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HIGH SENSITIVITY LINEAR BEAM DETECTOR

MODEL ERHS0712

TRANSMITTER – RECEIVER VERSION
Basic characteristics

- **Detector:** Project, Technology, Design and Production fully made in Italy
- Suitable for use in all civil and industrial premises
- Very easy to install and program
- Low cost for mounting, cabling and maintenance
- The Detector can be installed horizontally or vertically and can work at any angle
- Micrometric adjustment for alignment
- Integrated diaphragm with a wide range of adjustment

- **Control Unit** for programming, calibration and performing of remote test on line beam detectors.
  - Basic configuration for two Detectors even of different types Transmitter/Receiver or Reflection
  - Expansion board for connection up to 3 to 8 detectors and line loop closure (optional)
  - Ground level installation for the Control Unit
  - Alarm and Fault outputs can be programmed for each individual detector
  - Operational access to keyboard protected by password
  - Control Unit or Control Panel reset facility

- **Base** can also be installed separately from the detector for the pre wiring
  - Plug-in base to detector connection
  - Base complete with back up board short circuit isolator to ensure continued work even after a short circuit

- **Special Allen Key** suitable for mechanical alignment, diaphragm regulation, unhook of detector base and open/close of control unit

Product characteristics

- Standard EN 54/12
- Protection rating IP65 (Transmitter Unit, Receiver Unit and Controller Unit)
- RoHS Compatibility
- Operating distance 10 ÷ 200 m for Tx/Rx model for maximum permitted cover 1600 sq meters for detector - according to TS 54-14
- Width of cover up to 15 m according to T.S. European EN 54-14
- Connections to 4 serial line conductor RS485
- Local and remote maintenance request
- Automatic threshold compensation
- Angle misalignment ± 1degree max
- Complete directional stability over time
- Sensitivity adjustable and selectable over a wide range, using the control unit model CSRLS
- Automatic reset of detector after break in infrared beam
- Self tester for RS485 communication
- Fault relay output delayed up to 90 seconds
- Power supply 12-24 V DC auto selected
WORKING PRINCIPLE

The ILIA MODEL ERHS0712 detector consists of a Transmitter Unit, a Receiver Unit and a Beam Controller Unit for programming, setting and testing. The Beam Controller Unit is used to remotely manage the detector or detectors in the field using a single line. The Beam Controller Unit is put at a place on ground level from where the detector can be controlled without having to climb up to the detector, as regards all normal operations. The Beam Controller Unit is made of plastic, has a keyboard for programming and a backlight 16x2 display.

By entering a password of 4 digits you can program the system from ground level to determine the detector's signal level, to check environmental disturbances, to set the required thresholds based on these and to check the alarm threshold; the default password **FFFF** can be changed by the programmer by following the instructions in the remote programming menu.

The system configuration menu becomes available when you just touch any of the 5 buttons on the keyboard and by then entering the default password **FFFF** on the first programming session, customising the password from then on (the password can be reset if lost or forgotten by use of the beam controller Unit reset hardware).

The Beam Controller Unit electronic base permits direct connection of two detector units; by means of an expansion circuit, it is able to pilot up to 8 detectors connected together even in a closed loop. This permits continued proper working even if the cables are cut or in the case of a short circuit. There are also programmable relay contacts in the Unit for each individual detector connected. These relays can have their polarity reversed with the use of the software and permit the transmission to a single central unit of the individual alarm, fault and maintenance request signals. Any breakdown in communication between Beam Controller Unit and the detectors connected to it will be immediately signalled by the simultaneous flashing of the yellow Led and the green Led on the Transmitter and the Receiver, as well as being indicated on the display of the Beam Controller Unit itself.

The working voltage of the equipment is between 12 and 24 Volts without switching (± 20%). The Transmitter Unit emits a beam of modulated infrared light at 1 KHz in the form of a cone which crosses the space under surveillance to reach the Receiver Unit. As the modulated infrared crosses the environment under surveillance, it collects along its path all information that could suggest the start of a fire. The events that intervene
between Transmitter and Receiver affect the infrared carrier, alternatively optically modulating it in frequency and in amplitude.

The Receiver Unit demodulating from the infrared received the information that is optically gathered, transforms each symptom of a possible fire into corresponding electrical signals referable to “smoke”.

Such signals are electronically assessed by means of a special algorithm local to the Receiver Unit, and are transmitted to the Beam Controller Unit. All the units have a microcontroller that carries out a full scan of the working mode, i.e. not only of the alarm, but also of faults, blinding and maintenance requests. The messages are clearly given on the display and repeated by the four leds on the Unit, as well as with the local led’s on every individual piece of equipment. A message on the display will indicate the type of event and the detector number.

**Note: The Dip-Switch must always be used during installation to determine the detector address number.**

The connection of one or more detectors is with leads of a minimum cross-section, in accordance with current regulations, of 0.5 mm². The detection of the start of a fire will mean information is sent from the field (detector) to the Beam Controller Unit which will in turn send an alarm signal to a central control unit. System resetting is possible both from the Beam Controller with a dedicated command or from the central control unit. The Beam Controller Unit can be used to set the blinding fault relay switching delay for every individual detector, for times from 0 to 90 seconds.

