ModWRX: wireless receiver module

MODWRX module allows to handle, through the CONTATTO bus, up to a maximum of 8 wireless transmitters with ENOCEAN technology. The advantage of this technology is the availability of transmitters that, in addition to be wireless, are also battery-less, thus they do not need to be supplied by a battery.

The power supply is in facts provided by the conversion of the mechanical energy, due to the pushing or to releasing of the pushbutton, in electrical energy enough for the transmission of the telegram.

Since each transmitter features 4 inputs, then each ModWRX module can handle up to 32 points.

The transmitters normally have the shape of a pushbutton assembly with 2 rockers, thus featuring 4 commands. These pushbutton assemblies can be found on the market from several manufacturers, and then a large choice of styles and colors is available.

The pushbutton assemblies have a very small thickness and they can be also glued to the wall without any type of mural work; this system is thus particularly suitable when some command points have to be added to a CONTATTO system and there is not the possibility to place the bus cable in the desired location, or when the pushbutton assemblies must be applied to very thin walls or anyway to walls which cannot stand any type of work (e.g. glass walls).

When an application requires to transmit in wireless mode the status of some contacts that are not pushbuttons (e.g. end switches or similar devices), a transmitter module supplied by a small battery and coded TX4IWL is provided by DUEMMEGI; this module is suitable in all cases when the conversion of mechanical energy in electrical energy is not possible, thus the transmitter must be externally supplied. MODWRX module allows the receiving of these modules too.

More than one MODWRX module can be installed in the same Domino system, thus increasing the number of wireless points which can be handled.

ModWRX module can be used only in systems that uses MCP XT.

The module features a 5-way removable terminal block for the connection to the CONTATTO bus.

A green LED near to the bus connector informs about the power on condition. Two LEDs on the opposite side of the module monitor the several operating conditions (see the related paragraph). A button near to these two LEDs allows the erasing of the stored codes and the acquisition of new ones (see related paragraph).

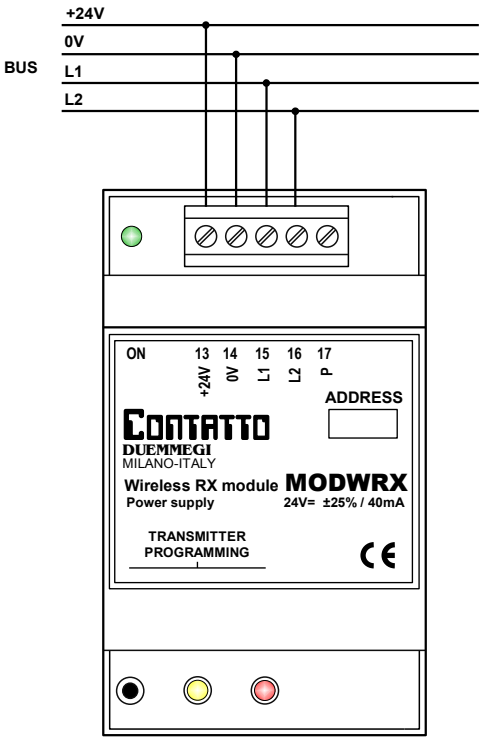
ModWRX module is housed in a standard DIN 3M box.

Address programming

ModWRX module takes 1 input address made by 4-channel 16-bit. The address must be assigned by FXPRO programmer. A white label on the front panel allows to annotate the assigned address for an immediate visual identification.

Module Connection

The following schematic diagram shows the connections to be made between ModWRX module and CONTATTO bus.



Acquiring the transmitters

Each ModWRX module takes in account only the transmitters whose code has been stored during the setting up. Each transmitter, in fact, features a well fixed identification code (more than 4 billions of different codes) distinguishing it from all the other ones. Each codes is referred to 4 pushbuttons (or inputs).

The memory erasing of ModWRX and the acquisition of the transmitters can be performed both by the proper pushbutton on the module, and by the configuration panel of MCP Visio program (release 2.1.0 or higher). This paragraph will describe the procedure by ModWRX, while a next paragraph will describe the procedure by MCP Visio.

Erasing the acquired codes

The first operation to perform, after having assigned an address to ModWRX module by FXPRO, is to erase the memory containing the codes of the transmitters that have been previously acquired (if any).

