Annex acc. to FCC Title 47 CFR Part 15
relating to
ESCATRONIC GmbH
ESCA DISTANCE US/CA

Annex no. 5
User Manual
Functional Description

Title 47 - Telecommunication
Part 15 - Radio Frequency Devices
Subpart C – Intentional Radiators
ANSI C63.4-2014
ANSI C63.10-2013

Deutsche Akkreditierungsstelle D-PL-12053-01-00

m. dudde hochfrequenz-technik GmbH & Co. KG **Rottland 5a** **51429 Bergisch Gladbach/ Germany** **Tel: +49 2207-96890** **Fax +49 2207-968920**

RADAR - Sensor to be used on escalators and walkways
certified due to performance level “d” according to
EN ISO 13849-1:2008 and certified according to EN115-1:2008

E 11.17

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1. General description

The Radar Sensor DISTANCE S3 has been designed to be used as contact less acting security device for moving staircases (escalators). The sensor is acting as a Doppler-radar intrinsically safe according to Performance Level d EN ISO13849-1:2008. His capture range covers the entrance area of the escalator above the contact plate area. It detects slow moving passengers as well as passenger with low reflecting surface to start-up the escalator according to EN115-1:2008.

2. Versions

The Radar-Sensor DISTANCE S3 is available in different Versions. They have different detection ranges of the Sensor. There are also sensors that will only detect approaching persons or both approaching and departing persons.

There are 2 different versions of outputs availlable:

V1 has one potential free Optocoupler output as opener.

V2 has two active 24V Outputs, which are phase-shifted 180°.

Als versions are in the following table:

Name	Opening angel	Output	Range	Approaching/Departing
DISTANCE S3-V1	70°H , 36°V	V1	2,5 - 2,7m	Approaching only
DISTANCE S3-V2	70°H , 36°V	V2	2,5 - 2,7m	Approaching only
DISTANCE S3-V2-120	70°H , 36°V	V2	1,2 - 1,3m	Approaching only
DISTANCE S3-V2-120-BD	70°H , 36°V	V2	1,2 - 1,3m	Approaching & Departing

3. Technical data

3.1 General

Supply voltage:	24V...28V
Current consumption:	max. 50mA
Signal output:	potential free optocoupler (OC)
Contact type:	normally closed (opener)
Alternative contact type:	2 phase output, 180° phase shift.

Switching current:	max. 50mA
Response time:	ca.100ms
Max. voltage level:	70VDC
min. duty cycle (open contact):	0,5s
Dimensions (H*W*D)	46 x 56 x 20 mm
Temp. range:	-20°C....+80°C
Protection class:	IP67

3.2 Sensor

Transmitter frequency:	24,075...24,0175 GHz
Max. RF output power:	100mW
Angle of beam horizontal:	70°
Angle of beam vertical:	32°
Sensitivity range:	2,5...2,7m pre-set
Moving sense:	towards sensor or toward and from sensor
Response time:	< 0,1m/s

3.3 Certification

EN115-1:2008

EN13849-1:2008

EN12015

EN12016:2004

2006/42/EG from 29.12.2009

2011/65/EU ROHS

2014/35/EU

2014/30/EU

Radio spectrum

ETSI EN300400-1V1.3.1 (2001-09)

ETSI EN300440-2V1.1.1. (2001-09)

Health

VDE 0848 (08/2000) Part1

VDE 0848 (01/1991) Part 2

ICNIRP Guidelines (04/1998)

3.4 Connection Options

Cable 4 x 0,25mm², length 0,5m, M12 connector assembly

Pin assignment *Dual-Different output (version 1):*

Pin 1 +24VDC brown
Pin 2 Output 1 OC PNP white, 180° phase shift output compared to Pin 4.
Pin 3 GND blue
Pin 4 Output 2 OC PNP black, security controlled output

Pin assignment *Single-Ended potential free output (Version 2):*

Pin 1 +24VDC brown
Pin 2 Output OC out - white
Pin 3 GND blue
Pin 4 Output OC out + black

4. Installation

4.1 Mounting position

The recommended locations to install the sensor into the escalator:

- below of handrail entrance point
- into the balustrade base
- at the area of the contact-mat inside a protective housing

4.2 Prescribed check of mounting position

For each type of escalator it is once required to determine and document the selected mounting position.
It has be assured to cover the entrance area of the escalator by the sensor range and to make sure this range/area can not be bypassed by any passenger. This procedure will secure a save start of the escalator. The sensor should be protected from covering it by any metal parts.

