

DFWRX: wireless receiver module

DFWRX module allows to handle, through the **Domino** bus, up to a maximum of 4 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 fact 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 Mod-WRX module can handle up to 16 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 **Domino** 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. DFWRX module allows the receiving of these modules too.

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

DFWRS only requires the connection to the 2 wires of the bus; as for almost all the module of the **Domino** family, the needed supply is derived from the bus itself.

On the same side of the bus terminal block, the module features the pushbutton for the assignment of the address and a green LED that is lighted when the module is ready to receive the address itself; this LED also flashes every 2 seconds about to signal that the module is properly supplied and operating. Removing the cover of the bus terminal block, a 3-way small connector (PRG) can be accessed, allowing the connection to the optional tester/programmer.

Two LEDs on the opposite side of the module monitor the several operating conditions (see the related paragraph). A pushbutton near to these LEDs allows the reset of previously acquired transmitters and the acquisition of new ones (see the related paragraph). DFWRX module takes, inside the **Domino** bus, up to 4 consecutive addresses, and so only a base address is required. *Note: the address assignment by DFPRO can be performed only if the bus is supplied by DFPRO power supply module.*



The effective number of used address depends on the number of acquired transmitters (1 address for each transmitter). A white label on the top panel allows the writing of the programmed module base address for an immediate visual identification. For more details about the assignment of the module address, refer to the related documentation.

DFWRX is housed in a DIN 3M box with reduced height.

Acquiring the transmitters

Each DFWRX 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 push-buttons (or inputs).

The memory erasing of DFWRX and the acquisition of the transmitters can be performed both by the proper pushbutton on the module, and by the configuration panel of BD-Tools program (release 6.1.2 or higher). This paragraph will describe the procedure by DFWRX, while a next paragraph will describe the procedure by BDTools.

Erasing the acquired codes

The first operation to perform, after having assigned an address to DFWRX module, 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 DFWRX 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 DFWRX module.

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To perform this operation follow these steps:

1. push and hold down the button of DFWRX 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 DFWRX 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 DFWRX, 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 DFWRX; anyway the acquisition mode will be automatically terminated after 5 minutes from the last acquisition

LEDs information

DFWRX module features two LEDs providing information about the operation of the wireless section as here described.

Red LED

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

Yellow LED

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

Information from DFWRX

As said before, DFWRX module takes, inside the **Domino** bus, up to 4 consecutive input addresses.

Said ADD the base address assigned to the module and assuming that 4 transmitters have been acquired, the meaning of the points of the 4 addresses of DFWRX module is the following:

Point	ADD	ADD + 1	ADD + 2	ADD + 3
1	Pt. 1 TX1	Pt. 1 TX2	Pt. 1 TX3	Pt. 1 TX4
2	Pt. 2 TX1	Pt. 2 TX2	Pt. 2 TX3	Pt. 2 TX4
3	Pt. 3 TX1	Pt. 3 TX2	Pt. 3 TX3	Pt. 3 TX4
4	Pt. 4 TX1	Pt. 4 TX2	Pt. 4 TX3	Pt. 4 TX4
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	TX1 BL	TX2 BL	TX3 BL	TX4 BL
14	TX1 KO	TX2 KO	TX3 KO	TX4 KO
15	-	-	-	-
16	-	-	-	-

The expression "Pt. x TXy" means that the related point of the given address of DFWRX 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 points 13 and 14 of each address of DFWRX report the diagnostic information related to TX4IWL module (battery supplied) installed in the system and acquired: the points TXy KO will be activated if the related TX4IWL has not performed any transmission for more than 35 minutes. The points Txy BL will be activated 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 DFWRX module must be used in the programming of the **Domino** system like any other real input point, thus using all the available programming functions.

For instance, suppose that the application requires to switch ON and OFF 4 outputs from 4 wireless pushbuttons, using the Toggle function; also suppose that the transmitter performing this function is the number 3 and the DFWRX has the base address 78. The equation to be loaded in the output module (with address 21 for instance) will be then:

O21.1 = TI80.1
O21.2 = TI80.2
O21.3 = TI80.3
O21.4 = TI80.4

In fact, the third transmitter acquired in DFWRX whose base address is 78 is mapped at address 80.

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Installation hints

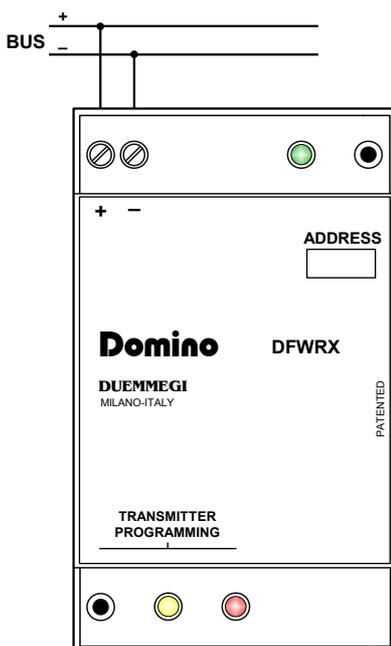
The maximum communication range between the transmitters and the DFWRX receiver modules mainly depends on the transmitters themselves; for the transmitters using ENOCEAN technology (with or without battery) a range of 100 meters in open space is normally specified; this range is typically reduced to 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 range also depends on the location where the receiver has been installed. As said before, the receiver module DFWRX 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. DFWRX module, thanks to the reduced height of the housing, can be installed also in the junction boxes, taking in account the electrical safety in respect to dangerous voltages if present in the same junction box; in this case too, be sure that the cover of the junction box be not made by metallic material. Avoid to install DFWRX 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 DFWRX module and potential disturbance sources may be 0,5 meters at least.

