



Predix™
Microwave
Barrier

Installation Guide and
Operating Manual

Dear Customer!

Thank you for choosing our product!

Before installation and use, please read this Installation Guide and Operating Manual carefully and thoroughly, so that you can take safe and full advantage of all features of the product.

This manual contains information about the design, operation, application and technical parameters of the **Predix™** Microwave Barrier. Instructions for its proper installation and use are also included in the manual.

Note: Installation of the product MUST be done by qualified personnel. Installer must follow local laws, statutes and regulations. Manufacturer or retailer will take no responsibility, nor assume any liability, for damage or injury caused by the faulty installation or misuse of the product. ANY modification or maintenance done by unqualified or unauthorized personnel could damage the product.

Note: Manufacturer continually refines the product to ensure optimal performance. Specifications subject to change without notice. As a result, temporary minor discrepancies between the actual device and that described in the contents of this manual may occur. Any such differences will not affect the intended operation of the device.

Disclaimer

The manufacturer/distributor reserves the right to revise any content in this manual at any time. While due diligence has been taken to ensure correct and comprehensive content, the manufacturer/distributor does not warrant or assume any legal liability whatsoever for the failure of any user of the product to follow the instructions, recommendations and guidelines contained in this manual.

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PRODUCT INVENTORY

| <u>Item</u> | <u>Quantity</u> |
|---------------------------------------------------------------------------------|------------------------|
| Transmitter unit kit | 1 |
| Receiver unit kit | 1 |
| Mounting hardware set for attaching the transmitter and receiver units to posts | 2 |
| Protective cable hose | 2*3 ft./0.9 m |
| Installation Guide and Operating Manual | 1 |

Note: Power supply is not included.

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INTRODUCTION

This operating manual contains information on the function, assembly, adjustment, operating principle, technical features and composition of the **Predix™** Microwave Barrier and its implementation versions (hereafter referred to as 'the detector'), as well as its deployment and operation.

INTENDED USE

The product is designed for use as part of an electronic security system to ensure the early detection of an intruder penetrating a protected site.

SAFE USE

During preparation of the product for use, as well as during any maintenance undertaken while it is in actual operational use, appropriate technical safety precautions must be taken, and appropriate technical safety rules observed, that are designed to ensure safe installation, maintenance and operation of low-voltage electrical devices.

The emissions level of the transmitter unit of the product, in accordance with the effective norms for the personal safety of those who are not involved in the actual installation of the product, allows its safe continuous operation in its specific intended use, as detailed in this manual.

MODELS

| | |
|--------------------|--------------------------------------|
| Predix™-50 | 164 ft. (50-meter) coverage variant |
| Predix™-100 | 328 ft. (100-meter) coverage variant |
| Predix™-200 | 656 ft. (200-meter) coverage variant |
| Predix™-300 | 984 ft. (300-meter) coverage variant |

PERFORMANCE CHARACTERISTICS AND FEATURES

The detector can function in areas with long grass or of uneven surfaces up to a height or height variance of 1 ft. (0.3 m) under the conditions specified below.

The detector meets a climatic implementation standard of temperatures ranging from 233°K through 338°K (from -40°F through +147°F, -40°C through +65°C), and also meets the European 'CE' safety standard.

The detector performs uninterruptedly, remains fully operational and does not generate an alarm signal under the following conditions:

- exposure to rain and snow – up to an intensity of 1.57 in./h (40 mm/h);
- exposure to sunlight;
- exposure to wind – up to a velocity of 67 mph (30 m/s);
- surface unevenness – up to a variation of 1 ft. (0.3 m);
- grass cover – up to a height of 1 ft. (0.3 m);
- snow cover, uncleared – up to a height of 1 ft. (0.3 m) – where the snow cover is higher than 1 ft. (0.3 m), the detection zone must be cleared.;

The detector is able to operate properly, and does not generate false alarms, in the event of any of the following disparate circumstances:

- a) movement of a person no closer than the following distance to the detection zone axis (an imaginary straight line extending from the transmitter unit center to the receiver unit center) of an individually protected segment:
 - 3.28 ft. (1.0 m) for a protected segment length of up to 164 ft. (50 m)
 - 3.94 ft. (1.2 m) for a protected segment length of from 165-328 ft. (51-100 m)
 - 5.91 ft. (1.8 m) for a protected segment length of from 329-656 ft. (101-200 m)
 - 6.56 ft. (2.0 m) for a protected segment length of from 657-984 ft. (201-300 m);
- b) movement of a motor vehicle no closer than the following distance to the detection zone axis of an individually protected segment:
 - 7.22 ft. (2.2 m) for a protected segment length of up to 164 ft. (50 m)
 - 8.20 ft. (2.5m) for a protected segment length of from 165-328 ft. (51-100 m)
 - 9.19 ft. (2.8 m) for a protected segment length of from 329-656 ft. (101-200 m)
 - 9.84 ft. (3.0 m) for a protected segment length of from 657-984 ft. (201-300 m);
- c) penetration of the detection zone by single small animals (e.g., birds) no closer than 9.84 ft. (3 m) to the transmitter unit or receiver unit of an individually protected segment;
- d) radiated emissions of 433 MHz-range radio devices and cellular telephones no closer than 1.64 ft. (0.5 m) to the transmitter unit or receiver unit.

The detector enables the adjustment of all parameters and signals with the aid of the tuning software running on a personal computer. The detector can be adjusted to modify the parameters of the operating signal – specifically, of the frequency channel – in order to eliminate possible mutual interference of adjacent detectors. It is therefore possible to set up multiple detectors in parallel.

The detector addresses a malfunction by disconnecting the outputs of the terminal control relay until the elimination of the malfunction when:

- a random, unanticipated chance malfunction occurs at the transmitter unit or receiver unit;
- an act of sabotage of the signal emission of the transmitter unit or of the signal reception of the receiver unit is attempted by the deliberate employment of radio-reflecting, radio-absorbing or other signal-interfering or signal-manipulating materials or devices, or by the deliberate severance of its power supply.

Further, the LEDs of the operational receiver unit will provide an additional visual indication by flashing momentarily under the following circumstances:

- if an alarm signal is generated, the LEDs will flash for 5 seconds;
- if a lack of adequate signal strength is detected, an outage of the transmitter unit or receiver unit is detected, interference with the signal by a powerful source of radio noise is detected, and in certain other instances, the LEDs will flash for more than 30 seconds.

The detector is protected against possible reverse polarity of the supply voltage due to faulty installation, and against spikes with a voltage up to 1000 V of up to 1 ms generated in power lines during storms.

It is recommended that the electric supply of the detector come from a stabilized source of constant current with a nominal voltage from 12-36 VDC at a fluctuation not higher than 0.1V.

GENERAL OPERATING PRINCIPLES

The transmitter unit and receiver unit are placed at opposite ends of the area to be protected. The transmitter unit emits electromagnetic waves in the direction of the receiver unit. The receiver unit receives these waves, converts them into an electric signal, and analyzes this signal.

An intruder who penetrates the detection zone – either at full height or bent down – triggers the modulation of the signal received by the receiver unit. The depth of the modulation and the form of the signal depend on the size and mass of the intruder, the place where the area is penetrated, the relief of the area and the speed of the intruder's movement. The detector in turn signals the generation of an alarm by opening the output contacts of the terminal control relay.

A special feature of the design, in conformance with the intended functional properties of the detector, is the very narrow detection zone in the direction of the antennas, due to its 'K'-band (24 GHz) operating frequency range. Use of this comparatively high operating frequency band not only contributes to the narrow width of the detection zone, but also ensures higher sensitivity to moving objects in the direct vicinity of the detection zone axis.

A sample view of the detection zone profile of a 984 ft. (300 m)-long segment is shown in **Figure 1**.

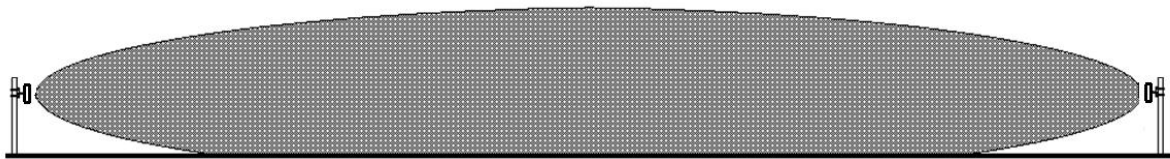


Figure 1 – Sample view of the detection zone profile

The detector has two modes for the determination of a proper detection threshold level: 'auto' and manual. In 'auto' mode, the processor determines the optimal threshold level for the detection of intruders penetrating the detection zone on a ground surface. In manual mode, the optimal detection threshold level is explicitly specified by the operator. As a rule, the need for manual adjustment arises in the event of a significant operational variation from the routine operating conditions specified in this manual.

It should be noted that, in 'auto' mode, the optimal detection threshold level is determined in dB in relation to the average strength of the radio signal received. The detector automatically adapts to gradual changes in the received radio signal's average strength resulting from slow changes in weather conditions.

SELECTING THE INSTALLATION LOCATION

Attention! The safety and reliability of the operation of the detector depend on the strict observation of the following requirements.

The presence of water due to overflow/spillage/leakage/seepage/etc. from nearby structures (e.g., roofs, etc.) should be avoided in the direct vicinity of the detector units (in the direction of the emission, no closer than 16.40 ft. (5 m); perpendicularly to the direction of the emission, no closer than 0.82 ft. (0.25 m)).

