel, with the value according to:

"OPTIONS"

" 0 0 0 0 " for simple display (one text).

" 0 0 0 1 " for double display (double text)

" 0 0 1 0 " for triple display (triple text)

The dipswitches located on the left, indicated with the label of TALLY CFG, all of them must be "0". Check the Tally options to configure.

There is a possibility of connecting the display unit with an equipment with TALLY input, for example a professional monitor. The maximum distance between the display unit and this equipment will be 100 meters. The connection can be done by “closure contact” or by “voltage activation”. **Carefulness**, when you use the option by “voltage activation”, do not short the power line; this can damage the display unit internally. In order to know the mode of connection and the connectors to use, check appendix A-1.

The following step is to check the communications between the control unit and the display units. See section “DISPLAY UNITS CONFIGURATION” in order to execute the test commands.

2. CONTROL UNIT INSTALLATION

Check the installation manual of the corresponding control unit.

3. DISPLAYS SYSTEM AND TALLYS CONTROL CONFIGURATION

3.1. Introduction.

Check the installation manual of the corresponding control unit.

3.2. The Menus Tree and the Keys.

Check the installation manual of the corresponding control unit.

3.3. The Display Units Verification.

Execute the Test function of present/display the addresses of the display units. The sequence of menus is: F3-F1-F2.

You will have to be careful **not to repeat any of the addresses** in the display units. This can cause conflicts in the communications and a badly operation of all RS485 network. For it, select a new address in those units whose address is repeated. See section 1 in order to do this operation.

In this point, it has to check that all the display units have received the order. It can occur that does not appear the message in any display. If this happens, check the connection of bus RS485 between the control unit and the first display unit. If in some of the display units appear and in some other not, is probable some problem in the connection between two of the display units. If the addresses of the display units have been programmed consecutively (See recommendation in section 1 of this manual), it will be able quickly to determine where is the problem.

This function of displaying the address, does not modify the programmed message and it is possible to be executed as many time the user wants.

In order to recover the original memorized messages in the display units, it is necessary to execute the function "Displays Reset" . The sequence of menus is: F1-F3-F1.

3.4. Programming of the messages in the display units.

Check the installation manual of the corresponding control unit.

4. TECHNICAL SPECIFICATIONS

DISPLAY UNIT DM4030R01

4.1. General Specifications:

- Power : 230 V_{AC} 32W By External Power Supply.
- Internal Power of 15V_{DC}
- Dimensions:
 - Width: 483 mm (rack 19")
 - Height: 45 mm (1RU)
 - Depth 160 mm
- Temperature Range: from 0 to 50 °C

4.2. Mechanical Specifications:

- **Width: 19" Standard rack.**
- **Height: 1 RU.**
- **Depth: 40 mm.**
- **Height of the digits: 17'78 mm.**

4.3. Function Features:

- Universal Under Monitor Display, has configuration capacity for a simple or single text presentation (14" & 20" monitors), a double text presentation(9" & 10" monitors) or a triple text (Triple 5" TFT Monitor), it can be configurable by the user.
- Presentation Features:
 - Simple Mode: up to 23 caractecs.
 - Double Mode: up to 10 caractecs.
 - Triple Mode: up to 8 caractecs.

All of them with ASCII alphanumeric digits presentation by dot matrix leds, graphic presentation as option. Possibility for several caractec sets.

- Red, Green or Amber colour can be selected by requeriment.

- Low profile unit (4 cms dept), it allows the mounting overlapping use in the front of the monitor, it helps to save space (1UR). With the mechanical kit DM4030K50 is possible to fold front these units in order to access to the monitor controls.
- Up to 3 Tally indicators with independent managements. It programmes the local or remote control. This under monitor display has 3 outputs by closure contact or by voltage activation in order to activate the associated tallys to the monitors.
- The display bright level control can be programmed by the user among 255 values.
- When the display is in standby and in case of enhancer with the tally activation, it is independent for each display zone, it depends on the SIMPLE, DOUBLE or TRIPLE mode, all these functions are controlled from the control unit.
- The unit can store up to 10 messages at in EEPROM memory.
- In case of the power off or a power failure, the last messages stored up must appears on the UMD.
- Individual control by RS232-RS422 bus, or Network bus control by RS485. It is able to connect up to 128 units, they are controlled by 2 control units simultaneously.
- Supply by external AC adapter to mains of 220V/ 50 Hz. Model: DM4500R01.
- As option, there is a possibility to be powered through network connection RS485 from the power unit DM4500R02. (It's able to power up to 30 display units).
- Identification of each display unit (up to 128), programmed by dipswitch, it is placed at the rear panel.
- It is 100% compatible with the old display units (DM4010 & DM4028) as well as with the old control unit (DM4000).
- There is an option with the Software Kit DM4030S10, the communication is through RS485 with digital input in Kroma monitors, serie BM53XX. This allow us:
 - Presentation of 8 audio stereo channels obtained from the embedded audio in the SDI video signal and showing it in vertical bars format.
 - Presentation of a LTC, it is embedded in the frame of SDI video signal.
 - Presentation of source identification code inserted in the data ancillary of the SDI frame video signal.
 For all these options **ARE NOT REQUIRED ADDITIONAL HARDWARE.**
- Options with additional hardware of combined text presentation and audio level average for monitoring of analog audio and digital AES-EBU.
- Any other additional options can be requested by you requeriment.