To test the entrance area a metal sphere of 18cm diameter should be used to simulate repeatable an approaching passenger.

The test using the metal sphere begins at a distance of 2.5m rolling the sphere slowly in direction of the

spirketing. The radar sensor has to activate the escalator in a distance of 1.6m from the spirketing. This procedure has to be repeated for all possible passenger routes into the entrance area. If the sensor doesn't recognise the movement of the sphere on a certain route, the mounting position of the radar sensor has to be modified accordingly.

The escalator manufacturer or the service/refurbishment company is responsible for the correct check of the sensor accordingly to the procedure shown above.

The radar sensor manufacture can not be held responsible for any loss or damage based on an inaccurate selected mounting position or ambiance or coverage of the radar sensor.

5. Output signal lines

The output lines are different due to the configuration of the radar sensor module (please refer to chapter 3.4). If a movement is detected by the radar sensor the output level is changed for about 0.5 seconds. The meaning for the possible status of the two different module versions are shown in table 1 below:

Version 1 (Dual-difference output)				Version 2 (Single-ended potential free output)	
Output 1	output 2	Meaning		Output	Meaning
low	high	No movement detected, module in operation		low	No movement detected, module in operation
high	low	Movement detected, module in operation		high	Movement detected, If permanent: Fault detected inside the module
low	low	Fault detected			
high	high	Not valid			

Table 1: Possible status of output lines

6. Fault tracking

The radar sensor undergo periodic repeating internal self tests while he is in operation. The time interval for this test are max 10 seconds. During these test cycles the radar receiver, as well as the internal controller memory and the output lines are checked for error-free functionality. Some of the output errors can only be

detected when the output power is changed.

6.1 Detection of malfunction

If an internal malfunction is detected during these tests, the output of the radar sensor is permanently disabled. It is impossible to reactivate the radar sensor again.

A cable break from the radar sensor to the escalator control results in an open output signal which forces the escalator control to keep continuous operation for the current direction.

The status of the output signal lines after detection of a malfunction are described in chapter 4.

6.2 Indication of errors or faults

A LED points out the module status. The LED is visible on the side of the housing.

Possible faults are described in table 2:

Name	Diagnostic	Interval of execution	Fault impact	Resetting	Fault signal
No fault					The green LED is on
Sensor fault	The radar modul is checked after power-up for a specific step-response-function.	every xx seconds	Put the module out of operation (secure situation due to open output lines)	Repeating the test	The red and the green LED are flashing.
„Galpat“ fault	The internal memory will be tested using walking „1“ and “0“ for error-free operation.	every xx seconds	Put the module out of operation (secure situation due to open output lines)	No successful restart	The red LED will be on all the time.
Program fault	Specific patterns are stored into the internal memory and tested by comparison of the checksum	every xx seconds	Put the module out of operation (secure situation due to open output lines)	No successful restart	The red LED will be on all the time
Output fault	The opto-coupler on the output lines is tested for error free operation (open)	If it is required to open the output line and during power-up, if the current test was successful	Put the module out of operation (secure situation due to open output lines)	No successful restart	The red LED will show the following sequence: short-short-long
Watchdog fault	The watch-dog and the opto-coupler are tested for error free operation (open)	If it is required to open the output lines and while power-up if the current test was successful	Put the module out of operation (secure situation due to open output lines)	Kein erneutes Anlaufen	The red LED will show the following sequence: long-long-short
Current fault	The current on the closed output lines is read back.	If it is not required to open the signal line and after power-up.	Don't take module out of operation. Continue the tests, eventually cable break or output signal line not connected	Repeat the tests	The green LED is flashing

Table 2: Indication of errors

7. DECLARATION OF CONFORMITY

EG-Konformitätserklärung

Im Sinne der EG-Richtlinie Maschinen 2006/42/EG

Hiermit erklären wir, dass die Bauart der folgenden Geräte

DISTANCE S3

den einschägigen Bestimmungen entspricht.