The preparation and maintenance of an exclusion zone, where the presence of bushes and branches of trees, as well as of big, immovable objects (e.g., buildings, etc.) – see **Comment** below – is not allowed, is necessary. The presence or motion of other movable objects (tractors, people, animals, etc.) is also not permitted in the exclusion zone. The recommended width of the exclusion zone for various detector segment lengths is shown below.

The horizontal distance from the detection zone axis to the edge of the exclusion zone must be:

- at least 3.94 ft. (1.2 m) for a segment with a length of up to 164 ft. (50 m);
- at least 4.92 ft. (1.5 m) for a segment with a length of from 165-328 ft. (51-100 m);
- at least 6.56 ft. (2.0 m) for a segment with a length of from 329-656 ft. (101-200 m);
- at least 8.20 ft. (2.5 m) for a segment with a length of from 657-984 ft. (201-300 m).

In the exclusion zone, optimally the maximum height variation between bare ground and that with snow or long grass cover should not exceed 1 ft. (0.3 m). Note – modified effective use of the detector is still possible in conditions of greater height variation, e.g., in situations where it is conceivable that an intruder might attempt to evade detection by using higher areas of the snow cover itself for concealment of approach. In such cases, it may be necessary to alter the generally recommended height of installation of the detector units; however, the **Note** below should always be given due consideration.

Comment – Within the exclusion zone, there should be absolutely no presence of non-radio transparent (e.g., stone, metal, ferroconcrete, etc.) natural or man-made objects like boulders, walls, barriers or other large stationary entities which might conceivably produce signal disturbances such as noise or reflection.

The presence of nearby walkways, bikeways, roadways, railways, etc., forested tracts, and large, immovable objects and structures must be at a distance from the detector of no less than twice the width of the exclusion zone itself. In the event of subsection of the detector or immediately adjacent objects to vibration caused by passing traffic, the appropriate distance of the detector therefrom must be determined by trial-and-error.

In case of installation near power lines, the detector units should be placed no closer than 16.40 ft. (5 m) to lines of a voltage up to 35 kV, and no closer than 32.81 ft. (10 m) to lines of a higher voltage up to 500 kV. It is also recommended that, if practical, any cabling connected to the detector units be buried underground in such circumstances.

Note: If the above requirements are not strictly observed, the operating performance of the detector may not be optimal. In the absence of such compliance with said requirements, the determination of whether the continued use of the detector under the existing conditions is appropriate should be dictated by the actual performance experienced.

MOUNTING THE DETECTOR

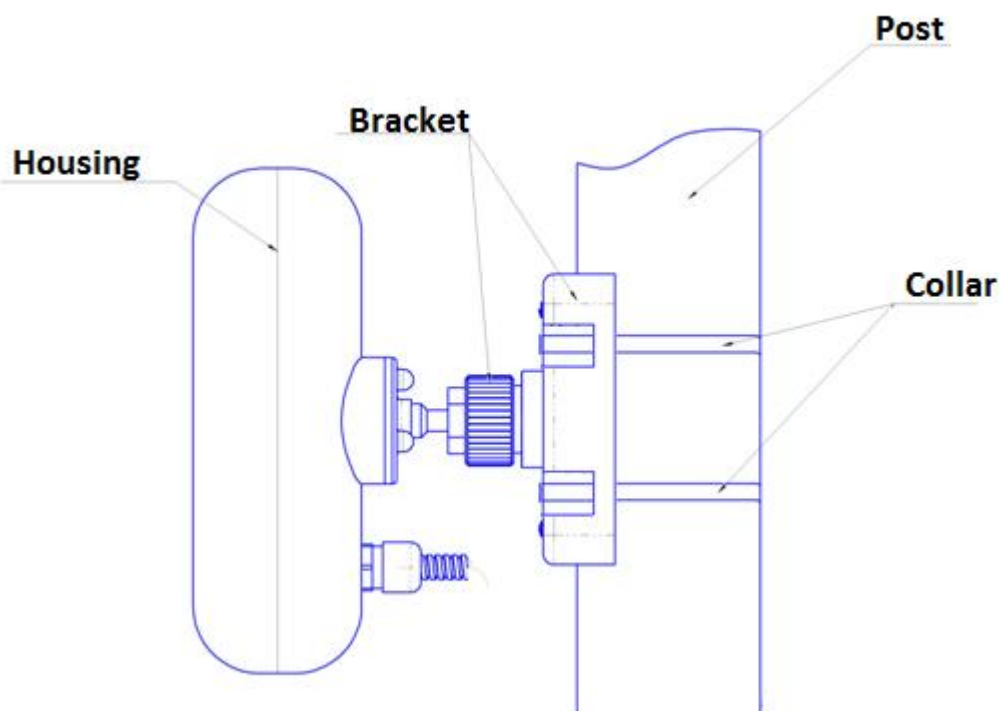
In terms of its physical configuration, the final assembled detector is comprised of two oppositely-placed separate units – the transmitter unit and receiver unit – which are identical in size and appearance. To perform proper physical orientation of the units, it is necessary first to loosen their fixing nuts, and then to tighten them after final adjustment. Firm attachment of the units on recommended round supporting posts is done with the aid of the mounting hardware. The recommended diameter of the posts is 2-3½ in. (5.1-8.9 cm). It is recommended to bury the connecting cables in the ground.

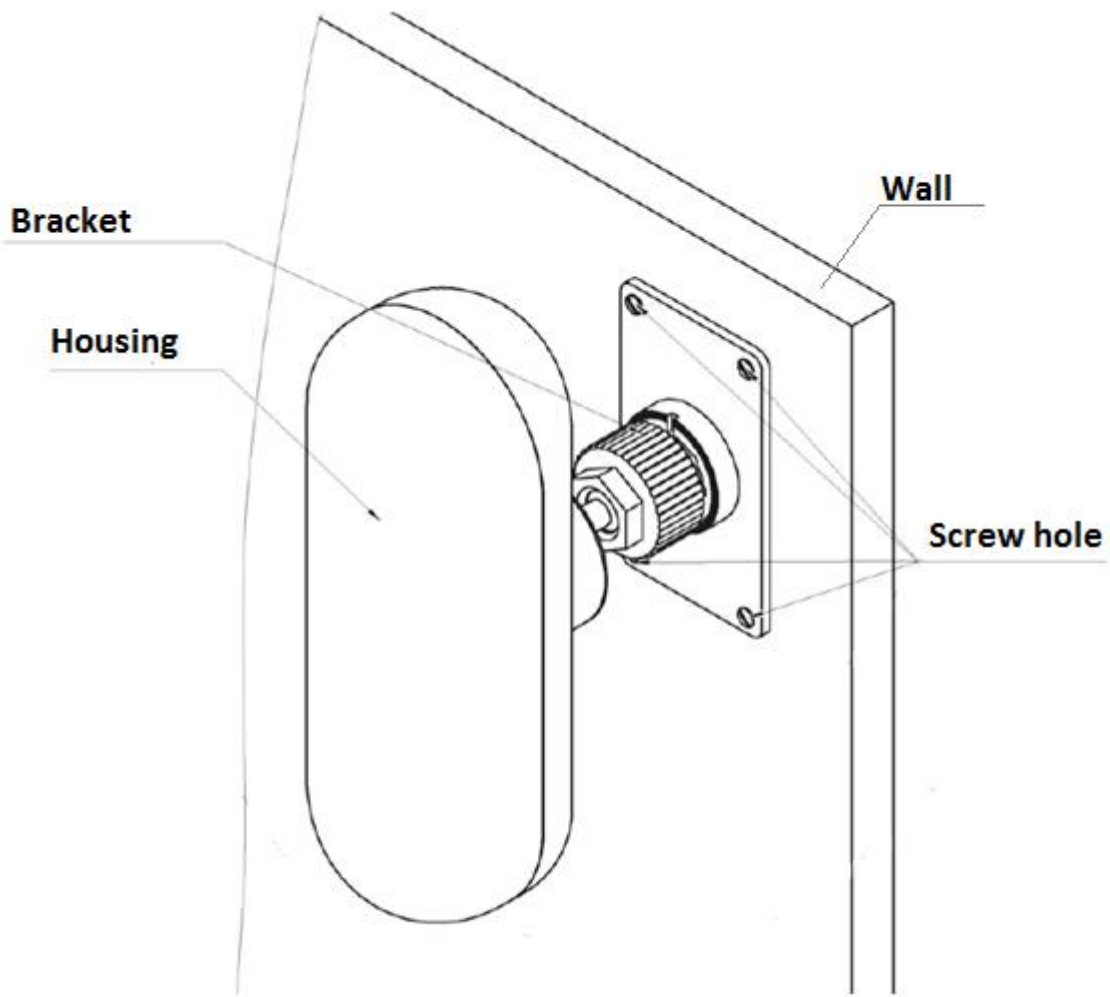
On existing soft ground or ground susceptible to periodic softness, the posts must be placed in foundations. The type and dimensions of the foundations should be determined in view of the type of soil and characteristic weather conditions at the site, in order to establish and maintain firm and steady support of the units during installation, adjustment and actual operation.