The Receiving Unit (RX) has an internal diaphragm that means it is possible, following the instruction to mechanically set for the use of a diaphragm filter, to solve environmental problems in particular architectural situation where there are awkward reflections or the optical beam must work in limited spaces.
CALIBRATION AND ASSEMBLY PROCEDURE

NOTE: Use the SETRONIC "Allen Key" for the opening and closing of the detector and the mechanical alignment of the equipment.

1. Fix the socket connection of the detector and carry out the wiring of the line (power supply and serial line).

2. Set the address of the detector between 1 and 8 consequently using the Dip-Switch according to the table on page 30th

NOTE: The Dip-Switch 4 must be set to ON only in the last detector connected to the line open. It must also be set with a single detector.

3. Insert the connector plug on the bottom of the detector into the socket until you hear a "click", then lock the unit to the socket by rotating the hooks with the appropriate Allen key and guide it to the paired device from the opposite.

4. Repeat above operations for all the detectors installed. Verify that the Transmitter and Receiver pair have the same address.

5. Power the system via the controller and set the number of detectors connected and the configuration of connection to serial line. The controller also allows the use of the two serials in an independent manner, as if they were two separate lines open. In this case, the addresses remain the same from set 1 to 8, but you set the end of the line (Dip-Switch 4 to ON) of both the last detector.

6. At this point the green led of the two units of detectors and you must switch controller, a short flash confirms the continuous scanning of the line. If the condition of led flashing green and yellow with flashes of about 2 sec., means that there is no serial communication (check the wiring for possible errors or inversions) or incorrect configuration of the switch address.

7. Orient the Transmitter through the Allen key adjustment in order to obtain the led blinking yellow.

8. Starting i.e. to the left to move the unit slowly until the yellow led stops flashing. Then rotate the unit to the right (the yellow led starts to flash again). Count how many turns of the key are made to obtain the yellow led off to the opposite side. Reposition the center of movement found by dividing in half the number of revolutions counted. The yellow led continues to blink.

9. Do the same for the vertical axis.

10. Orient the Receiver following the same steps 7, 8, 9.

11. Perform the calibration by the ground controller to follow the menu <Autoadjust>.

12. Now cover the Transmitter Unit or Receiver Unit with a card or opaque object. When you cover the Unit check that the yellow led remains continuously on.
MAIN CALIBRATION PROCEDURES

1. Enter menu:
   - from the main screen, press OK;
   - enter the password, using the direction buttons ▲►▼◄; press OK;

2. Set up detection lines:
   - press ► or ◄ until you get to < System Setup >; press OK;
   - press ▲ or ▼ to edit the number of the detection lines; press OK;
   - press ▲ or ▼ to change the delay time for fault outputs; press OK;
   - press ▲ or ▼ to change the configuration of fault outputs; press OK;
   - press ▲ or ▼ to set the <Com line> configuration; press OK;
   - press OK to skip debug function.

3. First calibration of the detection lines (after mechanical adjustment of the detectors):
   - press ► or ◄ until you get to < AUTO Adjust. >; press OK;
   - press ▲ or ▼ to change the number of the detection line to be worked on; press OK;
   - wait until the TX value stabilises (about 1 minute) and press OK;
   - the value of the RX must be about 100%
   - press OK to confirm the setting.

4. Calibration of detection lines (with the barriers already previously installed):
   - press ► or ◄ until you get to < AUTO Adjust. >; press OK;
   - press ▲ or ▼ to change the number of the detection line to be worked on; press OK;
   - wait until the TX value stabilises (about 1 minute) and press OK;
   - the value of the RX must be about 100%
   - press OK to confirm the setting.

5. Adjustment of detection line sensitivity:
   - press ► or ◄ until you get to < sensitivity >; press OK;
   - press ▲ or ▼ to change the number of the detection line to be worked on; press OK;
   - read the Detec value to quantify environmental disturbances for 1 to 2 minutes;
   - press ▲ or ▼ to change the smoke threshold value (the value of the highest disturbance value seen by Detec shall be less than the threshold setted); press OK;
   - read the Detec value to quantify environmental disturbances for 1 to 2 minutes;
   - press ▲ or ▼ to change the fire threshold value (the value of the highest disturbance value seen by Detec shall be less than the threshold setted);
   - press OK to confirm the setting.
PROCEDURE FOR FURTHER ADJUSTMENT

1. Enter menu:
   - from the main screen, press OK;
   - enter the password, using the direction buttons ▲►▼◄; press OK;

2. Checking the signal and manual adjustment of detection lines
   - press ► or ◄ until you get to < adjustment >; press OK;
   - press ▲ or ▼ to edit the number of the detection lines; press OK;
   - read the RX signal; it must normally be about 100%;
   - press ▲ or ▼ to change the TX value;
   - press OK to confirm the setting.