Angewendete harmonisierte Normen:
EN 62061:2005+A1:2012
EN12016:2004+A1:2008
EN115-1:2008+A1:2010 Abschnitt 5.12.2.4.2

Sonstige angewendete Normen:
EN12015:2004
2006/42/EG from 29.12.2009
2011/65/EU ROHS
2014/35/EU
2014/30/EU
EN13849-1:2008

siehe Baumusterprüfung ab Seite Fehler: Referenz nicht gefunden

Gemeldete Stelle nach Richtlinie 2006/42/EG:
TÜV NORD CERT GmbH
Kennnummer: 0044
Langemarckstrasse 20
45141 Essen

Unterlagenbevollmächtigte: Anke Schreiber

EG – Baumusterbescheinigungs-Nr.: 44 205 XXXXXX

ESCATRONIC GmbH
Ludwig Erhard Ring 24
D-31157 Sarstedt

Laatzen 28.07.2014

Anke Schreiber
Geschäftsführerin

8. Certificate

8.1 RADAR Module

CETECOM ICT Services GmbH

EC Identification number 0682

authorized by the German Government

to act as Notified Body in accordance with the R&TTE Directive 1999/5/EC of 09. March 1999.

CERTIFICATE
EXPERT OPINION

Registration-No.: **E813668P-EO**

Certificate Holder: **InnoSenT GmbH**
Innovative Sensor-Technik
Am Rödertor 30

D-94799 Donnersdorf

Product Designation: **IPS24–2–4–2–154 / 155**

Product Description: **Short Range Devices**

Product Manufacturer: **InnoSenT GmbH**
Innovative Sensor-Technik
Am Rödertor 30

D-94799 Donnersdorf

Essential requirements	Specifications / Standards	Submitted documents	Result
Health (R&TTE, Article 3.1a)	VDE 0848-1 (2000-08) VDE 0848-2 (1991-01) ICNIRP Guidelines (1998-04)	Test Report	conform
Radio spectrum (R&TTE, Article 3.2)	EN 300 440-1 V1.3.1 (2001-09) EN 300 440-2 V1.1.1 (2001-09)	Test Report	conform

Marking: **The product shall be signed with CE, our notified body number and the Class II identifier (Alert sign) as shown right hand.**

CE 0682 !

The scope of this evaluation relates to the submitted documents only.
The certificate is only valid in conjunction with the following number of annexes.

Number of annexes: 1

Saarbrücken, 02.07.2003
Place, Date of Issue

Signed by Ernst Hussinger
Notified Body

GERMAN NOTIFIED BODY · DEUTSCHE BENANNTE STELLE ·

CETECOM ICT Services GmbH, Untertürkheimer Straße 6-10, D-66117 Saarbrücken, Germany
http://www.cetecom.de

CETECOM ICT Services GmbH

CETECOM™

CERTIFICATE OF CONFORMITY

Registration-No.: **E813668P-CC** Number of annexes: **---**

Certificate Holder: **InnoSenT GmbH**
Innovative Sensor-Technik
Am Rödertor 30

D-94799 Donnersdorf

Product Designation: **IPS24–2–4–2–154 / 155**

Product Description: **Short Range Devices**
(motion detector)

Product Manufacturer: **InnoSenT GmbH**
Innovative Sensor-Technik
Am Rödertor 30

D-94799 Donnersdorf

Specifications and test reports:

Specification	Test report no. & date	Name of test laboratory	Notes
VDE 0848-1 (2000-08) VDE 0848-2 (1991-01) ICNIRP Guidelines (1998-04)	2-3279-01-02/03 dated June 6, 2003	CETECOM ICT	conform
EN 300 440-1 V1.3.1 (2001-09) EN 300 440-2 V1.1.1 (2001-09)	2-3279-01-01/03 dated June 6, 2003	CETECOM ICT	conform

Statement **This equipment fulfils the requirements or parts thereof in the above mentionend specifications.**

CETECOM ICT Services is authorized to act as Notified Body in accordance with the R&TTE Directive 1999/5/EC of 09. March 1999

Saarbrücken, 02.07.2003
Place, Date of Issue

Signed by Ernst Hussinger
Notified Body

GERMAN NOTIFIED BODY · DEUTSCHE BENANNTE STELLE ·

CETECOM ICT Services GmbH, Untertürkheimer Straße 6-10, D-66117 Saarbrücken, Germany

8.2 TÜV Certificate

TÜV NORD

Zertifikat

Certificate

Registrier-Nr.
Registration No.
44 799 09 370910

Zeichen des Auftraggebers / *Customer's reference*	Auftragsdatum / *Date of order*	Aktenzeichen / *File reference*	Prüfbericht Nr. / *Test report no.*
	26.02.2009	8000370910	09 799 370910

Name und Anschrift des Auftraggebers / *Customer's name and address*: **Escatronic GmbH, Würzburger Str. 8, 30880 Laatzen**

Geprüft nach / *Tested in accordance with*:
- EN 115-1:2008 — Sicherheit von Fahrtreppen und Fahrsteigen, Teil 1: Konstruktion und Einbau, Abschnitt 5.12.2.4.2
- EN ISO 13849-1: 2008 — Sicherheit von Maschinen - Sicherheitbezogene Teile von Steuerungen, Anforderungen an Performance Level d

Beschreibung des Produktes (Details siehe Anhang 1) / *Description of product (Details see Annex 1)*: Radarmodul als Sensor zur Ingangsetzung einer Fahrtreppe

Typenbezeichnung / *Type Description*: **Distance S3**

Bemerkung / *Remark*: Der Sensor ist geeignet zum in gang setzen einer Fahrtreppe gemäß EN 115:2008 Abschnitt 5.12.2.4.2 und Performance Level d nach EN ISO 13849-1: 2008

Dieses Zertifikat bescheinigt das Ergebnis der Prüfung an dem vorgestellten Prüfgegenstand. Eine allgemein gültige Aussage über die Qualität der Produkte aus der laufenden Fertigung kann hieraus nicht abgeleitet werden.
This certifies the result of the examination of the product sample submitted by the manufacturer. A general statement concerning the quality of the products from the series manufacture cannot be derived there from.

TÜV NORD CERT GmbH
Zertifizierungsstelle für Produktsicherheit
Certification body for product safety