In areas with little snow, the section of the posts remaining above the ground should be at least 3.61 ft. (1.1 m) high. In places where the height of the snow cover may exceed 1.64 ft. (0.5 m), the section of the posts remaining above the ground should be at least 4.92 ft. (1.5 m) high.

The installation of the units must allow free access to their adjustment controls and fastening elements. They must remain accessible for special maintenance needs as well as for routine seasonal adjustments. The initial height at which the units should be positioned before further adjustment is 2.62 ft. (0.8 m), measured from the ground surface to the center of the unit. The brackets should be positioned on the posts so that the emission of the transmitter unit is directed toward the receiver unit.

Each unit must be fastened to its respective post with the help of two collars (where posts of asbestos cement are used, it is necessary to replace the supplied collars).





INITIAL SET-UP

Switch on the power supply of the detector, and check its voltage at the corresponding outputs of the units. The voltage can be checked by any device that provides such measurement. The measured value, taking into account the required reserve for usage, must be between 12-36 V.

After the power supply is switched on, it is necessary to perform the initial adjustment of the detector.

To perform the initial physical set-up of the detector, first loosen the fixing nuts of the transmitter unit and receiver unit.

Then, after confirmation that the units are set to the same operating frequency, establish a maximal initial working signal level by slowly and gradually orienting the transmitter unit and receiver unit to face each other via line-of-sight positioning.

ATTENTION! During the software adjustment process, until 'Finish' is clicked (see final step of '**Programming the receiver**' in the **APPENDIX** below), the detector may temporarily generate an alarm signal. This can occur if a detector incorporating v. 3.7 or later version of the firmware is used: the alarm relay then remains in a closed position during programming of the receiver.

Upon completion of the initial adjustment, the fixing nuts of the units must be tightened, with care taken not to allow the units to change position and thereby possibly degrade the already-established maximal initial working signal level.

See also '**APPENDIX – SOFTWARE CONFIGURATION AND PROGRAMMING PROCEDURES**' below.

OPERATING FREQUENCY ADJUSTMENT

The detector has 250 independent frequency channels (1-250) available. The difference in frequency between adjacent channels is 1 MHz. The complete range of available channels comprises 24.001-24.250 GHz. The nominal operating frequency of channel 1 is 24.001 GHz, that of channel 10 is 24.010 GHz, and that of channel 250 is 24.250 GHz. The selection of a frequency channel is made with the help of tuning software. For proper operation of the detector, it is essential to specify the same frequency channel for both the transmitter unit and the receiver unit.

The following frequency channel-related operational practicality must be taken into account when installing multiple detectors in close physical proximity to one another, e.g., in a parallel configuration: Although the nominal transmission frequency of a given transmitter unit may be – for example – 24.150 GHz, its signal is receivable within an actual frequency range of 24.144-24.156 GHz.

It is therefore recommended that, in multiple-detector configurations, the operating frequency channels of the detectors be set as far apart as possible by spacing them at generous intervals across the entire available (1-250) channel range.

See also '[APPENDIX – SOFTWARE CONFIGURATION AND PROGRAMMING PROCEDURES](#)' below.

DETECTION SPEED ADJUSTMENT

An important feature of the processing algorithm of the detector is its ability to evaluate the likely maximum speed at which an intruder could reasonably be anticipated to penetrate the detection zone in relation to the actual penetration speed of the intruder. The specification of the associated evaluation parameter is made by the user, depending on the physical characteristics of the protected area.

Three values for the highest anticipated intrusion speed can be specified in the alarm system: ~1.64 ft./0.5 m/s; ~6.56 ft./2 m/s; ~32.81 ft./10 m/s. Recommendations for the setting of this parameter are shown in **Table 1**.

Table 1

| Operating environment of the detector | Recommended value for the upper detecting speed |
|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Open terrain, without any obstacle hindering the movement of an intruder | “high” (~32.81 ft./10 m/s) |
| Partially physically protected perimeter (low fence, limited approach space near buildings and walls, shrubbery, etc.) | “medium” (~6.56 ft./2 m/s) |
| Fully physically protected perimeter (wall, high fence, etc., where the anticipated penetration speed of an intruder is significantly lower) | “low” (~1.64 ft./0.5 m/s) |

Specifying an appropriate value can result in substantial reduction of the likelihood of erroneous responses by the alarm system, i.e., the frequency of false alarms generated by birds and other potentially disturbing moving objects.

See also '[APPENDIX – SOFTWARE CONFIGURATION AND PROGRAMMING PROCEDURES](#)' below.

TESTING AND TUNING

To implement the desired operation of the detector, it must be set to operational status after verification of the proper generation of alarm signals. It is therefore necessary to first perform test penetrations of the detection zone along its entire length, especially at particularly vulnerable points like depressions and elevations. In the event that no signal, an insufficient signal, a falsely high signal or other faulty signal is generated when the detection zone is penetrated, it is necessary to readjust the detection threshold level taking the measures described immediately below.

ATTENTION! To optimize the efficacy of the noise-proof feature of the detector, it is recommended to establish the highest possible practical absolute value for the detection threshold level.

The final specification of the detection threshold level is done after first determining its appropriate value by performing test penetrations of the detection zone. The mass of the mock intruder performing the test penetrations should be 110-176 lbs. (50-80 kg), and the height of the mock intruder, when bent, must be 2.62-3.28 ft. (0.8-1 m). It is compulsory to perform test penetrations in the following places:

- in the middle of the segment in both upright and bent positions;
- at a distance of 49.21-65.62 ft. (15-20 m) from the transmitter unit and the receiver unit in both upright and bent positions;
- in a bent position in depressions.

When the mock intruder penetrates the detection zone, the resultant diminished signal should then surpass the established detection threshold level, thereby triggering the generation of an alarm signal.

Should the level of the received signal be insufficient (e.g., in cases where this is caused by the actual length of a protected segment being close to the maximum range of the detector used), it is recommended to increase the height(s) of the transmitter unit and/or receiver unit within a range of 2.30-3.28 ft. (0.7-1 m), first in 0.33 ft. (0.1 m) increments, then in finer increments of in./cm.

It must be taken into account that, in certain cases, the maximum level of the received signal during adjustment is achieved when the detector units have been inadvertently oriented in the direction of a nearby reflective surface (e.g., metal fencing, water surface, etc.). In such cases it is not advised to orient the detector units in such a direction.

One of the possible causes of erroneous responses of the detector (e.g., the generation of a false alarm in the absence of an actual intrusion or, conversely, the generation of no alarm in the event of an actual intrusion) may be the effect on the receiver unit of one segment of the emission of the transmitter unit of a nearby segment. Such effect can be verified by temporarily switching off the power supply of the nearby transmitter unit. To eliminate the effect, it is necessary to change the operating frequency of the affected detector. The operating frequency change must be done **in both the affected receiver unit and its transmitter unit.**

If the signal processing analysis suggests the possible presence of 'noise' in the received signal (e.g., by recording changes in signal strength not caused by an actual penetration of the detection zone), it is necessary to identify and eliminate the source of such noise, if possible, or to modify the physical configuration of the installation so as to effectively avoid the source of such noise.

Noise of an intermittent character may be caused by the sporadic penetration of the detection zone by wind-blown tree limbs; hence, the importance of strict maintenance of an adequate exclusion zone (see '**SELECTING THE INSTALLATION LOCATION**' above). As mentioned above, noise of a constant character may be caused by the normal emitted signal of the transmitter unit of one detector affecting the received signal of the receiver unit of a nearby detector; hence, the importance of proper positioning of detectors in multiple-detector configurations (see '**INSTALLING MULTIPLE DETECTORS AT ONE SITE**' below). The presence of such noise may be confirmed by temporarily switching off the power of the transmitter unit suspected of inadvertently causing it.

Prior to actual operational implementation, it is strongly recommended, following testing and tuning, to verify the continued proper functionality of the detector by its uninterrupted operation for a probational period of not less than 3 days, with the logging of all events, including unintentionally generated alarms, and their subsequent analysis. Further deliberate test intrusions should be performed at least twice a day during this final verification period.

See also '**APPENDIX – SOFTWARE CONFIGURATION AND PROGRAMMING PROCEDURES**' below.

INSTALLING MULTIPLE DETECTORS AT ONE SITE

Where several detectors are installed adjacently with the intent to prevent penetration of the barrier at the so-called “blind zones” in the immediate vicinity of the detector units, a segment coverage overlap of at least 11.07 ft. (3.5 m) should be established. In such a detector configuration, detector units of the same type (transmitter unit or receiver unit) must be placed side-by-side. Variants of such configuration are shown in **Figures 2.1**.