5. APPENDIX

5.1. APPENDIX A: CONNECTION DETAILS

5.2. APPENDIX A-1: CONNECTION DETAIL OF THE EXTERNAL TALLY CONNECTOR (UNITS DM4030)

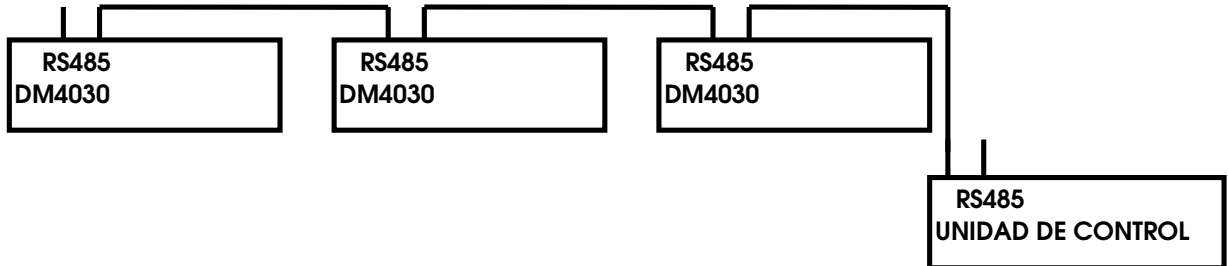
PIN	CONNECTION
9	GROUND (SHIELDING CONNECTOR)
3	COMMON WIRE OF THE POWER SUPPLY (SEE NOTE)
4	TALLY 1
6	TALLY 2
1	TALLY 3

NOTES:

1. Tally Outputs by closure contact. Maximum current of 400 mA.
2. Outputs by voltage: Maximum current of 50 mA.
3. Connector to use: MINI DIN 8 PINS.
4. This pin is the common one of the three relay contacts. With two dipswitches on the right labeled with "TALLY CFG", it can introduce a voltage of 15V for activation of tally by voltage.

5.3. APPENDIX A-2 CONNECTION DETAIL OF UKBUS RS485 BETWEEN THE DISPLAY UNITS DM4030 AND THE CONTROL UNIT.

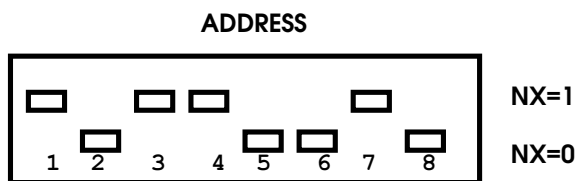
The connection is made in bus format. All the units have 2 connectors for the RS485: one as input and the other one as output (without distinction). So, they will be connecting one after the other, from the first display unit to the last one, and the last one with the control unit (see figure).



The maximum distance of the complete bus between the first display unit and the control unit will not be more than 300 meters. For greater lengths check it with your authorized distributor who will tell you the way to solve it .

5.4. APPENDIX A-4 CONFIGURATION DETAIL OF THE BUS RS485 ADDRESSES OF THE DISPLAY UNITS

Since the display units communicate through a shared bus RS485, each unit has a specific address. This one is programmed by means of the switchers, it is placed at the rear panel of the display units. Each display must have a unique address into the bus, in order to avoid conflicts of sharing of commands. The values that can take are between 1 and 120. It is recommended to use only the addresses from 1 to 63 for standard configurations of these systems. **The user does not have to use the addresses reserved for special functions 0 and from 121 to 127.** These are codified of binary form (See figure).