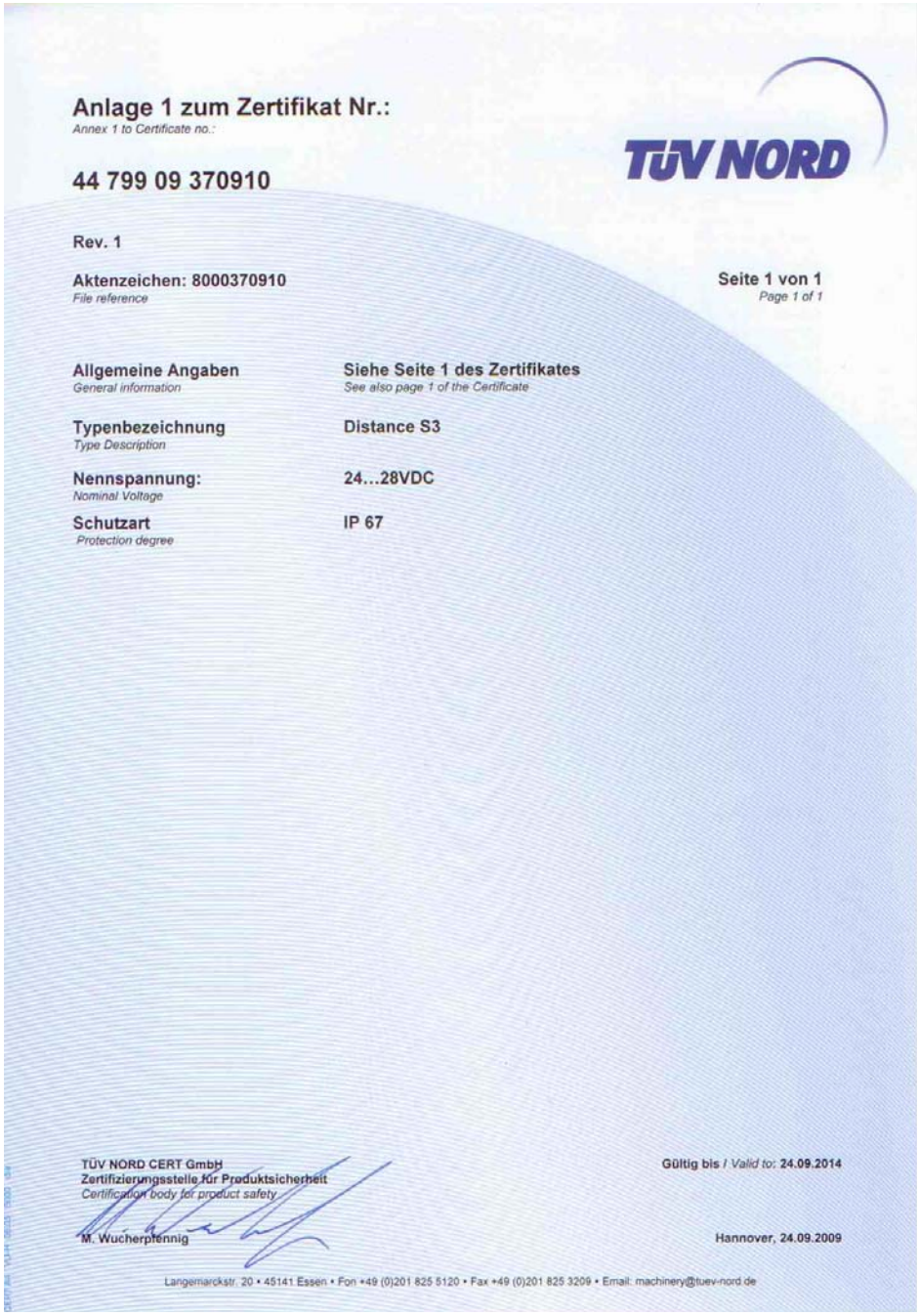
Gültig bis / *Valid to*: **24.09.2014**

M.Wucherpfennig

Hannover, 24.09.2009

Bitte beachten sie auch die umseitigen Hinweise
Please also pay attention to the information stated overleaf

Langemarckstr. 20 • 45141 Essen • Fon +49 (0)201 825 5120 • Fax +49 (0)201 825 3209 • Email: machinery@tuev-nord.de



Anlage 1 zum Zertifikat Nr.:
Annex 1 to Certificate no.:

44 799 09 370910

TÜV NORD

Rev. 1

Aktenzeichen: 8000370910
File reference

Seite 1 von 1
Page 1 of 1

Allgemeine Angaben *General information*	**Siehe Seite 1 des Zertifikates** *See also page 1 of the Certificate*
Typenbezeichnung *Type Description*	**Distance S3**
Nennspannung: *Nominal Voltage*	**24...28VDC**
Schutzart *Protection degree*	**IP 67**

TÜV NORD CERT GmbH
Zertifizierungsstelle für Produktsicherheit
Certification body for product safety

M. Wucherpfennig

Gültig bis / *Valid to:* **24.09.2014**

Hannover, 24.09.2009

Langemarckstr. 20 • 45141 Essen • Fon +49 (0)201 825 5120 • Fax +49 (0)201 825 3209 • Email: machinery@tuev-nord.de

8.3. FCC

FCC ID: 2ANWS-ESCADISTANCE

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: This device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.