To perform this operation, follow these steps:

1. push and hold down the button of ModWRX module for at least 15 seconds, until the yellow LED lights in fixed mode
2. release the button
3. wait until the yellow LED switches off; at this point the memory of the module is erased

Acquiring the transmitter codes

The second operation to be performed is the acquisition of the identification codes of the transmitters which must be taken in account by ModWRX module.

To perform this operation follow these steps:

1. push and hold down the button of ModWRX for at least 5 seconds
2. release the button: the yellow LED will begin to blink (0.5s ON and 0.5s OFF)
3. push and release 3 consecutive times (3 pushing and 3 releasing) any button on the transmitter to be acquired (or open and close the same contact in the case of TX4IWL transmitter module); this operation must be executed while the yellow LED on ModWRX is blinking (5 minutes of times are available from any acquisition and the next one)
4. if the code of the transmitter has been accepted the yellow LED will be lighted for 2 seconds, then it will blink again; if instead the code of the transmitter is already stored in the memory of ModWRX, then the red LED will light for 1 second about
5. repeat the steps 3 and 4 for the other transmitters
6. when all the transmitters have been acquired, quit the acquisition procedure pushing briefly the button on ModWRX; anyway the acquisition mode will be automatically terminated after 5 minutes from the last acquisition

LEDs information

ModWRX module features two LEDs providing information on the operation of the wireless section as here described.

Red LED

- ✗ short blink: ModWRX module has received an input change from a valid transmitter
- ✗ ON for 1s: the code to be acquired is already stored in the memory (acquisition mode only)

Yellow LED

- ✗ OFF: normal operation
- ✗ fixed ON: ModWRX module is erasing the memory of the acquired codes
- ✗ blinking 0.5s ON and 0.5s OFF: ModWRX module is in acquisition mode
- ✗ fixed ON for 2 seconds: the code has been accepted

Information from ModWRX

As said before, ModWRX module takes up to 4 consecutive input addresses inside the CONTATTO bus. The meaning of input channels is the next:

Point	CH1	CH2	CH3	CH4
1	Pt. 1 TX1	Pt. 1 TX5	-	TX1 KO
2	Pt. 2 TX1	Pt. 2 TX5	-	TX2 KO
3	Pt. 3 TX1	Pt. 3 TX5	-	TX3 KO
4	Pt. 4 TX1	Pt. 4 TX5	-	TX4 KO
5	Pt. 1 TX2	Pt. 1 TX6	-	TX5 KO
6	Pt. 2 TX2	Pt. 2 TX6	-	TX6 KO
7	Pt. 3 TX2	Pt. 3 TX6	-	TX7 KO
8	Pt. 4 TX2	Pt. 4 TX6	-	TX8 KO
9	Pt. 1 TX3	Pt. 1 TX7	-	TX1 BL
10	Pt. 2 TX3	Pt. 2 TX7	-	TX2 BL
11	Pt. 3 TX3	Pt. 3 TX7	-	TX3 BL
12	Pt. 4 TX3	Pt. 4 TX7	-	TX4 BL
13	Pt. 1 TX4	Pt. 1 TX8	-	TX5 BL
14	Pt. 2 TX4	Pt. 2 TX8	-	TX6 BL
15	Pt. 3 TX4	Pt. 3 TX8	-	TX7 BL
16	Pt. 4 TX4	Pt. 4 TX8	-	TX8 BL

The expression “Pt. x TXy” related to **CH1** and **CH2** means that the related point of the given address of ModWRX module contains the status of the point x of the transmitter y. The numbering from 1 to 4 of the transmitters is in the same order as the transmitters themselves have been acquired (see related paragraph).

The channel **CH3** is not used at this moment.

The channel **CH4** gives the diagnostic of TW4IWL modules (battery supplied) installed in the system and acquired by ModWRX: the first 8-points (Txy KO) are activate if the relative TX4IWL has not performed any transmission for a time higher than 35 minutes. The others 8-points of CH4 are activate to inform that the related TX4IWL, even if operating, needs the replacement of the battery because near to be discharged.

Programming

The information provided by each input address of ModWRX module must be used in the programming of the CONTATTO system like any other real input point, thus using all the available programming functions.

For example, suppose that the application requires to switch ON and OFF, by Toggle function, 4 outputs from the button of the transmitter 7; the related equations will be:

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O21.1 = TI78:2.9
O21.2 = TI78:2.10
O21.3 = TI78:2.11
O21.4 = TI78:2.12
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In this example we have supposed that the address assigned to ModWRX module is 78 and the outputs to be controlled are those of output module 21.