The address is calculated with the following formula:

$$\text{ADDRESS} = N1 \cdot 2^0 + N2 \cdot 2^1 + N3 \cdot 2^2 + N4 \cdot 2^3 + N5 \cdot 2^4 + N6 \cdot 2^5 + N7 \cdot 2^6 + N8 \cdot 2^7$$

For example, in the case of the figure, the value that takes the address is:

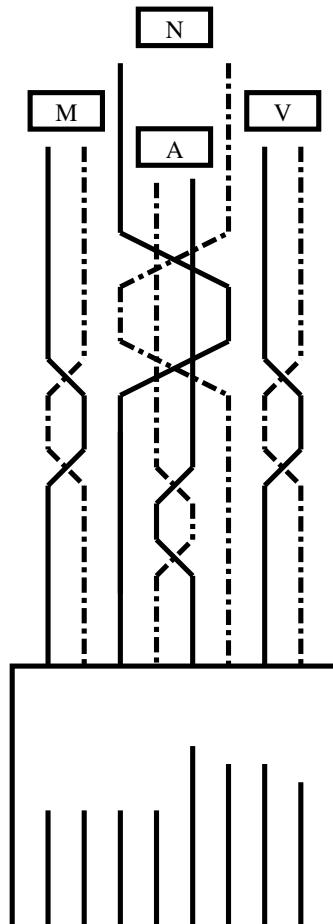
$$\begin{aligned} \text{ADDRESS} &= 1 \cdot 2^0 + 0 \cdot 2^1 + 1 \cdot 2^2 + 1 \cdot 2^3 + 0 \cdot 2^4 + 0 \cdot 2^5 + 1 \cdot 2^6 + 0 \cdot 2^7 \\ \text{ADDRESS} &= 1 + 0 + 4 + 8 + 0 + 0 + 64 + 0 = 77 \end{aligned}$$

5.5. APPENDIX A-5 CONNECTION DETAIL OF THE RS485 CONNECTOR FROM THE DISPLAY UNITS AND CONTROL UNIT DM4001

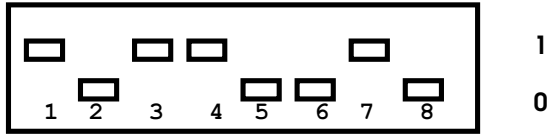
Pair: M = Brown
N = Orange
A = Blue
V = Green
(The dotted ones are the combined WHITE colour)

Cable: UTP Category 5
Connector: RJ 45 (8 pins)

Detail: The N and A pairs carry data. The M and V pairs carry power in the case of the corresponding option of power by cable.



OPTIONS



5.6. APPENDIX C: SCHEMATICS AND PART LIST

- **DM4030R01-1... UNDER MONITOR DISPLAY (RED COLOUR)**
- **DM4030R01-2 ... UNDER MONITOR DISPLAY (GREEN COLOUR)**
- **DM4030R01-3... UNDER MONITOR DISPLAY (AMBER COLOUR)**
- **DM4030R01-4... UNDER MONITOR DISPLAY (VU-METER MODE)**

Fast instructions how to install the power unit (DM4500) to the UMD's system

The DM4500 Unit is able to power up to 32 (DM4030) display units using the UKBUS wiring of communications. For it, it has 4 independent power supplies denominated ZONE 1, ZONE 2, ZONE 3, ZONE 4. Each one of them can be monitoring with 2 leds in the front panel: the green LED indicates voltage in the ZONE, the red LED means short circuit in the power, or an excess of load. As recommendation, each power supply is designed to power up to 8 displays, it depend on the load of each display, such as the number of illuminated characters and the bright level of each display. In each case it will be necessary to reconfigure the topology of the installation in order to adapt each ZONE to maximum of current that can provide.

Each ZONE has 2 connectors, in order to use the UKBUS loop. ONLY one of the connectors provide a voltage, labeled as POWER. The other is for continuing the loop. The recommendation is: to begin the loop connecting the control unit to the LINK connector of ZONE 1. From the POWER connector of ZONE 1 connect displays in proportional mode (if there are 20 displays, you have to install 5 displays in each ZONE). From the last display of ZONE 1 must be connected to the LINK of ZONE 2, and so on.

In the case of switched on some LED of power, an internal thermal fuse will go off. In order to rearm it it is necessary to disconnect the ZONE with problems and to wait some seconds, besides to solve the possible problem.