RADAR - Sensor to be used on escalators and walkways

according to EN115-1:2008

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6.2. FCC....10

1. General description

The Radar Sensor DISTANCE 2S has been designed to be used as contact less acting security device for moving staircases (escalators). The sensor is acting as a Doppler-radar. His capture range covers the entrance area of the escalator above the contact plate area. It detects slow moving passengers as well as passenger with low reflecting surface to start-up the escalator according to EN115-1:2008.

2. Function

The Radar-Sensor DISTANCE 2S is available only detect approaching persons or both approaching and departing persons.

The standard detection range is defined from 3,0 to 3,3m. The detection range can be increase to 4,0 to 4,2m by pulling the input to 24VDC

If passengers are detected the OC PNP output will be activated for a minimum time of 700ms.

3. Technical data

3.1 General

Supply voltage:	24V...28V
Current consumption:	max. 50mA
Signal output:	potential free optocoupler (OC)
Contact type:	normally closed (opener)
Alternative contact type:	2 phase output, 180° phase shift.
Switching current:	max. 50mA
Response time:	ca.100ms
Max. voltage level:	70VDC
min. duty cycle (open contact):	0,5s
Dimensions (H*W*D)	46 x 56 x 20 mm
Temp. range:	-20°C....+80°C
Protection class:	IP67

3.2 Sensor

Transmitter frequency:	24,075...24,0175 GHz
Max. RF output power:	100mW
Angle of beam horizontal:	70°
Angle of beam vertical:	32°
Sensitivity range:	2,5...2,7m pre-set

alternative:

Angle of beam horizontal:	45°
Angle of beam vertical:	38°
Sensitivity range:	1,2...1,3m pre-set
Moving sense:	towards sensor or toward and from sensor
Response time:	< 0,1m/s

3.3 Certification

EN115-1:2008
EN13849-1:2008
EN12015
EN12016:2004
2006/42/EG from 29.12.2009
2011/65/EU ROHS
2014/35/EU
2014/30/EU
Radio spectrum
ETSI EN300400-1V1.3.1 (2001-09)
ETSI EN300440-2V1.1.1. (2001-09)
Health
VDE 0848 (08/2000) Part1
VDE 0848 (01/1991) Part 2
ICNIRP Guidelines (04/1998)

3.4 Connection - versions

Cable 4 x 0,25mm², length 0,5m, M12 connector assembly

Pin assignment *Single-Ended OC PNP output:*

Pin 1 +24VDC brown
Pin 2 range expansion, open 3,0m, 24VDC 4,0m

Pin 3 GND blue
Pin 4 Output 2 OC PNP black

4. Installation

4.1 Mounting position

The recommended locations to install the sensor into the escalator:

- below of handrail entrance point
- into the balustrade base
- at the area of the contact-mat inside a protective housing

4.2 Prescribed check of mounting position

For each type of escalator it is once required to determine and document the selected mounting position.
It has be assured to cover the entrance area of the escalator by the sensor range and to make sure this range/area can not be bypassed by any passenger. This procedure will secure a save start of the escalator. The sensor should be protected from covering it by any metal parts.

To test the entrance area a metal sphere of 18cm diameter should be used to simulate repeatable an approaching passenger.

The test using the metal sphere begins at a distance of 2.5m rolling the sphere slowly in direction of the combline. The radar sensor has to activate the escalator in a distance of 1.6m from the combline. This procedure has to be repeated for all possible passenger routes into the entrance area. If the sensor doesn't recognise the movement of the sphere on a certain route, the mounting position of the radar sensor has to be modified accordingly.

The escalator manufacturer or the service/refurbishment company is responsible for the correct check of the sensor accordingly to the procedure shown above.

The radar sensor manufacture can not be held responsible for any loss or damage based on an inaccurate selected mounting position or ambiance or coverage of the radar sensor.