Figures 2.1 – Variants of configuration of adjacent overlapping segments

Figure 2.1.1

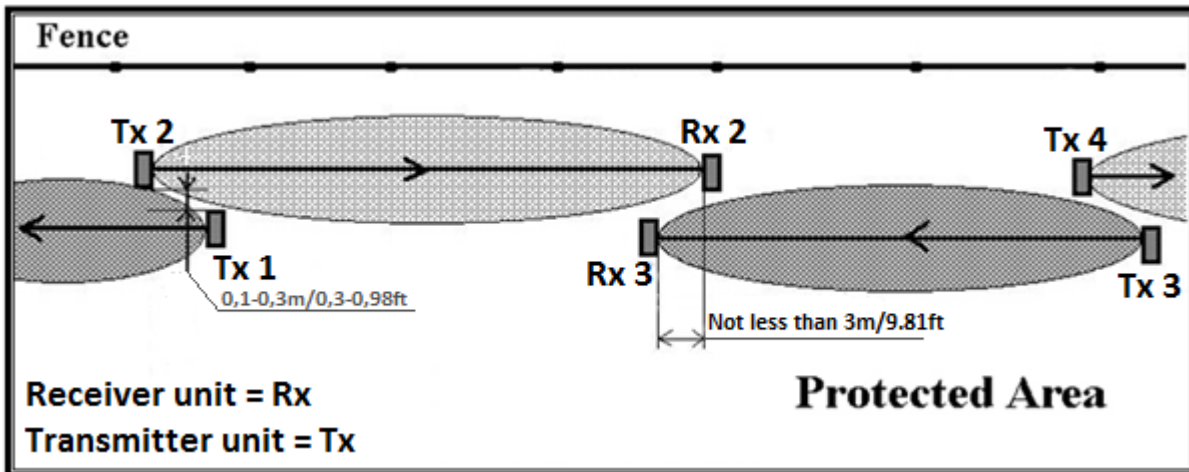


Figure 2.1.2

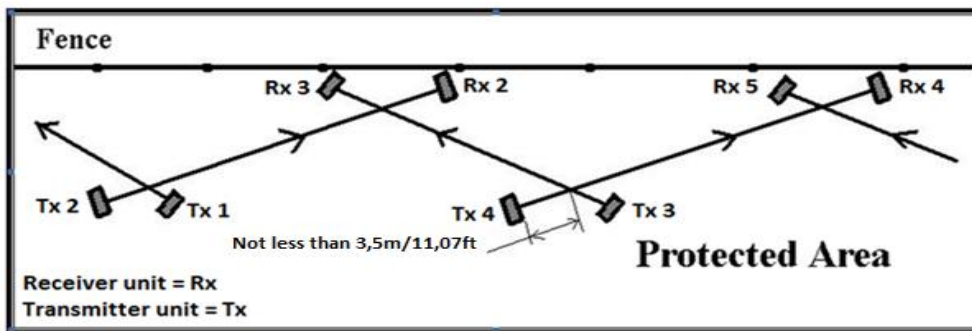
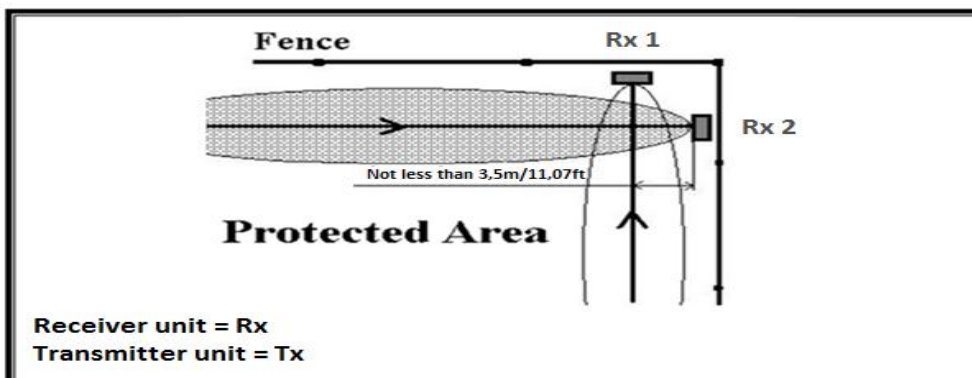


Figure 2.1.3



TECHNICAL SPECIFICATIONS

| Specification | Value |
|----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| Detection zone length | 32.81-984 ft./10-300 m |
| Minimum required level of signal received at maximum length of the detection zone | 8 dB |
| Minimum detection zone height for a protected segment length of 984 ft./300 m | 8.20 ft./2.5 m |
| Range of detection speeds | 1.64 / 6.56 / 32.81 ft./s 0.5 / 2 / 10 m/s |
| Working supply voltage, V-DC | 12-36 VDC |
| Maximum current required at the working supply voltage of 12V/24V/36V, a) Predix™ transmitter unit b) Predix™ receiver unit | 128mA/61mA/56mA 170mA/85mA/ 56mA |
| Maximum operable time after the supply is switched on | 12 s |
| Maximum recovery time of the stand-by system after notification of an alarm | 10 s |
| Parameters of signal, switched with the contacts of the output circuit: - maximum current, constant or alternate - maximum amplitude voltage | 30 mA 72 V |
| Relay contact signal parameters: - maximum input resistance of the circuit - impulse voltage - maximum impulse duration | 5 kΩ 10-30 V 0.5 s |
| Minimum signal duration | 5 s |
| Operating frequency | 24.001-24.250 GHz |
| Overall dimensions of Predix™ 50-100 with bracket: Predix™ 200-300 with bracket: | 6.5x6.5x7.1 in./ 165x165x180 mm 3.9x9.1x7.1 in./ 100x230x180 mm |
| Maximum weight of the packaged detector | 4 Lbs./1.8 kg |
| Minimum average service life of the detector, years (warrantied) | 2 |

WIRING CHARTS

Attention! The measurement (control) of the resistance of the circuits, and the isolation of the current-carrying cores of the connecting cables, can only be performed AFTER switching off the voltage of the power supply of the detector, and the disconnection of the circuits controlled.

Table 2.1 – Connections of the transmitter unit

| No. | Color of the output | Purpose of output |
|-----|-------------------------------------|-------------------|
| 1 | Brown | Plus supply |
| 2 | White | Minus supply |
| 3 | Shielding of the cable (GND) | RS-485 |
| 4 | Green (A) | |
| 5 | Yellow (B) | |

Table 2.2 – Connections of the receiver unit

| No. | Color of the output | Purpose of output |
|-----|-------------------------------------|-------------------|
| 1 | Brown | Plus supply |
| 2 | White | Minus supply |
| 3 | Shielding of the cable (GND) | RS-485 |
| 4 | Green (A) | |
| 5 | Yellow (B) | |
| 6 | Grey | alarm output (OC) |
| 7 | Pink | alarm output (OC) |

APPENDIX – SOFTWARE CONFIGURATION AND PROGRAMMING PROCEDURES

For set-up and adjustment of the detector, the following additional items are necessary:

- 1 personal computer (Windows® operating system)
- 1 Umirs USB-RS485 converter
- 1 mini-USB cable
- 1 software (the latest version of the software can be downloaded at any time at www.umirs.eu)

Installation of the USB-RS485 converter

Connect the USB-RS485 converter to the computer.

The proper device driver(s) for the specific operating system version in use can be determined and downloaded via the following link:

<http://www.ftdichip.com/FTDrivers.htm>

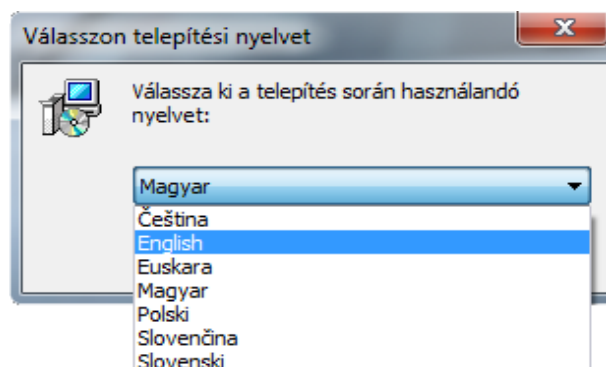
After successful installation, the COM-port assigned to the converter can be verified.

Installing the Predix™ software

Launch the downloaded Setup Wizard.

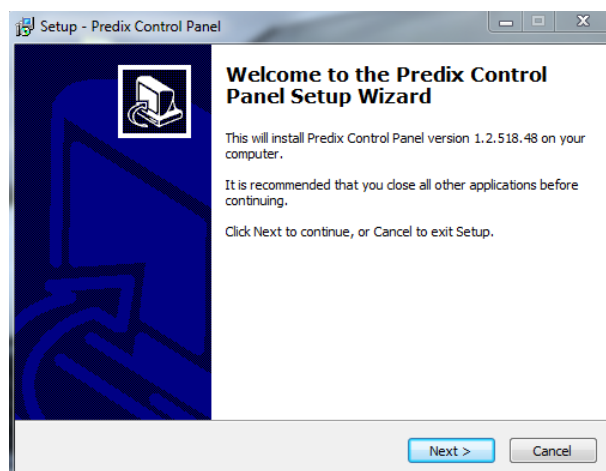
Choose a language.

- click 'Next' to continue ...



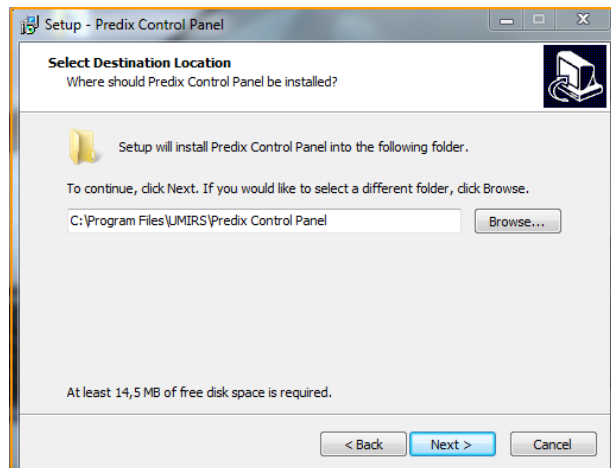
Initiate the installation process.