Installation hints

The maximum communication range between the transmitters and the ModWRX receiver modules mainly depends on the transmitters themselves; for the transmitters using ENOCEAN technology (with or without battery), a range of 100 meters in open space is normally specified; this range is typically reduced to 30 meters inside buildings with walls made by cement, metal or similar materials. Before to install in definitive mode the transmitters and the receivers, execute some test on the installation.

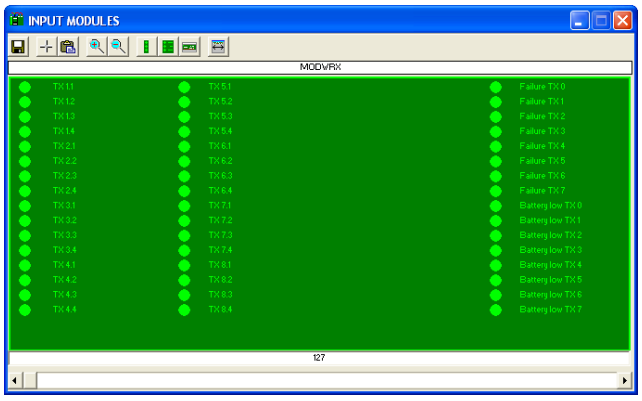
WARNING: *using metal frame for the wireless pushbutton assemblies may cause a significant reduction of the range; the use of plastic frame only is strongly recommended.*

The maximum communication range also depends on the location where the receiver has been installed. As said before, the receiver module ModWRX is housed in a plastic box for DIN rail; the receiving antenna is inside the box, therefore avoid to install the module inside full metallic cabinet that will reduce drastically the power of the received signal.

Avoid to install ModWRX module near to electronic devices that potentially can generate high frequency signals (e.g. computers, video systems, power supplies, alarm systems, mobile phones, etc.). The minimum distance from ModWRX module and potential disturbance sources may be 0,5 meters at least.

Mapping

ModWRX module is shown in the map of MCP Visio (release *2.1.1 or higher*) as 4-channel 16-bit module. The following figure shows the graphical representation of ModWRX in the map of MCP Visio.

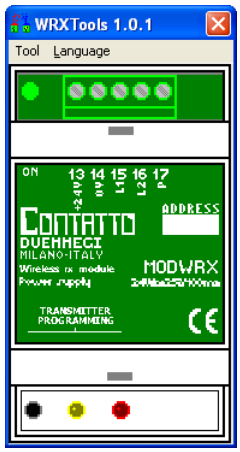


As for all other CONTATTO modules, the background of the group of modules is in green color if the module is connected and properly working, otherwise the background is in red color. As usual, each input is shown on the map in red or green color depending on the status of the related input.

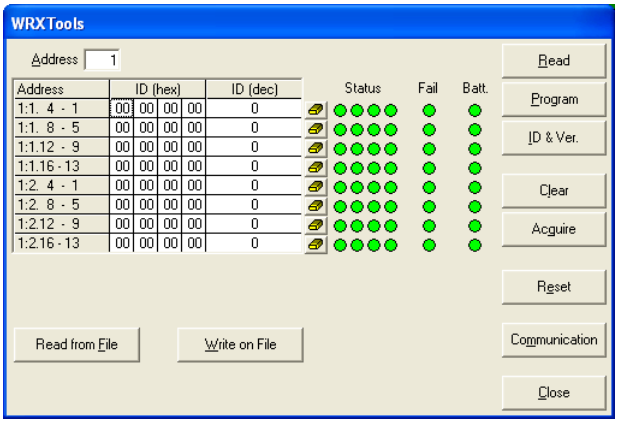
Setting up

MCP Visio program (release 2.1.0 or higher) provides a configuration panel called WRXTools; this panel allows to set up and check the ModWRX module in an easy and quick way. To open this configuration panel, select Configuration from the menu of MCP Visio and then MODWRX Configuration.

The window shown in the following figure will appear:



Select then Tool - Configuration, or press F2 to opening the configuration panel as shown in the next figure.



First of all, the address of ModWRX module to be configured has to be set writing its value in the Address text box, on the top left side of the panel. The column Address shows the 8 addresses taken by the module. At this point, the operations described in the following can be performed.