3. Alarm simulation for detection lines:
   - press ► or ◄ until you get to < Alarm Test >; press OK;
   - press ▲ or ▼ to edit the number of the detection lines; press OK;
   - press OK to start the alarm testing;
   - wait for the barrier alarm;
   - press OK to reset the barriers;

4. Reset the detection lines alarm:
   - press ► or ◄ until you get to < Reset Alarm >; press OK;
   - press OK to reset the alarm;

5. Change the password for access to the menu:
   - press ► or ◄ until you get to < Change password >; press OK;
   - enter the new password, using the direction buttons ▲►▼◄;
   - press OK to confirm the setting.
**TECHNICAL FEATURES**

**ILIA High Sensitivity Transmitter / Receiver Linear Beam Detector model ERHS0712**

- **Working temperature**: -20°/+65° C
- **Storage temperature**: -20°/+70° C
- **Electromagnetic disturbance**: EMC test up to 30 Volt/m
- **Power supply**: 12/24 V d.c. (± 20%) without switching
- **Cable type**: minimum section of 0,5 mm² with 4 wires type CEI 20-22
- **Maximum cable length**: max 1200 m from Control Unit to line detectors (double in loop configuration)
- **Operating distance**: from 10 to 200 meters
- **Maximum permitted cover**: 1600 sq metres for detector - according to TS 54-14
- **Width cover**: max 15 meters - according to TS 54-14
- **Size**: 162x145x193 mm
- **Weight**: Tx Unit 735g, Rx Unit 775g
- **Angle misalignment**: ± 1 degree max for Tx Unit and Rx Unit
- **Detector protection rating**: IP65
- **RAL Colour**: 5004

**Beam Controller Unit mod.: CSRLS**

- **Working temperature**: -20°/+65° C
- **Storage temperature**: -20°/+70° C
- **Power supply**: 12/24 V dc (± 20%)
- **Maximum cable length**: Max 1000 m with 1 sq mm cable – Type CEI 20-22 to Control Panel
- **Cable section per output**: max 0,5 sq mm
- **Contact capacity Alarm/Fault optorelay**: max 150 mA
- **Size**: 145x177x68 mm
- **Weight**: 375g
- **Connectable detectors**: 1 to 8
- **Control Unit protection rating**: IP65

**Current absorption**

<table>
<thead>
<tr>
<th>POWER SUPPLY</th>
<th>24V ± 20%</th>
<th>12V ± 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 DETECTOR CONNECTED</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stand By</td>
<td>max 48 mA</td>
<td>max 98 mA</td>
</tr>
<tr>
<td>Typical (alarm or fault relay)</td>
<td>max 50 mA</td>
<td>max 100 mA</td>
</tr>
<tr>
<td><strong>8 DETECTORS CONNECTED</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stand By</td>
<td>max 261 mA</td>
<td>max 502 mA</td>
</tr>
<tr>
<td>Typical (alarm or fault relay)</td>
<td>max 270 mA</td>
<td>max 512 mA</td>
</tr>
</tbody>
</table>
**DIAPHRAGM SETTING FOR MODEL ERHS0712**

**ILIA** has an internal 6 (0 Totally open ÷ 5 mac closure) position diaphragm that can be used where problems arise in the protected environment, for example the presence of direct sunlight or awkward reflections or flare. The diaphragm permits short distance adjustments and/or to have the beam pass through narrow spaces or in any case to limit its size.

### Receiver Unit

Fix the key

Turn clockwise

### SETTING

<table>
<thead>
<tr>
<th>Diaphragm position 0</th>
<th>Distance from 30 m up to 200 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diaphragm position 1</td>
<td>Distance from 50 m up to 180 m</td>
</tr>
<tr>
<td>Diaphragm position 2</td>
<td>Distance from 40 m up to 170 m</td>
</tr>
<tr>
<td>Diaphragm position 3</td>
<td>Distance from 30 m up to 150 m</td>
</tr>
<tr>
<td>Diaphragm position 4</td>
<td>Distance from 15 m up to 120 m</td>
</tr>
<tr>
<td>Diaphragm position 5</td>
<td>Distance from 10 m up to 80 m</td>
</tr>
</tbody>
</table>

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**POS 0**

**POS 1**

**POS 2**

**POS 3**

**POS 4**

**POS 5**
HIGH SENSITIVITY REFLECTION SYSTEM DETECTOR

MODEL ERRHS0712
**REFLECTION VERSION**

*Basic characteristics*

- **Detector**: Project, Technology, Design and Production fully made in Italy
- Suitable for use in all civil and industrial premises
- Very easy to install and program
- Low cost for mounting, cabling and maintenance
- The Detector can be installed horizontally or vertically and can work at any angle
- Micrometric adjustment for alignment
- Integrated diaphragm with a wide range of adjustment

**Control Unit** for programming, calibration and performing of remote test on line beam detectors.
- Basic configuration for two Detectors even of different types Transmitter/Receiver or Reflection
- Expansion board for connection up to 3 to 8 detectors and line loop closure (optional)
- Ground level installation for the Control Unit
- Alarm and Fault outputs can be programmed for each individual detector
- Operational access to keyboard protected by password
- Control Unit or Control Panel reset facility

- **Base** can also be installed separately from the detector for the pre wiring
  - Plug-in base to detector connection
  - Base complete with back up board short circuit isolator to ensure continued work even after a short circuit

- **Special Allen Key** suitable for mechanical alignment, diaphragm regulation, unhook of detector base and open/close of control unit