- click 'Next' to continue ...



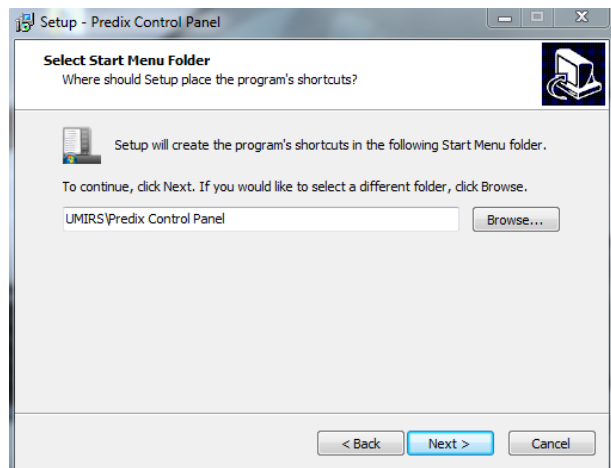
Designate a destination folder for the software.

- click 'Next' to continue ...



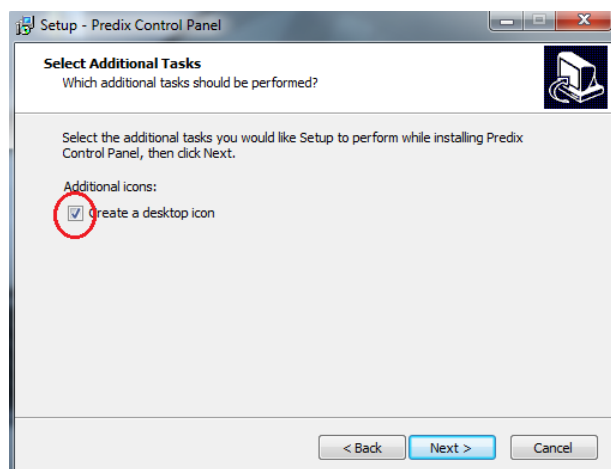
Designate a destination folder in the Start Menu directory for shortcuts to the software.

- click 'Next' to continue ...



Create a desktop icon for quick access to the software.

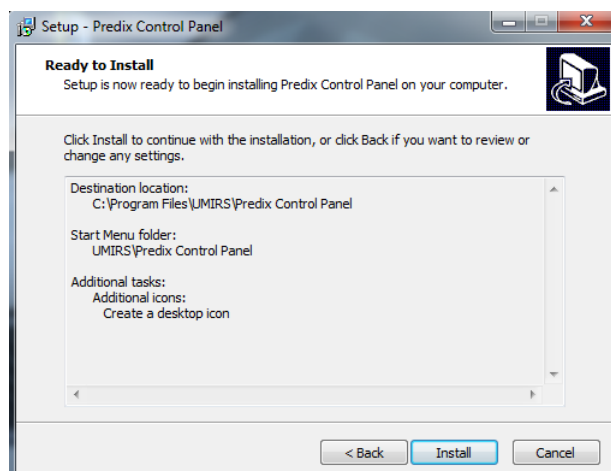
- click the indicated check-box;
- click 'Next' to continue ...



Proceed to install the software.

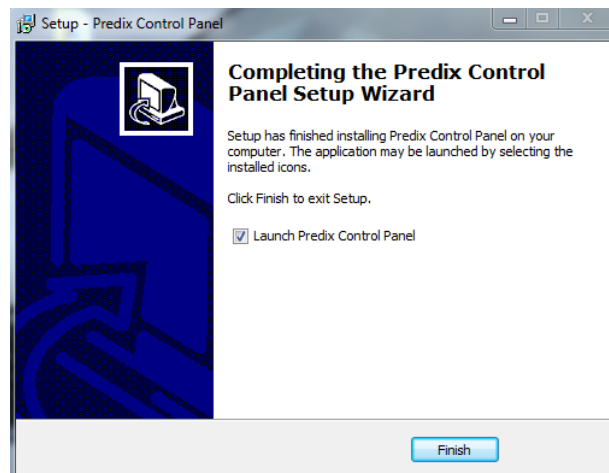
- click 'Install' ...

(this may take some moments)



Complete the installation process.

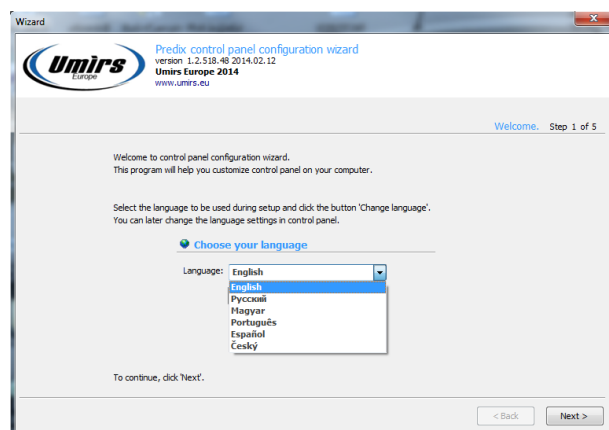
- click 'Finish'.



Configuring the Predix™ software

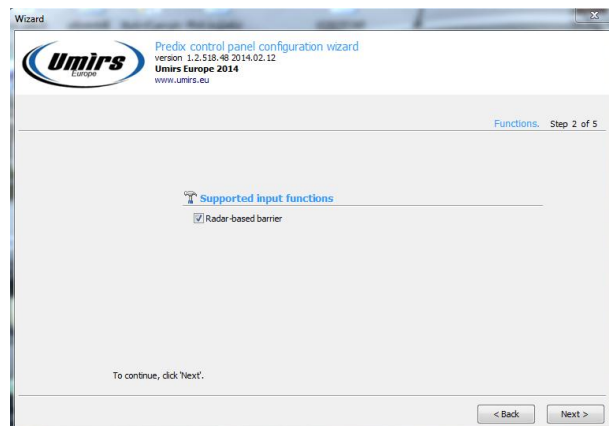
Choose a language.

- click 'Next' to continue ...



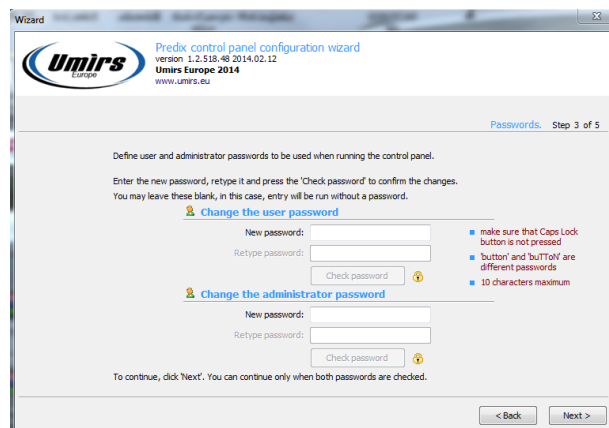
Select an input function.

- click the 'Radar-based barrier' check-box;
- click 'Next' to continue ...



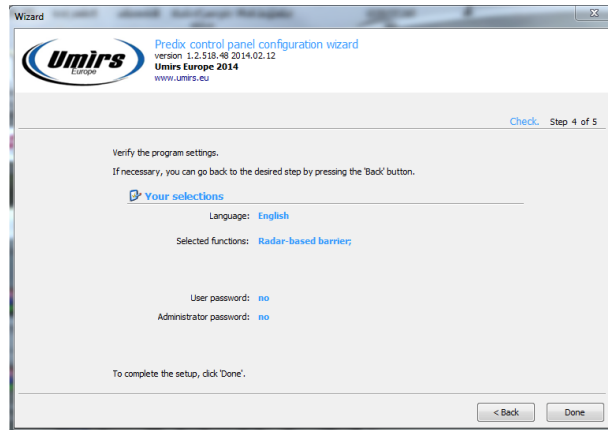
Specify password(s) - optional.

- if desired,
 - type password(s);
 - re-type password(s);
 - click 'Check password';
 - click 'Next' to continue ...
- if not desired,
 - click 'Next' to continue ...



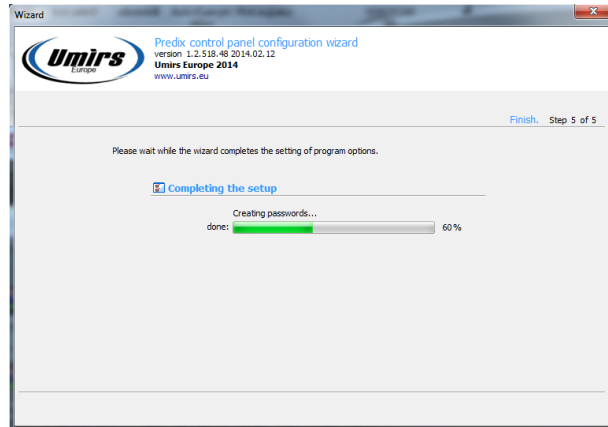
Verify the settings.

- click 'Done' to continue ...