Reading the current configuration

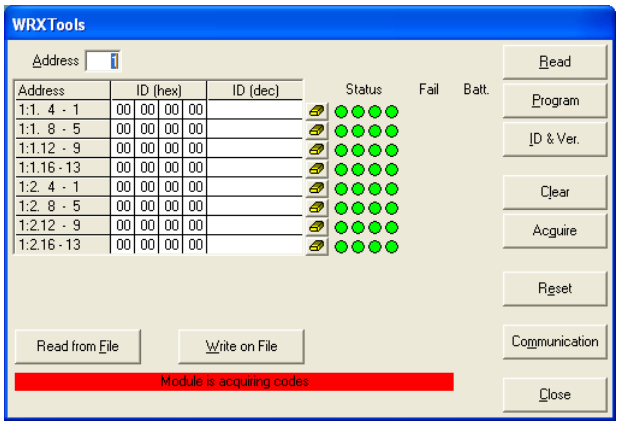
Push the button **Read**: the codes of the transmitters, if any, previously acquired will be shown in the table of the panel. The columns (hex) show the codes (4 numbers each code) in hexadecimal format, while the second column (dec) shows the same codes in decimal format.

Clearing the memory

Push the button **Clear** to erase the ModWRX module memory containing the codes of the transmitters, if any, previously acquired.

Acquisition

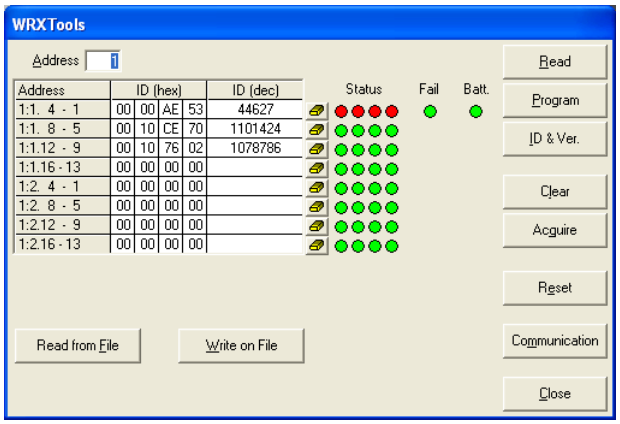
Push the button **Acquire** to start the acquisition of the identification codes of the transmitters which have to be taken in account by ModWRX module. The configuration panel will appear as in the following figure:



While the acquisition function is running, push and release 3 consecutive times (3 pushing and 3 releasing) any button on the transmitter to be acquired (or open and close the same contact in the case of TX4IWL transmitter module).

Reset

Push the button **Reset** to quit the code acquiring mode. The codes of acquired transmitters will be shown in the configuration panel.



Writing and reading configuration file

The configuration of ModWRX can be saved on a file (one file for each module) and then recalled by the buttons **Read from file File** and **Write on File** (Note: the address will not be saved). This feature can be useful when a ModWRX module has to be replaced: instead to redo the acquisition procedure, the new ModWRX can be configured recalling the saved file. Once the file has been opened, click on the button **Program** to send the codes shown on the window to ModWRX module.

Show firmware version

Push the button **ID & Ver.** to display the firmware version of ModWRX module.

Removing or replacing a transmitter

The button  allows to remove the code of the related transmitter. This is useful, for instance, when a fault transmitter has to be replaced. The transmitter will be removed from the memory of the module, thus freeing a location.

To acquire a new transmitter, perform the acquisition procedure: the new code will be placed in the first free location.

Diagnostic

The symbols referred as Status report the status of each one of the 4 inputs of the transmitters (a green symbol means point OFF, a red symbol means point ON).

The columns Fail and Batt report the diagnostic referred to TX4IWL modules (therefore battery supplied) or other transmitters installed in the system and acquired by ModWRX: the symbol **Fail** will be red colored if the related TX4IWL did not execute any transmission during the last 35 minutes. The symbol **Batt** will be red colored to inform that the related TX4IWL, even if operating, needs the replacement of the battery because near to be discharged. If ModWRX has not acquired any TX4IWL, the symbols Fail and Batt will not be shown.

Technical characteristics

Power supply (bus side)	24V ⎓ ± 25% SELV
Current consumption	40mA
Number of handled transmitters	8, for a total of 32 input points
Operating temperature	-10 ÷ +50 °C
Storage temperature	-30 ÷ +85 °C
Protection degree	IP20

Outline dimensions