*Product characteristics*

- Standard EN 54/12
- Protection rating IP65 (Transmitter-Receiver Unit, Reflection Unit and Controller Unit)
- RoHS Compatibility
- Operating distance 10 ÷ 150 m for Reflection model for maximum permitted cover 1600 sq meters for detector - according to TS 54-14
- Width of cover up to 15 m according to T.S. European EN 54-14
- Connections to 4 serial line conductor RS485
- Local and remote maintenance request
- Automatic threshold compensation
- Angle misalignment: ±1 grado max TRx Unit
  ±5 gradi max Ref Unit
- Complete directional stability over time
- Sensitivity adjustable and selectable over a wide range, using the control unit model CSRLS
- Automatic reset of detector after break in infrared beam
- Self tester for RS485 communication
- Fault relay output delayed up to 90 seconds
- Power supply 12-24 V DC auto selected
WORKING PRINCIPLE

The ILIA mod. MODEL ERRHS0712 detector consists of a Transmitter/Receiver Unit, with a Reflection Unit and a Beam Controller Unit for programming, setting and testing. The Beam Controller Unit is used to remotely manage the detector or detectors in the field using a single line. The Beam Controller Unit is put at a place on ground level from where the detector can be controlled without having to climb up to the detector, as regards all normal operations. The Beam Controller Unit is made of plastic, has a keyboard for programming and a backlight 16x2 display.

By entering a password of 4 digits you can program the system from ground level to determine the detector's signal level, to check environmental disturbances, to set the required thresholds based on these and to check the alarm threshold; the default password FFFF can be changed by the programmer by following the instructions in the remote programming menu.

The system configuration menu becomes available when you just touch any of the 5 buttons on the keyboard and by then entering the default password FFFF on the first programming session, customising the password from then on (the password can be reset if lost or forgotten by use of the Beam Controller Unit's reset hardware).

The Beam Controller Unit electronic base permits direct connection of two detector units; by means of an expansion circuit, it is able to pilot up to 8 detectors connected together even in a closed loop. This permits continued proper working even if the cables are cut or in the case of a short circuit. There are also programmable relay contacts in the unit for each individual detector connected. These relays can have their polarity reversed with the use of the software and permit the transmission to a single central unit of the individual alarm, fault and maintenance request signals. Any breakdown in communication between Beam Controller Unit and the detectors connected to it will be immediately signalled by the simultaneous flashing of the yellow Led and the green Led on the Transmitter and the Receiver, as well as being indicated on the display of the Beam Controller Unit itself.

The working voltage of the equipment is between 12 and 24 Volts without switching (± 20%). The Transmitter/Receiver Unit emits a beam of modulated infrared light at 1 KHz in the form of a cone which crosses the space under surveillance to reach the Reflection Unit. As the modulated infrared crosses the environment under surveillance, it collects along its path all information that could suggest the start of a fire. The events that
intervene between Transmitter/Receiver Unit and Reflection Unit affect the infrared carrier, alternatively optically modulating it in frequency and in amplitude.

The Transmitter/Receiver Unit demodulating from the infrared received the information that is optically gathered, transforms each symptom of a possible fire into corresponding electrical signals referable to “smoke”.

Such signals are electronically assessed by means of a special algorithm local to the Transmitter/Receiver Unit, and are transmitted to the Beam Controller Unit. All the units have a microcontroller that carries out a full scan of the working mode, i.e. not only of the alarm, but also of faults, blinding and maintenance requests. The messages are clearly given on the display and repeated by the four leds on the Unit, as well as with the local led’s on every individual piece of equipment. A message on the display will indicate the type of event and the detector number.

**Note: The Dip-Switch must always be used during installation to determine the detector address number.**

The connection of one or more detectors is with leads of a minimum cross-section, in accordance with current regulations, of 0.5 mm$^2$. The detection of the start of a fire will mean information is sent from the field (detector) to the Beam Controller Unit which will in turn send an alarm signal to a central control unit. System resetting is possible both from the Beam Controller Unit with a dedicated command or from the central control unit. The Beam Controller Unit can be used to set the blinding fault relay switching delay for every individual detector, for times from 0 to 90 seconds.

The Transmitter/Receiver Unit (TRX) has an internal diaphragm that means it is possible, following the instruction to mechanically set for the use of a diaphragm filter to solve environmental problems in particular architectural situation where there are awkward reflections or the optical beam must work in limited spaces.
CALIBRATION AND ASSEMBLY PROCEDURE

NOTE: Use the SETRONIC "Allen Key" for the opening and the closing of the detector and the mechanical alignment of the equipment.

1. Fix the socket connection of the detector and carry out the wiring of the line (power supply and serial line).

2. Set the address of the detector between 1 and 8 consequently using the Dip-Switch according to the table on page 30th

NOTE: The Dip-Switch 4 must be set to ON only in the last detector connected to the line open. It must also be set with a single detector.

3. Insert the connector plug on the bottom of the detector into the socket until you hear a "click", then lock the unit to the socket by rotating the hooks with the appropriate Allen key and guide it to the paired device from the opposite.

4. Repeat above operations for all the detectors are installed and the units of Reflection (Ref) omitting the part relating to the connection line.

5. Power the system via the controller and set the number of detectors connected and the configuration of connection to serial line. The controller also allows the use of the two serials in an independent manner, as if they were two separate lines open. In this case, the addresses remain the same from set 1 to 8, but you set the end of the line (Dip-Switch 4 to ON) of both the last detector.