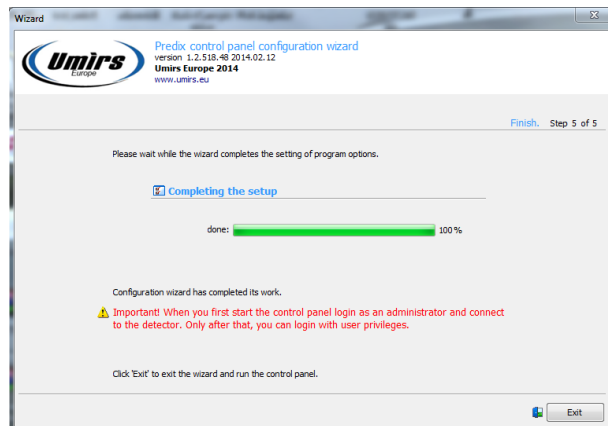
Configuration in progress ...

(this may take some moments)



Complete the configuration process.

- click 'Exit'.



Connecting a Predix™ transmitter or receiver to the computer

Connecting a transmitter

1. Connect the green wire of the transmitter to the 'A' socket of the USB-RS485 converter.
2. Connect the yellow wire of the transmitter to the 'B' socket of the converter.
3. Connect the power supply of the transmitter.

Connecting a receiver

1. Connect the green wire of the receiver to the 'A' socket of the USB-RS485 converter.
2. Connect the yellow wire of the receiver to the 'B' socket of the converter.
3. Connect the power supply of the receiver.

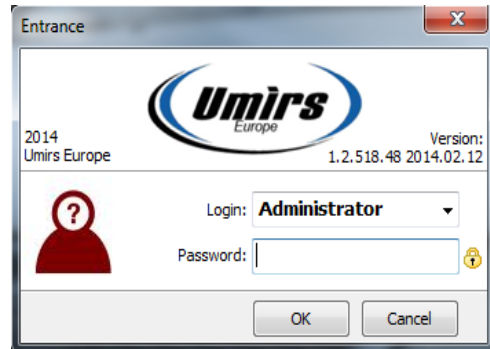
Starting the programming procedure

Click the Predix™ icon. 

(in Windows® 7, an error message indicating that the program is already running may appear. In this case, close the error message window and run the program as a system administrator)

When the Login window appears,

- if a password has previously been used, type it in the 'Password:' field.
- if a password has not previously been used, leave the 'Password:' field empty.

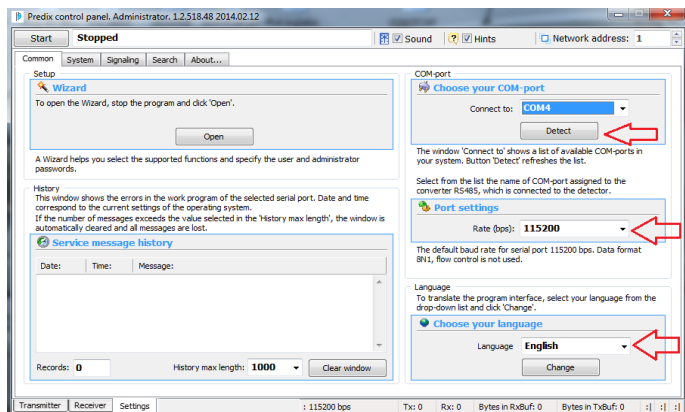


(although 'User' Login is an available option, 'Administrator' Login is necessary for programming the device)

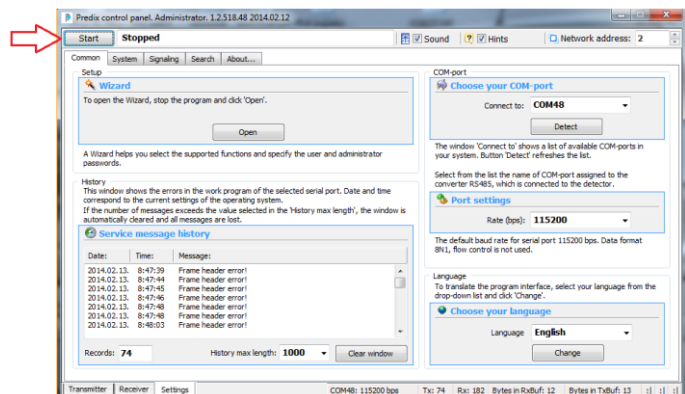
First, select the COM-port previously assigned to the USB-RS485 converter from the drop-down list.

Then, select a communication rate for the COM-port. (in the screen image at right, it is 115200 bps)

The language of the software is also selectable.



Finally, click 'Start' to initiate communication with the detector.

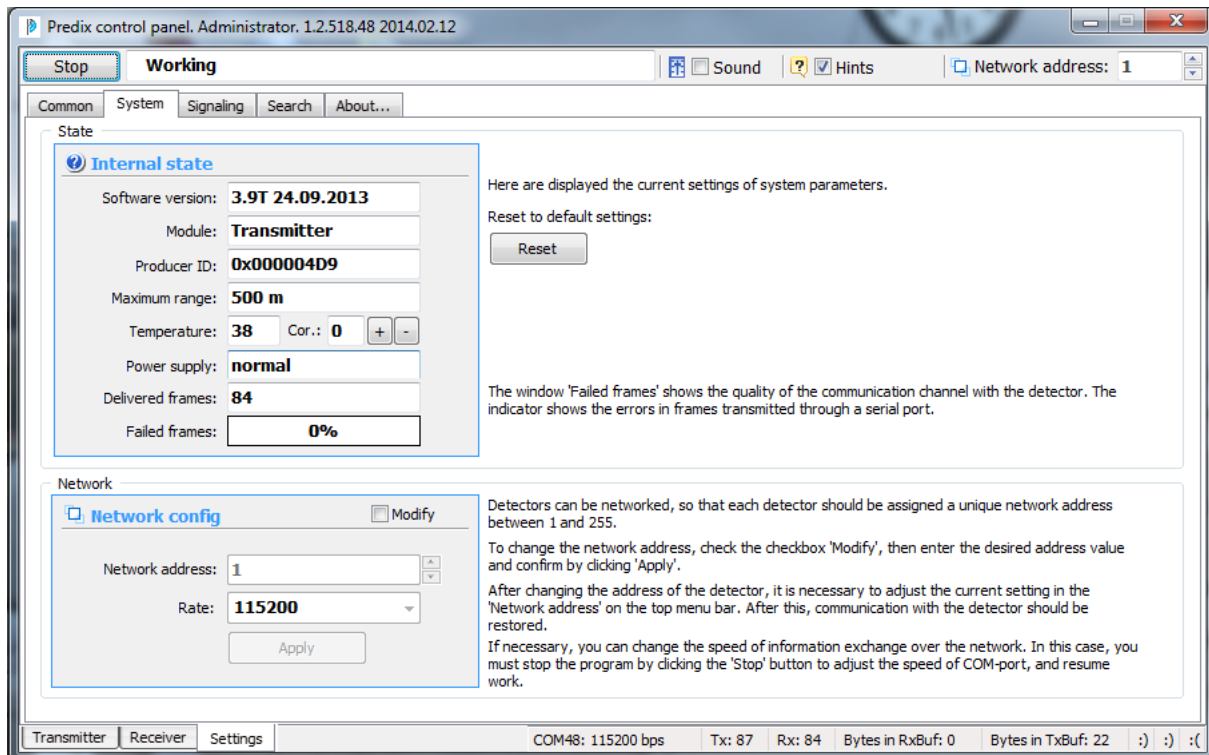


Configuring the transmitter

Complete the configuration of the transmitter first.

The factory default network address of the transmitter is '1'.

Initiate communication between the device and the computer by clicking 'Start'. If successful, the default settings of the transmitter parameters are then displayed in the 'Internal state' section of the screen accessed via the 'System' tab.



The following information is displayed:

Software version (firmware version)

Module (type of connected device - 'Transmitter')

Producer ID (serial number of the device)

Maximum range (maximal operating range)

Temperature (this function is only available on devices with firmware version 3.9T or later)

Power supply (voltage - this function is only available on devices with firmware version 3.9T or later)

Delivered frames (current successfully delivered frames)

Failed frames (an increase of this parameter indicates a degradation of communication between the computer and the device)

The network address of the connected device may be changed in the 'Network config' section of the screen after first clicking the 'Modify' check-box.

The communication rate may also be changed, via the 'Rate' field.

To activate the settings, click 'Apply' - the device will then be addressable at the newly-specified network address.

Programming the transmitter

To program the transmitter, click the 'Transmitter' tab at the bottom left of the 'System' window, and then click the 'Modify' check-box to start the programming procedure.

Set the operating frequency channel of the currently addressed transmitter by specifying a value between 1 and 250 in the 'Frequency channel' field.

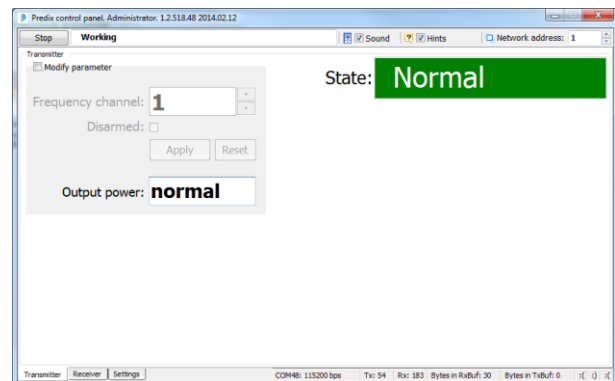
If a power supply is connected, the 'State' field's status will be 'Normal'. If the device has no power supply connected, the 'State' field's status will be 'Inactive'.