5. DECLARATION OF CONFORMITY

EG-Konformitätserklärung

Im Sinne der EG-Richtlinie Maschinen 2006/42/EG

Hiermit erklären wir, dass die Bauart der folgenden Geräte

DISTANCE 2S

den einschägigen Bestimmungen entspricht.

Angewendete harmonisierte Normen:
EN12016:2004+A1:2008
EN115-1:2008+A1:2010 Abschnitt 5.12.2.4.2

Sonstige angewendete Normen:
EN12015:2004
2006/42/EG
2002/95/EG RoHS
2006/95/EG
2004/1008/EG

6. Certificate

6.1 RADAR Module

CETECOM ICT Services GmbH

EC Identification number 0682

authorized by the German Government

to act as Notified Body in accordance with the R&TTE Directive 1999/5/EC of 09. March 1999.

CERTIFICATE
EXPERT OPINION

Registration-No.: **E813668P-EO**

Certificate Holder: **InnoSenT GmbH**
Innovative Sensor-Technik
Am Rödertor 30

D-94799 Donnersdorf

Product Designation: **IPS24–2–4–2–154 / 155**

Product Description: **Short Range Devices**

Product Manufacturer: **InnoSenT GmbH**
Innovative Sensor-Technik
Am Rödertor 30

D-94799 Donnersdorf

Essential requirements	Specifications / Standards	Submitted documents	Result
Health (R&TTE, Article 3.1a)	VDE 0848-1 (2000-08) VDE 0848-2 (1991-01) ICNIRP Guidelines (1998-04)	Test Report	conform
Radio spectrum (R&TTE, Article 3.2)	EN 300 440-1 V1.3.1 (2001-09) EN 300 440-2 V1.1.1 (2001-09)	Test Report	conform

Marking: **The product shall be signed with CE, our notified body number and the Class II identifier (Alert sign) as shown right hand.**

CE 0682 !

The scope of this evaluation relates to the submitted documents only.
The certificate is only valid in conjunction with the following number of annexes.

Number of annexes: 1

Saarbrücken, 02.07.2003
Place, Date of Issue

Signed by Ernst Hussinger
Notified Body

CETECOM ICT Services GmbH, Untertürkheimer Straße 6-10, D-66117 Saarbrücken, Germany
http://www.cetecom.de

CETECOM ICT Services GmbH

CETECOM™

CERTIFICATE OF CONFORMITY

Registration-No.: **E813668P-CC** Number of annexes: **---**

Certificate Holder: **InnoSenT GmbH**
Innovative Sensor-Technik
Am Rödertor 30

D-94799 Donnersdorf

Product Designation: **IPS24–2–4–2–154 / 155**

Product Description: **Short Range Devices**
(motion detector)

Product Manufacturer: **InnoSenT GmbH**
Innovative Sensor-Technik
Am Rödertor 30

D-94799 Donnersdorf

Specifications and test reports:

Specification	Test report no. & date	Name of test laboratory	Notes
VDE 0848-1 (2000-08) VDE 0848-2 (1991-01) ICNIRP Guidelines (1998-04)	2-3279-01-02/03 dated June 6, 2003	CETECOM ICT	conform
EN 300 440-1 V1.3.1 (2001-09) EN 300 440-2 V1.1.1 (2001-09)	2-3279-01-01/03 dated June 6, 2003	CETECOM ICT	conform

Statement **This equipment fulfils the requirements or parts thereof in the above mentionend specifications.**

CETECOM ICT Services is authorized to act as Notified Body in accordance with the R&TTE Directive 1999/5/EC of 09. March 1999

Saarbrücken, 02.07.2003
Place, Date of Issue

Signed by Ernst Hussinger
Notified Body

GERMAN NOTIFIED BODY · DEUTSCHE BENANNTE STELLE ·

CETECOM ICT Services GmbH, Untertürkheimer Straße 6-10, D-66117 Saarbrücken, Germany

6.2. FCC

FCC ID: 2ANWS-ESCADISTANCE

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: This device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.

Information to user

- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.