6. At this point the green led of the detector unit and the controller should turn on, a brief flash confirms the continuous scanning of the line. If the condition of led flashing green and yellow with flashes of about 2 sec., means that there is no serial communication (check the wiring for possible errors or inversions) or incorrect configuration of the switch address.

7. Orient the TRX by Allen key adjustment in order to obtain the led blinking yellow.

8. Starting with an example to the left to move the unit slowly until the yellow led stops blinking. Then rotate the unit to the right (the yellow led starts to flash again). Count how many turns of the key are made to obtain the yellow led off to the opposite side. Reposition the center of movement found by dividing in half the number of revolutions counted. The yellow led continues to blink.

9. Do the same for the vertical axis.

10. Point the unit of reflection following the same steps 7, 8, 9.

11. Perform the calibration by the ground controller to follow the menu <Autoadjust>.

12. Now cover the Reflection Unit with a card or opaque object. When you cover the Reflection Unit check that the yellow led on the Transmitter-Receiver Unit remains continuously on.
MAIN CALIBRATION PROCEDURES

1. Enter menu:
   - from the main screen, press OK;
   - enter the password, using the direction buttons ▲►▼◄; press OK;

2. Set up detection lines:
   - press ► or ◄ until you get to < System Setup >; press OK;
   - press ▲ or ▼ to edit the number of the detection lines; press OK;
   - press ▲ or ▼ to change the delay time for fault outputs; press OK;
   - press ▲ or ▼ to change the configuration of fault outputs; press OK;
   - press ▲ or ▼ to set the <Com line> configuration; press OK;
   - press OK to skip debug function.

3. First calibration of the detection lines (with mechanical adjustment of barriers):
   - press ► or ◄ until you get to < AUTO Adjust. >; press OK;
   - press ▲ or ▼ to change the number of the detection line to be worked on; press OK;
   - wait until the TX value stabilises (about 1 minute) and press OK;
   - the value of the RX must be about 100%
   - press OK to confirm the setting.

4. Calibration of detection lines (with the barriers already previously installed):
   - press ► or ◄ until you get to < AUTO Adjust. >; press OK;
   - press ▲ or ▼ to change the number of the detection line to be worked on; press OK;
   - wait until the TX value stabilises (about 1 minute) and press OK;
   - the value of the RX must be about 100%
   - press OK to confirm the setting.

5. Adjustment of detection line sensitivity:
   - press ► or ◄ until you get to < sensitivity >; press OK;
   - press ▲ or ▼ to change the number of the detection line to be worked on; press OK;
   - read the Detec value to quantify environmental disturbances for 1 to 2 minutes;
   - press ▲ or ▼ to change the smoke threshold value (the value of the highest disturbance value seen by Detec shall be less than the threshold setted); press OK;
   - read the Detec value to quantify environmental disturbances for 1 to 2 minutes;
   - press ▲ or ▼ to change the fire threshold value (the value of the highest disturbance value seen by Detec shall be less than the threshold setted);
   - press OK to confirm the setting.
PROCEDURE FOR FURTHER ADJUSTMENT

1. Enter menu:
   - from the main screen, press OK;
   - enter the password, using the direction buttons ▲►▼◄; press OK;

2. Checking the signal and manual adjustment of detection lines
   - press ► or ◄ until you get to < adjustment >; press OK;
   - press ▲ or ▼ to edit the number of the detection lines; press OK;
   - read the RX signal; it must normally be about 100%;
   - press ▲ or ▼ to change the TX value;
   - press OK to confirm the setting.

3. Alarm simulation for detection lines:
   - press ► or ◄ until you get to < Alarm Test >; press OK;
   - press ▲ or ▼ to edit the number of the detection lines; press OK;
   - press OK to start the alarm testing;
   - wait for the barrier alarm;
   - press OK to reset the barriers;

4. Reset the detection lines alarm:
   - press ► or ◄ until you get to < Reset Alarm >; press OK;
   - press OK to reset the alarm;

5. Change the password for access to the menu:
   - press ► or ◄ until you get to < Change password >; press OK;
   - enter the new password, using the direction buttons ▲►▼◄;
   - press OK to confirm the setting.
TECHNICAL FEATURES

**ILIA High Sensitivity Reflection Linear Beam Detector model ERRHS0712**

- **Working temperature:** -20°/+65° C
- **Storage temperature:** -20°/+70° C
- **Electromagnetic disturbance:** EMC test up to 30 Volt/m
- **Power supply:** 12/24 V d.c. (± 20%) without switching
- **Cable type:** minimum section of 0,5 mm² with 4 wires
  - type CEI 20-22
- **Maximum cable length:** max 1200 m from Control Unit to line detectors
  - (double in loop configuration)
- **Operating distance:** from 10 to 150 meters
- **Maximum permitted cover:** 1600 sq metres for detector - according to TS 54-14
- **Width cover:** max 15 meters - according to TS 54-14
- **Size:** 162x145x193 mm
- **Weight:** TRx Unit 780g, Ref Unit 770g
- **Angle misalignment:** ± 1 degree max for TRx Unit
  - ± 5 degree max for Ref Unit
- **Detector protection rating:** IP65
- **RAL Colour:** 5004, front cover 5005