(this feature is only available on devices with firmware version 3.9T or later)

The 'Output power' field indicates whether the currently addressed transmitter has an adequate power supply.

The 'Disarmed' check-box option (only available on devices with firmware version 3.9T or later) permits the temporary disabling of the transmitter without the need to switch off its power supply.

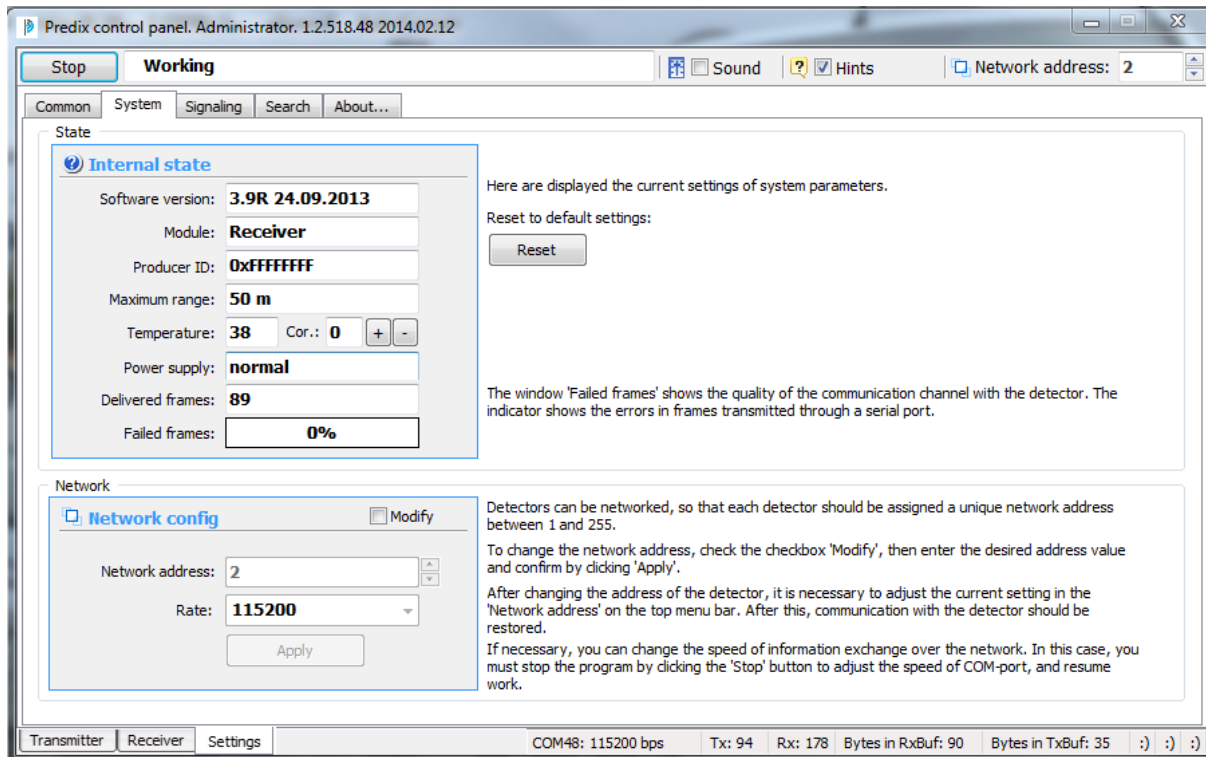
To activate the settings, click 'Apply'.



Configuring the receiver

The factory default network address of the receiver is '2'.

Initiate communication between the device and the computer by clicking 'Start'. If successful, the default settings of the receiver parameters are then displayed in the 'Internal state' section of the screen accessed via the 'System' tab.



The following information is displayed:

Software version (firmware version)

Module (type of connected device - 'Receiver')

Producer ID (serial number of the device)

Maximum range (maximal operating range)

Temperature (this function is only available on devices with firmware version 3.9R or later)

Power supply (voltage - this function is only available on devices with firmware version 3.9R or later)

Delivered frames (current successfully delivered frames)

Failed frames (an increase of this parameter indicates a degradation of communication between the computer and the device)

The network address of the connected device may be changed in the 'Network config' section of the screen after first clicking the 'Modify' check-box.

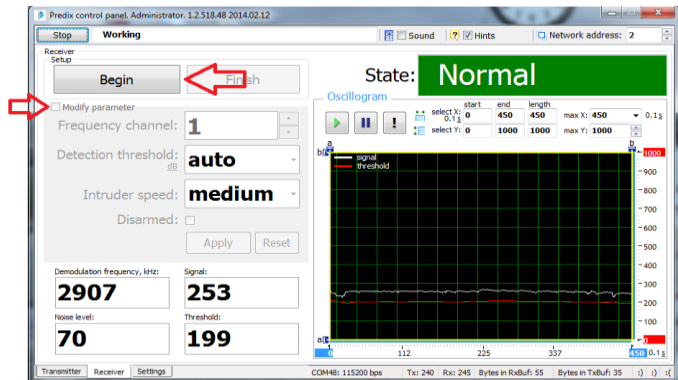
The communication rate may also be changed, via the 'Rate' field.

To activate the settings, click 'Apply' - the device will then be addressable at the newly-specified network address.

Programming the receiver

To program the receiver, click the 'Receiver' tab at the bottom left of the 'System' window.

Click 'Begin', and then click the 'Modify' check-box to start the programming procedure.



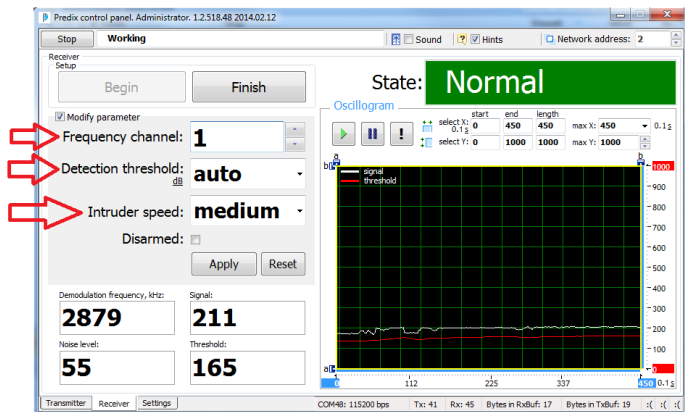
First, set the operating frequency channel of the currently addressed receiver by specifying a value between 1 and 250 in the 'Frequency channel' field.

Next, specify the detection threshold level. In 'auto' mode, the receiver sets the detection threshold level automatically, and its detection algorithm adapts to gradual changes of the environment (e.g., snowfall, growing grass, etc.), thus minimizing false alarms potentially caused by routine natural conditions.

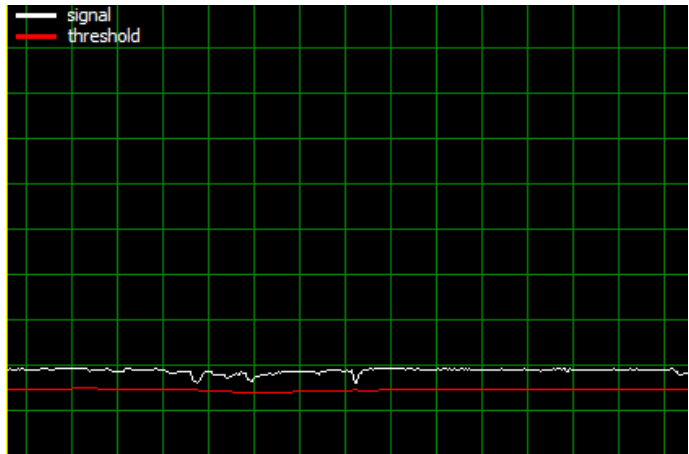
The detection threshold level may also be set manually, from -1 to -15 dB.

See sample associated displays on following page.

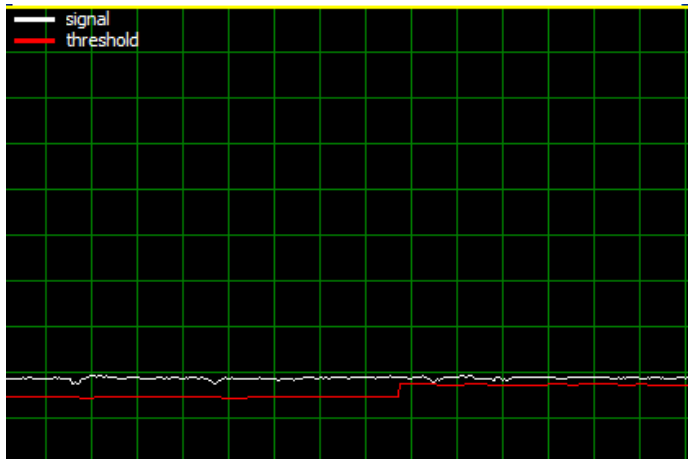
Then, specify the intruder speed, i.e., the anticipated speed of an intruder's penetration. There are 3 options: low – medium – high.