Module Connection

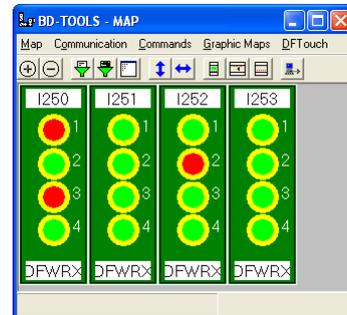
DFWRX module, for its proper operation, only requires the connection to the **Domino** bus. The following schematic diagram shows the connections to be executed.



Note: DFWRX module has a “weight”, from the point of view of current consumption, equal to 2 modules. This means that, when evaluating the amount of modules which can be sustained by a single DFPW2 power supply, each DFWRX must be considered equivalent to 2 standard Domino modules.

Mapping

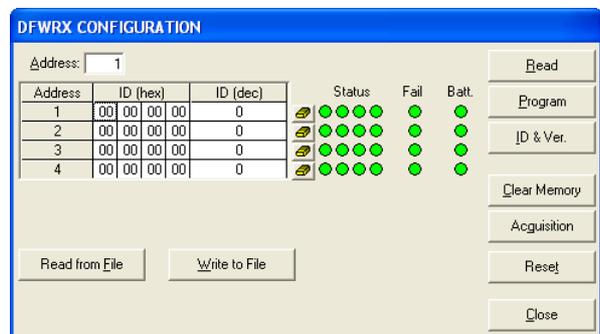
DFWRX module is shown in the map of BDTools (release 6.1.2 or higher) as many modules as the addresses that DFWRX is taking (as said before, the number of taken addresses is equal to the number of acquired transmitters, with a maximum of 4). The following figure shows the graphical representation of DFWRX in the map of BDTools.



As for all other **Domino** 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

BDTools program (release 6.1.2 or higher) allows to set up and check DFWRX module in an easy and quick way. To open this configuration panel, select Programming from the menu of BDTools and then MODWRX Configuration. The window shown in the following window will appear:



First of all, the address of DFWRX 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 4 addresses taken by the module. At this point, the operations described in the following can be performed.

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Reading the current configuration

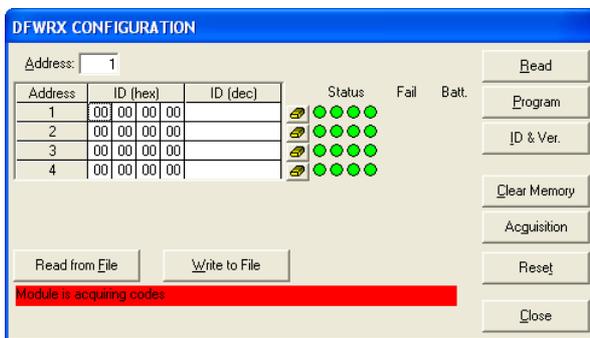
Push the button **Read**: the codes of the transmitters, if any, previously acquired will be shown in the table of the panel. The columns (hex) show the codes (4 numbers each code) in hexadecimal format, while the second column (dec) shows the same codes in decimal format.

Clearing the memory

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

Acquisition

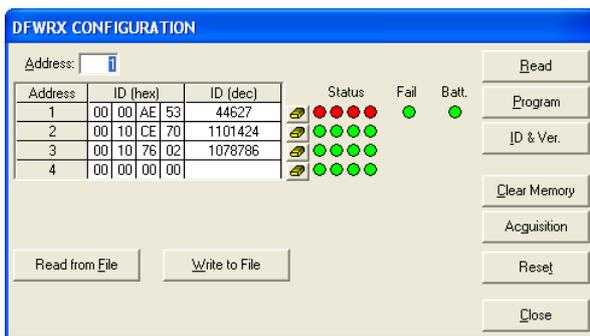
Push the button **Acquisition** to start the acquisition of the identification codes of the transmitters which have to be taken in account by DFWRX module. The configuration panel will appear as in the following figure:



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 DFWRX can be saved on a file (one file for each module) and then recalled by the buttons **Rad from file File** and **Write to File** (Note: the address will not be saved). This feature can be useful when a DFWRX module has to be replaced: instead to redo the acquisition procedure, the new DFWRX 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 DFWRX module.

Show firmware version

Push the button **ID & Ver.** to display the firmware version of DFWRX 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 DFWRX: 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 DFWRX has not acquired any TX4IWL, the symbols Fail and Batt will not be shown.

Technical characteristics

Power supply (bus side)	By specific centralized power supply mod. DFPW2
Current consumption	Equivalent to 2 standard Domino modules
Number of handled transmitters	4, for a total of 16 input points
Operating temperature	-5 ÷ +50 °C
Storage temperature	-20 ÷ +70 °C
Protection degree	IP20

Outline dimensions