**Beam Controller Unit mod.: CSRLS**

- **Working temperature:** -20°/+65° C
- **Storage temperature:** -20°/+70° C
- **Power supply:** 12/24 V dc (± 20%) to Control Panel
- **Maximum cable length:** Max 1000 m with 1 sq mm cable – Type CEI 20-22
- **Cable section per output:** max 0,5 sq mm
- **Contact capacity Alarm/Fault optorelay:** max 150 mA
- **Size:** 145x177x68 mm
- **Weight:** 375g
- **Connectable detectors:** 1 to 8
- **Control Unit protection rating:** IP65

**Current absorption**

<table>
<thead>
<tr>
<th></th>
<th>POWER SUPPLY</th>
<th>24V ± 20%</th>
<th>12V ± 20%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 DETECTOR CONNECTED</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stand By</td>
<td></td>
<td>max 87 mA</td>
<td>max 42 mA</td>
</tr>
<tr>
<td>Typical (alarm or fault relay)</td>
<td>max 89 mA</td>
<td>max 45 mA</td>
<td></td>
</tr>
<tr>
<td><strong>8 DETECTORS CONNECTED</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stand By</td>
<td></td>
<td>max 190 mA</td>
<td>max 362 mA</td>
</tr>
<tr>
<td>Typical (alarm or fault relay)</td>
<td>max 200 mA</td>
<td>max 372 mA</td>
<td></td>
</tr>
</tbody>
</table>

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SETRONIC Verona Srl – Via F. Da Levanto 14B – 37138 Verona  www.setronicverona.com
rev. 00 del 16.07.2009
**TECHNICAL FEATURES**

**DIAPHRAGM SETTING FOR MODEL ERRHS0712**

**ILIA** has an internal 6 (0 Totally open ÷ 5 mac closure) position diaphragm that can be used where problems arise in the protected environment, for example the presence of direct sunlight or awkward reflections or flare. The diaphragm permits short distance adjustments and/or to have the beam pass through narrow spaces or in any case to limit its size.

Transmitter / Receiver Unit

Fix the key

Turn clockwise

**SETTING**

<table>
<thead>
<tr>
<th>Diaphragm position 0</th>
<th>Diaphragm position 1</th>
<th>Diaphragm position 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from 20 m up to 150 m</td>
<td>Distance from 40 m up to 125 m</td>
<td>Distance from 30 m up to 90 m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diaphragm position 3</th>
<th>Diaphragm position 4</th>
<th>Diaphragm position 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from 20 m up to 80 m</td>
<td>Distance from 15 m up to 65 m</td>
<td>Distance from 10 m up to 50 m</td>
</tr>
</tbody>
</table>

POS 0

POS 1

POS 2

POS 3

POS 4

POS 5

rev. 00 del 16.07.2009
CONTROLLER FOR BEAM DETECTORS

MODEL CSRLS
DISPLAY MESSAGE AND PROGRAMMING STEPS

To start the programming the displayed message must be the following:

<table>
<thead>
<tr>
<th>SETRONIC Verona</th>
<th>Main Screen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation</td>
<td>Normal Operation</td>
</tr>
</tbody>
</table>

1. Sensibility Setting

PRESS OK

Insert password
FFFF

PRESS OK

If a wrong code is inserted, after the confirm with OK the mistake message is displayed. Check the error and repeat the procedure.

Password error!

PRESS OK

With the right password the menu is available.

PRESS OK

< choose line >
N.: x

PRESS OK

Loading data
From device: x

Waiting for the loading of the data

Look the value of Detector for a couple of minutes and set a value higher that the highest read. Repeat the operation as for SMOKE as for FIRE.

PRESS OK

Detec: x
Smoke: xxxx

Press the arrows ▲▼ SMOKE sensitivity will be set.

Note: if the threshold of sensibility comes from the value required by the Norm, you will see <Warn> (for example Smoke: 284 Warn).
Detec:  x
Fire:  xxxx

Press the arrows ▲▼ FIRE sensitivity will be set

PRESS OK

When the threshold as been chosen and set… PRESS OK

Saving data...

If the sensitivity has been changed will be displayed...

Data not changed
Ok to exit

If any change has been made, (may be has been just made a check of the values) the message on the display will be:

At the end of operation… PRESS OK

2. Modify of Transmitter level and check of the signal level received

PRESS OK

Insert Password
FFFF

Insert password as for step 1

PRESS OK

< Sensibility >

Menu access

< Adjustment >

Press one time ► to visualize on display:

PRESS OK

< choose line >
N.: x

Press the arrows ▲▼ select the Detector which will be regulated the IR power transmission

PRESS OK

Loading data
From device: x

Wait for the loading of the data
Press the arrows ▲▼ so can be increased or decreased the value of the TX (strength of the IR emitted). For a correct working of the Detector the reception value RX must be around 100%.

When the setting is done... PRESS OK

Saving data... If the TX level has been changed will be displayed...

Data not changed Ok to exit If any change has been made, (may be has been just made a check of the values) the message on the display will be:

At the end of operation... PRESS OK

3. Auto calibration of Transmitter level

PRESS OK

Insert Password FFFFF Insert password as for step 1 PRESS OK

< Sensibility > Menu access

< AUTO Adjust. > Press the arrow ◄ until to visualize on display:

PRESS OK

< choose line > Press the arrows ▲▼ select the Detector which will

N.: x be regulated the IR power transmission

PRESS OK

Loading data From device: x Wait for the loading of the data
Let the Detector level adjusting of the Transmitter is around 100%, then press OK to save the level. It is possible, when the value is tidy near the 100% increased or decreased the value with the arrows ▲▼ so to take it up to the effective 100%. Avoid carefully to set value Higher of 102% and under the 96%. If the 96% is not reachable it means that some obstacle reduce the strength of the Infra red beam, or the correct axis position has not been found.