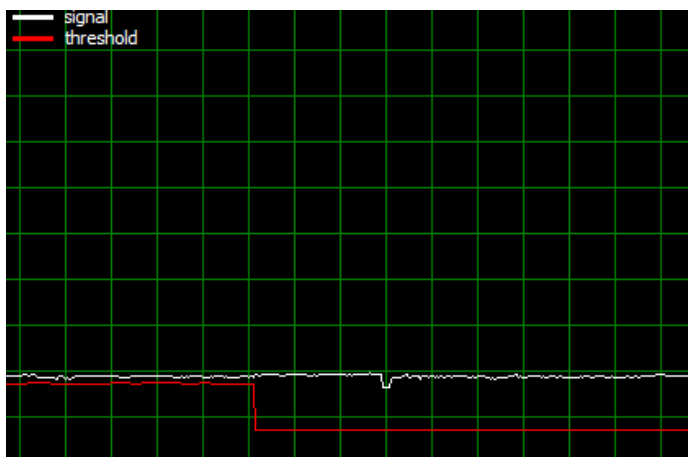
In 'auto' mode:



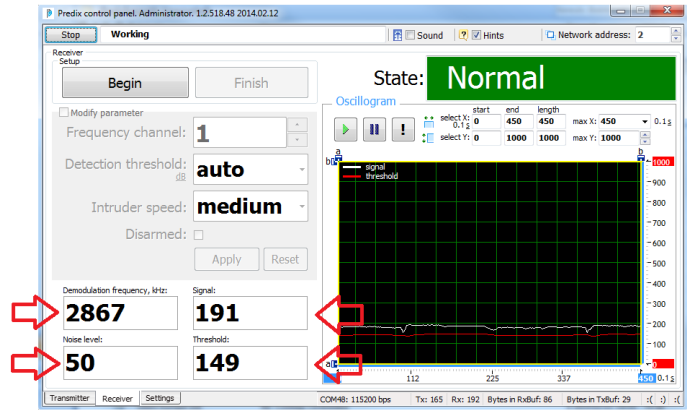
In manual mode, -1 dB:



In manual mode, -15 dB:



The receiver also has a 'Disarmed' check-box option (only available on devices with firmware version 3.9R or later) that permits the temporary disabling of the receiver without the need to switch off its power supply – with the 'State' of the output relay remaining normal. A newly 'Disarmed' receiver status is also indicated by the LED on the paired transmitter's circuit board flashing three times.



The displayed 'Demodulation frequency, kHz' value should be between 2700 and 3000, indicating optimal communication between the transmitter and receiver.

The displayed 'Signal' value indicates the actual level of the signal currently received from the transmitter.

The displayed 'Threshold' value indicates the actual level of the detection threshold.

To activate the settings, click 'Apply'.

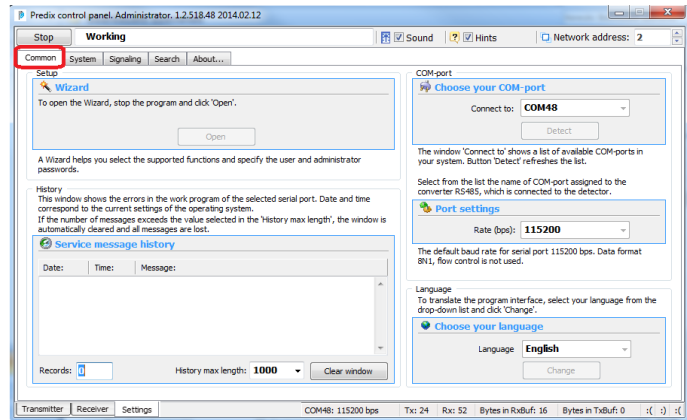
Complete the programming process.
 - click 'Finish'.

Further functions of the software

Via the 'Common' tab:

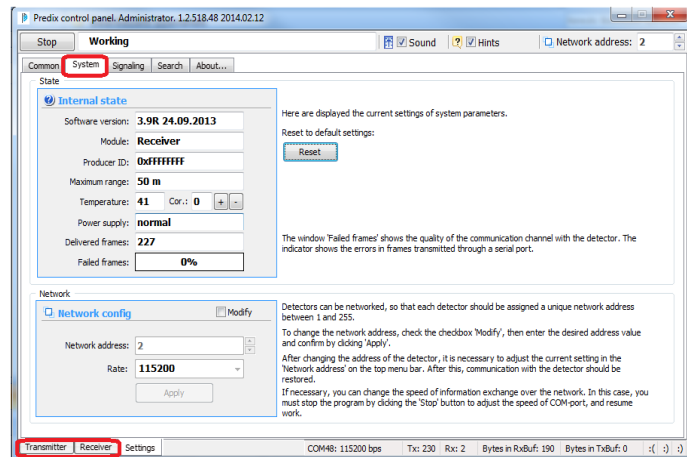
View/modify User and Administrator profiles, COM-port settings, and language.

Also found here is a log which can store up to 10,000 events (after which the system automatically overwrites the oldest events).



Via the 'System' tab:

View pertinent details about a connected transmitter or receiver.

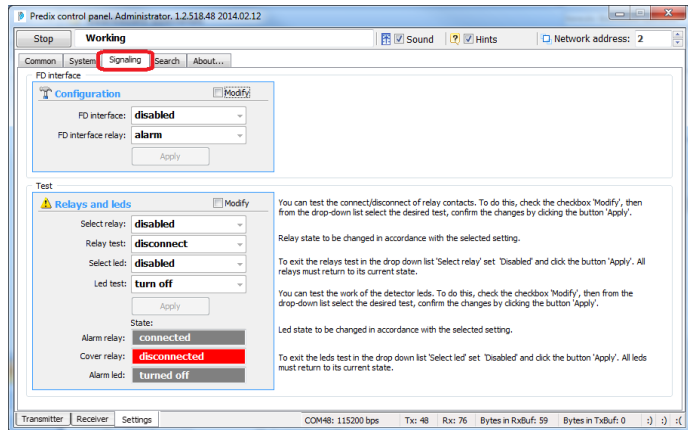


Via the 'Signaling' tab:

Verify proper functioning of relay contacts and LEDs.

To change the settings, click the 'Modify' check-box.

It is possible to activate the alarm relay, without generating an actual alarm, to check the communication between the detector and the alarm panel (refer to instructions in associated screen display).



Note: 'disabled' means 'none' selected from drop-down list; 'cover relay' option in drop-down list not currently available.

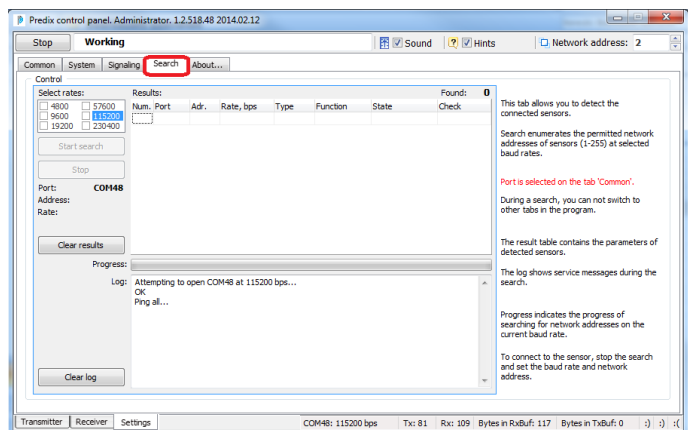
Similarly, 'Select led' is 'disabled' by default (in this state, the alarm LED is automatically switched on by an actual alarm). When 'Select led' is enabled (by selecting 'alarm led' from the drop-down list), the LEDs will light up automatically without an actual alarm - this setting is used only for testing the operation of the LEDs. If 'turn off' is specified for 'Led test', the LEDs will not operate even in the event of an actual alarm.

Note: 'disabled' means 'none' selected from drop-down list.

To activate the settings, click 'Apply' – the current settings may then be visually verified.

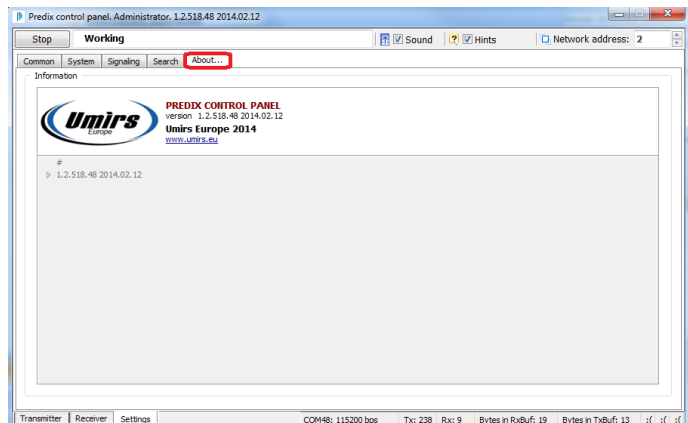
Via the 'Search' tab:

Selectively identify and list connected devices, and view their pertinent details.



Via the 'About...' tab:

View the currently-used version of the software.



Via the 'Sound' check-box:

Activate/deactivate an audible tone in case of an alarm. (useful when programming the detector outdoors)

Via the 'Hints' check-box:

Activate/deactivate helpful hints, which are text-sensitive, and appear when the cursor is positioned over existing explanatory text.