When the detector is up to 100%… PRESS OK

4. Alarm Auto test

PRESS OK

Insert Password FFFF

PRESS OK

< Sensibility >

Menu access

< Alarm Test >

Press the arrow ► until to visualize on display:

PRESS OK

< choose line >

Press the arrows ▲▼ select the Detector which will be tested

PRESS OK

N.: x

Loading data From device: x

Press OK to start the test and wait for the alarm signal (LED Alarm lighted)
Press OK to reset the Detector. In case that the reset in not working properly, wait for a minute and reset the Alarm by the reset menu.

5. Alarm Reset

PRESS OK

Insert password as for step 1

PRESS OK

Menu access menu

Press the arrow ► until to visualize on display:

PRESS OK

Press OK for the reset of all the Detector

PRESS OK

6. System Configuration

PRESS OK

Insert password as for step 1

PRESS OK

Menu access
Press the arrow ► until to visualize on display:

PRESS OK

Press the arrows ▲▼ it is selected the number of detector connected to the detection line. Press OK for confirmation.

PRESS OK

Press the arrows ▲▼ and select the delay time from 0 sec to 90 sec for the activation of fault output. The steps are of 30 sec.

PRESS OK

Press the arrows ▲▼ and set the contact of the fault output normally close or normally open

PRESS OK

Press the arrows ▲▼ is activated (on) or deactivated (off) the second serial line (to be used only if the expansion module is inserted)

PRESS OK

Press the arrows ▲▼ is possible to set up the serial line as closed loop (close) or Open Error, if the wish is to have two different stub lines with n detector connected (function available only with expansion card inserted).

PRESS OK

Press the arrows ▲▼ will be active (on) or not active (off) the check control of the correct serial line communication.

Note: to be used only if it is necessary make a check of the line for some problems during the first initialization.

PRESS OK
7. Modify of the password for menu access

**PRESS OK**

**Insert Password**

**FF**

*Insert default password as for step 1*

**PRESS OK**

**Password error!**

*If a wrong code is inserted, after the confirm with OK the mistake message is displayed. Check the error and repeat the procedure*

**< Sensibility >**

*Menu access*

**<Change Password**

*Press the arrow ▶ until to visualize on display:

**PRESS OK**

**Set NEW Password**

**FF**

*Press the arrows ▶ ◄ and moving the blinking cursor by arrows ▲▼ it is possible to change the default password. The changes could be made with the characters from 0 to 9 and from A to F. Press OK for confirm*

**PRESS OK**

**Password changed**

**OK to exit**

**PRESS OK**

8. Display messages for events

- **ALARM INDICATION:**

**Alarm:1---56--**

*Example with alarm on zone (detector) 1, 5 e 6 (the dash shows the zone out of the incoming event)

Note: the Led ALARM is on and the output related to the zone(s) is activated*
• **FAULT INDICATION:**

```
Fault:--2---6--
```

Example with fault on zone (detector) 2 e 6 (the dash shows the zone out of the incoming event)

Note: the led TROUBLE is on and there is the change of the status of the related output. (open/close and/or timing of delay as for programmed configuration.

• **MAINTENANCE REQUEST:**

```
Maint:----5---
```

Example with maintenance request on zone (the dash shows the zone out of the incoming event)

Note: the Led MAINTENANCE is on and there is the change of the status of the related fault output (open/closed as for chosen configuration)

• **INDICATION OF PROBLEMS ON SERIAL LINE:**

```
A-Err:123-----
B-Err:---45678
```

Example of loop interrupted. In this condition, the Detector from 1 to 3 will continue to work on serial line A (zone 1, 2 e 3). The Detectors related to zone from 4 to 8 will continue to work on serial line B. The dash will indicated where the line is cut.

Note: Led TROUBLE is on and will be activated the output of zone 1.

```
A-Err:123-----
B-Err:--345678
```

Example of interruption of the loop between TX and RX of zone (detector) 3. This message is shown only when the line is cut between Transmitter and Receiver.

Note: the Led TROUBLE is on and if the line i san open one all the output of the detectors from 3 to 8 will be activated, if it is a closet loop only the output 1 will be activated, and in any case the system is still working.

```
C-Err:-2345678
Fault:-2345678
```

Example with only one detector really connected and system configuration with 8 Detectors.

Note: Led TROUBLE is on and will be activated the output of zone 1.

**NOTICE:** in all conditions above mentioned, in case of an alarm of one or more zone (detector), the first line of the display will always show the alarm condition.
BOARD CONNECTIONS

MAIN MODULE
DETECTORS 1 / 2

FROM CONTROL PANEL
EXTERNAL POWER SUPPLY
TO DETECTORS
OUTPUT POWER SUPPLY
SERIAL LINE "A"
DISPLAY ADJUST
OUTPUT ZONE 1
OUTPUT ZONE 2

OPTIONAL EXPANSION BOARD
DETECTORS 3 TO 8

TO DETECTORS
OUTPUT POWER SUPPLY
SERIAL LINE "B"
OUTPUT ZONE 3
OUTPUT ZONE 4
OUTPUT ZONE 5
OUTPUT ZONE 6
OUTPUT ZONE 7
OUTPUT ZONE 8

ALARM
FAULT
ALARM
FAULT
ALARM
FAULT
ALARM
FAULT
ALARM
FAULT
ALARM
FAULT
ALARM
FAULT

**DIP-SWITCH FOR THE ADDRESS OF THE SMOKE BEAM DETECTORS**

<table>
<thead>
<tr>
<th>DIP-SWITCH</th>
<th>SW1</th>
<th>SW2</th>
<th>SW3</th>
<th>ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="DIP-Switch Diagram" /></td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>ZONE 1</td>
</tr>
<tr>
<td><img src="image2" alt="DIP-Switch Diagram" /></td>
<td>OFF</td>
<td>ON</td>
<td>ON</td>
<td>ZONE 2</td>
</tr>
<tr>
<td><img src="image3" alt="DIP-Switch Diagram" /></td>
<td>ON</td>
<td>OFF</td>
<td>ON</td>
<td>ZONE 3</td>
</tr>
<tr>
<td><img src="image4" alt="DIP-Switch Diagram" /></td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>ZONE 4</td>
</tr>
<tr>
<td><img src="image5" alt="DIP-Switch Diagram" /></td>
<td>ON</td>
<td>ON</td>
<td>OFF</td>
<td>ZONE 5</td>
</tr>
<tr>
<td><img src="image6" alt="DIP-Switch Diagram" /></td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>ZONE 6</td>
</tr>
<tr>
<td><img src="image7" alt="DIP-Switch Diagram" /></td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>ZONE 7</td>
</tr>
<tr>
<td><img src="image8" alt="DIP-Switch Diagram" /></td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>ZONE 8</td>
</tr>
</tbody>
</table>

**NOTE:** THE DIP-SWITCH 4 MUST BE SET IN **ON** POSITION ONLY ON THE LAST DETECTOR CONNECTED ON A STUB LINE. MUST BE SET ALSO IF ONLY ONE DETECTOR IS CONNECTED.
MAINTENANCE

Normal conditions of installation require maintenance intervals as indicated by current regulations (UNI9795 of 2005, point 9.2 UNI 11224). These intervals, on the basis of every 5 months, may sometimes be more frequent depending on the many kinds of conditions of application of the devices, especially in industrial environments where there may be stationary dust and steam or the products of various production stages.

PROCEDURE

The maintenance of the ILIA line does not require particular equipment and is both simple and fast. The operation is carried according to the following procedure:

1. Clean the front cover with water and/or neutral soap without the use of abrasive cloths. If the surfaces are very scratched, yellowed or significantly dimmed, they must be replaced as this may jeopardise the proper optical working of the detector.

2. With a soft cloth clean the outer surface of the front cover (Transmitter Unit, Receiver Unit or Transmitter-Receiver Unit and Reflection Unit).

3. Check the correct infrared signal level through the menu < adjustment >, observing conformity of the Led signals. It is advisable in any case to adjust the level of Rx at 100%. If the value of the Rx is too low, repeat the alignment procedure until saturation point, and repeat the <Autoadjust> procedure.

4. Check the Alarm conditions, the Fault conditions and the corresponding outputs, following “Alarm Test” and “Fault Test” procedures as set forth in the chapter “CALIBRATION AND ASSEMBLY PROCEDURE” at page 5 or 14.

ADDITIONAL CONTROLS

SIGNAL DROP
If the infrared signal carried emitted by the detector tends over times to fall in intensity, the system will carry out a proportional up rating by way of long term self-regulated compensation). If the infrared signal falls to the minimum set threshold due to the build up of dust or settling of the building structure to which the equipment is fastened, an green Led will flash locally as a warning. The consequent opening of the fault contact will send the detector control unit a maintenance request.

INSUFFICIENT SIGNAL / FAULT
When the infrared signal emitted by the detector falls below a minimum level or is interrupted by an obstacle, the “fault” contact will open, rather than that of “fire alarm”. When the correct signal level has returned or the obstacle removed the detector will return to normal working in less than one second. The detection units currently have memory retention also of fault conditions so if the detector comes immediately back into service, on removal of the obstacle it must always be checked that the control unit locally resets the fault signal, whether it be visual or sound.

ALARM
A red Led will indicated the start of a fire detection without enabling an output. After a certain analysis time, typically 16 seconds, the red Led will start flashing and the output will be enabled to signal alarm confirmation.
You are advised that as Setronic Verona constantly strives to improve its products it reserves the right to make any changes it considers necessary without prior warning. The same reservation applies to any corrections of printing errors including of details and measurements that may have found their way into this booklet. Any recommendations made in this booklet, must be considered as replaced by any conflicting Italian or European regulations that may come into force in the future, as of the date these come into force. Since the products herein are sold outside the country in which they are manufactured, we must point out that any installation regulations in force in the country of installation must be followed, even where they do not accord with our suggestions. We shall consider any such regulations as having been followed, as from the date they come into force.

Keep this booklet close to hand for future reference.
The information contained in this booklet is available in PDF files at our website: www.setronicverona.com

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